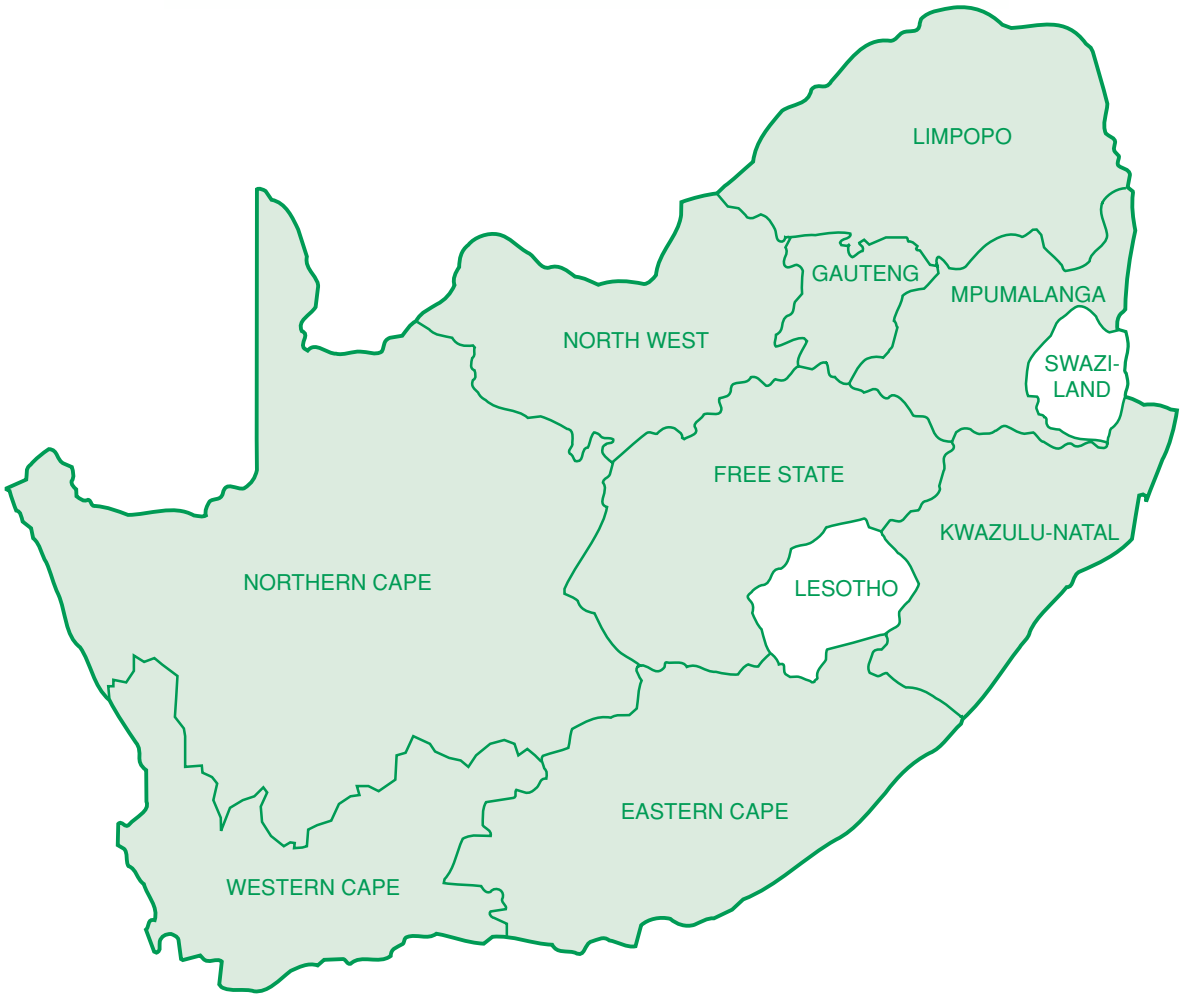
# South African Health Review 2002

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Health Systems Trust
401 Maritime House
Salmon Grove
Victoria Embankment
Durban 4001
South Africa

Email: hst@hst.org.za
Internet: http://www.hst.org.za
Tel: +27 - 31 - 3072954
Fax: +27 - 31 - 3040775

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*Designed by The Press Gang, Durban Tel: (031) 566 1024*

# Foreword

The restructuring of the health system for the provision of equitable health care to all South Africans continues to be at the centre of the government's agenda. Despite major challenges and constraints, including the exodus of health workers from the public sector, 'transformation fatigue', dwindling public sector funding, lack of adequate support systems and resources, 2002 recorded progress. Government also reaffirmed its commitment to the strengthening of the District Health System for the delivery of Primary Health Care.

South Africans continued to wrestle with the HIV/AIDS epidemic, and indeed HIV/AIDS is perhaps the single most important challenge to improving health care delivery in the country. The year saw an increasing number of AIDS patients seeking health care from already over-stretched public sector facilities, particularly clinics in under-served communities. Many households had to dig deeper into their pockets for the care of their loved ones, and both the private and public sectors intensified their efforts to reduce the impact of the epidemic on their workforce. Health workers at all levels of the health care system grappled with the burden of caring for the sick, and coping with the impact of the epidemic within its own ranks.

This 8th edition of South African Health Review seeks to provide a comprehensive account of developments in the South African health system over the last 12 months. It looks at issues related to transformation, such as, legislation and financing of health care, human resources, and support systems for health care delivery. Other key public health issues covered in the Review include HIV/AIDS, sexually transmitted infections, tuberculosis, malaria and nutrition.

It is envisaged that policy makers, planners, health managers, researchers, academicians, health workers and students in the health sector will benefit from reading the Review. The Review also provides useful information to health and development organisations in South Africa and internationally, particularly in the light of the developmental aspects of Primary Health Care that were confirmed at the World Summit on Sustainable Development.

Production of the South African Health Review is an enormous task that involves a lot of people and a great deal of hard work and commitment. The Board of Trustees of the Health Systems Trust is indebted to all those who made the effort and found time to contribute to the Review. We thank all the authors for writing the chapters, peer reviewers, the national and provincial Departments of Health for reviewing and making insightful comments on different chapters, and lastly HST staff for your various contributions to the Review.

**Dr Patiswa Zola Njongwe**
**Chairperson, Board of Trustees**

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## Editors

Petrida Ijumba, Antoinette Ntuli and Peter Barron

## Assistant Editors

Candy Day, Fiorenza Monticelli and Khululiwe Mfayela

## Conceptualisation

We thank the many individuals, particularly all the HST staff, who contributed to the planning process of the Review.

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We extend our gratitude to the national and provincial Departments of Health for reading and commenting on chapters of this Review.

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We are grateful to many individuals, including HST staff, who assisted in the production of this Review. We also wish to thank the Directorate: Health Systems Research, Research Coordination and Epidemiology in the Department of Health for facilitating the allocation of the different chapters to other Directorates for input and comments. We extend our appreciation to the individual authors who accepted tight deadlines and often responded to editing demands at short notice. Once more Lynda Campbell and the staff of The Press Gang have worked tirelessly to ensure that the Review is published timeously.

## Cover

'The boy in the hood' by Sibusiso Duma. Sibusiso began drawing houses and cars when he was at primary school but did not receive art tuition at school. He is now linked with the Africa Art Centre and has exhibited at a number of galleries in KwaZulu-Natal.

# Preface

## Overview

The purpose of the SAHR is to provide an annual and longer-term review of the development and implementation of South African health policies. It acts as a barometer for assessing the transformation processes and their impact on provision of equitable health care to all South Africans. The underlying theme of this year's edition, the 8th, is the restructuring of the health care system – progress to date. The reviewed issues are covered in 21 chapters, which are grouped into 4 sub-themes.

## Framework for Transformation

Chapters 1 to 6 deal with the framework and systems central to transformation, including legislation, health care financing, development of district health systems and integration of health care services delivery into local government, and environmental health. During 2002 provinces and districts established a number of structures to coordinate and integrate the implementation of national provincial and district health plans. Functional integration was strengthened to overcome duplication of services by provincial and local governments. The alignment of the districts to municipal boundaries was completed in most of the provinces and the problem of cross boundary district municipalities is being addressed. However the long waited for passing of the National Health Bill did not materialise and the legislative vacuum for establishing the district health system continues. In the absence of the National Health Bill, 4 of the 9 provinces have passed their own Acts and 3 others have Bills that will need to be amended and finalised after the National Health Bill is passed.

The legislative highlights include the passing, by Parliament, of the Medical Schemes Amendment Bill, Mental Health Care Bill, and the Occupational Diseases in Mines and Works Amendment Bill, as well as the landmark constitutional court ruling in favour of TAC on the provision of nevirapine to all HIV+ pregnant mothers in all public health facilities. The proposed restructuring of the environmental health sector will enable environmental health professionals to play a central role in the provision of services that are essential to poverty alleviation and primary health care.

There were positive moves towards addressing the challenges of health care financing. Attempts were made by some medical schemes to control costs, presumably partly in the hope of making medical schemes accessible to more

South Africans. Government explored new mechanisms for the creation of functional public-private initiatives in order to encourage optimal utilisation of all resources.

Major concerns voiced in these chapters include the escalating costs for provision of private health care, attributed in part to the reliance of the industry on the fee-for-service reimbursement system; the continuing inequity between public and private sector financing; and the inequitable funding of primary health care both across and within provinces. A national mechanism is recommended to manage the financing of decentralised health care in order to guard against the potential for exacerbating inequity that decentralisation poses. A system of targets for provincial budgets, using deprivation indices, is proposed.

## Human Resources

Chapters 7 to 10 deal with human resource matters. The National Health Bill recognises the need to address human resource issues comprehensively and outlines the key challenges of planning and training for adequate and appropriate skills and competencies. However a shortcoming is that the Bill does not address inequitable distribution of human resources which is a major stumbling block to provision of quality health care in most of under-served areas.

The exodus of health professionals from the public to the private sector and migration abroad, received substantial media coverage during the year and has become a pressing concern to the government. A comprehensive human resource strategy is urgently required and it is unfortunate that the legislative framework for such a strategy has once more been delayed.

Many of the health professionals remaining in the public sector are inadequately trained to manage the country's major health concerns including HIV/AIDS, TB and STI. In addition the heavy workload, multiplicity of roles, poor security at health facilities, lack of resources (including transport), means missed opportunities for optimal utilisation of the available human resources. This consequently impacts negatively on quality of care, particularly in under-served communities.

One of the government's strategies to address the shortage of skilled personnel, Community Service (CS), currently includes three professional groups – doctors, pharmacists and dentists. Plans are underway to include a further seven professional in 2003 – physiotherapists, occupational and speech therapists, clinical psychologists, dieticians, radiographers and environmental health practitioners. The majority of the participating CS professionals seem to be positive about the programme and feel that they have been able to make a difference. The CS programme has highlighted the inadequacy of tertiary training in equipping these professionals with the necessary skills,

especially those needed for working in under-resourced rural South African communities.

The programme experienced a number of challenges. The 'hard to staff' facilities remain the least popular choice of CS professionals and often remain unstaffed, and the perceived coercive nature of the programme has generated a negative attitude in CS professionals. Research has shown that there was inadequate supervision for these newly qualified personnel, particularly in rural areas.

Community Based Health Workers (CBHWs) often play a particularly critical role in under-served areas but there appears to be variable acknowledgement of their importance among provinces. Only KwaZulu-Natal seems to have a relatively comprehensive provincial support programme for this cadre of health workers. Uncertainty still remains about the precise roles for CBHWs both at national and provincial levels. The situation has changed little in the last two decades and the challenges which confronted the CBHWs then, such as fragmented roles, large variations in incentives and payments, voluntarism, quantity and quality of training, support and supervision, monitoring and evaluation of CBHWs programmes, inadequate transport and linkage with the district health system, are still pertinent today.

## Priority Programmes

Chapters 11 to 17 discuss some of the key programmes for the management of major health challenges in the country. The Review looks at the impact of HIV/AIDS on households, the response of the private sector to the epidemic, the debate around accessibility to antiretrovirals in the public sector, the management of sexually transmitted infections, progress on curbing the spread of tuberculosis and implementation of the nutrition policy. It also looks at TB and malaria beyond the borders of South Africa – in the Southern Africa Development Community.

The private sector seems to be grappling with an increasing loss in productivity and profit due to the HIV/AIDS epidemic a leading cause of absenteeism and ill health among its work force. Although the HIV/AIDS epidemic is increasing the cost of production and services due to loss of man-hours and thereby threatening the competitiveness of the South African private sector, only a handful of companies have taken initiatives to contribute to prevention, treatment and care of their workforce. This places an enormous burden on families as well as the public sector. On average a rural household caring for a family member with AIDS is spending 54% of its monthly income on health care. It is encouraging though to note that despite inadequate resources and training of PHC health workers, many AIDS patients (80%), are satisfied with the quality of care provided in the public sector clinics. The provision of antiretrovirals to people living with HIV through the public sector received

much attention in 2002. However, apart from post exposure prophylaxis and provision of nevirapine for the prevention of mother-to-child transmission programmes, ARVs are not provided in the public sector. The majority of the 20 000 South Africans with access to antiretrovirals are served by the private sector.

Sexually transmitted infections (STI) remain a major public health challenge especially as they contribute to the spread of HIV/AIDS. In order to effectively control STI, both the public and private sectors must achieve the required levels of quality of care. Building blocks for private-public initiatives (PPIs) have been identified and are being used to develop appropriate models. There remains a need for a national policy that ensures quality of care for STI in the private sector.

Integration of HIV/AIDS/STI/TB services at service delivery level remains a key challenge. On average, every second client presenting with an STI syndrome can be expected to be HIV infected. Given the high number of STI treated at PHC level it is reasonable to assume that the majority of asymptomatic HIV infected adults are seen at STI service points. Thus every opportunity should be harnessed to promote and make voluntary counselling and testing accessible where STI are being treated.

Considerable progress has been made in controlling TB, but the escalating HIV/AIDS epidemic is undermining these efforts. The importance of involving NGOs in directly observed treatment short-course (DOTS) programmes is illustrated through two case studies, and it is encouraging that the percentage of districts operating as DOTS Demonstration and Training Districts increased from 66% in 1999 to 87% in 2002.

Control of communicable diseases cannot be achieved through national activities alone, and this is especially so for malaria. Key constraints within SADC to controlling TB and malaria include: poverty, (which forces countries to implement donor driven fragmented unsustainable programmes), mosquito resistance to insecticides, malaria parasites and tuberculosis organisms resistance to drugs, poor health systems, lack of adequate and appropriately trained human resources and the escalating HIV/AIDS epidemic. Despite this SA has been successful in reducing malaria cases due to re-introducing DDT for house spraying and the establishment of a regional approach to malaria control.

Some progress has been made towards improving the nutritional status of South Africans. The school feeding programme, which, while not achieving its goal of optimal feeding as envisioned by the Department of Health, seems to have made a major social contribution in supplementing meals for needy school children. Nutritional management of malnutrition of the mother and child have been strengthened through primary and secondary nutrition interventions coupled with growth monitoring, promotion of breastfeeding and nutrition education. Guidelines on Nutrition Interventions (for acute

and severe protein energy malnutrition) and Integrated Management of Childhood illnesses have been implemented and expanded in most health facilities in all provinces. Integrated Nutrition Programme objectives for 2002-2007 are in place but their achievement will depend on availability of adequate human resources at primary and secondary health care levels and sufficient other resources to successfully implement it.

## Support Systems

Chapters 18 to 21 focus on support systems essential for delivery, planning, monitoring and evaluation of health care services. These include transport, public health data sources, disease registries and health and related indicators.

Case studies in Limpopo, Gauteng and Mpumalanga indicate that with better management, decentralisation and prioritisation of vehicle use, transport problems can be decreased. It appears that when transport is managed closer to the point of service delivery, it can be more responsive to local needs. However, there is a problem that many of the vehicles in the fleets are aging and therefore often out of action.

The public health data chapter gives a spectrum of sources of data available to public health decision makers. In general, there is an improvement in the range and depth of information available but its integration remains a challenge. Data sources include household surveys on demography, health services utilisation, health inequities, HIV/AIDS, National PHC Facilities Survey and other surveys. Routine data on health delivery such as child and youth health data are now available in the District Health Information System. Other available routine data include hospital data and the electronic TB register.

For the first time the Review highlights the importance of registries (such as cancer, dialysis and transplantation, birth defects, surveillance and work-related and occupational respiratory diseases) in providing data for public health planning and evaluation. The registries are increasingly being used by policy makers, pharmaceutical and insurance companies, and teaching and research institutions. However, despite recognising their usefulness, registries remain uncovered by legislation. Thus effective implementation of these registries is hampered by dependence on volun-teerism, (these at times affect quality of data), under-reporting, lack of firm guidelines to deal with confidentiality and ethical issues, and lack of both human and financial resources. With additional support of funds and human resources from the stakeholders including the Department of Health, operating and maintaining registries could be strengthened and this would make registries a more viable resource of public health information.

The health and related indicators chapter is a rich resource of information on health and development issues. It is a good reference for policy and decision

makers and planners, as well as research and academic institutions. Despite data quality variations between sources, the range and depth of data available improved greatly in 2002. Additionally, there has been an improvement in collaboration and sharing of information between government departments and other stakeholders involved in routine data collection and surveys, thereby increasing data set compatibility.

**Petrida Ijumba**

# Framework for Transformation


Chapter 1 Health Legislation

Chapter 2 Health Care Financing and Expenditure

Chapter 3 Medical Schemes

Chapter 4 Financing and Need Across District Municipalities

Chapter 5 District Health Systems and Local Government Development

Chapter 6 Environmental Health

# Health Legislation

1

**Yogan Pillay,[i] Nomvula Marawa,[ii] and Paula Proudlock[iii]**

[i]The Equity Project/Management Sciences for Health

[ii]National Department of Health

[iii]Child Rights Children's Institute, University of Cape Town

*This chapter reviews the legislation drafted by the national Department of Health during 2002. While progress has been achieved since 1994/5, the National Health Bill has yet to be passed despite its long gestation. Major themes in legislation drafting that are pursued in this chapter are division of powers and functions amongst the three spheres of government and issues related to implementation of legislation especially in relation to selected constitutional issues such as the right to health care services.*

## Introduction

This chapter looks at recent developments in health legislation. It refers back to the major developments and themes highlighted in the 2001 chapter and looks at legislation that has been put into effect, passed and drafted during 2002. Brief comment on the major debates and challenges surrounding the 2002 legislative developments is also provided.

Two major themes that featured during 2002 were: (a) issues of national, provincial and district health care services governance and the division of functions between the different levels of government; and (b) policy and implementation challenges with regards to realising constitutional rights to health care services. These two themes will receive attention throughout the chapter.

## Major Themes

The relationship between policy, legislation and implementation is often misunderstood. Before legislation can be drafted, policy must be developed to guide the nature and content of the legislation. Legislation is often (though not always) needed to provide the teeth to ensure the implementation of policy. In this context the role of legislation can therefore be seen as:

a) Providing certainty to the intention of the policy to which it relates

b) Establishing structures and mechanisms to put the policy into practice; and

c) Providing for sanctions should the policy (encapsulated in the legal provisions) be breached.

Decisions on policy, legislation and implementation should all be guided by the constitutional imperatives to:

- Take steps to progressively realise the rights of everyone to have access to health care services
- Promote and protect the right of children to basic health care services
- Ensure that no-one is refused emergency medical treatment.

These constitutional imperatives are set out in sections 27(1) (a), (2) and (3) and section 28(1) (c) of the South African Constitution.

Two recent Constitutional Court cases, namely *Grootboom* (CCT38/00, 21 September 2000)[1] and *Minister of Health vs. Treatment Action Campaign (TAC)* (CCT 8/02, 5 July 2002),[2] have recently re-emphasised these constitutional imperatives with respect to the realisation of socio-economic rights in South Africa. The TAC case related directly to health care rights and thus has direct relevance for all health policy, legislation and implementation decisions. The White Paper on the Transformation of the

Health Care System in South Africa (1997),[3] the policy that governs the health care system, clearly emphasised an approach that took cognisance of the above constitutional imperatives.

Health legislation needs to follow the vision set out in the policy and adhere to the implications of the interpretations given to constitutional rights by the Constitutional Court. The draft National Health Bill,[4] especially, as it is the overarching health legislation that will govern the entire health system, needs to put in place structures, mechanisms, resources and systems aimed at promoting and protecting health care rights.

## Key Issues From 2001 Review: Continuities and Discontinuities

This section illustrates the continuities and discontinuities between 2001 and 2002. Clearly some issues have been resolved, even if this needed to be done via the judicial system. Whilst others, especially those that revolve around contested policy issues, remain.

In her introduction to the chapter on legislation in the 2001 Health Review, Lynette Sait wrote:[5] "Health legislation continued to be highly contested terrain in 2001. While some progress was noted in advancing the policy goals of the Department in two areas – Medical Schemes legislation and the operation of the new National Health Laboratory Services, other areas were less successful. Strains in government thinking around the issue of drugs for HIV/AIDS continued to be evident, with legislative structures sending out mixed signals, and the government becoming embroiled in a court action with the TAC over the provision of Prevention of Mother-to-Child-Transmission (PMTCT) Programme using nevirapine. Perhaps the most outstanding legislative event was the publication of the Draft National Health Bill. However, implementation of a national system based on Primary Health Care principles and delivered by means of the District Health Systems approach still faces considerable challenges. In particular, continued transformation of the local government sphere will have considerable potential impacts on the provision of district-based health care services."

Some progress can be reported on the fate of the National Health Bill.[4] The Bill, which has taken more than 7 years to draft, was revised on the basis of inputs received by the national Department of Health (after it was gazetted for public comment). The Bill has been sent to the State Law Advisors for certification. Once certified the Bill will be sent to Parliament for debate. Whilst there is optimism that the Bill will be passed in 2003 there are two reasons for caution: (a) the Bill may still need to be discussed by the State Law Advisors and the department's legal officers and (b) given that its provisions impact directly on provinces, it will need debate within each province as well as the National Council of Provinces. This debate may delay the final passage and enactment to late 2003 at the earliest.

The Bill represents an opportunity to put into practice the vision set out in the White Paper[3] and to put in place structures, mechanisms, resources and systems aimed at the progressive realisation of everyone's rights of access to health care services and at the promotion and protection of children's rights to basic health care services. It needs to flesh out the importance and implications of the constitutional rights in the spirit envisaged by the Constitution. Key provisions in relation to rights include the list of patients' and providers' rights and duties. Although key rights, such as the patients' right to equality and non-discrimination and to be treated with dignity are not specifically mentioned in the Bill, they are implicitly covered in the Constitution. However, given the fact that South Africa is by most measures, a highly unequal society with a high HIV infection rate, specifying patients' rights to equality, dignity and non-discrimination in the Act governing the national health system, is essential.

A few key steps to create more certainty and to accelerate the full implementation of the District Health System (DHS) have also been taken. Whilst details will be provided in the chapter on the DHS, a few points are worth making in this chapter. A joint Department of Health and Department of Provincial and Local Government technical team proposed a definition of municipal health services to the two respective ministers as well as who should render these services and the process of implementation of the definition. The proposal was accepted by the Ministers and included as provisions in the DHS chapter of the revised National Health Bill. The proposals are:

- Municipal health services are defined as environmental health services with the exception of control of malaria, hazardous substances and port health – which will be provincial health responsibilities
- Metropolitan and district municipalities should have the responsibility to render municipal health services
- The definition will come into effect after a period of two years during which time various implementation issues will be resolved.

The Health Minister and other Members of the Executive Committee for Health (MINMEC) subsequently discussed the proposals related to the DHS in the Bill. The MINMEC made a range of decisions to strengthen the implementation of the DHS. These include:

- Focusing on functional integration for the next two years to strengthen service delivery
- Signing of service level agreements between provinces and municipalities that currently render health services to ensure that they continue to do so but improve efficiency and accountability especially for funds provided to municipalities by provincial departments of health
- A costing of services rendered by municipalities be urgently completed to assist the negotiations around the funding of municipal health services and primary health services in general.

## Legislation Put into Effect, Passed and Drafted During 2002

### Legislation put into effect

Arguably the most important piece of legislation put into effect during 2002 was the **Medical Schemes Amendment Act 55 of 2001,**[6] which came into effect in March 2002. The provisions of the Medical Schemes Amendment Act were fully covered in the 2001 Review.

### Legislation passed by Parliament

**The Mental Health Care Bill [B69D of 2001]**[7] was passed by Parliament in June 2002. However at the time of writing, the President had not as yet signed this Bill into law and it is unclear why its enactment has been delayed.

The Mental Health Care Bill can be described as progressive in that it protects the interests of the mentally ill from abuse. The mentally ill are highly vulnerable as they are often unable to make informed decisions. This piece of legislation protects them from maltreatment from the health system and from unscrupulous members of their families. It sets out rules for curatorship for example, to regulate how the affairs of the mentally ill will be conducted should a person be considered unable to take informed decisions on account of being mentally ill. The Act also sets out the rights of the mentally ill.

The Bill does not regulate the relationship between provincial and local government with regard to mental health, as the Constitution does not provide for local government to provide mental health care services. However, it does clarify matters that will be controlled by the national Department of Health and those that are the responsibility of provincial departments of health.

In October 2002, the **Medical Schemes Amendment Bill [B37-2002]**[6] was debated and adopted by Parliament. The amendment provides for a definition of a 'broker' and for the accreditation of brokers by the Council. In essence the Bill provides for the regulation of the practice of brokers – a gap in the principal Act. In the memorandum to the Bill the drafters provide reasons for the need to regulate brokers: "…there has been some lack of clarity on how medical schemes brokers should be regulated in their conduct of business, in particular, as to what extent they can be regulated by the Financial Services Board. The Council for Medical Schemes agreed with the Financial Services Board in February 2002 on how to jointly regulate the conduct of business by medical schemes brokers, thereby ensuring that there is no inadequacy in such regulation".

Also in October 2002, the **Occupational Diseases in Mines and Works Amendment Bill [B39-2002]**[8] was debated and passed by Parliament. The amendment provides for owners of mines to pay compensation to workers who contract diseases whilst in their service: "The owner of a controlled or a controlled works shall for a period not more than two years from the date of commencement of a compensatable disease pay the reasonable cost incurred

by or on behalf of a person in his or her service, or who was in his or her service at the commencement of a compensatable disease, in respect of medical aid necessitated by such disease". This is an important amendment given that employers often 'walk' away from their employees who become sick from diseases contracted at work (cf. the asbestosis case currently being fought in the Royal Courts of England).

## Legislation tabled and discussed in Parliament during 2002

**The Medicines and Related Substances Amendment Bill [B40 of 2002]**,[9] was tabled during 2002. The objectives of the Medicines and Related Substances Amendment Act are to amend the Medicines and Related Substances Act, 1965. Section 1 of Act 101 of 1965 has been amended a few times, the latest amendment being in 1997. The amendments provided for:

- The appointment of deputy registrars of Medicines
- The Minister, after consultation with the pharmaceutical industry and other stakeholders to make regulations on the marketing of medicines
- Strengthening the recording, use and manufacture of certain scheduled drugs
- The council to licence the manufacture, importation and exportation of medicines.

## Regulations and notices promulgated during 2002

In addition to these pieces of legislation a large number of regulations and notices were promulgated during 2002. Examples of these are provided below.

To protect the public from malpractices from a range of health professionals that previously have not been regulated, regulations on the constitution of boards for the following health professional groupings were issued during 2002:

- Professional board for Therapeutic Aromatherapy, Therapeutic Massage Therapy and Therapeutic Reflexology
- Professional board for Homeopathy, Naturopathy and Phytotherapy
- Professional board for Chiropractic and Osteopathy
- Professional board for Ayurvedic and Chinese Medicine and Acupuncture.

Notices for the commencement of community service for a range of health professionals were also promulgated during 2002. These included: dietetics, clinical psychology, environmental health, occupational therapy, physiotherapy, radiography and speech, language and hearing therapy. These health professionals are mostly only available to public sector health care users in urban areas, and even here they are in short supply. The extension of community service to these categories of health professionals should improve

access to them in rural and under-served areas of the country in 2003 when this notice comes into effect.

## Legislation initiated and drafted in 2002

**The Nursing Act**[10] is in the process of being reviewed and a Bill to replace the Act is being prepared. The Nursing Council (SANC) has recognised that the current Act is inadequate to meet the challenges facing the nursing profession to implement health policies adopted since 1994. Given the range of problems involving nurses that have been highlighted by the media in 2002, it is critical that the SANC reviews both policy and legislation that will protect the public and ensure that nurses provide the care that the public expects of them.

Changes to the Nursing Act are likely to be based on the recommendations made by a committee appointed by the Minister to review the functioning of the professional boards. This implies that 2003 should see amendments proposed to the legislation that governs all professional boards, e.g. the Health Professional Council of South Africa and the Pharmacy Council.

**The 1983 Child Care Act**[11] has been under review for the past 5 years. While the 1983 Act focused on tertiary interventions and the institutionalisation of children in need of care, the new Bill provides for primary and secondary prevention approaches to support children and families in poverty and those otherwise at risk of vulnerability. This development has major implications for improvements in children's health and therefore for the whole health care system. The new Bill also envisages intersectoral coordination, with the Department of Health being expected to play a role in implementing the Act. Children's health care rights are also elaborated on and fleshed out in the draft Bill.

At the end of 2001, the South African Law Commission published a Discussion Paper setting out the policy for the new Child Care Act and much comment and consultation between the South African Law Commission, Department of Social Development, and the Children's sector took place during the year. A draft bill[12] has now been published and will be tabled in Parliament for debate and passage in 2003. When passed and enacted, the Act will be a giant step forward with regards to the promotion and protection of children's socio-economic rights.

## Provincial legislation

Some provincial Departments of Health have not passed or amended their Provincial Health Bills/Acts. This is largely a result of the process engaged in to finalise the National Health Bill. Provinces have taken the view that they will focus on their provincial legislation once the national legislation is finalised. It is therefore anticipated that all provinces will be either amending their Provincial Health Acts or finalising Bills for passage in 2003.

## Legal and Implementation Challenges

**Lessons from the Constitutional Court judgment:** *Minister of Health vs. Treatment Action Campaign (TAC) and others*

The TAC challenged the Government (Minister of Health) to provide nevirapine to all HIV+ pregnant mothers and babies delivered in public health facilities in the country. The government had taken the view that it needed to pilot the dispensing of the drug designed to prevent mother-to-child transmission (PMTCT) and only scale up once the implementation issues were discovered and resolved. The Court ruled in favour of the TAC.[13] This raised the issue of the imperative for the judiciary to make decisions on policy matters which are traditionally the preserve of the executive. In effect the Court's decision obliged Government to rollout the PMTCT programme before it felt it was able to. The Court therefore obliged Government to find the additional resources required to rollout the PMTCT programme. The major lessons to be learned from this case are:

- The executive cannot act with impunity in that the acts of the executive are subject to the supreme law of the land, the Constitution
- The Constitutional Court takes the Bill of Rights seriously
- Although the executive is not the ultimate decision-maker on matters of policy that policy must comply with the supreme law of the land, the Constitution.

The TAC was again in the news lobbying for more and better treatment of people living with HIV/AIDS. Most recently they, in partnership with COSATU, have threatened to take two major pharmaceutical manufactures to the Competition Commission. They argue that these manufacturers of AIDS drugs are pricing them beyond the reach of ordinary South Africans.

**Table 1: Summary of Bills Drafted, and Passed in 2002 and their Key Impacts**

| Bill | Drafted | Passed | Key Impact |
|---|---|---|---|
| The Mental Health Care Bill [B69D of 2001] | | ✔ | Protect the interests of mentally ill from abuse from the health system and family members |
| Medical Schemes Amendment Bill [B37-2002] | | ✔ | Regulation of the practice of brokers |
| Occupational Diseases in Mines and Works Amendment [B39-2002] | | ✔ | Owners of mines to pay compensation to workers who contract diseases whilst in their service within 2 years |
| The Nursing Amendment Bill | ✔ | | Updates nursing legislation in line with health policies adopted since 1994 |
| Children's Bill | ✔ | | Will replace the 1983 Child Care Act and provides for primary and secondary prevention approaches to support children and families in poverty and those otherwise at risk of vulnerability |

## Other implementation challenges

The media highlighted one example of legislation not being implemented in the way it was intended, namely the **Choice on Termination of Pregnancy Act** (TOP).[14] The provision of termination of pregnancy services has been contentious from the beginning with many health workers not prepared to provide the service for personal and moral reasons. This was despite the provision, on a national scale, of what were termed values clarification workshops. At Philadelphia Hospital in Mpumalanga, nurses were recorded on video being abusive to women who were admitted for terminations.

The South African Nursing Council has investigated the charges of abuse of patients and has found one nurse guilty of misconduct. She has been disciplined by the Council in terms of the Nursing Act, i.e. her name has been removed from the register of nurses which means that she cannot legally practice as a nurse in South Africa. This episode illustrates the need for managers to take much more care in how they implement legislation. Resources and management capacity needed to ensure the successful implementation of legislation must be made available to the health system.

## Conclusions and Recommendations

A clear challenge for 2003 will be the debate and passage of the National Health Bill that provides for coordinated governance of the health care system and the realisation of everyone's constitutional health care rights.

The other challenge is a Bill on traditional healers which creates a framework for the regulation of this profession.

Clarity on national policy on the treatment and provision of antiretroviral drugs for people infected with HIV, both for prevention of mother-to-child transmission and treatment for adults, is also urgently needed.

To strengthen implementation of legislation it is critical to ensure that resources are provided at the necessary levels of the health care system. This means that all health legislation should be costed and funds made available in the medium term expenditure framework. In addition, targets and indicators should be developed to ensure that the implementation of the legislation can be effectively monitored.

## References


1 *Government of South African and others vs. Grootboom and others* (CCT38/00, 21 September 2000).

2 *Minister of Health vs. Treatment Action Campaign* (CCT 8/02, 5 July 2002).

3 Department of Health. The White Paper on the Transformation of the Health Care System in South Africa. Pretoria: Government Printer, 1997. URL: http://www.gov.za/whitepaper/1997/health.htm

4 Draft National Health Bill
URL: http://www.doh.gov.za/docs/bills/nhb.htm

5 Sait L. Health Legislation. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds). South African Health Review 2001. Durban: Health Systems Trust; 2001.
URL: http://www.hst.org.za/sahr/2001/chapter1.htm

6 Medical Schemes Amendment Bill [B37-2002].
URL: http://www.polity.org.za/pdf/MedSchemesAmendB37D.pdf

7 Mental Health Care Bill [B69D of 2001].
URL: http://www.gov.za/gazette/bills/2001/b69b-01.pdf

8 Occupational Diseases in Mines and Works Amendment Bill [B39-2002].
URL: http://www.polity.org.za/pdf/OccupatDis.pdf

9 Medicines and Related Substances Amendment Bill [B40 of 2002].
URL: http://www.polity.org.za/pdf/Medicines.pdf

10 The Nursing Act July 1997.
URL: http://www.polity.org.za/html/govdocs/legislation/1997/act19.pdf

11 The Child Care Act, No 96 of 1996.
URL: http://www.polity.org.za/html/govdocs/legislation/1996/act96-096.html

12 Draft Bill of the Child Care Act.
URL: http//www.gov.za/bills

13 Constitutional Court ruling on PMTCT.
URL: http//www.concourt.gov.za

14 Choice of Termination of Pregnancy Act No. 92 of 1996.
URL: http://www.polity.org.za/html/govdocs/legislation/1996/act96-092.html

# Health Care Financing and Expenditure

# 2

**Jane Doherty,[i] Stephen Thomas,[ii] Debbie Muirhead[i] and Di McIntyre[ii]**

[i]Centre for Health Policy, School of Public Health, University of the Witwatersrand

[ii]Health Economics Unit, School of Public Health and Primary Health Care, University of Cape Town

*This chapter summarises the main findings of the National Health Accounts (NHA) Project that was conducted in the late 1990s. The NHA Project is the natural successor of what was generally known as the Health Expenditure Review. The Review described patterns of health care financing and expenditure in apartheid South Africa, highlighting extensive geographic disparities, disproportionate spending on hospital-based care in the public sector, and severe cost escalation in the private sector. The NHA Project evaluates the extent to which these problems have been addressed by reforms put in place by the new government during its first term of office. It focuses on the three financial years 1996/97 to 1998/99, making comparisons with 1992/93, the year investigated by the Review.*

*The NHA Project reveals two eras of **public** health sector financing. The first ran from 1992/93 to 1997/98. It was characterised by substantial growth in government financing of health care, the re-distribution of health sector funds across provinces, and the shift of resources to primary health care. In contrast, data from 1998/99 indicate falling per capita financing of health care by government, a reversal of re-distribution trends between provinces and limited growth in PHC expenditure. It is unlikely that these latter phenomena were temporary, as they were associated with major policy changes that affect the long-term climate for public health care financing. Indeed, the implementation of the government's macro-economic policy, changes to the formula determining global budgets for provinces, and the elevation of other sectors – such as defence – in the budgeting process, mark a transition between these two eras of financing. These policies, together with limited economic growth and persistent public sector inefficiencies, have curtailed the potential for increasing access and equity in the public health sector.*

*The NHA data also highlight several key features of **private** health sector development in the post-apartheid era. These include growth in private sector provision (most markedly in bed numbers), rapid growth in expenditure, and contraction of the number of people with regular access to private care. Together, these trends suggest an overall decline in value-for-money in the private sector, at least prior to the implementation in 2000 of the Medical Schemes Act of 1998. During this period, some of those previously able to afford private care undoubtedly became dependent on public services, particularly hospitals. This would have represented an additional burden on a public sector that was already over-stretched.*

*In view of these rather disappointing findings, the chapter suggests a number of policy areas which government needs to address in order to achieve its publicly stated objectives.*

## Introduction

This chapter summarises the main findings of the NHA Project that was commissioned by the national Department of Health in the late 1990s and funded by the European Union. The NHA Project is the natural successor of what was generally known as the Health Expenditure Review (HER).[1] The HER described patterns of health care financing and expenditure in apartheid South Africa, highlighting extensive geographic disparities, disproportionate spending on hospital-based care in the public sector, and severe cost escalation in the private sector. The NHA Project evaluates the extent to which these problems have been addressed by reforms put in place by the new government during its first term of office. It focuses on the three financial years 1996/97 to 1998/99, making comparisons with 1992/93, the year investigated by the HER. To facilitate comparison, all financial figures are expressed in real terms and 1999/00 prices. This means that the effect of inflation has been removed and all prices standardised to one year.

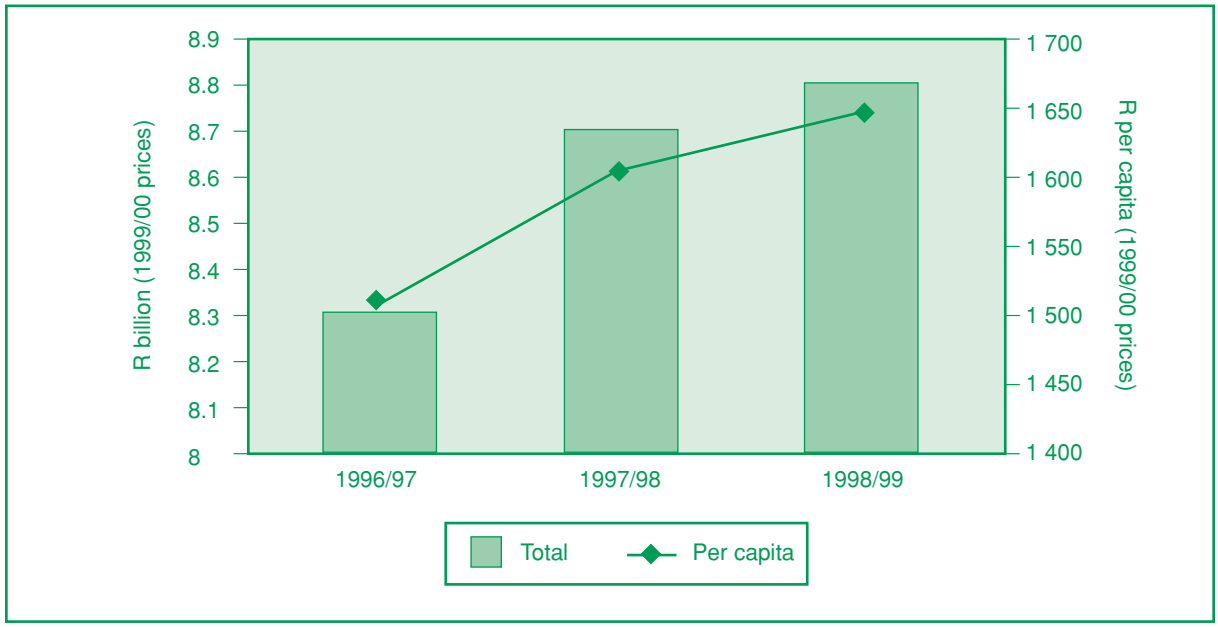
Separate NHA reports on the public and private sectors were published in 2000[2] and 2001,[3] and summaries of the public and private sector findings appeared separately in the 2000 and 2001 editions of the South African Health Review.[4,5] This chapter presents information from the final NHA report, published in 2002,[6] that provided a comprehensive analysis of trends across the whole health sector, both public and private.[a] It reflects on policy issues that confront the new government in its second term of office.

## Trends in the Overall Level of Finances Available for Health Care

In 1998/99 South Africa devoted R70.2 billion to health care. This represented 8.8% of Gross Domestic Product,[b] an unusually high proportion by international standards. The equivalent average figure for middle-income countries was 5.7%, while the figure for Venezuela, the country that came closest to South Africa during the same period, was only 7.5%. Moreover, indications are that South Africa is devoting increasing amounts to health care. Although the HER estimate of 8.5% of GDP is not strictly comparable given methodological differences, the value of health care resources certainly grew between 1996/97 and 1998/99, on average at 7% per annum.

a The final report also modelled scenarios in cases where the raw data were insufficient.
b Gross Domestic Product is a measure of the value of total goods and services produced nationally.

**Figure 1: Total and per capita financing of the health care sector using total population figures, 1996/97-98/99 (1999/00 prices)**




In this context, it is worrying that problems experienced by large sections of the South African population in accessing health care services – and enjoying quality care – persist. In answering why this should be so, it is necessary first to look at who provides finances for health care (that is, the sources of finance) and who is responsible for channelling these resources to particular health services (that is, the purchasing agents or financing intermediaries). A later section will look at expenditure on different types of services.

## Trends in the Sources of Finance

There are four main sources of finance for health care: government, households, employers, and donors plus non-governmental organisations (see Table 1). Changing relationships between these different sources point to waning financial support by government of health services for public sector dependants. As will be shown in the following paragraphs, this has put an increasing burden on households and employers as funders of health care.

**Table 1: Sources of finance in the South African health care sector, 1998/99**

| Sources of Finance | Rand billion | | |
|---|---|---|---|
| | (1999/00 prices) | % of total sources | change in %, 1997/98-1998/99 |
| Government | 31.1 | 44.2 | -4.8 |
| Households | 27.4 | 39.0 | 4.5 |
| Employers | 11.7 | 16.6 | 3.4 |
| Donors plus non-governmental organisations | 0.1 | 0.1 | unknown |
| Total | 70.2 | 100.0 | |

## Trends in government funding of health care

Government is the largest source of health care finance. It allocates to the health sector a portion of the finances it raises from: taxes such as income tax, company tax and sales tax (V.A.T.); licenses; sales of utilities such as electricity and water; and other sources of income. Of the amount raised by government, by far the majority, 94% – was contributed by central government in 1998/99. Provincial and local government provided only 2.7% and 3.3% of total government health care finances from their own revenue respectively.

While government as a whole increased its contributions to health care between 1992/93 and 1997/98, signs that government financing was beginning to stagnate emerged in 1997/98. Government financing per person dependent on the public sector increased by 4.3% between 1996/97 and 1997/98, but declined by 2.5% between 1997/98 and 1998/99, finally reaching a level of R814. In fact, between 1996/97 and 1998/99 government finances declined continually as a proportion of total health care finance, at an average annual rate of 3.6%.

What accounts for this trend? First, the performance of the economy faltered towards the end of the 1990s, leading to a decline in GDP per capita.[7] This was due in large part to the global economic recession.[8] In the absence of significant economic expansion, government funding of health care in South Africa will continue to be placed under pressure. Second, decreased government financing of health care was also a direct consequence of government policy. Between 1996/97 and 1998/99, government health care financing declined as a proportion of GDP, of total government financing, and of total government financing less debt servicing.[c] Clearly, health care was de-prioritised towards the end of the new government's first term of office, following an initial post-1994 period that was favourable to the health sector.

c Debt servicing relates to the funds deducted from the total government budget to service debts incurred by government, and amounted to 21 percent of the total budget in 1998/99.

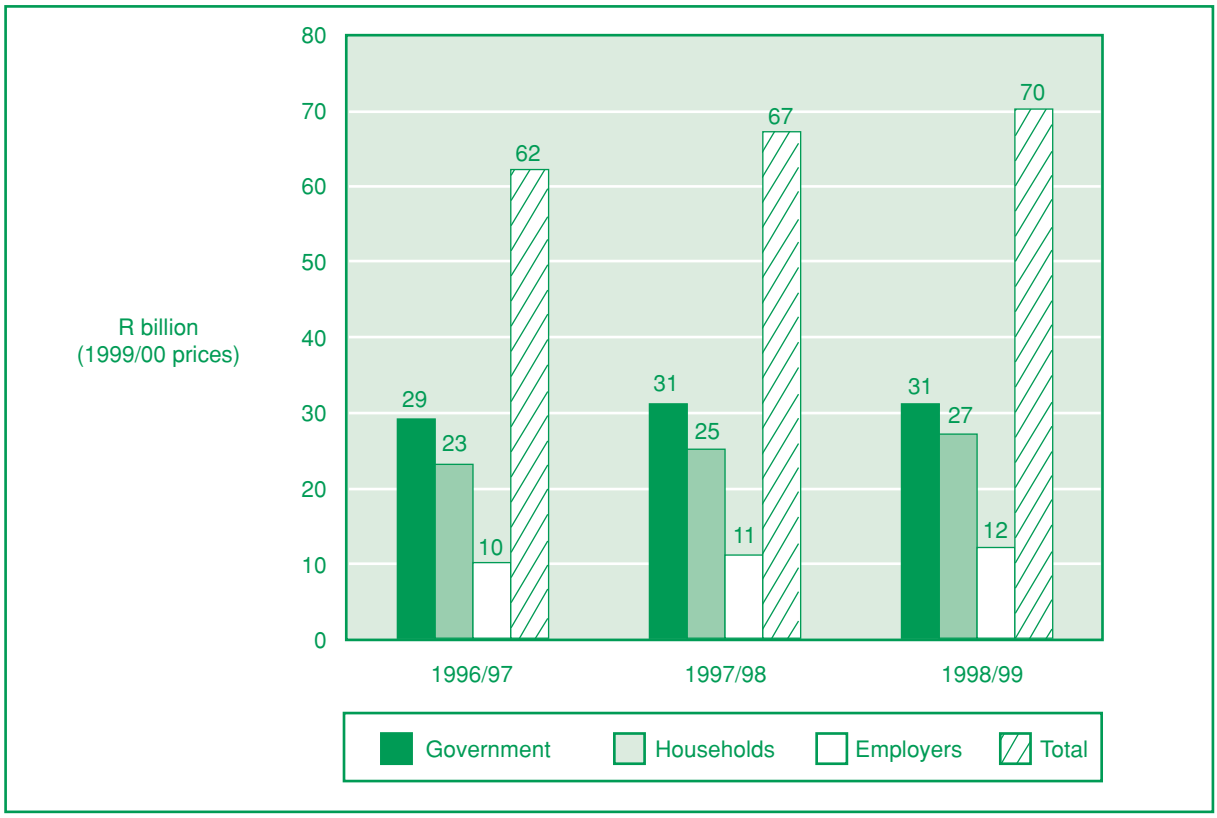
This was a result of a number of factors. The government's macro-economic policy, the Growth, Employment and Redistribution Strategy (GEAR) that was initiated in 1996, sets limits on the tax-to-GDP ratio.[d] This places a constraint on the finances available to government, especially during economic recession. In addition, the GEAR policy insists that public expenditure growth be lower than overall economic growth. This further constraint means that public expenditure is likely to decline in real per capita terms.[2] Moreover, the social sector budgets are projected to increase between 1999/00 and 2002/03 at a rate less than the increase in the overall government budget.[9] Other sectors, including Defence, will grow at a faster rate. Consequently, it is likely that the year-on-year growth in the health budget will only average 0.8% for the period 2000/01 to 2002/03.[2] When translated into per capita figures this means a decline every year. All in all, the economic outlook and government macro-economic policy suggest a declining ability on the part of government to fund improvements in health care provision.

## Trends in household funding of health care

The second largest source of finances for health care is households. Households either pay contributions to medical schemes and other forms of private insurance, or pay directly ('out-of-pocket') for services provided by health workers and facilities, and for pharmaceuticals. Even households with private insurance make out-of-pocket payments for services that are not covered – or are not fully covered – by their benefit packages. Households contributed over a third of total health care finances in 1998/99, and household finances grew at the highest annual average rate between 1996/97 and 1998/99 (see Table 1 and Figure 2). The increasing burden shouldered by households was mainly due to increased out-of-pocket expenditure. This is worrying as this form of financing is the least equitable of all, achieving little cross-subsidisation between the healthy and well off, and the ill and poor.[10]

d This is the size of tax revenue relative to GDP.

**Figure 2: Sources of finance for the health care sector, 1996/97-98/99 (R billion, 1999/00 prices)**




Note: The contributions by donors are so small that they do not register on the graph

## Trends in funding of health care by employers

Employers, the third major source of finances, also found themselves paying out more for the health care of their employees over the period 1996/97 to 1998/99. Employers (which include private firms as well as government-owned entities) fund health care for their employees either directly through health services provided at the workplace, or indirectly through contributing to different forms of private insurance on behalf of their employees. The proportion of finances contributed by employers grew at a slightly lower rate than that of households, and represented a smaller percentage (a fifth or less) of total resources (see Figure 2). Most of this source of finance was contributed by private employers. The growth was a result of increases in their contributions to employees' medical schemes (at an annual average rate of approximately 11% in real terms) and to the Workers' Compensation Fund[e] (at an annual average rate of approximately 6%).[3] In the context of declining employment levels, this indicates that the costs to employers of providing health care benefits to their employees mounted rapidly. On the

e The Workers' Compensation Fund receives a levy from employers based on their risk profile and wage bill, and contributes to the costs of health care for injuries sustained at the workplace.

other hand, the value of direct health care services provided by employers to their employees declined at an annual average rate of five percent between 1996/97 and 1998/99. This is likely to have been due to the rapid shrinkage over this period in the size of the mining sector that traditionally provided extensive health care services to its employees.[3]

### The contribution of donors and non-governmental organisations

Donors and non-governmental organisations are the fourth source of health care finance. Unlike most countries in Africa, donor contributions represent only a tiny proportion of overall health care financing in South Africa (a tenth of a percent in 1998/99). This reflects the self-sufficiency of the South African health care system, as well as the international isolation South Africa experienced under apartheid. This source appears to be growing as donors take an interest in the new government's policies to extend health care services to the disadvantaged, but this in no way alleviates the growing health care financing burden shouldered by households in general.

## The Flow of Finances through Financing Intermediaries

Finances that are raised from a source, flow through one or more financing intermediaries before being passed on to a health care provider (the flows from sources of finance to financing intermediary are illustrated in Figure 3). The financing intermediaries who control finances have a pronounced effect on efficiency and equity within the health system, as they determine what resources are allocated to which populations, and for which services. In turn, the ownership of these intermediaries influences these decisions.

### The relative size of public and private financing intermediaries

In South Africa, the proportion of total finances controlled by privately owned intermediaries rose from 56% to 59% between 1996/97 and 1998/99, representing an absolute increase of R8.8 billion in 1999/00 prices. This probably reflects a wider trend over the past decade, although comparable data for the early 1990s are not available. Public sector intermediaries grew at a much slower pace between 1996/97 and 1997/98, and in fact shrank between 1997/98 and 1998/99. Private financing intermediaries' increasing size and relative control over health care finances are illustrated in Figure 4.

**Figure 3: The flow of finances from financing sources to financing intermediaries**

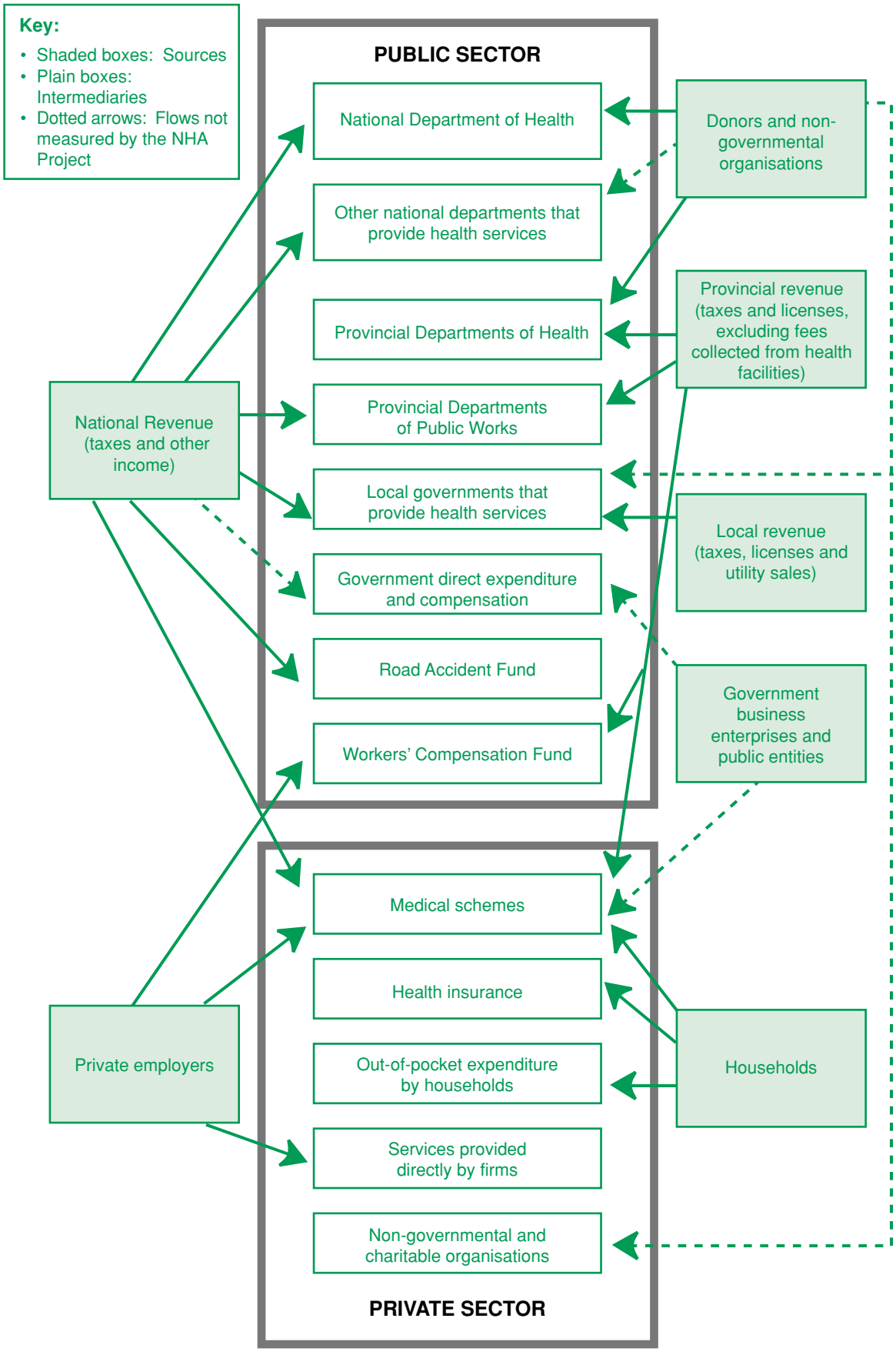


**Figure 4: The total size of public and private sector financing intermediaries, 1996/97-1998/99 (R billion, 1999/00 prices)**

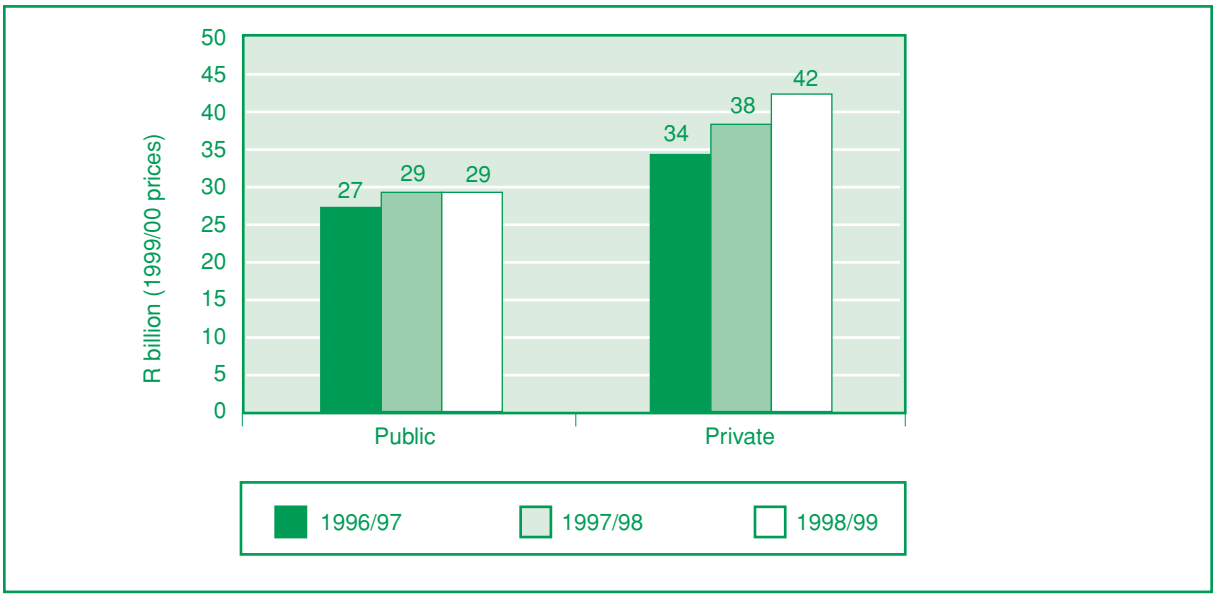
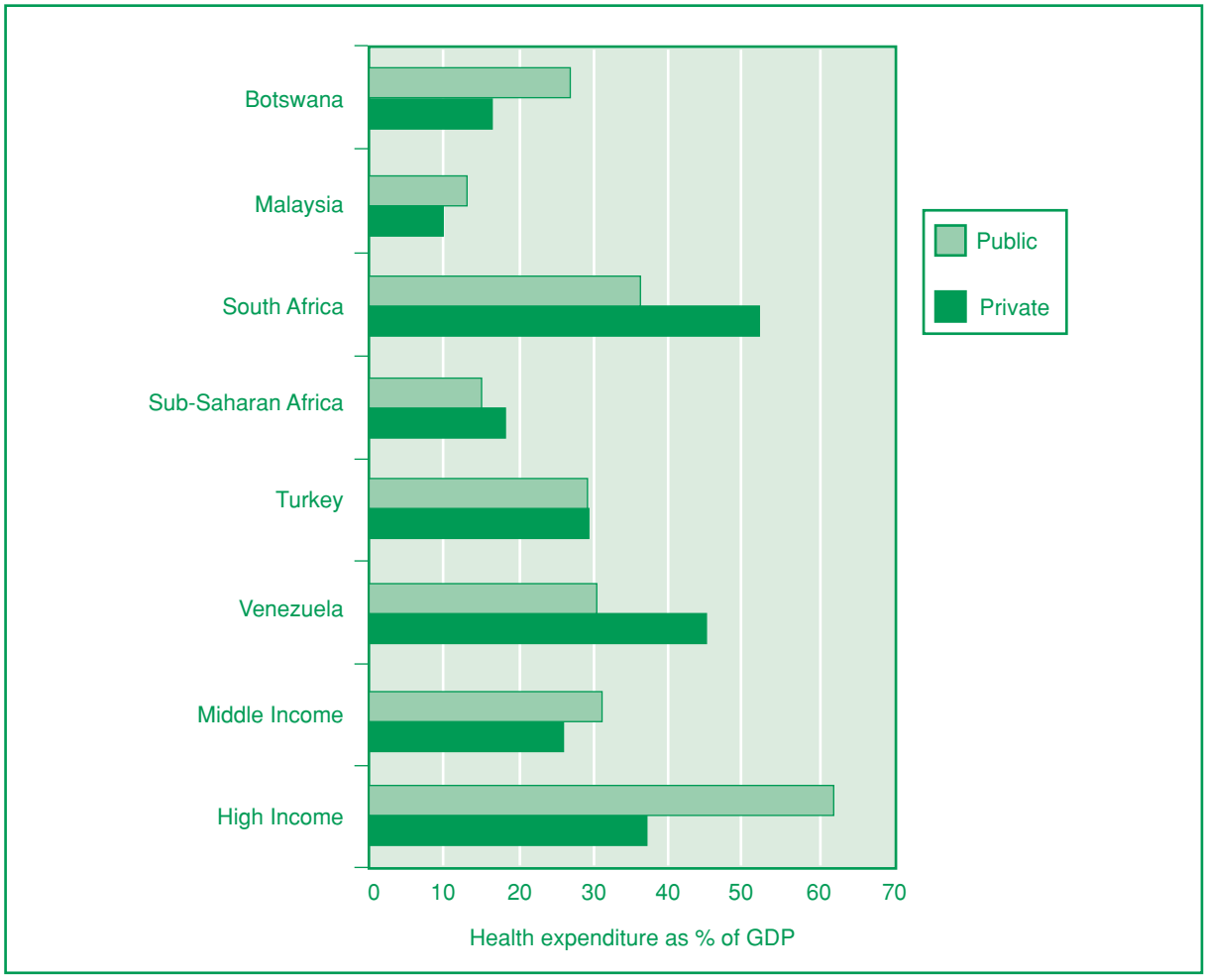



Table 2 shows the share of GDP controlled by public and private financing intermediaries. The 1998/99 figure for public intermediaries was only 3.6%, whereas in the same year for private intermediaries it was as high as 5.2%. Although these data are not strictly comparable to other countries because of definitional and methodological differences, it is pertinent to note that the South African public sector is relatively large for a middle-income country but much smaller in relation to high-income nations (see Figure 5). In contrast, the private sector is much larger even than that of high-income countries, let alone the middle-income country average.

**Table 2: Public and private health care financing intermediaries as a percentage of Gross Domestic Product, 1996/97-1998/99**

| Sector | 1996/97 | 1997/98 | 1998/99 |
|---|---|---|---|
| Public sector | 3.7 | 3.8 | 3.6 |
| Private sector | 4.6 | 4.9 | 5.2 |

**Figure 5: International comparisons of public and private health care expenditure as a proportion of GDP[11]**




Note: South African data are for 1998/99 and refers to the volume of finances flowing through financing intermediaries in the public and private sectors. Data closest to 1998/99 are used for the other countries, and probably relate to expenditure on private providers.[11]

Despite the growing dominance of the private sector, it is estimated that less than 20% of the total population made regular use of the full range of services in the private sector in 1998/99.[3] The low coverage of the private sector in South Africa was apparent even in the 1980s.[1] Moreover, private sector coverage declined as a proportion of the total population between 1996/97 and 1998/99,[3] suggesting that an increasing proportion of the population became reliant on public services even as the public sector received a declining share of health care finances (and even as the HIV/AIDS epidemic began to impact on health care needs). This probably reflected the increasing unaffordability of scheme membership as costs escalated in the private sector. In addition, there was a substantial decline in the number of employees covered by on-site health services, especially in the mining industry. This is attributable to falling levels of employment, most notably on the mines.[3] These trends obviously had implications for equity, as will be discussed in a later section.

## The main financing intermediaries

Table 3 breaks the public and private sectors into their component parts. The largest intermediaries in 1998/99 were medical schemes (accounting for R26.9 billion in 1999/00 prices, or 38% of total finances) and provincial-level government departments (accounting for R23.5 billion in 1999/00 prices, or 34% of overall finances). These two groups were the dominant financing intermediaries in the South African health sector, channelling over 70% of finances.

Medical schemes are the main type of private insurance, the other, much smaller type being health insurance. Medical schemes are non-profit associations, but are operated by professional administrators that are essentially for-profit companies. Schemes receive monthly premiums from households and employers. Health insurance, on the other hand, is offered by life and short-term insurance companies, and bought by households, some of whom may also belong to medical schemes. Most health insurance policies provide non-indemnity cover for major surgical and hospitalisation costs, that is, the insurer pays a predetermined amount of money for clearly specified events, rather than reimbursing the actual costs of health care as is the case with medical schemes. The finances under the control of medical schemes grew at an annual average rate of 11% between 1996/97 and 1998/99. Despite their volume, such finances were allocated to the care only of the 16% of the population that could afford this sort of private cover.[3]

**Table 3: Financing intermediaries in South Africa, 1998/99**

| Financing Intermediary | % of Sector | |
|---|---|---|
| *Public sector* | | |
| Central government | 9.5 | |
| National Department of Health | | 2.7 |
| Other national departments (Defence, Education, Correctional Services, and Safety and Security) | | 6.8 |
| Regional government | 82.0 | |
| Provincial Departments of Health | | 79.3 |
| Provincial Departments of Works | | 2.7 |
| Local government | 5.6 | |
| Statutory Security Schemes | 2.8 | |
| Workers' Compensation Fund | | 1.6 |
| [f]Road Accident Fund | | 1.2 |
| Government direct expenditures and compensation for health care for employees | 0.1 | |
| *Private sector* | | |
| Private health insurance | 68.3 | |
| Medical schemes | | 64.8 |
| Health insurance | | 3.5 |
| Households' out-of-pocket payments made directly to public or private health services | 30.1 | |
| Private firms' direct expenditure on workplace health services | 1.6 | |

Some of the finances flowing through medical schemes are derived from government sources. In 1998/99, at least 10.3% of medical scheme finances, or R2.8 billion in 1999/00 prices, were contributed by government as a subsidy to its employees. The significance of this is twofold. First, tax finances are being used to provide health care to civil servants at a much higher cost than public sector care (the maximum *monthly* government subsidy is just over R800, while public per capita funding of health care for those without medical aid was just over R800 *per annum* in 1998/99). This explains why government is increasingly concerned, from an equity and efficiency perspective, that civil servants receive cost-effective care. Second, it is estimated that only a half of civil servants who are eligible for the government subsidy have chosen to take up medical scheme membership.[3] Given the existing burden on government of the present subsidies, this is of concern to government from a sustainability perspective.

f The Road Accident Fund receives contributions from a levy on fuel sold by oil companies and provides cover for medical expenses incurred by third parties involved in motor vehicle accidents.

The second biggest financing intermediary, after medical schemes, is that of provincial Departments of Health. These controlled almost 80% of the finances available to the public sector in 1998/99 (see Table 3). The fact that provincially controlled finances stagnated between 1997/98 and 1998/99 is linked to the decline in overall government finances for health care. In 1998/99, about 54% of the total government budget, excluding debt service costs and a contingency reserve, was allocated to the provincial level.[12] This proportion was set by Treasury to remain roughly stable over at least the next two years, despite increasing responsibilities at the provincial level.

After provincial health departments, the next largest intermediary is households which purchase health services directly through out-of-pocket payments. Households controlled 30% of private intermediary resources in 1998/99 (see Table 3). Between 1996/97 and 1998/99, the annual expansion in direct spending by consumers on health care was 11%, or R2.4 billion in 1999/00 prices. The vast bulk of this would have been directed to private providers, as there was a large decline in user fee revenue in the public sector.[2] This trend may be viewed with alarm as it reflects not only increasing out-of-pocket expenditure by medical scheme members but also declining confidence in public provision, resulting in a weakening of the public sector's capacity to raise revenue from private patients.

The next largest set of intermediaries is the national departments other than the national Department of Health. These include the Departments of Correctional Services, Defence, Education, and Safety and Security. The financial flows through these and other non-health intermediaries (be they at national, provincial or local level) together represented 12% of public sector finances – or R3.5 billion – in 1998/99, and have a marked impact on the equity of resource distribution, as will be demonstrated in the following section.

## Trends in Reducing Geographic Inequities in Health Care Resource Allocation

Although South Africa is an upper middle-income country, large sections of its population are poverty-stricken and suffer from poor health status. In addition, financial and human resources, in both the public and private sectors, were skewed during apartheid times in favour of the advantaged. These included those with medical scheme cover and, amongst those without cover, people living in urban areas. The following paragraphs reflect on the extent to which expenditure patterns have been altered by the new government.

### Persistent inequities between the public and private sectors

The NHA Project shows that, despite the change in government, the largest equity problem remains the increasing differential in resources available to service the poor – who are dependent on public sector care – and higher-

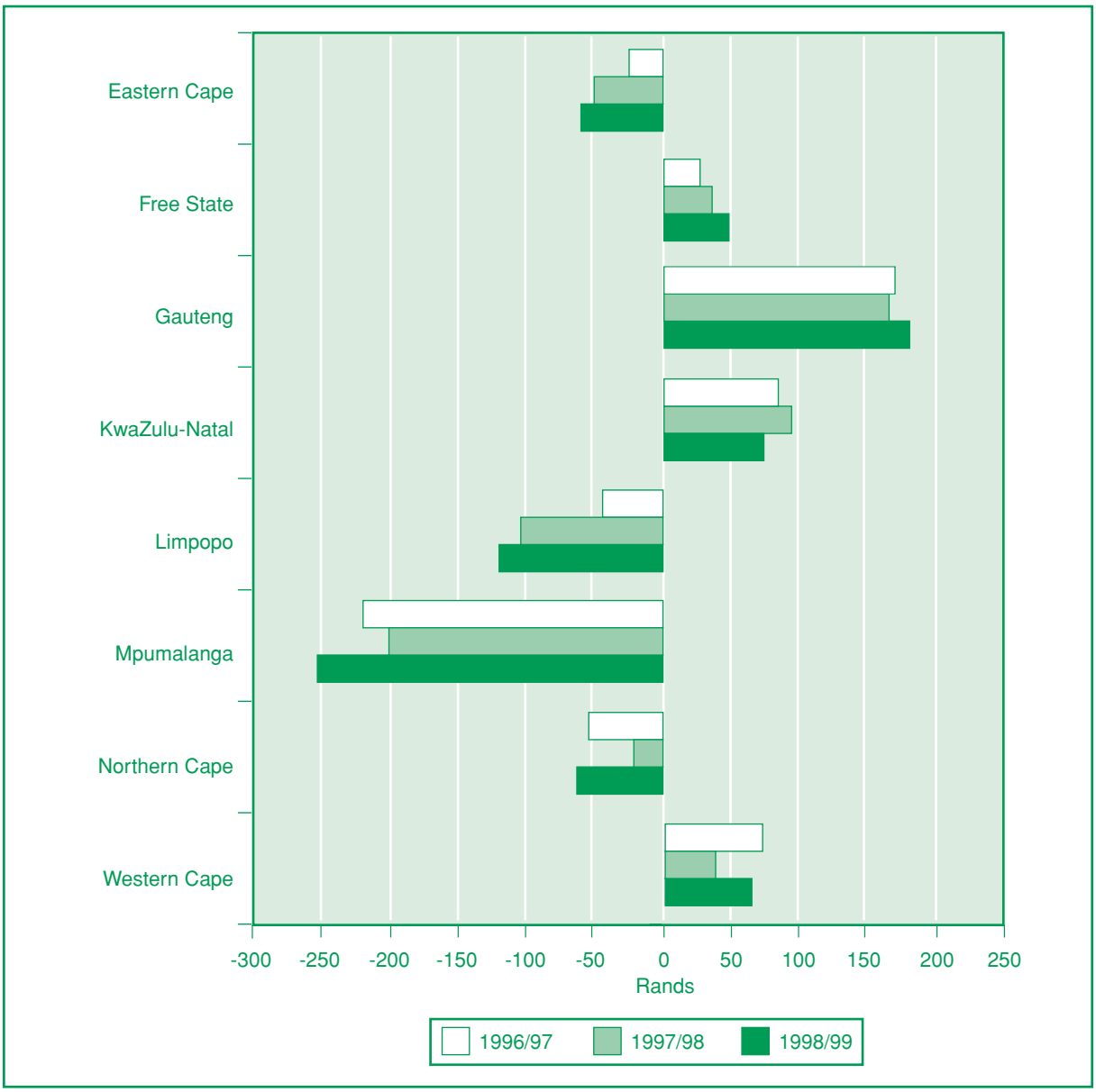
income individuals, especially medical scheme beneficiaries. For example, annual expenditure per medical scheme beneficiary rose from 4.7 times that spent by national and provincial departments of health per public sector dependant in 1996/97, to 5.8 times in 1998/99. In 1998 the proportion of people on medical aid who used a health service in the previous month was 68% higher than the proportion of those not on medical aid.[3] Even within the population not on medical aid, there was a differential in health service utilisation that was linked to relative wealth.

The Medical Schemes Act of 1998, which was implemented in 2000, is a policy which attempts to increase the size of the population with private sector cover, improve the level of cross-subsidisation within the private sector, and prevent 'dumping' of private patients on public hospitals once benefits have been consumed. In so doing it may improve equity within the private sector, as well as lessen the burden on public services. Resources freed in this sector could be used to improve services for those who are fully dependent on the public sector. The NHA Project was reviewed years prior to the implementation of the Act, and so cannot comment on the extent to which the Act has contributed to reducing inequity (another chapter in this volume reflects on this issue, however). A comprehensive evaluation of the Act is clearly a priority. Policy-makers need to know both whether the coverage of the medical schemes industry has broadened and whether expenditure per beneficiary has decreased through the pressures of increased competition. However, the main mechanism to address inequity between the public and private sectors would be some form of social health insurance.[13] Until progress is made on this policy the major cause of inequity in South African health care will not be addressed.

## Setbacks in moving towards inter-provincial equity

A second leading cause of inequity is the differential in resources available to different geographic areas. Government has made some progress in this regard, at least in the earlier part of the review period. Initially some of the poorer provinces began to receive budget allocations that attempted to move them towards national average per capita expenditure. This trend reversed after 1997/98, however, followed by an improvement in the position of some of the already better-off provinces (see Figure 6). Thus, in 1998/99, the richest provincial health department spent twice the amount per public sector dependant than the poorest, even excluding spending on those hospitals classified as central hospitals (which are intended to service more than just the inhabitants of a single province).

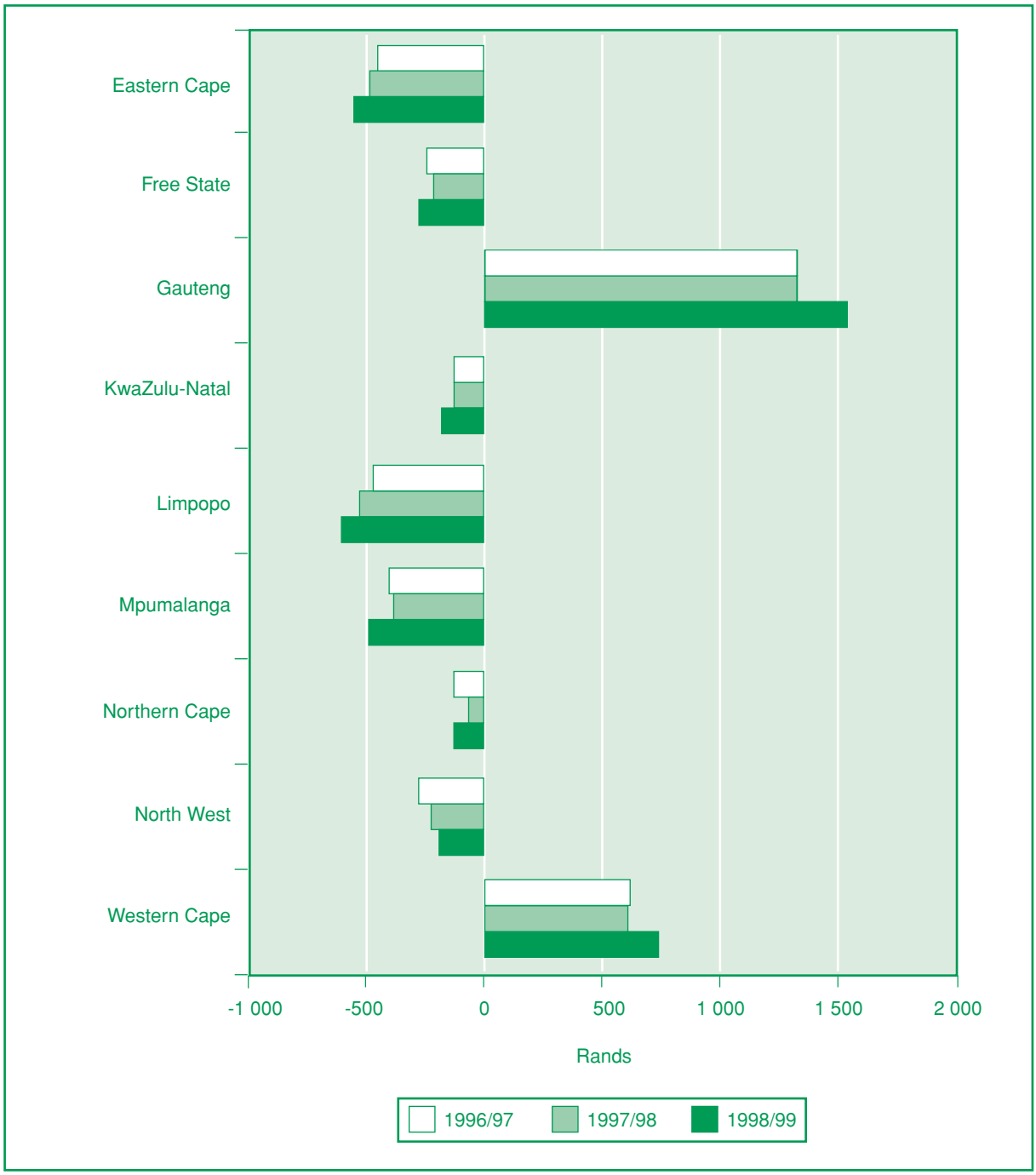
**Figure 6: Deviations from the average of the National and Provincial Department of Health annual spending (excluding central and provincial tertiary hospitals) per public sector dependant, by province (R 1999/00 prices)**




Note: North West was not included due to expenditure data deficiencies

The gap between provinces is widened if private sector expenditure is combined with expenditure by provincial departments of health. Indeed, Figure 7 shows that this results in all provinces other than Western Cape and Gauteng falling below the national per capita average.

**Figure 7: Deviations from the national average for provincial expenditure by provincial Departments of Health combined with private sector expenditure by province, 1996/97-1998/99 (excluding central and provincial tertiary hospitals)**



The last, and most comprehensive, analysis of expenditure that is possible is one that combines all public expenditure (that is, with the addition of spending by Departments of Works, local government and non-health national departments) with all private expenditure. Unfortunately, this analysis is only possible for five provinces (Table 4). In 1998/99, the total amount spent per capita in Gauteng is now 150% higher than that for Eastern Cape residents and nearly 200% higher than that for Limpopo.

**Table 4: Total health care spending per capita, 1996/97-1998/99 (Scenario A, excluding central and provincial tertiary hospitals, adjusting per capita figures for the private sector by household variations in expenditure by province) (R 1999/00 prices)**

| Province | 1996/97 | 1997/98 | 1998/99 |
|---|---|---|---|
| Eastern Cape | 716 | 763 | 708 |
| Gauteng | 2 493 | 2 584 | 2 842 |
| KwaZulu-Natal | 1 036 | 1 151 | 1 128 |
| Limpopo | 650 | 651 | 607 |
| Western Cape | 1 855 | 1 912 | 2 071 |

Clearly, within the sphere of policy on the public sector, current processes for resource re-distribution need to be re-examined. It certainly appears that several policies and mechanisms are failing to achieve the objective of shifting provinces towards equity in public health care spending. These include the formula that determines the global budgets awarded to provinces (known as the 'equitable shares'), the medium-term expenditure framework that plots allocations over three years, and the processes at a provincial level that determine the share of budgets awarded to health departments. All of these mechanisms have been critiqued for a less-than-optimal emphasis on equity,[14,15,16] and are overdue for serious revision, particularly as the emerging role of local government introduces new complexities into the system. In addition, the creation of norms and standards for encouraging provinces to spend equitably in relation to one another is a policy option that is still worthy of consideration. Lastly, there might be merit in exploring partnerships with health care facilities that fall under Defence, given that these access considerable funds (see Table 3), especially in the better off provinces.

## Trends in Shifting Resources to More Cost-effective Levels of Care

The government has an array of policies to improve access to public primary health care (PHC) services. Some price barriers to services have been removed through the free PHC policy, and the NHA Project shows that financial, human and physical resources have indeed been re-directed towards PHC. Thus, whereas the HER estimated that only 11% of total public expenditure was on non-hospital PHC, the NHA Project found this figure to be 19% in 1998/99. Expenditure on total PHC services (including clinics and health centres, public health programmes and outpatient departments at district hospitals) increased at an annual average rate of 5.3% between 1996/97 and 1998/99. Yet, without a thorough evaluation of the combined impact of the array of government policy initiatives on utilisation, it may be difficult to plan adequately for further progress in future. It is clear that a thorough evaluation of the free PHC policy, and its supporting measures, is required urgently.

While achievements in developing public PHC services are considerable, there are signals that the funding of these services may be beginning to dip, in both absolute and per capita terms. Public PHC spending per person dependent on the public sector declined from a high of R205 in 1997/98 to R191 the following year. The funding of district and regional hospitals was also squeezed, partly as a result of the reprioritisation of PHC but more importantly as a result of the expansion of spending on central and tertiary hospitals (see Table 5). Maintaining services at these hospitals is important in order to ensure accessible hospital care and appropriate referral channels. However, this category of hospital experienced the highest average annual growth in spending (8.5%) over the period under review. While improvements in efficiency at lower level hospitals could theoretically absorb decreases in funding, this is unlikely at present, given the problems in management capacity at this level. Thus, the end result of present trends may be to undermine the District Health System that the government is keen to implement.

**Table 5: Public expenditure by type of hospital, 1996/97-1998/99 (R million, 1999/00 prices)**

| Hospital Type | 1996/97 | | 1997/98 | | 1998/99 | | Average Annual Growth |
|---|---|---|---|---|---|---|---|
| | R million | % | R million | % | R million | % | |
| Cent/tertiary | 3 933 | 24% | 4 407 | 25% | 4 627 | 27% | 8.5% |
| Regional | 4 489 | 30% | 5 159 | 30% | 5 235 | 30% | 3.9% |
| District | 5 101 | 32% | 5 498 | 32% | 5 234 | 30% | 1.5% |
| Other* | 2 187 | 14% | 2 309 | 13% | 2 220 | 13% | 0.9% |
| Total | 16 070 | 100% | 17 374 | 100% | 17 316 | 100% | 3.9% |

* This refers to specialist hospitals, and hospitals belonging to non-health national departments and private contractors that could not be classified by level of care.

The increased spending on central and provincial tertiary hospitals is a result of the conditional grant system implemented in 1998/99. Conditional grants commit provinces to certain types of spending identified either as being a national priority or relating to services utilised by more than just the inhabitants of a single province. Large conditional grants, representing roughly half of all government conditional grants,[7] are set aside for the health sector. Most important among these are grants to fund central hospitals providing highly specialised care, and to fund the extra costs incurred by health facilities in training health workers. These grants are supposed to meet 75% of the total running costs of the ten central hospitals.[17] Critics have argued, though, that the Central Hospitals Grant was not appropriate in its initial form because, amongst other reasons its funding basis was arbitrary, the size of the grant impeded restructuring within provinces, and the grant did not focus on national specialist services and assets, a more appropriate target for earmarked funds.[18] The Health Professional Training and Research grant may also have centralised activities unduly. Given the government's

commitment to PHC, there may need to be a redistribution of teaching and research funds to lower levels of care so that not all teaching is done in hospitals.[19,20] These criticisms have been noted by the national Department of Health and the conditional grants are being modified. Such a review is indeed an urgent priority if the re-distribution of resources between levels of care is not to become a casualty of this particular aspect of financing policy. Importantly, the conditional grant system also impacts on the equitable distribution of resources between provinces, given the fact that central hospitals tend to be located in better off provinces.

## Trends in Improving the Efficiency of Resource Use by Services

### Inefficiencies in the private sector

The annual real growth in expenditure per medical scheme beneficiary was 7% between 1992/93 and 1998/99 (see Table 6). It was as high as 10% between 1996/97 and 1998/99, compared to a figure of one percent for public sector spending on public sector dependants. The main driver of cost escalation in the medical schemes sector was private hospitals which, in 1998/99, consumed 24% of funds spent on beneficiaries. The average annual growth in this expenditure was 16% between 1992/93 and 1998/99 (and 19% over the last three years of this time period). Private hospital beds more than doubled in the decade between 1989 and 1998, and the annual rate of growth between 1989 and 1994 was very similar to the rate of growth thereafter (around 9%). This happened despite the government moratorium placed in 1994 on the development of new private beds.

**Table 6: Comparison of monthly expenditure on health care per medical scheme beneficiary in 1992/93 and 1998/99 (R 1999/00 prices)**

| Provider Category | 1992/93 | | 1998/99 | | Average annual change in per capita spending |
|---|---|---|---|---|---|
| | R per capita | Proportion | R per per capita | Proportion | |
| General practitioners | 23 | 12% | 30 | 11% | 5% |
| Medical specialists | 36 | 18% | 56 | 19% | 9% |
| Dentists and dental specialists | 20 | 10% | 22 | 7% | 2% |
| Medicine (including those dispensed in hospital) | 65 | 32% | 84 | 29% | 5% |
| Private hospitals (excluding medicines) | 36 | 18% | 70 | 24% | 16% |
| Provincial hospitals (excluding medicines) | 9 | 4% | 2 | 1% | -13% |
| Ex-gratia benefits | 1 | 0% | 0 | 0% | -17% |
| Other benefits | 14 | 7% | 25 | 8% | 13% |
| Total | 203 | 100% | 290 | 100% | 7% |

Although increasing at a slower rate of 5% per annum, expenditure on medicines remained the largest single expenditure category between 1992/93 and 1998/99. Schemes were able to reduce expenditure on medicines between 1996/97 and 1997/98 due to initiatives such as chronic medicine management programmes, but medicine expenditure reverted to rapid increases (of 12% in real terms) between 1997/98 and 1998/99.[3] This suggests that some of the 'managed care' initiatives introduced by medical schemes had a once-off, and relatively limited impact.

The limited impact of managed care interventions is even more worrying when contrasted with the steep increase during the late 1990s in the total administrative costs of medical schemes (including managed care). The average annual growth in these costs was 26% between 1996/97 and 1998/99. This meant an increase of R263 per medical scheme beneficiary between 1996/97 and 1998/99. This seems to have been due to a dramatic increase in managed care activities (which grew at an average annual rate of 219% over the three years), as well as a surprisingly sharp increase in other administrative costs between 1997/998 and 1998/99.[3]

Further investigation is required to understand better the reasons for cost escalation in the private sector. As mentioned already, government's attempt to limit the supply of private hospital services through a moratorium on new beds has failed to have an impact on the industry, while interventions aimed at controlling the cost of medicines – such as generic prescribing and substitution, limiting dispensing by private practitioners, and creating a single 'exit' price for pharmaceuticals as they leave the manufacturer – have not yet been implemented. Medical schemes administrators need to address the over-utilisation of services promoted by the fee-for-service, third party payer environment, and demonstrate a commitment to providing low-cost packages. As the largest single employer, government has an important role to play in encouraging the development of such packages.

## Inefficiencies in the Public Sector

In the public sector, the large proportion of expenditure absorbed by personnel (71% in 1998/99) presents a major challenge to improving the efficiency and quality of care. Civil service agreements make the scaling-down of personnel complements difficult, and it is more realistic to expect shifts to happen slowly through attrition than through dramatic changes in staff establishments. Budgeting policy now formally encourages provincial administrations to decrease the overall percentage of total expenditure accounted for by personnel.

Another personnel-related challenge in the public sector is shifting the balance of highly skilled to lesser skilled staff, especially in the nursing profession. Of course, lesser skilled staff should only replace more highly skilled staff when there is no implication for the quality of care received by the patient. However,

the South African public health service currently relies on a mix of staff that is unnecessarily highly skilled and unaffordable in the long-term (for example, half of all nurses are professional nurses). Redressing the balance is no easy task, as it entails reviewing the competencies of lesser skilled staff as well as present constraints on the types of care they are allowed to render. It also entails developing career paths that satisfy the aspirations of staff, without increasing the costs of care unnecessarily.

The public sector also needs to watch its level of expenditure on administration, lest it become too high, especially as decentralisation proceeds. This is more of a problem in some provinces than others, particularly when decentralisation is occurring within the context of extensive bureaucracies inherited from the apartheid state.

Importantly, the improved management of hospital resources remains a high priority, as does the closure of redundant beds. Public hospitals may be getting more expensive in terms of unit costs.[2] Certainly, many hospitals still have problems with low occupancy rates and longer than necessary average lengths of stay. This is a significant problem because hospitals consume the bulk of public health resources. This limits opportunities for expanding primary health care services.

Appropriate capital investment and maintenance are required to enable improvements in management to take full effect. In 1996 the Department of Health estimated that, in terms of monetary value, a third of facilities required complete replacement or major repair.[21] Progress has been made with building and upgrading clinics, but delays have been experienced in the replacement and refurbishment of hospitals. Certainly, the proportion of recurrent expenditure reserved for maintenance is very low (one percent in 1998/99).[2] Inadequate provision for the recurrent costs of existing facilities may make capital investments less efficient, entailing more regular replacement and higher costs or, in the absence of fresh investment, deteriorating physical stock. It has been found that the productivity of Western Cape hospitals declined in recent years, a major contributing factor being a failure to maintain and update technology.[22] This in turn resulted from financial pressures on hospitals in the absence of management transformation and improved efficiency.

## The Sustainability of Current Patterns of Resource Mobilisation and Use

The overall resource envelope of the health sector is likely to continue expanding in the short- to medium-term. Most of the expansion will benefit the private sector, however. The public sector will find itself increasingly constrained in its ability to meet existing needs, let alone new burdens generated by the HIV/AIDS epidemic. Whether private sector coverage will expand alongside increased funding depends on the impact of the Medical Schemes Act of 1998. If the medical schemes environment is unable – or

unwilling – to expand into the upper-lower and lower-middle income markets through offering low-cost packages, the implications could be dire. The state would have to increasingly accommodate those falling out of the medical schemes environment due to spiralling costs in the private sector.

Importantly, the full potential of the Medical Schemes Act of 1998 cannot be achieved without additional policy actions. Most urgent amongst these is improving the cost-recovery potential of the public sector. This, together with efficiency and quality improvements, would allow it to compete with the private sector in attracting patients with low-cost hospital cover. If designed properly, social health insurance could also be a crucial mechanism for raising resources to cross-subsidise the less well off and improve equity within the health system.[13] Together these measures would reduce the vulnerability of the public health sector to dwindling per capita levels of taxation-based financing. However, user fee policy in the public sector needs to be applied cautiously. During the period under review, an increasing proportion of public health care expenditure was funded by out-of-pocket payments. At the same time, the collection of user fees declined over the three years of this study, partly as a result of patients with medical scheme coverage shifting to private hospitals (see Table 6). If a new uniform patient fee schedule is widely implemented in public hospitals, and incentives are put in place to encourage the collection of fee revenue, there may be a marked increase in out-of-pocket expenditure by non-scheme members. Whilst revenue generation is important for the public sector, the effect on poorer users of the health services needs to be carefully monitored.

## Key Challenges

The NHA Project revealed two eras of **public** health sector financing. The first ran from 1992/93 to 1997/98. It was characterised by substantial growth in government financing of health care, the re-distribution of health sector funds across provinces, and the shift of resources to primary health care. In contrast, data from 1998/99 indicate falling per capita financing of health care by government, a reversal of re-distribution trends between provinces and limited growth in PHC expenditure. It is unlikely that these latter phenomena were temporary, as they were associated with major policy changes that affect the long-term climate for public health care financing. Indeed, the implementation of GEAR and global budgets for provinces, and the elevation of other sectors – such as defence – in the budgeting process, marked a transition between these two eras of financing. These policies, together with limited economic growth and persistent public sector inefficiencies, have curtailed the potential for increasing access and equity in the public health sector.

The NHA data also highlight several key features of **private** health sector development in the post-apartheid era. These include growth in private sector

provision (most markedly in bed numbers), rapid growth in expenditure, and contraction of the number of people with regular access to private care. Together, these trends suggest an overall decline in value-for-money in the private sector, at least prior to the implementation in 2000 of the Medical Schemes Act of 1998. Some of those previously able to afford private care undoubtedly became dependent on public services, particularly hospitals. This would have represented an additional burden on a public sector that was already over-stretched.

Government needs to re-consider both the level of funding it devotes to health care and the mechanisms by which it seeks to distribute health care funds to priority services in poor areas. Unless this is undertaken seriously, the earlier gains in health care provision made by the new government will be squandered, and patterns of service delivery on the ground will contradict stated government policy. A number of reforms to public sector financing and expenditure have been suggested in the text above. Box 1 presents a summary of these suggestions.

**Box 1: Priority interventions for addressing equity, efficiency and sustainability problems in public health sector financing and expenditure**

***To promote equity:***

- Review national resource allocation and budgeting processes, in particular:
  - the current Treasury formula that calculates the 'equitable shares' component of the budget for provinces;
  - the calculations determining conditional grants to provinces; and
  - the equity-oriented mechanisms of the Medium Term Expenditure Framework.
- Provide support in their provincial budgeting processes to health departments of provinces which do not prioritise health care spending.
- Consider alternative mechanisms of resource allocation, such as norms and standards that could protect allocations to priority health care services.
- Remove cross-subsidies to private patients at public hospitals through appropriate pricing of services and collection of fees.

***To promote the appropriate distribution of expenditure between levels of care:***

- Conduct a thorough evaluation of the package of PHC-promoting policies and their impact on utilisation.
- As indicated above, pursue the revision of calculations determining conditional grants to provinces.

***To promote technical efficiency:***

- Accelerate management transformation in the public health sector, especially in key hospitals.

***To promote sustainability:***

- Investigate alternative forms of financing, including user fees within public hospitals, revenue retention and social health insurance.
- Review human resource policy with respect to appropriate staffing levels, skill mix, distribution across services and packages.

Government also needs to enhance the functioning of the private sector and its interface with the public sector. The implementation of the Medical Schemes Act of 1998 was an achievement but its impact needs to be better understood. Medical schemes and their administrators also need to demonstrate a more convincing commitment to cost containment, and apply collective pressure on providers to reduce the costs of provision. Employers also have a role to play in negotiating down the cost of private health care. One of the biggest employers is government which, as the custodian of tax funds, has an interest in ensuring more cost-effective care for the civil servants it subsidises.

A second area of regulation has clearly been unsuccessful. Private hospital expansion continued unabated after the moratorium placed on new beds in 1994. This impacted on the cost of hospital care in the private sector, but also threatened the viability of public hospitals in small towns as skilled

personnel sought better remuneration in private settings. Government needs to find mechanisms for preventing uncontrolled expansion of the private sector in areas where new services would duplicate and threaten existing services, whilst encouraging personnel – in both the public and private sectors – to move into under-served areas. These mechanisms could include regulation of negative behaviour, as well as the creation of incentives to encourage positive behaviour.

Indeed, it is the creation of positive incentives, and new mechanisms for engaging the private sector, that represents one of the biggest challenges to government policy makers. Many of the resources abundant in the private sector – such as highly trained personnel, sophisticated technology, managerial skills and money – are in scarce supply in the public sector. Government may benefit from harnessing these resources in a co-operative manner in the service of society at large. Indeed, there is a growing interest in public-private partnerships within government as a whole, although the understanding of what such partnerships might be is still evolving.

However, this report has highlighted trends within the private sector that sound a note of caution. First, inequity between the public and private sectors grew over the period under review. Second, cost escalation continued unabated. If government enters into partnerships that rely on private sector modes of provision, it needs to ensure that the interests of equity and efficiency will be served. Whether this is in fact possible is difficult to answer as there is very little publicly available data on the performance of the private sector, while the capacity of government to control profit-driven behaviour by private partners is unproven.

Thus, in investigating public-private partnerships, government needs to ensure that these are evaluated within the context of an over-arching policy on the private sector. This policy should spell out both the advantages and disadvantages to government of closer engagement, as well as the principles – such as equity and sustainability – against which new partnerships should be judged. The recent adoption by the Department of Health of a policy document in this regard is a positive move in this direction. The role of regulation, as opposed to partnerships, also needs to be clearly understood. Lastly, the importance of comprehensive intervention at all levels needs to be made explicit. The experience of the past has shown that piece-meal interventions have had only a diluted effect. Indeed, the absence of an intervention at the level of the source of financing for health care – namely some form of new pre-payment mechanism such as social health insurance – has meant that the main cause of inequity in health care provision has remained untouched.

Lastly, a concerted effort needs to be made to improve data that are relevant to future NHA exercises, as well as the formulation of policy on health care financing reform in both the public and private sectors. Many of the analyses conducted by the NHA Project were hampered by inaccurate, incomplete or

insufficiently disaggregated data from both the public and private sectors. While the competitive value of data in the private sector is understood, from the perspective of increasing interest in public-private partnerships, comparative studies of the relative efficiency of the two sectors are urgently required to inform government policy.

## References


1 McIntyre D, Bloom G, Doherty J, and Brijlal P. Health Expenditure and Finance in South Africa. Durban: Health Systems Trust and the World Bank; 1995.

2 Thomas S, Muirhead D. National Health Accounts Project: the public sector report. Pretoria: Department of Health; 2000.

3 Cornell J, Goudge J, McIntyre D, Mbatsha S. National Health Accounts: The Private Sector Report. Pretoria: Department of Health; 2001.

4 Thomas S, Muirhead D, Doherty J, Muheki C. Public sector financing. In: Crisp N, Ntuli A (Eds). South African Health Review 2000. Durban: Health Systems Trust; 2000.

5 Goudge J, Cornell J, McIntyre D, Mbatsha S. Private sector financing. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds). South African Health Review 2001. Durban: Health Systems Trust; 2001.

6 Doherty J, Thomas S, Muirhead D. Health care financing and expenditure in post-apartheid South Africa, 1996/97-1998/99. Pretoria: Department of Health; 2002.

7 Department of Finance. Budget Review 1999.Cape Town: Department of Finance; 1999.

8 South African Reserve Bank. Annual Economic Report 2001. Pretoria: South African Reserve Bank; 2001.

9 Department of Finance. Budget Review 2000. Pretoria: Department of Finance; 2000.

10 Wagstaff A, van Doorslaaer E. Equity in the finance and delivery of health care: concepts and definitions. In: van Doorslaaer E, Wagstaff A, Rutten F. Equity in the financing and delivery of health care: an international perspective. Oxford: Oxford University Press; 1993.

11 World Bank. World Bank Development Report, 1999: Washington: World Bank; 1999.

12 Department of Finance. Budget Review 1998. Cape Town: Department of Finance; 1998.

13 Doherty J, McInytre D, Gilson L. Social Health Insurance. In: Crisp N, Ntuli A (Eds). South African Health Review 2000. Durban: Health Systems Trust; 2000.

14 McIntyre D, Baba L, Makan B. Equity in public sector health care financing and expenditure in South Africa: An analysis of trends between 1995/96 to 2000/01. In: Ntuli A (Ed). South African Health Review 1998. Durban: Health Systems Trust; 1998.

15 Gilson L, Doherty J, McIntyre D, Thomas S, Brijlal V, Bowa C, Mbatsha S. The dynamics of policy change: Health care financing in South Africa, 1994-1999. Johannesburg: Centre for Health Policy (University of the Witwatersrand) and Cape Town: Health Economics Unit (University of Cape Town); 1999.

16 McIntyre D, Muirhead D, Gilson L, Govender V, Mbatsha S, Goudge J, Wadee H, Ntutela P. Geographic patterns of deprivation and health inequities in South Africa: Informing public resource allocation strategies. Cape Town: Health Economics Unit and Centre for Health Policy; 2000.

17 Sinanovic E. Cost-effectiveness of highly specialised services: a review of literature. Prepared for National Department of Health: Health Economics Unit, Cape Town: University of Cape Town; 2000.

18 Department of Health. Review of health conditional grants for 2001/02 and beyond: Discussion of key issues and proposed work plan. Directorate of Health Financing and Economics, Pretoria: National Department of Health; 1999.

19 Lochner J D. Is there a crisis in tertiary medicine in South Africa? S Afr Med J. 1997; 87(7): 873-4.

20 Govender V. Literature Review: Estimating and financing the incremental service costs of training and research. Prepared for the National Department of Health. Health Economics Unit, Cape Town: University of Cape Town; 2000.

21 Department of Health. Health Sector Strategic Framework 1999-2004. Pretoria: Department of Health; 1999.

22 Zere E, McInytre D, Addison T. Technical efficiency and productivity of public sector hospitals in three South African provinces. South African Journal of Economics: 2001; 69(2): 336-58.

# Medical Schemes

3

**Jane Doherty[i] and Heather McLeod[ii]**

[i]Independent consultant: health systems and financing

[ii]Director: Centre for Actuarial Research (CARE), University of Cape Town

*This chapter analyses trends in the coverage and cost of medical schemes since the mid-1970s, reflecting on the impact of recent legislation on these trends. Although some low-cost options may be drawing lower-income earners into the market, in a general sense medical scheme membership has remained stagnant over the past few years, while the costs of cover have generally continued to escalate unabated. The chapter points out the main drivers of this cost escalation, first and foremost of which is the continued reliance of the industry on the fee-for-service reimbursement system which creates incentives to over-supply. The tools and strategies that the industry is currently using to contain costs are reviewed. It is argued that some of these are successful in controlling utilisation, but several have negative implications for equity. Importantly, very few strategies deal with the problem of over-supply. Only when managed care is implemented properly and throughout the industry – with extensive use of provider networks reimbursed through risk-sharing arrangements – will costs be brought under control and affordable private sector care be made available to low-income earners. This requires tough negotiations between consumers and employers on the one hand, and administrators and health care providers on the other. Government has a role to play as a legislator, a provider of health care, and the largest single employer in the country. All interventions need to be monitored carefully with respect to their impact on the cost and quality of care provided to private patients, as well as their broader contribution to equity in the health sector.*

## Introduction

The medical schemes industry was de-regulated in 1989 and 1993 through legislation passed by the apartheid government. This was in response to calls from the industry to free it from controls that it claimed limited its ability to deal with cost escalation. Indeed, between 1982 and 1992 medical scheme contributions had risen steadily from 7.1% of the average salary to 15.2%, while salaries had not changed much in real terms.[1] The 1989 amendments allowed 'risk-rating' to be employed in the management of medical schemes. That is, higher contributions could be charged to higher risk members, thereby eliminating existing cross-subsidies between the young and old, and between the healthy and sick. The amendments of 1993 were also far-reaching and included the removal of statutory minimum benefits and guaranteed payment for claims. Schemes were able to exclude or limit cover for procedures at their own discretion.

Cost escalation continued into the first term of office of the post-apartheid government. However, total contributions grew faster than inflation between 1996 and 1998, even though medical scheme membership remained stable.[2] In addition, practices became entrenched that impacted negatively on medical scheme coverage. With risk-rating, high-risk members – typically the elderly or chronically ill – had their contributions loaded, were given life-long exclusions for pre-existing conditions or were denied membership completely. Another practice that escalated was the 'dumping' of private patients on the public sector once their (now more limited) benefits had been exceeded. Each of these practices were a means of cost avoidance (as opposed to improvements in efficiency), and together they reduced medical scheme coverage for those private patients most in need. This, in turn, increased the burden on the public sector.

These features of the health system contributed to the low rating received by South Africa in the World Health Organization's *World Health Report 2000*.[3] The report points out the poor value for money offered by private sectors like the one in South Africa. It promotes a stronger role for governments in 'stewarding' their private markets towards achieving social goals, including affordability and fairness in financial contributions. In response to the defects of the South African private health insurance market, government passed a new Medical Schemes Act, No. 131, in 1998. The Act and accompanying regulations of 1999 were implemented from January 2000, and were followed by several amendments.[a] Amongst other things, the Act made it compulsory for every scheme to accept all eligible applicants ('open enrolment') and to charge contributions that were differentiated only on the basis of income and the number of dependants, and not on age or the risk of ill-health ('community rating'). In addition, the Act made it compulsory for every

a From here on the term 'the Act' refers to the 1998 Act and all the subsequent related legislation.

scheme to cover a comprehensive package of hospital and outpatient services, known as the Prescribed Minimum Benefits (PMBs).

The Act faced considerable opposition during its design phase. It was pushed through parliament successfully partly because of the commitment of the then Minister of Health to improving equity within the private sector.[4] The Act also had the support of a large section of the industry that believed in the principle of social solidarity whereby the young and healthy cross-subsidise the health care costs of the elderly and ill. This part of the industry also hoped to see a more stable industry develop around the proper management of health care costs as opposed to the 'cherry-picking' of low-risk members.

Since implementation, the Act has faced continued controversy. The most prominent stories carried in the press have been the 'demarcation dispute' (which arose around what forms of private health insurance should be classified as medical schemes and therefore fall under the aegis of the Act) and the 'reinsurance issue' (which arose around the abuse of so-called 'reinsurance contracts' (see later discussion).[5] This chapter does not attempt to detail the full range of impacts the Act has had since its implementation, including these controversies. Instead, it asks whether the primary objective of the Act has been achieved, that is, the extension of coverage in terms of both the number of members and the benefits they enjoy. The explicit tool used by the Act to force this extension was the combination of mandatory open enrolment, community-rating and PMBs. While community-rating and PMBs would increase the costs of cover for younger individuals, the designers of the Act hoped that the collective effects of opening up schemes to a large low-income market, creating larger risk pools and applying pressure to compete on the basis of efficiency, would bring down the costs of cover for the bulk of members. Many critics of the Act argued otherwise, however. Thus, this chapter looks at the evidence for changes in membership and the provision of more affordable health care since the implementation of the Act. It examines the mechanisms used to reduce costs, as well as the factors that continue to prevent effective cost containment.

This information is important not only for assessing the success of the Act itself. Medical schemes and their administrators potentially form the basis for the delivery of Social Health Insurance, a form of mandatory private insurance that could extend cover even further to low-income earners.[6,7] For this potential to be realised, government needs to be convinced of administrators' ability to control costs whilst upholding the concept of social solidarity.[8] The degree to which administrators comply with the letter and spirit of the Act will influence government's vision for the industry within a future Social Health Insurance system.

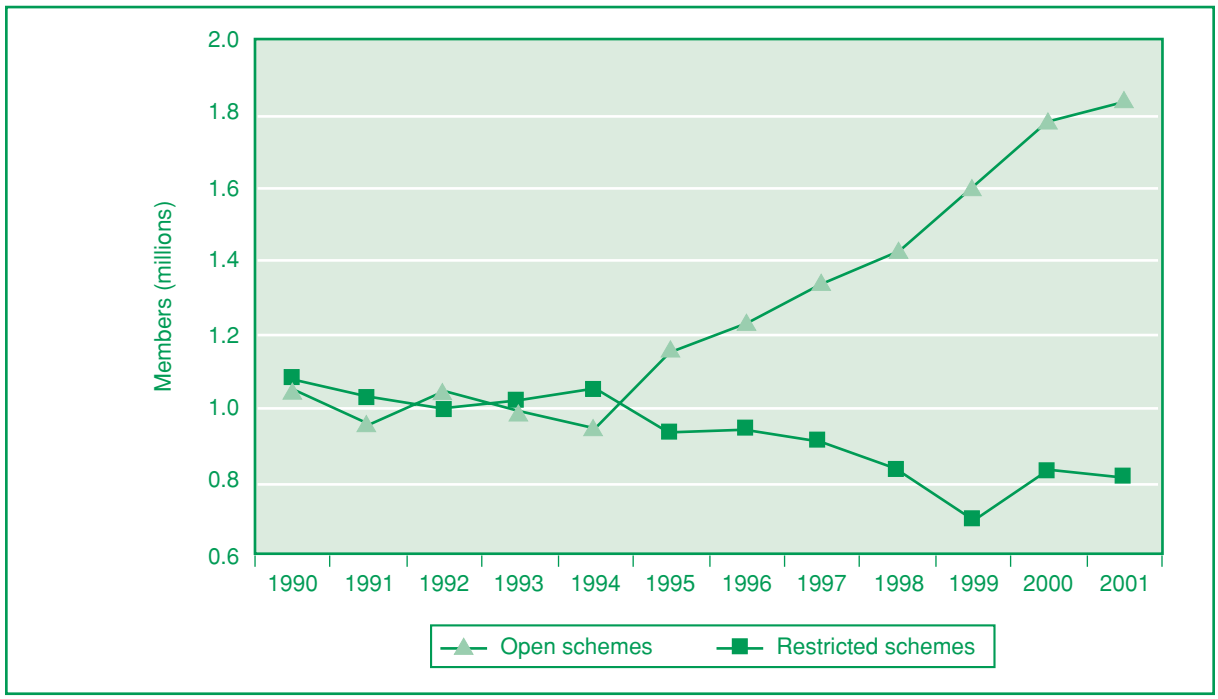
There are two main categories of medical schemes. **Registered** medical schemes are those that fall fully under the regulatory control of the Act. In 2001 these numbered 146.[9] **Bargaining Council** schemes (previously called exempt schemes) are those schemes that are not able to comply fully with the Act and are thus granted exemptions from certain of its provisions, particularly with respect to PMBs. Historically these schemes included those covering the police service, correctional services and the defence force, as well as schemes that were created before the first Medical Schemes Act of 1967. Over time many exempt schemes have acquired registered scheme status. Those that remain tend to offer very limited benefits – often only primary health care delivered by salaried or panel doctors. In 2001 the Bargaining Council schemes that reported to the Registrar of Medical Schemes numbered only eight and serviced only four percent of total beneficiaries.[b]

The total number of schemes has declined steadily over the years (three decades ago there were roughly double the number of schemes there are at present), with smaller schemes tending to merge.[9] In contrast, the number of beneficiaries increased steadily from 3.5 million in 1974 to 7 million in 1996 and thereafter the figures remained fairly stable. This has resulted in schemes with larger risk pools, a trend that should have made the management of risk – and associated health care costs – more effective.

With respect to registered schemes, in 2001 roughly two thirds were **restricted** schemes (these typically only accept members belonging to the employer or industry that set them up), while the remaining were **open** schemes (these are open to the general public).[9] The membership of open schemes has grown rapidly since the early 1990s while that of restricted schemes has declined. In fact, a feature of recent years has been the shifting of beneficiaries from restricted into open schemes. Thus, in 2001, 71% of registered schemes beneficiaries were located in open schemes whereas, in 1990 beneficiaries were distributed roughly evenly between the two types of registered schemes (see Figure 1). At present, almost two-thirds of all the largest medical schemes (with 30,000 or more beneficiaries) are open schemes.

b However, there are estimated to be 34 more that still need to be brought within the regulatory framework of the Act (personal communication with Stephen Harrison, Council for Medical Schemes).

**Figure 1: Members belonging to restricted and open schemes, 1990-2001[9]**



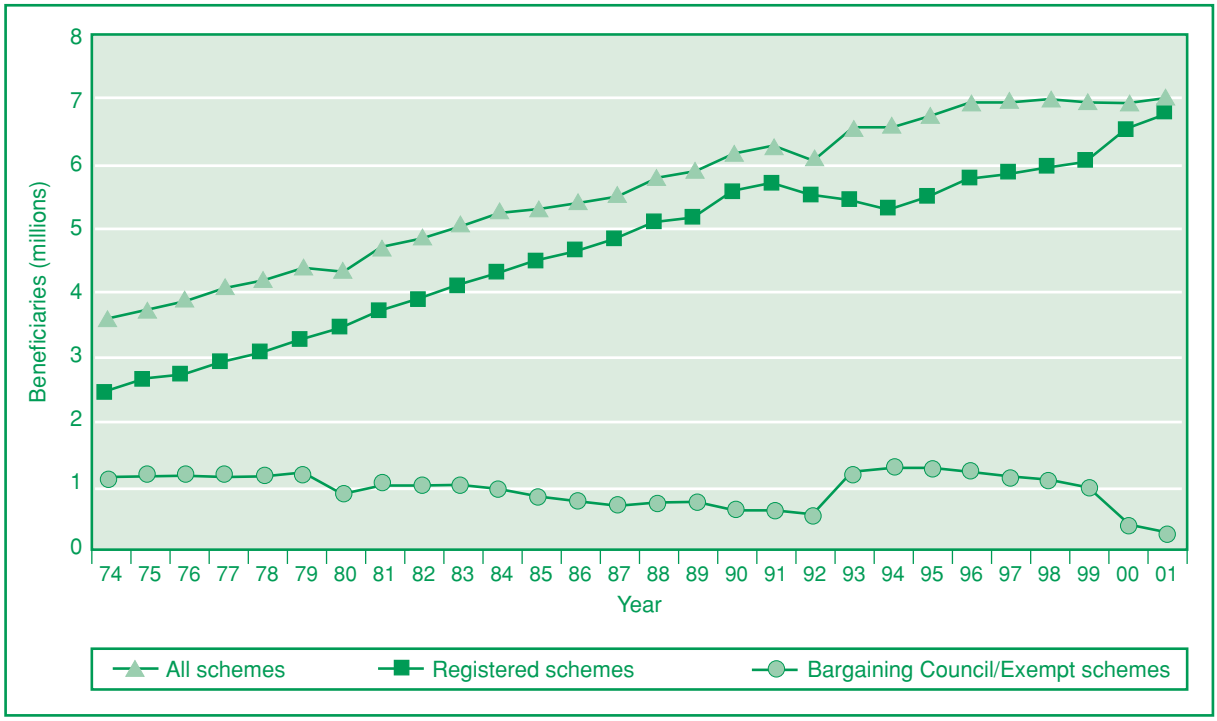
Apart from medical schemes, other important players in the industry are the administrators that run the schemes. In 2000 there were 26 administrators.[9] While the schemes themselves are not-for-profit, administrators are able to make a profit on their administration fees. Like schemes, administrators have also consolidated over time with the top six administrators controlling only 41% of the market in 1997, but as much as 84% in 2000. The industry also includes an increasing number of managed care organisations, some of which are owned by administrators. These organisations advise schemes on hospital admission criteria, appropriate treatment protocols and cost containment. Further, there are surprisingly large numbers of corporate and individual brokers (roughly 6 000) whose business is enrolling clients with open medical schemes. The shift of members from restricted to open schemes in the 1990s was largely a result of the actions of these brokers.

## Are More People Covered by Medical Schemes?

A clear indication of greater affordability of medical scheme cover would be an increase in total beneficiaries. As Figure 2 shows, the total number of beneficiaries grew steeply in the 1970s and 1980s. This was largely due to the increase in African members as certain groups began to experience relatively large increases in income levels, whilst unionisation placed pressure on employers to provide cover.[1] Growth slowed in the early 1990s and the market appeared to reach saturation in 1996. Certainly the years around the implementation of the Act have not seen a clear improvement in total

beneficiary numbers, although there was a slight increase of 0.7% between 2000 and 2001, compared to decreases of 0.1 and 0.2% in the previous two years. Whether this indicates the start of a continuing upward trend in the new market is a matter for speculation. One can conclude, however, that the new Act has not reduced the number of beneficiaries since its implementation. Of course, in reality individuals are shifting between schemes, as well as in and out of the medical schemes market. Aggregate data are just not able to indicate whether, since the Act, schemes are beginning to attract a greater proportion of low-income and high-risk individuals.

**Figure 2: Total beneficiaries for registered and Bargaining Council/Exempt Schemes, 1974-2001[9]**



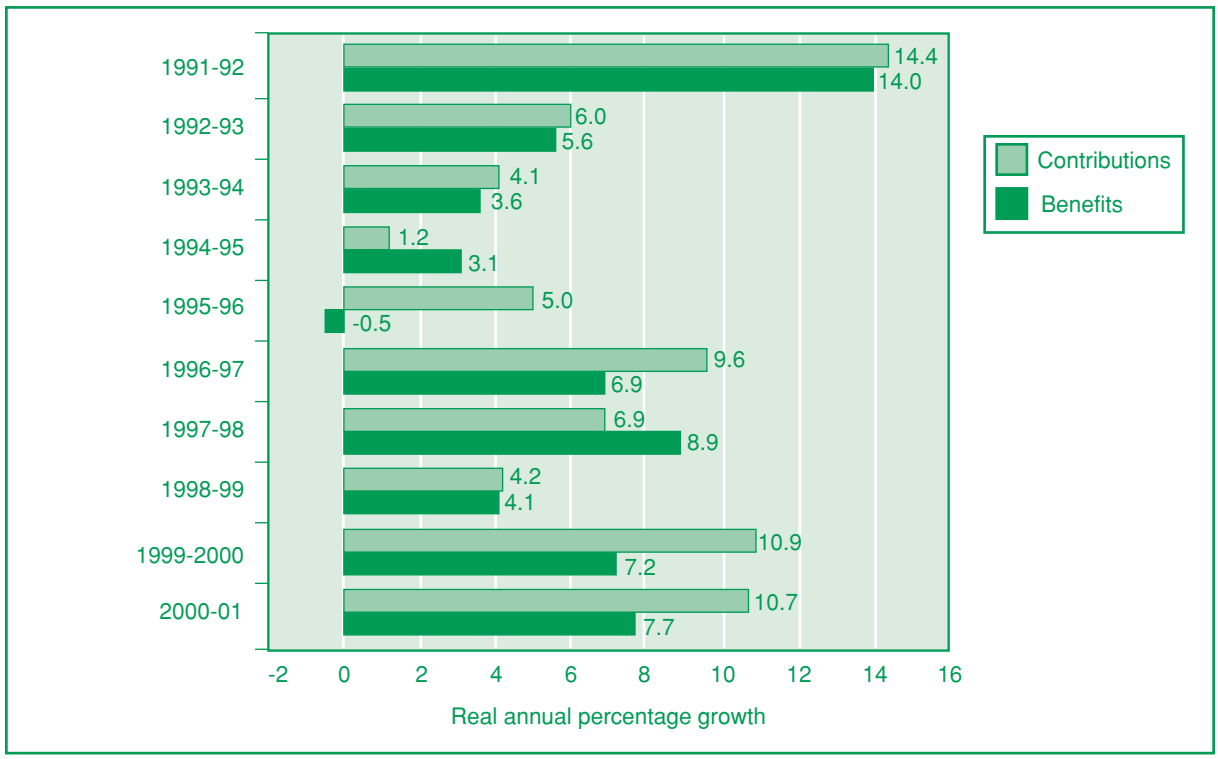

With respect to restricted schemes, the decrease in beneficiaries apparent in Figure 2 during the early 1990s is an anomaly resulting from the reclassification of Polmed and Transmed – the medical schemes of the South African Police Services and Transnet respectively. These schemes were initially registered schemes but were granted exempt status between 1993 and 1999. Thereafter, they were again classified as registered schemes. Indeed, Polmed and Transmed are much larger schemes than most exempt schemes, with benefit and contribution levels similar to conventional registered schemes. Their re-classification limits the analysis of data from the 1990s.

## Are Health Care Contributions Becoming More Affordable?

In 2001, R456 (in 2001 prices) was paid per month by the average registered medical scheme beneficiary (this included contributions to savings accounts see later for an explanation of this term).[9] In real terms, this was three times

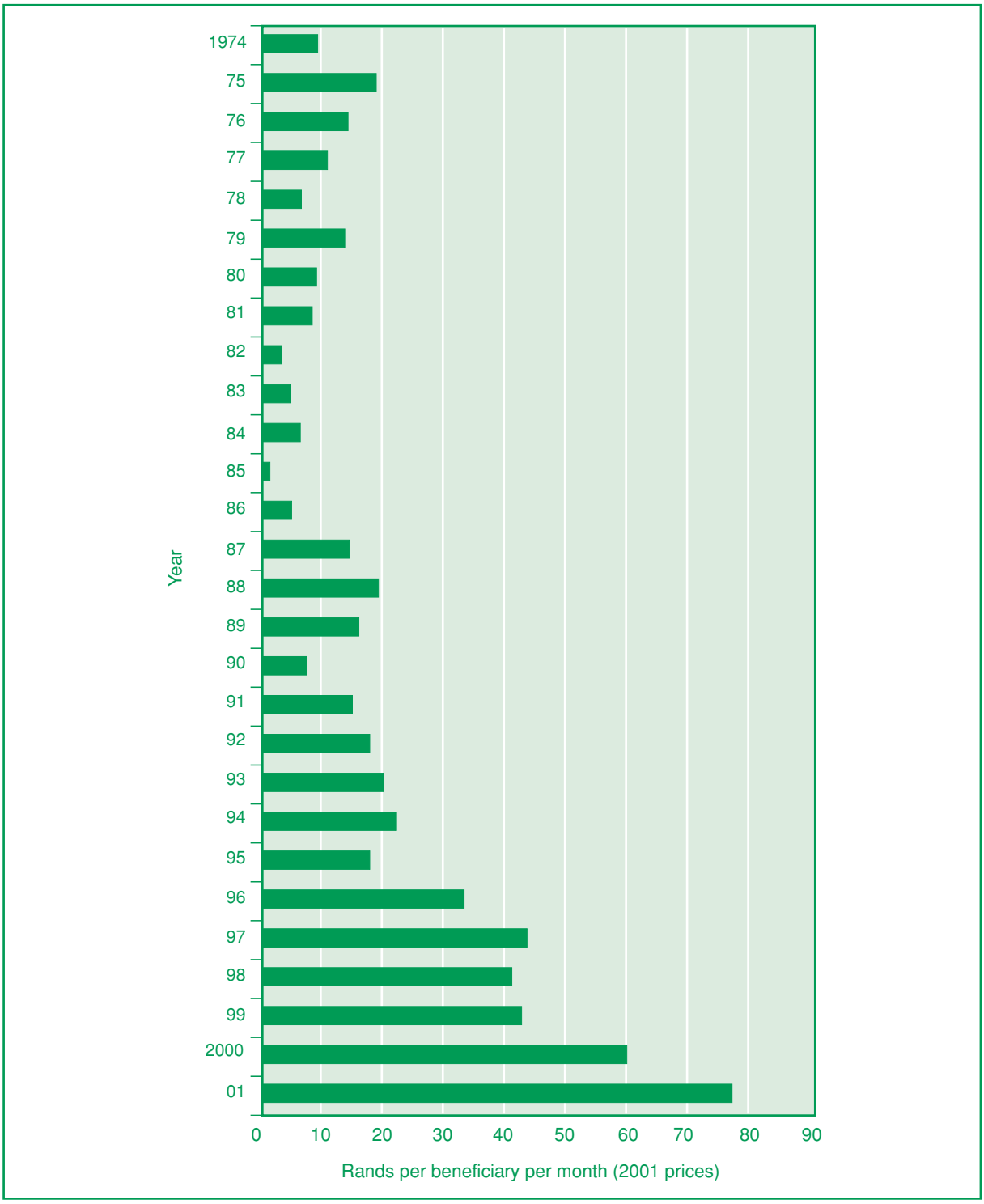
the amount required by schemes 25 years previously. Indeed, contribution increases in registered schemes have consistently outpaced inflation since the 1980s, sometimes rising to double the inflation rate during the 1990s (see Figure 3). In 2000 and 2001 the rate of increase was more rapid than it had been for a long time, at around 11%.

**Figure 3: Annual increase in average contributions and benefit expenditure per beneficiary for registered schemes, 1991-2001 (2001 prices)[9]**




The value of health care benefits paid out to members has also risen faster than inflation, but since 1999 this has been to a notably lesser extent than contributions (see Figure 3). Thus, whereas in real terms the monthly difference between contributions and health care expenditure per registered scheme beneficiary remained at R20 or below between 1976 and 1993, it was just over R40 by 1999, and as much as R77 in 2001 (see Figure 4).

**Figure 4: The difference between average real monthly contributions and benefit expenditure per registered scheme beneficiary, 1974-2001 (R, 2001 prices)[9]**




Clearly, membership of a medical scheme is becoming relatively more costly, at least on average. The Act certainly has not impacted positively on this trend: on the contrary, it may have sparked off both the recent rapid increase in contributions and the increasing divergence between contributions and benefits. Whether this is due to what the Act itself prescribes, or to the manner

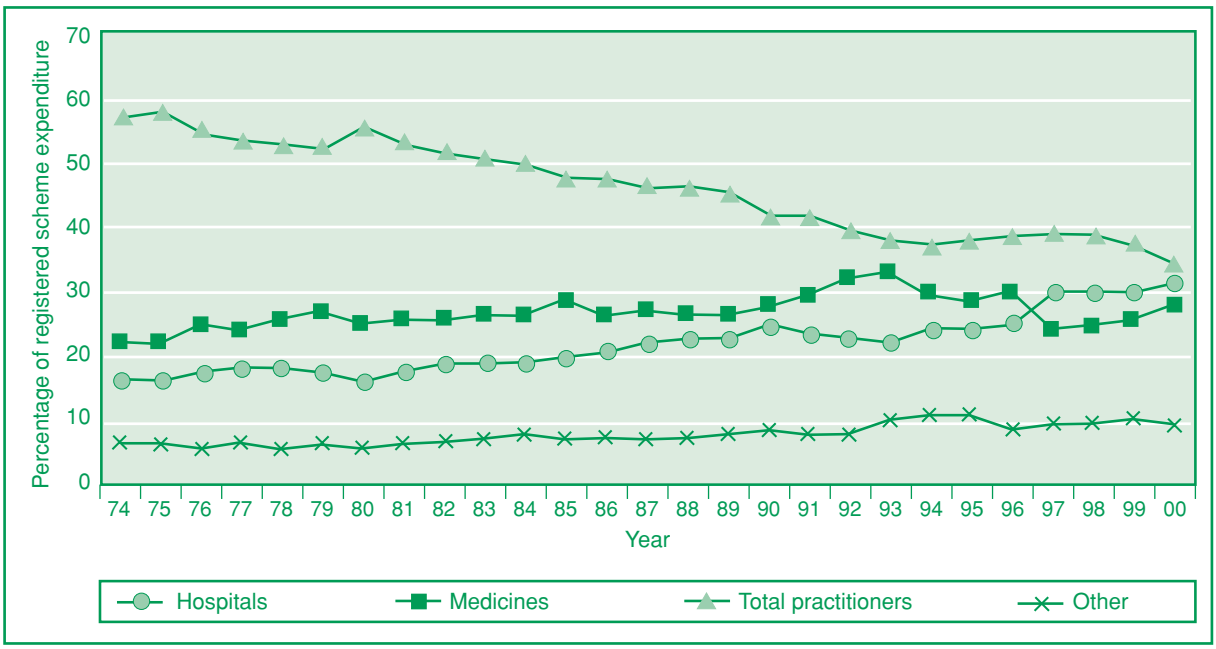
in which the industry has chosen to respond, will be discussed in the following section. In any event, the recent trend is of great concern from the perspective of equity, let alone efficiency. Incomes tend to be inflation-linked and can hardly be expected to keep up with the present escalation in medical scheme contributions. In addition, the high costs faced by employers in subsidising medical scheme membership for their employees is encouraging the creation of cash packages that leave the choice of how (and whether) to spend on health care to the individual employee.[8] If the economic climate worsens, employees may choose to spend their packages on more immediate needs than health insurance. Further, there are indications that fewer employers are willing to offer new employees medical scheme cover that extends beyond the pensionable age.[10] This means that, in 15 to 20 years time, increasing numbers of newly-retired pensioners will have to fund the full costs of cover from their own pockets. Unless the aggregate data are masking real improvements in the affordability of cover at the low-income end of the market, there is a risk that increasing numbers of lower-income earners will opt out of medical scheme cover, particularly if the economic climate worsens.

## Why is there Little Progress in Reducing Costs?

Between 1995 and 2000, expenditure by registered schemes on hospitals grew rapidly (at an average annual rate of 11%) to reach 31% of total benefit expenditure in 2000.[c] Growth in expenditure on out-of-hospital medicines, which tended to keep pace with growth in hospital expenditure until the end of the 1980s, began to slow relative to hospital expenditure in the early 1990s. Expenditure on out-of-hospital medicines was overtaken by hospital expenditure as a proportion in 1997 (see Figure 5). At this time, restructuring of medicine benefits (especially chronic medicine) seems to have had a once-off cost-saving effect.[2] Since then, expenditure on medicines has picked up, continuing to approximate the rate of growth in hospital expenditure. These trends have squeezed out expenditure on practitioners, which in 2000 represented only 34% of total benefit expenditure, compared to 57% in 1974. Within the practitioner category, the growth in specialist expenditure has far exceeded that of other practitioners since the late 1980s. Thus, specialist expenditure accounted for 58% of practitioner expenditure in 2000, more than twice the percentage it had two decades earlier. Clearly, less and less of each rand spent on health care benefits is going towards the less expensive primary care services provided by general practitioners. Indeed, the expenditure on general practitioner care per beneficiary declined at a rate of 6% per year between 1997 and 2000. This may mean that members are increasingly having to pay out of pocket for this category of benefits.

c Data from 2001 are not sufficiently reliable to include in the analyses in this section.

**Figure 5: The percentage of registered scheme expenditure accounted for by hospitals, out-of-hospital medicines, practitioners and other expenditure, 1974-2000[9]**



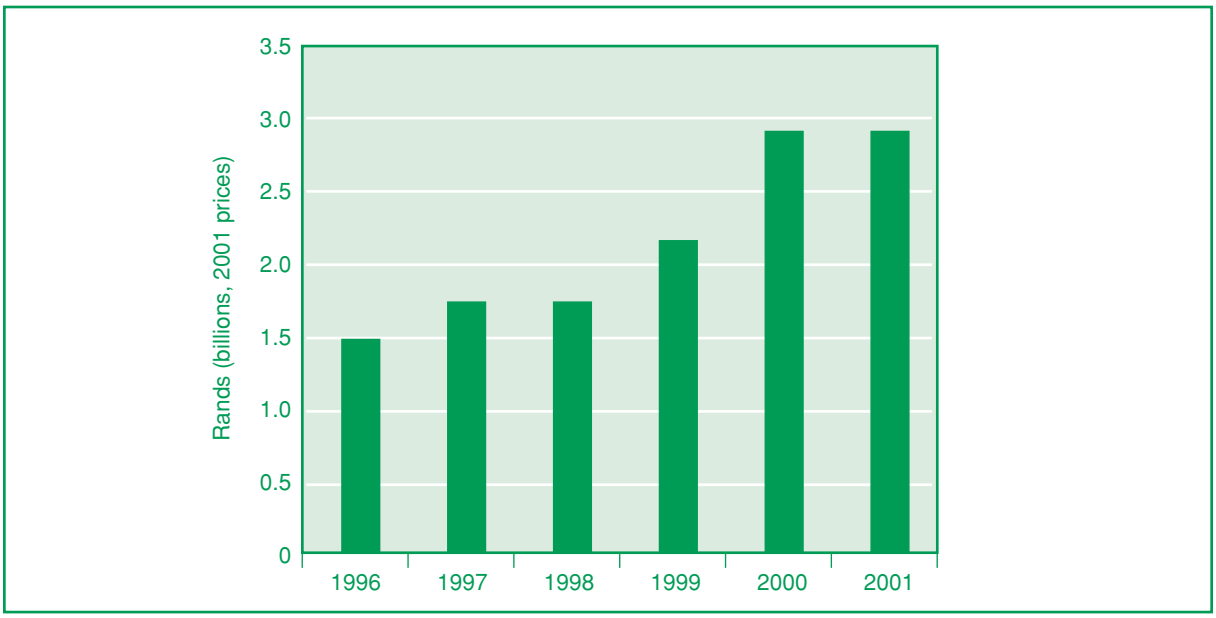

To explain rising costs, and the shift in the balance of expenditure, medical scheme administrators and health care providers generally cite a number of unavoidable factors that make cost control in the medical environment difficult. Commonly included amongst these are the ever-increasing cost of new technology, the fact that ageing populations need relatively more expensive health care, and the emergence of new diseases, most notably HIV/AIDS. More recently, the declining value of the rand, which increases the cost of imported equipment and drugs, has been advanced as another reason for cost escalation.

All these are indeed relevant factors. However, there are particular features of the South African market that contribute significantly to the lack of cost control. First and foremost is the persistence of the fee-for-service reimbursement system that creates incentives for providers to over-supply services. Patients have relatively little information or personal authority with which to challenge care decisions made by providers, while the third-party payment system – whereby an administrator settles claims – shields both providers and patients from a full awareness of the cost of services. The fee-for-service problem extends to administrators themselves as their fees are sometimes expressed as a proportion of contributions. As contributions rise, so do those administrators' earnings.

A second feature is the stripping of some schemes' assets through the abuse of reinsurance contracts. Reinsurance is required to protect small risk pools from the risk of unusually high claims in any one year. Reinsurance is recognised as sound practice for smaller schemes. However, reinsuring at excessively high levels has become a mechanism for removing 'profits' from not-for-profit schemes when the insurance company and administrator are

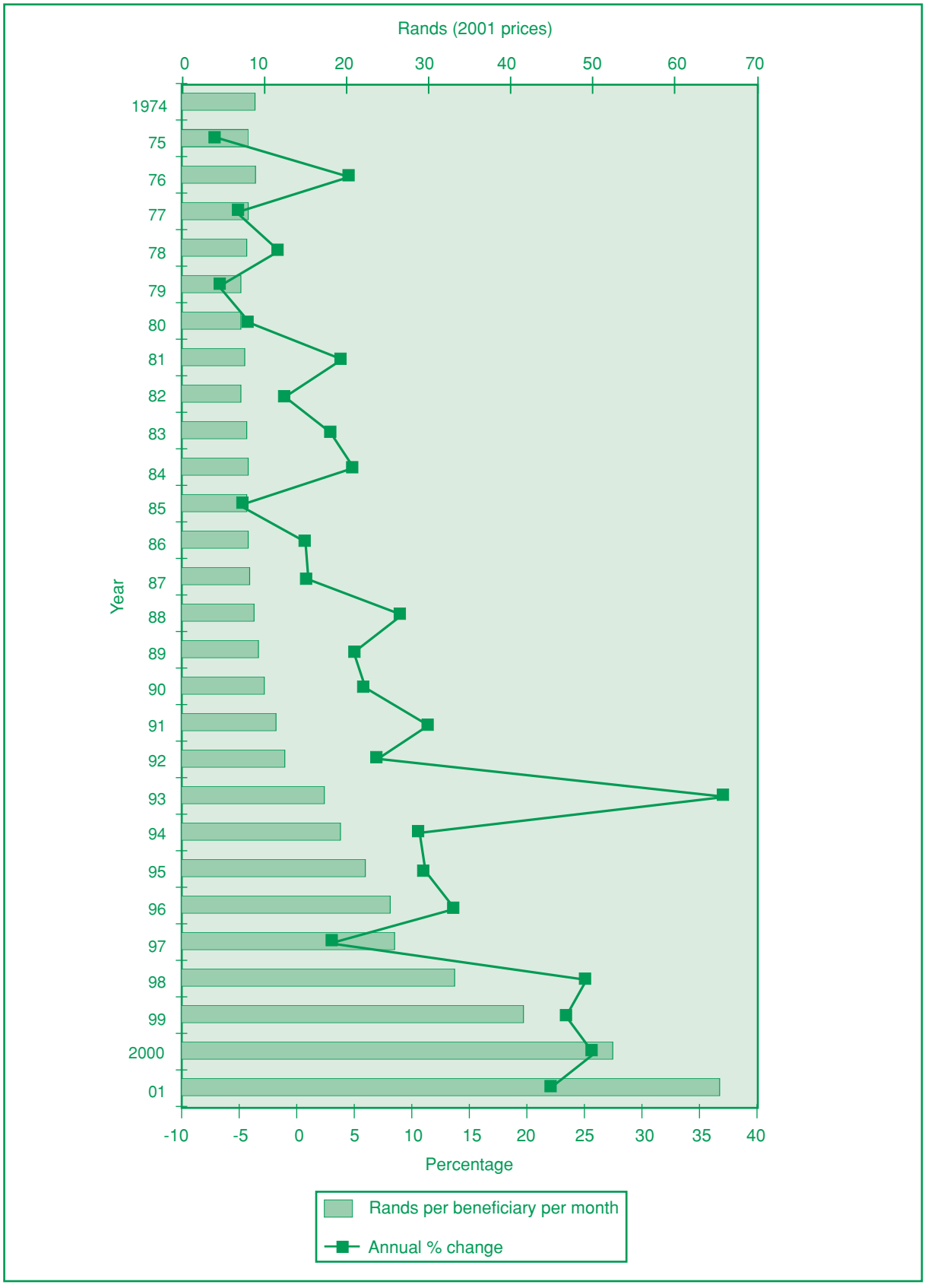
owned by the same investors, or when the administrator benefits from a profit-sharing arrangement with an independent insurer. Evidence of this practice emerged when reinsurance levels escalated noticeably in the late 1990s, slowing only between 2000 and 2001, possibly due to the tightening up of legislation (see Figure 6).[11] The escalation was caused by large schemes that would have been expected to have sufficient members to spread their risk internally and therefore not require reinsurance at all. Thus, between 1996 and 2001, 94% of the R12.6 billion paid (in 2001 prices) as reinsurance premiums derived from large schemes. As two thirds of large schemes are open schemes (as discussed previously), the abuse of reinsurance has become associated with the administrators of open schemes particularly as, in 2001, 99% of losses on reinsurance (that is, where the premiums paid exceeded recoveries from reinsurance) were made by such schemes.

**Figure 6: Reinsurance premiums paid, 1996-2001 (R billions, 2001 prices)[11]**




A third worrying feature of the present market is the unprecedented escalation in total administration costs since the late 1990s (see Figure 7). In 1997, R27 (in 2001 prices) was spent per beneficiary per month on administration (including general administration, managed care costs, broker fees, net reinsurance losses/profits, and bad debts). This figure had more than doubled (to R66 per month) by 2001. The annual percentage change has been more than 20% since 1998. Administrators have argued that efforts to control cost escalation, especially under the more complex environment of community rating and mandatory PMBs, have resulted in increases. However, administration costs were far lower as a proportion of total expenditure under the community-rated and statutory minimum benefit environment that existed before de-regulation in 1989, while a previous section has shown that the escalation in health care expenditure per beneficiary has in fact not been controlled.

**Figure 7: Trends in expenditure on total administration, 1974-2001 (R, 2001 prices)[9]**



This kind of information has fuelled suspicions that, as administrators find it more and more difficult to maintain their profits through selecting low-risk members at the expense of high-risk members and then strip the profit through reinsurance, they are turning to extracting higher profits from general administration and managed care. This siphons funds away from health care expenditure, and also compromises the ability of funds to achieve appropriate solvency levels. Many managed care organisations are owned by administrators which provides an opportunity for costs to be re-routed this way. It is going to be increasingly difficult for administrators to refute these arguments if the present investment in managed care practices does not soon result in improved value for money for beneficiaries.

In the meantime, government has introduced regulations effective from January 2003 that should deal with another cause of high administration costs, namely the demand by some brokers for on-going payments in excess of what is legislated in order to leave members in schemes. The paying of brokerage fees was legalised in the Medical Schemes Act of 1998 and could be paid at the level of three percent of first year contributions only from January 2000 onwards. In reality, brokers began to be paid commissions from approximately 1993. Brokers systematically raided restricted schemes for their younger members and enrolled them in selected open schemes. As a consequence, restricted schemes were left with a much older beneficiary profile during that decade. More recently, when the total number of beneficiaries remained static but brokerage fees continued to escalate,[11] brokers concentrated on moving members from one open scheme to another. The latest regulations will restrict brokerage fees to three percent (plus V.A.T.) of contributions paid, with a maximum of R50 per member per month. The commission is now payable on an on-going basis. This should remove the incentive to 'churn' members through a variety of schemes, and to sell only the highest-priced products.

## What Mechanisms *are* Medical Schemes using to Control Costs?

### Re-designing benefit packages

As mentioned previously, the Act makes it compulsory for schemes to provide *at least* the PMBs. The designers of the 1998 Act focused on hospital care partly because, from an individual's point of view, the need for this type of care is unpredictable, while the care itself is expensive. This makes it difficult for individuals to fund this type of care out of their own pockets, as they might be able to do for primary care. In addition, in 1996 primary care services at public facilities were made free for people not on medical schemes. While strictly speaking medical scheme beneficiaries are still required to pay, in practice this does not happen. Indeed, there is an argument current in government circles that medical scheme cover for primary care cannot be made mandatory in this sort of environment.[6]

The composition of the PMBs evolved out of a study that used cost data for services provided in-house by the mining industry.[12] These services were seen as superior to those offered by many public facilities, while information on their cost was readily available and not affected by profit-making, unlike those in the private sector. Services were excluded from the package if they were relatively expensive, cost ineffective, or for non-urgent, non-life-threatening conditions. However, the affordability of the legislated package is contested by some of the industry sources. The main reason proffered is that the package is too extensive, particularly in the context of government regulations promulgated in November 2002 which assert that PMBs are not only hospital events, but include ambulatory management.[13] These regulations also make provision for 25 chronic conditions, including hypertension, asthma, diabetes and hyperlipidaemia, to become part of PMBs from 1 January 2004. However, in only a few cases has the introduction of PMBs meant that a scheme has had to expand the range of benefits it offers: most schemes have continued with their pre-2000 benefit structures without interruption. It is likely that the real cause of the high cost of benefits is not the composition of the PMBs but the over-servicing that is prompted by the fee-for-service reimbursement system. Indeed, forthcoming research undertaken by the Centre for Actuarial Research suggests that arguments that PMBs are unaffordable and that the entire concept of PMBs is not viable are likely to prove unfounded. A later section examines whether there is scope for dealing with this problem. However, one could argue about the current composition of the PMBs from a perspective other than that of the industry. There is an in-built incentive in a package dominated by hospital and other major medical events for administrators to prevent beneficiaries entering the hospital system or staying in it too long. This is because it is mainly hospital care that incurs costs to the scheme. There is the opposite incentive for beneficiaries to seek care in hospital in preference to the primary care level, to ensure that costs are paid by the scheme. Importantly, the separation of funding mechanisms for primary and hospital care removes the 'gate-keeping' function of primary care practitioners who should ideally ensure appropriate referral of patients to higher levels of care. In the interests of the efficiency of the health system as a whole, one could argue that PMBs should be extended to include primary care.

These controversies aside, the innovative adjustment of benefits (within the parameters of the legislation) remains a potentially strong mechanism for cost control. For example, preventive programmes can be used to reduce subsequent expenditure due to serious illness. Interestingly, many schemes already offered fairly comprehensive forms of cover for HIV/AIDS before regulations included these benefits (excepting antiretrovirals) in the PMBs.[14] This shows that short-term costs are not the only factor driving the development of options: the treatment requirements of members as well as an appreciation of the broader impact of disease on society also play a role. Nonetheless, it is surprising that the introduction of PMBs has not had more

influence on the way benefit packages are configured. It appears that administrators, trustees, providers and members have not fully embraced PMBs and their implications.

## Monetary limits, levies, co-payments and savings accounts

Monetary limits, co-payments and savings accounts are three mechanisms used by administrators to create incentives for consumers to control their own utilisation. **Monetary limits are** annual limits on the amount that can be claimed from a scheme with respect to different categories of care. At best, this mechanism deters beneficiaries from utilising services unnecessarily. At worst, it allows schemes to avoid providing cover to patients with a legitimate need for care. In the past it was this mechanism that led to the 'dumping' of private patients on public sector hospitals once they had consumed their medical scheme benefits. The 1998 Act outlawed monetary limits on PMBs which, by definition, are considered essential services. Monetary limits are still allowed on other, top-up benefits, often through a fairly complex set of rules. Indeed, three-quarters of low-cost options rely on monetary limits to control spending on top-up hospital benefits.[15] As it is low-income groups that utilise these options, and as it is these groups that are least likely to be able to afford to pay out-of-pocket for services over and above the limit, this form of cost-control may deny access to services needed by these groups. This becomes important in cases where such services are in fact essential, even though they are not presently part of the PMBs.

Unlike monetary limits, which relate to annual expenditure, levies and co-payments are applied to individual claims. **Levies** are fixed amounts per claim, whereas **co-payments** are defined proportions of claims that are payable by members on each claim. Both these mechanisms are intended to deter unnecessary utilisation of non-PMB services but, like monetary limits, they can become a financial burden and reduce access to appropriate care, especially in a situation where high prices prevail. In South Africa, average annual out-of-pocket expenditure per beneficiary grew at 11% per annum (in real terms) between 1996/97 and 1998/99.[16] Whereas the Act's prohibition of levies and co-payments for PMBs would have lessened the financial burden with respect to these services, out-of-pocket expenditure on other essential services, such as chronic medicine, is likely to have increased since 2000.

**Savings accounts** were introduced in the mid-1990s. Under this system, members arrange for part of their contribution to be held in a personalised, account. The member decides when to use the account to pay for care. Any unspent monies can be carried over from one year to the next. Savings accounts were ostensibly designed to encourage beneficiaries to ration their own utilisation. Schemes typically require non-hospital costs to be funded from savings accounts, the assumption being that historically these services were over-used by patients (or that, at least, beneficiaries can afford to pay for this type of care out of their own pockets, once the savings account is exhausted).

However, savings accounts can also be a mechanism for attracting low-risk members into an option. Cover for these members becomes cheaper as they no longer have to cross-subsidise non-hospital care for members who are more ill. In addition, these options appear deceptively cheaper to consumers in industry comparisons when contributions to savings accounts are excluded from contribution quotes. In the past this impacted negatively on the equity of schemes, and contributed to unaffordable cover for high-risk beneficiaries. As a result, the proportion of contributions that may be put into a savings account has progressively been limited, as the legislation has evolved. In addition, the Minister for Health has also recently clarified that schemes may in no way make use of savings accounts to fund any portion of the PMBs.[13]

Unfortunately, savings accounts have not had the expected impact on cost control. Between 1996 and 1998 the growth in claims to schemes with savings accounts was slightly faster than schemes without savings accounts.[2] Interestingly, savings accounts are not a design feature prominently associated with low-cost options: only 20% of the 41 low-cost options available between 1999 and 2001 had savings accounts.[15] This may be precisely because savings accounts fail as a cost control measure as they do not tackle the incentives to over-supply that are created by the fee-for-service reimbursement of providers. In addition, they remove the cross-subsidy function of large risk pools that helps to fund PMBs. It may also be the case that savings account options are being marketed to higher income consumers who have a higher propensity to utilise services and are better able to reimburse providers out of pocket when the account is used up.

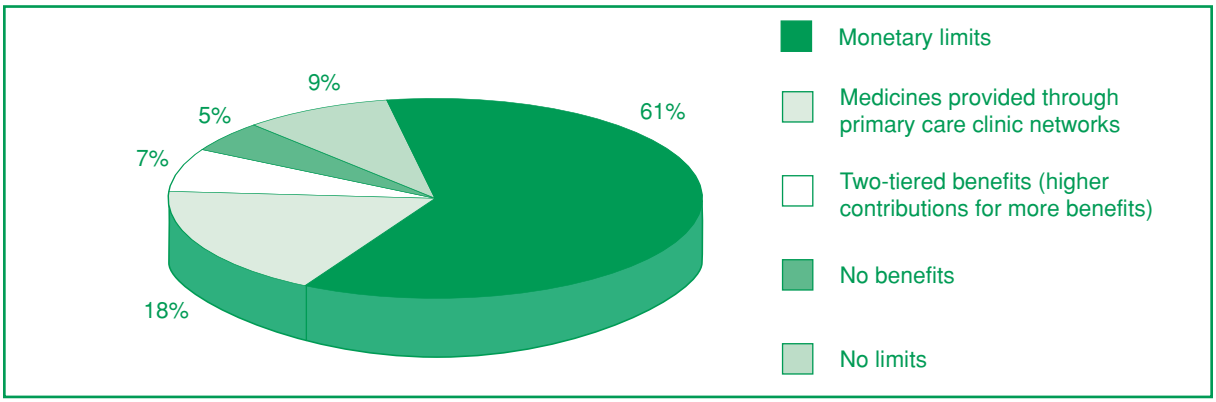
## Attracting the Young and Healthy

Although the Act prohibits any discrimination on the basis of age or health status, open schemes still have a substantial incentive to attract the young and healthy rather than accept the overall age and illness profile of the industry. Competitive pressures in an era of aggressive broker switching of members are such that open schemes need to keep annual contribution increases as low as possible relative to their competitors. Health care costs escalate sharply with age and proximity to death. The treatment of chronic conditions is particularly sensitive to age, with very low costs in the early adult years and diseases of lifestyle affecting costs from roughly age 40 onwards. A low proportion of elderly beneficiaries thus represents a substantial competitive advantage in a community-rated environment where a flat rate contribution has to be charged to all prospective members.

One method of discouraging older and more ill members from joining a scheme is to design so-called 'Swiss cheese' products that have strategic gaps in the benefits offered. While there was concern in the run-up to the implementation of the Act that schemes would remove chronic medicine

benefits altogether, a study of benefit designs in 2001 showed that only 5% of the 169 open scheme options offered no chronic medicine benefits at all (see Figure 8).[17] However, some schemes, representing 7% of options, have experimented with two-tier chronic medicine benefits where members pay a lower premium for basic cover but need to move to a more expensive option when they require more extensive cover, with a difference in contribution sometimes exceeding 140%. This has the appearance of discrimination by health status and concerns about the legality of these designs have been raised within the industry.

**Figure 8: Limits used by open schemes to control the costs of chronic medicine, 2001[17]**




Industry leaders have also introduced programmes that reward fitness levels and voluntary screening for certain diseases with low-cost movie tickets, airline tickets, and discounts on lifestyle electronic equipment and gym or sports club membership. These loyalty programmes are not technically part of medical schemes: members typically have to pay additional amounts to join these programmes. Yet these programmes are becoming more widespread and have become a major incentive for young and healthy members to switch to certain schemes.

These strategies have contributed to differentials between restricted and open schemes in the proportion of beneficiaries over the age of 65 years. In 2001 the proportion was eight percent for restricted schemes, and only 5% open schemes.[11] Indeed, a survey of the ten largest open schemes in 2002 showed one scheme with less than one percent of beneficiaries over the age of 65 while another had 23%.[18] The continued use of subtle forms risk-rating is one of the major philosophical drivers behind the intention of government to implement a risk equalisation mechanism between medical schemes. **Risk equalisation** is the compensation of schemes with a higher-than-average risk profile from a central fund comprised of contributions from the industry. Community rating and open enrolment are normally accompanied by such a mechanism in order to preserve social solidarity and focus schemes on risk management rather than risk avoidance.[19] Government will need to move quickly to implement risk equalisation to prevent further risk selection in the current market.

## Formularies for Acute and Chronic Medicine

**Formularies** are lists of drugs that a managed care organisation determines to be clinically appropriate and cost effective. Reimbursement by schemes is then restricted to items on the formulary, although members can obtain other products if they are prepared to pay the difference. Such lists often include generics, which tend to be far cheaper than brand name drugs. The cost-reducing opportunities provided by formularies are extensive, although providers and pharmaceutical companies often vigorously resist their application. Nonetheless, most schemes have used formularies for chronic medicine since the mid-1990s. Beneficiaries seeking chronic medicine benefits are required to register on a chronic medicine management programme. This allows close review of each prescription. Chronic medicine management is one of the few success stories in managed care in terms of reducing cost escalation.

It has been less easy to introduce formularies for use in acute prescriptions or to influence doctors' prescribing habits. In 2001 the largest administrator, Medscheme, published a formulary for both acute and chronic medicines. This has been combined with incentives to primary care doctors to use the Medscheme price list as part of an extensive Performance-based Reimbursement (PBR) programme. Pharmaceutical companies have aggressively re-priced products in order to have them included on the price list, bringing down retail prices for all schemes.[d] The PBR programme in 2002 rewarded doctors who could demonstrate savings on prescribing with a retrospective upward adjustment to their consultation fees. A contracted doctor's performance is assessed from regular monitoring of data on consultations, prescriptions and subsequent referrals. A system of provider-driven peer review has also been set up for doctors to review the practice patterns of their colleagues. It will be interesting to monitor the impact of these strategies over the coming years.

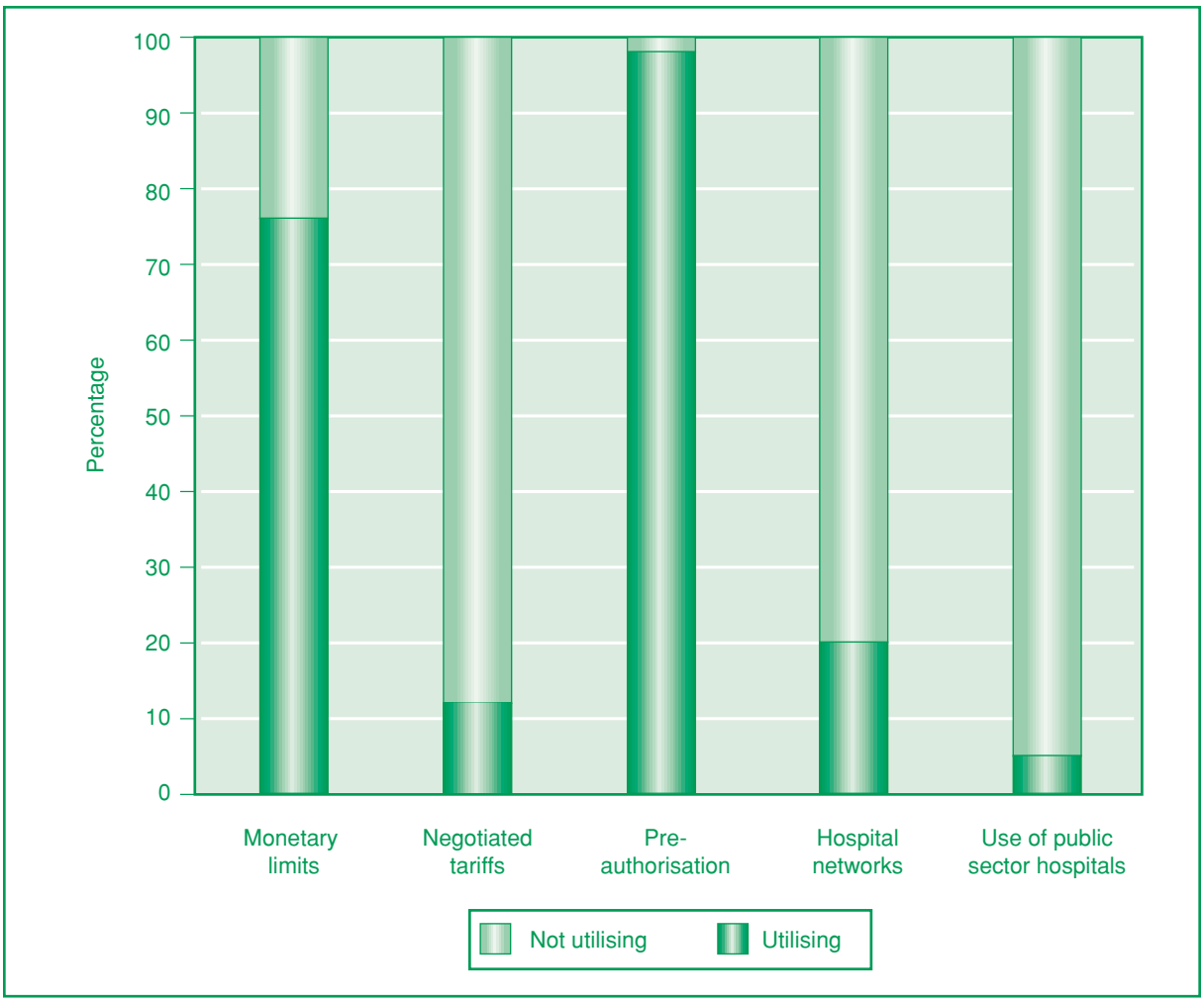
## Hospital Pre-authorisation and Case Management

**Pre-authorisation** is a system that requires a managed care organisation that is contracted to a scheme to authorise the hospitalisation of a patient before admission. If authorisation is not granted, the claims for the hospital stay are not reimbursed. The aim of this mechanism is to reduce supplier-induced demand, as well as deter beneficiaries from unnecessary utilisation. If applied appropriately it should not affect access to necessary care. **Case management** is the active monitoring of patients once in hospital with the aim of ensuring that the patient receives clinically appropriate care in the appropriate setting. This may involve moving patients to wards with a lower intensity of care once their condition permits. The use of step-down facilities to rehabilitate

d Personal communication, Professor Alan Rothberg, Medscheme Integrated Care.

patients in a lower-cost setting than a hospital is also on the increase. Pre-authorisation and case management, together with careful auditing of the bills received from hospitals, are now common cost control mechanisms used by practically all low-cost schemes (see Figure 9).

**Figure 9: Proportion of low-cost options using different types of cost control mechanisms for hospital benefits[15]**




## Disease Management Programmes

**Disease management programmes** involve active management by the scheme administrators of the prevention, diagnosis and treatment of specific conditions such as asthma, diabetes or pregnancy. Such programmes represent one of the more comprehensive mechanisms for managing costs. Typically they allow better collection of data on the beneficiary's medical condition, and dissemination of best practice information to providers caring for the patient. They also provide the basis for interventions directed by the administrators (such as preventive action). Disease management programmes to manage HIV/AIDS benefits have become standard. A recent survey found that these programmes could potentially be accessed on a confidential basis by 90% of medical scheme beneficiaries.[20]

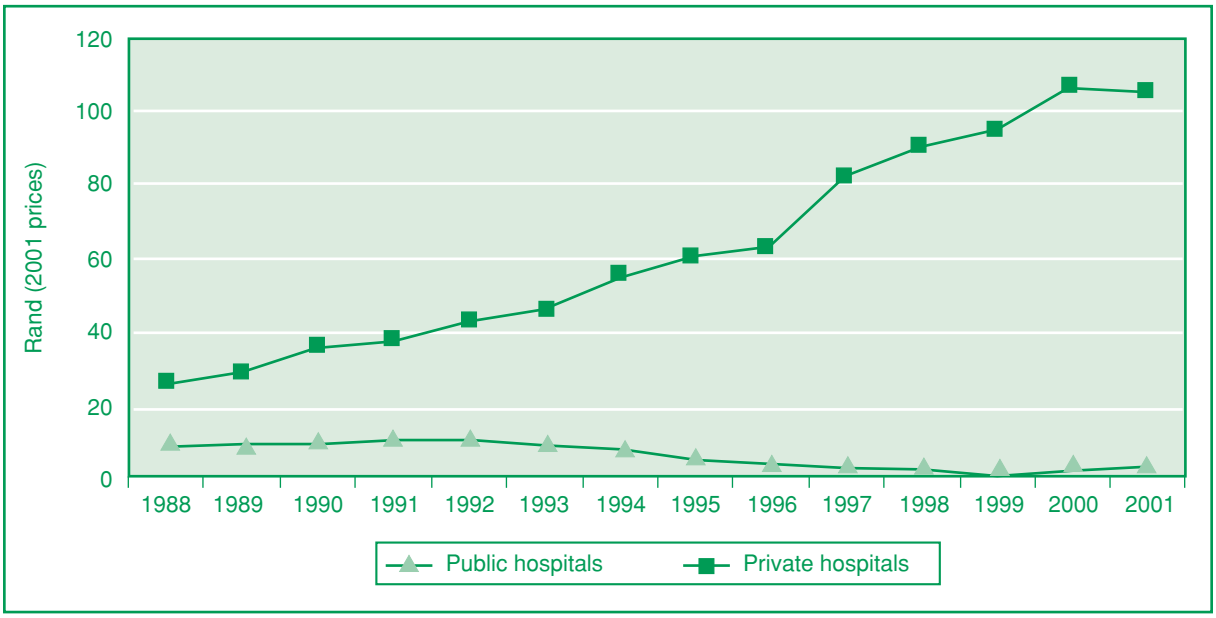
## Negotiated Tariffs in Combination with Preferred Providers and Networks

Tariffs are negotiated between providers and schemes. Many schemes use the industry tariff negotiated by the Board of Health Care Funders, which represents schemes. In theory, such negotiations should place downward pressure on the fees providers are able to charge. However, schemes have been hesitant to exercise collective bargaining power and private hospitals tend to belong to one of three main groups. So that the effects of competition are limited. There have even been unsubstantiated claims of collusion between provider groupings. As a result, negotiation does not have much effect on cost escalation. In addition, many providers choose to charge above the negotiated industry tariff: this means that beneficiaries are forced to pay the difference out of their own pockets.

An alternative to using industry tariffs is for schemes to negotiate mutually acceptable rates with individual providers. The scheme then reimburses the full cost of care provided by these preferred providers. Patients who use providers not on the list may face the full cost – or part of the cost – themselves. When providers group together in networks, this offers even greater potential for collective cost control as well as enhanced geographic access to care. In 2001 the use of hospital networks was quite low at 22% of schemes while the percentage for other types of provider was even lower (for example, 13% for general practitioners and 7% for specialists).[10] However, the use of provider networks in low-cost options has become more prevalent for primary health in the last two years.

In theory, public hospitals should be attractive preferred providers for schemes. This is because the cost of care – and the rate of cost escalation – is comparatively low in this sector.[16] However, utilisation of public hospitals by private patients fell dramatically during the 1990s, probably as a result of a perceived decline in the quality of care (see Figure 10). Thus, expenditure on public hospitals per medical scheme beneficiary fell at an average annual rate of 10% in real terms between 1990 and 2001.[9] Over the same period private hospital expenditure per beneficiary rose at an average annual rate of 11%.

**Figure 10: Comparison of expenditure per registered scheme beneficiary for public and private hospitals, 1988-2001 (R, 2001 prices)[e]**




## Risk-sharing and the Provision of Low-cost Options

The limitations of the individual cost control mechanisms discussed above have prompted the recent evolution of low-cost options. These options employ a variety of mechanisms, as already suggested in earlier paragraphs, but their main innovate feature is the use of primary care provider networks in combination with a capitated reimbursement mechanism. Capitation addresses the negative incentives created by fee-for-service reimbursement. Under a **capitation** arrangement a provider is paid a fixed fee for the monthly care of a group of patients. The provider has to cover the cost of care within the agreed amount, thus assuming some of the risk normally held by schemes alone. This forces providers to limit unnecessary treatment, choose cost-effective treatment options and prevent ill-health wherever possible. The negative incentive here is for the provider to under-supply, which necessitates proper monitoring of contracts. Nonetheless, capitated payment arrangements are one of the most effective cost control mechanisms available.

Other forms of risk sharing that can be used with hospital networks are contracting on a per diem basis (fixed rates are charged per day spent in hospital rather than relying on itemised billing) or on a per case basis (fixed rates are charged the whole episode of care e.g. for a hip replacement). These forms of reimbursement have not yet been introduced widely in the hospital sector, however. In 2001, only three percent of schemes reported contracts

e Figure 10 may under-state the true level of care offered by public hospitals to medical scheme beneficiaries. Claims are not always generated for private patients due to poor billing systems in the public sector.

with hospitals that used a reimbursement mechanism other than fee-for-service.[9] It seems that restricted schemes are starting to make more use of public hospitals, especially for higher level care, but this practice still remains low at six percent. Surprisingly, the use of public hospitals by low-cost options in particular is also very low (only two out of the 39 available between 1999 and 2001 made use of publicly provided hospital care[15] – Figure 9). Again, this may reflect continuing concerns about the quality of care offered at these hospitals, the lack of differentiated amenities for private patients in these facilities (private wards have only just begun to emerge in some provinces), as well as difficulties in concluding risk-sharing contracts which guarantee access to patients. The future provision of hospital care on a risk-sharing basis, particularly through public facilities, could be a significant advance in containing costs, essentially through affecting the price of services. The choice of risk-sharing arrangement needs to be based on a careful analysis of the impact it has first on provider incentives and then on the cost and quality of care.

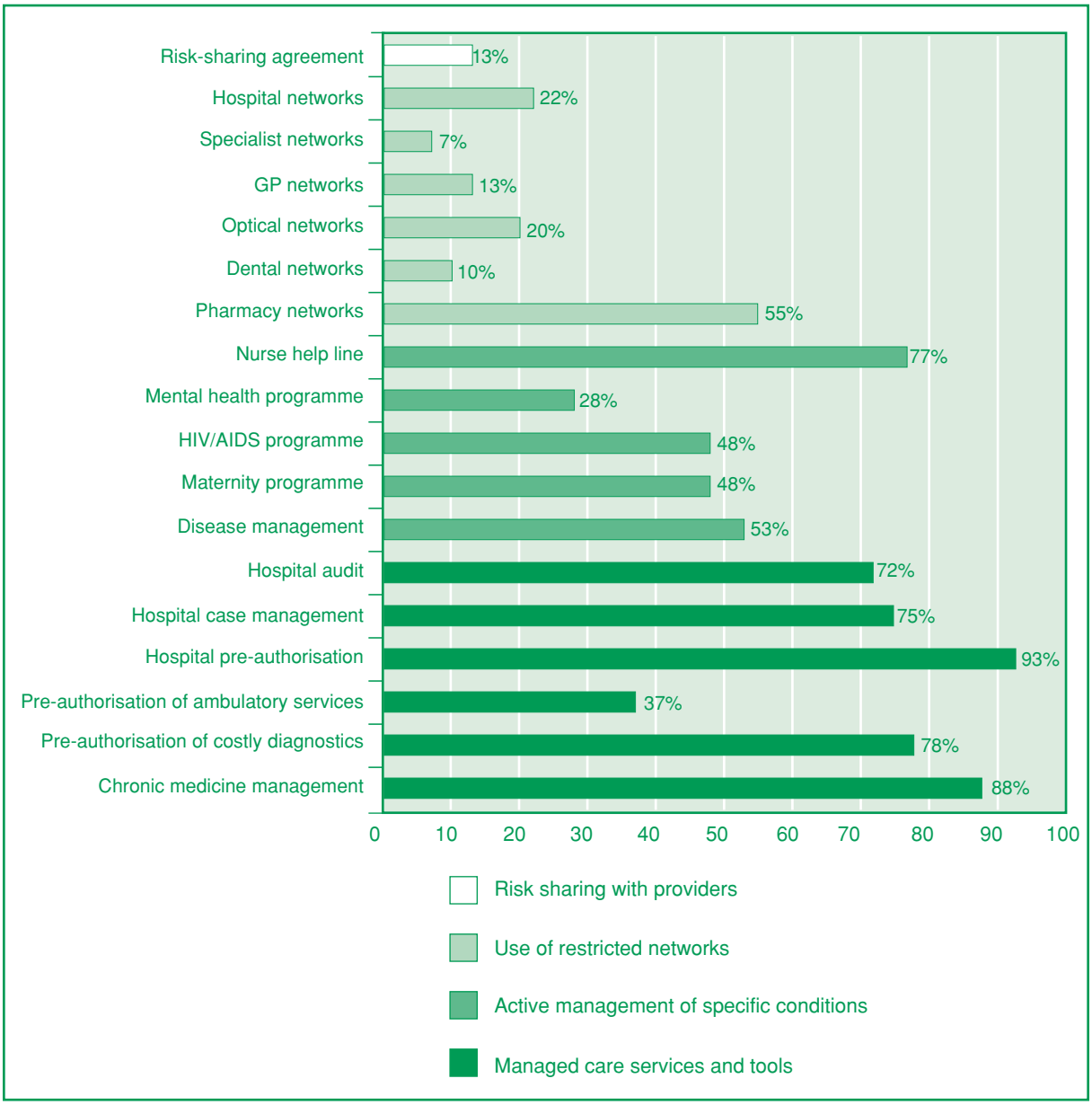
## Has Managed Care Failed in South Africa?

The previous section has shown that schemes are aware of, and are using, the entire classic cost containment mechanisms. Why has this had no effect on cost escalation? The answer lies mainly in the way managed care has been implemented in South Africa. In the USA, managed care is taken to mean, at the very least, the use of selective networks of contracted providers, some means of incentivising members to use the networks, and some degree of risk sharing with those networks.[21] Figure 11 shows that few schemes have taken on the essential elements of provider networks and risk-sharing arrangements. This may be as a result of difficulties in engaging with powerful provider groups. Even the active management of specific conditions tends to be practised by less than half of schemes. Most schemes concentrate on what Figure 11 refers to as 'managed care services and tools' which affect utilisation but are unable to deal with the essential problem, namely the incentives to over-supply created by the fee-for-service reimbursement system. This may explain why cost escalation persists in the face of rapidly rising managed care costs. In a sense, then, one can argue that managed care has not failed in South Africa: its implementation has hardly begun. Consequently, the 2002 regulations provide a more expansive definition of managed care that emphasises the need to manage (rather than avoid) risk, as well as to actively manage (rather than avoid) the costs of health care.[f,13] It appears that, in order to remain viable, the industry needs to abandon fee-for-service

f The 2002 regulations define **managed care** as follows. 'Managed health care means clinical and financial risk assessment and management of health care, with a view to facilitating appropriateness and cost-effectiveness of relevant health services within the constraints of what is affordable, through the use of rules-based and clinical management based programmes.

reimbursement (except in isolated cases of out-of-network benefits) and fully embrace risk-sharing arrangements with networked providers.

**Figure 11: Managed care initiatives used by medical schemes in 2001[10]**




## Conclusion

Schemes employ a number of mechanisms to control costs. Some of these mechanisms simply place limits on the benefits that the option will cover. However, they at least all offer the PMBs. Others attempt to encourage more appropriate utilisation of care. These efforts are commendable. Indeed, low-cost options have succeeded in bringing down the costs of care considerably. Unfortunately, however, even the lowest-cost options still cost between R600 and R800 a month for a family of four: this is probably still not affordable for families earning less than R3 000 a month.[15] The industry probably has

to offer options that cost less than R500 a month (for a family of four) in order to bring significant numbers of low-income earners into the medical scheme market for the first time. Furthermore, the industry-wide cost of cover is increasing on average, even after adjusting for the effects of inflation. Even the currently insured will need to access more affordable forms of cover in future, or risk dropping out of the market.

Clearly, existing managed care practices are not sufficient to tackle the root causes of cost escalation, namely the over-servicing and high prices charged by providers. What is required are mechanisms that reduce both the actual cost of delivering health care and the proportion of contributions represented by non-health care expenditure. These include tougher negotiations between trustees and administrators on administration and managed care fees, tougher negotiations between managed care organisations and providers on tariffs, and more risk-sharing reimbursement arrangements such as capitation. The wider application of formularies and cost-effective treatment protocols is also important. The purchasers of health care (i.e. employers and employees as represented by their unions) are barely engaged in the debates on health care cost containment, let alone on actions to purchase health care collectively. Greater participation by these parties – including government in its role as the largest single employer – will enhance the bargaining power of schemes in relation to providers and administrators.

Government also needs to play its part in supporting cost-cutting efforts by the industry. This includes implementing risk-equalising mechanisms to discourage remaining risk-selection practices, introducing legislation that helps to bring down the cost of pharmaceuticals, and the reform of public hospitals so that they can once again become attractive providers of care to private patients. It also includes in the longer term the introduction of Social Health Insurance which could double the size of the privately insured market, creating large risk pools and providing new opportunities for cross-subsidisation this would in turn improve negotiating power with providers. The proposed implementation in 2004 of a new government restricted scheme will provide cover for civil servants currently without medical scheme cover (adding more than 1.5 million beneficiaries to the medical scheme market) and go some way in this regard. Clearly, government needs to remain vigilant in monitoring the overall impact of the Act, particularly in relation to its effect on the coverage and cost of medical scheme cover. Further interventions in the industry need to be carefully monitored with respect to their impact on equity, efficiency and the quality of care.

## References


1 McIntyre D, Bloom G, Doherty J, Brijlal P. Health expenditure and finance in South Africa. Durban: Health Systems Trust and the World Bank; 1995.

2 Cornell J, Goudge J, McIntyre D, Mbatsha S. National Health Accounts: the private sector report. Pretoria: Department of Health; 2001.

3 World Health Organization.The World Health Report, 2000 – Health systems: improving performance. Geneva: World Health Organization; 2000.

4 Gilson L, Doherty J, McIntyre D, Thomas S, Brijlal V, Bowa C, Mbatsha S. The dynamics of policy change: health care financing in South Africa, 1994-1999. Johannesburg: Centre for Health Policy; 1999.

5 Pearmain D. Impact of changes to the Medical Schemes Act. In: Crisp N, Ntuli A (Eds.) South African Health Review 2000. Durban: Health Systems Trust; 2000.

6 Doherty J, McIntyre D, Gilson L. Social health insurance. In: Crisp N, Ntuli A (Eds.) South African Health Review 2000. Durban: Health Systems Trust; 2000.

7 Department of Health. Inquiry into the various social security aspects of the South African health system. Pretoria: Department of Health;14 May 2002.

8 Buch E, Doherty J. Public policy and the future of medical schemes: an independent insight. In: Board of Healthcare Funders, Deloitte and Touche Human Capital Corporation. Investing in the new healthcare economy. Johannesburg: Board of Healthcare Funders; 2002.

9 Data collated from the Annual Reports of the Registrar of Medical Schemes.

10 Old Mutual. Looking Beyond the Obvious, Old Mutual Healthcare Survey, 2001. Cape Town: Old Mutual; 2001.

11 Council for Medical Schemes. Annual report of the Registrar of Medical Schemes, 2001. Pretoria: Council for Medical Schemes; 2002.

12 Söderlund N, Peprah E. An essential hospital package for South Africa: selection criteria, costs and affordability. Johannesburg: Centre for Health Policy; 1998.

13 South African Government. Amendment to the General Regulations in Terms of the Medical Schemes Act, 1998 (Act 131 of 1998). Government Notice No. R. 1360, Regulation Gazette No. 7496, Vol. 449, No. 24007, 4 November 2002.

14 Stein A, McLeod H, Achmat Z. The cover provided for HIV/AIDS benefits in medical schemes in 2002. Cape Town: Centre for Actuarial Research for the Treatment Action Campaign; 2002.

15 Ranchod S, McLeod H, Adams S. The need for low-cost options and an analysis of benefit designs used in 2001. Cape Town: Centre for Actuarial Research; 2001.

16 Doherty J, Thomas S, Muirhead D. Health financing and expenditure in post-apartheid South Africa. Pretoria: Department of Health, 2002.

17 Ranchod S, McLeod H. Chronic medicine benefits in medical schemes: an analysis of benefit designs in 2001 and changes since the introduction of the Medical Schemes Act, 1998. Cape Town: Centre for Actuarial Research; 2001.

18 Board of Healthcare Funders, Alexander Forbes Healthcare Consultants. Key performance Indicators from the 2002 Survey of Medical Schemes in Southern Africa. Johannesburg: Board of Healthcare Funders and Alexander Forbes Healthcare Consultants; 2002.

19 Parkin N, McLeod H. Risk equalisation methodologies: an international perspective. Cape Town: Centre for Actuarial Research; 2001.

20 Stein A, McLeod H, Achmat Z. The cover provided for HIV/AIDS benefits in medical schemes in 2002. Cape Town: Centre for Actuarial Research for the Treatment Action Campaign; 2002.

21 Garofalo WA, Horwitz ET. Reardon TM. Managed care contracting: A practical guide for health care executives, Jossey-Bass Publishers; 1999.

# Financing and Need across District Municipalities

4

**Stephen Thomas,[i] Debbie Muirhead,[ii] Sandi Mbatsha[i] and Di McIntyre[i]**

[i]Health Economics Unit, Department of Public Health and Primary Health Care, University of Cape Town

[ii]Centre for Health Policy, University of Witwatersrand

*Decentralisation and equity are key goals of the South African health sector. Yet decentralisation typically threatens the equity of health care financing. This chapter maps the public funding of non-hospital Primary Health Care services across local government areas in four provinces. It also calculates measures of deprivation for each district municipality to indicate need for heath services. The equity of financing of Primary Health Care in relation to need is then evaluated and the equity of health care financing from different public sector sources is compared.*

*This study reveals that the funding of Primary Health Care is extremely inequitable both across and within provinces. Local Government funding is the least equitable funding source, inversely related to need. Provincial funding does little to correct inequities and in some cases exacerbates the picture. Without intervention the country-wide financing of the standard Primary Health Care package, proposed by the national Department of Health, will prove impossible. A national mechanism is therefore required to manage the financing of decentralised health care and correct inequities in the fragmented funding of Primary Health Care. A system of targets for provincial budgets, using deprivation indices, is proposed.*

## Introduction

In South Africa the National Health Accounts (NHA) public sector report highlighted the vastly different per capita expenditure across provinces.[1] This situation worsened between 1996/97 and 1998/99 partly as a result of the decentralisation of sectoral allocations to provinces.

Decentralisation, in its various guises, has proved to be a very popular reform in many developing countries.[2] Nevertheless, it is often complex and characterised by political battles and tensions between different spheres of government.[3,4] One threat of decentralisation identified internationally is to equity in health care financing across geographical populations. As decentralisation progresses to lower levels of the system, local financing sources become increasingly important. If there is no effective vehicle for cross subsidy between wealthier and poorer populations, then inequities are likely to increase further.[4] While, decentralisation may encourage additional resource generation at the local level,[4] it may also result in fragmentation of funding with little overall coordination.[2,3] All this points to the need for strong central oversight of financing to redress problems of inequity and manage, if not rationalise, fragmentation of funding.

Mbatsha and McIntyre, in the 2001 SAHR,[5] discussed resource allocation processes and the views of key actors on strengths and weaknesses of alternatives. This chapter[a] builds on this approach by:

- Mapping the financing of non-hospital Primary Health Care (PHC) within local government areas in South Africa, in four provinces
- Analysing the equity of financing health care in relation to need
- Comparing the equity of financing of health care from different sources
- Proposing a potential basis for equitable budgeting.

## Financing Data Sources

A picture of overall financing of non-hospital PHC services, across district municipalities, has been created from several sources. First, data on provincial direct funding of PHC and provincial transfers to local government earmarked for PHC have been collected from provincial Departments of Health (PDoH). Local government own funding of health care services has been derived from a database made available by the national Department of Provincial and Local Government, which has subsequently been tested for reliability.

a The results and analysis contained in this chapter represent the preliminary findings of a research project being undertaken by the Health Economics Unit, University of Cape Town and the Centre for Health Policy, University of Witwatersrand. This research is one component of the "Local Government and Health in South Africa: a research monitoring project." which is being coordinated by the Health Systems Trust with a consortium of partners.

NHA data estimated that local government contributed just under R1 billion in 1998/99 to health financing. The national Department of Provincial and Local Government, with additional data for the metropolitan councils, projected this amount to be approximately R1.1 billion for 2001/02. This implies a 5% growth rate between 1998/99 and 2001/02 compared to a 7% growth rate between 1997/98 and 1998/99.

National level funding to local municipalities through the equitable share is available on the Treasury web site. Equitable share transfers are from National Treasury to local municipalities, level B. They involve three components:[5]

- An institutional grant to support overheads for those local municipalities where the tax base is low
- A basic services grants to help fund the provision of basic services to low-income households, and
- A grant to municipalities in former 'homeland' areas, taking over personnel costs from province.

Thus local municipalities are explicitly compensated where they have few resources and many in need. It is important to note that the basic services grant is earmarked for services like water, sanitation and electricity. The equitable share grants to local government do not include, at present, funding for health but could potentially be used as such a vehicle in the future.[5] The equitable share data are thus useful to analyse with this in mind.

Financial data have been aggregated to the level A and C municipalities (metropolitan districts and district municipalities) to allow for ease of comparison. Where transfers are made to the B level (local municipalities) the data are aggregated up to the appropriate C level within which the B municipalities reside.[b] Data relate to the 2001/02 budget year and are revised budget estimates.[c] In September 2002 complete datasets were available for four provinces KwaZulu-Natal, Mpumalanga, Limpopo and the Northern Cape. A picture of PHC financing and need across the whole of South Africa is expected to be available by the end of 2002. This map should be an important baseline for subsequent evaluation of financing of local government health care services and planning for appropriate financing mechanisms for Primary Health Care.

The population data used in this chapter relate to the total population in each district and/or province unless otherwise stated. Currently, there are no reliable data on public sector dependency at a district or provincial level, even using proxies such as medical scheme membership. Consequently, it is difficult to calculate what proportion of different populations is dependent on the public sector. Estimates at the provincial level are derived from the consolidated NHA report[6] and using more up to date information from the

b 'A's refer to metropolitan councils; 'B's to local municipalities and 'C's to district municipalities. Often, but not always, several Bs are within one C.

c Discrepancies through different financial years have been ignored for the sake of ease of analysis. It is not thought that this changes the results significantly.

Medical Schemes Council. Estimates at the district level are avoided because of their likely unreliability. The effect of this may be to under-report the existing inequities in health financing, though the report's general conclusions and strategies for system development are unlikely to be affected.

## Need and Deprivation Indices

Those who are more deprived are more dependent on publicly funded health services and so have a greater need for these services than those who have access to private care.

Many previous studies on health financing in South Africa have relied on equal funding per capita as a basis of measuring equity (see for example McIntyre, Baba and Makan[7]). This measure treats everyone equally but not necessarily equitably. Equitable funding requires a bias toward those in greatest need or the endorsement of the notion of vertical equity, "unequal treatment of unequals".[8,9]

To assist with measuring equity, composite indices of deprivation for district councils by province were constructed from 1996 census data. Deprivation indices are useful because there is a strong correlation between deprivation and ill health.[10] Thus deprivation indices allow a detailed map of need in the specific provinces.[d] Census data for 1996 were utilised to build up a picture of need for health care services in each district. Data from the ward level were used in relation to variables that appeared relevant to socio-economic status. These are shown in Box 1. The values of such indicators were weighted according to the respective population within each ward. A deprivation index score was then calculated using principal component analysis. The score indicates a measure of the relative socio-economic deprivation in a district in relation to other districts in the province. Positive scores indicate that a district is relatively deprived.

**Box 1: Key Socio-Economic Variables**

- Proportion of African individuals in the population
- Proportion of children in the population
- Proportion of the population which are illiterate
- Proportion of the population which are unemployed
- Proportion of the population living in informal dwellings
- Proportion of the population with no access to telephones
- Proportion of the population with no electricity
- Proportion of the population with no sanitation
- Proportion of the population with no direct access to water

d Similar work has been done previously by both McIntyre and Muirhead and Statistics South Africa by magisterial district, however to our knowledge this is the first time this analysis has been performed by the newly demarcated municipality boundaries.

In this chapter funding per capita and funding according to deprivation as a measures of equity are explored. However, translating measures of need into a workable basis for budgeting is not straightforward.[11] The authors build on McIntyre and Muirhead's approach to develop indicators for deprivation-based budgeting.

## Interprovincial Financing

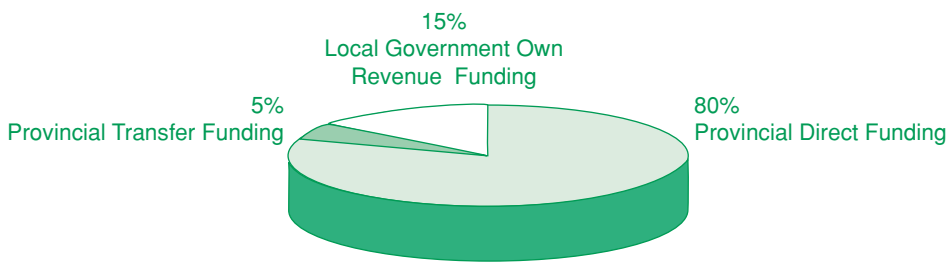
The overall funding picture for the selected provinces is shown in Table 1. *Provincial Direct* funding is by far the largest channel (see also Figure 1), constituting around 80% of total resources. Funding consists of resources allocated from the PDoH to be spent directly on provincial PHC facilities and services. *Provincial Transfer* funds relate to resources flowing from provincial Departments of Health to Local Governments, earmarked for spending on health services. This is the least significant route for funding.

The funds from the *Local Government Own Revenue* consist of resources from the Local Government's own revenue base primarily through rates and taxes, but also occasionally from appropriated grants from other spheres of government. Such finances are allocated to health through the resource allocation processes at the local government level. This route is quite significant providing 15% of non-hospital PHC funding for the four provinces, and appears to be particularly important for KwaZulu-Natal and Mpumalanga (see Figure 2).

**Table 1: Funding of non-hospital PHC services in four provinces, 2001/02 (R million)**

| | Provincial Direct | | Provincial Transfer | | Local Government Own Revenue | | Total |
|---|---|---|---|---|---|---|---|
| KwaZulu-Natal | 952.6 | 74% | 73.1 | 6% | 260.9 | 20% | 1 286.6 |
| Limpopo | 464.8 | 97% | 2.1 | 0% | 14.1 | 3% | 480.6 |
| Mpumalanga | 117.6 | 74% | 13.6 | 9% | 28.2 | 18% | 159.3 |
| Northern Cape | 88.0 | 88% | 5.0 | 5% | 7.2 | 7% | 100.2 |

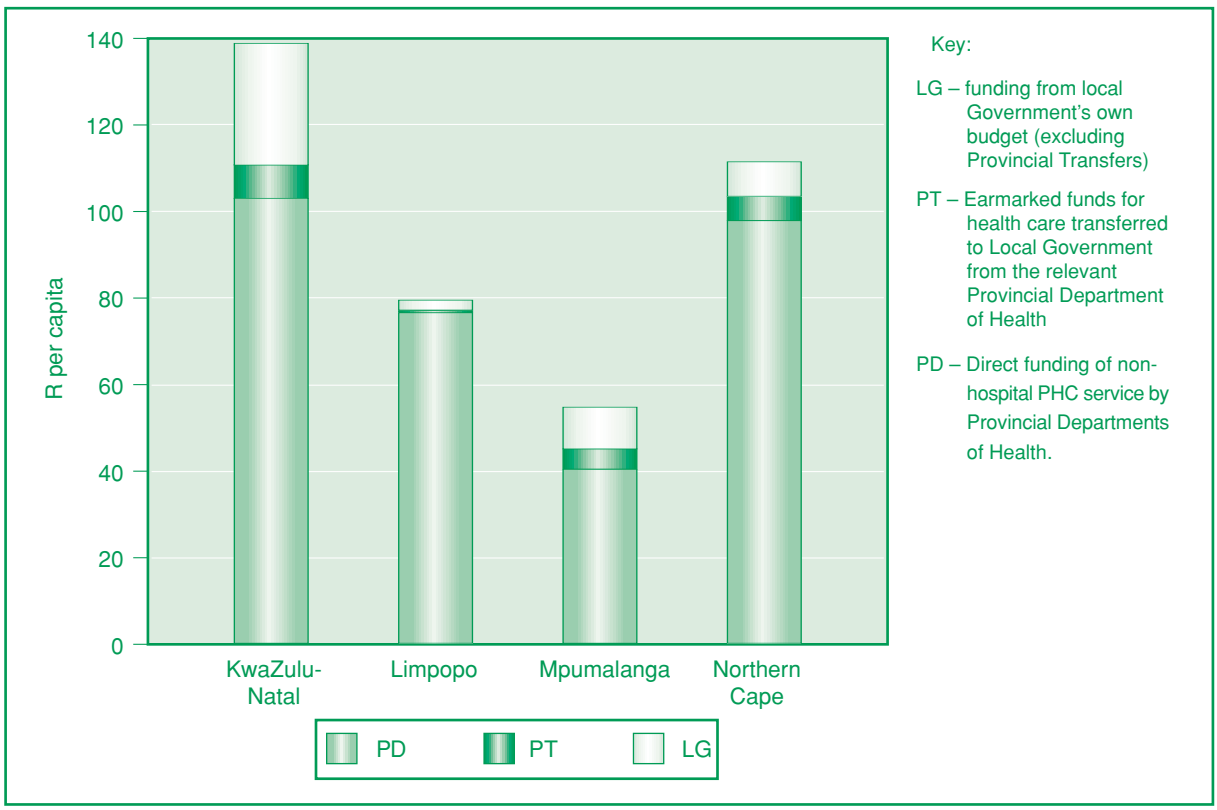
**Figure 1: Average share of funding from each source across the selected provinces**



To gain insight into the equity of funding of non-hospital PHC across the four provinces it is useful to compare per capita funding, as illustrated in Figure 2. The inequalities in PHC financing across the provinces immediately become apparent. In KwaZulu-Natal more than twice as much funding is allocated per person to PHC services than in Mpumalanga.

Cost estimates indicate that at least R125 per person is needed to provide a standard PHC package, as specified by the national Department of Health (NDoH), to provide an acceptable level of PHC services.[12] It is therefore difficult to see how this PHC package could be affordable within at least two, and possibly three, of the four provinces with current funding patterns. Given the importance of PHC in national health policy this situation is in dire need of remedy.

**Figure 2: Funding per capita of non-hospital PHC services**




Interprovincial inequity is even greater where medical scheme members are excluded. Measures of per capita funding within each province are compared in Table 2; the first column uses total population as the denominator, while the second relates financing to public sector dependants only. The results indicate that financing per person is even more skewed toward richer provinces when only public sector dependants are considered. Indeed, the spread between the best and worst funded provinces increases using this measure.

**Table 2: Per Capita Funding (R) of non-hospital PHC services (with and without private sector dependants)**

| | Per Capita Funding (Total Population) | Per Capita Funding (Public Sector Dependants only) | Difference |
|---|---|---|---|
| KwaZulu-Natal | 140 | 161 | +21 |
| Limpopo | 79 | 86 | +7 |
| Mpumalanga | 55 | 65 | +10 |
| Northern Cape | 112 | 143 | +31 |
| Spread | 85 | 96 | +11 |

Note: Spread refers to the difference between the highest and lowest values.

## Interprovincial Financing

This analysis is less concerned with the overall level of resourcing in each province, as discussed above. Instead it focuses more on intraprovincial resource allocation, particularly the distribution of resources to PHC across district municipalities within each province and drawing out issues about fairness.

In all four provinces there is a substantial spread between the best and worst resourced district municipalities in terms of funding per capita[e] (Figures 3 and 4 and Tables 3 and 4). The difference between best and worst funded District Municipalities is R100 per capita in the Northern Cape and approximately R70 per capita in KwaZulu-Natal, Mpumalanga and Limpopo. The low levels of overall funding, noted above, further highlight the starkness of such ranges. Indeed, the data show substantial intraprovincial inequalities in all cases.

e The population base used here and in the remainder of the chapter is total district population.

**Figure 3: Difference in per capita funding of non-hospital PHC between each district and the provincial average, in KwaZulu-Natal**

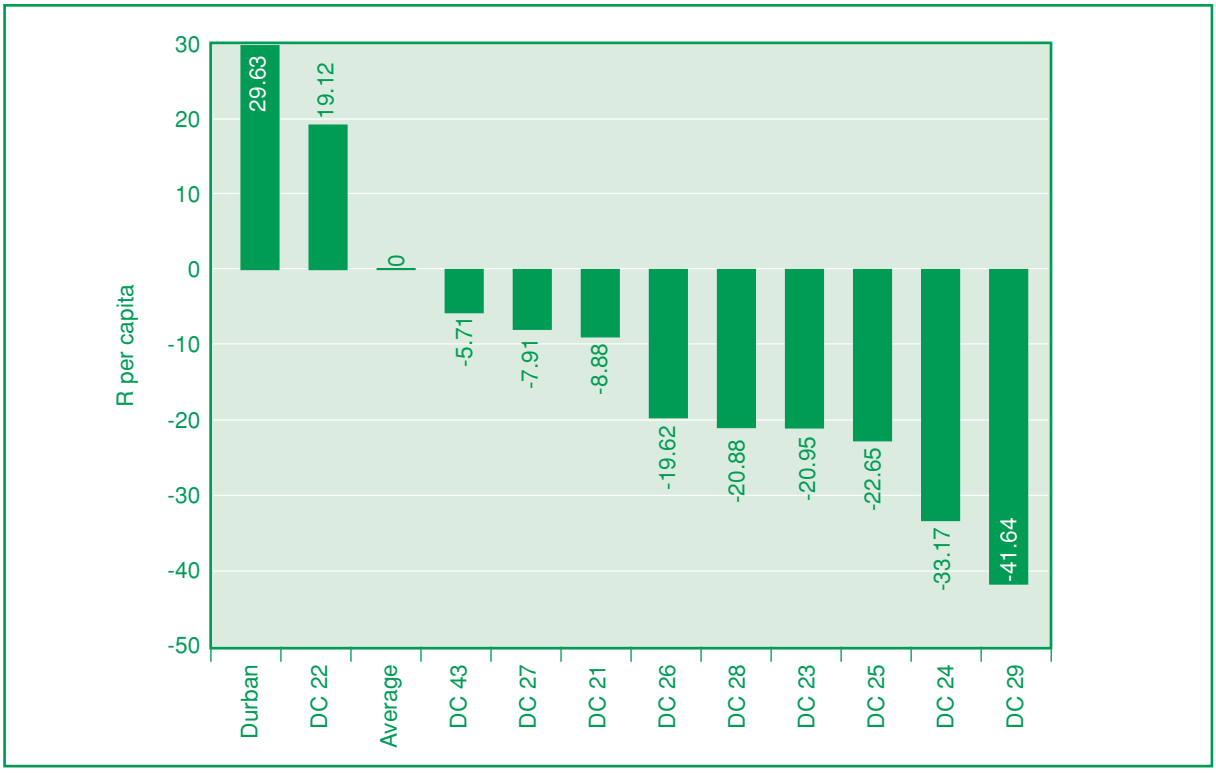



**Table 3: Funding of non-hospital PHC in Mpumalanga across district municipalities**

| | Provincial Direct Exp | Provincial Transfers | Total Provincial Funding | Local Government Health Budget | Total |
|---|---|---|---|---|---|
| DC 30 | 8.2 | 7.9 | 16.1 | 15.5 | 31.7 |
| DC 31 | 18.5 | 3.0 | 21.5 | 12.3 | 33.8 |
| DC 32 | 97.7 | 3.5 | 101.2 | 1.0 | 102.2 |
| Average | 40.4 | 4.7 | 45.1 | 9.7 | 54.8 |

**Figure 4: Difference in per capita funding of non-hospital PHC between each district and the provincial average, in Northern Cape**

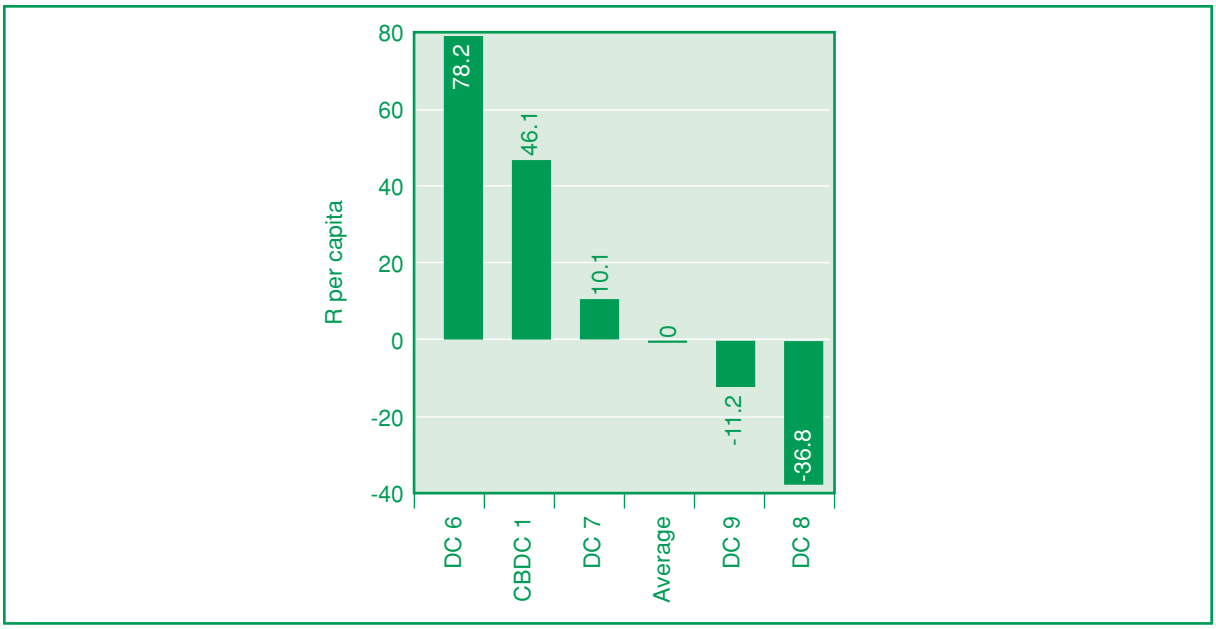



**Table 4: Funding of non-hospital PHC in Limpopo across district municipalities**

| | Provincial Direct Exp | Provincial Transfers | Total Provincial Funding | Local Government Health Budget | Total |
|---|---|---|---|---|---|
| CBDC 3 | 68.6 | - | 68.6 | - | 68.62 |
| CBDC 4 | 42.7 | - | 42.7 | - | 42.70 |
| DC 33 | 104.4 | 0.1 | 104.5 | 4.6 | 109.12 |
| DC 34 | 93.3 | 0.2 | 93.5 | 2.8 | 96.30 |
| DC 35 | 60.1 | 0.3 | 60.3 | -0.3 | 60.08 |
| DC 36 | 85.2 | 2.2 | 87.4 | 9.4 | 96.77 |
| *Average* | *76.8* | *0.4* | *77.1* | 2.3 | 79.45 |

Note: Negative values for Local Government own revenue imply that provincial transfers exceeded the LG health budget

Mbatsha and McIntyre[5] suggested that equity could be improved if National Treasury provided a grant direct to local government, rather than funds flowing through the provincial Department of Health. Certainly central funding mechanisms have the potential to redistribute funding across the whole country in response to inequity. Yet, is there any evidence that national level allocations are more equitable?

Revised budget data for the equitable share funding of local government from National Treasury were examined to explore this issue.[f] (As previously

f The equitable share funding from National Treasury is currently allocated to the B level, or sub-district. For our analysis the data were aggregated to the C level, to allow for comparison with the Provincial Department of Health allocations.

noted these grants do not have a health care component and introducing one would change the shares allocated to different local governments.) Nevertheless, the existing equitable share formula does provide an indication of the likely distribution of resources for health care across districts if allocated from National Treasury. From the equitable share funding of local government it is possible to derive weights for funding district municipalities. Applying these weights to funds currently flowing through each provincial Department of Health allows the development of a scenario for national level funding of health care in local government areas (Scenario 1). This can then be compared with current funding patterns to assess any potential improvement in equity.

The findings show that in KwaZulu-Natal, Mpumalanga and the Northern Cape the National Treasury weightings, implicit in the equitable share grants, seem to reduce the spread between districts, so that per capita amounts are more equal. In all four provinces the currently best funded districts get significantly less funds, under Scenario 1, and the currently worst funded districts receive more funds in per capita terms. Data from Limpopo and the Northern Cape are shown below as examples in Figures 5 and 6.

**Figure 5: Difference in per capita funding of non-hospital PHC between each district and the provincial average, in Limpopo: Actual and Scenario Funding**

**Figure 6: Difference in per capita funding of non-hospital PHC between each district and the provincial average, in Northern Cape: Actual and Scenario Funding**

Hence, there appear to be some grounds for arguing that a more equitable allocation of funds would be achieved by relying on centrally allocated grants rather than direct expenditure from the PDoH. Of course there are other concerns and obstacles to this, not least the aspect of the capacity of local government to be able to manage such resources to best effect.[5] Indeed, concerns about the capacity in some local governments has led to significant debate and, in some provinces, action concerning the re-provincialisation of PHC responsibilities.

## Applying a Deprivation Index to District Level Financing

As argued earlier, the concept of equal funding per person may be an inappropriate approach to equity in South Africa. In the context of massive disparities in living conditions, a more appropriate basis for financing might be in relation to a measure of deprivation.

Table 5 highlights the best and worst funded districts in each province and notes their deprivation index score (DIS). (The deprivation score provides a measure of the need for public health care services in each district. The scores generally ranges from -1 to +1 within each province. The higher the score the more deprived the district.) In all provinces except Mpumalanga the best funded district municipalities are typically the least deprived. It appears, perhaps unsurprisingly, that budgeting had little to do with relative deprivation. Furthermore, there was frequently an inverse relationship between financing per capita and deprivation.

**Table 5: Best and Worst funded District Municipalities, in per capita terms, with their deprivation scores**

| | Best Funded District | Deprivation Index Score | Worst Funded District | Deprivation Index Score |
|---|---|---|---|---|
| *KwaZulu-Natal* | | | | |
| | Durban Metro | -0.97 | DC 24 | 0.67 |
| | DC 22 | -0.37 | DC 29 | 0.37 |
| *Limpopo* | | | | |
| | DC 33 | -0.47 | DC 35 | 0.28 |
| | DC 36 | -0.44 | CBDC 4 | 0.25 |
| *Mpumalanga* | | | | |
| | DC 32 | 0.26 | DC 30 | -0.21 |
| *Northern Cape* | | | | |
| | CBDC 1 | -0.42 | DC 8 | 0.1 |

Note: Higher positive values indicate increased deprivation

Figure 7 highlights the mismatch between funding per capita and deprivation with data from KwaZulu-Natal. The figure ranks the district municipalities in terms of their deprivation index scores, shown by the bars, with the least deprived on the left. The figure also indicates the funding of each district in per capita terms, with the line graph. Hence Durban Metro with the lowest deprivation score, -0.97, receives the most funding, approximately R170 per capita.

**Figure 7: Funding per capita vs relative deprivation in KwaZulu-Natal**

To provide an indicative measure of the equity of financing of *each* source, correlation scores were calculated between need, as measured by deprivation, and different types of financing, across the four provinces. The only significant result from this, at the 1% level, is the negative correlation between the local government own revenue funding of health care and the degree of deprivation. This suggests that Local Government own revenue financing of health care is the least equitable funding source. It is not unexpected that there is a significant negative correlation between deprivation and local health funding. Areas with high deprivation levels are likely to have low revenue-generating capacity and local government areas that have high levels of deprivation are more likely to be in former homeland areas, with no history of local government and associated health care provision. This concurs with the findings of international literature that decentralisation can exacerbate inequity where local funding sources are relied upon.

Turning the analysis round, what sort of resource allocation process would be needed to make budgets reflect relative deprivation? McIntyre and Muirhead[11] suggest using a resource allocation formula based on the population of each district, *weighted for deprivation*. This draws together the concepts of funding per capita and relative deprivation score to arrive at an appropriate indicator of need for determining budgets.

Table 7 demonstrates this method with one set of results from Limpopo. The final column indicates the difference between the equity target share and the actual total current budget. Aggregating these differences, estimates the overall magnitude of divergence from the target budget. The size of this divergence can then be related back to the overall size of the budget to calculate what proportion of the budget can be said to have been related to deprivation. This gives us a deprivation based budgeting score (DBBS). Table 6 indicates the DBBSs for each province, comparing current funding patterns and Scenario 1.

**Table 6: Deprivation based budgeting scores for current financing and under scenario 1**

| | Current Funding | Scenario 1 |
|---|---|---|
| KwaZulu-Natal | 51% | 54% |
| Limpopo | 76% | 67% |
| Mpumalanga | 53% | 69% |
| Northern Cape | 67% | 83% |

The DBBSs indicate that, for instance, in Mpumalanga 53% of the combined current budget for non-hospital PHC can be justified according to need. A score of 100% would indicate that the budget was allocated completely according to need and, therefore, on an equitable basis. While this may be too much to expect, any movement to a higher score would be positive from an equity perspective. Given the historical legacy and mix of districts in

KwaZulu-Natal it is not surprising that it has the lowest DBBS. Interestingly, in three out of the four provinces, there is an improvement in equity under Scenario 1 i.e., a higher score. These findings are consistent with the earlier analysis of per capita financing indicating that National Treasury could be a more equitable source of financing than provincial Departments of Health.

The potential use of such indicators is as a base for setting targets for improved equity in each province. Clearly a move to deprivation based budgeting in one year is not feasible. Shifting money, and therefore human resources and services, can only be done in a phased approach. While current inequities cannot be bridged easily, a central financing body could coordinate the move toward better scores for each province and set targets for achievement within a five-year period. This would allow for a gradual but sustained tackling of the problem of inequitable financing under decentralisation.

**Table 7: Budgeting According to Need – An Illustrative Example for Limpopo**

| | Deprivation Index Score (DIS) | Normalised DIV | Population | Population Weighted by Deprivation | % share of weighted population | Equity Target Share | Actual Budget | Difference between Target and Actual | Magnitude of Divergence |
|---|---|---|---|---|---|---|---|---|---|
| DC 33 | -0.47 | 1 | 1 065 240 | 1 065 240 | 12% | 55 838 | 64 730 | -8 841 | 8 841 |
| DC 36 | -0.44 | 1.03 | 752 922 | 775 510 | 8% | 40 651 | 111 944 | -71 256 | 71 256 |
| DC 34 | 0.03 | 1.50 | 1 033 660 | 1 550 490 | 17% | 81 274 | 74 670 | 6 678 | 6 678 |
| CBDC 4 | 0.25 | 1.72 | 1 300 553 | 2 236 951 | 24% | 117 257 | 92 326 | 25 039 | 25 039 |
| DC 35 | 0.28 | 1.75 | 1 263 106 | 2 210 436 | 24% | 115 867 | 78 831 | 37 142 | 37 142 |
| CBDC 3 | 0.61 | 2.08 | 639 383 | 1 329 917 | 15% | 69 712 | 58 538 | 11 238 | 11 238 |
| Total | | | 6 054 864 | 9 168 543 | 100% | 480 598 | 481 038 | | 160 194 |

Calculation of DBBS:

Deprivation Based Budgeting Score = 1 – (Magnitude of Divergence/Actual Budget) = 1 – (160 194/481 038) = 67%

## Recommendations and Conclusions on Financing District Municipalities

Whichever measure is used it is clear that funding of PHC in South Africa is extremely inequitable, even from the partial analysis outlined in this chapter. Given that PHC and equity are at the heart of Government policy this situation is undesirable. Immediate steps for corrective action need to be taken.

Local Government funding of health care is more inequitable and inversely related to need than any other source. While the growth of local government financing may well have generated additional resources for the funding of PHC, it may also have worsened the equity of financing.

Provincial funding does not appear to be sufficiently well targeted to take account of differential own-revenue generating capacities between local governments. Indeed provincial funding frequently exacerbates prevailing inequities. Provinces need to reconsider their budget allocation processes to take account both of relative need for public health care within local government areas and the varying revenue bases of different local governments.

The findings for Scenario 1, based on current equitable share funding, may indicate that direct grants from National Treasury could be a more equitable financing source than through PDoH. This adds weight to the arguments of those who favour central allocations of grants for health to local governments. While there may well be no immediate prospect of such a reform, the results highlight the need for some national mechanism to compensate for existing inequities and to provide overall management of the financing of decentralisation. One key strategy for improving the equity of funding PHC services is to move toward Deprivation Based Budgeting in each province, through the setting of targets for redistribution.

## References

1 Thomas S, Muirhead D. The Public Sector Report. National Health Accounts Project. Health Economics Unit, Cape Town: University of Cape Town. Centre for Health Policy, Johannesburg: University of Witwatersrand; 2000.

2 Brijlal V, Gilson L, Mahon J, McIntyre D,Thomas S. Key Issues in Decentralisation: A Background Paper. Prepared for the EDI/World Bank Flagship Course on Health Sector Reform and Sustainable Financing. Johannesburg: University of Witwatersrand; 1998.

3 Mills A, Vaughn JP, Smith DL, Tabibzadeh I. Health system decentralisation: Concepts, issues and country experience. Geneva: World Health Organization; 1990.

4 Collins C. Decentralisation. In: Janovsky K (Ed). Health Policy and Systems Development: an agenda for research. Geneva: World Health Organization; 1996. p 161-78.

5 Mbatsha S, McIntyre D. Financing Local Government Health Services. In: Suleman F, Ntuli A (Eds). South African Health Review 2001. Durban: Health Systems Trust; 2002.

6 Doherty J, Thomas S and Muirhead D. Health financing and expenditure in post-apartheid South Africa, 1996/97-1998/99. [Final Draft] Johannesburg : The National Health Accounts Project Team; 2002.

7 McIntyre D, Baba L, Makan B. Equity in public sector health care financing and expenditure in South Africa: an analysis of trends between 1995/96 to 2000/01. In: Ntuli A (Ed). South African Health Review 1998. Durban: Health Systems Trust; 1998.

8 McIntyre D. Health care financing and expenditure in South Africa: towards equity and efficiency in policy making. [Dissertation]. Cape Town: University of Cape Town; 1997.

9 Mooney G. And now for vertical equity? Some concerns arising from Aboriginal health in Australia. Health Econ 1996;(5): 99-103.

10 McIntyre D, Muirhead D, Gilson L, Govender V, Mbatsha S, Goudge J, et al. Geographic patterns of deprivation and health inequities in South Africa: informing public resources allocation strategies. Cape Town: Health Economics Unit and Centre for Health Policy; 2000.

11 McIntyre D, Muirhead D. Undertaking small area research to explore deprivation and resource allocation issues. (SARDRA): Key Issues. Harare: Equinet; 2002.

12 Brijlal V, Hensher M. Estimating the Costs of Implementing the Primary Health Care package. Health Financing and Economics Directorate. Pretoria: National Department of Health; 2000.

# District Health Systems and Local Government Developments

5

**Ross Haynes and Wendy Hall**
Health Systems Trust

*The provinces have, in the absence of strong national leadership, national legislation and clear strategic direction over the past eight years, attempted to fill the vacuum with the introduction of their own legislative frameworks and policies. These generally differ from each other and from the policy direction given by the national Department of Health (NDoH) in February 2001. This chapter reviews the variations in current provincial legislation and strategic planning resulting from these uncoordinated processes.*

*Expected changes in the next draft National Health Bill suggest that, with the exception of environmental health, which will become a local government responsibility, the remainder of PHC will be a provincial responsibility. Although provinces will remain responsible for the funding and planning of these PHC services, it is expected that over time they will be delegated to Metro (type A) and District (type C) Councils for implementation. In turn it is envisaged that District Councils will be able to delegate the rendering of services to Local Municipalities (type B).*

## Introduction

The anticipated passing of the November 2001 National Health Bill into law did not materialise during 2002. The Bill has been redrafted after being scrutinised by and discussed with the National Treasury, the Department of Provincial and Local Government and other stakeholders and is currently with the State Law Advisors. This redraft could be tabled in parliament early in 2003, although indications are that it may be later in the year or only in 2004. The legislative vacuum for establishing the district health system (DHS) thus continues.

In the absence of strong national leadership, national legislation and clear strategic direction over the past eight years, the provinces have attempted to fill the vacuum with the introduction of their own legislative frameworks and policies. While provincial autonomy within the broader policy framework accommodates this, the provinces' health legislation differs somewhat from one another and from the policy direction given by the national Department of Health in February 2001. Some provinces have followed the national policy guidelines rather than their own legislated direction. During 2002 they established Provincial Health Authorities (PHA) and, in some provinces, District Health Authorities (DHA), even where these structures had not been included in their provincial health Acts or Bills. These structures have begun their work with varying degrees of effectiveness.

The overall policy direction for health services has not changed. The Health Minister/Members of Executive Committees (MinMEC), on 25 July 2002, again reaffirmed their vision of Primary Health Care (PHC) being delivered through a municipality-based district health system.

In this chapter the variations in current provincial legislation and strategic planning resulting from this uncoordinated process are reviewed. This chapter also reviews some of the changes that are expected in the next draft National Health Bill and their implications in the implementation of the vision for DHS in all provinces.

In summary it is expected that with the exception of environmental health, which will become a local government responsibility, the remainder of PHC will be a provincial responsibility. Although provinces will remain responsible for the funding and planning of these PHC services, it is expected that over time theses services will be delegated to Metro (type A) and District (type C) Councils for implementation. In turn it is envisaged that District Councils will be able to delegate the rendering of services to Local Municipalities (type B).

## Part I: Policy and Legislation for a DHS in South Africa

### National policy and vision

National health policy for a DHS was first set in the early 1990s through the African National Congress (ANC) Health Plan.[a] Subsequently, it has been expressed in a number of other documents such as the Reconstruction and Development Programme and the White Paper for the Transformation of the Health System.[1]

The National Health Bill of November 2001 has been redrafted. The redrafted version (August 2002) has been approved by cabinet and at the time of writing is being scrutinised by the state legal advisor. The Health MinMEC has reaffirmed the NDoH's policy direction as PHC being delivered through a DHS.[b] The policy envisages the creation of 53 'health districts' based on the boundaries of the six metropolitan councils and the 47 district municipalities. It furthermore characterises the DHS in terms of:

- Provision of comprehensive district health services (i.e. the PHC package plus district hospital services)
- A district health plan that is part of the Local Government district Integrated Development Plan (IDP)
- A structure and processes to ensure cooperative governance, joint planning and seamless service provision
- Joint funding from municipalities and the provinces
- A single health budget with clear components or budget lines
- A single health management structure
- All staff being part of a single public service; and
- All staff being ultimately employed by the district (or metro) municipality.

### Definition of municipal health services

The Constitution[2] (Section 156(1)) states that local government is responsible for the delivery of 'municipal health services' (MHS). The constitution does not, however, define MHS. In July 2002 MinMEC agreed that MHS should be narrowly defined as 'environmental health services', in contrast to the earlier proposal of a broader definition.[c,3] This decision was confirmed in Cabinet discussions on 9 October 2002. This definition is expected to be included in the next draft National Health Bill. This narrow definition of

a A National Health Plan for South Africa. Prepared by the ANC with the technical support of WHO and UNICEF (May 1994).
b According to a national Department of Health discussion document, 31 May 2002.
c The Draft National Health Bill, November 2001, gives a broader definition of municipal health services and includes 'environmental health services, promotive and preventative health services and other health services that are rendered by other municipalities at the time of coming into operation of this Act'.

MHS means that mobile clinics, clinics, community health centres and district (level 1) hospitals will remain the constitutional responsibility of provincial government.

National health policy, however, still appears to favour the long-term vision of local government being responsible for the full package of district health services (up to and including district hospitals). In order to accommodate this, MinMEC envisages provincial governments delegating, through service level agreements and with the necessary resources, other PHC services to a district or metropolitan municipality where the capacity exists.

This decision has financial implications. About R1 billion of municipal revenue (taxes and rates levied by local government) is currently being spent on PHC services other than environmental health. Legally speaking, local government is only obliged to (and some argue may only) fund MHS. Application of the narrow definition of MHS may therefore lead to a R1 billion reduction in the total pool of funds available for PHC services. About 80% of this stems from metropolitan and the larger district municipalities. It can be argued however that this money will not be lost to health improvement if used by the municipalities for infra structural improvements such as water, sanitation and housing, or for poverty alleviation.

If local government withdraws funding for non-environmental health services, these services would then have to be funded from the provincial health budget. The NDoH and Department of Finance are discussing mechanisms to allow this to happen.

In line with the Municipal Structures Act amendment, as per Cabinet discussions on 9 October 2002, proposed legislation also stipulates that the authority and responsibility for MHS will lie with the metropolitan and district councils only. This means that the authority for local municipalities to render health services is withdrawn. The Minister of Provincial and Local Government's press release of 7 November 2002, confirms that a two-year transitional period is envisaged, meaning that the status quo for municipal health will continue until 1 July 2004. During the transitional time municipalities that are currently performing health services beyond the accepted definition of municipal health (viz. environmental health services only) must continue to do so, but should enter into service level agreements with provincial governments in this regard.

It is also possible for district municipalities to delegate powers and functions to local (B) municipalities, thereby appointing the local municipality as its service provider.

## Provincial structures and governance

At the provincial level the latest MinMEC decisions envisage the establishment of a Provincial Health Council. The Council will comprise a Member of the Executive Council (MEC) for Health, a councillor from each metropolitan and district council within the province, the head of the provincial Department

of Health (PDoH) (ex officio), representatives from local government management and any other relevant person appointed by the MEC. The Council is to be advisory to the MEC on health matters such as intergovernmental policy, proposed legislation, requests from District Health Councils (DHC) for functions to be delegated or assigned to them, management of health districts and implementation of national policy.

The establishment of a Provincial Health Advisory Committee (PHAC) has also been discussed and is expected to consist of the head of the PDoH, a representative of the provincial local government association and representatives (ex officio) of local government management. The function of the PHAC is to consider any health matters referred to it and to report its findings to the Provincial Health Council, make recommendations to the Provincial Health Council, coordinate implementation of intergovernmental policy and ensure the integration of national and provincial health plans.

The PDoH is responsible for preparing, with the concurrence of the governance structures, plans for the delivery of health services within the province and to ensure an equitable distribution of the services and resources. These are to be in line with national policies and guidelines. The PDoH is also required to determine the time frames, guidelines and format of district health plans within the province and ensure that these link with relevant Integrated Development Plans (IDPs).

The MEC for Health is ultimately responsible for ensuring the effective management of health districts and sub-districts in the province.

Health care services that are delegated to local government from the province will be done through service level agreements, between the MEC for Health and the District Municipality concerned. The MEC is required to make available the resources for the delegated services, set standards for monitoring and to set the terms under which the agreement can be terminated.

A provincial consultative body to promote and facilitate interaction, communication and sharing of information on provincial health matters with the wider community of health service users is also envisaged. The responsibility for establishing this body lies with the MEC for Health.

## Health district structures and governance

At district level the July 2002 MinMEC decision envisage the establishment of a DHC.[d] The envisaged composition of the council comprise a member of the metropolitan or district municipal council (as chair), an appointee of the MEC to represent him/herself, a councillor from each local municipality in the district and any other relevant person as decided (in consultation with

d The Draft National Health Bill (November 2001) required the establishment of a District Health Authority through provincial health legislation by the MEC for Health in consultation with the MEC for Local Government. No details of membership or function were included.

the district municipality) by the MEC for Health. The role of the DHC will be to promote cooperative governance, ensure coordination of planning, budgeting, provision and monitoring of health services and to advise the MEC (through the Provincial Health Council) and the municipal council on any matter regarding health services in the district.

District health plans (these have not been referred to in the paragraph above) will be prepared by each metropolitan and district municipality and will be presented to the MEC for Health. These plans must be developed in accordance with national and provincial policies and guidelines and the requirements of the IDPs for the district as prepared in terms of the Local Government Municipal Systems Act (Act 32 of 2000).

## Part II: Comparative Analysis of the Provinces

In the absence of a national legislative framework for DHS development, some provinces have developed their own legislation, policies and implementation strategies, although generally informed by national DHS policy. The provincial Acts show numerous variations. These variations are partly due to the fact that these Acts were drafted at different times and they were based on the then current national policy guidelines. The analysis summarised in Table 1 below, is drawn from the HST publication, 'The Long Road to the District Health System'.[4]

Readers should note that this section is based on the legislative and structural picture as at August 2002,[4] except for a recent addition on cross-boundary municipalities. Subsequent health policy and legislative developments emanating from national level have introduced considerable changes, although these had not been confirmed at the time of writing and are therefore not included.

### Legislation

**Health Acts**

In the absence of a National Health Act, four of the nine provinces (Eastern Cape, Free State, KwaZulu-Natal, Limpopo) have passed their own health Acts. Three other provinces (North West, Mpumalanga, Northern Cape) have health Bills that will be amended and finalised once the National Health Act is passed. The other two provinces (Gauteng, Western Cape) passed Acts dealing with other aspects of health delivery. All the Acts pre-date the December 2000 local government elections and the Health MinMEC meeting of February 2001 at which a number of policy decisions on DHS development were made.

The Acts are very different in content and presentation and will all require significant amendments to enable them to be in line with any future national legislation.

**Table 1: Summary of provincial rapid appraisals – state of DHS and decentralisation**

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalalnga | Northern Cape | North West | Western Cape |
|---|---|---|---|---|---|---|---|---|---|
| **LEGISLATION** | | | | | | | | | |
| Provincial Health Act in place? | Yes – Act 10 of 1999 | Yes – Act 8 of 1999 | No change – but District Health Services Act of 1998 | Yes – Act 4 of 2000 | Yes – Act 5 of 1998 | No – being drafted | No – draft discussed by legislature but not passed | No – but North West Health Bill drafted | No – WC Health Facilities Board Act 7 of 2001 |
| Legislative commitment to DHS? | Yes – Chapter XIV | Yes | Yes | Yes | Yes | No Act | No Act | Yes | No Health Act |
| Provision for decen-tralising health to Local Government? | MEC may devolve | Yes – authorise | Yes – delegate or assign | MEC may delegate | Yes | No Act | No Act | Yes – delegation or transfer | No Health Act but cabinet resolution |
| **DEMARCATION** | | | | | | | | | |
| Number of DMs,[e] LMs[f] and Metros | 6 DMs<br>37 LMs<br>1 Metro | 5 DMs<br>20 LMs | 3 DMs<br>3 Metros | 10 DMs<br>50 LMs<br>1 Metro | 6 DMs<br>26 LMs | 3 DMs<br>17 LMs | 5 DMs<br>25 LMs | 4 DMs<br>22 LMs | 5 DMs<br>20 LMs<br>1 Metro |
| Alignment (i.e. health boundaries co-terminous with LG boundaries) | Yes – No structure at DC[g] level | Yes – Health Districts = DC | Yes – Health District = DC or Metro | Yes – Health District = DC or Metro | Yes District = DC | Yes – Health District = DC | Yes – Health District = DC | Yes – Region = DC | No – using old regions outside the Metro |
| Province has cross-boundary municipalities? | No | No | Yes – 2 Mpumalanga and North West | No | Yes – 2 Mpumalanga | Yes – 3 Limpopo and Gauteng | Yes – 1 North West | Yes – 2 Gauteng and Northern Cape | No |
| Health sub-districts defined? | 25 | Local service areas | 27 | Not finalised | 18 | 16 | Nil envisaged | 22 | Not defined – Metro being sub-divided |

e DM = District Municipality – C Category
f LM = Local Municipality – B Category
g DC = District Council

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalalnga | Northern Cape | North West | Western Cape |
|---|---|---|---|---|---|---|---|---|---|
| **PROVINCIAL LEVEL – structures and implementation** | | | | | | | | | |
| Legislated structures | Nil specified | PHA, PHAB | PHA, no change | PHA, PHAC, PHF | PHCF | No Act | No Act | PHA, PHMC | No Health Act |
| *Implementation of structures* | PHA – Feb 2002. Meeting, but TOR not ratified | PHA and PHAB established Aug 2001. Meeting regularly | PHA established Jan 2001. Meets bimonthly. PHAC established May 2001 Meets 6 weekly | All three legally established but none have yet met | PHWA meets regularly; PHAC (equivalent to PHCF) | PHA established 2001; met March 2002 TOR under discussion | IPHA established meets regularly IPHAC – to be established | PHA established July 2001 PHAC – to be established | PHA established Nov 2001 |
| Strategic Plan available | Not clear | Yes, on web site. | Yes | Unknown | Being developed | No – being developed | Yes | Yes | Yes – focus on Metro |
| - promotes DHS development? | Yes | Yes | Yes | | Yes | | Yes | Yes | Yes |
| - intended level of decentralisation (to DM unless otherwise stated) | All PHC, possibly to include hospitals in some districts | PHC – not hospitals | PHC – not hospitals | | PHC – not hospitals | Likely to be Environment Health only | PHC – not hospitals | PHC – not hospitals to LM | PHC, not hospitals – Metro initially |
| **DISTRICT LEVEL – structures and implementation** | | | | | | | | | |
| Legislated structures | DHA, DHC | DHA, DHC | DHA, no change | DHA, DHAC, DHF | DHA | | | DHA, MHA | |
| *Implementation of structures* | DHA – some established TOR to be determined | DHA – launched Feb 2002 | DHA = DC or Metro Council | None established | In process | DHA TOR under discussion | Nil established | DHA – planned at DC level | DHA – not established |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalalnga | Northern Cape | North West | Western Cape |
|---|---|---|---|---|---|---|---|---|---|
| **COMMUNITY LEVEL – structures and implementation** | | | | | | | | | |
| Legislated structures | Health councils, hospital boards, advisory committees | Community Health Committees | Hospital Board, Community Health Committees Provincial Health consultative forum | Hospital Boards, Clinic Committees, PHF, DHF | Health Service Facility Boards | | | Community Health Committees | |

### Provision for decentralisation to Local Government

All the Acts make provision for the provincial MEC for Health to 'delegate', 'assign', 'transfer' or 'devolve' health services to local government. In most provinces, this was to be to a District Health Authority (DHA) located at the level of the metropolitan or district municipality. The signing of a Service Level Agreement between the MEC for Health and the DHA is also included. North West Province's Health Bill, however, envisages decentralisation to the local (B) municipality level and the establishment of a Municipal Health Authority (MHA).

### Demarcation

All the health Acts require health districts to be aligned to municipal boundaries. This process has been completed in most of the provinces. In the non-metro parts of the Western Cape, the old health regions are still being used as management units.

In some provinces further sub-division into health sub-districts (Eastern Cape, Limpopo, Mpumalanga, North West) has taken place, with boundaries being coterminous with one or more local municipalities. In an exceptional case in the Eastern Cape the division of one local municipality (Umzimvubu) into two health sub-districts is being discussed. The Northern Cape does not plan to sub-divide health districts below district municipality level. In the metros, subdivisions into 'service areas' are envisaged, with two cities, Johannesburg and Cape Town, having completed the process by August 2002.

Cross boundary district municipalities have experienced tremendous challenges in trying to jointly administer their service delivery responsibilities. Some provinces have signed Memorandum of Understanding (such as Gauteng and North West). This problem has been recognised and the President's Coordinating Council has resolved that no municipality should cross provincial boundaries.

## Provincial level

### Structures

The provincial health Acts legislate for different provincial governance structures, although most legislate for the establishment of a PHA, with differing relationships between the PHA and the MEC.

Despite the differences in legislation, all but one of the provinces (KwaZulu-Natal) established PHAs between early 2001 and early 2002, in accordance with the MinMEC decisions of February 2001. The regularity of the PHA meetings varies.

Composition of the PHAs varies, although all are chaired by the MEC for Health and all have representation from each district municipality and metro in the province. Organised labour is normally represented, as is the Head of the Department of Health, usually ex officio. Representation is widened in

some provinces to include the MEC for Local Government (Northern Cape, Gauteng and Free State) and Housing and the Head of the Department for Local Government (Northern Cape and Gauteng). The Northern Cape has included a local municipality representative.

**Strategic plans for DHS and decentralisation to Local Government**

The provincial Acts and Bills show commitment to establishing a DHS and the decentralisation of PHC services to local government. This commitment is however not always reflected in clear, medium-term strategic plans with feasible timeframes delayed due to awaiting national decisions. Well formulated strategic and business plans that are well communicated to their health workers and community members are available in some provinces. Others have detailed plans for phased decentralisation, even without supporting legislation.

Joint planning processes with the Department of Local Government have occurred in most of the provinces.

The provinces have developed various approaches regarding decentralising health services to local government. Mpumalanga stipulated that they would not decentralise PHC services other than environmental health services, although this would however be contrary to the vision of a municipality based DHS. The Eastern Cape has varied its approaches and at one time was considering decentralising district hospitals as well, particularly in the ex-Transkei and Ciskei areas of the province where there is historically a close link between hospitals, clinics and community services.

The Western Cape had arguably progressed the furthest towards the full decentralisation of PHC with the signing of an in-principle agreement between the PDoH and the City of Cape Town for the transfer of staff in July 2002. This process has, however, been put on hold until national legislation and policies are finalised. In Gauteng there is a firm proposal for the seconding of all provincial PHC staff in line with MimMEC Nov. 2002 to the City of Johannesburg Metropolitan Council with effect from 1 July 2003.

## District level

**Governance structures**

As with provincial structures, the provincial legislation varies in its envisaged district structures. These will be changed once national legislation is enacted.

All the provincial Acts provide for establishing DHAs, although the relationship between these structures and the PHA and/or the Health MEC varies. The process of establishing DHAs at the District Municipality level has commenced in many provinces. The Free State has a complex relationship between the DHA and DHC resulting in the DHA being a structure combining governance and management.

Those Acts that make mention of service level agreements envisage agreements

being between the provincial MEC for Health and the DHA, making the DHA the body that would be charged with service delivery within the health districts.

### Management structures

The lack of clear policy direction has resulted in a wide variation in establishing district and sub-district health management teams. At district municipality level some provinces (Free State, Limpopo, Mpumalanga, Northern Cape) have health managers who were, prior to the re-demarcation process, part of the now defunct regional offices. The Eastern Cape has provincially-appointed Sub-district Health Managers and district municipality-appointed Directors for Social Services and Development, whose responsibilities include health. In the North West, PDoH and district municipalities are appointing health leaders in consultation with each other.

At the health sub-district level there are variations between the provinces and even within the provinces. Certain provinces have made permanent appointments in some sub-district leadership posts, while their colleagues in similar posts are still working in an acting capacity. In other provinces such as Mpumalanga, there are no health management teams at sub-district level.

Provincial and local spheres of government are currently both delivering health services in areas with history of strong local government. Duplication of services is partially being overcome through a process of voluntary functional integration.[h]

## Community level

### Structures

Community participation is provided for in all the Acts through various structures, such as hospital boards, clinic committees and health forums. The structures vary between provinces in composition, function and lines of accountability.

Some community structures are established and functioning, but this varies between and even within each province. Generally speaking, there are more active clinic committees and other community structures in the rural areas, particularly in the old homeland areas, than elsewhere in the provinces. For example in the Eastern Cape, hospital boards and clinic committees are in place and have received specific training regarding their roles and functions. In Gauteng community participation is mainly through the ward committees and other local government community structures that are not health specific.

h Functional integration is bringing together of the services provided by the provincial and local spheres of government so as to eliminate duplication and fragmentation, to ensure that the users experience the service as being seamless and there is an increase in efficiency in the provision of health services.

## Part III: The Way Forward

The legislative vacuum in which the DHS has been floundering for the past eight years has been very costly, as explained below. Part II of this chapter illustrated some of the resultant differences between and within provinces. Changes in policy direction affecting all public sectors have confused and demotivated mid and ground level workers. Poor communication compounds the lack of clear direction.

The health service's challenge for 2003 will be in preparing for the anticipated changes of the next draft National Health Bill. Health policy makers and managers must consider how best to use the wide range of implementation strategies that already exist in the provinces and to plan amendments to present provincial legislation to bring these in line with national legislation and policy.

The proposal to define MHS means that all other (or non-MHS) health services would remain the responsibility of the provincial government. To attain the country's vision for health services, i.e. a municipal-based DHS, would in time require all non-environmental health services to be delegated to the district municipalities and metros. The process to achieve this requires careful planning and implementation. Service level agreements developed in the spirit of cooperative governance and trust are envisaged as a critical part of the road forward, especially in the two-year transition period mentioned below.

A national task team is developing a pro forma document to assist provinces in introducing service level agreements. A national level team has also developed a guide to facilitate functional integration between local government and provincial services at all levels of the health services.

Until the National Health Act is finally enacted, progress in DHS development is likely to be disjointed and piecemeal. The impressive variety of provincial health Acts, health strategies, and other policy documentation is attributable to each province's best efforts to interpret national health policy and implement their understanding of it. Swings in policy direction have left health managers confused and wary. It's now safer to await the Act than to predict direction, lest today's flavour is not that of tomorrow.

Repeated calls have been made for improved communication between the 'top' and the 'bottom' levels and spheres of the health delivery structures. Policy formulated at the national level frequently appears to reach the implementation levels more by accident than by design, and sometimes not at all. New structures are being put in place such as, establishing the district health system, yet old channels of communication are still followed, thereby undermining the authority of the newly created structures.

## Strategic decisions and plans

The Health MinMEC has given clarity on the definition of MHS and the finalisation of the boundaries of health districts facilitated progress. A Cabinet's decision of 9 October 2002 endorsing the Minister of Provincial and Local Government's authorisations clarified that district municipalities (and not local municipalities) are to be responsible for MHS, although a district municipality could appoint a local municipality as its service provider.

The Cabinet's decision of 9 October 2002, also resolved that municipalities that are currently performing health services beyond the accepted definition of MHS should continue to do so, but should enter into service agreements with provincial government in this regard. To facilitate the transition within this sector, a two-year transitional period has been allowed. This means that the status quo for municipal health will continue until 1 July 2004. Municipalities are compelled to continue providing services to the current levels until then.

Progress in DHS development and decentralisation of health is, however, still dependent on finalisation of national legislation. Current policy direction points to provinces delegating all district health services to district and metropolitan municipalities in the long term. The timetable for this delegation is debatable.

The current human resource management problems related to the transfer of staff from provincial to local government and vice versa, and to disparities in terms and conditions of service, have been recognised. The Department of Public Services and Administration (DPSA) is developing a framework for the creation of a single public service, which will facilitate implementation of the NDoH's vision of a single national health system.

Despite identifying these key decisions, each province still requires a clear strategic plan providing solutions to the following issues:

### Governance

Mechanisms and structures are required to enable provincial and local government to jointly 'govern' district health services in any particular health district. For this to happen, a match must be found between the district council's governance responsibilities and wishes and the provincial government's commitment to delegate primary health care responsibilities other than MHS to local government, using service level agreements.

So too must the relationship between the DHC and the Provincial Health Council, the District Council, hospital boards and clinic committees be clarified and formalised.

### Timeframes

Indications are that delegation of non-MHS will be matched to local government's capacity to deliver services. Some form of measurement will

thus be required to measure municipal capacity to deliver such services. A decision in principle is also required confirming that district health services:

- Will be delegated at different paces from one municipality to another, and
- Will be delegated incrementally in phases (for example start with clinics and delegate district hospitals later).

**Functional integration**

Incremental delegation of district health services in phases will require a clear strategy on how provincial and local government management structures will cooperate and work together to provide a seamless and integrated package of comprehensive district health services.

Measures must be in place to avoid the dangers of splitting the responsibility for district hospital services from that of clinics.

Since cooperative governance aims at cooperation, trust, common purpose, mutual responsibilities and efficiency, service level agreements between the PDoH and district/metro councils must be designed to promote these. Dispute resolution mechanisms must be included.

With MHS now defined and the vision still being to delegate the non-MHS district health services to local government, decisions will be required on secondment or transfer (currently not possible) of provincially-employed staff providing non-MHS to local government; and whether local government-employed staff who are providing non-environmental health services will remain as local government employees or be transferred to provincial government.

**Financing and costing**

Provinces will require adequate budgets, based on realistic costing, to enable district and metropolitan municipalities to deliver the delegated package of non-MHS district health services.

Clarity is required about whether non-MHS funding will come from national or provincial budgets. Appropriate transfer mechanisms must be in place.

If current inequities are not to be compounded, special mechanisms will have to be devised to support districts with inadequate tax bases to fund their MHS responsibilities.

**Communication**

Clear decisions are required concerning who needs to know what to be able to achieve the aims of a decentralised health delivery system. Once defined, clear strategies must be put in place to promote such information sharing, together with monitoring mechanisms to ensure that the desired communication is in fact happening.

## Issues pertinent to the South African situation

In answering some of these questions, the following peculiarities about the South African situation must be kept in mind:

### The size and populations of 'health districts'

As can be seen from the following tables, district and local municipalities vary tremendously in geographical and population sizes.

**Table 2: Variation amongst district municipalities**

| District Municipality | Geographic size[5] ($km^2$) | Population size[5] | Population density (per $km^2$) | No. of district hospitals |
|---|---|---|---|---|
| Alfred Nzo (DC 44) | 7 969 | 615 501 | 77 | 3 |
| uMgungundlovu (DC 22) | 9 020 | 960 384 | 106 | 3 |
| Ehlanzeni (DC 32) | 14 112 | 921 602 | 65 | 8 |
| Chris Hani (DC 13) | 33 599 | 931 772 | 27 | 13 |
| Namakwa (DC 6) | 126 748 | 115 853 | 9 | 6 |

**Table 3: Variation amongst local municipalities**

| Local Municipality | Geographic size[5] ($km^2$) | Population size[5] | Population density (per $km^2$) | No. of district hospitals |
|---|---|---|---|---|
| Impendle (KZ 224) | 946 | 38 693 | 41 | 0 |
| Intsika (EC 135) | 3 614 | 234 826 | 65 | 1 |
| Umzimvubu (EC 05b2) | 5 533 | 428 494 | 77 | 2 |
| Thaba Chweu (MP 321) | 5 681 | 74 281 | 13 | 3 |
| Hantam (NC 065) | 27 975 | 20 185 | 7 | 1 |

For this reason, equating a district municipality with a 'health district' is not ideal. The provision for 'health districts' to be divided into 'health sub-districts', however, makes it possible for 'health districts' that exceed the World Health Organization's DHS criteria to be divided into more appropriately sized 'health sub-districts'.

### Two 'tiers' of local government

The Constitution provides for one level of local government but in reality there are two levels of operating. Although the amendment of the Municipal Structures Act states that the responsibility for the delivery of MHS lies with the district municipality, the existence of the two 'tiers' of local government outside the metropolitan areas poses its own challenges.

In several places, the strength and capacity of a local municipality is greater than that of its district municipality. Furthermore, local municipalities, not district municipalities, collect most of local government revenue resulting in a disjuncture between revenue collection (greater at the local municipality level) and responsibility (greater at the district municipality level). A resolution to this could be found in transferring that capacity and 'strength' from the local level to the district level. This would speed up the capacity development at the district level as well as enhance the sharing of capacity and equity within a district.

Another option for addressing this anomaly would be for the district municipality to sub-delegate responsibilities to local municipalities to run their own health services. Measures would, however, be necessary to ensure that inequities between strong local and weak local municipalities within a district are not entrenched, thereby retarding development of management and governance capacity at the district level. A third option might be for strong local municipalities to manage health service on behalf of the district municipality for the entire district area. This would maintain the integrity of the health district and promote equity and sharing, but might result in an unnecessary layer of bureaucracy between district and local municipalities.

**Variation in wealth, capacity and experience between municipalities**

As described earlier, some local municipalities have many years of local government experience. There are however parts of the country, particularly in the former homeland areas, with minimal or no previous local government experience. Accommodating this diversity presents a big challenge to policy makers. In addition, those areas with little experience also tend to be the poorest and with the greatest developmental needs. An affirmative and effective programme to develop local government capacity in these areas will be a prerequisite to the establishment of an effective and equitable municipal-based DHS.

**Cross-boundary municipalities**

Cross-boundary municipalities have all along presented implementation challenges, not the least of, which is two sets of provincial legislation and health policies applicable to one functional area.

Fortunately the President's Coordinating Council, on 1 November 2002, resolved that no municipality should straddle provincial boundaries. The Ministry for Provincial and Local Government has been given the responsibility to develop an implementation plan that will allow affected municipalities to be located within the jurisdiction of one province. Although not spelt out, this implies shifting of provincial boundaries.

## Conclusion

Each of the above issues and questions require clear and unambiguous answers and a plan to facilitate the required reorganisation and change within a feasible timeframe. Dynamic and consistent leadership at national and provincial levels is critical to ensure meaningful functional integration and cooperation between provincial and local government, and for relationships of trust and mutual respect to be developed.

The road ahead is still long, but with positive leadership, clear policies and guidelines, and clear and open communication between all stakeholders, it is potentially an exciting road for the health services. Should these critical qualities not manifest themselves, health workers could experience more of the confusion, which has characterised the health delivery system for the past eight years.

## References


1 National Department of Health. White Paper on the Transformation of the Health Sector. Pretoria; 1997.

2 Republic of South Africa, Constitution of the Republic of South Africa, 1996, Act 108 of 1996.

3 Department of Health. Draft National Health Bill. Pretoria; November 2001.

4 Hall W, Haynes R. McCoy D. The Long Road to the District Health System. Legislation and Structures for the DHS in South Africa: an appraisal as at August 2002. Durban: Health Systems Trust; 2002.

5 Barron P, Asia B. The District Health System. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds). South African Health Review 2001. Durban: Health Systems Trust; 2002.

# Environmental Health

6

**Kathy Eales, Shadrack Dau and Nompumelelo Phakati[a]**
Policy Unit: The Mvula Trust, Johannesburg

*This chapter reviews some recent developments in the environmental health sector and their implications for improved access to the basic services necessary for poverty alleviation, socio-economic development and health improvement, particularly in rural areas. It cannot be assumed that the excellent potential for improved coordination between environmental health and basic services provision, provided for in the National Health Bill, will be achieved. Far-reaching advocacy initiatives will be required by the Department of Health, other departments, the South African Institute of Environmental Health and broader role-players – notably civil society – to motivate municipalities to make the necessary staff and funds available to resource this role, and to strengthen inter-sectoral and inter-governmental relationships. In tandem with this, a far-reaching re-orientation is needed in the way environmental health professionals are trained, deployed and regard their own role.*

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## Introduction

When the National Health Bill is passed far-reaching changes will be underway in the health sector, which will have a significant impact on the way environmental health services are delivered. It is expected that the National Health Bill, will devolve responsibility for most environmental health services to metro and district municipalities, and redefine municipal health services so that they focus exclusively on environmental health. This is an extremely positive development, as it makes municipalities accountable for environmental health, makes their staff – not Province's – responsible for monitoring and promotive work in line with locally identified needs and priorities, and shortens the referral chain where problems arise.

Recent outbreaks of cholera in Mpumalanga, KwaZulu-Natal and the Eastern Cape since 2000 serve as a reminder of key challenges in the environmental health sector. The extent and ferocity of the outbreaks underlined how severe the backlogs in basic services really are, and indicated that there has possibly been a greater focus on curative care as opposed to prevention and control. Moreover, the outbreaks exposed an acute shortage of Environmental Health Practitioners (EHPs) in rural areas – in some areas, there simply were not enough EHPs available locally to contribute to local primary health care (PHC) teams, so additional personnel had to be brought in from other provinces to provide emergency support.[b]

Municipalities have primary responsibility for the provision of basic services – water, sanitation, waste management and electricity. Each of these services has profound implications for public and environmental health, however due to lack of resources and poverty, some communities have no access to these services.

The 1996 Draft National Environmental Health Policy specified the need for a move away from the old 'health inspector' model, with its emphasis on monitoring, control and sanctions. In its place, the policy calls for a community development approach, which focuses on promoting environmental conditions conducive to health. EHPs must increasingly play the role of educators and facilitators, involved in the monitoring, assessment and representation of community demands and needs, and in motivating for the supply of essential services and structures by the local authority.

Thus the devolution of environmental health to municipalities offers enormous opportunities for integrating environmental health with development planning and provision of basic services across all sectors. Unfortunately environmental health is not currently a high priority in municipal budgets, and it remains to be seen whether this important function receives the resources and support it requires. In addition, many environmental health posts at local government

b Andre Swart, Head of Department of Environmental Health.Technikon Witwatersrand. Personal communication, 20 September 2002.

level are frozen, in part because of ongoing restructuring within local government.

This chapter reviews some recent developments in the environmental health sector and their implications for improved access to the basic services necessary for poverty alleviation, socio-economic development and health improvement, particularly in rural areas. It draws on the insights of professionals in the environmental health and water services sectors.

**The work of environmental health practitioners**

EHPs focus on primary environmental health protection, through identifying, monitoring and evaluating risks and planning interventions which relate to a range of environmental hazards – microbiological, chemical or physical – whether in the home, at work, in the street, and so on.

EHPs have a key role to play in monitoring the quality of local service provision, minimising hazards and promoting understanding of simple measures to improve the basic health and hygiene of vulnerable communities.

Their work ranges from educating hawkers on the importance of good food hygiene, to advising municipalities on waste management and refuse removal, monitoring a range of potential environmental health risks – particularly those relating to water, air and food quality, identifying and addressing health nuisances, and liaising with nurses, laboratory staff and medical officers in investigating and addressing the outbreak of infectious diseases. In industrial settings, there is a large occupational health focus to their work. In rural and informal settlement areas, monitoring water, waste and sanitation services are a high priority. A growing component of their work is proactive and educational, so that potential hazards can be understood by local residents, identified and addressed before they become a problem.

EHPs thus have the potential to play an important role in supporting the integration of primary and preventative health care measures within municipal health services, promoting understanding of good basic health and hygiene on the ground and among decision-makers in all sectors, focusing attention on the health impacts of service provision, and promoting integrated development planning.

## The Draft National Health Bill and Environmental Health

In line with the Constitution, it is anticipated that the Bill will define Municipal Health Services (MHS) as addressing environmental health exclusively, and assign responsibility to district municipalities for the following environmental health functions:

- Monitoring water quality and availability, including mapping of water sources in relation to pollution and contamination, protection of water sources, water sampling and testing, and implementing health, hygiene awareness and education campaigns
- Food safety and hygiene monitoring
- Waste management and general hygiene monitoring, including waste disposal and sanitation advocacy
- Premises health surveillance

- Communicable and environmental-related disease control and monitoring
- Vector control and monitoring
- Environmental pollution monitoring, including air quality
- Disposal of the dead
- Radiation and safe energy-use monitoring and control
- Chemical safety
- Noise control.

According to the Constitution and the principles of cooperative governance, every municipality – regardless of whether it is a District, Metropolitan or Local municipality – and every sphere of government has an obligation to ensure a safe and healthy environment.

At national level, the Environmental Health Directorate (EHD) within the Department of Health (DoH) will focus primarily on driving national policy, strategy and research, and defining norms and standards.

Provincial environmental health services will focus on port health services, malaria control, coordinating interventions where a crisis poses a regional health risk (such as a cholera epidemic), providing environmental health-related support to municipalities, and monitoring compliance with legislation.

The EHPs currently employed at provincial level and undertaking functions defined as MHS (as defined in the draft Bill) will be transferred to metros and district municipalities. How municipalities are to fund provision of MHS is still unclear. There are however, several possibilities: (a) provinces currently rendering these services will make the resources available to municipalities to render these services; (b) national and/or provincial Treasuries will make funds available to municipalities to render these services; and (c) municipalities will be expected to use locally generated funds to render these services. A mix of sources of funding will be possible for example some national or provincially allocated funds combined with locally generated funds.

Experience in the water sector suggests that the assumption of responsibility for environmental health services by District municipalities will not be as simple as this outline suggests. Ongoing confusion over the respective jurisdictional powers and functions of Category B (local) and Category C (district) municipalities in relation to planning and provision of water services is delaying provision of basic sanitation and water services in some areas, while at least one District municipality has taken government to court over whether it, or a local municipality, should receive equitable share funding for the provision of basic services.

Only a few District municipalities have begun to develop environmental health strategies, and it is likely that service agreements will be drafted by Category C (District) municipalities to authorise Category B (Local) municipalities to

provide services on their behalf.[c] While this strategy is pragmatic in many respects – given that capacity is frequently stronger at local municipality level – it raises important questions as to how equitably services will be provided and how well coordinated the respective strategies of different local municipalities will be within a broader district municipality. Most EHPs are urban-based, concentrating on the major towns, and tend to focus on urban needs; a lack of transport and budgets tends to reinforce this bias. Despite far-reaching demarcation changes, EHPs tend to focus on the areas they previously served, and are not necessarily able to address broader needs, particularly those in under-served rural areas.

Moreover, while District municipalities have a management and oversight role, funding is more concentrated at local level. Thus it is conceivable that an EHP may identify an environmental health problem, yet report to a municipal authority which lacks the resources to intervene. What is clear is that local government must be encouraged to budget appropriately for environmental health services, and to address environmental health as an integral part of an Integrated Development Plan (IDP). All too often the value of EHPs' role is acknowledged only when disaster or disease strikes – yet health budgets at all levels of government can be reduced through preventative environmental health measures and timeous monitoring.

## Human Resource Challenges in the Environmental Health Sector

The next two years are likely to see considerable disruption in the provision of environmental health services as personnel are transferred from Provincial to Metro and District level, and from District to Local municipalities. It is hoped that promulgation of the new National Health Act will end the era of moratoria on the appointment of provincial environmental health staff, and accelerate the appointment of staff at municipal level, thereby redressing severe staff shortages.

In 1999, the SAHR reported a national shortfall of 2 323 EHPs,[1] a deficit of well over 50%. Although work has been commissioned to update these statistics the results have not yet been released. The national Department of Health (NDoH) estimates that the shortfall has fallen from over 50% to nearer 25%.[c] However, the NDoH has revised its benchmark ratios. The 1999 statistics were based on a total population of 40.5 million, with target ratios of 1 EHP per 10 000 population, in line with World Health Organization recommendations. The new target ratio for South Africa is 1:15 000, and updated statistics are likely to be calculated off a higher total population. While the ratios may improve, there remains an acute absolute shortfall of personnel to undertake the work required, and the experience of EHPs in the provinces and municipalities bears this out.

c Mr. Zama Zincume, Acting Director Environmental Health, National Department of Health. Personal communication 16 September 2002.

Roughly 50% of the population lives in rural areas – yet an estimated 75% of EHPs work in urban areas, and while there have been improvements in staffing ratios in KwaZulu-Natal, Eastern Cape and Mpumalanga, the biggest single increase is in port health services, where the number of personnel has increased by roughly 80%.[c] Port health services are important, and an increase in the number of EHPs addressing this function will ease the burden on other EHPs straddling several functions. Nonetheless, port health services have a relatively narrow focus, and will have little impact on making personnel available to serve communities in rural areas.

Underpinning this shortage of personnel has been a moratorium on new EHP appointments at provincial level, because of the pending devolution of environmental health functions to municipalities. In addition at municipal level, many posts remain frozen.

There is no shortage of qualified EHPs at present. Ten technikons provide a three-year course in environmental health management, and roughly 250 students graduate each year. In the past, provinces and municipalities would recruit new personnel directly through the technikons, and most students found employment. However in 2002, according to a representative of one of the leading schools, Wits Technikon, less than three in ten students find work in provincial or local government on graduation. The remainder leave the sector, or work for the private sector or parastatals such as water boards. Already technikons are reporting a decline in the number of applicants wanting to be trained in environmental health.[b] Unless employment opportunities for graduates improve, South Africa faces a looming shortage of EHPs at precisely the time when the policy and legislative framework is opening up space for them to be more effective on the ground.

Personnel shortages mean that most EHPs are 'fighting fires', and simply do not have the time or resources to undertake anything more than reactive health inspections and monitoring. This compromises their potential impact on broader environmental and community health, and reinforces perceptions at municipal level that environmental health is a relatively low priority, requiring limited resources.

One remedial strategy that can be put in place immediately, is to revise the way EHPs report on their activities at municipal level, so as to focus attention on the enormous value of their work for public health. Instead of simply listing the number of food vendors or vacant stands inspected, the number of complaints attended to, or the number of water quality samples tested, EHPs should take the initiative in highlighting the value of preventative health measures and monitoring and alert those who decide on budget allocations how their work impacts on public health, and what cost savings derive from their work. Proactive community-level hygiene education and awareness campaigns, coupled with timely water quality monitoring, for example, can limit outbreaks of diarrhoeal and other diseases.

If government is indeed to balance preventive and curative health care services, the importance of the contribution EHPs can make must be understood and acknowledged at municipal level, and must be supported through appropriate resourcing. This includes provision for funded overtime so that EHPs can engage with communities after hours and over weekends, when people are home from school and work.

## Re-orienting sectoral training

A new approach to skills development will see the emergence of two streams of environmental health specialists, with a greater emphasis on professional competence, rather than book learning, in line with the National Qualifications Framework.

From 2004, the training of environmental health personnel will allow for an exit level qualification after two years. These students will qualify as Environmental Health Assistants (EHAs), and will work under the supervision of registered EHPs. The existing three-year qualification will be extended to four years to accommodate an expanded curriculum, and only these graduates will be eligible for registration as independent practitioners. In this way it is hoped to provide supplementary capacity for the routine inspections that currently occupy roughly 70% of the time of skilled professionals, thereby freeing up the more senior EHPs for more specialised work.

Emerging environmental health policy is enabling, rather than prescriptive – yet comparatively few EHPs have the kind of facilitation skills needed to engage people in discussion of the causes of local environmental health problems, and what steps they can take to remedy them. Moreover, if EHPs are to move beyond a law enforcement role, they need to know how to challenge bad practices constructively and motivate the perpetrators to improve their practices.

There is growing acknowledgement that technikons must provide some training in facilitation as part of their core courses, yet the reality is that most technikon lecturers are themselves inadequately attuned to the nuances of current developmental practice. Training institutions need to adapt and equip themselves to address needs in the sector. Moreover, the curriculum is currently overloaded, with a high emphasis on theoretical knowledge, and limited training in practical application. As a matter of urgency, the critical skills needed by EHPs must be identified and prioritised, in consultation with employers and practitioners, with considerably more weighting given to facilitation skills. This is particularly relevant for the new category of EHAs.

Training institutions need to pay far greater attention to in-service training for EHPs to enable sectoral professionals to update their skills. Current initiatives tend to focus on broad management and transformation issues, specifically relating to clinical services, rather than the specifics of environmental health.

## Developments in the Sanitation Sector

### The relevance of sanitation

Recent developments in the sanitation sector provide a useful focus to explore the current gap between existing environmental health policy and practice, have significant implications for a massive new national sanitation improvement initiative, spearheaded by the Department of Water Affairs and Forestry (DWAF). The DoH is keen to see environmental health professionals playing a lead role in driving the health and hygiene promotion and awareness aspects of the programme – which is necessary to ensure lasting sanitation improvement – yet all the challenges identified above will have to be addressed if this objective is to be achieved.

Indeed, the sheer volume of support required in the sanitation sector alone underlines the scope of the challenge facing environmental health professionals and the municipalities who employ them.

## Sanitation developments since 1994, and the White Paper on Basic Household Sanitation

Good sanitation is a fundamental component of environmental health. Poor sanitation stresses people's health and their immunity to disease, and puts vulnerable groups – notably children, the elderly, and those living with AIDS and TB – at greater risk of illness. Oral-faecal diseases are common. Less widely acknowledged are the impacts of worm infestations on young children. Intestinal worms spread through open defecation rob young bodies of vital nutrients, leading to physical and mental stunting.[5]

Post 1994, DWAF undertook responsibility for water and sanitation improvement in the former 'homeland' areas. While rapid progress has been made in addressing water backlogs, with an additional seven million households served since 1994, progress in sanitation has been less dramatic.

In the absence of programme implementation capacity of its own, and in view of the non-existence of rural local government structures, DWAF worked with the Mvula Trust – a major water sector NGO – to develop a national sanitation programme methodology premised on outsourcing programme management to designated Implementation Agents, who in turn support and manage NGO and private sector project agents running community based sanitation projects at community level. Using participatory methodologies to identify local sanitation-related problems and plan ways to resolve them, local residents are directly involved in planning and implementing the sanitation projects. Early progress was slow while sectoral capacity was being built, but the pace of delivery has picked up considerably. To date nearly 90 000 toilet structures have been built in numerous projects around the country. Even more importantly, local understanding has been built around

why hygiene and sanitation matters, how to build safe, affordable and sturdy toilets, and how to sustain the benefits of improved hygiene and sanitation using locally available skills and resources. Through the DWAF funded national sanitation programme, which focuses on rural areas, the total number of people served with sanitation facilities since the start of the programme is 89 369. The number of people impacted through the health and hygiene programme is 155 301.[2]

**Table 1: Number of households served with sanitation facilities and people trained in health and hygiene per province – 1994 to 2002**

| Province | Toilets delivered (Households served) | Health and Hygiene (People Impacted) |
|---|---|---|
| Eastern Cape | 1 968 | 22 686 |
| Free State | 3 984 | 5 973 |
| Gauteng | - | - |
| KwaZulu-Natal | 35 251 | 27 946 |
| Limpopo | 15 818 | 1 533 |
| Mpumalanga | 3 105 | 37 765 |
| Northern Cape | 13 897 | 47 117 |
| North West | 15 035 | 12 079 |
| Western Cape | 311 | 202 |
| Total | 89 369 | 155 301 |

The 1997 Water Services Act assigned municipalities responsibility for providing water and sanitation services. Since 1999, DWAF has been transferring responsibility for rural water and sanitation provision to municipalities. Demand for improved sanitation is growing steadily, yet in many areas municipal implementation capacity remains weak, along with a lack of clarity on appropriate strategies, technologies and methodologies to ensure the benefits are sustained. Sanitation is still regarded essentially as a technical matter, with municipalities continuing to rely on outsourced programme and project support.

The death of hundreds of people from cholera in 2000 focused unprecedented attention on the scale of the sanitation backlog in South Africa: an estimated 18 million South Africans, primarily in rural areas, have inadequate toilets and inadequate sanitation.[5] In response, government updated a long dormant draft policy document and in September 2001 published a White Paper on Basic Household Sanitation, which elaborates a sound policy framework to tackle sanitation backlogs. In sharp contrast to the approaches of the past which concentrated on provision of a high level of service – flush toilets – to a minority, the Sanitation White Paper[3] prioritises the provision of at least a basic level of sanitation to all by 2010.

Importantly, this policy emphasises that lasting health, hygiene and sanitation improvements are seldom achieved by supply-driven approaches which focus solely on the provision of 'one size fits all' toilet structures. The White Paper[3] puts people, rather than toilets, at the heart of sanitation improvement, by emphasising demand creation through hygiene awareness campaigns, and participation by local residents in all aspects of hygiene improvement and sanitation planning, implementation and maintenance. Toilet construction is promoted by provision of a capital subsidy which covers most of the cost of the structure, with additional funding provided to equip local residents to lead local projects, identify and remedy hygiene and sanitation-related problems and engage local builders to undertake toilet construction. This approach contributes, moreover, to local economic development, by enhancing skills and providing work opportunities for local builders and other service providers.

**Case Study of an Impact Assessment Tool**

At the start of a sanitation project, a baseline survey is used to score each household against a list of 16 possible barriers to disease transmission: whether a toilet is in place, whether it meets basic requirements, how much water the household uses, whether hand washing facilities are available, whether soap is used, and so on. This approach enables the committee to identify which problems it should prioritise in its hygiene promotion campaign, and provides a quantifiable benchmark against which improvements can be assessed when evaluating the impact. By compiling a simple average of each settlements' score before, during and after a project, this approach provides a powerful new tool to measure the impact of a sanitation and hygiene improvement initiatives – beyond counting toilets.

Government has now vastly expanded budgetary support for sanitation improvement to R3.6 billion over the next eight years to implement the White Paper,[3] via municipalities. While this increased budget – coupled with increased household subsidies – has the potential to greatly accelerate sanitation improvement, the reality is that there is limited capacity in the sector to utilise this finance on the scale required and within the time frame envisaged while still adhering to the demand-responsive, health- and hygiene-oriented, community management and developmental principles of the White Paper. Coupled with government's ambitious spending and delivery targets, which will require the national programme to quadruple over the next two years, there is real concern that the health and development objectives of the programme could be compromised. Municipalities are under pressure to deliver, and many see toilet delivery as an end itself, rather than broader hygiene and sanitation improvement.

In this context, the potentially increased involvement of environmental health professionals, employed by municipalities, in sanitation advocacy and hygiene promotion is a welcome development.

The EHD of the DoH is currently developing a national sanitation health, hygiene education and awareness strategy, working in conjunction with the

WHO, and with some input from provincial sanitation task teams. A draft strategy could be developed by late 2002. The intention is to provide a coherent framework for EHAs to play the lead role in promoting hygiene and sanitation in municipal projects, in line with the role defined for the DoH in the 2001 Sanitation White Paper.

Formally assigning municipal EHPs with responsibility for sanitation improvement could greatly strengthen local capacity to support hygiene promotion within sanitation projects – ideally in partnership with community based hygiene and sanitation promoters – and mainstream improved sanitation as an integral component of environmental health and integrated development. However, as identified above, considerable re-orientation of EHPs will be needed if they are to be effective at community level. Additionally, developing and utilising effective monitoring tools so that relevant information can be gathered for advocacy and funding would enhance the role of EHPs in this field.

**Lessons from the Mvula Trust's rural sanitation projects**

- Health and hygiene awareness resource kits should be developed for EHPs and anyone else involved in sanitation and hygiene promotion – including village hygiene and sanitation promoters, community health workers, clinic personnel and development practitioners. Those developing these kits should also train target groups in how to implement them.
- Once communities have applied for project support, explore with them why they want better water or sanitation, and how they think they will benefit. Use this outcome to drive the project.
- Prior to forming local committees and setting training agendas, explore how people want to manage their projects, what this entails, what they can offer, where there may be gaps, and who will be involved, and on what terms.
- Investigate local health, hygiene and sanitation practices, and get people to suggest which they want to target, what they can do to promote behavioural change, and how they want to monitor the impact of their efforts.
- Facilitate broad discussion of technology options and design permutations, with clear inputs on costs and fees – leading to informed choices. Participatory Hygiene and Sanitation Transformation (PHAST) is particularly good at demystifying technology.
- Promote the use of local resources – local materials and local skills (builders, administrators, book-keepers, quality assessors and so on) to make sanitation improvement affordable and accessible to poor households.
- Shift the emphasis in project assessment and reporting from a pre-occupation with counting toilets to measurement of the hygiene impacts of sanitation improvement programmes.
- Budget adequate time and resources to fund effective facilitation.

## Developments in the Pollution and Waste Management Sector

Alongside water and sanitation, waste management is a third major contributor to health risks arising from the physical and social environment. A White Paper on Integrated Pollution and Waste Management was published in March 2000.[4] It marks a significant shift in policy from the historical focus on pollution impact management and remediation, to a management approach, which combines pollution and waste prevention and minimisation at source, impact management and, as a last resort, remediation. The emphasis now is increasingly on waste minimisation and recycling, capacity building, education and awareness campaigns.

The primary legislative output of the White Paper to date is regulations governing the manufacture of plastic bags and beverage containers – and these remain contentious. A national waste management Bill is still in the early stages of consultation and development. Draft guidelines for waste collection have been developed and distributed to the Department of Provincial and Local Government for comment and input from municipalities.

The Department of Environment Affairs and Tourism (DEAT) is the lead department, but primary responsibility for successful implementation of the policy now lies with local government. Municipalities will be responsible for providing waste management services, and managing waste disposal facilities. The White Paper specifies the following functions, which will be carried out by municipalities:

- Compiling and implementing general waste management plans, with assistance from provincial government
- Implementing public awareness campaigns
- Collecting data for the Waste Information System
- Providing general waste collection services and managing waste disposal facilities within their areas of jurisdiction
- Implementing and enforcing appropriate waste minimisation and recycling initiatives.

The White Paper[4] stresses the need to include all role-players in formulating, implementing and managing viable pollution and waste management strategies, and states that "community based organisations must have access to integrated pollution and waste management decision making and local information, since many communities live adjacent to polluting industries". There is little evidence yet of the mechanisms and capacity building needed to ensure that this happens. Many municipalities still struggle to provide adequate basic waste collection services and extend services to new settlement areas – particularly informal settlements. Inevitably this leads to erratic waste collection and uncontrolled dumping of domestic waste, which poses ongoing threats to the health of local residents.

Integration of activities across departments remains problematic, and responsibility for waste management remains fragmented and uncoordinated. The DWAF, for example, retains responsibility for water quantity and quality aspects of pollution and waste management; the Department of Minerals and Energy regulates the mining and nuclear industries within the context of environmental legislation; the DoH regulates the medical industry within the context of environmental and health legislation; and the Department of Agriculture develops the necessary regulations and guidelines for all agricultural wastes – all in consultation with DEAT.

The White Paper[4] acknowledges the importance of sectoral integration. As in many other sectors, devolving much responsibility to municipalities will be positive in achieving local integration and alignment. Once again, though, capacity at municipal level to formulate, implement and monitor effective strategies remain problematic. The White Paper prioritises capacity building at all levels as an urgent short-term strategy, but this presupposes the allocation of appropriate human and financial resources to fulfil the required functions. EHPs have an important role to play in supporting municipalities achieve their waste management objectives – but this is a complex role, and just one among many EHPs functions.

## Conclusions and Recommendations on Supporting the Services of EHPs

### Role definition

Environmental health is one of the most neglected spheres of health management in South Africa. As one EHP put it, when commenting on this article, "the whole system is against us". Many EHPs feel marginalised within primary health care teams, and are seriously concerned that municipalities will not resource their activities adequately when the new Act comes into effect. The lack of clearly defined environment health strategies, standardised health indicators and effective reporting systems undermines their position further.

Legislative changes and restructuring of environmental health services at provincial and municipal level offer environmental health professionals enormous opportunities to impact decisively on the provision of services which are essential for poverty alleviation and primary health care. Yet clear role definition will be needed, particularly at local level, to ensure that the potential of these opportunities is realised, and that limited resources are not wasted through duplication of activities while complementary aspects are neglected.

Water quality, for example, is monitored by DWAF officials, municipal technical departments and by EHPs. Parallel reports are often prepared, for different authorities, without adequate integration or assessment of their

implications for broader development planning. It is not enough to monitor the quality of water supplies at source: the water coming out of a communal tap may be clean, but frequently contamination occurs while water is being carried home, or in the home itself. A cross-sectoral and integrated monitoring framework is needed to ensure water quality is monitored and safeguarded at every stage of the supply chain; this must be complemented with user education at every stage of the pipeline. Similarly, 'disposal of the dead' (specified under MHS in the Draft National Health Bill) is a function generally assigned to municipal parks and cemeteries departments – yet cemeteries have the potential to pollute groundwater. EHPs have an important role to play in alerting communities, ward committees and municipalities of this risk and promoting sound planning.

## Capacity building

Notwithstanding the professionalism and commitment of South Africa's EHPs, this review of support needs in the basic household sanitation sector suggests that many EHPs are not yet equipped to play the kind of sanitation and hygiene promotion role as envisaged by the Environmental Health Directorate of the Department of Health. This underlines the challenge facing tertiary training institutions to ensure that their graduates have the skills they require, and the need for the sector to assist mid-career professionals to make a shift to a more facilitative role.

## Communication, coordination and integration

Effective primary health care requires a multi-disciplinary approach to identify problems, plan interventions and monitor their impacts in a coherent and coordinated manner. Environmental health professionals have a pivotal role to play here; in ensuring that health problems are understood in their broader social, economic and environmental context, and in providing information on key indicators and trends. Currently, primary health care services are dominated by medical practitioners and nurses. It is essential that EHPs become part of the management structure of health management teams at district level, so that their perspectives and knowledge inform district health management strategies – from conception through to impact assessment.

In a context of limited resources, EHPs need to be creative in tapping the range of support resources available to them – for example, by linking in with community health committees and community health workers. Many EHPs acknowledge the contribution community based structures can play in monitoring and identifying problems at an early stage – but liaison and communication networks need to be strengthened.

## Information management systems

In this context, sound information systems are critical. As a matter of urgency, a minimum set of manageable and usable data and indicators must be defined at district and/or municipal level. A clear distinction must be drawn between information that is 'nice to know', and information that is essential for effective tracking of problems, prioritising interventions and assessing their impact.

This information must be used across sectors too. For example, statistics on the prevalence of diarrhoea in a particular settlement needs to be cross-referenced against water quality and provision of adequate water and sanitation services.

Information must inform planning and provision of water services, and needs to be integrated into municipal management systems from ward level upwards. In this way, health priorities can help shape the planning and prioritisation of water and sanitation projects, and guide remedial interventions where necessary.

Good data assist in identifying what kind of intervention is necessary. For example, in the Uthukela district of KwaZulu-Natal, water quality sampling at the peak of the cholera outbreak between December 2001 and February 2002 showed that drinking water was not the primary source of cholera infection.[5] There cholera spread primarily through physical contact with infected people, which underlined the importance of hygiene education as the first priority, rather than water tankers and rapid toilet building.

## Sectoral flux and restructuring

Concrete ways must be found to align national, provincial and local environmental health priorities, develop coherent mechanisms to achieve coordination and integration at municipal level, and provide a coherent programme of capacity building to equip both EHPs and municipalities to fulfil the roles assigned to them. Above all, the proactive and preventative role of EHPs in strengthening primary health care systems at district level must be acknowledged and resourced.

## References


1 Matthee A, Swanepoel F and Swart A. The state of environmental health services. In: Crisp N, Ntuli A (Eds). South African Health Review 1999. Durban: Health Systems Trust; 1999.

2 DWAF, 'Sanitation Report', submitted to the Parliamentary Portfolio Committee, 6 November 2002, by the National Sanitation Programme Manager.

3 Department of Water Affairs and Forestry. Republic of South Africa, White Paper on Basic Household Sanitation. Pretoria; 2001.

4 Department of Environmental Affairs and Tourism. Republic of South Africa. White paper on integrated pollution and waste management for South Africa. Pretoria; May 2000, p 9.

5 Thys Badenhorst, KwaZulu-Natal Department of Water Affairs presentation to the African Sanitation Conference, Midrand, 29 July 2002.

# Human Resources

Chapter 7 Human Resources Development

Chapter 8 Community Service for Health Professionals

Chapter 9 Community Based Health Workers

Chapter 10 'Voices' of Primary Health Care Facility Workers

# Human Resource Development

7

**Uta Lehmann and David Sanders**
School of Public Health, UWC

*Human resource development is increasingly being recognised as being key to improved health service delivery and health sector transformation. Policies do acknowledge that health is a human system, and that reforms have to address themselves centrally to the personnel staffing the service, improving planning, capacity and management. Yet, concern continues to be raised about a lack of strategy and implementation, leading to ever increasing strains on the health sector.*

*This chapter highlights some success stories and traces reasons for and the impact of the unsatisfactory human resource situation in the health sector, based on a number of case studies. It specifically looks at issues affecting quality of care, such as capacity and skills; workloads; management, support and supervision; HIV/AIDS and its impact on human resources; and the reasons for and extent and effect of the brain drain. It furthermore outlines selected components of a human resource strategy, which could address some of the identified issues.*

## Introduction

It is almost a truism that human resources determine the success or failure of health sector transformation. A growing number of academic authors as well as policy makers throughout the world recognise the fact that health care is a human system, and that reforms have to address themselves centrally to the personnel staffing the service.[1] In South Africa the National Assembly Portfolio Committee on Health expressed concern about the "lack of synergy between national DoH's policy and the implementation thereof in the respective provinces", as well as the "DoH's deficient strategy on human resources".[2] And while there is recognition that successful health sector reform hinges on its human resources (HR), the concern raised by the Portfolio Committee indicates that HR practices continue to lag behind this understanding.

However, there has been progress: the Government recently launched a 'Human Resource Strategy for South Africa' under the heading - A Nation at work for a Better Life for All, which addresses human resources development (HRD) needs throughout the country. Within the strategy "enhancing the skills and capacity of employees in the public sector" has been identified as a crucial component, with specific emphasis on management capacity, monitoring and evaluation, human resource management, and leadership development. The Draft National Health Bill acknowledges the importance of HR by dedicating a whole chapter to it. Also, there is progress, albeit slow, towards the decentralisation of HR functions to districts. And there are numerous examples of innovation, creativity and excellence in approaching HR issues throughout the country. However, progress made threatens to be undone by a host of continuing challenges, problems and set-backs, which impact negatively on the key measure of success, i.e. quality of and accessibility to care. For example, HIV/AIDS is having devastating effects on the health sector, as disease burdens are rising sharply, and dis-proportionately in under-serviced areas, while health workers are feeling the effects of the epidemic in their own ranks. Furthermore, there are continued concerns about the availability of appropriate clinical and management skills to deal with a host of health care delivery issues, including HIV/AIDS. Lastly, staff are leaving the public health service in large numbers, either to work in the private sector or to emigrate to other countries. There has been a fair amount of public debate about the extent of and the reasons for this. Migration has been attributed to better salaries and conditions of service in the private sector and in foreign countries, but also to dissatisfaction with working conditions and the socio-economic climate, particularly crime, in South Africa.

This chapter will highlight some of the success stories and trace some of the reasons for and the impact of the unsatisfactory HR situation in the health sector, based on a number of case studies. It specifically looks at issues affecting quality of care, such as capacity and skills; workloads; management, support and supervision; HIV/AIDS and its impact on human resources; and the

reasons for and extent and effect of the brain drain. It furthermore outlines selected components of a human resource strategy, which would address some of the identified issues. The chapter does not directly address the issues of recruitment and selection, nor does it explore in detail the decentralisation of HR.

## Human Resources in the Draft National Health Bill

The section on HR in the Draft National Health Bill has undergone numerous changes over the years, and the final version is still awaited. In the August 2002 version, the whole of chapter 7 is dedicated to Human Resource Planning and Academic Health Service Complexes, which, after dedicating considerable space to the formation of Statutory Professional Health Councils, sets out a number of regulations governing human resource development within the national health system. It spells out the Minister's responsibilities as follows:

a. Ensure the availability of adequate resources for the education and training of health care providers and health workers to meet the human resource requirements of the national health system

b. Ensure the education and training of health care providers and health workers at all levels in accordance with recognised norms and standards in order to meet the requirements of the national health system

c. Prescribe new categories of health workers and health care providers to be created, educated or trained

d. Identify shortages of key skills, expertise and competencies within the national health system and prescribe strategies for recruitment of health care providers or health workers from other countries or strategies for the education and training of health care providers or health workers in the Republic of South Africa in order to make up the deficit in respect of scarce skills, expertise and competencies: provided that such strategies are not in conflict with the provisions of the Higher Education Act

e. Prescribe strategies for the recruitment and retention of health workers and health care providers within the national health system

f. Prescribe circumstances in which health workers and health care providers may be recruited from other countries to be employed as such, or to deliver health services, within the Republic of South Africa.

In the past, legislation and policies often tended to equate HRD for health with training and the functioning of academic health service complexes. This draft Bill is an important step beyond this. While it continues to give great prominence to academic health service complexes, and is silent on issues of distribution and equity, it does identify the key challenges of planning and training for adequate and appropriate skills and competencies. It furthermore spells out the need to develop management policies and practices, which will ensure recruitment and retention of staff. One component, which would further strengthen the Bill would be a commitment to the establishment of mechanisms to ensure the equitable distribution and support of staff throughout the country.

## Capacity and Skills

"With the move towards decentralised health systems, many health workers, particularly at district level, now require, in addition to clinical skills, substantial public health skills in planning, advocacy, programme design, programme implementation and monitoring and evaluation which are fundamental to the successful implementation of the Primary Health Care (PHC) Approach."[3] These are skills for which few of the newly appointed district, sub-district and programme managers received training, resulting in a wide gap between existing and required job competencies.[4]

It will be shown below that many of the skills required for HIV/AIDS clinical treatment and management are still lacking amongst frontline health workers, yet urgently required and needing massive training inputs and continuous support. But HIV/AIDS is not the only area where clinical or management skills are lacking. The National STI Initiative, for example, "set up in 1999 to develop 'model' district-based STI control programmes,"[5] found, that the clinical and management skills in STI care in clinics often fell short of standard, "resulting in many clients being incorrectly treated". It was suggested that "training in STI clinical case management is still essential", and that "efforts to ensure that every primary level clinical provider knows and understands the syndromic case management protocols needs to continue".

In another example, a review of the clinical management of severe malnutrition amongst children in rural hospitals found a lack of resources, as well as poor management and the use of outdated, inappropriate treatment practices, resulting in very high case fatality rates.[6] Using a participative action research approach, the team conducted training and developed case management protocols, concluding that, given the necessary training and support, "hospital staff, even in the most under-resourced areas, have the ability to identify and begin to rectify poor practices". The strong developmental potential of participative research has been highlighted in other projects,[7] and should be strengthened throughout the country as a capacity building tool. Prominent among participative approaches is the Women's Health Project's Health Workers for Change initiative. In an article[8] on the initiative Fonn and Xaba reported on a project which aimed to improve the relationship between health providers and clients through a series of reflective, exploratory workshops. In these workshops health workers interrogated their own perceptions and moved towards developing solutions to solving identified problems. The authors concluded that, "this initiative suggested that this methodology[8] could be useful as a research tool to understand provider-client relations and thus quality of care. The methodology assisted participants in understanding the social, including gender, determinants of health".

The positive effect of health workers' ability to engage with communities and other sectors on quality of care has been highlighted in several projects. An initiative in Khayelitsha, Cape Town, to reduce worm infestation in

children saw health workers, community members and teachers working together to assess the size of the problem and then plan and implement intervention.[9] As a result, worm infestation among children in 12 schools dropped from 80% to under 20%.

In an initiative in the Uthukela District, KwaZulu-Natal, much progress was made towards improving child health through a combination of community participation, developing community health workers, and a concerted effort to train all primary care nurse practitioners and doctors in Integrated Management of Childhood Illnesses (IMCI).[10]

Skills development in established and emerging clinical areas as well as in aspects of public health and PHC such as management, community participation and multi-sectoral collaboration can clearly lead to substantial improvements of quality of care and has to remain a priority. Systematic and in-depth capacity and skills assessments in all programmes and at all levels will assist the development of skills development strategies.

## Workloads

Workloads, particularly at PHC facilities, continue to be a controversial issue. The 2000 National PHC Facilities Survey found that, although uneven, fixed facilities had substantially lower patient loads in 2000 compared to 1997. But views on what constitute appropriate workloads continue to vary. The PHC survey reported views of health managers that considered a range of between 20 and 35 patients per day to be appropriate. Kraus has developed staffing norms for district personnel in various South African provinces. He explains that "a workload variable of 25 patients per eight hour shift has been used in all clinic and PHC models. What proved interesting about applying this ratio is not only the general agreement that the workload variable [of 25] is quite reasonable (if not too generous) but the remarkable variation in workload that PHC nurses are in fact handling in PHC facilities. It is not uncommon to find services where nurses average 6 patients a day or 60 patients a day on a routine basis."[11] While this finding highlights great variation in productivity of nurses, it also points to the fact that health care delivery in South Africa takes place in enormously complex and diverse socio-economic contexts and conditions and that transformation (integration and decentralisation) of services is far from complete. Workload is not only a question of individual nurses' efficiency and productivity, although these are undoubtedly contributing factors, which need to be taken into account. Rather, workload is quite fundamentally determined by dramatic structural differences, such as location, size, staffing levels, infrastructure and resourcing. This is illustrated in examples of two clinics sketched below, one situated in urban Cape Town, the other one in the rural Eastern Cape.

**Case Study 1: Clinic in Cape Town**

"Despite needing a fresh coat of paint and the weeds growing through its once grand colonial-style veranda removed, the centre is an example of a well functioning clinic which has everything it needs. The centre offers district surgeon services, mental health, dental services, school health, family planning and curative services. It forms part of a strong network with the surrounding hospitals. Whenever a patient is referred to hospital, for example for surgery, there is a reply from the hospital, as well as a letter sent with the patient when s/he returns to the clinic. There is also a taxi service contracted to run between the centre and the hospitals."[12]

**Case Study 2: A rural clinic in the Eastern Cape**

"It has not rained in Mount Frere in the former Transkei for many months and the rain water tank at the Mntwana clinic has run dry. A truck has brought water to the outlying village of Dangwana and filled up the clinic's tank, but the water comes straight from the river and is too muddy for drinking or for using during procedures such as childbirth. The clinic has also run out of its supply of vaccines, but Sister N comes down the road carrying a cooler box filled with new stock on her head. She has caught a taxi and fetched the stock from the hospital in Mount Frere. Unlike the situation a few years ago, the clinic can now get the medicines it needs, but still has very little else in the way of facilities. There is no electricity, even though that was promised three years ago, and there are not even paraffin stoves. A state-of-the-art satellite phone was installed in February but it only worked for the few days following its installation. There is no other form of communication, not even a radio-phone."[13]

While these may be extreme examples, they illustrate the complexity and diversity of health care delivery and nursing practice at primary level in South Africa. In one setting health workers may be able to concentrate on their core tasks, drawing on administrative and other support (such as cleaners and porters), as well as reliable water, electricity and drug supplies, and having access to ambulance and specialist services where required (even if these may not always be satisfactory). In another setting nurses may be the only staff in a clinic with a vast and dispersed catchment area. Electricity and water supplies may be intermittent, transport irregular, and drugs may be brought by the clinic supervisor or have to be fetched by the clinic sister from the nearest distribution point (see case study 2). Staff have to start their day by cleaning the clinic themselves, and will attend to all aspects of patient care, including all clerical work, dispensing and organising transport to hospitals. Yet, workloads and staff allocations are measured against the same one-dimensional yardstick, i.e., number of patients seen at the clinic per day, regardless of whether the nurses in question have to spend hours travelling to town to collect medicines, organising transport for women in labour and cleaning the clinic, or whether they can concentrate on their core nursing duties in a well functioning facility. Another example is of nurses who assist HIV positive clients to apply for social assistance grants. These will be lengthy consultations, which will look bad in statistics on patient load, yet they constitute a vital service to HIV positive clients (see section on HIV/AIDS).

Research is presently underway at clinics and community health centres in Cape Town to explore qualitative aspects of workloads: quality of interaction

with clients, impact of infrastructure and skills, as well as integration of services on patient loads.[14] The outcomes of this research will hopefully contribute to the development of more sophisticated tools to assess and determine workloads of health workers.

## Management and Support

Management and support are crucially important to health personnel performance: good support and able management (including planning and supervision) will vastly improve work satisfaction and ability to function productively, while lack of management and support contribute substantially to low productivity and demotivation and lead to what can be termed 'transformation fatigue' among health personnel. The Voices of Facility and District Managers in the South African Health Review 2001[15] reflected this.

Other research points in a similar direction. A project looking at the roles and functions of clinic supervisors in rural districts in the Eastern Cape Province[16] found that the single most important challenge to clinic supervisors' performance and ability to fulfil their role is the fact that many governance issues remain unresolved in the process of transforming the South African health system. Continued fragmentation of services, unfilled posts and unclear lines of accountability have an immediate and negative impact on working conditions and supervisors' ability to render effective service.

In addition, a mismatch often exists between job description and actual functions performed. While the focus should lie on support and supervision of clinics and their staff, most supervisors find themselves occupied with a range of other activities: lending a helping hand by rendering clinical care in under-staffed clinics; taking full responsibility for provisioning of clinics; attending large numbers of unscheduled meetings and workshops throughout the province. The negative and disruptive impact of a proliferation of unscheduled and unnecessary meetings, pointing to a lack of planning capacity, particularly at provincial level, is highlighted by the following statements made by district, facility managers and supervisors:

***"Managers or personnel are sent on unplanned training courses, which mess up planning."***

***"Short notice is given for meetings."***

***"Too much planning and too little implementation."***

In research presently underway in Cape Town, staff involved in the implementation of the Provincial Integrated Nutrition Policy in Cape Town have complained about management's inability to coordinate communication and activities between different departments and to prepare the ground for

policy implementation.[17] Staff voiced frustration with the fact that they bear the brunt of having to implement the new Nutrition policy, without practical support or acknowledgment. They furthermore feel that policies are often not well thought through or they get abandoned halfway through the implementation process. This eventually leads to general disenchantment with the transformation process, transformation fatigue. This is well articulated in a quote of a facility manager interviewed by Leon et al.[15]

***"Because of all the change I am tired of change. Since 1994 these consistent changes. First it was the health policy they changed that, we had to get this primary health care, we are since then still in a changing phase because then it is this programme then it is that programme that's changing."***

Good management, leadership and support, on the other hand, contribute greatly to well-functioning service delivery, as shown by Couper and Hugo in their study of Management of District Hospitals.[18] Assessing four rural district hospitals in the North West Province and KwaZulu-Natal, they identified four key factors to success: teamwork, the framework for the functioning of the team, i.e. ethos, structures and systems, the position of the hospital in the community and the district, and capacity building. They conclude that to achieve these key factors, "there is a need for leaders – not managers or administrators, but leaders – who believe in what they are doing and have a vision for it". They therefore recommend that leadership development be given priority on the national and provincial capacity development agenda.

Another example of a management initiative at district level, which impacted positively on staff, is the functional integration of services in Brakpan District in Gauteng.[19] Again, the importance of teamwork and goodwill are highlighted, as well as management support and the political will at municipal and provincial level to 'make things happen'.

Careful and regular supervision is increasingly being identified as a factor, which impacts profoundly on quality of service delivery. The crucial role of clinic supervision was highlighted earlier. The study conducted by Lehmann et al. found that supervisors played a vital role in keeping clinic staff in touch with policy developments, treatment protocols, etc. Virtually all staff found supervisory visits productive and beneficial, but complained about irregularity and infrequency of visits.[20] In the report on the improvement of child health in Uthukela District, the importance of ongoing supervision in supporting and enhancing training efforts is stressed.[21] Without supervision staff easily feel unappreciated and insecure, particularly in the implementation of new policies and treatment regimes. This sense of insecurity and lack of appreciation may in turn again lead to disenchantment with and resistance to the transformation process in the health sector.

All evidence therefore points to the fact that management and leadership (or lack thereof) can boost or deflate staff morale, productivity and ultimately

quality of care. A case may therefore be made to visit and revisit the numerous management development initiatives the country has seen since the early 1990s, to assess gaps and to develop or strengthen management and leadership development programmes at all levels of the system. In this assessment attention should particularly be paid to the question which initiatives have proven most successful. Schaay et al. recommended in 1998 that "training across traditional sector boundaries should be encouraged, a competency-based approach to management training should be pursued, and that the training should encourage a 'reflective and self-directed' approach to learning. In addition, the particular skills required by health workers to manage a transforming health system – at every level within the public health service – should serve to guide the development of the content of the evolving health management programme in South Africa".[22] Furthermore, experience in numerous projects indicates that management development is most successful when it happens in the context of practice, e.g. within a programme or service. An assessment of management development initiatives should take account of these findings and recommendations.

## HIV/AIDS and Human Resources

HIV/AIDS arguably poses the greatest challenge to human resource development in the health sector. Unlike other sectors, though, health is faced with a double burden, having to cope with increased morbidity and mortality in its own ranks, but also having to shoulder the impact of a rapidly increasing disease burden in the general population.

Although there have been no published studies, it is believed that infection rates among health workers at least mirror those in the general population. As in many other sectors, the health sector is experiencing increased rates of absenteeism, as health workers have to care for sick family members and attend numerous funerals. At the same time health workers bear the brunt of an increased disease burden and are expected to implement emerging initiatives and policies, often without additional staffing. A study conducted by the Centre for Health Policy[23] found that TB patient load, a good indicator of the changing clinical load related to HIV, had increased by 27% over a 7-month period, between July 2000 and January 2001. The Interim Findings of the National PMTCT Pilot Sites recently found that in some sites the additional workload generated by the PMTCT programme "has not been compensated for by any additional staff", while in other sites lay counsellors had been appointed, but "nurse and medical staffing levels have been mostly unchanged".[24]

The same studies point out that training and support for health workers is uneven. The PMTCT study found that, while "training and human capacity development is critical for the development of adequate staff competencies, morale and motivation", "many staff do not have a strong foundation of

knowledge and skills in HIV and PHC". The report highlighted that the Programme engaged in very substantial training efforts, yet did not reach all staff involved in the programme. It stressed that "the sheer volume of training required at the pilot sites points to a major challenge should provinces expand the programme to new sites".

In facilities beyond the PMTCT sites the availability of knowledge and skills, as well as access to information, appears to be even more uneven. Modiba et al. found that of a sample of 215 providers in PHC facilities in Gauteng more than half had received some training in HIV/AIDS, 40% had been trained in counselling, but only 10% had received training in the clinical aspects of HIV/AIDS and management. The study also found that "provider knowledge of the clinical illness associated with various stages of HIV was generally poor". A Rapid Appraisal of Primary Level Health Services for HIV-Positive Children at Public Sector Clinics in South Africa[25] found that only 20% of a sample of 383 clinics had heard of the DoH guidelines for 'Managing HIV in Children', and only 10% reported using them. In the same study, 21% of clinics reported that they were assisting clients with accessing social assistance grants, pointing to further increases in workload not directly linked to clinical load.

While at present the knowledge and skills base for managing different aspects of HIV is clearly uneven and the training needs are enormous, support and supervision of staff are equally important, but sometimes undervalued. Giese and Hussey[25] quote the desperate comment of one clinic manager that: "People are dying like flies". The psychological and emotional trauma reflected in this comment is frequently repeated in conversations with health workers, who state that they were trained to heal people that they cannot cope with the fact that people around them are dying and that there is nothing they can do about it. Yet organised support and supervision to counter stress and burnout are only available to a minority of providers. Modiba et al.[23] reported that only 36% of the providers in their sample from 3 regions in Gauteng recorded that they had participated in formal group meetings for clinical or counselling debriefing. The figures are likely to be considerably lower in other provinces, and particularly in rural areas, although support and supervision of health workers in the context of the HIV pandemic is a topic that requires urgent research and intervention. As McCoy et al. point out: "Support and supervision, as well as organising peer support groups, is required to help prevent staff burn-out. Providing effective and appropriate support and supervision for frontline staff is a highly skilled job that should also be part of a human resource development plan."

## The Brain Drain

Lack of management and support, work overload, poor working conditions, lack of appropriate skills and emotional burnout make a lethal mix of factors which lower productivity, staff morale and quality of care, and contribute to what has been dubbed the brain drain, both here and in other African countries.

The exodus of health workers from the public sector has become a much discussed issue in the media and is clearly of great concern to government. In 2001, the Minister of Health warned that the rate at which nurses were leaving the country was turning them into an endangered species. Over the past two or three years numerous media reports have spoken about the reasons why health workers are leaving, ranging from high crime rates to poor working conditions, to the lure of better salaries overseas.

The brain drain is not a uniquely South African phenomenon. Countries throughout the developing world have been battling for years (mostly unsuccessfully) to retain their skilled health workers. In Ghana, for example, 50% and 75% of each batch of graduates in medicine emigrate in 4.5 and 9.5 years, respectively.[26] Some 60.9% of doctors produced between 1985 and 1994 had already left the country, mainly to the United Kingdom and USA in 1999. South Africa, in fact, is benefiting from in-migration from other African countries[27] Commonwealth Secretariat, 2001. Some 20% of doctors (approximately 6 000) on the South African Medical Register in 1999 were expatriates. And yet, the situation (lack of doctors) in many provinces, particularly in rural areas of South Africa is reaching crisis proportions. Many posts, particularly in rural facilities, cannot be filled because of a lack of applications. This sets up a vicious cycle, which is accelerated by the impact of HIV/AIDS, as remaining staff become increasingly overburdened, burn out and eventually may also leave.

## Conclusions

The picture sketched above supports policy makers' concern that a coherent and comprehensive human resource strategy for the health sector is urgently needed. Numerous examples have shown that innovation in and attention to human resource issues can substantially support and improve service delivery and care.

Strategic policy development, planning and implementation is needed at many levels.

The number and distribution of health personnel throughout the sector, although not at the centre of this chapter, requires urgent attention, particularly in the light of the impact of the HIV/AIDS pandemic and the brain drain. It would be encouraging, if the National Health Bill spelt out

guiding principles in this regard.

Capacity development will remain a focus area for the foreseeable future. In the light of overwhelming need it would seem advisable, however, that development efforts significantly concentrate on priority programme areas. Within overall health policy priorities these would likely include HIV/AIDS and STI, TB, nutrition, maternal and child health. Within these areas, both clinical and management skills should be continuously developed, based on skills and needs assessments. Furthermore, there is an urgent need for management and leadership development across all levels of service, which should be preceded by a systematic needs and impact assessment.

Of course, the ongoing capacity development of staff in the service is only one leg of human resource production. Issues of training, curricula and community service have not been discussed in this chapter. Developments in community service are dealt with elsewhere in the SAHR 2002. Findings made by Edelstein et al.[4] in 1998 that new graduates lack crucial clinical and public health skills to implement PHC still largely hold true four years later. This is illustrated by a statement made by a community service doctor in the rural Eastern Cape who said about his undergraduate training:

***"There wasn't enough emphasis on patient management in a lower level institution, our training was mostly theoretical ... most patients are filtered out at this lower level therefore the students don't see them ... The environment here is very different from both RCH and Pretoria Academic ... some of the antibiotics we were taught to use aren't available so we have to look for alternatives ... The Sister is teaching me a lot, I'm learning more than I ever learnt in my whole training!"***[a]

In the area of HIV/AIDS a comprehensive human resource plan is needed which projects staffing, capacity and training needs in the light of morbidity, mortality and attrition rates within the health sector, increased disease burdens and the likely development of treatment strategies such as PMTCT and ARV treatment.

Next to HIV/AIDS, staff retention is the most obvious area of intervention, yet in many ways also the most elusive. While the New Partnership for Africa's Development (NEPAD) may put the brain drain on the international agenda, it is unlikely that countries in the developed world will refrain from recruiting staff from developing countries in the short or medium term. This does not mean however, that staff retention should be given up as a lost cause. Firstly, the Department of Health can work towards the regulation of migration through bilateral and multi-lateral agreements such as the Commonwealth Code of Practice for International Recruitment of Health Workers.[28] Secondly, numerous initiatives can be taken internally to reduce the 'push-factors' encouraging out-migration. Amongst these are many mentioned earlier in this chapter, which cluster around improvement in the conditions of service

a Personal communication.

of staff, resulting in better morale. They include improved supervision and management support, skills development in key areas as well as the resolution of governance and transformation issues. Improved infrastructural support, particularly in rural areas, such as transport, electricity and water supplies and communication, should also be explored for its retention potential.

This is a crucial time for human resources in the health sector. There are signs that 'transformation fatigue' is beginning to spread at a time of overwhelming challenges. It is neither doubtful nor controversial that the sectors' human resources hold the key to tackling these challenges. To do this they need to be better cared for, listened to and looked after. While this has been acknowledged on paper in public pronouncements, it is now time that these pronouncements are translated into concerted action. This chapter has shown many examples of how this can be done on a small scale. The challenge is to build such initiatives into a national strategy for health human resources.

## References


1 Kolehmainen-Aitken, Riita-Liisa (1997), Decentralisation of human resources: implications and impact. Human Resource Development Journal Vol 1 No 3.

Martineau T, Martinez J (1996), Human resources and health sector reform – priorities for analysis and research. Proceedings of workshop on human resources and health sector reforms – research and development priorities in developing countries. Liverpool.

Segall M (2000), Human development challenges in health sector reform. In: Ferriho P, Van Lerberghe W, Providing Health Care Under Adverse Conditions: Health Personnel Performance & Individual Coping Strategies. Studies in Health Services Organisation and Policy.

2 Sait L. Health legislation. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds) South African Health Review 2001. Durban: Health Systems Trust; 2001.

3 Sanders D, Chopra M, Lehmann U, Heywood A, Meeting the challenge of health for all through Public Health education; some responses from the University of the Western Cape. S Afr Med J 2001; 91:10.

4 Edelstein G, Sanders D, Groenewald E, van Niekerk R, Reddy S. An assessment of the exit competencies of professional nurses in relation to those required to implement the national system at district level: the implications for nursing education. Centre for Health Human Resources: Public Health Programme. Bellville: University of the Western Cape; 1998.

5 Moys A et al. Training clinic sisters. Lessons learnt based on experience of National STI Initiative. Durban: Health Systems Trust and Reproductive Health Research Unit; 2002.
URL: http://www.hst.org.za

6 Puoane T et al. Evaluating the clinical management of severely malnourished children – a study of two rural district hospitals. S Afr Med J 2001; 91(2): 137-140.

7 Lehmann U et al. Investigating the Roles and Functions of Clinic Supervisors in Three Districts in the Eastern Cape Province. HST Technical Report. Durban: Health Systems Trust 2002. Also: No author. Participatory Action Research: training district research teams in the Eastern Cape. MCH News no 10. 1998.

8 Fonn S, Xaba M. Health workers for change: developing the initiative. Health Policy and Planning 16 (Suppl. 1), 2001: 13-18.

9 The Khayelitsha Task Team – building partnerships that work. Published by KTT; 2001.

10 Kerry T. Child Health in the Uthukela District, KwaZulu-Natal. MCH News no 16, Dec. 2000.

11 Kraus, Rodion, Final Report on Optimal District Personnel and Skills Mix Requirements for Delivery of Primary Health Care Services. HPSA 1998.

12 Strachan, Kathryn, A look at a Cape Town clinic. HST Update. Issue no. 46.

13 Strachan, Kathryn, Working as a nurse in a rural clinic. HST Update. Issue no. 46.

14 A comparative investigation into nurses' workloads in different primary health care settings in the Cape Town Unicity. Project as part of the Cape Town Equity Gauge Project funded by the Rockefeller Foundation.

15 Leon N, Bhunu F, Kenyon C. Voices of facility managers. And Masilela T, Molefakgotla P, Visser R. Voices of district managers. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds). South African Health Review 2001. Durban: Health Systems Trust; 2001.

16 Lehmann U et al. Investigating the Roles and Functions of Clinic Supervisors in Three Districts in the Eastern Cape Province. HST Technical Report. Durban: Health Systems Trust; 2002.

17 A Contextual Analysis of Functions, Roles and Skills of Nutrition Personnel in the Implementation of the Integrated Nutrition Programme at Primary Care Level in the Cape Town Unicity. Project funded by the Health Systems Trust.

18 Couper I, Hugo J. Management of District Hospitals. Exploring Success. Durban: Health Systems Trust; 2002.

19 Zondo M et al. The Story of Integration in the Brakpan District. Kwik-Skwiz #26. Durban: Health Systems Trust; 2000. URL:http://www.hst.org.za.

20 Lehmann U et al. Investigating the Roles and Functions of Clinic Supervisors in Three Districts in the Eastern Cape Province. Technical Report. Durban: Health Systems Trust; 2001.

21 Kerry T. Child Health in the Uthukela District, KwaZulu-Natal. MCH News no.16, Dec. 2000.

22 Schaay N, Heywood A, Lehmann U. A review of health management training in the public health sector in South Africa. Technical Report to chapter 9 of the South African Health Review 1998. Durban: Health Systems Trust; 1998.

23 Modiba P et al. The integration of HIV/AIDS care and support into Primary Health Care in Gauteng Province. Johanneburg: Centre for Health Policy, 2002: iv.

24 McCoy D, Besser M, Visser R, Doherty T. Interim Findings on the National PMTCT Pilot Sites. Durban: Health Systems Trust; 2002: 36.

25 Giese S, Hussey G. Rapid appraisal of primary level health services for HIV-positive children at public sector clinics in South Africa. Cape Town: University of Cape Town; 2002.

26 Delanyo Dovlo, Dr. Frank Nyonator, Migration by Graduates of the University of Ghana Medical School : A Preliminary Rapid Appraisal, HRDJ 1999; Vol 3 No.1.

27 Commonwealth Secretariat. Migration of Health Workers from Commonwealth Countries. Experiences and Recommendations for Action. London: Commonwealth Secretariat; 2001.

28 Commonwealth Secretariat. Commonwealth Code of Practice for International Recruitment of Health Workers. 13th Commonwealth Health Ministers Meeting, Christchurch, New Zealand, 25-29 November 2001.

# Community Service for Health Professionals

8

**Steve Reid**
Centre for Rural Health, University of Natal

*The one-year period of community service (CS) for health professionals has been implemented since 1998, with doctors, dentists and pharmacists now being routinely allocated to a 12-month period of service in public institutions, on completion of their formal training. A further 7 professional groups will follow in 2003, including physiotherapists, occupational and speech therapists, clinical psychologists, dieticians, radiographers and environmental health officers. The aim of CS, according to the Department of Health, is "to ensure improved provision of health services to all citizens of the country". The chapter reports on a number of findings that are measured against this overall goal.*

*With respect to the responses of all three professional groups currently undergoing CS, there were a number of patterns that were notably similar. Firstly, despite difficulties and frustrations, the majority felt that they had made a difference and had undergone some professional development. Overall, most described their experience of the year as positive in retrospect, but only a minority reported that their attitude had become more positive during the year. Supervision of CS doctors, dentists and pharmacists by more senior professionals was found to be significantly poorer in rural than in urban settings. The dentists showed the greatest gap, between their skills and expectations as university graduates, and the needs and context of oral health in the public service. CS pharmacists, who had completed their internships in the retail sector, were also initially disorientated in the public health sector, but their skills and knowledge were valued and appreciated particularly where there had been no pharmacist before. Doctors varied widely in their level of preparedness not only in skills but also in attitudes. Language gaps were also found to be a factor.*

*CS highlights the general management deficiencies in the public health system. All groups expressed dissatisfaction at the conditions of service in the public sector, but particularly the pharmacists, many of whom had exposure to the private sector during their internships. Many of the dentists, who have a particular reliance on specialised equipment and supplies, found themselves unable to perform any but the most basic procedures.*

*A feature of all these young professionals is the alarming proportion of between 20% and 45% that are planning to work overseas after their CS.*

*Recommendations include the need for a comprehensive national plan for the recruitment and retention of health professionals in rural and under-served areas that include other*

*complementary strategies besides CS. Health Science Faculties need to address the gaps between the skills and attitudes of their graduates, and the realities of the health of the South African public as experienced by CS professionals. Supervision of CS professionals in rural areas needs to be improved through direct support by health managers, as well as the support of senior clinicians in the health system, through appropriate promotions and acknowledgement. The CS strategy should be reviewed after 5 years, to evaluate whether it is achieving the goal for which it was instituted.*

## Introduction

The one-year period of compulsory CS for health professionals has been implemented since 1998, with doctors, dentists and pharmacists now being routinely allocated to a 12-month period of service in public institutions on completion of their training. A further 7 professional groups will follow in 2003, including: physiotherapists, occupational and speech therapists, clinical psychologists, dieticians, radiographers and environmental health practitioners. The experiences and lessons learnt from the first few years of the programme are therefore of importance to the effective utilisation of this pool of human resources.

CS professionals are young and relatively inexperienced, largely in need of supervision and support in order to practice their professions effectively within the constraints of the South African public health service. The role of the universities is crucial in preparing their graduates appropriately for this year – which can be regarded as a 'test-drive' of their products, on a challenging test ground. How well they are able to perform, respond to the challenges, adapt to local circumstances and contribute meaningfully wherever they are placed, is a function of their resourcefulness as individuals, their education, and the context in which they are placed.

This chapter reports on the personal experiences of doctors, dentists and pharmacists who have participated in CS, based on an annual exit survey conducted by the national Department of Health since 2000, as well as a number of other smaller studies. It does not attempt to analyse the impact of this programme on the health system and health services as a whole.

According to the Department of Health: "the main objective of Community Service is to ensure improved provision of health services to all the citizens of our country. In the process, this also provides our young professionals with an opportunity to develop skills, acquire knowledge, behaviour patterns and critical thinking that will help them in their professional development."[a] The reported results must be measured against these overall goals.

a Department of Health letter addressed "Dear Intern", Public Service (Community Service): 2000.

## CS Doctors

Medical doctors were the first to participate in the CS programme and are the largest professional group to have undergone CS each year. The pioneer cohort of 26 CS doctors was mostly allocated to urban hospitals around the country in July 1998.

A qualitative survey was carried out through a few on-site visits by the national Department of Health (DoH) at the end of 1998. The survey revealed that there was generally positive feedback. Specifically, it was reported that there was adequate supervision, and the CS doctors' attitudes were positive. Concern was expressed at that time that there would not necessarily be posts available for those who wished to continue to work in the public sector after their year of CS. Secondly, those in rural placements felt that it was unfair that those placed in large urban hospitals were advantaged in terms of access to training opportunities, both during the year as well as for subsequent registrar posts.

In January 1999, 1 088 (92% of the total number of interns eligible for CS) were allocated to government institutions around the country. Of these, only 25% were in hospitals that are designated as rural or under-served sites and therefore qualify for rural allowance. Thus the majority were placed in relatively urban institutions, and this pattern has not changed significantly since then.

A thorough review of the first year of implementation was carried out in 1999,[1,2] based on focus group discussions in 3 rural provinces and a national exit questionnaire. A low response rate (27%) to the questionnaire in 1999 limited the generalising of the results. However, further analysis showed that the profile of the respondents closely matched that of the target group, therefore some conclusions were drawn. The national Department of Health assisted by the author, has continued to monitor the responses of CS doctors through exit questionnaires in subsequent years. These have drawn significantly better response rates (51% in 2000 and 77% in 2001) allowing valid statistical analysis as well as the description of trends. The results of this ongoing monitoring system form the basis of most of the results reported here.

### 'Uptake' and 'Turn-up'

The first cohort represented 92% of the potential pool of applicants, consisting of 1 182 interns from 1998. This is termed the 'uptake' of CS. A total of 94 interns therefore chose to delay their CS year, leave the country, or not to register at all. Of these, a small proportion applied for CS but did not 'turn up' for duty at their allocated site, presumably for similar reasons. Turn-up rates by doctors have remained between 92 and 95% in subsequent years (Figure 1).

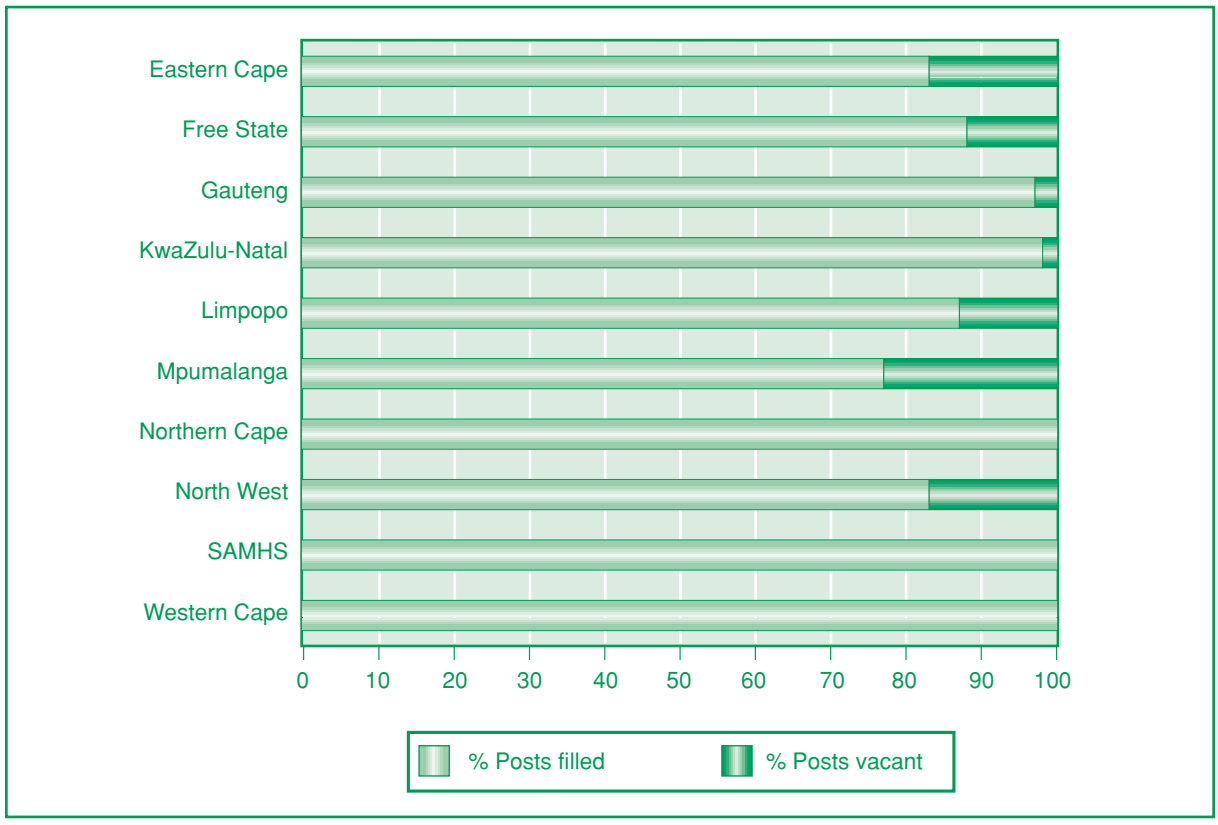
## Application and Allocation Process

Allocations to approved sites for CS allows each applicant five initial choices, which are coordinated nationally in a 'first round' of allocations. This first round normally places approximately 85% of applicants, and the remaining 15% are asked to name another five choices, which go into the 'second round'. The 5% who are not placed in the second round are allocated wherever the remaining posts are identified around the country. It has emerged, however, that the mostly rural provinces are not filling all their available posts in rural hospitals, as these are unpopular choices and tend to be left until the third round of allocations. A number of these doctors then decide to avoid their CS rather than be placed in these rural positions and do not turn up, presumably heading directly overseas. It has been agreed by the stakeholders that those returning from overseas a year after completing internship to do their CS, should be allocated only after all post-interns have been placed, thus effectively dissuading them from returning to the country.

The largely rural provinces are thus left with unfilled CS posts in the most needy rural areas, whereas CS posts in urban provinces are all filled by the 2nd round allocation, as shown in Figure 2. It is therefore questionable as to whether CS is achieving its objectives in terms of providing staff for under-served areas.

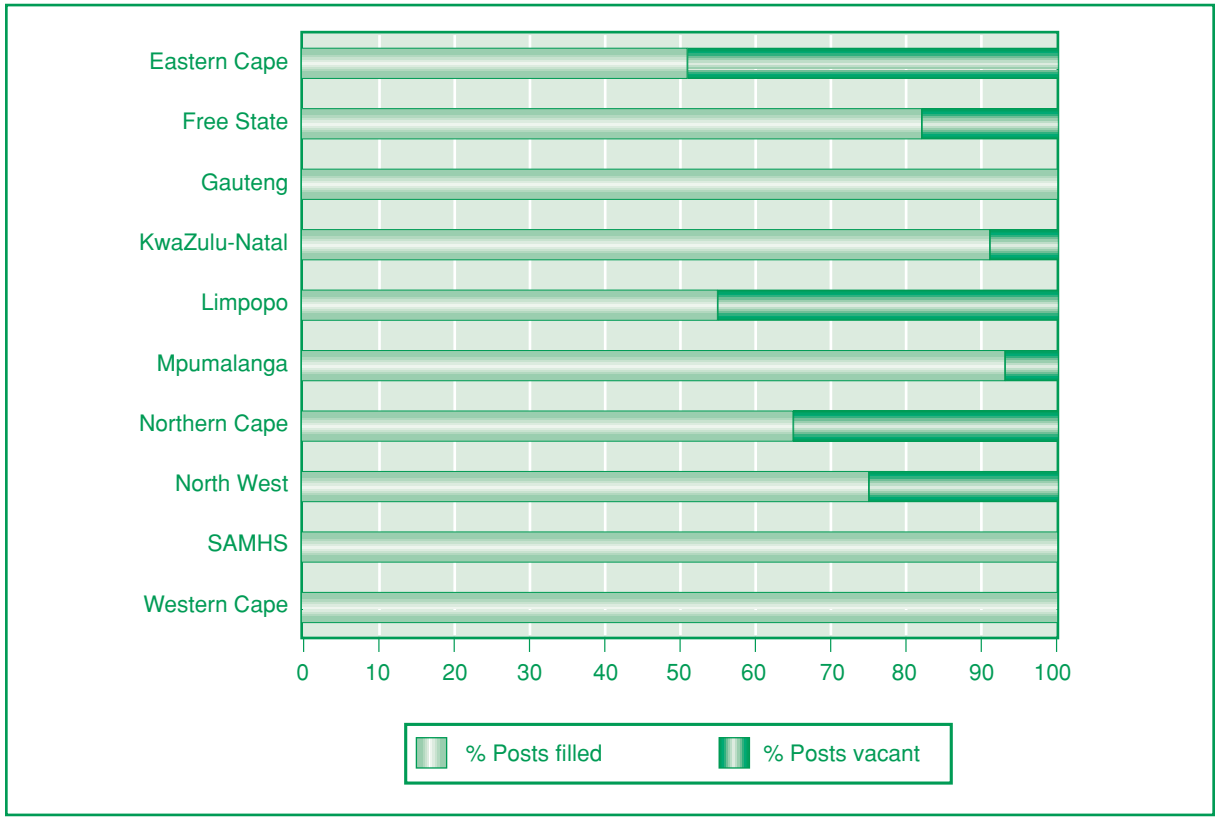
In order to obviate this situation, it was agreed in 2001 that the total number of posts advertised for CS each year should not exceed the total number of intern posts in the previous year, thus eliminating the phenomenon of unfilled posts as far as possible. This will still not prevent those who apply for CS from not turning up if they receive an unfavourable allocation site, but these posts can then be filled by returnees and foreign-qualified doctors.

**Figure 1: Proportion of CS posts filled (turn-up) by end of January, by province**




Note: SAMHS – South African Military Health Service

**Figure 2: Proportion of CS posts filled by end of 2nd round by province**



## The CS doctors experience

The exit questionnaires show that the majority of respondents felt they had been well orientated, that the CS year had been worthwhile, that they had made a difference and they had developed professionally (see Figures 3 and 4). With regard to professional development, one CS doctor said: *"I have not learnt anything new medically, but I have gained an enormous amount of confidence."* (See Figure 4)

**Figure 3: The percentage of CS doctors in 1999 and 2001 who felt that they had personally made a difference during their CS year**

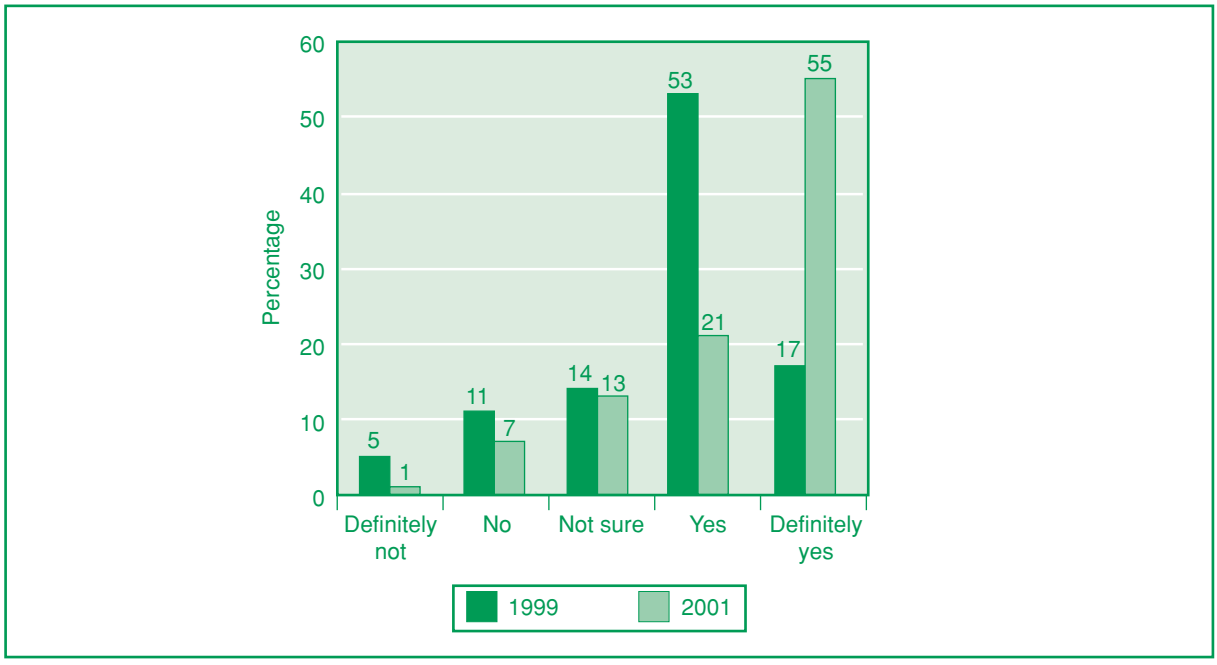
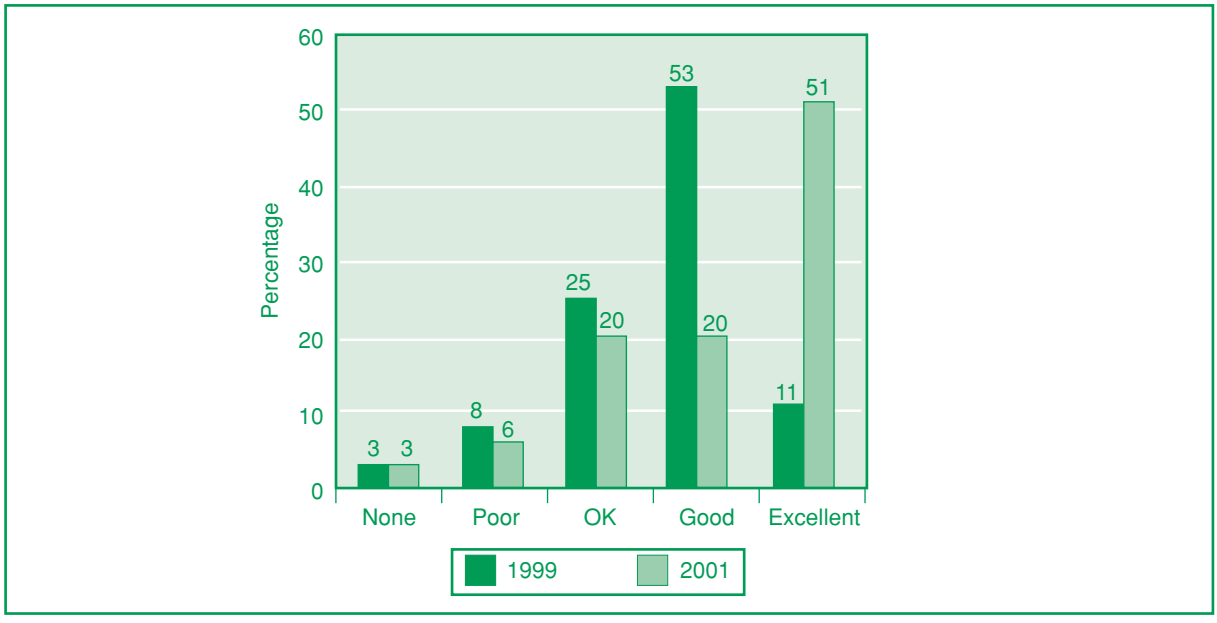
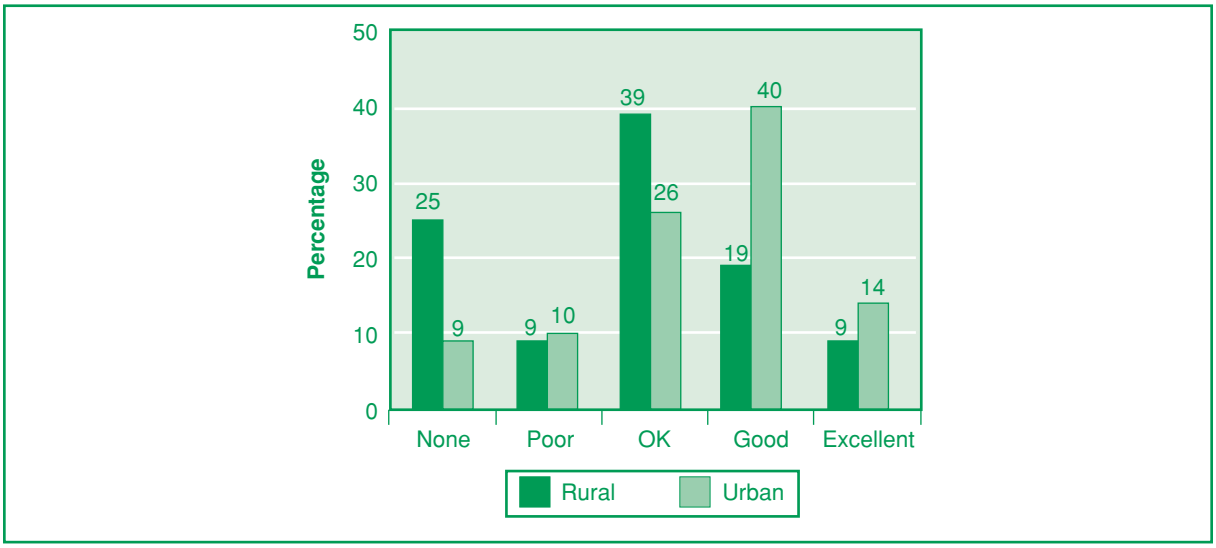



**Figure 4: The percentage of CS doctors in 1999 and 2001 who reported that they had experienced significant professional development during the year**



Doctors in 'rural' hospitals, so defined by the payment of a rural allowance, reported more negatively on the level of clinical supervision as compared to those in urban institutions (Figure 5). With regard to supervision, one CS doctor in a rural hospital said: *"We can handle most medical problems as we have good theoretical knowledge, but we don't know if we are doing it right."*

**Figure 5: Reported level of clinical supervision experienced by CS doctors in rural and urban sites in 2001**

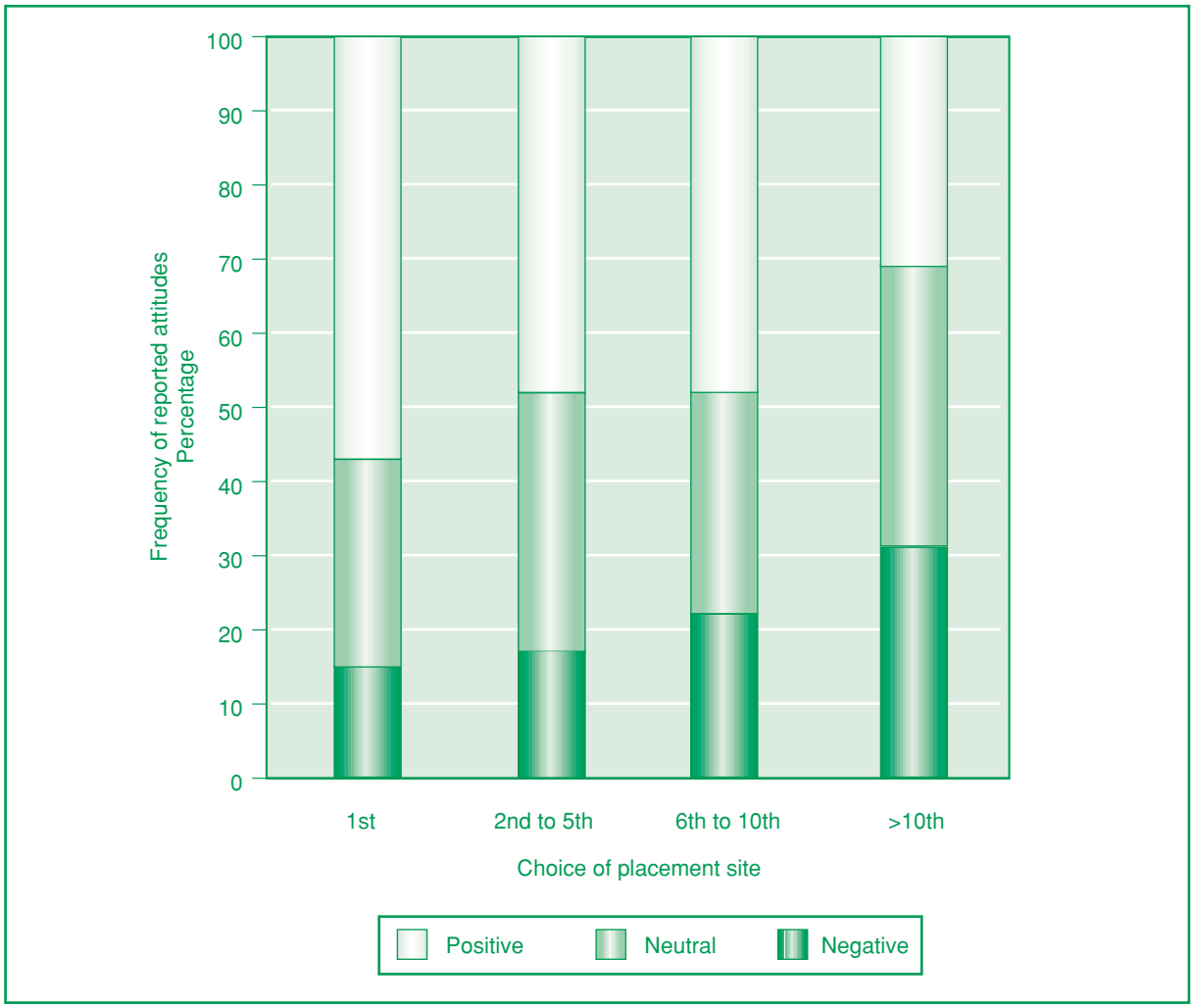



Just over half (55%), reported that they were generally positive about CS and their attitudes did not change over the course of the year. Those who were allocated to hospitals which were not among their first five choices, were less positive about CS by end of the year as compared to those who had been placed at the institution of their first choice (Figure 6). A frequent comment was as follows:

*"It all depends on your attitude [to CS]: if you make the most of it, then you can handle most things."*

Only a handful of respondents (15%) were able to study towards a post-graduate qualification during the year – mostly those placed in urban sites.

**Figure 6: Reported attitudes of CS doctors to community service, relative to their choice of placement site**




## Skills and competencies

A qualitative assessment of the skills and competencies of interns and CS doctors was carried out by a task team of the DoH in 2001. It was based on the findings of the National Confidential Enquiry into Maternal Deaths in 1998, which revealed that the skills of junior doctors were lacking and this was a cause of some cases of maternal death.[3] The study reported on four major inter-related themes including technical skills, 'soft' skills, supervision, and management support in 15 district hospitals in rural areas of Eastern Cape, KwaZulu-Natal and Limpopo Provinces.

Skills and competencies of doctors generally refer to clinical skills, or 'technical' medical skills such as clinical diagnosis and management, surgical and other procedural skills. The Task Team found that the priority technical skills required among junior doctors related to emergency procedures, particularly Caesarean sections, anaesthetics and resuscitation skills. *"Obstetrics is scary – when things go wrong they can go horribly wrong"*,

said one. Also necessary were the less urgent competencies as well as the need to make clinical decisions in the absence of complete diagnostic information, where diagnostic facilities are limited.

In addition to the technical competencies, the task team found that issues such as attitude, teamwork, confidence and communication, were equally important in the delivery of quality medical services. These were referred to as 'soft' skills. Deficiency in 'soft' skills in a number of individuals and hospital teams significantly hampered the provision of quality medical services as a whole. CS doctors and interns are often thrust into situations of clinical responsibility without the personal maturity needed to work as part of a team. The level of attitudinal adequacy to face the challenges of the public service was found to be critical in determining the quality of the medical services. A diagrammatic representation of the themes and findings is shown in Figure 7.

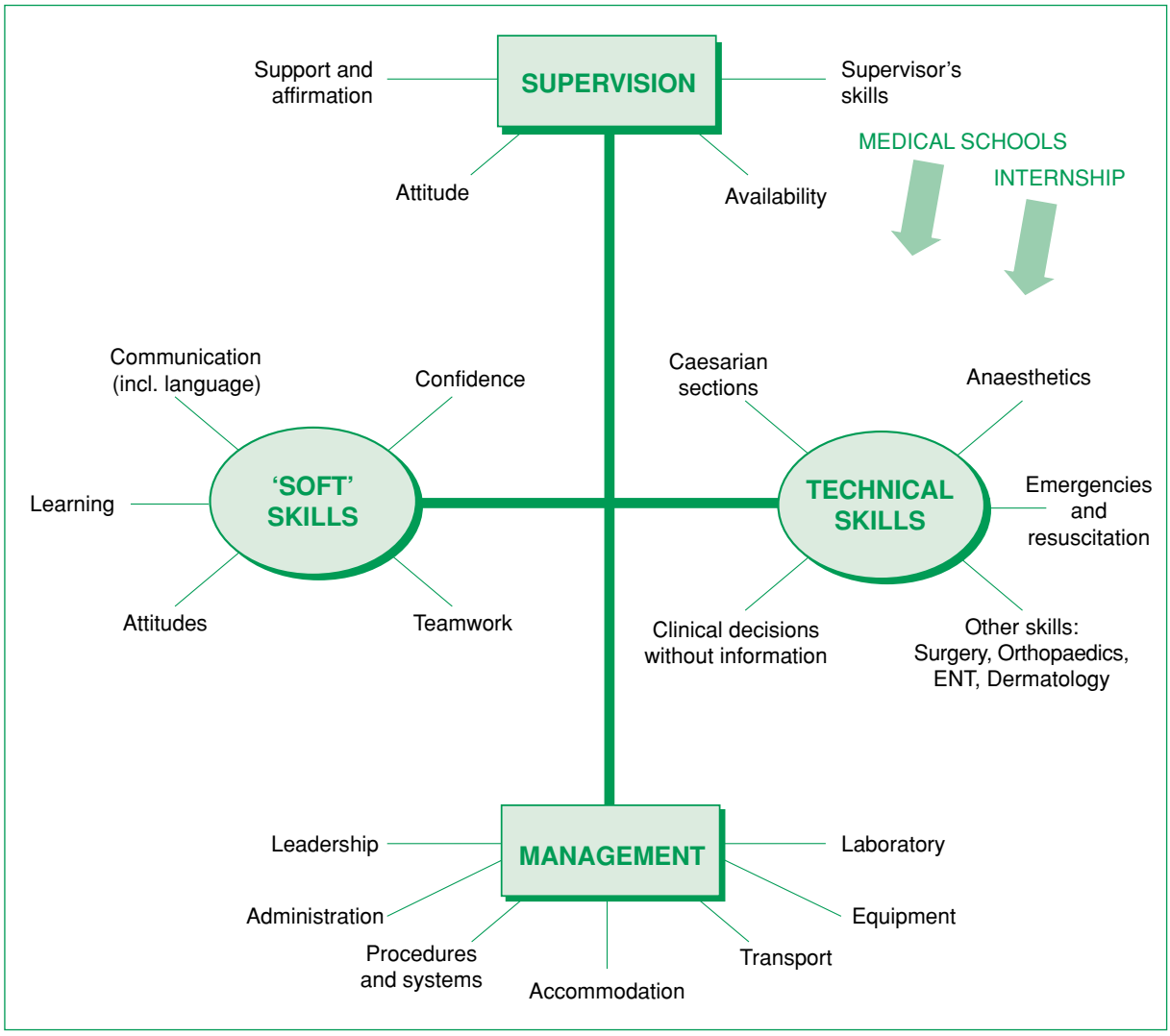
The skills, competencies and attitudes of CS doctors and interns were significantly enhanced or hampered by two other factors at the hospitals visited by the task team, viz: the degree of supervision available to them, and the management capacity of the institution. In terms of supervision, the level of competence and confidence of the more senior doctors was critical in making the CS doctor's work a positive learning experience. Many of the senior doctors are foreign-qualified, and do not share the background and cultural norms of their junior colleagues. Despite this, many contributed their experience and teaching willingly, while others did not see the support of junior South African doctors as their responsibility. Their availability was variable, especially in isolated rural situations where community service doctors were unsupervised by full-time colleagues.

The management capacity at hospital, district and provincial level, was found to play a significant role in the provision of quality care. Although this was not the direct focus of the task team, it is clear that many medical procedures cannot be carried out without the necessary equipment, drugs, supplies or transport. Thus, although the skills and competencies of the doctors may be sufficient, they were unable to perform their tasks satisfactorily in situations where the necessary management and systems were faulty or absent. This was found to be the case in a sufficient proportion of institutions to present it as a major theme of the inquiry. Management capacity affected not only issues of administrative function such as those mentioned, but it was noted that the quality of leadership and the support of teamwork also contributed significantly to the optimum utilisation of human resources in the public sector.

In another study by De Villiers done in district hospitals in Western Cape on skills and competencies of doctors, it was found that CS doctors lacked skills and needed increased supervision which required the resident medical officers to constantly train new recruits at the beginning of each year.[4] Also, the CS doctors ordered more X-rays and laboratory tests, due to their relative

insecurity and reliance on special investigations coming from larger teaching hospitals, which put a strain on hospital budgets particularly at the beginning of each year.

**Figure 7: A diagrammatic representation of the major themes arising from the Department of Health Task Team investigation into the skills and competencies of interns and CS doctors 2001**




An unpublished study carried out on a sample of 41 CS doctors in rural KwaZulu-Natal in 2000 by industrial psychologist, Dhaniram, revealed that CS doctors experienced significant levels of stress and burnout as measured by 3 different objective tools.[5] The highest stressors were found to be career development and responsibility for people, followed by work overload, role ambiguity and conflict in the workplace.

## Future plans of CS doctors

Respondents to the exit questionnaires answered questions on their work plans for the following year. Two trends have become apparent: firstly there is an increasing proportion of CS doctors intending to work overseas, which has risen from 34% in 1999 to 43% in 2001. This is mirrored by the second

trend, viz: the decreasing proportion of doctors planning to remain in the public service – 42% in 1999 to 38% in 2001 (Figure 8). Less than 10% go straight into private practice, and the remainder are unsure.

**Figure 8: Where CS doctors intend to work after their community service year (1999-2001)**

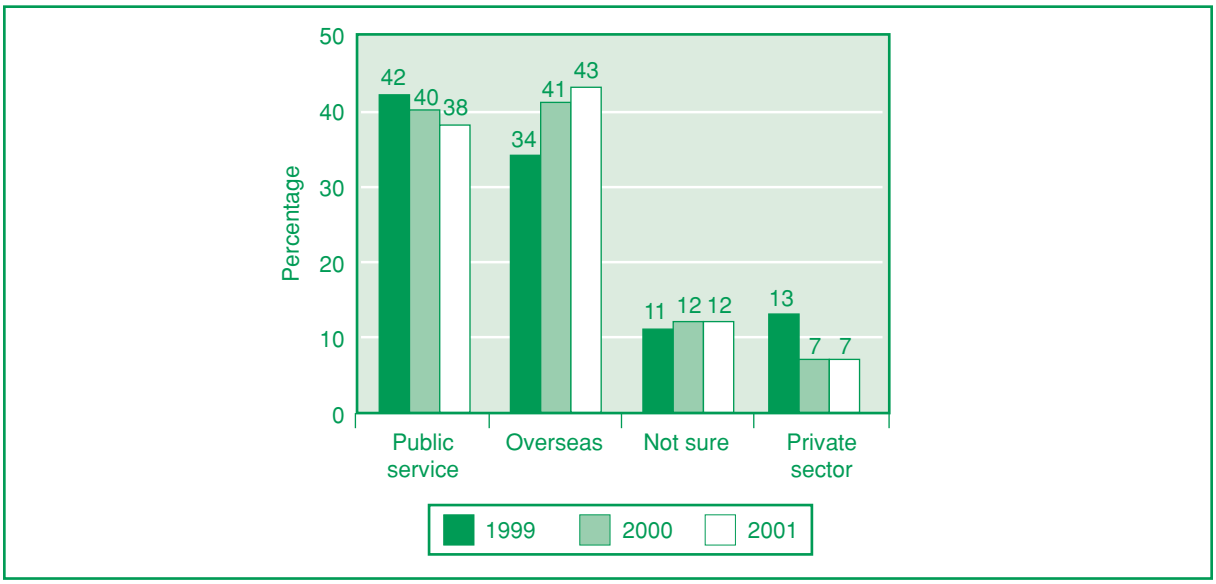
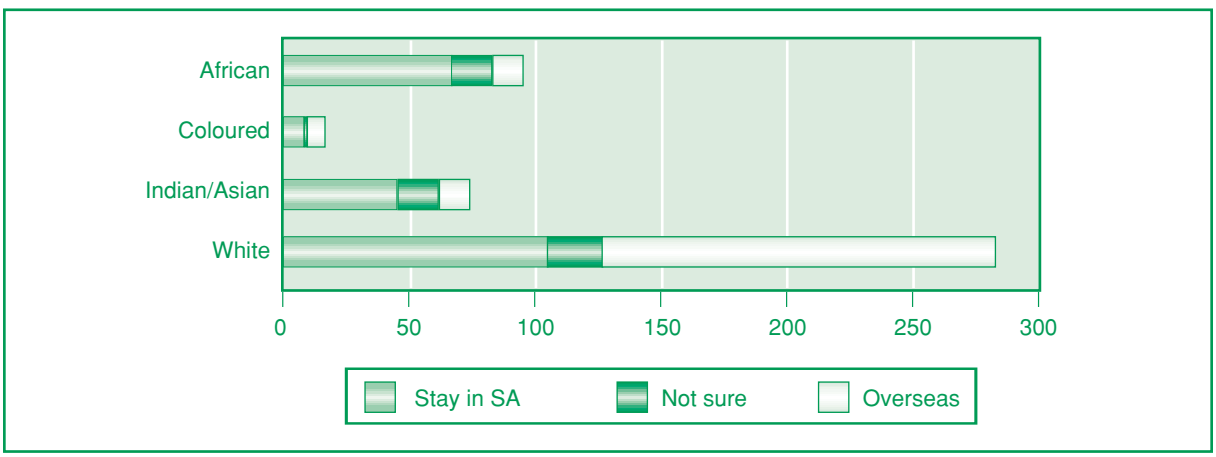


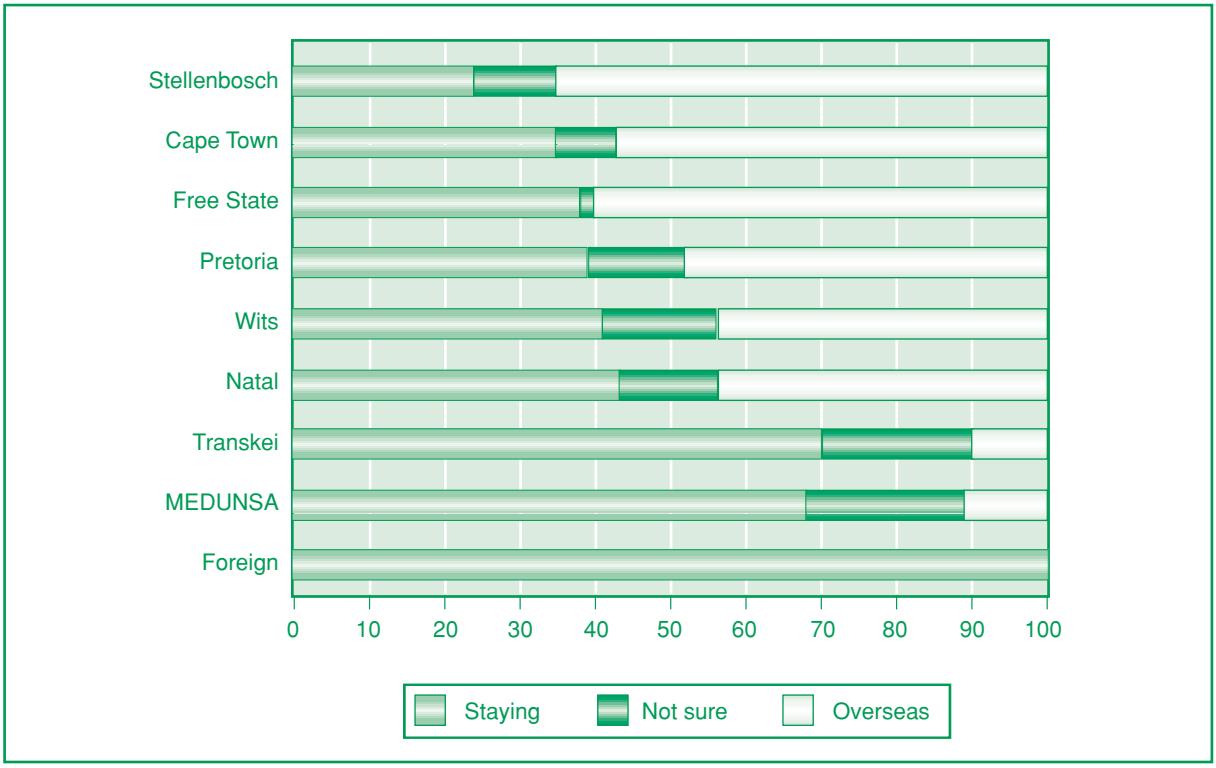

**Figure 9: Intentions of CS doctors of different racial groups in 2001**




Over half of the white CS doctors intended to work overseas the following year, compared to around 10% of African doctors, and around 40% of both Indian and Coloured doctors (Figure 9). There were significantly large differences in the intentions of the respondents when analysed according to university of origin, with the majority of Stellenbosch, UCT and Free State university graduates heading overseas, while the majority of MEDUNSA and UNITRA graduates intended to remain in South Africa (Figure 10). These patterns have remained unchanged over 3 years. These reported plans to work overseas were mostly short-term, as 70% said that they were planning to return to South Africa, 5% were planning not to return and 25% were unsure, and could presumably therefore be persuaded to either continue working in a foreign country, or return to SA – depending on which option

offered the most favourable circumstances. This is a significantly large group of young doctors, amounting to approximately 300 per year, and every effort should be made to attract them back to the country.

**Figure 10: The intentions of Y2001 CS doctors, in relation to the university of origin**




When asked whether they would consider working in a rural or under-served area in the future, around 20% said that they would consider it. There was no significant difference in these responses between those who were placed in rural hospitals compared to those in urban hospitals. In other words, there are over 200 young doctors in the country each year who would willingly choose to work in rural and under-served areas, even at the end of their community service. Given the right incentives, this voluntary cohort could achieve the primary purpose of the whole programme of community service at a much lesser cost than coercing all medical graduates into grudgingly filling posts, most of which are in large urban hospitals.

## CS Dentists

The first group of 173 dental graduates began their CS year in July 2000, and were allocated to sites in all 9 provinces as well as the SA Military Health Service. In 2001, the largest number (34) were placed in the North West Province. Approximately 25% of the total number of CS dentists were allocated to rural sites for which they received a rural allowance. Nearly a quarter (22%) of the first group of dental graduates in 2000 that were eligible,

decided not to do community service, and presumably left the country. The proportion was significantly reduced with the second cohort when only 7% did not take up CS posts.

An initial qualitative evaluation of their experiences was undertaken by the DoH staff assisted by the author, through focus group discussions of CS dentists in 6 provinces, in December 2000. Structured interviews were also held with the provincial coordinators of CS dentists. A brief questionnaire was also administered to 93 (52%) of the CS dentists, half of whom were working in rural sites. This was followed by a postal survey to all CS dentists carried out by the University of Stellenbosch in March 2001, to which 58 people responded (35%) rate was obtained.[6] Finally, the national exit questionnaire was carried out by the DoH on the second cohort in May 2002, with a response rate of 42%.

## The CS dentists experience

The qualitative results are summarised in Figure 11. Graduates emerging from dentistry schools have a level of skills far greater than those required by their placements as CS dentists in the public health system. They feel that their skills are not being utilised appropriately, as they are largely performing extractions only. They feel that their more complex skills are wasted.

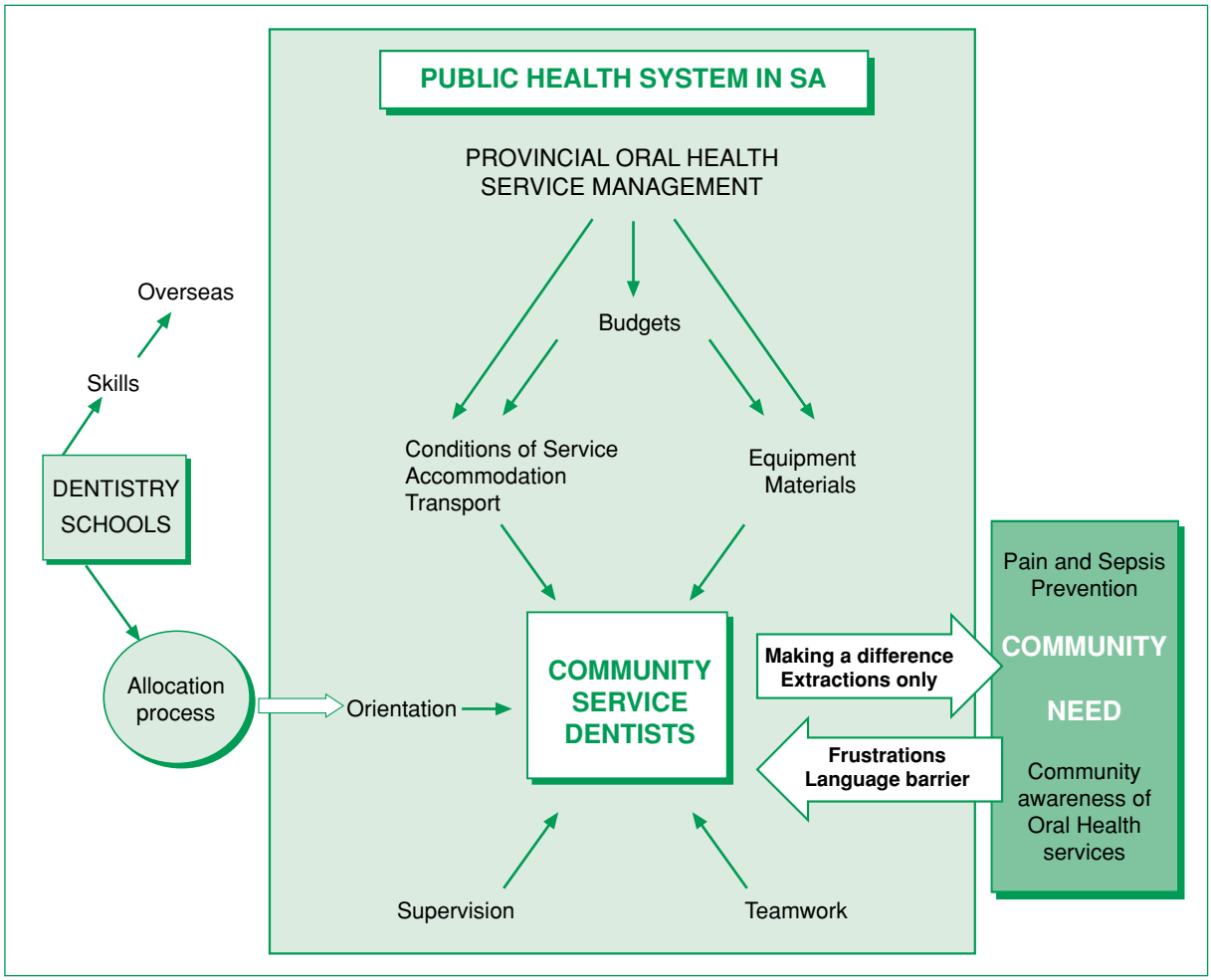
*"I received a first world training to work in a third world institution,"* is a typical comment, *"I learned a hundred times more at university but now I am just doing extractions which is boring and frustrating."*

A number of challenges and constraints were identified including:

- Inadequate orientation (this is supported by the quantitative results)
- CS exposed dentists to the problems and limitations of the public health system, and particularly those affecting Oral Health Services (OHS) at provincial level, such as:
  - Low budget allocations for OHS
  - Unavailability of equipment and supplies
  - Unavailability of accommodation at rural sites
  - Lack of transport to reach outlying clinics
  - Poor supervision particularly in rural sites.

There was great variation between provinces and the quality of provincial management emerged as a key factor. Supervision was significantly poorer in rural as compared to urban sites. Some CS dentists had managed to work as part of a team, whereas others found themselves extremely isolated and lonely.

**Figure 11: A diagrammatic representation of the major themes arising from the CS dentists focus group interviews**




## Allocations

The allocation process was widely criticised by the first cohort for being too late and taking place during their final exams. Furthermore it was felt to be unfair, as new posts became available after the second round of applications, and there was inadequate information available about the placement sites. The process was felt to lack transparency, as the criteria used for allocating them were not clear. As expected, only those who received their first choices, and bursary-holders were satisfied with the procedure. Some hospitals were unaware that CS dentists were posted at their hospitals until their arrival, which added to the confusion.

## Making a difference

The majority 63% felt that they were making a difference especially in areas where dental services were previously non-existent. Some dentists started their own programmes such as: brushing and schools oral health promotion programmes. However, most of the CS dentists did not get involved in preventive strategies in the community. A minority felt that they made no

difference at all. One of the community dentists indicated that his "initial enthusiasm was dampened" because of lack of equipment and materials which inhibited providing high quality care. Some felt that they were doing more harm than good to their patients. Others felt that they were doing the work of a dental therapist (extractions and nothing else).

## Skills gap

A common theme related to the gap between the skills that dentists are taught at university, and the skills required by community service in the public health service, is reflected in the following comments:

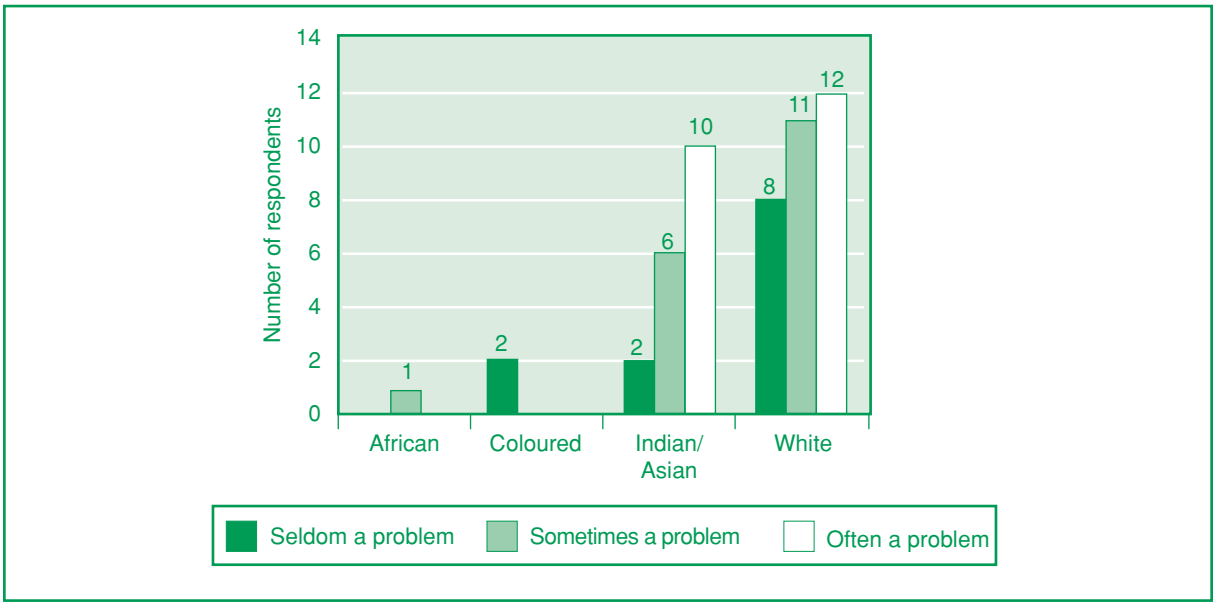
*"We are over qualified for Community Service."*

*"I only use a small portion of the knowledge I received."*

*"I learned a hundred times more at university but now I am just doing extractions, which is boring and frustrating."*

Many CS dentists were resentful that they were losing these skills through lack of use during their first year of practice. Even the fitting of dentures, which was identified as a major need in the community, could not be done at many sites because of the lack of equipment and materials. CS dentists felt that dental therapists or oral hygienists could have been done the work they did. A number of CS dentists particularly whites and Indians were frustrated by not being able to communicate with their patients (Figure 12).

**Figure 12: The number CS Dentists who identified language as a barrier between them and their patients, by race**



## Equipment shortage

Many CS dentists felt that the service to their patients was severely limited due to lack of equipment. Since dentistry is so highly dependent on technical equipment and consumables, this point was a major concern and was strongly emphasised by those CS dentists who were placed in rural areas. Almost 25% reported that they did not have a full set of instruments, and one-third said that they often experienced shortages in equipment for primary oral health care. This was particularly an issue in the Limpopo Province. Some also proposed that more research should be done to determine whether or not the sites allocated for CS dentists are actually functional. In provinces where the Oral Health Services budgets are subsumed into general hospital budgets, this is difficult. However, some provinces performed well with regard to provision of equipment and the usage of their budget, and this seemed to relate to the quality of the provincial management of OHS.

## Community awareness and under-utilisation

Some of the CS dentists in certain rural areas saw only a few patients a day and had plenty of time on their hands. It seems that there was lack of community awareness of the availability of free dental care in their public health facilities. Some CS dentists reported to be seeing only five patients a week particularly those allocated to the Free State and Limpopo Province. One CS dentist in the Limpopo Province who was placed in a rural area commented that there was a shortage of patients: "*I'm sitting around not doing anything, losing skills and dying of boredom. If there are no patients we should not be forced to sit around and do nothing. At least let us work half days, so we can take up music or painting to keep ourselves busy.*" However, in some provinces such as KwaZulu-Natal, CS dentists complained of being too busy with extractions to do anything else. The appropriate utilisation of human resources requires careful planning, and those provinces which have strong provincial management of oral health services, keep their CS dentists productively occupied.

## Conditions of service

Lack of adequate accommodation in rural areas was a common complaint. Some CS dentists who did not receive the rural allowance felt that no incentives were given to compensate for the social and geographical isolation, even though the rural allowance was given to dentists in more rural sites. The salary was felt to be low, presumably by comparison to what they could be earning in the private sector. The lack of responsiveness of certain provincial departments also came in for criticism, following administrative problems such as late payment of salaries, leave approval etc. Few CS dentists had been given clear job descriptions, and little information was available regarding conditions of service. The lack of transport to get to outlying clinics was a frequent frustration.

### Supervision and teamwork

Supervision was a major problem in rural areas, though less of an issue in urban centres. Where there was no other full time dentist around, the CS dentists were expected to cope on their own. The presence of a regional coordinator alleviated problems, but most areas have provincial coordinators only. Some found themselves without dental assistants or even cleaners, making the job tedious and slow. Where there are dental assistants who have been in the job for years, the new CS dentists had to negotiate their own place within the team, which some did more successfully than others. Many found themselves having to perform tasks that they did not anticipate, such as ordering medical supplies, motivating for equipment, and negotiating for transport to visit clinics.

### Future plans

The University of Stellenbosch study of the first cohort in 2000 revealed that 38% of respondents were planning to enter private practice, 24% planned to remain in the public sector, and 35% were planning to leave the country. The 2001 exit questionnaire revealed that 45% were intending to enter private practice, 10% to remain in the public sector, and 42% to go overseas. However, care needs to be taken when interpreting these findings as the studies involved very small numbers.

### Summary

There has been limited success through CS in terms of providing access to certain oral health services. However, the community needs for sepsis prevention and preventive programmes is starkly contrasted with the expectations of dental graduates of practicing high-tech dentistry. This is illustrated by the huge 'skills gap' between community oral health needs, and what CS dentists can do. CS for dentists highlights many of the general issues and problems in the health system (e.g. OHS management, budgets, equipment, transport, conditions of service). The differences between rural and urban placement sites are marked, especially in terms of supervision. The appropriateness of universities in continuing to produce dentists at high cost, many of whom go on to leave the country, needs to be reviewed.

## CS Pharmacists

The first group of 406 newly qualified pharmacists began their year in January 2001, with allocations to all 9 provinces, the SA Military Health Services, and the Dept of Correctional Services. The largest group of 82 CS pharmacists was allocated to KwaZulu-Natal.

An audit of this first cohort was carried out through the national DoH using qualitative and quantitative methods. Nine provincial focus groups of CS

pharmacists were interviewed between July and September 2001, and the major and minor themes arising from these data informed the construction of an exit questionnaire. This was then sent out to every CS pharmacist through the provincial coordinators, with the assurance that responses would be anonymous. 53% responded to the questionnaire providing a baseline for descriptive purposes.

Most CS pharmacists were placed at district hospitals, and 20% were placed at hospitals where other health professionals received a rural allowance, thus designating the facility as rural. However, half of the respondents did not know whether their hospital was classified as rural or not. Most of the CS pharmacists are unmarried females, and the majority received their training at the University of Durban-Westville. Just under half had completed their intern training the previous year in the retail sector.

## Application and allocation process

Being the first cohort of CS pharmacists, the application process was poorly organised, and many felt that the allocation process was unfair. The majority felt that they were given inadequate information to make choices, and the allocations were made extremely late in the year. There was some confusion over the availability of CS posts and accommodation and this meant that the situation at the beginning of the year was extremely tense at a number of sites. Those who got their first choices were satisfied, but the 33% who were allocated in the second and third rounds (i.e. not one of their first five choices) were less happy. Although there were formal orientation programmes arranged in some provinces, almost half of the respondents reported that they were not **orientated** to their jobs. A number of CS pharmacists were sent to health facilities where there had never been a pharmacist before, and these experienced particular challenges.

## Experiences of CS pharmacists

Not withstanding these initial difficulties, the feedback from this first cohort was extremely variable, and in many instances, surprisingly positive. The focus group interviews tended to allow the ventilation of suppressed frustrations, especially with regard to hospital management and conditions of service. However, when looked at objectively in terms of the exit questionnaire, the vast majority felt that they had made a difference during the year, and said they had developed professionally as a result of the CS experience. Half described their attitude to CS as positive and the other half as negative, and this appeared not to have changed over the course of the year (Figure 13).

Most CS pharmacists felt valued as part of a team, and took some part in management of the pharmacy or unit. However, there were enormous variations in the quality of management of the pharmacies and hospitals. Some pharmacies and hospitals welcomed and included the new recruits,

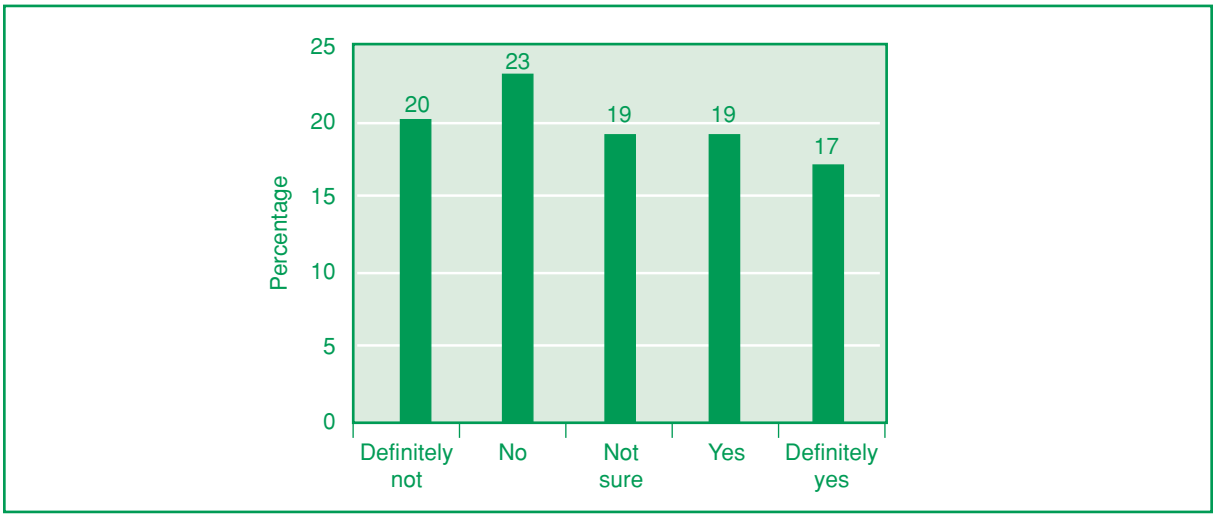
into management and others used them just as another pair of hands.

Pharmacists placed in institutions where there had never been a pharmacist before made a tangible difference, especially in rural hospitals. Examples witnessed by the audit team include:

- Introducing new stock systems and budget control
- Better patient counselling
- Training of primary care nurses on rational drug use
- Attending ward rounds.

Initiative and energy, which CS pharmacists bring to an institution was seen at the Hillbrow manufacturing unit, where two CS pharmacists had introduced new systems and significantly increased the production level.

**Figure 13: Responses of CS pharmacists to the question: "Has your CS experience influenced your career plans?"**

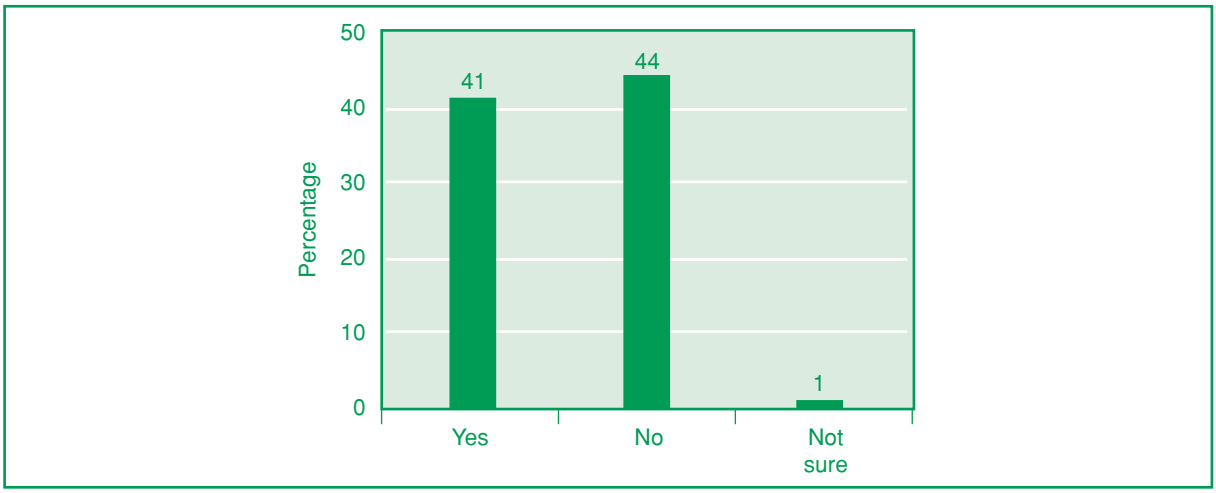



Written submission from a CS pharmacist at a rural hospital in KwaZulu-Natal:

"When I started working at N Hospital there was no pharmacist here before me. All the work was being carried out by the assistants, and I knew there was a lot of work to be done in order to get the pharmacy up to an acceptable standard. I started creating control cards and entering these onto a computer programme, placing the monthly orders, dealing with leave and the staffs' personal problems, as well as tons of paperwork. I came to the conclusion that the assistants could run the pharmacy without a pharmacist. But before considering applying for a transfer with the Head Office, I decided to change my way of thinking and make the most of the situation. My first objective was to control the budget for drugs and if possible to reduce it ... Don't get me wrong and think that it is great living in a rural hospital – I would have preferred to have been placed in an urban situation close to family and friends. But community service is here to stay and it is just a matter of accepting and concentrating on the positive and not dwelling on the negative. Giving a year of your life to the community can be seen as good or bad depending on how YOU spend the year. Community service is basically what you make of it."

Most CS pharmacists felt that their role was not clearly defined, and only 41% had a job description. (Figure 14). About half reported that they felt valued as part of a team, and experienced a satisfactory level of support from pharmacy managers. Even though they were often the youngest members of the team, they were often put in charge of a team of older pharmacy assistants who had been working for years, and this caused some friction where the CS pharmacists were not mature enough to handle the situation sensitively. In other situations, the initiative and new ideas of the CS pharmacists were welcomed and utilised, particularly with regard to computerisation.

**Figure 14: Responses of CS Pharmacists as to whether they have a job description**




Pharmaceutical services managers were reassured to have a reliable supply of young CS pharmacists each year, even though this meant additional orientation, in the light of the unpredictable turnover of permanent staff.

Many felt under-valued by the salary level of government pharmacists, and the fact that they are not seen as being fully qualified: *"We are seen as students", "I am treated like a donkey-boy", "I am just an extra pair of hands"*.

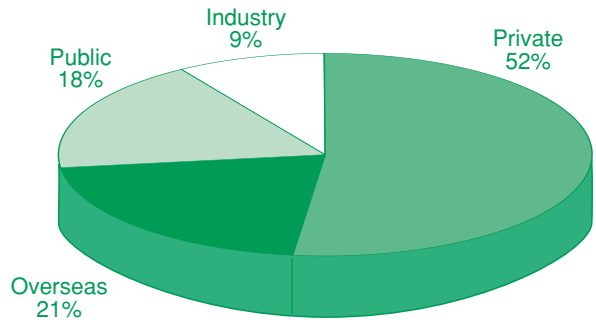
The vast majority (71%) felt strongly that they would remain in the public service if the salary package of pharmacists were higher.

The salaries of pharmacists in the public sector compared to the retail/private sector were clearly insufficient to retain them in areas of need, and these institutions would continue to rely solely on CS pharmacists in the future. This raised the issue of end-of-year handovers and the need to ensure that the systems and initiatives begun by one CS pharmacists were not wasted, but continued by successive CS pharmacists in isolated pharmacies.

With regard to plans for the following year, 52% intended to work in the private sector, 21% planned to go overseas, 18% were to remain in the public sector, and 9% planned to work in industry (Figure 15). Of those intending

to work overseas, about half did not intend to return to the country. Whereas most (60%) said they would not consider working in a rural or under-served area in the future, 13% said they would consider it.

**Figure 15: Shows the intended place of work of Y2001 CS Pharmacists the following year**




## Other Professional Groups: 2003

Seven new groups of health professionals are due to begin their CS in 2003, and planning for their placements is currently underway. These are:

- Physiotherapists
- Occupational therapists
- Speech therapists
- Dieticians
- Radiographers
- Clinical psychologists
- Environmental Health Officers.

The numbers in each group are relatively small, but the same issues that affected the first cohorts of doctors, dentists and pharmacists are likely to affect these graduates as well. A baseline study of entrants' attitudes to and experience of CS within the first months is being planned in collaboration with the World Health Organization (WHO).

## Conclusions

### Overview

With respect to the responses of all three professional groups undergoing CS, there were a number of patterns that were notably similar. Firstly, despite difficulties and frustrations, the majority felt that they had made a difference and had undergone some professional development. Overall, most described their experience of the year as positive in retrospect, but only a minority

reported that their attitude had become more positive during the year. In other words, the experience of CS appears to have no net effect on young professionals' career plans, but merely delays them by a year. This is in contradiction to the hopes of the Department of Health that establishing the system of CS would positively influence health professionals' future contributions to the health system.

Supervision of CS doctors, dentists and pharmacists by more senior professionals was found to be significantly poorer in rural than in urban settings. Of significance is the finding that around 20% of CS doctors would voluntarily consider working in a rural or under-served area in the future, a cohort that could potentially fill the staffing needs of these hospitals and clinics, given the right incentives. However, only 13% of pharmacists and 6% of dentists shared these career plans.

## Gaps in skills and attitudes

It has become apparent that new graduates entering CS, experience a disjuncture between the academic training expectations and the actual conditions in the public health service.

Dentists showed the greatest gap, between their skills and expectations as university graduates, and the needs and context of oral health in the public service. With a few exceptions, they had no idea how to address oral health on a population-based level, and many were reduced to managing pain and sepsis through endless dental extractions, while their costly high-tech skills were unused during the year. The frustration that this generated added to the resentment of having been coerced into CS, and as a result this is probably the most disaffected CS group.

CS pharmacists who had completed their internships in the retail sector, were also initially disorientated in the public health sector, but pharmacists as a group were probably the most appropriately trained for the work required of them during CS. Their skills and knowledge was valued and appreciated particularly where there had been no pharmacist before, and they made a noticeable difference in a number of situations.

Doctors varied widely in their level of preparedness not only in skills but also in attitudes. The DoH Task Team on Skills and Competencies of Junior Doctors highlighted the important issues of the so-called 'soft skills' of teamwork, and highlighted the fact that excellent technical or medical skills are rendered useless in the absence of the ability to handle conflict, teamwork and responsibility. Language gaps were also found to be a factor. The task team also found that the absence of management support in a number of institutions, with regard to laboratory services, transport, equipment and policy issues, made it difficult for the skills of the doctors to be utilised.

All of these gaps reflect on the appropriateness of the curricula at university level to the South African realities in the public service, and also indicate the

need to put in place training programmes to address these gaps, both before as well as during the CS year.

## Conditions of service and management

CS tends to highlight the general management deficiencies in the public health system, as each successive group of young professionals encounters the system anew. All groups expressed dissatisfaction at the conditions of service in the public sector, but particularly the pharmacists, many of who had exposure to the private sector during their internships. Many of the dentists, who have a particular reliance on specialised equipment and supplies, found themselves unable to perform any but the most basic procedures.

Where accommodation was provided for CS professionals at rural hospitals, most reported that it was satisfactory, but there was significant variation between provinces. More females than males complained that CS has put them at an increased risk to their personal safety. A few felt that their religious beliefs were compromised by the site of their placements, but this was less than 10 individual respondents in total from all three groups.

A few provinces have attempted to improve the burden of CS in isolated or inhospitable sites by arranging rotations of CS professionals with a 'complex' of institutions, between larger urban hospitals and smaller rural ones. This has worked well in some instances, with 6-month or 3-month rotations, but the educational value of exchange has not been fully realised in other provinces, since CS is regarded as service and not as a training year.

## Emigration

A feature of all these young professionals is the alarming number (20% and 45%) that are planning to work overseas the following year. One-fifth of the pharmacists, and just under half of the doctors and dentists surveyed intended to work outside of SA the following year. In the case of doctors, an increasing trend has been documented since 1999, now amounting to around 500 per year. While most intend to return, a significant minority are undecided, and could be swayed either to return or to continue working overseas, depending on the relative attractions. This group needs to be targeted with incentives to return and contribute to the health needs of the country.

## Recruitment and retention of professional staff in under-served areas

Three years after the introduction of the CS scheme, the most difficult to staff hospitals still remain without doctors. Additionally the turnover each year burdens senior staff, who have to orientate and train each new group. Moreover, the coercive nature of the scheme gives rise to negative attitudes on the part of a significant proportion of CS professionals, which is difficult to manage, especially in small institutions. This raises the question of whether CS, in engendering a sense of obligation on the part of the newly qualified professionals, actually defeats its own ends as they assume that they have

'done their duty' and compensated society for the costs of their studies, after only one year. For the same reason it could also be seen as one of the 'push' factors in the current brain drain to overseas. This has been found to be the case with respect to the National Health Service Corps in the USA, where those who were contracted into service in rural areas as compensation for the payment of their education costs, did not remain longer than their service obligations.[7] This was in contrast to those who chose these situations voluntarily, who tended to stay longer in such communities as they were often those who had grown up in such surroundings. An article from Ecuador about CS, which has been in operation since 1975, similarly challenges the assumption that CS attracts health professionals to remain in under-served situations, and suggests an alternative system based on volunteerism.[8]

There are many other non-coercive strategies that have been shown to be effective in ensuring adequate staffing of rural health facilities, and these need to be put into place. The active recruitment of high school students from rural and under-served areas into tertiary health science education, with appropriate educational and financial support, is a long-term strategy that has been shown to make a difference not only in other countries but also in South Africa.[9] Secondly, the exposure of undergraduate students to rural and under-served areas during their training, and maintaining the links of those students drawn from rural areas with their communities of origin, will probably increase the proportion of graduates who will consider this a career option. Thirdly, financial as well as non-financial incentives such as housing, extra study leave and postgraduate educational support, can retain practitioners in areas of need.

The factors that will attract health professionals to practice in under-served areas within South Africa are the same in principle as those that would encourage them to remain in the country. A thorough recruitment and retention plan is needed by the Department of Health, in order to prevent the ongoing loss of valuable human resources from the country, and at the same time provide the conditions that will support those who choose to work in circumstances that most prefer to avoid. This demands nothing less than 'swimming against the stream', in a globalised economy where health services can be bought by the highest bidder. But it is precisely in these choices that health professionals can demonstrate their willingness to contribute to alleviating the pain and suffering of those who are disadvantaged, motivated not by financial gain but by a commitment to their vocation.

## Recommendations for Community Service for Health Professionals

It is recommended that:

1. A comprehensive national plan is drawn up for the recruitment and retention of health professionals in rural and under-served areas that includes other complementary strategies besides CS.
2. Health Science Faculties address the gaps between the skills and attitudes of their graduates, and the realities of the health of the South African public, as experienced by CS professionals.
3. Detailed information on CS should be made more widely available to applicants.
4. Rotations between isolated or inhospitable sites and more urban sites for CS be facilitated where appropriate, in each province.
5. Rural incentives, both financial and non-financial, should be put in place to retain health professionals in areas of need.
6. Supervision of CS professionals in rural areas needs to be improved through direct support by health managers, as well as the support of senior clinicians in the health system, through appropriate promotions and acknowledgement.
7. The strategy of CS should be reviewed after 5 years, to examine whether it is in fact achieving the goal for which it was instituted.

## References


1. Reid SJ, Conco D. Monitoring the Implementation of Community Service. In: Crisp N, Ntuli A (Eds). South African Health Review 1999. Durban: Health Systems Trust; 1999.
2. Reid SJ. Compulsory Community Service for Doctors in South Africa – an evaluation of the first year. S Afr Med J 2001; 91: 329-36.
3. Mathebula MP et al. Skills and Competencies of Interns and Community Service Doctors. Pretoria: National Department of Health: Maternal, Child, Women's Health and Nutrition Cluster; 2001.
4. De Villiers M, de Villiers P. The Professional Skills of Medical Practitioners in delivering District Hospital Services in the Western Cape Province. Dept of Family Medicine and Primary Care. Stellenbosch: University of Stellenbosch; 2002.
5. Dhaniram N. Stress, Burnout and Salutogenic Functioning amongst Community Service Doctors in KwaZulu-Natal Hospitals. Unpublished Masters thesis submitted to UNISA Dept of Industrial Psychology; 2002.
6. Naidoo S, Chikte U. Community Dental Service – the first year. SA Dent J 2002; 57(5): 193-6.
7. Pathman DE, Konrad TR, Ricketts TC. The comparative retention of National Health Service Corps and other rural physicians; results of a 9-year follow-up study. JAMA 1992; 268(12): 1552-8.

8 Cavender A, Alban M. Compulsory Medical Service in Ecuador: the Physician's Perspective. Soc Sci Med 1998; 12(47): 1937-46.

9 De Vries E. Do South African rural origin medical students return to rural practice? Paper delivered at the Fifth Wonca World Conference on Rural Health. Australia: Melbourne; Unpublished paper, 2002.

# Community Based Health Workers

9

**Dr Irwin Friedman**[a]
The SEED Trust, Health Programme

*This chapter examines the use of various categories of Community Based Health Workers as first line health workers in dealing with important health and social issues, for example with Tuberculosis and HIV/AIDS. It attempts to answer certain key issues: Are Community Based Health Workers valuable and cost effective? What should be their role? To whom should they be accountable? In what way should they be selected, trained, supervised and remunerated, if at all? What methods should be used for monitoring and evaluating Community Based Health Workers?*

*The chapter is based on a brief review of published literature followed by a short survey that was circulated via electronic discussion groups and e-mailed to key informants around the country. This was supplemented by direct discussion with participants in a few programmes.*[2]

a Acknowledgements: I would like to thank the very many people who assisted by giving me their valuable time in explaining or writing about CBHW Projects in which they are involved. It has not been possible to utilise all of the material that I have been given or to do justice in the description of the incredible work that so many are doing in adverse circumstances throughout the country. If any insights are to be gained then it is no doubt from the valuable lessons they have helped to share. If there is any obscurity, then I must take the blame. Thank you Penny Dladla, Zandile Ngidi, Nkosi Nyawo, Dudu Maoela, Tshitshi Ngubo, Mayu Sosibo, Sandhya Singh, Barbara Solarsh, Sarah Rule, Judy Dick, Buti Kulwane, Phillicia Matshidiso Mapapanyane, Sister J. Sithole, Yolisa Sithela, Bridget Lloyd, Nomathemba Mazaleni, Alan Vos, Joan Littlefield, Steve Reid, Anna Voce, Monika Holst, David McCoy, Tanya Doherty, Sphindile Magwaza, Ross Haynes, Megan Mortlock, Carmen Baez, Ria Grant, Tracey Dolan, Silindile Moitse, Abdul Elgoni, Gcina Radebe, William Okedi, Elise Levendal, Dingie Van Rensburg, Thulani Masilela, Nandy Mothibe, Evangeline Shivambu, Peter Barron, Wendy Hall, Serene Wentley, Florence Bhunu, C.P Nimb, Soekie van der Westhuizen, M.L. Maphuta, Thandi Puoane, Elizabeth Swarts, Sibongile Dube, Marian Loveday Tswane ATIC, The Equity Project, The Partners in Health initiative, Border Institute for Primary Health Care, AMREF South Africa, The Valley Trust, NPPHCBN, PPHC KZN, Centre of Learning, Emakhosini Sub District - Ulundi Municipality, and anyone who I have inadvertently omitted.

## Definitions and Roles

The umbrella term 'Community Based Health Worker' (CBHW) embraces a variety of health auxiliaries who are selected, trained and work in the communities in which they live. The term is used in this chapter to be as inclusive as possible of all the different types of community based health workers. They include the most generic type of workers such as community/village health workers (CHWs/VHWs), *Onompilo,*[b] community resource persons (CORPs) as well as a range of more specialised cadres such as community rehabilitation facilitators (CRFs), community based directly observed therapy short-course (DOTS) supporters, HIV/AIDS communicators (HACS), home based care (HBC) workers, first aid workers, lay health workers etc. All these types of CBHWs carry out one or more functions related to health care delivery and welfare, are trained in some way in the context of the intervention, but usually have no formal professional or para-professional certificated or tertiary education. Not included for example, are formally trained nurse aides, medical assistants, physician assistants, paramedical workers in emergency and fire services and others who are self-defined health professionals or health para-professionals. CHBWs may receive training that is recognised by the health services and national certification authority, but this training does not form part of a tertiary education certificate or degree.

Although the role of traditional, faith and complementary healers is important, particularly in view of the fact that new legislation is being anticipated for Traditional Healers, the scope of the chapter was already so wide, a separate chapter would be necessary to deal with the topic.

In general terms, the role of CHBWs is to act as agents for health promotion, care and health development. They also provide local outreach for health services that might otherwise be unavailable.

## Brief Historical Review

For more than twenty years, since the World Health Organization (WHO) declaration of Alma Ata in 1978 established the Primary Health Care (PHC) paradigm, CBHWs in one form or other have worked in different parts of the country, undertaking varied roles. Non-governmental organisations (NGOs) in particular were early to recognise their value in extending PHC services. Some CBHWs are paid and have been able to make their work a career, but many more are unpaid and have worked as volunteers, driven by their willingness to provide community service. Whether it is fair to encourage voluntarism of this sort in poor communities, where it is important that people earn income to support their families, has been a terrain of contestation for some time.

b Onompilo is the Zulu word for Community Health Worker.

CBHWs have had a chequered past in South Africa. In apartheid times, it was mainly NGOs and some 'homeland' governments who undertook the programmes although their position began to change when they gained tentative recognition by the Department of Health in the early 1990's. As a cadre, however, there was little practical attempt at developing common standards until various professionals, the present Minister of Health Dr Manto Tshabalala-Msimang among them, from about 1992 to 1994 held national workshops to bring Community Health Workers' (CHWs') programmes around the country together to advocate for the application of more formal support.

In early drafts of the ANC health plan, CBHWs were seen as an important resource for PHC because of their potential to play a significant role in expanding and improving health services, provided they received effective support and ongoing training. They were viewed as catalysts for community development, who could mobilise people around issues such as the need for clean water, sanitation, waste disposal, safe playgrounds and parks. Further, they could empower people with health knowledge and encourage their participation in health issues such as nutrition, family planning and HIV/AIDS. It was envisaged that they would form an integral part of the decentralised health services, and be compensated, either by the Government, or the local community, according to their level of skills. This implied that they were to have career structure and pathways for promotion within the health system.

After the democratic transition in 1994, the hope that this idea would be implemented was initially in limbo. The official policy watered down their role by stating that although CBHWs' programmes would be encouraged where they were integrated into local services, there would be no national programme.

In 1995, a national task force funded by the Health Systems Trust produced a report *"Assessing the Feasibility of Greater State Support to Community Based Health Programmes"* (CBHP)[1] which recommended that a phased CBHP model be considered for implementation by the national government. In the first phase, it recommended that financial, political, structural and other support be given by the government to existing programmes in order to strengthen them. In the second phase it was suggested there should be an evaluation to measure the effectiveness prior to a decision whether to expand or not. It was proposed that there be a national 'Core Curriculum' which should be monitored by an 'Accreditation Committee'. The training of CBHWs, should be carried out at local training centres, with provincial training centres providing training for CBHWs supervisors known as Community Health Facilitators (CHFs). Additional recommendations were that health personnel in general be re-orientated, specifically to understand PHC and the role and functions of CBHWs; further that it was essential that mechanisms to support them be built into the district based health system

with strong linkages to District Management Committees, who it was felt should pay CBHWs and to whom they should be accountable.

Perhaps as a result of this and other strong lobbying, the generally unsupportive national policy position changed slightly in 1996, when the national Department of Health (NDoH) delegated the decision on the deployment of CBHWs to provincial and district levels. Although the official national policy regarding remunerated employment of CBHWs at the current time has not changed significantly from this position and no further national policy directives have been provided, some provincial programmes are gradually developing. For example, in KwaZulu-Natal, there has been strong commitment to establish a network of provincial support for CHWs throughout under-served areas of the province. However, even here the support has been patchy and inconsistent. Two other provinces provide or have provided funding support to CBHWs' programmes (notably Eastern and Western Cape). In the remaining provinces of Limpopo, Mpumalanga, North West Province, Gauteng, Northern Cape and Free State CBHWs are encouraged, and certain cadres receive incentives, but few are fully remunerated.

Despite advocacy and some progress, uncertainty about precise roles for CBHWs remains both at a national and provincial level. The situation has not greatly changed in two decades and the same issues that confronted CBHWs in the early 1980s remain as pertinent as ever, even with a national Health Minister who has advocated for them in the past. In addition to many of their original problems, there are now even more complex new issues as a result of the HIV/AIDS pandemic

There is, however, room for some optimism in that many local municipalities, who have only recently begun to fully function effectively, have enthusiastically begun to take on their PHC responsibilities and see CBHWs as an important element in improving health care. Also positive is that from 1999, the South African Qualifications Authority (SAQA) 'Auxiliary Health Worker' standards were agreed to nationally and provide the framework for the training of all workers in this category.

## The Accomplishments of CBHWs

From reports and evaluations of the numerous examples of CBHWs' programmes in different parts of the country, it is clear that many have achieved some astonishing feats over the past decade. Although there is enormous variety in the types of CBHWs and the way they function, few communities are entirely without them. They are found in rural, urban, peri-urban and farm settings, among some of the country's most under-served communities. They have played an active role in reducing child morbidity and mortality by promoting nutrition, growth monitoring, breastfeeding,

immunisation, contraception and oral rehydration. Many groups have become involved in working with disabled children and on intersectoral social issues such as poverty relief, food security, water and sanitation, income generation, literacy education, obtaining child maintenance, care dependency grants and documents such as birth certificates. Among adults they have been important at times of epidemics such as cholera and assisted with some of the most difficult programmes aimed at controlling and improving compliance with diseases such as tuberculosis, hypertension, diabetes, epilepsy, STI as well as preventable cancers. Had it not been for the HIV/AIDS pandemic then, at this point in time, they would probably have played a most critical role in reducing child mortality, reducing fertility and improving life expectancy throughout the country. Regrettably, many of these gains are being reversed by the HIV/AIDS epidemic. But even given the challenge presented by HIV/AIDS, CBHWs continue to play a crucial role spanning health promotion, prevention, care, rehabilitation and palliation.

## Are CBHWs Good Value for Money? Do They Improve the Health Status and/or Access to Health Care?

Advocates with experience in working with CBHWs value them because they:

- Are excellent health promoters who also play an important role in prevention, treatment, rehabilitation and palliation
- Enhance community participation
- Provide the District Health System (DHS) with a link to communities and a means of getting feedback. In a sense this allows DoH staff to feel the pulse of the people, helping them understand, for example, why people do or don't use certain services; what people know and why they are not accepting responsibility for certain issues.
- Unearth sensitive social problems such as child or woman abuse and reach people with physical disabilities who can otherwise only access the service with difficulty. Similarly, mental disease, which was previously felt to be a shame on the family – children once hidden or even chained, are now identified and referred for help.
- Bring all the stakeholders who need to collaborate into one forum. In this way a CBHWs' programme acts as a core integrative process around which all vertical programmes and diverse services can rally.
- Provide a mechanism for socio-economic development undertaken by a variety of other sectors.

Evidence for the value and cost effectiveness of CBHWs has been documented for a range of tasks. The following case study documents one concrete example.

**The value of the KwaZulu-Natal CHW programme – a case study on cost effectiveness of DOTS *undertaken by CHWs or Volunteer Lay Persons (VLPs)***

Since 1991 all patients with tuberculosis in the Hlabisa health district, KwaZulu-Natal have been eligible for community-based directly observed therapy, short-course (DOTS). Tuberculosis incidence increased there from 312 cases in 1991 to 1 250 cases in 1996 because of the onset of the HIV/AIDS epidemic. Wilkinson, Floyd and Gilks (1997)[2] conducted an economic analysis of the DOTS strategy compared to the costs of three alternative strategies; the Hlabisa Strategy prior to 1991 based on hospitalisation, the National Strategy and Sanatorium Care, in terms of cost-effectiveness to both health service and patient. They found that the DOTS strategy implemented by CHWs in the community was the most cost-effective (R3 799) per patient and was less than half of hospitalisation cost at Hlabisa (R9 830), the National Strategy (R9 940) or Sanatorium Care (R11 145). Prolonged hospitalisation was much more expensive (R119 per day), compared to community care which was cheaper (community clinic visit, R28; community health worker visit, R7).

The largest component of the total cost was supervision of treatment. While much cheaper than hospital, supervising a patient in the community was R503, equivalent to 4.2 days in hospital, with the drug costs R157 being equivalent to just 1.3 days in hospital. The conclusion was that costs to both health service and patient could be substantially reduced by using community-based DOTS for tuberculosis, a strategy that was cheap and cost-effective in Hlabisa, a fairly typical rural community.

In a further study[3] patients were supervised either by a health service provider (HSP) in a community clinic, or in the community by a community health worker (CHW) or a volunteer lay person (VLP). More patients supervised by VLPs (85%) and CHWs (88%) than by HSPs (79%, P = 0.0008) completed treatment. High tuberculosis treatment completion rates were achieved and sustained for several years in a resource-poor setting, despite a massively increased caseload.

These findings had important national implications, supporting the goals of the new tuberculosis control programme, and suggesting that community supervisors may be an essential and cost-effective component of any DOTS strategy. Patients may be more effectively supervised by voluntary lay people than by health service providers under these circumstances without being placed at increased risk. However there is no room for complacency. In a follow up study,[4] it appears that the frequency of treatment interruption from this programme has increased recently. The strongest risk factor was year of diagnosis, perhaps reflecting the impact of an increased caseload on programme performance. Ensuring adherence to therapy in communities with a high level of migration remains a challenge even within community based DOTS programmes. Stigmatisation of patients with TB as having HIV may also have lead to early withdrawal from treatment.

Despite the potential, all is not well with CBHWs' programmes in most places. Part of the problem is that there is an unhelpful amount of programme variation. Often the variation is explained away as adaptation to local circumstance, but this is not entirely the case. Mostly it is because lip service is paid to the importance of community based programmes without a willingness to provide the type of support lent to hospital and clinic based services. CBHWs' programmes have most often been driven by the passion of those who want to make a difference in an environment of extremely limited and inconsistent resources. Frequently they are accepted only by the

formal health system as an afterthought; perhaps nice to have, but not essential. Sometimes CBHWs development is even seen as a digression from what are perceived to be more important facility-based strategies for improving health. Even if a programme exists, it may be inadequately supported, often leading to erroneous impressions that CBHWs' programmes fail to deliver valuable results. Most evaluations reveal that the failure is in the commitment and support and not in the potential value of the CBHWs' programmes themselves.

## Current Challenges for Current CBHWs' Programmes

During the process of gathering material for this article, certain critical issues emerged repeatedly and provide a useful framework for analysis and suggest how improvements could be incorporated into future policy and programmes. Common challenges for CBHWs programmes are:

- **The fragmented roles of many different kinds of community based health workers** – different and often competitive CBHWs provide DOTS support, HIV/AIDS, sex education, nutrition, IMCI, first aid, home-based care etc. often without reference to each other or to 'generalist' CBHWs. They often lack the skills necessary to deal with even simple issues outside their range of narrow specialisation and this can lead to conflict. Many projects, in their urgency to implement vertical programmes, often introduce their own cadres of CBHWs only to find out later that this was not the best course of action.
- **The large variation in incentives and payments** for similar types of work. This has been responsible for confusion and conflict. Some 'volunteer' incentives are as low as R250 per month, whereas other paid CHWs get about R1 600 per month.
- **The excessive amount of days per week that unpaid workers or partially paid CBHWs are often expected to work**. This has blurred the boundaries of 'voluntarism' and sometimes over-extended the resources of very poor people.
- **The disconcerting range in the amount and quality of training** offered to different groups. This is not due to the justifiable need to adapt to local circumstance. Rather it is due to a lack of cooperative working. Curricula vary widely. Teaching materials that have already been produced are not being adequately disseminated, used and adapted. There is a continual re-invention of the wheel. The SAQA 'Auxiliary Health Worker' standards and approach to the training of CBHWs are not, as they should be, the starting point for all training programmes. Existing materials do not always seem to be consulted before new materials are developed.

- **The inconsistent support and supervision** given to different groups as is evident in many programmes
- **Monitoring of programmes is weak and evaluation results are sparse.** This continues to be a problem, although there is an increasing amount of information on programmes that have been evaluated. Regrettably many of these evaluations reach a limited audience.
- **Transport constraints are a major obstacle** even for those programmes where there are paid CBHWs. Many successful projects have required CHFs to have their own vehicles prior to being employed. Alternatively some are subsidised so that they can own their vehicles, and receive a transport allowance for their travel.
- **Inadequate linkages with the district health system** and a lack of involvement in intersectoral activity. Many districts do not understand the critical role of CBHWs' contribution to the success of their programmes.
- **Poor integration** with the work of community-based professionals, CBOs, NGOs, faith-based organisations (FBOs), funders, local and provincial government in different sectors. Functional District and Health Forums, which coordinate the activities of all stakeholders in the district, are absolutely essential and require strong Government support. Without such forums, even the excellent work of a few NGOs or the Government itself, flounders in the long term.
- **The potential for developing conflict between different groups** of CBHWs is great if vertical programmes do not agree on working together jointly at community level.

## Should CBHWs be Paid?

Whether CHBWs ought to be volunteers, supported in kind by the community, or paid through community or government funds, has been much debated. Tanya Doherty and Sphindile Magwaza[c] in an unpublished article on community involvement in health have carefully reviewed voluntarism in relation to CBHWs. They found that much of the literature tends to imply that volunteers are the ideal to which most CBHWs' schemes should aspire. Many proposing this idea have assumed that there is a sufficient pool of volunteers to provide basic health and social service in rural areas and informal settlements; some even going as far as to suggest voluntary service should be a moral obligation to the community.[5]

However, the reality is that most programmes pay their CBHWs either a salary or an honorarium. Almost no examples exist of sustained community financing of CBHWs. Even NGOs have to find ways of financially rewarding

c Personal communication based on an unpublished article.

their 'volunteer' CBHWs, with what are euphemistically called 'incentives'. Moreover, where there are programmes in which CBHWs work on a completely voluntary basis, attrition rates are high and the few enthusiastic and reliable volunteers that remain become overloaded with tasks from other agencies and sectors. There is no reason to believe that the situation has changed over the last decade when a WHO draft document concluded that there was little evidence that the mobilisation of volunteers in CHW programmes was an effective policy.[6]

The tasks assigned to CBHWs are commonly time consuming and often difficult. Even when the workload is light and can be fulfilled on a part-time basis, the costs entailed by lost economic opportunities are significant. It is not surprising therefore that worldwide, most schemes which involve voluntarism are situated in predominantly industrialised countries or among upper/middle classes in developing countries, where people can afford to volunteer. Crucial prerequisites to this volunteering are time and money. A secure economic and social life makes voluntarism possible, even attractive, and may give volunteers satisfaction they do not get from paid work.

The reverse applies among volunteers from poorer settings where they are driven by the hope that it will lead to paid work or some other benefits.[7] Where paid jobs do not materialise it can be frustrating to volunteers.[8,9] As many of the volunteers in poor urban or rural settings are women, already heavily burdened with daily tasks, grappling with survival or subsistence issues, the cost of their participation is borne by their families.

Although extended voluntary work for the community at large may have debilitating costs for those who participate, there may nevertheless be considerable value in voluntarism. At a more immediate neighbourhood level, where reciprocity of assistance between neighbours or families at certain times may be very helpful and an investment in social capital.[5] Rarely are communities beyond the neighbourhood level able to institutionalise this system to provide reciprocal benefits that would justify voluntarism. Therefore, payment becomes essential, particularly in urban areas where the cash economy 'rules', and subsistence without a salary is impossible.

Based on the burden that voluntarism tends to place on the poor, many view the intentional use of the strategy by health services as a form of exploitation. Why should poor people offer their services for free when other health personnel are paid? Why should community volunteers be expected to work under difficult conditions, without pay, while the professional health workers are not ready to do the same?

For the above reasons, it is clear that a programme is usually at a disadvantage in the long run if it relies heavily on volunteers without some kind of reciprocal benefit system. It will experience a high attrition rate which will contribute to decreased stability and increased training costs because of the need for continuous replacement. It becomes difficult to plan and manage the

programme. Such troubles caused the abandonment of a programme in Botswana.[10]

In South Africa, among the most successful programmes, CBHWs generally receive a monthly salary. They are employed by NGOs and work full-time. There are however, innumerable cases where CBHWs successfully carry out their tasks even though they are not paid. For example in their own households or those of their close friends and neighbours. Home carers, like first aid workers, generally work part time or only a few hours per week. Where their activities begin to extend beyond their immediate neighbourhood and it becomes necessary to reimburse them for transport costs, problems begin to emerge. Once these workers begin to offer their services more widely, exploitation both by the clients and organisations or the workers themselves increases. Once the home carer is known in the community, expectations rise and they are frequently called upon after hours to assist people. This leads to high attrition rates as the home carers work increasing hours with no pay. On the contrary, paid CBHWs generally stay in their jobs for many years as they are remunerated for their experience and level of responsibility. There are also increasing opportunities for CBHWs to undertake continuing education and to progress to positions as coordinators and project managers. Where this is successfully implemented this contributes to the stability of staff in these projects.

The important lesson that has repeatedly emerged from experiences of CBHWs' projects is that adequate and sustained remuneration is essential to maintain the interest of the CBHWs and to ensure the stability of programmes.

## Remuneration Issues

The question of who pays CBHWs is an important one from the point of view of the CBHW's accountability to the community. Ideally, salaries should be paid by the community-based NGO and not directly by the formal health services. The district health authority could pay the NGO or community structure responsible for the CHWs, according to the contractual agreement. Donor funding should be supplementary and used for testing innovations prior to widespread adoption. The principal funder should be the state given that the CBHWs is one components of the district health system budget.

The feasibility of national or provincial salary structures, standardised according to level of training and years of service should also be considered.

There are various options for funding. The best option, given that government resources are restricted, is to promote public-private partnerships between the provincial Departments of Health and local private or overseas funding organisations who together can achieve more that what is possible from government sources alone.

## Community Relationships and the Sustainability of CBHWs' Programmes

Ignoring important lessons such as the need to pay CBHWs and not create conflicting roles is illustrated by the following case study of emerging conflict between a group of CHWs and home based volunteers. This type of situation has arisen in many different communities and is likely to occur whenever the circumstances create these conditions.

The following case study is based on the observations of a social anthropologist attending a meeting where a volunteer group of home-based caregivers were explaining their activities to the local Department of Health and CHWs (*Onompilo*). Details which can identify the individuals involved or the situation have been changed to ensure confidentiality.

**A case study of the conflict emerging between CHWs and home based volunteers**

A group of CHWs (*onompilo*) who had long been providing a service to a rural community as paid workers requested a meeting with a group of newly formed Home Based Caregivers (HBC) from a Faith Based Organisation (FBO) who were operating successfully in a neighbouring township and beginning to extend their services to the rural area. The HBC workers agreed to give the *onompilo* a slot on their standing agenda.

The trainer and initiator of the HBCs, Ms K formerly a nurse in the same district, introduced the group. She outlined the history of the FBO and the principles of its home based care programme. She explained that when she initiated the home based care programme in the township, it was in recognition of a desperate need for home care by the terminally ill who were often discharged from hospital because nothing more could be done for them. This factor, coupled with the absence of the services of *onompilo* in the township (because of the existence of the clinic in the township) led her to start the home based programme. Ms K stressed the point that she had set up the home based care programme and confined it to the township because there were *onompilo* services in rural areas beyond the township. But the Church had a different idea, and wanted to widen the scope to the district. That is how the voluntary caregivers had begun to extend their services beyond the township boundaries.

Ms K emphasized that all the FBO caregivers were doing purely voluntary work for which they were not paid. They only received a stipend to cover their travel and subsistence expenses when they did home visits.

Ms T, one of the caregivers from the FBO then briefed the gathering on how food came to be integrated into the concept of home based care. She explained that at the beginning of the programme, the focus was merely on providing the sick with prayer, pastoral counselling, bandaging wounds and providing other forms of practical assistance. However, each time the caregivers did home visits, they would be constantly confronted with the stark realities of poverty and hunger, which they found difficult to ignore. As a consequence of this, a strong appeal was made to the church to include food parcels and over the counter medication into the care programme.

These briefings were followed by a round of questions from the *onompilo*.

A number of concerns were raised by the *onompilo* regarding the FBO caregivers. One of the concerns was that the caregivers encroach upon their designated areas of work; carrying food parcels and clothing to give to families that *onompilo* regularly visit. They felt that this created the situation where some the families then rejected the *onompilo* because they were not able to bring food supplies, clothing etc.

They added that while the *onompilo* had been selected by the community to serve them, their work was now being disturbed by 'strangers' (referring to the caregivers) who came and worked in their designated areas. They expressed fear that the activities of the FBO would threaten the survival of the *onompilo* programme which was set up with the same intentions and to achieve similar goals.

In response to this concern, Ms K apologised profusely on behalf of all the caregivers. She observed that it was a grave mistake that the caregivers and *onompilo* had failed to liaise from the beginning. She promised to ensure proper coordination of tasks, and appealed to the caregivers to seek out and collaborate with the *onompilo* responsible for the areas within which their patients resided. She also observed that even the delivery of food parcels should be done jointly by both *onompilo* and the caregivers.[d]

An additional concern was also raised when the *onompilo* learned that the caregivers administered drugs, whereas *onompilo* were not allowed to do any more than monitor patients taking TB treatment. In fact, the coordinator of the *onompilo* programme in the area, who was also attending the meeting, observed that *onompilo* are strictly forbidden to administer drugs to the sick, even Panado which is available over the counter. In response to this, Ms K quickly explained that the caregivers ensured that their patients take only medication specified by a health practitioner. Like the CHWs, this also included monitoring their patients' TB drug regimen.

In the concluding discussion it was agreed that in future all service providers, including *onompilo* and home caregivers, would collaborate and present a united front to the communities.

## Management of CBHWs' Programmes

Various studies[e] have shown that the training of many health professionals such as doctors and nurses does not adequately prepare them for work in a community setting. In addition, the reported universal shortage of doctors, nurses, and other health personnel has been exacerbated recently by emigration of many professions from South Africa. As a result it has proved difficult to bring about transformation even within clinical settings where systems can be more easily managed within an environment that health professions understand. Community Based programmes which are poorly understood have therefore been almost entirely neglected.

Despite the difficulties, there is considerable agreement that CBHWs have a role to play in improving the health of communities and fill the gap in areas which existing health personnel cannot reach. In these areas CBHWs have a vital role and to do this, they need to be formally recognised as members of the district health team.

d The Observer noted at this point: "I silently wondered how feasible this was going to be. Then I thought perhaps Ms K was just saying this to appease the *onompilo*. The fact that the bulk of the caregivers were not present at this meeting to give support to some of these assurances Ms K was making, also troubled me somewhat".

e Personal communication – article by: Tanya Doherty (tanya@hst.org.za), Health Systems Trust, Durban and Minette Coetzee, Nell Hodgson, Woodruff School of Nursing at Emory University – The Community Health Worker: A Critical Determinant of Responsive District Health Services in South Africa.

The first crucial step requires the acknowledgement and recognition of CBHWs as an essential part of the district health team from the highest level in terms of both policy and committed funding, much as has been done in KwaZulu-Natal.

The Department(s) of Health in the national, provincial and municipal spheres of government should cooperate with each other and in partnership with NGOs to provide support for CBHWs programmes. This should include the provision of adequate supervision, training, resources, and physical space. Other departments such as Social Development and Education could assist and benefit by incorporating CBHWs into their own programmes.

Explicit national and provincial policies and supportive legislative measures are also necessary. These should formalise the position and role CHBWs, so that they can achieve their full potential.

## Supervision Procedures and Structures of Accountability

A simple practical system would be for each district health authority which receives funds from the provincial department of health, to contract one or more NGOs to provide specific sets of health, welfare and development outputs to be undertaken by CBHWs working within a defined population. In this way district health authorities retain responsibility for the services, while recognising that these specific services are best delivered by NGOs using CBHWs supported by CBOs and FBOs. Examples of services that could be contracted include DOTS services, HIV pre- and post-test counselling, HBC, care of orphans and vulnerable children, health promotion, rehabilitation work and potentially even antiretroviral treatment supervision. Some of the tasks would be undertaken by full-time paid CBHWs, while other tasks might be undertaken by part-time workers or volunteers, receiving remuneration or acknowledgement appropriate to the amount of time they contribute.

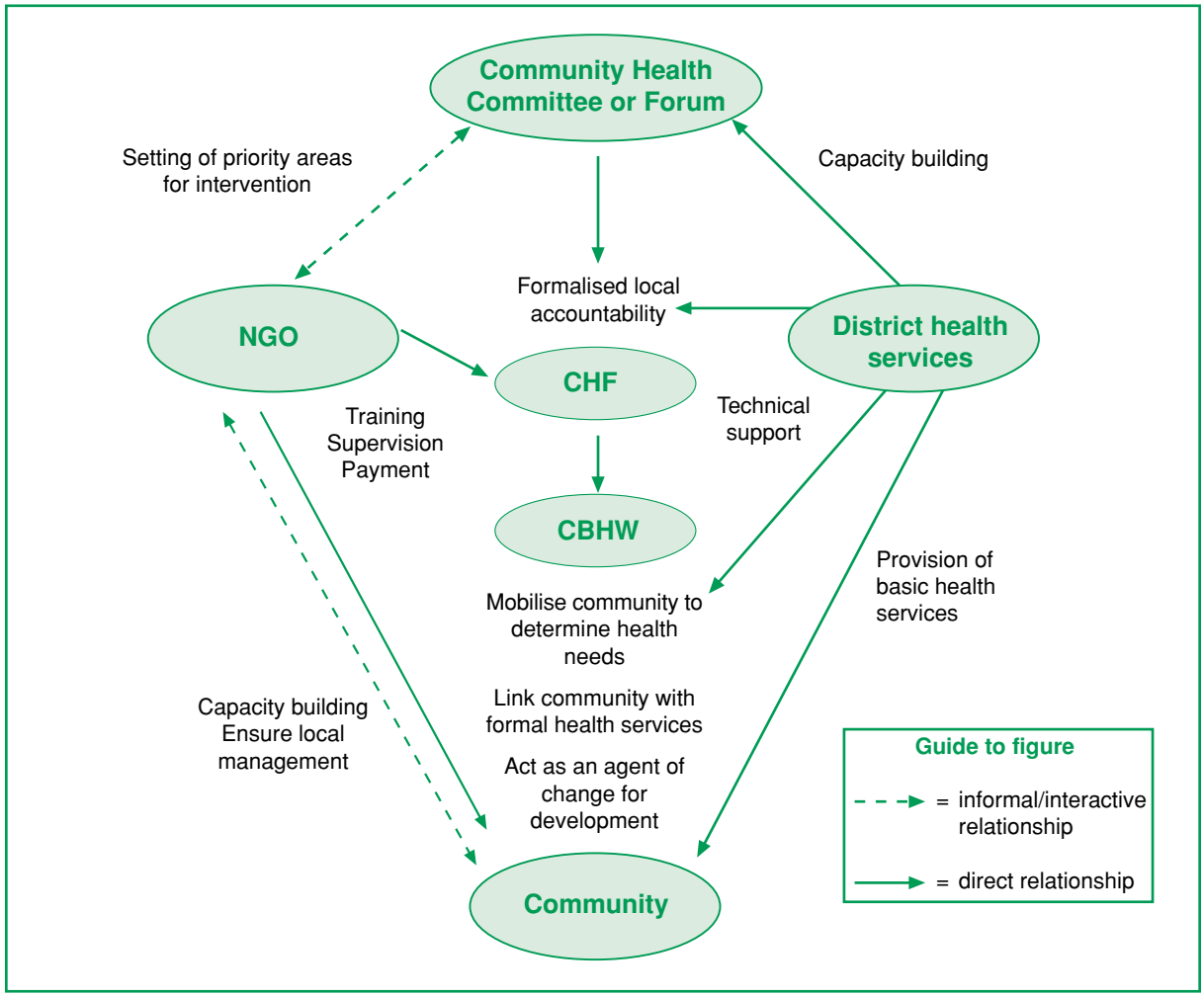
An example of this is the KwaZulu-Natal model of delegating the management of the programme fully to a consortium of NGOs who receive a block grant from the province and in consultation with them, the district health management and local municipalities, decide which services to offer and help to capacitate local NGOs.

## Selection, Day to Day Supervision, Monitoring and Reporting Systems – How is it Done and Who Should Do it?

Support for CBHWs is an essential element in their effective performance. While both NGOs and formal health services have a role to play in providing this, it creates multiple levels of accountability for CBHWs working at the interface between the community and the rest of the health service. This is made especially complex by the need to integrate vertical programmes and achieve inter-sectoral collaboration. Figure 1, based on a conceptual model by Doherty and Coetzee, proposes an approach that clarifies the lines of accountability. There is formal line accountability to the NGO (which could be a formalised district forum) as the employer. The CBHWs are accountable to the NGO in terms of performance and health outcomes. The NGO is in turn accountable to the district health authority that is contracting the services or the donor for reporting on the use of funds. The CBHWs is also accountable to the formal health services for the clinical component of their work. This is, however, not as much a control mechanism, as a means for providing ongoing training and technical support. The CBHWs are also accountable to communities for the provision of an accessible, equitable service through voluntary community health committees (CHCs) or broader community health forums. These committees, which exist in many districts, are appointed by communities to set priorities for health care interventions and as such, also have a role in monitoring and evaluating the work of CBHWs. They do this most effectively when it is done on an occasional part-time basis and does not require intensive day-to-day supervision. There is currently a great need for capacity building within these community structures, in order to equip them to take the role of advocacy bodies representing the community in health care matters or commissioning projects.

Given that the environment within clinics is fairly hierarchical, with a rigid management structure where nurses tend to approach CBHWs supervision from a disciplinary rather than supportive standpoint, community based facilitators (CHFs) are generally necessary to provide support. For this reason, the best CHFs are not necessarily health professionals, but they must have excellent communication and management skills to plan and implement community development processes as well as enable CBHWs to handle community conflict situations.

**Figure 1: Model for CHW supervision, support and accountability in the District Health System**



## Training of CBHWs

In general training should be a continuous, community-based, problem-oriented, experiential education process. Apart from an initial orientation course and short specific course(s) the training should be undertaken where CBHWs operate. The curriculum should be comprehensive, task oriented and outcomes based. Usually the training should start with an intensive course and then continue gradually over a few years with the CBHWs functioning during this time, gradually extending their range of their work as they become more competent. Most training programmes are not currently accredited by an approved educational institution, and this deprives CBHWs of recognition, which would enable them to develop their careers.

While there is a need for a standardised curriculum and formal accreditation for the training, there is also the need for local flexibility so that CBHWs programmes can respond to the needs of their communities. The KwaZulu-Natal model which works well has established a provincial board for

accrediting all formally trained CBHWs. This approach helps to reduce the uneven variety of training programmes, some of which are questionable.

## New Tasks and Roles in a Complex, Changing Environment

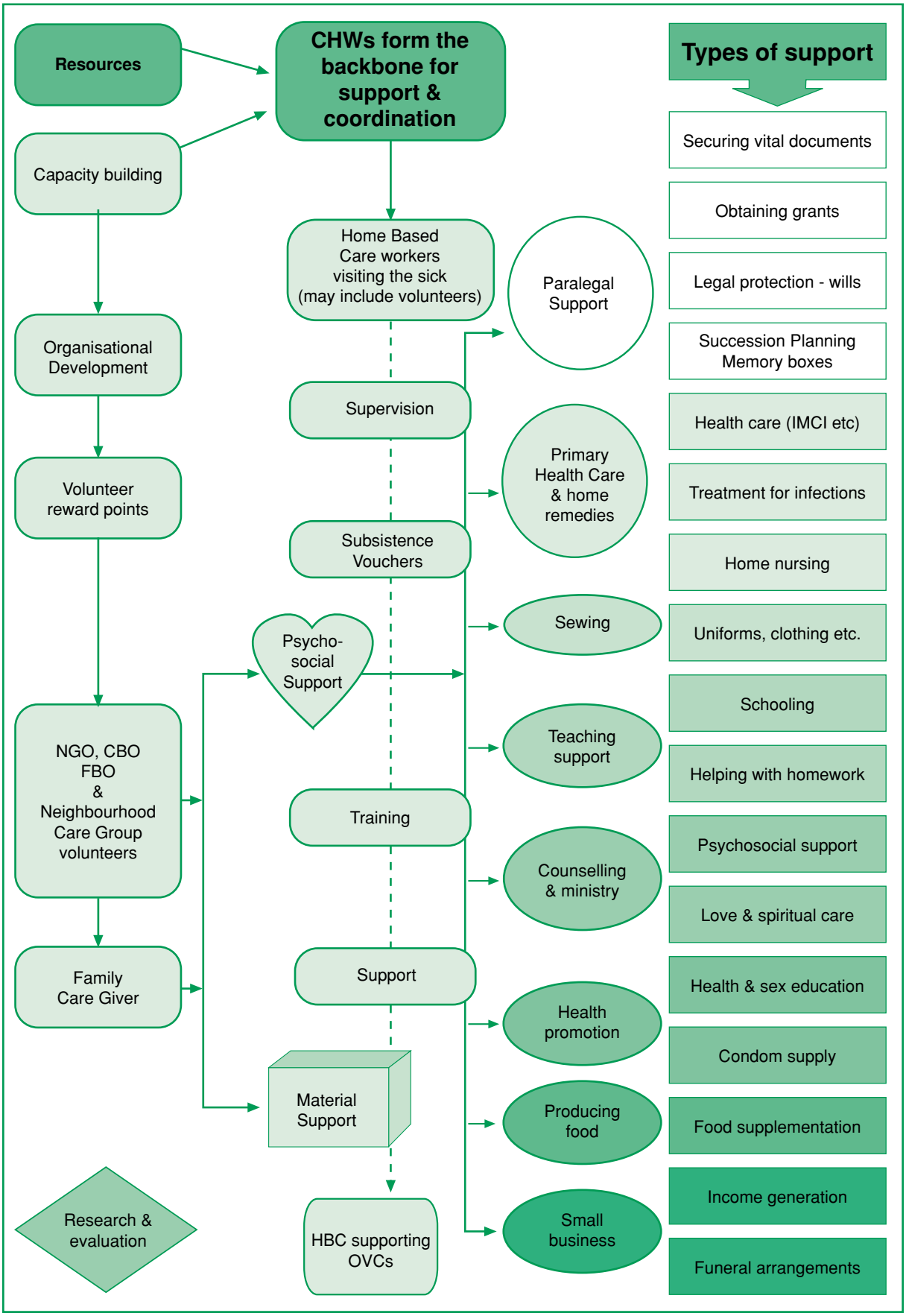
Apart from CBHWs, the community and organisational support structures also require training. These include health professionals who require reorientation to the CBHWs scope of practice, as well as project managers responsible for monitoring the effectiveness and ability of CBHWs to meet their objectives. Standardised recording and reporting instruments are needed in order to evaluate progress and several projects have examples of these.

Lastly, it is important that the role of **other** CBHWs be developed coherently to specialise in dealing with HIV/AIDS, TB, rehabilitation or other problems, but also work in a coordinated way with the full-time generalist CBHWs.

Figure 2 presents a comprehensive community based care model showing how CBHWs, adequately supported with resources and training could take on the role of coordinating and supporting community based support for sick adults and vulnerable children, including orphans. The model tries to incorporate the complex situation that exists at the moment where there are both full-time generalist CBHWs working in the same communities as a wide variety of more specialist volunteer cadres.

Primarily CBHWs would support caregivers in households, supplemented when necessary by volunteers from neighbourhood care groups, community- or faith-based organisations. Organisational development would be undertaken to enhance the functioning of such groups. Other community groups who sew, garden, teach literacy, undertake para-legal work etc. are all important in providing holistic care. In certain countries, where voluntary work is undertaken, credit is given to volunteers through the allocation of 'points', to which can be allocated certain benefits in respect of training etc. Although less valuable than money, such schemes could at least document and acknowledge the large amount of time that some individuals volunteer.

**Figure 2: An approach to integrating the work of CBHWs in an HIV/AIDS environment**



## Evaluating CBHWs' Programmes

Despite the growth of interest in CBHWs interventions and the evaluation of several programmes over the past decade, few of these systematic reviews on the effectiveness of interventions in South Africa have been published or widely circulated. It is important, as new policies on HBC, treatment support and other forms of voluntary outreach work, are being developed, that there is some evidence these interventions result in more good than harm.

There are a few examples of such evaluation research being undertaken at the current time into this important topic. The MRC,[f] for example, is undertaking a randomised cluster trial for the Health Systems Trust on a project in the Boland Health District where farm labourers are trained as Lay Health Workers. They are carrying out a systematic review to examine the effects of the lay health worker (paid and voluntary) primary care and community interventions on health care behaviours, patients' health, well-being, and satisfaction with care in that environment.

In a separate research initiative,[g] the School of Public Health at University of Western Cape is also at present busy with a large programme evaluation of Zanempilo and Centre for Learning Programmes.

The University of Natal Community Health Department has also been involved in an evaluation of the programme in KwaZulu-Natal facilitated by the Valley Trust.

These external evaluations are in general extensive and because they are complex they are expensive to implement therefore, they require separate funding.

## Recommendations

- The feasibility of national or provincial salary structures, standardised according to level of training and years of service should be considered.
- To facilitate effective structures for supervision and accountability, NGOs should be contracted to provide specific sets of health, welfare and development outputs to be undertaken by CBHWs working within a defined population.
- CHWs need to have their own transport and this works best where they are subsidised to provide their own vehicles and are then remunerated for a fixed amount of travel per month.

f Systematic Review of Lay Health Workers for the Cochrane collection, personal communication with Judy Dick at MRC.

g Kirstie Rendall-Mkosi (kmkosi@uwc.ac.za) University of Western Cape, personal communication, 2002.

- To overcome the problem of CBHWs visiting poverty stricken households empty handed, it is suggested that they be provided with poverty-relief vouchers, which they could give to families and individuals in distress. These could be exchanged for food, seeds, clothing or other basic household essentials at local spazas and shops, boosting the local economy and avoiding the need to establish complex logistical systems to purchase and provide food parcels.
- In terms of the training of CBHWs, it is important that existing SAQA standards and material already developed be utilised as fully as possible.
- Simple internal evaluation can be built into the normal project monitoring activities.

## Conclusion

South Africa has a rich potential of a new democracy committed to people-centred development. However, the reality is that global and national macro-economic systems often threaten rather than strengthen programmes that aim at dealing with the two-headed 'monster' of poverty and HIV/AIDS.

Community Based Health Workers offer the country one of the most viable means of dealing with this catastrophe but at the moment the very variety of creative initiatives which are being widely undertaken lack coherence and threaten the CBWHs' Programme.

Clarity of conception and the development of formal systems which link the various elements of community based health care are essential to enhance the capacity of CHBWs to provide a comprehensive service.

## References

1 Lomax K, Mametja D (Eds.) Assessing the Feasibility of Greater State Support of Community-Based Health Programmes, Durban: Health Systems Trust; 1995.

2 Wilkinson D, Floyd K, Gilks CF. Costs and cost-effectiveness of alternative tuberculosis management strategies in South Africa implications for policy. S Afr Med J 1997 Apr; 87 (4): 451-5.

3 Wilkinson D, Davies GR. Coping with Africa's increasing tuberculosis burden: are community supervisors an essential component of the DOT strategy? Directly observed therapy. Trop Med Int Health 1997 Jul; 2 (7): 700-4.

4 Connolly C, Davies GR, Wilkinson D. Who fails to complete tuberculosis treatment? Temporal trends and risk factors for treatment interruption in a community-based directly observed therapy programme in a rural district of South Africa. Int J Tuberc Lung Dis 1999 Dec; 3 (12): 1081-7.

5 Walt G. CHW: are national programmes in crisis? Health Policy and Planning 1988; 3 (1): 1-21.

6 World Health Organization. Draft working document for the WHO Study Group on community health workers. Division of Strengthening of Health Services Geneva: World Health Organization; 1987.

7 Perera M. Study of the JOICFP volunteers of the Ministry of Health. Colombo: Marga Institute; 1985.

8 Adeniyi J, Olaseha I. Toward a conflict resolution of multiple perceptions on post training utilisation of VHWs. Hygiene 1987; 6: 24-28.

9 Jaju V. Role of the village health worker - a glorified image. In: Jayaroa K, Patel A, (Eds). Under the lens. New Delhi: Mexico Friends Circle 1983.

10 De Zoysa I, Cole-King S. Remuneration of the community health worker: what are the options? World Health Forum 1983; 4: 125-130.

# ‘Voices’ of Primary Health Care Facility Workers

10

**Petrida Ijumba**[a]
Health Systems Trust

*This chapter summarises the experiences of Primary Health Care Facility health workers gathered through interviewing 11 nurses, 6 doctors, 9 pharmacists, 8 administrative clerks, and 8 environmental health practitioners, associated with these facilities across the country. The experiences shared pertain to the complexity of training, roles, work relationships, job satisfaction, workload, physical infrastructure and resources, transformation and HIV/AIDS issues. Nearly all professionals interviewed expressed concern at the lack of proper in service training programmes. Many felt that they were disadvantaged in terms of their preparedness to provide quality care while a few were frustrated because they are unable to utilise their skills. Some of the health workers were frustrated by lack of sufficient resources to handle the increased number of users. Although the views expressed cannot be generalised to PHC health workers in the country, they provide a platform from which managers can start investigating the factors that promote or hinder effective health care delivery at a PHC facility.*

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## Introduction

The implementation of free Primary Health Care (PHC) policy to all South Africans, has led to improved access to health care.[1] In the second Kaiser Family Foundation Survey of Health Care in South Africa, the majority of South Africans (58%) named free primary health care as the government's best health policy.[2] This is not surprising, given that in many areas of South Africa, Primary Health Care facilities may be the only available and/or readily accessible health services for the majority of the population. Therefore, PHC services, providers and facilities carry a large burden and responsibility for the provision of health care in South Africa.[3] Even though the implementation of this policy has removed cost barriers,[4] major challenges still remain such as: inappropriate training of primary health care nurses and other PHC facility health workers, multiples roles, heavy workload, infrequent and inadequate supervision, inequitable distribution of resources, poor facilities, infrastructure and transport.[5,6] It must be stressed that these constraints are not new. However, they have to be highlighted because they are crucial and still remain unresolved.

There is no doubt that the escalating dual epidemic of HIV/AIDS and Tuberculosis is placing enormous demands on PHC health workers. For example, Johnson and others[7] argue that utilisation of public clinics by AIDS patients is high, and McCoy et al.,[8] have pointed out the challenges of deploying adequate and appropriate human resources at pilot sites for the prevention of mother-to-child transmission (PMTCT).

The 2001 South African Health Review recorded the 'voices' of health care services users, health policy makers, managers and parliamentarians. Users complained of problems such as: overcrowding, long waiting times and limited hours of service,[9] which are symptomatic of under-resourcing. Similarly, facility managers voiced both their job satisfaction and frustrations. Job satisfaction was associated with factors such as: team work, good staff relationships, accessible management, recognition and affirmation of efforts and peer support, while frustrations were caused by under-staffing, heavy workload, limited physical space, poor remuneration, inadequate support from their respective districts and 'summons to meetings'.[10] As a follow up, this year's chapter on 'voices' focuses on the implementers. It summarises the experiences of health workers responsible for the delivery of health care at the PHC facility level. The chapter is based on interviews of 42 health workers (working at PHC or have regular interactions with such a facility) i.e. 11 nurses, 6 doctors, 9 pharmacists, 8 administrative clerks (ACs) and 8 environmental health practitioners (EHPs). Efforts were made to interview at least one professional from each category in each of the 9 provinces.

Experiences expressed in this chapter are limited by the sample size. They reflect individual voices and opinions and are by no means representative of the views of South African PHC facility health workers as a whole. Also as is

to be expected, the voices focus on day to day concerns that are impinging on the interviewees' performance. Nevertheless they do provide a platform from which further investigations of factors supporting or hindering health care delivery at PHC facilities in the country can be made and appropriate interventions sought.

## How the Chapter is Structured

The experiences of PHC facility health workers are summarised under different themes. The key themes relate to issues of:

- Basic training, in-service training and utilisation of skills
- The working environment
- Facilities, Infrastructure and Resources
- HIV/AIDS.

## Basic Training, In-service Training and Utilisation of Skills

Provision of quality PHC service hinges on how well the providers are trained and requires multi-skilled workers who are prepared and have time to upgrade their competencies regularly. The competencies needed by PHC staff are well articulated in 'The primary Health Care Package for South Africa – A set of norms and standards'.[11]

The initial training of a PHC health worker, particularly the nurse, was and still is to a large extent urban-hospital-academic institution based. Often it does not address the real day to day competency needs and challenges of a PHC health worker such as: cultural diversity, community mobilisation and participation, community data collection analysis, interpretation and utilisation, problem solving, integration of PHC services, inter-sectoral collaboration, coordination etc.[12,13]

This section explores a number of facets related to initial and in-service training, and utilisation of skills of health workers. Issues raised included access to and the impact of training, and the differing expectations and conditions of service which exist. Lack of resources, heavy workload and poor facilities are causing frustration through denying many health workers the opportunity to use all their skills. Conversely, many health workers are experiencing stress because of feeling that their training has not equipped them to perform the tasks that their jobs entail. A heavy workload also prohibits health workers from being able to participate in training opportunities.

Some nurses feel that although they have invested their time in undergoing training, this has not added value to the quality of care they provide to their patients. ***"....Although we are trained to suture wounds we do not have suturing materials in the clinic. We send people to the hospital ... even those we can suture. Also, we do not provide delivery services although we are trained to deliver babies."***

***"... it is frustrating because I have skills, which I cannot really use. I refer patients that I think need examination to the doctor. This frustrates me because in some cases I know what has to be done but lack the equipment and space to do it."***

Others are concerned that staff shortages prevent them from undertaking their duties effectively ***"... they say there's a shortage of staff ... even if I'm having patients in the maternity, I am unable to monitor them effectively because I have to go to general side as patients are waiting, ..."*** One nurse has no time to fulfil one of her major roles. ***"... I am the sister in charge but have no time for administrative duties because the clinic gets so full."***

Equally doctors are not able to utilise all their skills. The workload has forced one doctor to abandon some of the procedures he used to perform before he moved to his current facility. ***"... Because of the workload, we don't really do any procedures ... we often just refer them ... where I worked before – in a rural hospital – you do everything; whereas here, you never touch a scalpel."*** He blames this on the shortage of nurses.***"... it's a nursing problem. We have a theatre, but we haven't got enough nursing staff to run the theatre and sterilise the equipment, and everything."***

Pharmacists also feel that their skills are not well utilised. ***"... I would say about 70% of my time goes into paperwork. What I am doing most of the time is writing orders, receiving medicine, and giving out medicine to the clinics and the hospitals." "... Any clerk with training can do it and release me to serve the people."***

For many workers, the training they have received has been inadequate or inappropriate, while for others it is often impossible for them to attend any in-service training.

For example, Professional Nurses (PNs) are expected to provide supervisory support to the Assistant Nurses but are not trained in counselling ***"... and our wish is that all the PNs should be trained properly ... when you counsel an HIV patient you know where to start and where to end. So you can imagine having a patient that you think needs to be counselled and you have to call a nursing assistant to go and counsel this patient ... You don't know that she actually counsels correctly ... you ask yourself is she doing the right thing."***

The EHPs share this concern. Although there are opportunities to upgrade skills these are not available to everyone. ***"... we are sent for workshops and something that's related to our job, ... But it's not possible for everyone to always attend these***

***workshops." "... we are untrained, we don't attend workshops, and I can say for capacity building we are sidelined on most of the activities."***

Some nurses feel that inadequate training and skills puts their patients at risk. This is how one nurse evaluated herself. ***"... you haven't maybe killed anybody – but you are sort of a danger to the patient."*** Another nurse points out that in-service training is insufficient. ***"... (as) PNs - we get in-service training on how to handle general patients, even if we are not primary health care trained; but really I don't think we are adequately trained to work in the general section."***

Some nurses feel that there are opportunities for them to upgrade their skills but heavy workload and shortage of staff curtail their participation. ***"... so you must go for in-service training but, as we all know, there's always a shortage of staff, you can't go or you are turned down."***

On the other hand, most pharmacists indicated that they have had opportunities to participate in in-service training, while doctors feel sidelined. One doctor expressed concern that they are rarely invited for training ***"... It's never done; either the clinical manager doesn't pass it on to the doctors, or he's never told. I can't explain, but we rarely get invitations."***

Administrative Clerks (ACs) seem to have to picked up the skills they need on the job, and their formal training is very limited. ***"... they just told me on such and such a date I will be starting. No training, the only thing that is done is an orientation to the work. ...you are oriented towards programmes such as the computer programme."*** Of concern is the fact that ACs are not trained on how to interact with patients, particularly as almost all complained about the loss of appointment cards by patients.

## The Working Environment

### Transformation

The 1997 White Paper for the Transformation of the Health System in South Africa provided a framework for addressing inequalities.[14] However, continuous and ongoing transformation has sometimes impacted negatively on quality of care.

A few nurses discussed transformation and it's impact on their work. Some recognise that change always brings resistance but recommended that transformation processes should be supported realistically. For example she felt that the perceived abuse of PHC services could be minimised by charging patients a small fee. ***"... I know that that's a government decision. They've decided this in Parliament, that patients don't have to pay, but if you look at patients coming every week, the same patients coming for nitty-gritty things, they should really (and you're not allowed to turn patients away) implement something where patients must pay – whether it's R5 or a R10. Our pensioners want to pay. They are prepared to pay."***

Environmental Health Practitioners (EHPs) seem to be especially affected by the redefining of the role of Local Government in providing health care. ***"... So it is a question of devolving what used to be a provincial function to the grass root level. And has not been fully implemented but we are working towards it. It is time for change, it's a little bit difficult and unsettling in a way, because you are not sure about your future, who your boss is going to be? ... where you are going to end up?"*** and, ***"... They have to get everything in proper order because there's a lot of confusion with the transformation legislation – even people like themselves ... you could be a director and all of a sudden you become like a normal EHP. So, I don't know how they sort those things out, and in fact, I'm also scared because I do not know where they are going to place us, what positions are they going to give us."***

There is concern that the system is sidelining the EHPs on decisions regarding transformation. ***"... Many times you'll find when they come into that position, they haven't got a clue what Environmental Health entails." "... for example, consultants from the Department of Water Affairs are running these projects now because they see that's a problem we've got ... they call it 'water and sanitation' but if you see it from the health sector point ... it is the greatest part of the whole environmental health system."***

## Roles

Due to the absence of other health professional at many PHC facilities, the nurse is expected by management, supervisors, patients and the community to perform multiple roles. She is in turn a social worker, pharmacist, physiotherapist and nurse. Changes in PHC services now require clinic-based staff to integrate preventive and promotive care with a wide variety of curative services.[13] They are expected to provide care for chronic diseases such as hypertension and diabetes, as well as manage tuberculosis, sexually transmitted infections, and HIV/AIDS counselling and care. The multiplicity of roles can be a source of job dissatisfaction, and curtail professional growth.

Some nurses have tried to take up this challenge but others are still grappling. ***"... There are some days when they ask me to help out in the chemist. I have to go and help out with dispensing of the medicine, writing up the medications and things like that."*** Similarly, a nurse may spend a good amount of time performing odd duties instead of concentrating on her/his primary roles. ***"...The patients get mad at us, ... How many times do we have to sit on the phone? How many times do I have to fill in requisitions? How many times do I have to run up and down from one hospital to the other to borrow stuff for our patients? ... that's time consuming ..."*** One nurse partly blames herself for being a jack of all trades ***"... If they are short in Reception, they will ask you 'can't you help me out'; or, if they're short in the pharmacy, 'don't you want to help out please?' I mean we are so used to be a jack-of-all-trades, that we do it."***

Other nurses are frustrated because expectations of managers, especially from the District and Provincial offices interfere with their work plans. This situation has forced one nurse to stop planning. ***"... I decided this Monday not to do any more planning. You plan, but immediately face different things at the office – an unscheduled meeting or demand from District office or Province through District office."***

## Workload

"Stop poaching our health care professionals" was the simple message delivered by South African Minister of Health, to developed countries at the 2002 World Summit for Sustainable Development in Johannesburg.[15] The brain drain, although a world wide phenomenon, it is becoming a major challenge to the African continent. According to the Democratic Nurses Organisation of South Africa (DENOSA) 300 nurses, leave South Africa each month. The South African Medical Association (SAMA) estimated that 5 000 doctors have left South Africa for western countries. Pharmacists, dentists and other health professionals are also following suit, if not abroad to the private sector where pay and working conditions are better.

To date many PHC facilities in under-served communities remain without adequate doctors' services. A typical rural South African clinic is staffed by two or three professional nurses (PNs), two or three enrolled nurses and one or two nursing assistants[16] with irregular support and supervision from the PHC Coordinator who may not be trained for the job but is responsible for all PHC services in a given area.[17]

A common consequence of unmanageable workload is stress, which manifests itself as 'low morale, rapid turnover of staff and detrimental effects on service delivery as well as interpersonal relationships which impact negatively on service delivery and interpersonal relations'.[12] Examples below indicate the extent of job related stress among the interviewees.

The yearning for more staff is loud and the workload is hardly bearable for some ***"... we are seeing many more patients nowadays ...We have been sent a lot of chronic cases and it is not getting better, it is getting worse ... the load is actually getting worse. We need much more staff at the reception, to work with that load in front ... people sit like that for hour, by the time they come to you they are frustrated, they are mad at you and I mean it's not my fault."*** Some are overwhelmed by the number of patients ***"... From the time that you come to duty the patients are so many that you cannot even go for tea. So you just say let me finish them and they are just coming."***

ACs seem to experience an undue workload when their colleagues are on leave or absent ***"... We see about plus/minus 400 to 500 people per day; and the bulk of those people will be coming for medication ... that takes up quite a bit of time ... especially when you're short-staffed as well. There are supposed to be four staff, and that's including the supervisor. Most of the time we are only three – either one is off sick, or on leave, or they have to relieve somewhere else."***

EHPs experience similar challenges. ***"... the most one hears about here is staff. We are very much short staffed ... initially we were four and the other one has left for greener pastures."***

**Coping with workload**

A doctor explained how he deals with heavy workload and absenteeism. ***"... I have learnt that it doesn't help to get upset. Like yesterday, there were four doctors off sick ... and when I started working somebody said to me, 'The patient in front of you is definitely not the only patient you're going to see that day, but, for that patient, you are the only doctor that he or she will see today. So, I try to be in the present moment, with this patient, and try and not think about the 20 people sitting outside ..."*** A heavy workload clearly has the potential to impact negatively on quality of care – cutting out community outreach services ***"... if one looks at a patient from a family medicine perspective, you don't only look at the illness ... I had a woman tell me for the first time that she is being abused by her husband; and it's just because I listened and I picked up on what she said it's important for me to try and address the patients' real needs ..."*** And ***"... although a PHC facility is supposed to offer preventative health care, we don't do much preventative health care here, it's mostly curative."***

The problem of overtime can be especially acute for doctors ***"... I was really angry, ... how could a human being work 24 hours a day, 7 days a week, and 30 or 31 days a month? That is not possible. You cannot think, you cannot rest, and you cannot concentrate, not to mention that I have also my family."***

The pharmacists also feel overworked and this has lead to stress associated illness in at least one facility. In the story below, a pharmacist explaining how a heavy workload took its toll on him and his colleagues.

**Overwhelmed by workload**

***"It's quite exhausting and frustrating because we get overloaded, they won't, like limit the intake for the pharmacy, but they will limit the intake for reception and for nursing staff; and, if they've too few doctors. They've [pharmacy assistants] got to take occasional leave, they are off sick sometimes and, as it happened during the whole of April, one was on vocational leave and the other was on sick leave, which was genuine stress leave that she had to be off, so we were without assistance at all then, and it was absolute hell, ... it was totally exhausting. In the end, I went off sick, and the other pharmacist couldn't cope ... She was the only pharmacy staff ... you just push and push yourself until you're totally exhausted, and you can make mistakes. There's no two-ways about it, ... well I just carried on until I actually physically collapsed. ... they let us go through four more weeks of this, and we kept on telling them and asking for help, and showing them that we needed pharmacy staff to come and help us; but nobody was willing to help. Nobody in the head office was willing to see. What we desperately needed was pharmacy***

***staff to come and help us and, OK, it wasn't possible for them, but this is why I would like to make a plea for locum assistance. We desperately need locum pharmacy assistants to supply all the day hospitals when the pharmacy assistants are off, so that the overload can be remedied ... and we're not asking for luxuries, we are just asking for the load to be more manageable."***

That's why one pharmacist is so happy with the introduction of Community Service because it relieves him. ***"... The [community] pharmacist came and I think it is a relief in a way because at least you are using some people who can do some duties. At least I can plan, and they can may be do something to help in implementing most of the operating procedures."***

Yet another pharmacist still complains of under-staffing – the large number of unfilled posts is disturbing the entire hospital. ***"... Our hospital is not happy. I can tell you we've got 20 posts and only about 11 are filled, even then those 11, like elsewhere of course, we are helped a lot by the Community Service Pharmacists. I can say now that without community service pharmacists, the whole pharmaceutical services certainly in the whole country, would have collapsed."***

Pharmacists attribute the poor recruitment into Public pharmacies to poor remuneration, in particular and conditions of service in general, they are convinced that unless there are drastic changes the likelihood of filling the pharmacists posts remain futile. ***"... Nobody will apply for the posts because the pay is too low and the conditions are too bad ..." – "...young pharmacists are not attracted to the public sector but go to private sector and these days they also go overseas, approximately 400 have left or probably more this year ..."***

A handful of the respondents were happy with their jobs. One EHP had no criticisms. ***"... To be honest, I haven't experienced something negative that I could take home. I enjoy myself tremendously and I get a lot of satisfaction."*** And one pharmacist is in tune with his work and place of work. ***"... I like this hospital. I have emotional and historical connection with this place. Well I was one of the first qualified pharmacists of colour. In fact we were pioneers, it was very difficult for us Black to get placed in white pharmacies so the hospitals were the only places that welcomed us. So I wanted to contribute to the hospital so when I came back from outside the country, I came here. I enjoy the job ..."***

Training seems to have had the desired positive effect in one AC ***"... I'm happy to do my work, especially ... the DHIS since I have been trained. I have learnt ... and I'm enjoying my duties,"*** but another is bored ***"... I am getting bored every day taking patients' cards and after that taking them filing again and then my problem is when they have lost their cards. Doesn't challenge me ... its the same thing ..."***

### Relationship with management

Enabling managers, provide supervision that increases staff morale and motivation, addresses issues related to structure and process, and solves problems. In addition, supportive supervision requires thorough planning with clear objectives, effective communication skills and appropriate leadership skills.[18]

Many of the facility managers/supervisors have no formal training in leadership, management or supervision. In addition, they work in isolated areas and are faced with the reality of organising work and supervising staff in the most difficult circumstances (i.e. poor infrastructure, facilities and meagre finances, material and human resources).[12,13,16,18]

As would probably be expected then, when asked about relations with managers, more negative comments were received than positive. However one nurse is full of praise for her manager. ***"... the nursing manager, she is always supportive and we never have any problems ... she provided a shoulder for us to cry on."***

Relationship with management is considered to be good where views can be aired. ***"... I can say it's far much better than that of the hospital ... they are more supportive and there is transparency, and we all discuss most of the things. We see them as colleagues and they don't make us feel they are our seniors. They respect a good relationship."***

But others complain that efforts and concerns go unnoticed by management, and of a lack of support from management. ***"... We will just work ... and no one will see that these people are meeting their objectives because we are not being evaluated. Since I came here, no one came to me and ask me how good are these objectives, which one did you meet?" "... I feel our management becomes a hindrance somehow, ... if we want to have awareness of some sort like HIV or AIDS or TB or something and you try to organise it with the community, you don't get support."***

The issue of staff shortages and the concomitant pressure arising from a heavy workload was attributed to poor management.

***"... When you look at our staff establishment for the PHC services we are not short staffed. However, we become short staffed because people just absent themselves from work without proper arrangements. I get angry when fellow workers increase our workload by taking sick leave when they are not really sick and staying away from work just because they feel like it."*** and management is considered to be responsible for this. ***"... Many of those who just take off say they are overworked and tired and they are taking off because no one disciplines them when they stay away."*** Management is also judged as falling short with regard to assisting with problem solving. ***"... We have lived so long with hearing from the authorities that***

***nothing can be done about our requests that we have learnt to live with the situation."***

Several nurses have adopted a culture of silence as a coping mechanism to the 'hard hearing' management. ***"... So, most of the time, even if you complain you know you'll just be victimised. So we just keep quiet and work with it."***

But one nurse is unhappy that management is forcing them to do more than what they are prepared or probably supposed to do. She does not even know her job description. ***"... but we are forced to go and work at the dispensary. If we say no, who's going to dispense for those patients? So we do it although it is not within our scope of practice, and I am worried about that because even the job description – I don't have one."***

Some of the EHPs dissatisfaction with management relate to bureaucracy ***"... there's a lot of red tape involved in working, a lot of channels you have to go through, and sometimes it's frustrating to do the job."*** Poor communication also dogs relations with management ***"... right now I can say it's a supervisory position where I am acting even if there's nobody said now you are in this position. Poor inter-departmental relationships are also blamed for poor communication "... Many times, I do find that there are frustrations that come on because of other departments that are supposed to solve those problems, and their house is not order. They don't come back."***

### Relationship with patients and communities

Social scientists have helped to develop understanding of the provider-patient interaction, recognising the influence of provider behaviour and existence of biases and cultural gaps between patients and health care workers. Studies have shown that, perhaps not surprisingly, patients respond positively to **attention** and **encouragement.**[19] Good interaction between the health care workers and their patients/communities improve the user satisfaction, patterns of utilisation, patient compliance and willingness to participate in service delivery. On the other hand, the Health workers morale is boosted by appreciation, recognition and affirmation by the communities and patients they serve.

Many health workers were satisfied and proud of the relationships with their patients/clients or communities. One nurse was very pleased to have helped her patient in accessing TB medication on time. ***"... it was a TB client that was living in a compound like a farm, and that client couldn't come to the clinic to collect the medication, so I made an effort to reach that client and decided to follow up with the treatment, and she improved, she got better, oh I was so happy ... I was very happy ..."***

Assistant nurses in particular, feel empowered when patients choose to be seen by them instead of being seen by a senior nurse. ***"... Some clients are happy that I***

***attend to them more than being attended by the sister because I am not harsh to them and I look as if I am one of them."***

Doctors too feel that they are making a difference. ***"... despite this being a remote area, I really feel alright working here, I am just trying to help the patient, and whenever I see that they improve, I feel grateful that at least I am doing something for this community."*** However for another doctor this is becoming difficult to sustain despite drawing happiness from serving the community ***"... it's good to help people, you feel sorry for them, ... and just want to help them ... but it's difficult to keep that motivation ... I suppose we're just hanging in there. I have talked to some of my colleagues, most of them are not very enthusiastic about continuing to work here. I've been here six years and they are asking me 'Why are you still around here for so long?'"***

An EHP indicated that where support from management was not forthcoming, he draws energy from the community he serves ***"... the department doesn't give you support and you resort to ... the people you are giving the service to ...",*** and the positive feelings that come from helping people were also acknowledged by administrative staff. ***"... at the end of the day you feel like you helped people ... Everybody knows my name ... It feels good when you help a person."***

However, not all experiences with patients/communities are positive, with nurses sometimes experiencing abuse from patients. ***"... Well, the one incident happened in December, and the other one in January ... it was just unfortunate that I was the one being on duty both nights ...and people will ask you why you still work at that place if people are so rude, ... if the language is so bad, ... and you're not used to that type of language at home."***

As frontline staff, administrative clerks experience difficult clients ***"... Patients can get difficult ... they don't want to wait they have no patience, especially they don't bring their cards and you have to look for the files; and they get impatient and some of them get rude. Sometimes we get people who are drunk and become very abusive."***

### Relationship with colleagues

In their study on 'Management of District hospitals'[20] Couper and Hugo discuss the importance of creating teamwork as a basis for a 'functioning' district hospital. When people work as a team they build good relationships, (individuals respect one another, became accountable to each other, and they share information). They have a common vision, which guides their actions and contributes – to effective service delivery. Similarly, effective PHC service delivery depends on how well the PHC teams are operating.

In some cases health workers work well together. ***"... No one keeps any information to herself. If someone has picked up something queer, she calls the whole team and then we can debate it. We even go to the doctor ..."*** good relationships with colleagues were acknowledged by some as key to handling work frustrations. ***"... You get frustrated. I think we try and cheer up each other, by doing things for each other, and saying I'll do this."***

However, some Assistant Nurses feel that PNs are domineering. ***"... When we attend general meetings with the nursing staff, PNs dominate and do not allow us Nursing Assistants to share in the meeting. Only PNs chair the meetings."*** And are unhappy that the voices of Assistant Nurses are ignored in meetings and that PNs assign extra responsibilities to them. ***"... You are asked to do things that should be done by the PNs themselves as they refuse to carry out instructions given to them. One example is doing home visits to seriously ill patients in the location just next to the clinic."*** On the other hand one professional nurse seems to be working well with her Assistant Nurses ***"... if you have one general assistant working over a weekend, and one on night, you feel sorry for that person ... I'm that type of a person that will go out of my way to help ... but you have nursing sisters, turning their backs and walk on, and say – 'it's not my job, it's your job'."***

Some supervisors are unable to discipline their staff and experience frustration. One Pharmacist is concerned that he has not managed to reduce absenteeism ***"... there is lots of absenteeism in the section. We are eighteen ... Sometimes, like yesterday about four people were not here."*** Supervisors may also experience isolation like the pharmacist who is responsible for managing the unit and has several complaints ***"... If there is a problem – it is your problem. If you are right, there is silence – no recognition. If you are wrong – you hear from everyone ... Here I feel alone. There is not enough support. They take decisions without consulting or informing me. Sometimes I hear things from others, but they expect me to implement those changes."***

## Security

> The South African health sector has among the highest incidence of violence in the world. Recent research indicated that 61% of the surveyed health sector personnel in South Africa had experienced at least one incident of physical or psychological violence in the year prior to the study.[21]
>
> Women are especially vulnerable. While ambulance staff are reported to be at greatest risk, nurses are three times more likely on average to experience violence in the workplace than other occupational groups.[22]

Health workers need to feel secure when at work, but at times are threatened by the same patients they are supposed to serve. One nurse had to struggle with an abusive patient even after informing those responsible about her plight. ***"... And you see police standing there and they are just going away without doing anything."*** and ***"... These patients are allowed to come back to that same hospital again."***

Another nurse risked her life to protect others. ***"... there was a person that came drunk and was carrying a gun, and was chasing another person so, as a person in charge of the clinic I had to do something ... I had to plead with the person who was having a gun."***

There were complaints that the facilities are not well guarded particularly at night. ***"... I HAVE HAD ENOUGH! Because, during the night, it's just you and a nurse, and a staff nurse, and the doctor; and if something happens to you and the Police isn't there for you at night, you know it tells you a lot. It's dark, and you know nobody's around you to help you, and your life is in danger."*** And ***"... although we are have security guards but the surroundings are not well secured at all ... most of the time they hardly have anything with them, and they are supposed to protect us."***

## Facilities, Infrastructure and Resources

Since 1994, South Africa has made remarkable strides in building PHC facilities, particularly in the previously under-served communities. The number of clinics in the public sector stands at approximately 3 500 and more than 500 were built in the last 5 years.[22]

The 2000 National PHC Facilities survey recorded an overall improvement in the provision of infrastructure in fixed clinics. However, these improvements are hampered by frequent break-down for example of telephones and radiophones and electricity interruptions. Thus communication constraints still persist and some clinics are still operating without adequate sanitation and water particularly in Eastern Cape, Limpopo and North West Provinces.[23] Lack of transport was by far the most common constraint expressed by interviewees. The 2000 facilities survey reported that out of 92 mobile clinics included in the survey, 24 (26.1%) of the vehicles were out of order for one or more days in the month preceding the survey. In Mpumalanga and Limpopo Provinces, some vehicles were out of order for 14 days.[3]

Lack of transport is a major hindrance ***"... if you are an environmental health practitioner, sitting in the office is not going to do any good for you. You have to go out and meet people because it's about informing people"*** and ***"... You see, if you look at the pool system, they have got problems when it comes to the cars, they don't have enough. So if we are to wait for them to try and organise the car that will be coming to the sub-district, collecting specimens it is going to be a problem. Sometimes when we attend those meetings, they don't have a driver, so I usually volunteer to become their driver."***

Likewise the work of pharmacists is hindered by unreliable transport. Without transport they are unable to deliver medicines on time or pay monitoring visits to the PHC facilities, ***"... we don't do clinic visits ... if we visit and see the clinics are over supplied, we could shift the medicine from where it is not being used to where it is needed. We are unable to supply medicines to the clinics because of lack of transport, or a***

***driver ... so those poor patients are sent here. You want the patients to be treated there in the district where they live; but, if they come here, then it means those patients won't want to use the clinic, they will come all of them here and there will be more work in the hospital, so we are destroying the whole thing that the Minister of Health wants us to practice the district health system."***

Doctors also experience the frustration cause by inadequate and unreliable transport as well as poor communication ***"... Well, I need an ambulance, but then there's no phone, because the phone lines are down, or the ambulance is called and it hasn't come in three hours because there are not enough ambulances around, and you really sweat blood if you have a lady in labour that has had two previous caesarean section and she is pushing."***

A few nurses pointed out how inadequate space affects the quality of care. ***"... We have to let the dental patients sit there waiting to be called in and we have our general patients all in the same waiting area".*** And the reception area. ***"... The area is too small. Our reception staff work under terrible circumstances."***

Others complained of the age of their clinic building. ***"We are still working in the old clinic, the structures are very old"*** and some pointed out the insensitivities to the culture of the community regarding the use of toilets. ***"This facility has one toilet for both males and females ... that thing brought about squatting outside the clinic because males according to their culture cannot share toilets with females."***

For EHPs there were many infrastructure issues needing attention. ***"... There's a lot of them ... our office, we are both crowded in one office – and secondly, our office is filthy, no one is cleaning for us. I can say the last time our office was cleaned was during the environmental month. We lack so many equipments you cannot take a food sample, you don't have the up to date forms."***

At one clinic there are a number of shortages. ***"... We have one obstetric bed, and it's an old model but it's an obstetric bed; and then the other normal beds are poor. Also our mattresses are not of good quality"*** and the same clinic has no reliable transport ***"... Sometimes, I actually use my own car just to see that things are in order, for instance, I used to bring in emergency orders to the hospital. Even patients, I used my car, ... I mean we are not subsidised for petrol or anything. It's my private car. If anything happens to that car, it's my problem."*** In addition the clinic has no washing facilities. ***"... our cleaners will come and they may use a hand brush to get the patient's blood off and put it down the drain. They are washing with hands because the machine has long been broken. Since last year, when I came here in February, everything has been washed by hand. There is no inside sluice. Some nights I don't even use the outside sluice because at night you are afraid to go out."***

There are severe shortages of equipment and blood for transfusions. ***"... We come to a point that we cannot do the work because there is no equipment, ... when you've got a patient who is severely anaemic ... the patient needs blood and there is no blood. We are too far from the blood bank."***

EHPs lack financial resources for purchasing even the basic items, ***"... since the establishment of this whole district, we don't have a budget dedicated for environmental health. We had to rely on envelopes supplied by the province."***

## HIV/AIDS

**Somewhat surprisingly many PHC health workers particularly the nurses were silent on the issue of HIV/AIDS.** This was unexpected given the gravity of the epidemic in the country and could be because of feelings of hopelessness, lack of skills in counselling and palliative care, and burn out as a result of having seen too much suffering, and stigma and discrimination may prevent health workers from openly discussing HIV/AIDS.

There is a sense of urgency to equip PHC facility health workers with appropriate knowledge and skills on management of HIV/AIDS, borne out in a recent study of the pilot PMTCT sites which indicates that, "Many staff at the 18 national PMTCT pilot sites do not have a strong foundation of knowledge and skills in HIV and PHC".[8]

One nurse is concerned that her counselling efforts have not resulted in behaviour change. ***"... Confidentiality in HIV/AIDS– you know an HIV positive person going out with someone and you can't disclose to the other the person's status. Some of them go out with more than one person and you feel guilty not telling them. I don't have a solution to this problem. Should we tell police it is criminal because we have counselled these people. They appear as if they understood, but they still are behaving the same old way."*** Another mentioned the heavy load of patients they have to counsel. ***"... We are getting a lot of cases that we are supposed to do counselling on, especially HIV counselling; and I'm also an HIV counsellor at the clinic, and we find that we see many patients, something like 5 500 to 6 000 per month."***

One doctor talked about his feelings regarding the fact that many HIV/AIDS patients in his facility are students, children and babies. ***"... if you go to the wards the large number of HIV/AIDS patients are students – it's a very disturbing fact ... you have many children and many babies being brought here because the community discovered they are suffering from AIDS ... the number of AIDS-related diseases we are having is very high and very saddening."*** And his concern that he can do very little for his patients. ***"... we are here to cure but now with this epidemic we are here to manage it. Even when you discharge a patient, you know he or she will be back. We treat them and they come back again and are worse off; and we feel powerless because we don't have something to give them."***

## Concluding Remarks from the Interviewees

Based on their experiences, the interviewees were asked to indicate the kind of **advice** they would give to someone new in their profession. Those who responded concentrated mostly on what kind of attitude to adopt in order to 'cope' with the negative experiences, which they are bound to find in their working environment.

Advice from one nurse is, ***"... Try your best everyday, don't let anybody get you down, keep your head up high, sort out whatever problems you encounter immediately so that you can be happy in your job ... and remember that your patient comes first."*** and another, ***"... have a love of people ... understand people and be patient, especially when dealing with illiterate people and the elderly ... have respect ... don't expect to change the world ... Do the little that you can and work to change things little by little."***

A doctor suggested that doctors need to change their perception about themselves, ***"... The days are over when doctors used to be regarded as semi-gods, and that's certainly the truth. You just accept that you are an ordinary civil servant and if you accept it then you'll stay and won't get disillusioned."***

A pharmacists recommend that as a pharmacist, ***"... You have to be open-minded. A narrow-minded person would never survive! ... it is teamwork. You can't do this alone. You must always listen and then, if a patient is rude to you, ... don't be rude back to them ... maintain your professionalism try and be nice to the patients."***

Several ACs interviewees' advice was around respect and patience ***"... be patient ... do the correct thing and not to be one-sided, ... communicate with other co-workers and be free with them, not to be angry, if they hurt you must try to be calm."***

And ***"... be patient, ... working with the public can be stressful sometimes. You have to restrain yourself, not hitting back at patients if they are volatile ... just keep cool."***

Another highlights equality in serving people. ***"... You treat them all the same, White, Black, Coloured or Indian. This is something that we have to get out of our system. It was a sickness of the past that should die to do your job properly, you get respect from the public."***

Some had advice for management and the DoH. ***"... The public is not really knowing the work that we are doing in the first place, and I think that the government can be more open – not only about their policies – but be open to the public to let them get insight in what they are really doing."***

Pharmacists advised deploying more Assistant Pharmacists ***"... The value of the pharmacy assistants, is an extremely critical point ... A lot of assistants can be***

*brought in ... It's not necessary that it would be professional people with a degree ... but people that can work with the patients and try to make the management do managing, admin people do the admin work, and let the pharmacist be the pharmacist and not do a lot of paperwork."*

Some clerks would like to see more staff hired and strengthened private-public partnerships so that the workload is less, ***"... We need extra funds to hire more people ... they should encourage the private sector people to come here to work for us. Doctors are always complaining ... they don't earn enough here, so if money's always the issue, the DoH should make it available if they want excellent service and get the best doctors."***

## Conclusions and Recommendations

During the Interviewers' Data Coding Workshop, which was conducted after transcribing the interviews, the interviewers clearly articulated that many PHC health workers welcomed the opportunity to voice their concerns. To be 'heard' is to be appreciated. On the other hand unvoiced concerns usually result in a 'go slow culture,' which can easily erode the quality of care.

As expected, the 'voices' of the nurses reflected the reality at most of the PHC facilities which have limited access to doctors and other health professionals. The situation needs to be rectified, so that PHC facilities are staffed by balanced teams of relevant health professionals.

Despite a host of negative experiences, there are some positive experiences and dedicated staff doing their best in a working environment, which is often changing as well as challenging. The efforts of these staff need to be identified and affirmed.

Some of the perceived problems may be ameliorated through managers and supervisors finding ways to strengthen the PHC team. Management may want look into how to change perceptions like ***"If there is a problem, it is your problem. If you are right, there is silence – no recognition. If you are wrong – you hear from everyone,"*** through better communication, affirmation and supportive supervision.

The views expressed by the interviewed health workers, though personal, give an indication to some of the problems that are pertinent to effective health care delivery at the PHC facility. Problems such as heavy workload, poor relationships and communication between staff and their managers and colleagues, inadequate infrastructure, lack of reliable and sufficient transport and other resources and under-staffed facilities appeared to be common at many of the facilities, although with variations. These are not new challenges, but their persistence indicates the challenges that need to be overcome if existing PHC policies are to be implemented.

Some staff also face both professional and personal dilemmas in handling HIV/AIDS issues. Strengthening palliative care through staff training and support may improve the capacity of PHC health workers to deal with the increasing numbers of AIDS related cases.

There is a need for further studies to assess the extent and impact of some of the issues raised such as training and skills development in HIV/AIDS management in collaboration with PHC health workers.

Without well trained, supported and evenly distributed nurses and other PHC workers, the national health system as envisioned by the government will not materialise. PHC health workers have the ability to not only serve as the backbone of the health system but to be the driving force of a well-run and highly effective health system. But for this to happen some of the challenges raised by these 'Voices' will need to be overcome.

*Reviewers of chapters for the SAHR are not unanimous in their opinions as to the value of this chapter and after due consideration, the HST editorial committee decided to include it.*

## References


1 Department of Health, Republic of South Africa: Primary Health Care Progress Report 2000.

2 The Second Kaiser Family Foundation survey of Health Care in South Africa 1999.

3 Viljoen R, Heunis C, van Rensburg EJ et al. The National Primary Health Care Facilities Survey 2000. Durban: Health Systems Trust; 2000.

4 The Department of Health – The First 5 Years. HST Update Issue No. 39, Durban: Health Systems Trust; January 1999.

5 The Changing Role of the Clinic Nurse. Update Issue No. 46, Durban: Health Systems Trust; September 1999.

6 Pick W. Measuring Quality of Care in South African Clinics and Hospitals, Technical Report to Chapter 14. In: Ntuli A (Ed). South African Health Review 1998. Durban: Health Systems Trust, 1998.

7 Johnson S, Schierhout G, Steinberg M et al. AIDS in the Household. Chapter 12. In: Ijumba P, Ntuli A, Barron P (Eds). South African Health Review 2002. Durban: Health Systems Trust; 2002. in press.

8 McCoy D, Besser M, Visser R, Doherty T. Interim Findings on the National PMTCT Pilot Sites. Durban: Health Systems Trust; 2002.

9 Modiba P, Gilson L, Schneider H. Voices of Service Users. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds). South African Health Review 2001. Durban: Health Systems Trust; 2001.

10 Leon N, Bhunu F, Kenyon C. Voices of facility managers. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds). South African Health Review 2001. Durban: Health Systems Trust; 2001.

11 Department of Health: The Primary Health Care Package for South Africa – A set of Norms and Standards, Pretoria: Department of Health; 2001.

12 Nurse Training. HST Update Issue No. 54. Durban: Health Systems Trust; August 2000.

13 Strasser S, Gwele N. Nurse Oriented Primary Health Care. In: Ntuli A (Ed). South African Health Review 1998. Durban: Health Systems Trust; 1998.

14 Republic of South Africa. White paper for the transformation of the health system in South Africa. Government Gazette 382 (17910) Notice 667; 1997.

15 Lauring H. Action needed on brain drain. Globaleyes online magazine on globalisation.
URL: http://manila.djk/global/stories/storyReader$98, 2002.

16 Reid SJ. A Training Programme for Rural Primary Care Nurse Practitioner in South Africa. World Rural Health, International Conference Melbourne; 1-3 May 2002.

17 Lehmann U et al. Investigating the Roles and Functions of Clinic Supervisors in Three Districts in the Eastern Cape Province. HST Technical Report. Durban: Health Systems Trust; 2002.

18 McMahon R, Barton E, Piot M. On being in charge: a guide to management in primary health care. Geneva; World Health Organization; 1992.

19 TB Notes No 2, 2002, Update from research and evaluation branch CDC.
URL: http://www.cdc.gov/nchstp/tb/notes/TBN_2_02/U_reb.htm

20 Couper I, Hugo J. Management of District Hospitals – Suggested Elements for Improvement. Durban: Health Systems Trust; 2002.

21 New research shows workplace violence threatens health services. Press Release WHO/3710 May 2002.
URL: http://www.who.int/inf/en/pr-2002-37.html

22 Department of Health Annual Report April 2000 – March 2001. Department of Health. Pretoria; 2001.

23 Hall W, McCoy D. No Transport No Primary Health Care. Durban: Health Systems Trust; 2000.

# Priority Programmes


Chapter 11 AIDS in the Household

Chapter 12 AIDS and the Private Sector

Chapter 13 Antiretrovirals

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# AIDS in the Household

11

**Saul Johnson,[i] Gill Schierhout,[i] Malcolm Steinberg,[i]**
**Bev Russell,[ii] Katherine Hall[ii] and Jonathan Morgan[iii]**
[i]Health and Development Africa, [ii]Social Surveys
[iii]Memory Box Project, AIDS and Society Research Unit, UCT

*The HIV epidemic that has swept through South Africa has now developed into a maturing AIDS epidemic. In many communities around the country, households are battling to cope with caring for a severely ill household member, while dealing with the economic consequences of the person's illness. There is no doubt that health services are feeling the impact of this epidemic, and this is likely to get worse in the next 5 to 10 years.*

*A study was undertaken to understand the impact that AIDS is having at a household level in 4 provinces in South Africa, and also to explore the perception of household members of the care that they had received. Data were collected through structured interviews with the heads of 728 AIDS affected households. These households were sampled randomly from lists of households provided by organisations that work with people with AIDS and their households. While data were collected on a range of issues, only the household experience of illness, and the utilisation and rating of health services are presented in this chapter.*

*Almost half of the respondents interviewed needed assistance with walking, while 10%-20% required assistance with other daily tasks like dressing and washing. The most common symptoms reported by households were weight loss and pain, but chronic diarrhoea was the symptom that the households found most difficult to deal with.*

*Most of the households reported that there was someone to provide full time care for the ill person, but in 32% of households there was either no care or only part time care. The main caregiver was usually a woman, and 73% of the caregivers were women over 60 years old. In a significant 7% of households the caregiver was under the age of 18 years.*

*Utilisation of public clinics was high, and satisfaction with these services was also high. This is in contrast to the use of public hospitals, which was much lower than clinics. There was also a greater level of dissatisfaction with the treatment provided at public hospitals. Surprisingly there was a high level of dissatisfaction with traditional healers.*

*The households in this study spent an average of 34% of their monthly income on health care. This is much higher than the amount spent on health care by non-AIDS households.*

*The study highlights the needs for policy makers and planners to address the health needs of people with AIDS, and find ways to assist their households. Without a clear and comprehensive approach to this problem existing poverty will be deepened, and the dignity of poor families and communities threatened.*

## Introduction

It has been strongly argued that the AIDS epidemic's greatest impact will be felt by individuals living with HIV/AIDS, the health sector and the poorest households, as a result of deepening poverty brought on by AIDS-related illness and death.[1] In South Africa we are seeing the burdening and rationing of health care services, and their inability of health services to cope with late and end stage HIV disease. HIV/AIDS reinforces the need to strengthen access to effective primary health care (PHC), but also imposes a substantial and complex burden on PHC services. This creates a large scale need for new models and levels of care, including home based care and other types of step-down and terminal care initiatives that will require the increased efforts of community based organisations (CBOs) and non governmental organisations (NGOs).

While these new models of care are being developed, health services in the public sector are overburdened with the result that many patients are likely to be cared for at home. This presents real challenges given that apartheid has disrupted family and community life in South Africa, and weakened extended family and community coping mechanisms. Although there is an existing formal welfare system, costs are high and capacity is limited. In addition, social welfare safety nets are focused largely on the elderly and the disabled.

In order to determine the needs of households, and their perceptions of the care that they are receiving from formal and informal services, a survey was performed in 2001 and 2002 among 728 AIDS affected households in four South African provinces. This survey was commissioned by the Kaiser Family Foundation, and supervised by the Health Systems Trust. One of the key aims of this study was to provide information for policy makers and planners to inform the need for new programmes and to support existing ones.

The overall aim of the survey was to determine the impact AIDS has on households. While the study collected data on the economic and demographic impact of the epidemic, it is the experience of morbidity and mortality, and the perceptions of the household of the response of the health and welfare systems that are reported here.

This cross-sectional study looked at a sample of AIDS affected households in the provinces of Free State, Gauteng, KwaZulu-Natal and Mpumalanga. In each province sites were selected to provide suitable strata of urban and rural households. Within each site organisations that work with AIDS-affected households were consulted and invited to participate in the survey. Households in an area were then sampled randomly from the lists of all organisations that had agreed to participate in the study.

In addition to the quantitative questionnaire, a narrative psychologist visited a sub-sample of the households and gathered stories through in-depth interviews. Some of the stories' excerpts are included in this chapter.

## Details of the Sample

Details of the sample are shown in Table 1 below. There was a fairly even spread of households where a person was ill with AIDS, and where a person had died of AIDS.

**Table 1: Distribution of the sample**

| Area | Chronically ill | Deceased | Total |
|---|---|---|---|
| Gauteng | 150 | 112 | 262 |
| Free State | 78 | 58 | 136 |
| Mpumalanga | 64 | 67 | 131 |
| Jozini, KwaZulu-Natal | 37 | 54 | 91 |
| Durban, KwaZulu-Natal | 65 | 86 | 151 |
| Total | 394 | 377 | 771 |

A total of 771 cases and households were included in the final data set. However, 43 cases were excluded from the main analysis of the study (i.e. those above 60 or below 15 years). Therefore the analysis was based on 728 cases and households.

The age profile of the index case is given in Table 2. The mean age of the cases was 34.6 years, with a median of 33 years (16 to 59 years). On average, the men were older than the women, men having a mean age of 37.3 years (16 to 59 years), and women, an average of 33.1 years (17 to 59 years); the corresponding age medians for men and women were 37 and 31 years respectively. As expected, the age of those deceased was slightly older (around 1 year) than those ill.

There were 265 male index cases (36.4%), and 463 female index cases (63.6%). The age profile is consistent with AIDS as the cause of illness and death among this sample.

**Table 2: Age profile of the index case by mortality status**

| Age | Index Case Ill | Index Case Deceased | Total |
|---|---|---|---|
| 16-20 | 6 | 6 | 12 |
| 21-24 | 38 | 31 | 69 |
| 25-34 | 158 | 150 | 309 |
| 35-44 | 107 | 101 | 208 |
| 45-54 | 47 | 41 | 88 |
| 55-60 | 7 | 13 | 20 |
| No Response | 5 | 13 | 18 |
| Total | 368 | 360 | 728 |

## Details of the Illnesses, and their Impact on the Household

> "Kaiser passed away four months ago. This is his mom's house. He couldn't work, he lost weight and he was going blind and his girlfriend ran away when he became sick. So the family hired me to look after him. At sixteen years he was staying at the hostel and he was arrested. He was in jail for fifteen years for murder so he came out when he was thirty one. He was only out for a couple of years. At the end he couldn't do anything, he couldn't even control his bladder or his bowels and he needed nappies. I bought big ones, R55 for twelve at the chemist."
>
> "How many did he use per day?"
>
> "Five. He also had bedsores and he used to go to the hospital for a day when he was bleeding. His mother paid me R500 to look after Kaiser and now that he died they still pay me almost the same. He told me he did get AIDS from a lady in Jo'burg."

### Length of illness

The index cases had been ill for a median of about 9 months at the time of the interview. Those who were already deceased were reported to have been ill for about 6 months before death, whereas those who were alive were reported to have been ill for about 1 year at the time of interview (Table 3).

**Table 3: Duration of illness by mortality status**

| Duration of illness at time of interview | Ill | Deceased | Total |
|---|---|---|---|
| <2 weeks | 7 | 9 | 16 |
| 2 weeks-3 months | 50 | 114 | 164 |
| >3 months-<1 year | 160 | 151 | 311 |
| 1-2 years | 63 | 42 | 105 |
| >2 years | 88 | 44 | 132 |
| | 368 | 360 | |

### Capability of performing daily tasks

The level of disability was looked at among the people in the households who were ill, through an abridged Activities of Daily Living score. Households of deceased cases were not asked these questions, as there were concerns about their ability to recall the information. The main activities that caused problems were related to mobility, although many of the cases required support for simple tasks such as dressing. This reveals a burden of care that households will have to meet, unless there are services in the community to assist the households.

Almost one half of the index cases needed help walking on uneven surfaces, and help was needed for basic activities such as eating, dressing, toileting and getting in and out of bed for between 10% and 20% of the index cases. This is shown in Table 4 below.

**Table 4: Percentage of index cases that needed help with various activities of daily living**

| Activity | Independent | Needs Help | Not Answered |
|---|---|---|---|
| Eating | 328 (89%) | 35 (10%) | 5 (1%) |
| Moving in and out of bed | 304 (83%) | 59 (16%) | 5 (1%) |
| Personal care | 317 (86%) | 46 (13%) | 5 (1%) |
| Getting on and off the toilet | 301 (82%) | 62 (17%) | 5 (1%) |
| Washing him/herself | 292 (79%) | 71 (19%) | 5 (1%) |
| Walking on a level surface | 286 (78%) | 76 (20%) | 6 (2%) |
| Walking on stairs or uneven surfaces | 197 (53%) | 163 (44%) | 8 (3%) |
| Dressing | 298 (81%) | 64 (17%) | 6 (2%) |
| Can control bowels? | 298 (81%) | 59 (16%) | 11 (3%) |
| Can control bladder? | 298 (81%) | 64 (17%) | 6 (2%) |

Table 5 shows the identified common symptoms experienced by the ill person. Adequate management of many of these symptoms requires a reasonable level of training, which may be a challenge for both the household and many HBC organisations that use volunteers.

'Confusion' was mentioned as a symptom by half the sample; this is something that might be difficult to manage within households where many people are living in a small space. The role of community psychiatric services in managing 'confused' AIDS patients needs to be explored.

**Table 5: Common symptoms**

| Symptom | % of households which reported the symptom |
|---|---|
| Weight loss | 89% |
| Pain | 87% |
| Chronic cough | 74% |
| Difficult breathing | 56% |
| Confusion | 52% |
| Chronic diarrhoea | 52% |

Chronic diarrhoea was most frequently mentioned as the symptom that caused the worst disturbance for the household. There was obvious concern about the constant washing and cleaning that is required, especially in areas with poor access to water and sanitation.

## Details of the caregiver

Nosipho and Mpho's Story (Mpho is the daughter of Leta, the woman who was ill, and Nosipho is their neighbour).

"She gets abused to look after her mum," says Nosipho, "her mother always say that she is going to die of hunger and is angry that her children are going to become orphans. Because of her weakness Leta always needs members of family to carry her from the house to the toilet. She always vomits and cry for pain and say that it can be better if she can die now. There is confusion. She acts as if she is mad and is always short tempered. It will be better Mpho doesn't know about her mother's sickness."

"I will get sick from that disease," says Mpho, "I am afraid to use her toothbrush, I used it already. While my mother is sick she says you must scratch my back where she has sores."

I reassured Mpho that there is a very low chance that you can contract HIV like that unless you have open sores on your hands but you are right to be careful. There is a much greater chance of all of us getting the illness through sex without a condom.

"I'm also afraid," says Mpho, "the father of my child who lives in Johannesburg is not faithful."

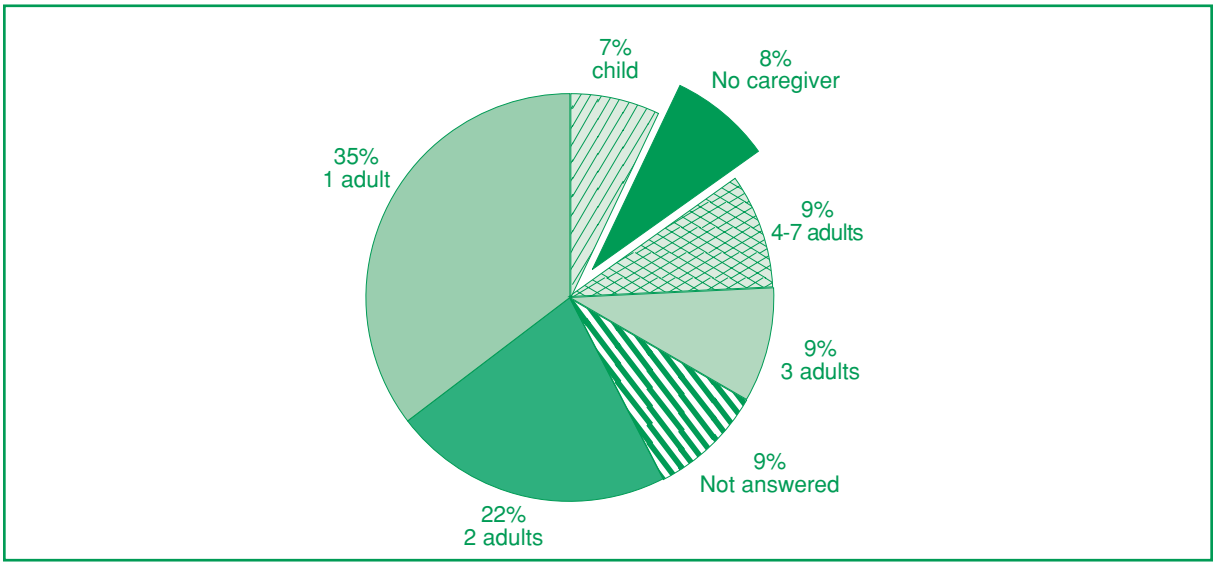
"In the notes from the last interview," I say to Nosipho, "it was written that you are a very caring person who is looking after your neighbour with great generosity, even though you are unemployed and have children of your own. I will write a story about your kindness, and also about your struggles and your courage Mpho. I will send it to you if you write down your address."

"I have brought you this," says Rebecca handing them a large food parcel.

Most households (68%) reported that there was someone at home for most of the time, to care for the ill person. A further 22% reported that someone was available some of the time, and around 7% said that there was no one to care for the person despite needing care, or that the person lived alone or with only a young child. The fact that 32% of these households require intensive assistance to care for the person with AIDS reveals a large potential area of need, given the large number of households that will have a person with AIDS over the next 5 to 10 years.

The main caregiver was most often a female (i.e. 68% of caregivers were women or girls). About 23% of the caregivers were over 60 years old, and were mostly women (i.e. 73% of caregivers over 60 years were women). A further 7% of primary caregivers were under 18 years. Both girls and boys were equally likely to be primary caregivers. In around 35% of all households, the primary caregiver was the only person involved in caring for the ill person. The detail of the number of people caring for the person who was ill is shown in Figure 1.

**Figure 1: Number of people involved in the care of the index case**




Just over 40% of households (i.e. n=312) reported that caregivers took time off to care for the ill person. While the majority of caregivers took off time from work in the house, in 1 in 5 of these households the caregiver had to take time off school, and in 1 in 10 the caregiver had to take time off from formal employment.

## Knowledge of HIV/AIDS status

About half of the households (i.e. n=366) reported that they were aware that the index case was suffering from AIDS. This number is quite high, given the stigmatised nature of this 'disease'. Many other diseases were mentioned by those who were not aware of the AIDS diagnosis, the more common being tuberculosis and pneumonia.

## Access To and Rating of Services

### Phindi's story

A voice cries out and I get up asking Phindi if I can greet her son.

A man with very long hair and no flesh on his bones lies half under a blanket. A catheter leads out of him into a bucket. I shake his hand in my own and I try to explain why we are here.

"He is scared of the tokolosh and he gets very tired fighting it," says Phindi who is leaning on her stick beside us. I tell John I will say goodbye before we leave and we return to the other room.

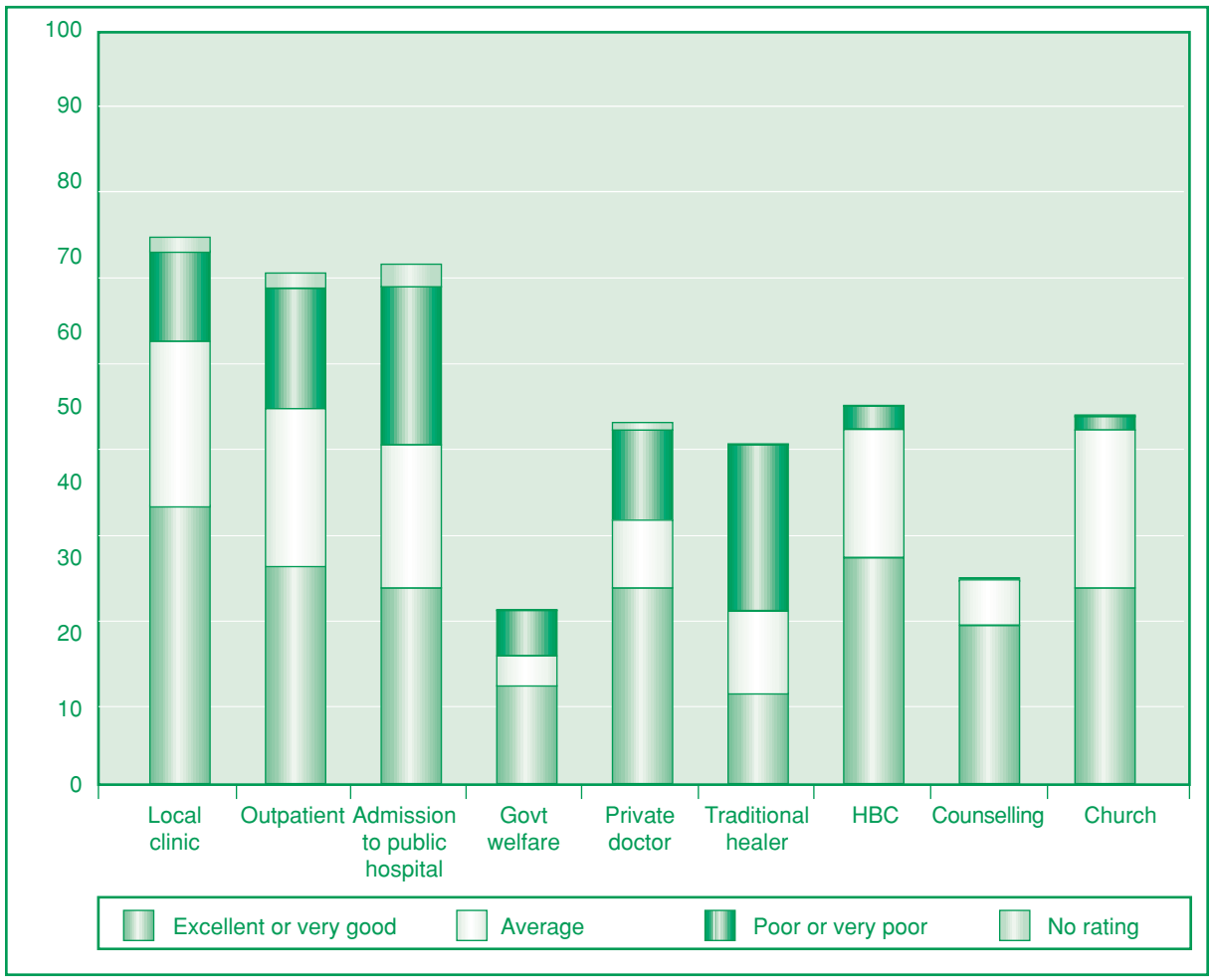
"He don't have a wife or children, his wife left him because of cheating, she was looking after someone else. When it looked to her like he had HIV she vanished with their three children," says Phindi snorting snuff into one of her nostrils. The hospital is too far and even if they admit him he comes back sick. His brother found him lying in the bed full of sores. He coughs blood that makes him difficult to eat and we have to force him to eat or he will die. The government give him no disability. What will be the benefits of this research? Especially to us. How are we going to receive these benefits by post or you will it come physically? It would have been better if John was working before he got sick. I have never benefited from this child. I remember when he was young I make it a point I did everything for him as he was the first son but now its over I have to do it again."

Through the wall I hear John crying and I give him my cap and we leave.

Of all the services used in the past 6 months, prior to the study, local clinics were the most commonly used (i.e. 17% of all utilisation), followed by public hospitals and HBC organisations. Services that were least utilised were workplace clinics and private hospitals. Government welfare services were also seldom utilised, especially in rural areas.

Overall, almost 80% of the sample had used a local clinic, with 62% rating this service as being good or very good. However, 17% rated the service as poor or very poor and 21% as average. The details of the services that households have accessed, broken down by urban/rural are given in the figures below.

**Figure 2: Service utilisation and level of satisfaction among rural households**



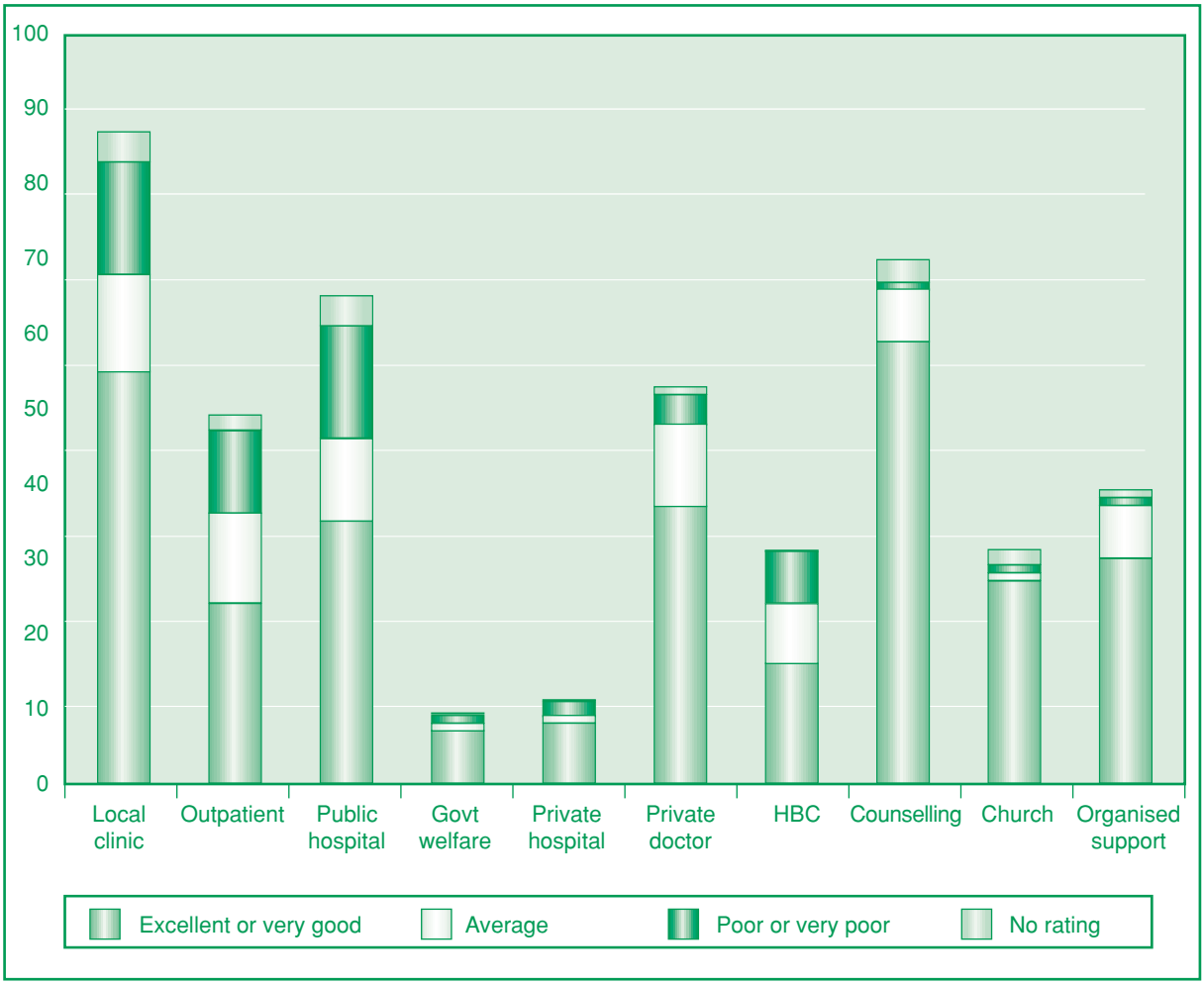

Rural households seem to utilise local clinics extensively, and have a high degree of satisfaction with these services. On the other hand, satisfaction with public hospitals was lower. Of interest is that almost 50% of people with AIDS in this sample had used a doctor in the private sector. About 40% of the rural sample had used a traditional healer, but there seemed to be high degree of dissatisfaction with their services. As the figure indicates, very few of these households reported having had contact with the government welfare services. This would seem to be a problem, because it is that section of the population that is in most need of social support.

For rural households, there was low utilisation of workplace clinics, private hospitals and organised support, at 10%, 4% and 8% respectively. These have not been shown in the graph.

The utilisation of services and their rating among urban households is shown in Figure 3. These households show a very similar pattern of health service utilisation and satisfaction, to that of rural households. Utilisation of public clinics and satisfaction with these services was high. However, access to public hospitals, as well as the satisfaction with these services was lower.

Very few households in urban areas reported using traditional healers' services.

**Figure 3: Service utilisation and level of satisfaction among urban households**




Around 30% of households were being serviced in some way by churches. Access to HBC organisations seems low, since the sample was generated in part through these services. However, there may have been problems with the respondents' interpretation of this service, since many of these organisations offer counselling services as well. Satisfaction with this service was generally high. For urban households there was low utilisation of workplace clinics (5%), government welfare services (9%), private hospitals (11%) and traditional healers (6%), most of which are not shown on this graph.

Respondents gave reasons for their rating of services in their own words, and these were grouped into categories. There were four main categories of reasons identified for ratings: The attitude of the caregiver, the type and nature of care received, the effect of the care, and the facilities available.

Since the satisfaction with public clinics service was quite high, and the satisfaction with public hospitals service quite low, further analysis of the reasons for these ratings was carried out.

Over half of the households (54%) mentioned that it was the type of care

that the patient received that was the reason that they were satisfied. Health worker attitude was mentioned by 20% of households as the reason for rating public clinics as good or very good. This somewhat contradicts the public perception that health workers don't care for people with HIV/AIDS, or provide them with inferior treatment. A further 22% of the respondents indicated that they were satisfied with the effect of the treatment provided at public clinics.

Interestingly, the type of care that the patient received was also the reason why public sector hospitals received a poor rating. Despite the general perception of health workers as being uncaring of people with AIDS only 18% of respondents who rated public hospitals poorly, gave the attitude of health care workers as their reason. However, half of the respondents (49%) were dissatisfied with the treatment they received at public hospitals, while 22% were unhappy with the outcome of their treatment. Given that AIDS is a 'non-curable disease', and that antiretroviral drugs are not available at public hospitals, this response is unsurprising.

An interesting finding in this study was the high level of dissatisfaction with traditional healers. Over two thirds of respondents gave this rating because of lack of effect of the treatment they received. Typical comments included "never got better", "came back worse" and "medication didn't work".

## Proportion of the Household Expenditure (Income) Spent on Health Care

> What little money this family had they spent on Godfrey looking after his needs. Now they do not have something to eat. They live in grace. The son of Godfrey is not working and they do not have money to further his studies. What worries is that the son of Godfrey will end up doing bad thing because he even mentions that he better go to jail than living this life of no point and in misery.

Overall some 34% of all income received across all the households was spent on health care. Households spent between R8 and R4 000 per month per household on health care, with a median of R250.

Within households, this translated into a median of 28% of household monthly income going on health care, with fairly wide variation between households. Overall, rural households spent a greater proportion of monthly income on health care than urban households (i.e. 54% of total monthly income received by rural households was spent on health care compared to 26% of total monthly income for urban households). In the most recent available national data (1995), households spent an average of 4% of their monthly income on health care,[2] which is considerably lower than the corresponding expenditure in AIDS affected households.

## Conclusion and Recommendations

This study emphasises many of the challenges that South Africa will face in dealing with the HIV/AIDS pandemic. While the country grapples with the need to find ways to stop the spread of the HIV pandemic, especially among young people, it is coming to realise the urgency of caring for the increasing number of people becoming ill with AIDS, and the households in which they live.

The way that the households were sampled introduced a bias into the study. This was recognised before the study began. The main source of households was HBC and CBOs and public clinic services. The study therefore excluded those people and households that had no access to these organisations, and may be more marginalised. But the study possibly also excluded wealthier households that would have other means of support. From the data on household income it seems that the study was able to access many households from poor socio-economic strata, since the median monthly household income was R800. However, the living conditions, especially in the urban areas, would indicate that some wealthier households were included in the sample.

In general it is likely that this sample of households represents a fair picture of households affected by AIDS in the provinces that were sampled. However these households are likely to have better access to services than the average AIDS-affected household, through access to care and support organisations.

Most of the households in the survey seemed to have good access to primary health care services. While this could have been due to sampling bias, it is more likely due to the government's push to expand the role of PHC in the South African health system. Access to public hospitals was more limited. AIDS is a 'disease' that will require hospital admission at some stage of the illness. In this survey around 40%-60% of the patients with AIDS had not been admitted to a hospital, indicating a possible lack of capacity of these services. Patients who are not admitted to hospital have a need for care that will have to be met by either the households or the HBC organisations. This is a large burden that is going to increase over time.

### Access and attitudes towards services

As mentioned above, access to PHC services is extensive. What may be more surprising is the positive attitude that clients have towards those services. This may be a result of the fact that the illnesses that require attention by a PHC facility is more easily addressed than an illness that requires a hospital admission. However, there may also be a greater familiarity with the staff at a local level clinic. It is important to address the public perception that health services are not supportive of patients with AIDS, when this may not be the situation in most cases.

Not only is access to state hospitals more limited, but also patients with AIDS find these services less satisfactory. The main reason for this seems to be that expectations of care and treatment are not met. It may also represent the lack of training of health workers in the area of palliative care, and the helplessness they feel when confronting so many young people with a terminal illness.

Usage of traditional healers was lower than expected, although this ranged from 30%-40%. This finding could be partly explained by the respondents' reluctance to admit to seeking these services. However, a surprising finding was the dissatisfaction felt by clients with traditional healers. The major reason for this was the lack of a cure available from traditional healers. The extent to which traditional healers are offering a 'cure' for AIDS is difficult to tell, although if this is happening, it is damaging the credibility of the sector.

## Policy and planning implications and priorities

There are many policy and planning issues that arise from this study. Many of them are already well known, but still bear repeating.

- There is a burden of need caused by HIV and AIDS, which is only being partially met by the formal health sector. The balance of this need is being met in part by community care organisations, and the households have to do a lot of the active caring. There is an urgent need for active planning in the health sector on ways to deliver affordable and appropriate services to people with AIDS.

- The Department of Health needs a clear Care and Support Plan for people with AIDS, and this needs to be communicated widely. People living with HIV/AIDS, and their caregivers, need to know what services they can expect from health services. This will go some way to reduce the dissatisfaction with hospital services, but also assist health workers to understand their role in the epidemic. Current clinical guidelines are fragmented, and do not adequately fill this gap.

- It is unlikely that health services are going to be able to scale up to meet the needs of people with AIDS and their households. The emphasis will need to be on developing appropriate community support services. However, these need to be integrated in some way with formal health services, and there must be referral mechanisms between them.
- Hospital services need to be pro-active in planning around the increasing number of patients with AIDS. There will need to be a close relationship with Home Based Care organisations, so that a clear transition from hospital to home care is established. At the same time, health workers will need support to prevent burnout. There needs to be additional training in the area of palliative care, so that health workers appreciate their role in caring for people with AIDS.

- The introduction of antiretroviral drugs on a larger scale could protect hospital services from having to provide services to the increasing number of people with AIDS. However, it is unlikely that these drugs are going to be available on a scale that will make a material difference to most institutions.
- Although there was a high level of satisfaction with local clinics, there is still a need to provide training for health workers in these facilities. The high prevalence of 'confusion' as a symptom of AIDS does raise the role of community psychiatric nurses in supporting the home caregivers.
- The role of gender in susceptibility to HIV infection is well recognised. There are data from this study on the role that girls and women play as carers and maintainers of the household. Although often stated, we need to ensure that the status of women is not undermined as a result of the epidemic, not only through their susceptibility to infection, but also as a result of their care and support burden.

## References


1 Ainsworth, M, Over M. Confronting AIDS: Public priorities in a global epidemic. Oxford University Press. 1997.

2 Hirschowitz R. Earning and Spending in South Africa: Selected findings of the 1995 income and expenditure survey. Statistics South Africa. Pretoria 1997.

# AIDS and the Private Sector

# 12

**Gavin George[a] and Alan Whiteside[b]**

Health Economics and HIV/AIDS Research Division (HEARD) of the University of Natal

*HIV/AIDS is affecting businesses in profound and costly ways. The epidemic poses a serious threat to global competitiveness for the South African private sector. Disease prevention and health promotion are not commonly thought to be business concerns, but HIV/AIDS is forcing a re-examination of this view.*

*The corporate sector's motive is to make a profit, but HIV/AIDS is a factor that now needs to be considered, as it not only increases the costs of production but also affects the entire business environment. This chapter looks at the mechanisms by which this happens; existing responses and what could and should be done. Of particular concern is the issue of burden shifting – a global phenomenon whereby costs are shifted to the public sector and ultimately to individuals and households.*

a Gavin George is a Research Fellow at HEARD
b Professor Alan Whiteside is the Director of HEARD

## Introduction

The cost of producing goods is a function of the cost of inputs such as labour, materials and utilities. The impact of HIV/AIDS may raise costs and reduce productivity for a number of reasons:

- Absenteeism – which includes more than employees missing work due to ill health. Women's roles as caregivers will necessitate time off and funerals become a major source of lost time. Employees may force themselves to come to work for fear of losing jobs, but be effectively absent.
- Workers whose health is failing will be less productive and unable to carry out physically or emotionally demanding jobs.
- Replacements for employees who die or retire on medical grounds may be less skilled and experienced. Recruiting new workers will cost money and firms will also have to cover the associated training costs.[1]
- Employers may increase the size of the workforce and hence payroll costs to cover for absenteeism.

## Human Capital

The Actuarial Society of South Africa (ASSA) 2000 model estimated that in 2002 there were over 6.5 million South Africans infected with HIV. HIV prevalence is a forerunner to the AIDS epidemic, with morbidity and mortality due to AIDS, following HIV infection. In the absence of affordable, deliverable and effective treatment, those currently infected will fall ill and die. Prevention efforts do little to stave off this reality although they may have an impact on the epidemic in the longer term.[2]

The Bureau for Economic Research, reviewing projections on population growth, concludes that the population could grow by as little as 1.5 million people between 2000 and 2015 – 10 million people fewer compared to a no-AIDS projection. The total labour force is projected to be almost 21% lower by 2015 compared to a no-AIDS scenario, resulting in the overall labour force remaining almost stagnant until 2015. The difference between an AIDS-inclusive and no-AIDS labour force by 2015 could be 16.8% in the case of highly skilled workers, 19.3% for skilled and 22.2% for semi- and unskilled workers.

## Measuring the Impact of the Disease

A recent manual produced by Family Health International (FHI) sets out three general methods that can be used to measure the impact of HIV/AIDS on a company.[3] The first involves conducting an HIV survey within the

confines of voluntary counselling and testing to determine the prevalence of HIV infection rates of staff within the workplace. This method is believed to provide the most detailed information to companies and as a result, companies are able to extrapolate data and project medical care, death benefits, recruitment and new training costs. This method does have inherent problems in that information regarding employees HIV status can create issues for labour relations. This method is also the most expensive option, as both the HIV test kits and analysis would cost money. These tests are also only a measure at one point in time. A person may become infected soon after being tested and the test does not indicate and provide information about the employee's sexual behaviour. Similarly, this method requires a company to have access to voluntary counselling and testing (VCT) services to assist the HIV+ employees to get the services they need and HIV- employees to continue protecting themselves from the infection.

The second method of gauging the impact of HIV/AIDS on a company is to use the HIV prevalence rates for the country or region and assume that they mirror the prevalence rates of the company. This is the least accurate measure of company specific impacts, although it takes the least time and costs the least.

The third method is to identify and track company indicators. This is a very low cost option, but assumes companies keep up to date human resource and medical records, which can be used to monitor trends.

The indicators, which can assist businesses in assessing the impact of HIV on productivity and profitability, include:[3]

**Worker Absenteeism**: as the employee enters the later stages of the infection, a person experiences increased periods of illness and absenteeism. Those employees caring for sick family members will also require time off work.

**Employee Turnover**: Retirement due to ill health or deaths can be monitored. These data can be costed and put together with that of hiring and training.

**Medical Costs**: Many companies offer medical assistance to their employees. This can be medical aid or insurance, medical cost reimbursement schemes or the provision of an on-site clinic. These costs should be easily tracked. A gradual increase in medical costs is expected in the absence of HIV/AIDS but any rapid increase can be associated with the AIDS epidemic.

**Company Benefits**: Benefits such as health insurance, life insurance and death benefits, will be affected. These benefits should be closely monitored by the Human Resources departments to ascertain the cost impact of HIV/AIDS.

**Disruption of Production**: When an employee falls ill and continues with his/her work commitments because they have no remaining sick leave, and the employees require their wages, production and service delivery could be disrupted. The training of new staff or the retraining of existing staff to fill a vacant position can impact on productivity and profits. Work disruption

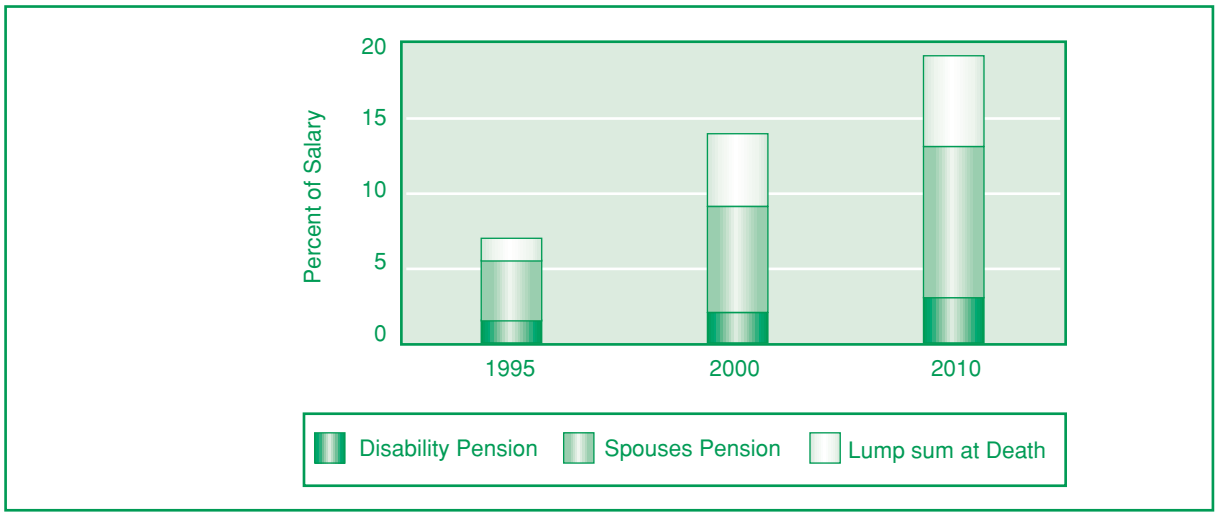
should be monitored closely by supervisors while recruitment and subsequent training is a function of the Human Resources department.

The collection and monitoring of baseline data can give a company a good indication as to the impact HIV/AIDS has on the workforce and subsequently, on its profits. However, these numbers cannot be definitive as HIV/AIDS is not the only factor which may push up premiums or result in higher levels of absenteeism. But these data are important because they can help monitor changes once prevention mechanisms have been implemented.

## Costs

HIV/AIDS will increase the cost of employee benefits, such as group life insurance, pensions and medical aid. Figure 1 shows how three benefits – a lump sum payment on death, a spouse pension and disability pension are likely to rise in the face of increased mortality and morbidity. In 1995 these benefits cost about 7% of payroll costs. By 2010 they would cost around 18%.

**Figure 1: Illustrative Impact of AIDS on Employee Benefits in South Africa[4]**




HIV/AIDS means the cost of death benefits to retirement funds could rise within five years to more than four times the 2001 cost. Fund investment strategies would need to be reassessed to cater not only for the impact on members and on liquidity, but also for the impact of the disease on the economy. This would be further exacerbated by the significant increase in death benefits paid out over the next few years, which would change the liquidity needs of most retirement funds.[5]

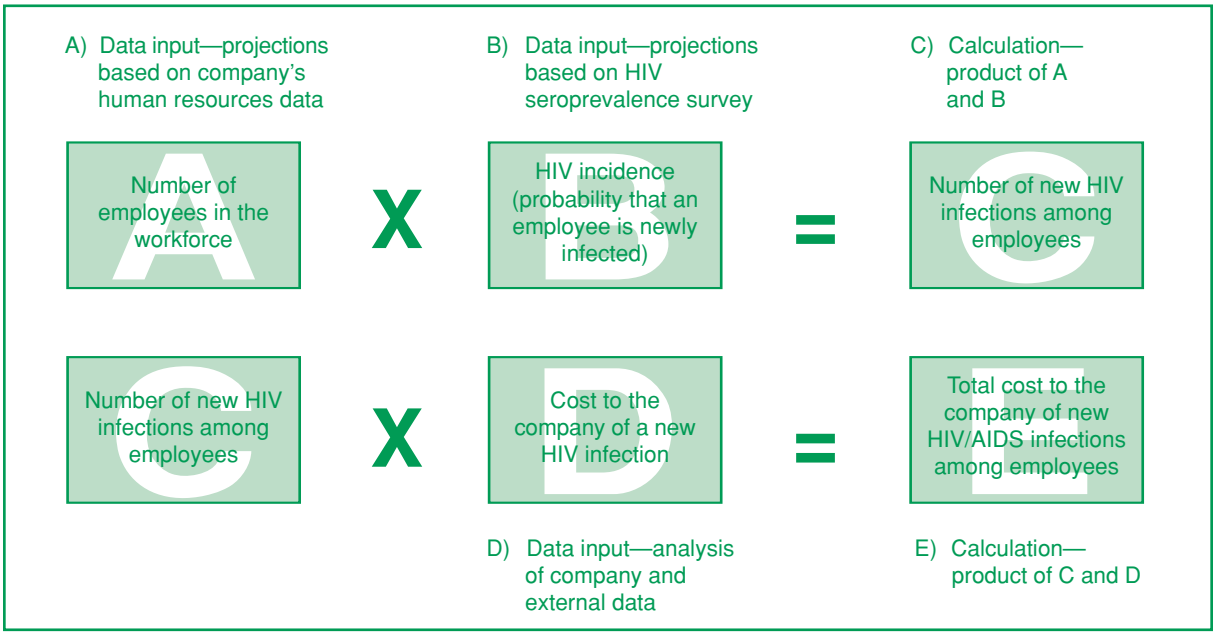
Some companies are looking to support selected employees on the grounds that it is more cost-effective to provide antiretroviral therapy to those employees above the level of supervisor and that for any employee below these levels, it would be more economically prudent to outsource these

functions. This move will shift the costs as well as the burden of the disease on to the individual worker. These issues need special consideration in the light of South Africa's commitments to human rights and non-discrimination on the one hand, and economic growth on the other.[6]

The United States Agency for International Development (USAID) funded study conducted by Boston University, researched five large enterprises in South Africa and Botswana. The aim of the research was to extrapolate information on the potential costs of AIDS in the private sector. The study estimated the cost of AIDS to business, put side by side, with the benefits of prevention and treatment. It took account of company specific data on employees, costs, and HIV prevalence amongst the workforce.

The five companies surveyed were able to provide detailed human resource, financial, and medical data and carried out voluntary, anonymous, unlinked HIV prevalence surveys of their workforce. The methodology used to cost these five companies is illustrated in Figure 2. In order to conduct a costing of this nature a number of baseline assumptions had to be made, and these included: HIV incidence would peak in 1999 and decline after that year, HIV prevalence would stabilise in 2002 or 2003, AIDS mortality would climb until 2005 or 2006 and then stabilise, and that the median survival time was nine years.

**Figure 2: Costing Methodology**




It must be pointed out that an incidence costing method was used, i.e. once an employee becomes infected with HIV, the company is committed to certain costs associated with that infection, e.g. sick leave, productivity loss, supervisory time, disability, death, medical benefits and turnover. Furthermore financial assumptions are made when calculating the cost and these include:

the use of a company's own discount rate[c] which can be anything between 4%-10%; there are no major market or price changes; salaries, benefits, and other monetary values are held constant in real terms; there are no changes in the core business structure or operations and that non-AIDS turnover has little effect on costs. Table 1 illustrates the characteristics and results of the five companies.

**Table 1: Characteristics and results from the 5 companies[7]**

| Sector | Heavy Manufacturing | Agribusiness | Mining | Mining | Retail |
|---|---|---|---|---|---|
| Workforce size (number of employees) | >25 000 | 5 000 - 10 000 | <1 000 | >1 000 | <1 000 |
| Estimated HIV prevalence 2002 (%) | 9.9 | 24.4 | 33.6 | 24.1 | 11.2 |
| Cost per infection by job level (present value, 2001 US$) | | | | | |
| *Unskilled/semi-skilled* | 32 393 | 4 439 | 10 732 | 9 474 | 4 518 |
| *Technician/artisan* | 50 075 | 6 772 | 17 972 | 14 097 | 11 422 |
| *Supervisor/manager* | 83 789 | 18 956 | 63 271 | 45 515 | 24 149 |
| Average cost per infection (multiple of median salary) | 4.3 | 1.1 | 5.1 | 2.9 | 0.9 |
| Liability acquired in 2002 (future cost of incident infections) (% of payroll) | 5.0 | 2.4 | 9.4 | 5.9 | 5.9 |
| Undisclosed cost of prevalent infections in 2006 (% of payroll) | | 4.8 | 18.1 | 12.2 | 1.8 |

## Costing Example:

**The Lesedi Project:**[8] The Lesedi Project worked in partnership with the Harmony Gold Mining Company, USAID/AIDSCAP, the National Reference Centre for STD, the Institute of Tropical Medicine, Antwerp, Pfizer Pharmaceuticals, the South African National HIV/AIDS and STI Programme, provincial and local health departments.

The Project ensured that miners who had symptoms of STI were treated promptly using the syndromic management approach. Additionally, women at high risk of contracting STI were offered monthly treatment with a single monthly oral dose of 1 gram of azithromycin. This antibiotic was given to all women with their consent even if they were asymptomatic. Women with

c In the absence of inflation, a Rand in the future is worth less than a Rand today, and must be 'discounted' by an amount that depends upon the interest rate and when the money is receivable. This is commonly referred to as the discount rate.

symptoms were managed according to the syndromic management guidelines.

A cost-effectiveness assessment was conducted using a computer model to estimate the number of HIV infections that would have occurred in the community without this intervention. It was estimated that 235 HIV infections were averted (40 women and 195 men), i.e. a 46% decrease in estimated HIV infections. In terms of averted HIV/STI-related medical costs, an estimated R2.34 million was saved. This was a massive saving compared with the relatively small cost of the intervention (R268 000). The project has shown that targeted STI interventions are a cost-effective means of preventing HIV infections.

## Company Responses

One study[9] suggested that employer responses to the epidemic were strongly linked to the size of the workforce. Those companies who employed fewer than 100 employees were reporting very little in the way of substantive interventions. The study observed that employers with a workforce between 100 and 500 were doing well in terms of education and awareness programmes but fell short when it came to conducting risk assessments. The summary of the employer response to this epidemic is shown in Table 2.

**Table 2: Summary of employer responses based on selected questions[9] (Size of the company and employers' responses)**

| Employer Response (Categories assessed) | Less than 100 | Between 100 and 500 | Above 500 | Overall |
|---|---|---|---|---|
| Coordination with industry associations | 29.0% | 37.9% | 60.0% | 45.5% |
| Formulating an HIV/AIDS strategy and policy | 6.5% | 51.7% | 82.0% | 52.7% |
| Risk assessment | 6.5% | 6.9% | 52.0% | 27.3% |
| Programmes for support of HIV infected people | 21.3% | 42.1% | 64.8% | 46.5% |
| HIV/AIDS awareness/ education programmes | 25.8% | 72.4% | 86.0% | 65.5% |
| Monitoring and reporting | 3.2% | 17.2% | 48.0% | 27.3% |

The study concluded that at an individual organisational level, the responses lacked focus and as a result, would prove less effective. Areas requiring attention were:

- Surveillance data, which permits companies and society in general to develop effective responses to the disease, are poorly developed in South Africa

- There are no viable fora to share the private sector data and collaborate with Government in leveraging these data in the fight against HIV/AIDS
- Very limited use of KAP (knowledge, attitude and practices) studies in South Africa
- Limited use of peer educators
- Domestic initiatives were thought to be too limited to seriously impact on behaviour change which internationally is emphasised as a key thrust to fighting HIV/AIDS
- The treatment of STI is under-developed in South Africa
- Condom distribution via South African employers is weak by international standards i.e. those stipulated through the code of good practices as laid down by the International Labour Organisation (ILO).

Research by Ebony Consulting International (ECI) on small and medium enterprises (SMEs) looked at the impacts this epidemic has on their workforce. The study revealed that owners and managers of SMEs are aware of the effects of HIV/AIDS on their workforce but very few of them were developing strategies to mitigate this impact.[10] The study suggested that the challenges for small businesses were around the problem of developing a programme that was both appropriate and affordable for the size of the firm. In-depth programmes were feasible and affordable for larger corporations but not so for smaller companies. The study called for research and development to be applied and easily adaptable for a SME workplace programme.

These and other studies and surveys have been publicised and there is a growing awareness within the corporate sector that this epidemic will impact adversely on their business practices. However, there is a sense that everyone is waiting to see what other businesses and their competitors are doing before initiating a comprehensive plan to respond to the epidemic. Although awareness is growing within the private sector, there are still many employers who fail to institute any form of programme or awareness raising activity within the workplace.

Among companies which have taken some initiative, most responses take the form of a simple awareness or prevention activity, for example, the distribution of condoms and educational material. It is unfortunate that for many companies, this is where the response ends. However, there are some who offer a beacon of light in terms of a comprehensive response. They have seized the initiative and developed and implemented a policy which safeguards employees from unlawful and unfair acts on the part of the employer, while setting out a plan to respond to the epidemic.

These benchmarks or 'best practices' provide a framework from which companies can develop their response to the epidemic. This cannot be done in isolation and must take cognisance of such entities as the pharmaceutical

companies who play a major role in the care and treatment of infected employees. The possibility of establishing partnerships and the social outreach embarked upon by companies, play a critical role in mitigating the impacts HIV/AIDS has on a company's employees, and the community at large.

## Workplace Policies and Programmes

It is not important whether a policy precedes a programme or visa versa. Both a company's policy and its programme are critical responses to the epidemic and will evolve over time, as necessitated by conditions. Where programmes already exist, it is not necessary for them to be put on hold in order for a policy to be adopted. A programme, can in fact, inform policy decisions.[3]

An HIV/AIDS policy defines an organisation's position and practices for preventing HIV transmission and for handling HIV infection amongst employees. This policy should provide guidance to supervisors who deal with day-to-day issues and problems that arise in the workplace. Furthermore, the policy should inform employees about their responsibilities, rights and expected behaviours on the job.[3]

The prevention, treatment and care programme, however, is the core of an organisation's response to the epidemic. The programme's activities will be informed and sustained by well-designed policies. The HIV/AIDS prevention, treatment and care programme seeks to inform employees about HIV/AIDS, promote behaviour changes and reduce and manage the spread of HIV. Effective HIV/AIDS programmes do not consist of once off events, but rather build on coordinated activities and services.[3]

The development of a comprehensive workplace programme would comprise a list of the following components, which relate to prevention, care and support activities.

- **Raising awareness activities** such as displays, distribution of pamphlets, industrial theatre, and getting actively involved on Nationally recognised days set aside for AIDS awareness activities like; World AIDS Campaign/World AIDS day and AIDS Week. Industrial theatre has proven useful at petrol stations.
- **Peer education**: This is a successful tool in changing behaviour amongst employees. Employees will respond better to an HIV/AIDS policy and programme, as the peer counsellors will usually share a common cultural and communal background and, therefore, are better equipped to communicate in a more effective manner.
- **Condom promotion and distribution:** This is often the first response companies have taken in an attempt to prevent new infections. However, condom distribution must be done hand in hand with condom education. Condoms must be accessible to employees in places within

the workplace where workers feel comfortable that they are not being monitored or observed.

- **Voluntary testing and counselling** must be promoted either as an on site service or in the community.
- **Management of STI** must be optimal, as part of a workplace health service or in the community.
- **An infection control programme,** specifically focusing on health care providers and first aid personnel.
- **A wellness programme** for infected employees consisting of 'positive living' elements and medical management.[8]

**Policy and Programme Example**

Anglo American has made considerable strides in developing a policy and implementing programmes aimed at mitigating the impact HIV/AIDS is having on their workforce. It was estimated that between 25% and 30% of its 44 000 South African employees, depending on the location, were HIV positive. The epidemic was believed to be adding between $4/oz and $6/oz of gold to the cost of production. This led to the development of a comprehensive response and took the form of a three-tier mitigation strategy.

The first tier aimed at prevention management to restrict the spread of HIV/AIDS. This is being done through education, promotion of condom usage and the treatment of STI. The second tier focused on caring for those infected through voluntary counselling and testing, wellness clinics, the treatment of opportunistic diseases together with a compassionate ill-health retirement system for those employees who are unable to work. Thirdly, the program advocated health research which sought to inform the company's management of occupational health issue in the field of TB and HIV/AIDS. This meant that Anglo American are able to keep abreast of any health developments in the fields of TB and HIV/AIDS, and further ensure that mine workers receive timely and up-to-date treatment.

In 2002 Anglo American took a landmark step in signing a comprehensive agreement on the management of HIV/AIDS in the workplace with 5 unions, including the National Union of Mineworkers (NUM). At the end of July 2002, AngloGold acknowledged that it had pursued the opportunities of conducting a feasibility study on the provision of antiretroviral drugs in partnership with other role players in the industry. This agreement ensures that the company together with the union undertakes to work together in order to accelerate these efforts. This has since culminated in the decision to provide antiretroviral therapy to those employees who are infected with the HIV virus.[d]

## Managing the Impact of HIV/AIDS on a Company

It is imperative that managers and employees are updated on information or new developments about HIV/AIDS. The updating of the HIV/AIDS programme while maintaining the visibility of its various activities and components will demonstrate openness about the disease and its human consequences. This will go a long way in demonstrating the company's commitment to its policy and programmes.[3]

d The full HIV/AIDS report entitled AngloGold HIV/AIDS Report 2001/2002 - AIDS and South Africa is available at www.anglogold.com

The ultimate value of company's human resources is the ability to fulfil job functions efficiently. This ability comes from innate skills, prior education, experience and accumulated on-the-job training. Companies can safeguard against the loss of these skills by:

- Training two or more employees to perform one or more selected functions (multi-tasking)
- Providing antiretroviral therapy to employees and their dependants, thus managing their illness and prolonging their life and time on the job
- Altering internal production and/or supervisory processes to accommodate potential disruptions, e.g. streamlining ordering or accounting functions
- Intensifying prevention efforts and in the process working with community based programmes.[3]

The minimisation of the impact on company benefits is high on the priority list of employers. Companies are faced with difficult decisions and have to examine the trade-offs involved in reducing benefits. Some benefits are difficult to reduce or redefine, as their provision is a legal requirement. Some companies with retirement plans have encouraged ill employees to take early retirement and live on their pensions. This process must be carefully managed as although this may result in a marginal decrease in company health care costs, these retirement accounts could be over utilised resulting in less money for other retirees. It must be noted that the above scenario is applicable for those companies with a defined benefit contribution.

While companies are attempting to minimise the impact HIV/AIDS has on their benefit schemes, they also need to prevent income losses. The example used by FHI was 'a convenience store'. A store could curtail consumer credit to reduce losses from non-payment of debts, however, fewer people might buy thus resulting in no real savings for the store. Insurance companies are faced with similar predicaments. Consumers have shown a reluctance to buy health or life insurance if the companies require an HIV test. Companies that limit access to certain policies may find consumers uninterested in other services or policies, which the company may offer.[3]

## Best Practice Case Study: Debswana 2002[11]

The Debswana Diamond Company (Pty) Ltd is the largest company in Botswana with a total of 6 169 employees. The threat of HIV/AIDS has long been recognised by Debswana. AIDS education and awareness activities began in 1988 in response to the first AIDS cases experienced at the Debswana Mine hospitals. Education was initially carried out by a team of medical doctors and nurses on a part-time basis, and was aimed at health care workers.

A small-scale Knowledge, Awareness and Practice (KAP) survey was conducted which highlighted the need to extend this education programme to the rest of the workforce. This programme was extended in 1991 and included families of employees. It included the use of posters, the distribution of pamphlets, use of multi-media, and motivational talks by people living with HIV/AIDS (PWA), seminars and workshops.

Between 1996 and 1999, the company management noticed an increase in HIV/AIDS related morbidity and mortality in the workforce. In 1996, 40% of retirements and 37.5% of deaths, within the company, were due to HIV/AIDS; by 1999 the rates had risen to 75% and 59.1% respectively. Company hospitals reported an increase in the number of patients with HIV/AIDS related conditions while, at the same time, absenteeism and under-performance were on the rise.

In 1999, the company decided to review its interventions and carried out a survey to ascertain the number of infected employees. This voluntary anonymous saliva test survey was to establish the HIV prevalence rates by job grade and age. Prior to the survey, protocols were discussed with employees and their respective unions. The company sold the concept to the employees on the basis that the survey would be used to help determine what form of treatment the company could provide to infected employees and their dependants.

The survey showed an overall HIV prevalence rate of 28.8%. HIV prevalence was highest amongst the lowest skilled workers and among the 30-34 years age category. Following the survey, the company conducted an audit of HIV infection in relation to skills levels of employees. The purpose was threefold. First, the audit was designed to assess future training and skill replacement needs. Secondly, it sought to identify critical posts in the company, in order to assist the planning of risk reduction strategies. Thirdly, the audit was designed to enable the company to assess options for and costs of interventions, notably, the treatment of HIV infected workers and their spouses.

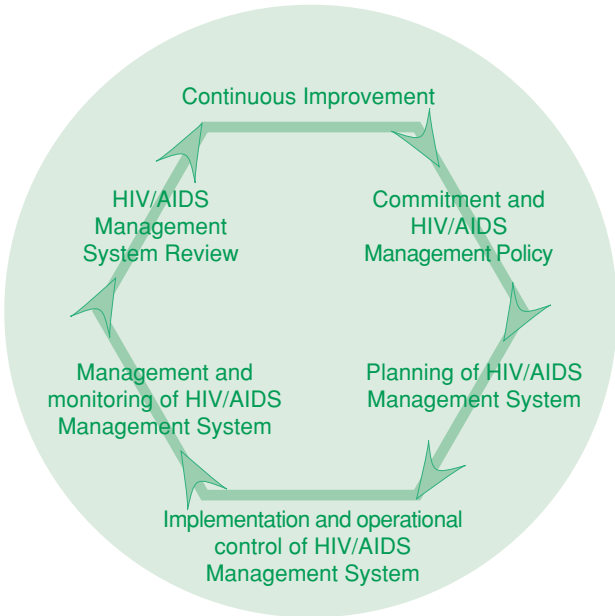
At the conclusion of the audit, the management of Debswana had a clear understanding of its problems, potential liabilities to the employees, obligations and commitments. This lead to the company taking key strategic decisions, one which was to cover 90% of the costs of antiretroviral therapies (ART) for workers and their spouses. This was a ground-breaking response and one which stands as a benchmark for all firms.

Debswana have gone further and established a HIV/AIDS management system (AMS 16001) in response to urgent customer demand for an international recognisable HIV/AIDS management system to which their AMS can be assessed and certified. The AMS has been developed to be compatible with the ISO 9001:1994 and the ISO 14001:1996 management systems standards as well as the OHSAS 18000, in order to facilitate the integration of quality environmental and occupational health and safety management systems of

organisations.[e]

There are a number of elements that make up a successful HIV/AIDS management system. These elements are shown in Figure 3.[12]

**Figure 3: Elements of the AMS 16001[12]**




## Pharmaceutical Response

In May 1999, Bristol-Meyers Squibb, a large pharmaceutical company announced that it would spend $100 million over five years to combat HIV/AIDS in Africa. This remains the single largest corporate contribution made in an effort to curb the epidemic. The money is used for research and community outreach programmes in five Southern African countries.

Post 1999 there has been a public outcry aimed at those pharmaceutical companies who have attempted to make a profit by selling their products to PWA. The Levy Report[13] indicated that a key focal point from 2000 onwards was the pharmaceutical groups and their pricing and licensing policies. The year 2001 witnessed a growing agitation both locally and globally for these groups to reduce the Third World prices of the antiretroviral drugs. These pharmaceutical groups have adopted a two tier pricing structure. In for profit situations, they expect to recover a sizeable margin on antiretrovirals. However, in the expanded access scenario (when drugs are made available

e Publications referred to during the development of these standards included:
- ISO 14001: 1996 *Environmental management systems – specification with guidance for use*
- ISO 9001: 1994 *Quality systems: Model for quality assurance in design, development, production, installation and servicing*
- OHSAS 18000: 1997 *Requirements for Safety and Health Management Systems*

by governments to the very poor) they are prepared to sacrifice that profit margin. It is very difficult to quantify what the pharmaceutical companies are sacrificing in terms of profit, as it would depend, largely, on the particular drugs being sold, to whom the drug is sold and on the pharmaceutical companies themselves.

By the second quarter of 2001, a combination of moral persuasion and political pressure induced major international groups to massively lower their expanded-access prices. Governmental response in South Africa was muted and it has been suggested that this was due to the fact that government held the belief that any therapeutic approach would prove unaffordable and unsustainable in Third World countries.[13]

The announcement that Anglo American Corporation was prepared to investigate the cost-effectiveness of distributing antiretrovirals as part of a strategic response, resulted in pharmaceutical groups indicating that it may be possible to widen their expanded access definitions. This would cover antiretroviral distribution in the private sector as long as any was not for profit. This in turn, created a ripple effect where other companies announced their readiness to investigate the use of antiretrovirals in their own HIV/AIDS programmes. Qualified backing for these initiatives was given by COSATU.

Treating HIV positive employees has been proven to be a cost-effective measure for companies, but there needs to be a closer collaboration between the private sector and pharmaceutical companies in order to negotiate affordable prices and ensure sustainability.[13]

A company cannot act in a vacuum and must seek partnerships and form coalitions through which they can negotiate with pharmaceutical companies to distribute drugs effectively and to price them reasonably. Companies should:

- Prioritise HIV/AIDS in their strategic planning
- Actively seek out all opportunities for reducing HIV/AIDS treatments costs
- Continue to develop systems to ensure rational use of drugs, and in particular antiretrovirals, as part of an integrated approach responding to the epidemic
- Develop mechanisms for drug price negotiation at a regional and national level with other stakeholders.[14]

## Company's Role in Prevention Campaigns

HIV/AIDS threatens not only present consumer markets but also future markets. Many of the major companies around the world are the foremost communicators, demand creators and the distributors of goods and services. It is precisely these skills that are needed to combat the spread of HIV/AIDS.

It is evident that some of the world's greatest mass-marketing companies not only have communication capacities that can help communicate the message about HIV/AIDS through social marketing, but they also command effective distribution systems. For example, Coca-Cola can get its products into small villages that departments of health find extraordinarily difficult to service due to their inaccessibility. These and other such channels could be used for condom distribution and education campaigns here in Southern Africa.[15]

Companies have a number of avenues through which to address the issue of HIV/AIDS. For example, television is a very powerful tool for portraying a particular message. The oil industry together with automotive companies often spend large amounts of money promoting road safety, and this concern for preventative education measures on the road could easily be applied to the spread of HIV/AIDS at rest and refuelling stops.[15]

## Burden Shifting

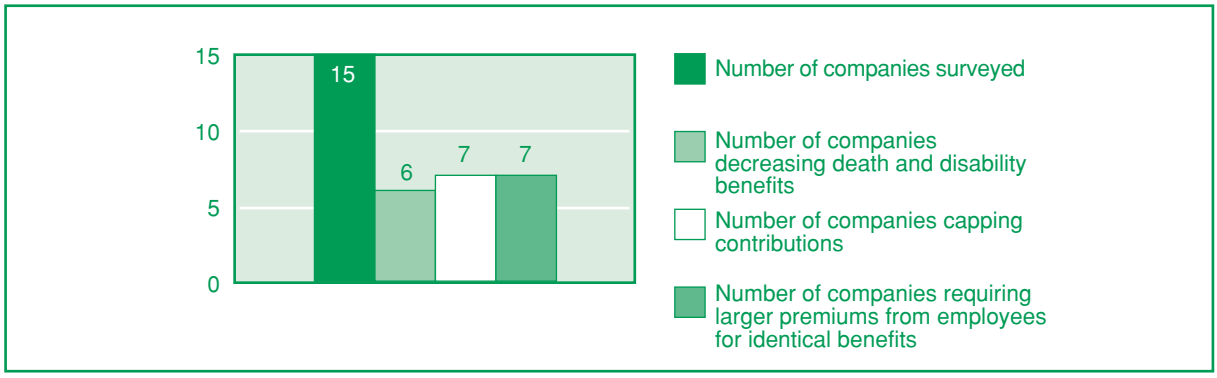
Not all companies choose to take up the torch of 'social investment', some choose to shift the AIDS burden cost to the public sector, households and to the individual. This shift may manifest itself in undisclosed pre-employment screening to exclude those with HIV from entering the workforce, reduced employee benefits, restructured employment contracts, outsourcing of less skilled jobs, selective retrenchments and changes in production technologies that substitute capital for labour. This enables the private sector to reduce their share of the economic cost of HIV/AIDS.[16]

Rosen et al.[7] point out that when an employee-subsidised health insurance plan, caps benefits for HIV disease at far less than the cost of the treatment needed, employees with HIV must either pay for their own treatment, rely on government subsidised services, community centres, non-governmental organisations (NGOs) or forgo treatment altogether. Government, together with NGOs, will only be able to meet some of the demands placed on them by those employees whose subsidies have run out. Inevitably, the cost of care will fall squarely on the household and the individual.

It can be argued that companies who decide to manage these costs have three avenues open to them. Firstly, a company can invest in HIV prevention programmes, which reduce the incidence of the infection within the workforce. Following on from this, a company can institute a wellness programme, which provides for treatment, care, and social support to employees both infected and affected by the epidemic. Finally, companies can alter their benefit policies, contract structures, and hiring practices to reduce the exposure to AIDS-related costs.

Rosen et al. make reference to a study conducted by Old Mutual in 1999, which asked 15 defined contribution funds; if and how they were responding to the rising cost of death and disability insurance. Their responses are illustrated in Figure 4.

**Figure 4: Graph illustrating the response of companies to the rise in cost of death and disability insurance**




A defined benefit pension fund provides a fixed lifetime annuity to the spouse left behind by an employee who died of AIDS, regardless of how many years the employee has worked at the company or the employee's age at death. Defined contribution provident funds make a one-off payment of the sum of the employee's contributions and employer contributions up to the last day of employment. This translates into the scenario whereby beneficiaries of younger employees with AIDS would receive a reduced one-off payment. It is this transference of employees from defined benefit to defined contribution retirement funds which has been one of the most common ways for firms to avoid the costs of HIV/AIDS.

A survey of 800 retirement funds carried out by Sanlam, a South African financial services firm, in 2000, found that 71% of the funds were defined contributions, compared to just 26% in 1992.

Further surveys reveal that companies are currently reviewing their health care benefit systems whilst some have restructured them by shifting more of the cost onto employees, capping company contributions, and/or reducing the benefit levels.

Outsourcing has long been a characteristic of the South African private sector. Companies outsource the non-core activities of the company to independent firms or contractors. Studies reveal that the mining and agribusiness sectors are very large contractors of independent labourers, who provide the service of full time employees but receive few of the benefits that accrue to them.[16]

It is difficult to determine whether what has been described above is as a result of an evolutionary shift in labour practice brought on by globalisation and the concept of profit maximisation, or indeed as a result of the HIV/AIDS epidemic. Rosen et al. describes how the second half of the 1990s unearthed a combination of rising labour costs from new legislation, together with affirmative action targets leading to high rates of employment turnover. This occurred while health care costs rose and South Africa opened itself up to the global markets. These factors encouraged companies to restructure their workforces, reduce production costs, limit employee benefits and shift

to more capital-intensive production technologies. They shift cost from the private sector to the public sector and households.[16]

## Conclusion and Recommendations

Each company will have its own unique characteristics, be it geographical, ethnic diversity, size or practice. It therefore becomes important for a company to carefully develop a policy and programme which will best suit the needs of its workforce.

The business sector is advised to have broad-based programmes which address issues of prevention, treatment, care and support. It is possible to redesign employee benefits to use the resources to target the needs of workers without a significant increase in contributions. A workplace environment should be safe for employees should they wish to disclose their HIV status or come forward for company assistance. A community orientated approach, which takes cognisance of the context in which employees live, contributes to an effective programme. Here there is much potential for partnerships with the NGO sector.[f]

Partnerships play an integral role in workplace mitigation efforts and often form the cornerstone of a good response. "The stigma and discrimination around HIV/AIDS demand meaningful responses from the public and private sectors. It is clear that no one sector alone can make a significant inroad in the fight against the epidemic. A true partnership involving the government, the private sector and the community is essential to face the problem. The business community is now realising that its very survival depends on how effectively it joins forces with other partners to face the problem."[4]

When discussing the merits of fostering partnerships it is important for the company to recognise the value of what is termed 'social investment'. A company's sustained involvement within the community, not only helps reduce risk to employees, but also promotes a healthy lifestyle. This in turn can enhance the company's reputation for social responsibility with public officials, local customers and other community members.

The time to act is now. Companies must ensure that they develop the infrastructure to implement comprehensive strategies and plans to fight against the impact HIV/AIDS will have on their workforce. "The HIV/AIDS epidemic should teach South African business one thing: pro-active rather than simply responsive action. The difference will essentially decide who wins the battle."[4]

f For instance, Enthembeni is an NGO that can assist companies in implementing strategies. These approaches emerged from the Symposium on HIV/AIDS in the Place of Work, Durban International Convention Centre, 29 March 2001.

## References


1 Barnett T, and Whiteside A. AIDS in the Twenty-First Century: Disease and Globalisation: Palgrave Macmillan; 2002.

2 Bureau for Economic Research: Press Release: The Macro-Economic Impact of HIV/AIDS in South Africa: September 2001.

3 Rau B. Workplace HIV/AIDS Programs: An Action Guide For Managers: Family Health International; 2002.

4 Kramer S. HIV/AIDS: Getting down to Business: Metropolitan Life; 2000.

5 West E. Business Report; 18 July 2002.

6 Stevens M. AIDS and the Workplace with a specific focus on Employee Benefits: Issues and Responses. Johannesburg: Centre for Health Policy; 2001.

7 Rosen SB, et al. Investing in the epidemic: The impact of AIDS on businesses in Southern Africa; 2002.

8 Smart R. HIV/AIDS in the Workplace: The AIDS Directorate, Gauteng Department of Health; 2001.

9 Deloitte & Touche. Human Capital Corporation, Evaluation of Workplace Responses to HIV/AIDS in South Africa: A Rapid Situation Analysis; May 2002.

10 Ebony Consulting International, Economic Impact of the HIV/AIDS Pandemic and its Impact on Governance; July 2002.

11 Barnett T, Fantan T, Mbakile B, Whiteside A. The Private Sector Responds to the Epidemic: Debswana – A Global Benchmark, UNAIDS Best Practice Case Study. 2002.

12 NOSA & Debswana: Standard for HIV/AIDS Management System (AMS 16001) – Specification Document, Draft 11 of 2002.

13 Andrew Levy & Associates, 20th Annual Report on Labour Relations and Employee Benefits in South Africa; 2001 - 2002.

14 Thomas A. Street Price: A Global Approach to Drug Pricing for Developing Countries, VSO Publication; 2002.

15 Daly K. The Business Response to HIV/AIDS: Impact and Lessons Learned: UNAIDS Publication; 2000.

16 Rosen S, Simon JL. Shifting the Burden of HIV/AIDS, AIDS Analysis Africa, 12 (6) April/May 2002.

# Antiretrovirals

# 13

**Neil Martinson,[i,ii] Busi Radebe,[i] Mdu Mntambo,[i] Avy Violari[i]**

[i]Perinatal HIV Research Unit, Chris Hani Baragwanath Hospital, Johannesburg

[ii]Johns Hopkins University, USA

*This chapter examines the current status of the provision of antiretrovirals (ARVs) in South Africa. It uses examples of developing countries such as Brazil and Botswana that have national Highly Active Antiretrovirals Therapy (HAART) programmes to illustrate the potential of public sector provision of HAART in developing settings.*

*There are several HAART treatment projects in South Africa, treating about 20 000 people of the approximately 5 million people currently living with HIV/AIDS. The majority of these receive ARVs as part of a medical insurance scheme. An increasing number of people will be treated as part of occupational programmes in the mining industry. There are several small treatment projects located in townships within major cities. None of these projects treats more than 400 people. Government's stance on the use of ARVs has changed in 2002 but there has been no sign of urgency in providing ARVs in the public sector. Cost estimates of universal access are imperfect, owing to the rapid decrease in ARV prices and uncertainties on costs, benefits and durability of HAART. It seems likely that over the next 3-7 years universal access to HAART in South Africa will become a reality.*

## Introduction

Preventive measures against new infections of HIV are reported to be more cost effective than treatment and care for people with HIV and AIDS[1] but have failed the approximately 5 million people[2] currently living with HIV (PLWH) in South Africa. In the absence of combination therapy with ARVs, the prognosis for PLWH is poor in all settings. Studies from Uganda[3,4] and Haiti[5] suggest that progression to AIDS and death are more rapid in PLWH in developing settings than those living in wealthier countries. The more rapid course of the disease has been attributed to poverty, intercurrent infections and malnutrition.

South Africa is reeling under the increasing burden of HIV-related death and disease. The MRC has predicted that under five mortality will double current levels by 2008 and by 2010, the cumulative number of HIV/AIDS deaths will exceed 6 million.[6] UNAIDS estimated that there were 360 000 AIDS deaths in South Africa in 2001.[7] Adult AIDS deaths have a major impact on society. For example, three percent of SA households are headed by children 12-18 years old.[8] In Tanzania, 44% of households disintegrated where the head of the household had died.[9]

Life expectancy of South Africans will be reduced by about 18 years as compared to a no-AIDS scenario in the years 2000-2005.[7] By 2005, it has been estimated that almost 60% of all deaths in South Africa will be due to HIV/AIDS. Hospitals are already bearing the brunt of the epidemic. At Chris Hani Baragwanath Hospital, in Johannesburg about 40% of all adult medical admissions are HIV-infected. At King Edward VIII Hospital in Durban 60% of paediatric admissions are HIV-infected.[10]

Antiretroviral drugs have revolutionised the treatment of HIV/AIDS, converting a uniformly fatal infection to a treatable, chronic disease. Specifically, three-drug combinations of ARVs – known as triple therapy or highly active antiretroviral therapy (HAART) – have had major impacts on HIV-related deaths and illnesses in settings where these drugs are widely available. Goals of ARV treatment are 'maximum, durable suppression of viral load, restoration and/or preservation of immune function, improvement of quality of life and reduction of HIV related morbidity and mortality'.[11]

In developed countries where HAART has been available, deaths and new cases of AIDS have fallen. The introduction of HAART in 1996 immediately reversed an upward trend in annual death rates due to AIDS in the US. Studies from the US,[12,13] Australia[14] and Europe[15,16] show the positive effects of HAART in preventing opportunistic infections and prolonging AIDS-free survival.

HAART has the potential to reduce the increasingly devastating impact of HIV on households, communities, workplaces and the entire society. It would allow infected parents to live long enough to care for their children until they

reach adulthood, and may diminish stigma associated with HIV/AIDS and allow greater acceptance of prevention efforts. In particular it may encourage more people to present for HIV-testing at an earlier stage in their illness. The provision of HAART may have an impact on the infectiousness of individuals thereby reducing transmission, as well as alleviating the enormous burden due to HIV related illnesses on hospitals.

HAART can be successfully provided in resource-poor settings. In Haiti, a pilot HAART provision programme in a remote rural area has initiated 120 patients on triple therapy since 1998 using generic and donated ARVs. In this programme, apart from simple baseline blood tests, no other laboratory monitoring is performed and patients are monitored using symptoms and clinical signs. All patients are assigned a treatment supporter who ensures adherence.[17,18] By April 2002, no drug related deaths had been recorded.

By mid-2002, Thailand was treating 740 patients with HAART in the northern provinces where HIV prevalence is high.[19] Brazil – a country with a similar GDP per capita to South Africa but whose HIV-seroprevalence is less than one tenth South Africa's – provides HIV care including HAART through a sophisticated vertical program involving all tiers of government.

**Box 1: Brazil and Universal access to ARVs**

Brazil was the first developing country to provide ARVs on a large scale to its citizens. After a change to its constitution in 1996, the Brazilian government has guaranteed universal, free access to ARVs to those who need them. Currently the programme treats 113 000 patients[20] throughout this vast country using a network of city, provincial and federal facilities linked to prevention programmes. In 1996, deaths due to AIDS in Sao Paulo City (which treats almost 50% of the country's HIV-infected patients) decreased for the first time and have continued to decrease subsequently.[21] Mortality due to AIDS has reduced by 60%-80% after the introduction of ARVs.[20]

Brazil has its own treatment guidelines and it appears that the provision of HAART in Brazil has not resulted in an increase in new HIV infections. Condom use by individual patients is reported to have increased after the initiation of HAART compared to prior to starting ARVs.[22] Surprisingly, despite successes in treating HIV, the Brazilian TB control programme has not received similar attention and preliminary reports from Rio suggest an increase in new cases of TB in HIV-infected people.

One of the major successes of the Brazilian programme has been generic ARV manufacture to bring prices down. ARV prices on average have dropped by 72.5%.[23] The Brazilian government uses two strategies to achieve lower drug prices.

1 Local generic production. The government upgraded existing drug production facilities to make generic versions of ARVs that had not been patented in Brazil. Currently Brazil manufactures 7 ARVs and a combination tablet. By expanding local capacity, the price of 100 mg of AZT has been reduced from US$0.56 in 1996 to US$0.15 in 2001.

2 Price negotiation. The manufacturing base allows estimation of the cost to Brazil of manufacturing its own version of ARVs. Using this price and the threat of compulsory licensing, negotiations are entered into with pharmaceutical companies on discounted prices for ARVs. As an example, the price of efavirenz, which is patent-protected in Brazil, was reduced from US$2.05 to US$0.84 per capsule.

A fourfold decrease in HIV-related hospitalisations as a result of the introduction of HAART has ensured that the Brazilian government has realised net savings as a result of its ARV programme.[23]

### ARVs in Africa

In 2001, the president of Botswana publicly committed this country of 1.6 million people with the highest adult HIV seroprevalence in the world, to an ARV therapy programme.[24] It is estimated that nationwide about 110 000 people would currently require treatment.[25] The programme enrolled its first patient in January 2002 and by September 2002, 1 600 PLWH had been started on HAART, far less than originally expected. Malawi initiated a government-sponsored programme in 2000 in Lilongwe[26] and is about to scale-up a large national HAART programme. Senegal has a pilot programme treating 470 patients with ARVs.[27] In 1997 UNAIDS – in conjunction with pharmaceutical companies and the governments of Uganda, Cote d'Ivoire and Chile and Vietnam - started the Drug Access Initiative. In Uganda, where patients had to purchase ARVs, there were mixed results. The virologic and immune responses to ARVs were similar to developed settings,[28] however, the monthly cost of triple therapy was higher than the salary of a senior government worker and sudden currency devaluations prevented many people from continuing treatment.[29]

## Provision of Antiretrovirals in South Africa

### Private sector

Patients being treated in the private sector can either make out-of-pocket payments to purchase their own ARVs (there is little data on this group) or receive treatment through their health insurance or through an employer sponsored programme.

### Health insurance schemes

Currently, more than 60% of health care resources in South Africa are consumed by the private health sector, which serves between 17%-18% of all South Africans. The Medical Schemes Act makes provision for the medical and surgical management of opportunistic infections as well as localised malignancies as part of the Prescribed Minimum Benefits. The Amendment of Regulations on Minimum Benefits has added the following as part of the treatment of HIV infection:

- HIV voluntary counselling and testing
- Co-trimoxazole as preventive therapy
- Screening and preventive therapy for TB
- Diagnosis and treatment of sexually transmitted infections
- Pain management in palliative care
- Prevention of mother-to-child transmission of HIV
- Post-exposure prophylaxis following sexual assault.

Access to HAART has not been included as part of the Prescribed Minimum Benefits.

There has been lack of transparency as well as availability of detailed information on the extent of HIV benefits offered in the private health sector.[30] There are some medical schemes, which do not provide any HIV coverage for their members. However, amongst those schemes that do have a provision for HIV/AIDS benefits, most exceed Prescribed Minimum Benefit requirements.

## Disease management programmes

The Centre for Actuarial Research (CARE) at the University of Cape Town has published a review of the provision of ARVs by the health insurance industry in SA.[30] The review included 53% of all medical schemes listed in the Registrar's Statutory Returns 2000. Euphemistically named disease management programmes (DMP), have been retained by medical schemes to manage costs and benefits available to people accessing ARVs. There are currently seven DMPs in South Africa.

DMPs potentially cover 89% of all health insurance beneficiaries. Even though beneficiaries of medical schemes have access to the DMPs, very few are registered into the programme. Only 18 000 medical scheme members are registered with a DMP, representing less than 1% of all beneficiaries. This is low relative to the extent of the epidemic in South Africa as it is estimated that about 5% of all medical scheme members are HIV-positive.

**Table 1: Disease Management Programmes and their coverage[30]**

| Disease Management Programme (DMP) | Percentage of Health Insurance Schemes linked to DMP | Percentage of Beneficiaries linked to DMP | Percentage of all Beneficiaries participating in HIV/AIDS DMP |
|---|---|---|---|
| Aid for Aids | 41.6 | 36 | 0.42 |
| Calibre Clinical Consultants | 5 | 1 | |
| Discovery Health | 3 | 20 | |
| Lifesense | 4 | 8 | |
| MX Health | 3 | 6 | |
| Newmed | 3 | 7 | |
| Qualsa | 1 | 2 | |
| Own Programme | 18 | 9 | |

Health insurance schemes cover monotherapy, dual-therapy and triple-therapy. However, most beneficiaries have access to either dual or triple-therapy. The use of ARVs is accompanied by other services such as counselling,

treatment of side effects, drug monitoring, diagnostic measures and support groups. The health sector should be more pro-active, informing their members about the benefits of using ARVs at appropriate stage in the disease.

**Box 2: Example of a Disease Management Programme: Aid for AIDS (AfA)**

AfA is the largest DMP. Their mission is to provide 'a total HIV/AIDS management solution'. HIV clinical specialists provide oversight and suggest appropriate ARV regimens for beneficiaries, both adults and children.

AfA manages the initiation of therapy, adherence to treatment, laboratory monitoring, clinical response and costs. AfA ensures member confidentiality and does not allow medical schemes or the employer to know whether a patient is receiving benefits. AfA has negotiated with pharmaceutical companies to obtain ARVs at the best price and drugs can be delivered directly to the patient. Total benefits per annum are limited to R5 000-R40 000 depending on the health insurance scheme utilising the services of AfA.

Doctors are provided with guidelines[31] for HIV treatment including HAART and timing of laboratory monitoring. Deviation from guidelines is allowed after pre-authorisation with AfA. Patients are required to have viral load, CD4 and full blood count tests prior to starting ARVs and 4-6 monthly thereafter. A 24-hour help-line is available to both patients and their doctors.

16 400 HIV-infected patients are currently managed by AfA in Southern Africa (including 36 health insurance schemes in South Africa), of whom 10 500 receive ARVs.[a] Prominent companies whose health insurance is contracted to AfA are Debswana, Coca-Cola and Daimler Chrysler SA.

**Table 2: Aid for AIDS Cost per patient per month[a]**

| Scenario | Total Rands | Specialist (%) | Path-ology (%) | GP (%) | Hospital (%) | All other medicine (%) | ARV (%) | Other (%) |
|---|---|---|---|---|---|---|---|---|
| All patients | 1 462 | 7 | 12 | 4 | 20 | 11 | **41** | 6 |
| HAART (All) | 2 082 | 5 | 11 | 3 | 17 | 8 | **53** | 3 |
| HAART (>70% compliance) | 2 579 | 4 | 10 | 2 | 12 | 7 | **62** | 2 |

Metropolitan Life is marketing a novel insurance product that apparently provides cost savings for large employers who have group life cover for their employees.[b] About 5 million employed people in SA have group life cover. HAART would be paid for as part of group life cover. Costs of HAART are more than offset by reductions in death benefit payouts and other direct and indirect costs related to HIV/AIDS in the absence of HAART. Access to ARVs is independent of the existing health insurance scheme but would involve a DMP.

a L Regensburg, personal communication.
b S Kramer, personal communication.

### Occupational health programmes

Several companies have ensured access to ARVs linked to workplace programmes. Daimler-Chrysler South Africa, Coca-Cola, McCord's Hospital and Old Mutual ensure access to ARVs as part of broader HIV/AIDS prevention and care workplace strategies.

**Box 3: Anglo American**

In November 2002, after several false starts, the Anglo American group of companies started providing HAART to eligible employees in a phased implementation programme, supplementing existing workplace prevention programmes and wellness clinics.

AngloGold, a large subsidiary of Anglo American, employs 44 000 people, with HIV-seroprevalence of 25%-30% and currently spends US$ 17 per employee per annum on HIV programmes.[32] It is estimated that once the programme reaches full capacity about 10% of all infected employees will eventually be treated with HAART. AngloGold plans to expand access to HAART to 820 employees by the end of 2003[32] and Anglo Platinum to 1 000 employees; the remaining subsidiary companies should account for a further 500 people treated with HAART in 2003. The programme is currently restricted to employees who attend wellness clinics. Anglo American will not provide HAART for partners or dependants as they maintain their treatment is the responsibility of the state.

Clinical criteria only are used to determine access to HAART for employees. A CD4 count of less than 250 cells/mm$^3$ or WHO stage 3/4 are used as indications to initiate therapy. HAART will be provided in 6 hospitals and 24 workplace clinics where doctors will make the clinical decisions with nurses providing dispensing support. Five first line HAART regimens are available to employees. Combivir® (zidovudine + lamivudine) and efavirenz is the recommended regimen in the absence of any contra-indications. The programme will be linked to an extensive research agenda devoted to cost benefit analysis.

## Public Sector

### Current status

Apart from post exposure prophylaxis (for rape survivors and needle stick injuries) and nevirapine for the prevention of mother-to-child transmission programmes, ARVs are not purchased by the public sector health service. However, public sector doctors do provide clinical support, including monitoring laboratory tests, to patients who make out-of-pocket payments for ARVs. The proportion of total patients treated in this manner is minute compared to those patients clinically eligible for HAART attending public sector hospitals.

### Government's stance on ARVs

There has been aversion on the part of Government to contemplate ARVs. The potential toxicity of the drugs has been cited as the reason.[33] On 17 April 2002 there appeared to be a shift in the Government's position when a Cabinet statement[34] was issued, supported by a communication campaign, which recognised that antiretroviral treatments can help improve the condition of people living with AIDS but that these drugs were too costly for universal access. The statement reported further work on the cost implications was

being undertaken. An attempt to reach consensus on a research and policy agenda was made at a scientific summit organised by the Department of Health in August 2002, of which the proceedings had not been made public by January 2003. The draft recommendations focused on the need to increase access to antiretroviral treatment for adults and children, to scale up provision of antiretrovirals to prevent mother-to-child transmission and the treatment of opportunistic infections. On 9 October 2002 the cabinet statement was updated[35] with a suggestion that government was actively engaged in lowering the cost of ARVs, and creating conditions that would make it feasible and effective to use ARVs in the public sector.

Despite the cabinet statement, it appears there has been little change in the attitude of government officials to implementing ARVs in the public sector. Government intransigence has been cited as the biggest obstacle in implementing a universal access programme in SA. The Treatment Action Campaign (TAC), in conjunction with trade union federations; COSATU, FEDUSA and NACTU, started negotiations within NEDLAC (a statutory body involving labour, government, business and community representatives) in September 2002 to provide universal access to HAART.

## Some existing pilot HAART programmes

The Perinatal HIV Research Unit (PHRU), at Chris Hani Baragwanath Hospital, provides HAART and monitoring for 25 children and 70 adults assessing operational implementation of ARVs. One of the aims of the project is to ensure that doctors gain experience and expertise in treating people with ARVs. Initial results have been similar to other programmes in developing settings.

Médecins Sans Frontières (MSF) has introduced a HAART programme, run as a research study, in three provincial primary clinics in Khayelitsha, Cape Town.[36] After one year of recruiting patients to receive HAART, 177 of 219 potential participants approved by the community selection committee had initiated triple therapy. Fifty four percent of patients in these programmes started HAART when their CD4 count was less than 50 cells/mm$^3$.[36] Adverse effects due to treatment have been found to be mild. Only 8% of patients have required a change in regimen. There were 13 deaths of which about half were in patients whose CD4 count was less than 10 cells/mm$^3$. No deaths were attributed to HAART regimens. Currently, 360 patients are receiving HAART. One of the major achievements of the MSF programme has been the reduction in HIV-associated stigma in Khayelitsha.

Ithembabalabantu Clinic in Umlazi, KwaZulu-Natal is treating 72 people with HAART and providing monitoring for a further 49, not eligible for treatment. The Hannan Crusaid ARV project in Gugulethu, Cape Town is treating patients with HAART. A further 10 PLWH are having HAART regimens paid for by another UK based charity, AIDS Ark.

### Clinical trials

Doctors in tertiary hospitals and in private practice perform trials of ARVs on a contract basis for pharmaceutical companies, providing free-of-charge access to HAART to several hundred patients in clinical trials of ARVs. Ethics review committees require that post-trial access to ARVs be provided to participants. However, continued access is not guaranteed and is often subject to limitations set by the sponsor. On the other hand, it appears that pharmaceutical companies are avoiding using SA as a country to test new ARVs or ARV regimens. In 2002, no new clinical trials testing ARVs were started in South Africa.[c]

## Criteria for Accessing HAART

### Clinical criteria

The WHO,[37] the SA HIV Clinicians Society[38] and Masa (the National Antiretroviral Therapy Programme of Botswana)[24] recommend similar criteria to initiate HAART using either symptomatic disease or a CD4 count of less than 200 cells/mm$^3$. However, like US guidelines, AfA recommends a CD4 count threshold for initiating HAART of 350 cells/mm$^3$ [31] and the Anglo American initiative uses a threshold of 250 cells/mm$^3$. Starting HAART when patients have advanced disease is less effective. In Uganda, patients commencing ARVs at an advanced stage (CD4 less than 50 cells/mm$^3$) had about a three times greater risk of death than those who initiated ARVs at a CD4 count above 50.[28]

### Other criteria

It is more difficult to determine non-clinical parameters for patient suitability, treatment readiness and adherence. Several criteria have been suggested or are currently used to ensure equitable and just decisions about individual access to HAART. These include:

**Means test:** For programmes targeting the poor, setting an income threshold above which HAART should not be paid for by the programme is an attractive option. However, accurately defining income for individual patients adds to the total cost. The Khayelitsha programme requires patients not to have medical insurance and they prioritise people with dependants or who are very poor.[36] The income level for not providing HAART has not been specified. It has been suggested that a means test may also be used to identify key people requiring treatment whose longevity is critical to society e.g. AIDS activists, teachers, members of the security services although some may question how this fits with SA's constitutional commitments to equity.

c I. Sanne, personal communication.

**Proof of ability to adhere:** Adherence to HAART regimens is crucial to their durability. A patient-performed task to show ability to take tablets is recommended. The US guidelines[11] suggest a test of adherence using sweets as a proxy. Others recommend patients prove their ability to adhere by taking cotrimoxazole for three or six months. The MSF programme requires three months attendance at the clinic with patients presenting on time for the last 4 visits.

**Understanding and knowledge/treatment literacy:** People who are about to start HAART should understand the implications of poor adherence and be informed about expected side-effects of the drugs as well the implications of laboratory results used to monitor treatment success. The PHRU programme requires that patients treated with ARVs attend a structured programme that includes treatment literacy.

**Disclosure:** Informing family members (and the community) of their HIV status is used in some projects as a criterion for initiating treatment. It is assumed that disclosure has a positive impact on adherence, since close family members are aware that the index patient is on treatment and could offer support in terms of reminding the patient to take his/her medication, or assisting the patients if she/he develops side effects. However, there are no studies showing that disclosure has a positive effect on adherence and this requirement may unnecessarily exclude potential recipients of HAART who do not want to disclose their status.

**Geographic targeting:** Because most programmes are restricted to defined localities, many have a limitation to people who have lived in that area for a minimum period. This is to ensure ease of follow up should patients not attend clinic visits. Geographical targeting can serve as a proxy means test.

**Review by committee:** The Khayelitsha HAART programme[36] uses a committee of community representatives including health care workers and PLWH. The Cote d'Ivoire Drug Access Initiative used socio-demographic criteria and a committee to review eligibility for HAART. A committee then decided on the level of subsidy for each patient. Review by committee in Cote d'Ivoire as a screening mechanism proved to be a major obstacle for patients attempting to access HAART.

## Preparedness of Human Resources for Implementing HAART

Expertise of health care providers is important when providing ARVs. Studies in settings where combination antiretroviral therapy is widely available show that doctors with expertise and experience in treating HIV deliver more effective HAART.

Health care workers in SA have not been exposed to ARVs in their training. In all likelihood a universal HAART access programme in SA would be through existing primary health care facilities, utilising nurses as primary

providers. The University of the Witwatersrand has initiated a three-day training course for nurses that includes training/information on ARVs. As far as is known, there are no formal training courses in South Africa that prepare nurses for the clinical use of ARVs.

The Reproductive Health Research Unit (RHRU) has developed a two-week HIV training course run twice annually for about 60 doctors. This course satisfies the requirements for a proposed Diploma in HIV Management awarded by the College of Medicine of South Africa. The SA HIV Clinicians Society programme includes continuing medical education on the use of ARVs. The membership of the Society includes 750 private practitioners and 550 in the public sector.[d]

## Benefits of ARVs

### ARVs may reduce HIV transmission

Successful HAART reduces viral load to undetectable levels, theoretically reducing the risk of transmission.[39] However, this effect may be offset by increased longevity of patients who receive HAART. There have been contradictory reports on the 'HIV treatment optimism' effect (optimism as a result of beneficial effects of HAART is said to increase high-risk sexual behaviour thus increasing HIV transmission).

Presently, there are few incentives for knowing one's HIV status in SA. If HAART were widely available, the number of people who present themselves for HIV testing may increase. UNAIDS drug access initiatives found that access to ARV therapy was a stimulus for HIV testing. HIV testing itself is a cost effective intervention to reduce sexual risk behaviour.[40]

### ARVs and TB

TB control cannot be achieved unless the HIV epidemic is also contained. Cohort studies from Cape Town[41] and Rio de Janeiro[42] have shown 80% reductions in new cases of TB in patients treated with HAART compared to HIV-infected patients without HAART. For HAART to have a population impact on new cases of TB, four criteria would have to be satisfied:

1. Voluntary counselling and testing services would have to be scaled up to identify a large proportion of people who are HIV-infected and start HAART prior to them developing active TB.
2. Large numbers of PLWH would have to be treated with HAART.
3. The CD4 count currently recommended to start HAART (<200 copies/ml), may have to be raised because approximately 50% of active TB cases are diagnosed in people with HIV when their CD4 counts are above 200 copies/ml.[41,43]

d J. Solan, personal communication.

4 Active TB case finding coupled with preventive treatment for TB should be part of a programme of provision of HAART to have maximum impact on preventing TB.

TB clinics have the potential to identify large numbers of people who could benefit from HAART as approximately half of their clients are likely to be HIV-infected. The WHO's directly observed treatment (DOTS) programme used to enhance adherence to TB drugs is an attractive model to administer ARVs.[44,45] However, having large numbers of PLWH, who may not be infected with TB, waiting in close proximity to patients with infectious TB may enhance transmission of TB.

## Costs for Laboratory Monitoring of HAART

Although the Haitian project has shown that clinical monitoring may be sufficient in most instances to monitor HAART in resource-poor settings, it is unlikely that this would be regarded as standard-of-care treatment in South Africa. The WHO guidelines for resource limited settings[37] divide currently available laboratory testing into 4 categories based on the available resources and anticipated potential adverse effects of HAART. Each category includes the laboratory tests of the previous one.

**Table 3: Laboratory tests and their costs in SA Rands**

| Category | Tests | Private sector price (October 2002) | Cumulative total for doing each test once (October 2002) |
|---|---|---|---|
| Absolute minimum | Confirmatory HIV antibody test and haemoglobin or haematocrit | 50 | 50 |
| Basic recommended | White blood cell count and differential count, serum alanine or aspartate aminotransferase level, serum creatinine and/or blood urea nitrogen, glucose and pregnancy test | 145 | 195 |
| Desirable | Bilirubin, amylase and serum lipids, CD4 count | 545 | 730 |
| Optional | Viral load | 750 | 1 480 |

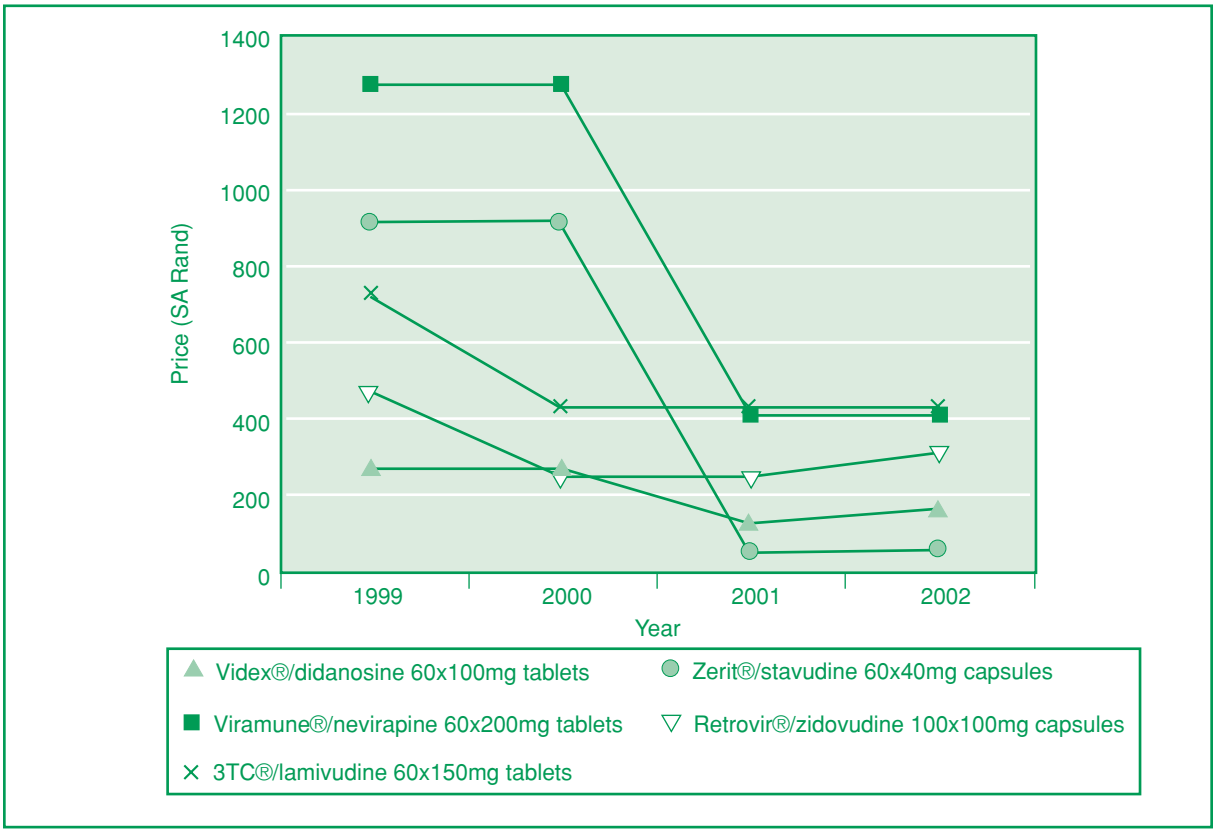
In South Africa viral load and CD4 tests are available in most large centres but availability in rural hospitals is inadequate. Viral load assays are performed in 10 laboratories situated in 4 cities. One laboratory in SA has automated viral load assays. In October 2002, the price of a CD4 count in the private sector was R393.00. A cheaper, recently validated, method of performing CD4 count has been developed in South Africa.[46,47] The panleucogating or AffordCD4 method has reduced the price of a CD4 count by more than 50% to R116.00 and is exclusively used by the National Health Laboratory Service (NHLS).

Toga, a private sector laboratory, offers a CD4 count, viral load and full blood count for R500 (excluding VAT). This represents a greater than 50% discount on the existing Scale of Benefits tariff.[48] The offer has resulted in at least two other private South African laboratories matching it. Toga predicts that they could provide this test at a greater discount if the numbers of tests performed increases. It is envisaged that new technology will soon become available which will reduce prices to around R20 per CD4 count.

## ARV Prices

ARVs are a large part of total costs of any HAART programme. Over the past 4 years South Africa has seen large reductions in the prices of patented ARVs.

**Figure 1: Prices of selected ARVs 1998-2002* in South Africa**




* Prices used are for drugs ex pharmaceutical companies, including VAT i.e. manufacturer price.

GlaxoSmithKline offers a dual pricing mechanism that provides patented ARVs at reduced prices to non-governmental organisations, employers and governments. The savings are approximately 50%.

The retail cost in SA of a cheap adult triple therapy regimen at the time of writing this chapter was about R860 per patient per month.[e] The mean price

e A. Pakendorff, personal communication.

of drugs making up a HAART regimen in patients who were adherent to their drugs in the AfA programme was R1 589 per patient per month. Paediatric HAART preparations are more expensive than the equivalent adult regimen. The cheapest paediatric suspension triple therapy costs approximately R1 500 per patient per month.

### Generic ARVs

There are currently two ways of procuring generic ARVs completely legally; either obtain a license to manufacture in South Africa (voluntary or compulsory) or apply for a 'Section 21' exemption to import and use an unlicensed drug. Government has resisted pressure to allow compulsory licensing of ARVs and it appears that this stance will not change in the near future. Aspen Pharmacare has recently negotiated with Boehringer-Ingelheim to obtain a voluntary license to produce nevirapine.[49] The agreement restricts Aspen to supply to the state sector in the Southern Africa Development Community (SADC). Aspen has previously obtained voluntary licenses for AZT and lamivudine. The price at which these drugs will be offered to the state sector has not been announced nor had production started at the time of publication.

MSF report that by importing generic ARVs manufactured by the Brazilian National STD/AIDS Programme – under a Medicines Control Council 'Section 21' permit – prices of triple therapy used in Khayelitsha were halved[50] and a triple regimen can be provided for R10/day. ARVs have not been patented in some countries neighbouring SA where generics are freely available. A limited list of generic ARVs can be obtained by presenting a prescription to retail pharmacies in Lesotho, Swaziland or Namibia. A retail pharmacist in Swaziland will, for a small fee (R50-R70), courier generic ARVs door-to-door. Prices of generics obtained in this way are about a third of patented drugs purchased in South Africa. As demand for ARVs increases it likely that generics will become more available in this country, but smuggling of unregistered ARVs to South Africa is not yet happening on a large scale.

## Cost Projections for Providing HAART in SA

One of the limitations to widespread use of ARVs in developing settings has been affordability. High costs make ARVs unaffordable for most high HIV-prevalence settings where provision of ARVs at current prices may result in health budgets being diverted from more cost effective interventions.

Several models of the cost of providing HAART in South Africa have been made. Results differ owing to rapid reductions in ARV prices and uncertainties, especially; coverage, costs of medical care (particularly admissions) both in the absence of HAART and with HAART, and expected direct and indirect benefits and the durability of the benefits.

A model published in 2000, simulating the demographic impact of providing ARVs in SA, reported that if 25% of the HIV-infected adult population received triple therapy from 2000 to 2005, life expectancy at birth for the country would increase by 3.1 years by 2005 at a cost of US$15 000 per life-year gained. The total cost to the country estimated over the 5-year period was US$19 billion.[51]

A report commissioned by the loveLife programme, published in 2000, asserts that it would cost R70 billion per annum by 2010 to provide HAART on a wide scale without savings being made to the public sector. Anglo Gold has estimated that a HAART regimen would cost the employer R2 440 per patient per month.[32] In their cabinet statement, the SA Government[35] estimates that it would cost R7 billion to treat one million people with ARVs; however the time period over which this happens is not stated.

In October 2002, the TAC modelled the costs and benefits of phased-in introduction of HAART to adults with a CD4 count of less than 200 cells/ml.[52] They estimate that by providing HAART, the life expectancy of the average South African will be extended by about 8 years by 2015.

**Table 4: TAC estimates of the cost of phasing in widespread adult HAART in SA[52]**

| Year ending June | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|
| Phase-in | 20% | 30% | 60% | 80% | 90% |
| Cost (Rands) | 224 million | 958 million | 2.3 billion | 4.3 billion | 6.8 billion |

The TAC estimate that the cost of an adult HAART programme would peak in 2015 at about 18 billion Rand per annum, treating 2.3 million adults with HAART. This cost ranges from R14.7 billion at the lowest possible HAART cost and R28.4 billion at lowest-cost patented drug prices. In this model ARVs represent about 83% of total costs. The widespread implementation of HAART is estimated to create direct savings to the health sector of about 8.5 billion Rand as a result of lower utilisation of public sector facilities due to fewer hospitalisations and opportunistic infections (OIs)

## Viral Resistance to ARVs

If antiretrovirals are prescribed unnecessarily, taken intermittently or at sub-therapeutic doses or as mono or dual therapy, resistant viral genes are preferentially selected possibly causing treatment failure. US guidelines recommend that resistance testing be performed on patients on HAART if they have virologic failure. However, the cost of implementing this recommendation on a broad scale would probably be prohibitive in South Africa. Of great concern is the transmission of resistant viruses, which would cause existing ARVs to become redundant.

Data on HIV resistance in SA is scanty and the impact on viral resistance of large numbers of single doses of nevirapine (for PMTCT) on background resistance to other ARVs is not known. A national pharmacovigilance programme has been initiated by the DoH through the Medical University of South Africa (MEDUNSA).[f]

## Conclusions

Despite the expense in introducing widespread HAART, it is probably inevitable that ARVs will be introduced in South Africa over the next 3-7 years. However, lack of capacity and operational weakness currently undermine the health system's ability to deliver basic care. Should universal access to HAART become a reality in SA, efforts must be made to ensure that the ARV programme does not steal resources from existing health interventions and the introduction of HAART must serve as a catalyst to improve all health services, particularly in rural and remote areas and particularly for HIV-infected people.

Specific steps that should be taken include:

- All avenues to access HAART should be improved. The minimum package of benefits provided by health insurance schemes should be altered to include HAART immediately. Employers, including the civil service, should ensure access to ARVs by PLWH in their workforces.
- Innovative ways of procuring cheap ARVs must be investigated, including expanding local manufacturing capacity and parallel imports. Drug distribution and storage systems will be required to ensure that losses due to theft are minimised.
- Clinical monitoring of HAART should be investigated to reduce dependence on laboratory tests. Routine HIV resistance surveillance in representative samples of newly infected, treatment naive PLWHs and patients currently on HAART should be implemented immediately.
- Medical and nursing schools should introduce patient contact sessions with people taking HAART for trainee doctors and nurses.
- The shortage of doctors, nurses, pharmacists and lay support personnel such as counsellors, would need to be addressed.
- Existing HAART provision for the poor is restricted to 4 cities in three provinces. These projects should be expanded to other sites, including rural areas.
- Given the divergence in estimates of cost shown above, operational projects in South Africa that accurately assess costs, benefits and feasibility of providing comprehensive AIDS care including ARV

f Rose Mulumba, Director HIV/AIDS/STIs Directorate, Department of Health.

therapy are necessary. Any cost benefit exercise should take into account the impact of HAART on family members and decreased hospital admissions for the patient being treated.

Pilot studies at a relatively small scale in SA have shown that providing HAART in a developing country setting can save lives. A large-scale pilot project assessing effectiveness of treating many thousands of patients with HAART should be implemented urgently, learning from national programmes in Brazil and Botswana to prevent the massive mortality and morbidity related to this epidemic.

## References


1 Creese A, Floyd K, Alban A, Guinness L. Cost-effectiveness of HIV/AIDS interventions in Africa: a systematic review of the evidence. Lancet 2002; 359(9318): 1635-43.

2 Dorrington RE. How many people are currently infected with HIV in South Africa? S Afr Med J 2002; 92(3): 196-7.

3 Morgan D, Mahe C, Mayanja B, Whitworth JA. Progression to symptomatic disease in people infected with HIV-1 in rural Uganda: prospective cohort study. BMJ 2002; 324(7331): 193-6.

4 Morgan D, Mahe C, Mayanja B, Okongo JM, Lubega R, Whitworth JA. HIV-1 infection in rural Africa: is there a difference in median time to AIDS and survival compared with that in industrialised countries? Aids 2002; 16(4): 597-603.

5 Deschamps MM, Fitzgerald DW, Pape JW, Johnson WD Jr. HIV infection in Haiti: natural history and disease progression. Aids 2000; 14(16): 2515-21.

6 Dorrington RB, Bradshaw D, Laubscher R, Timaeus IM. The impact of HIV/AIDS on adult mortality in South Africa. Cape Town, South Africa: Burden of Disease Research Group, Medical Research Council; 2001.

7 UNAIDS. Report on the global HIV/AIDS epidemic. Geneva: UNAIDS; 2002. Report No.: UNAIDS/02.26E.

8 Shisana O, Simbayi L, et al. Nelson Mandela/HSRC Study of HIV/AIDS. South African National HIV prevalence, Behavioral Risks and Mass Media Household Survey 2002. Cape Town: Human Sciences Research Council; December 2002.

9 Urassa M, Boerma JT, Isingo R, Ngalula J, Ng'weshemi J, Mwaluko G, et al. The impact of HIV/AIDS on mortality and household mobility in rural Tanzania. Aids 2001; 15(15): 2017-23.

10 Jeena PM, Pillay P, Pillay T, Coovadia HM. Impact of HIV-1 co-infection on presentation and hospital-related mortality in children with culture proven pulmonary tuberculosis in Durban, South Africa. Int J Tuberc Lung Dis 2002; 6(8): 672-8.

11 Panel on Clinical Practices for Treatment of HIV Infection. Guidelines for the use of antiretroviral agents in HIV-infected adults and adolescents. Department of Health and Human Services and Henry J. Kaiser Family Foundation; February 4 2002.
URL: http://aidsinfo.nih.gov/guidelines/

12 Palella FJ, Delaney KM, Moorman AC, Loveless MO, Fuhrer J, Satten GA, et al. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. HIV Outpatient Study Investigators. N Engl J Med 1998; 338(13): 853-60.

13 Detels R, Munoz A, McFarlane G, Kingsley LA, Margolick JB, Giorgi J, et al. Effectiveness of potent antiretroviral therapy on time to AIDS and death in men with known HIV infection duration. Multicenter AIDS Cohort Study Investigators. JAMA 1998; 280(17): 1497-503.

14 Dore GJ, Li Y, McDonald A, Ree H, Kaldor JM. Impact of highly active antiretroviral therapy on individual AIDS-defining illness incidence and survival in Australia. J Acquir Immune Defic Syndr 2002; 29(4): 388-95.

15 Egger M, Hirschel B, Francioli P, Sudre P, Wirz M, Flepp M, et al. Impact of new antiretroviral combination therapies in HIV infected patients in Switzerland: prospective multicentre study. Swiss HIV Cohort Study. BMJ 1997; 315(7117): 1194-9.

16 Tassie JM, Grabar S, Lancar R, Deloumeaux J, Bentata M, Costagliola D. Time to AIDS from 1992 to 1999 in HIV-1-infected subjects with known date of infection. J Acquir Immune Defic Syndr 2002; 30(1): 81-7.

17 Farmer P, Leandre F, Mukherjee JS, Claude M, Nevil P, Smith-Fawzi MC, et al. Community-based approaches to HIV treatment in resource-poor settings. Lancet 2001; 358(9279): 404-9.

18 Farmer P, Leandre F, Mukherjee J, Gupta R, Tarter L, Kim JY. Community-based treatment of advanced HIV disease: introducing DOT-HAART (directly observed therapy with highly active antiretroviral therapy). Bull World Health Organ 2001; 79(12): 1145-51.

19 Srithanaviboonchai K, Leusaree, T, LoYR, Sennun R, Natpratan C. [MoOrG1079] Community participation in a pilot project on Highly Active Antiretroviral Therapy (HAART) in northern Thailand. In: XIV International AIDS Conference; 2002; Barcelona; 2002.

20 Texiera PR, Santos, C.E. (MoOrB1098) The impact of antiretroviral therapy in Brazil (1996-2001). In: XIV International AIDS Conference; 2002; Barcelona; 2002.

21 Caminada S, Lira M, Mesquita F, Veras MAS. [C10856] AIDS-related mortality in the city of Sao Paulo, Brazil: trends and impact of the antiretroviral therapy. In: XIV International AIDS Conference; 2002; Barcelona; 2002.

22 Barroso PF, Schechter M, Cerbino-Neto J, Almeida, MHH, Littleton M, Harrison LH. [C10687] Sexual activity after initiation of antiretroviral therapy in Brazil. In: XIV International AIDS Conference; 2002; Barcelona; 2002.

23 Ministry of Health Brazil. AIDS: The Brazilian experience. Brazilia: National STD/AIDS Programme. Brazil: Ministry of Health, 2001.

24 Masa. The National Antiretroviral Therapy Programme of Botswana. 25 November 2002.
URL: http://www.gov.bw/government/ministry_of_health.html

25 Darkoh-Ampem E, Obita G, De Korte D, Mazonde P. [PL4.3] Scaling up antiretroviral therapy in a resource-poor setting: the Botswana example. In: Sixth International Congress on Drug Therapy in HIV Infection 2002; Glasgow: 7-12 November 2002.

26 Hosseinipour MC, Namarika, D, Mwale B, Martinson F, Hoffman I, Luftl S. [B10592] Antiretroviral use in Malawi: experience with the government sponsored antiretroviral program. In: XIV International AIDS Conference 2002; Barcelona: 2002.

27 Sow PSS, Ngom NFG, Diakhate ND, Gueye PMG, Kane NCT, Thiam ST, et al. [MoPeB3225] The Senegalese initiative on access to antiretroviral therapy: current situation and perspectives, how to translate pilot study results to public health realities in a country with limited resources. In: XIV International AIDS Conference 2002; Barcelona; 2002.

28 Weidle PJ, Malamba S, Mwebaze R, Sozi C, Rukundo G, Downing R, et al. Assessment of a pilot antiretroviral drug therapy programme in Uganda: patients' response, survival, and drug resistance. Lancet 2002; 360 (9326): 34-40.

29 UNAIDS. Report on the meeting on the evaluation of the UNAIDS HIV Drug Access Initiative. Geneva: UNAIDS; 30-31 May 2000.

30 Stein A, McLeod H, Achmat Z. The cover provided for HIV/AIDS benefits in medical schemes in 2002. CARE monograph number 10. Cape Town: Centre for Actuarial Research, University of Cape Town; 2002.

31 Aid for AIDS. Clinical Guidelines 2nd Edition. Cape Town: Aid for AIDS; 2001.

32 World Economic Forum. Private sector intervention case example: Using a direct service model to provide workplace prevention, care, support and treatment. Geneva: Global Health Initiative, World Economic Forum; 2002.

33 Castro H. Caravans, cats, geese, foot & mouth and statistics: HIV/AIDS and the struggle for the humanisation of the African. 2002.

34 Cabinet Statement on HIV/AIDS. Pretoria: Government Communications; 17 April 2002.
URL: http://www.gov.za/speeches/

35 Update on Cabinet statement of 17 April 2002 on fighting HIV/AIDS. Pretoria: Government Communications; 9 October 2002.
URL: http://www.gov.za/speeches/

36 Providing antiretroviral therapy at primary health care clinics in resource poor settings. Preliminary report: May 2001 - May 2002. Cape Town: Médecins Sans Frontières (MSF) and School of Public Health and Primary Health Care, University of Cape Town; 2002.

37 World Health Organization. Scaling up antiretroviral therapy in resource limited settings. Guidelines for a public health approach: executive summary. Geneva: World Health Organization; 2002.

38 Southern African HIV Clinicians Society, Adult Guidelines Committee. Clinical Guidelines: Antiretroviral therapy in adults. Johannesburg: Southern African HIV Clinicians Society; June 2002.

39 Gray RH, Wawer MJ, Brookmeyer R, Sewankambo NK, Serwadda D, Wabwire-Mangen F, et al. Probability of HIV-1 transmission per coital act in monogamous, heterosexual, HIV-1-discordant couples in Rakai, Uganda. Lancet 2001; 357(9263): 1149-53.

40 Sweat M, Gregorich S, Sangiwa G, Furlonge C, Balmer D, Kamenga C, et al. Cost-effectiveness of voluntary HIV-1 counselling and testing in reducing sexual transmission of HIV-1 in Kenya and Tanzania. Lancet 2000; 356(9224): 113-21.

41 Badri M, Wilson D, Wood R. Effect of highly active antiretroviral therapy on incidence of tuberculosis in South Africa: a cohort study. Lancet 2002; 359 (9323): 2059-64.

42 Santoro-Lopes G, de Pinho AM, Harrison LH, Schechter M. Reduced risk of tuberculosis among Brazilian patients with advanced human immunodeficiency virus infection treated with highly active antiretroviral therapy. Clin Infect Dis 2002; 34(4): 543-6.

43 Corbett EL, Churchyard GJ, Charalambos S, Samb B, Moloi V, Clayton TC, et al. Morbidity and mortality in South African gold miners: impact of untreated disease due to human immunodeficiency virus. Clin Infect Dis 2002; 34 (9): 1251-8.

44 Bekker LG, Wood R. Antiretroviral therapy in South Africa – can we do it? S Afr Med J 2002; 92 (3): 191-3.

45 Harries AD, Hargreaves NJ, Chimzizi R, Salaniponi FM. Highly active antiretroviral therapy and tuberculosis control in Africa: synergies and potential. Bull World Health Organ 2002; 80 (6): 464-9.

46 Janossy G, Jani IV, Bradley NJ, Bikoue A, Pitfield T, Glencross DK. Affordable CD4(+)-T-cell counting by flow cytometry: CD45 gating for volumetric analysis. Clin Diagn Lab Immunol 2002; 9(5): 1085-94.

47 Glencross D, Scott LE, Jani IV, Barnett D, Janossy G. CD45-assisted PanLeucogating for accurate, cost-effective dual-platform CD4+ T-cell enumeration. Cytometry 2002; 50(2): 69-77.

48 Martin DJ. Press release. Johannesburg: Southern African HIV Clinicians Society; August 2002.

49 Press Release: Boehringer Ingelheim grants voluntary license for nevirapine to South African company Aspen Pharmacare. Johannesburg: Aspen Pharmacare; 15 October 2002.
URL: http://www.pharmacare.co.za/showarticle.php?id=152

50 Médecins Sans Frontières. From Durban to Barcelona: Overcoming the treatment deficit. Geneva: Médecins Sans Frontières; July 2002.

51 Wood E, Braitstein P, Montaner JS, Schechter MT, Tyndall MW, O'Shaughnessy MV, et al. Extent to which low-level use of antiretroviral treatment could curb the AIDS epidemic in sub-Saharan Africa. Lancet 2000; 355 (9221): 2095-100.

52 Treatment Action Campaign. The costs and benefits of preventing and treating HIV/AIDS. A Treatment Action Campaign Fact Sheet. Cape Town: Treatment Action Campaign; October 2002.

# Sexually Transmitted Infections

# 14

**Rita Sonko,[i] David McCoy,[i] Eva Gosa,[ii] Christoph Hamelmann,[ii] Nzapfurundi Chabikuli,[iii] Anne Moys[iv] Arthi Ramkissoon[iv] and Jabu Hlazo[iv]**

[i]Health Systems Trust, [ii]Department of Health

[iii]Centre for Health Policy, [iv]Reproductive Health Research Unit

*This chapter provides an overview of broad issues related to the management of STI in South Africa. It reviews both the public and private sector issues describing the key health system problems and strategies being taken to address them by the different stakeholders.*

## Introduction

Curable STI represent a large burden of disease worldwide with an annual incidence of about 333 million cases. Eighty six percent of the world's burden of STI occurs in the developing world.[1] The biggest burden is among the poorest nations of the world, many of which are found in sub-Saharan Africa.

In South Africa, it's estimated that 11 million STI cases occur annually. For example in Hlabisa, a rural area in KwaZulu-Natal, among 321 women attending district antenatal clinics, 52% were found to have at least one STI (gonorrhoea, chlamydial infection, trichomoniasis or syphilis), and 18% had more than one infection. Modelling indicates that around 25% of all women in the reproductive age group residing in that district have at least one STI on any given day; of which about half are asymptomatic.[2] Routine HIV and Syphilis surveillance also indicates high rates of these infections countrywide.[3]

The public health importance of STI has been increasingly underscored by epidemiological and biological evidence that they act as co-factors in the sexual transmission of HIV.[2] With the staggeringly high rates of HIV infection in South Africa, controlling STI have become a high priority for the country and is one of the main strategies for HIV control advocated by the national Department of Health (NDoH).[4]

In order to effectively control STI, both the public and private sectors must achieve the required levels of quality of care in order to curb disease spread. In the past, much emphasis was placed on improving quality in the public sector without involving the private sector. At present, efforts are focusing on addressing quality of care in both sectors and designing models of public-private partnerships (PPPs) in order to facilitate this initiative. The big challenge for the future however, lies in successfully establishing effective working relationships between the two sectors that will result in a reduction of STI prevalence.

This Chapter provides a general overview of the STI management issues, the strategies presently being adopted and implemented at different levels of the health care system and the key challenges.

## The Public Sector

### Overall policy/strategy

The national Department of Health (NDoH) in collaboration with a broad spectrum of stakeholders including provincial and local governments, the National Health Laboratory Service (NHLS), academic and research institutions, NGOs and private initiatives, introduced the national strategy for the control and management of STI in the second half of the 1990s. The key focus was on the nationwide introduction of syndromic STI management at Primary Health Care (PHC) facility level.

As a result of implementing this strategy, the National STI Treatment Guidelines including safer sex education, condom promotion, partner notification and treatment, were introduced and are generally available at PHC facility level.[5] Training manuals have been developed and master trainers and service providers have been trained in all of the 9 provinces. Information Education Communication (IEC) materials are widely available. Many provinces and districts have appointed STI Coordinators who are supported by the NDoH.

### Challenges identified 5 years ago

The main STI management challenges identified 5 years ago include: the need for wider dissemination of treatment guidelines, improvement in overall quality of care at primary health care (PHC) level and the improvement in partner management through counselling and provision of partner notification slips at clinics.[6] The importance of addressing the underlying social conditions that are conducive to STI spread, in particular the status of women and the disruption of family life through social strife, labour migration and poverty, was also highlighted.

### New support initiatives for improving STI management

A number of new initiatives at different levels of the health system have been developed. Many were started in the last 5 years and aim at improving the quality of care.

**The National STI Initiative** was established in September 1997, following a national workshop on the state of STI management in South Africa. The overall goal of this initiative was to strengthen district-level capacity to implement an effective STI control programme. The STI initiative is currently operating in 6 sites around the country. Lessons learned from this initiative are shared through publications and other forms of communication in order to achieve a knock-on effect of best practice. The key aims of this initiative at the clinic and sub-district level include improving:

- Evaluation and monitoring the quality of care at clinics
- Identifying aspects of care that need strengthening
- Providing training to clinicians, supervisors and trainers
- Strengthening related areas such as drug and condom supply, partner treatment antenatal syphilis testing and health information management.

In addition, the STI initiative is involved in piloting a Behavioural Sentinel Surveillance (BSS) tool, initiatives for improving STI quality of care in the private sector and evaluating undergraduate medical and health sciences training.

**The Reproductive Health Research Unit** (RHRU) and **United States Agency for International Development** (USAID) project aims at improving the delivery

of sexual and reproductive health services in South Africa. The project is targeting STI and core transmitters through training and intervention-linked research. The project is also involved with capacity building for provincial coordinators. It provides training on technical communication and funds for STI conferences and workshops attendance.

**The Department for International Development (DFID) funded consultant** provides technical support to the STI sub-directorate at the NDoH.

**The Integrated Sustainable Rural Development Project,** which is funded by the European Union and the DoH, is operating in 13 rural district municipalities. The project is facilitated by the Initiative for Sub-district support (ISDS) programme of the Health Systems Trust. Situation analysis conducted in these districts identified STI as one of the key primary health care problems. ISDS in collaboration of the DoH are currently implementing a number of interventions for improving the STI management.

**The National Adolescent Friendly Clinic Initiative (NAFCI)** is a progressive rollout programme, designed to incorporate adolescent friendly sexual health services in 1 500 (33%) of the public clinics in the next five years. The program establishes minimum standards for adolescent friendly sexual health services in public clinics and facilitates improvements in quality of care and community outreach for sexual and reproductive health. The programme, which is implemented by loveLife in partnership with the DoH, has already been piloted in 50 clinics around the country. NAFCI is funded by the Kaiser Family Foundation and the DoH.

**Other programmes** such as the National STI Reference Centre and the Africa Centre for Health and Population Studies in Hlabisa mainly focus on research and surveillance and provide valuable input on evaluation of STI management protocols.

## Syndromic management at PHC level

### The concept of Syndromic Management

Syndromic Management (SM) is a multifaceted strategy for STI control that includes the recognition of symptoms by the patient and an effective treatment regime that comprehensively covers the possible aetiological agents for a defined syndrome, appropriate health seeking behaviour of infected individuals, recognition of syndromes by the health care worker, partner management (notification and treatment), behavioural counselling and condom promotion. The syndromic approach uses clinical algorithms so designed that primary health care nurses in resource poor settings may arrive at an appropriate clinical diagnosis based on a patient's symptoms and clinical signs.[7] The clinical diagnosis is then linked with a predefined antimicrobial prescription in which drugs are advised that have shown efficacy against the different STI pathogens in clinical trials.[2] The ultimate objective of the SM strategy is to reduce the load of STI and this has gained importance due its

possible impact on HIV transmission.[3]

In resource poor settings, classic laboratory diagnosis of STI is hampered by the lack of trained health care personnel and appropriate laboratory support. However, even if these issues are addressed, studies have shown that, the most sensitive of the classic tests fail to diagnose between 20% and 40% of infections when compared to the newer and much more expensive Polymarase Chain Reaction (PCR) based tests.[2]

The main advantage of the SM approach is that the patient receives effective treatment at the first visit because the treatment regime targets all common causative agents of the presenting symptoms. Ensuring the implementation of syndromic management of STI is the main clinical component of the National Strategy. Many PHC personnel have been introduced to SM through training programmes and IEC materials.

**Challenges (present and future)**

Although much effort is being channelled into improving conditions in clinics and quality of care, there are several problems that continue to recur or which are difficult to address given the limited resources the health sector is faced with. Common problems identified include inappropriate treatment, missed opportunities for treatment and incomplete examination of patients leading to failure in diagnosing STI.

The main challenges include:

- Community level
  - Partner Notification: Management of partners (notification and treatment) continues to be very poor, however factors that are at play here also include gender and cultural issues which influence communication between partners and thus affect their ability to pass on information gained from clinics. These issues need to be addressed at the community level and programs of this nature need to be developed and integrated into the strategy.
- At clinic level, improvement of quality of STI services through:
  - Employing appropriately skilled staff to manage patients
  - Improvement of working conditions of staff thereby improving their morale and attitude
  - Reducing patient waiting time by increasing the number of staff working in the clinics
  - Improving the clinic structures to allow for patients being treated in privacy
  - Ensuring regular supply of drugs for syndromic management
  - Ensuring that counselling is done routinely by training staff and allowing more time for each consultation.

- At District level, ensuring adequate support, supervision and management by:
  - Addressing the negative impacts of local government transformation, which have lead to a sense of insecurity and unhappiness among district personnel. Discouraging the frequent transfer of staff between different departments leading to the need to re-train new staff often.
  - Improving supervisors' ability to deliver on their tasks by reducing the number of other tasks delegated to them. Many supervisors experience work pressure as they have several tasks in addition to supervision of clinics and are often called to meetings at short notice, disrupting progress of planned activities.
- Provincial level:

  - Equipping provincial departments with highly skilled staff that can provide better management and planning support for provincial health programs. Master's level qualifications particularly Masters' in Public Health would effectively equip managers at this level of the health care system with the necessary skills that are essential for improving quality of care.

## Monitoring, surveillance and research

### Routine monitoring of STI

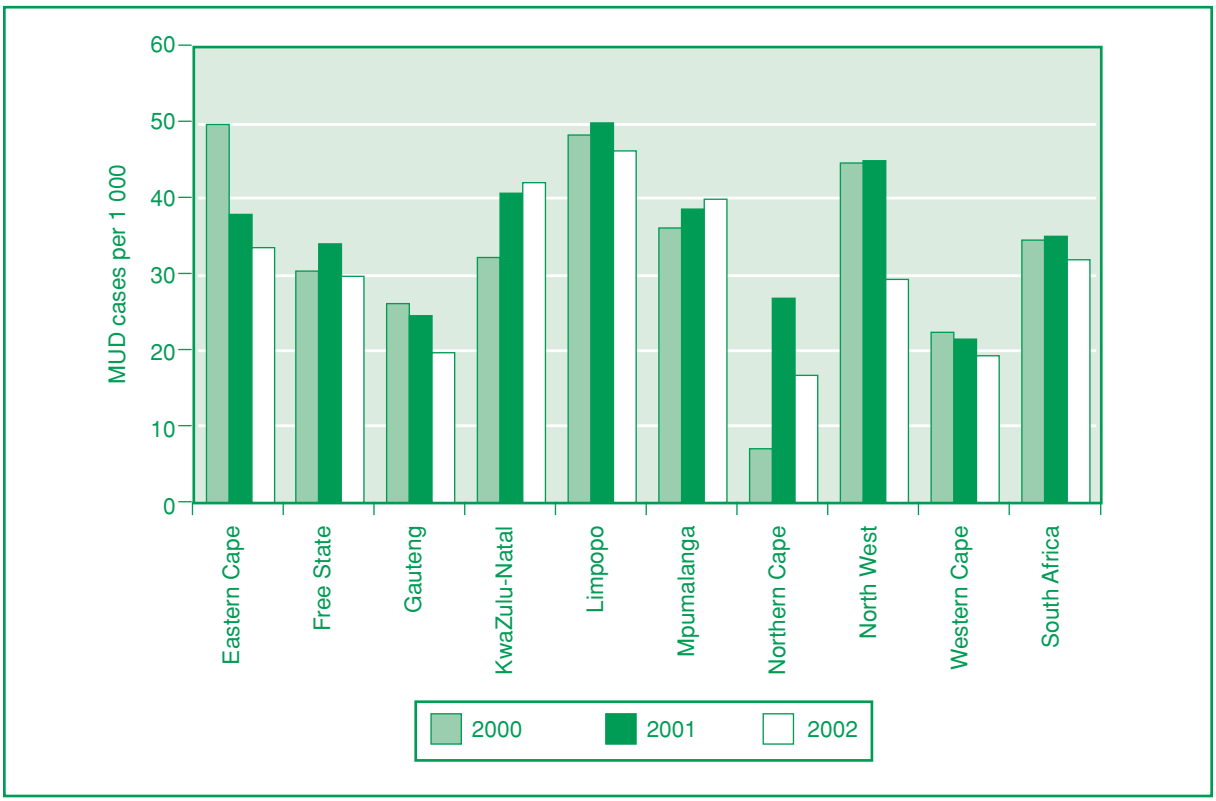
#### A. The District Health Information System (DHIS)

The key STI indicators routinely collected in the DHIS include:

- Male urethral discharge rate
- STI incidence ratios
- Contact tracing rates and
- Condom distribution rates (number of condoms per sexually active male).

The information needed to estimate these indicators is collected routinely at the clinic level and collated by the district health information personnel. Although the information collected is quite limited it provides some indication on how well the STI control programme is doing. Figure 1 shows an example of data on males urethral discharge (MUD) obtained from the DHIS. The data can be used to track changes in this indicator.

**Figure 1: DHIS data showing male urethral discharge (MUD) rates/1 000**




Definition: Number of cases of MUD per 1 000 male population age >+ 15 years. MUD incidence rate is often used as a direct proxy for STI incidence since such cases are invariably STI.

Use: Tracking the distribution of STI in the target population.

Comments: This is the best indicator available for STI incidence, since practically all cases are sexually transmitted. The control of MUD is also vital to control the HIV/AIDS virus, since it makes the spread of the HIV virus easier.

These four indicators are not sufficient for surveillance of specific STI and other surveillance systems are needed to complement the current DHIS. The quality of data collected are very much dependant on the commitment of clinic staff to record the information according to the given guidelines.

## B. The DISCA tool

The DISCA tool (District STI Quality of Care Assessment tool) was developed after extensive consultation with nurses, public health professionals and health service managers, and measures key input, processes and output indicators related to management of people with STI.[8] The DISCA has been introduced countrywide at a district level. This tool is used at clinics to assess the quality of STI management. The information obtained guides development of interventions and forms a baseline from which project evaluations can be done. In the STI initiative sites, the DISCA is used every 9 months and the information collected is used to guide further interventions.

**Establishment of an STI surveillance system**

A number of institutions have been involved with developing concepts and guidelines for a STI surveillance system. However, there is still no surveillance system in place and this is a major challenge.

In addition to antenatal screening, the surveillance system should include:

1 Clinical sentinel surveillance that provides detailed information about syndrome distribution by sex and age, treatment failures, complicated cases and their changes over time

2 Microbiological surveillance and drug resistance to monitor syndrome associated pathogens and changes of their distribution over time as well as to track changes in microbial drug resistance patterns.

Surveillance does not only add valuable information to routine data for service providers and managers, but are also an essential component of the National STI Management and Control Programme. Only such a system can provide the basis for rational changes and adaptations of national treatment guidelines and policies while studies focusing on a particular geographical area and study population can provide important alarm signals.[2] New attempts to implement such a system are underway and will only succeed if all stakeholders support it at national, provincial and district/facility level as well as the academic institutions and the National Health Laboratory Service. Such a system could also be expanded towards a surveillance system for comprehensive HIV/AIDS/STI management and control.

The national HIV and syphilis sero-prevalence survey of women attending public antenatal clinics was first done in 1990. Antenatal surveys are a recommended surveillance tool used to estimate HIV prevalence in populations and were spearheaded by World Health Organization (WHO) and later the Joint United Nations Programme on HIV/AIDS (UNAIDS).[3] The South African Survey utilises a scientifically selected (large) sample of sentinel sites, which are representative of the entire country, as opposed to nominating a few conveniently selected sentinel sites. Over the years these annual surveys have established themselves as the cornerstone of HIV and syphilis surveillance in South Africa.

In addition to the national surveys, localised studies contribute greatly to the body of knowledge. In Hlabisa, a wide range of studies have been carried out including STI surveillance by clinic nurses and family doctors, microbiological studies among women attending antenatal and family planning clinics, household surveys, and quality of care surveys in the public and private sectors. The biomedical research projects conducted there provided valuable information, which was used to guide development and evaluation of treatment guidelines. For example, before 1997, syphilis and chancroid were together responsible for almost 80% of cases of genital ulcer disease. Recent studies conducted in Hlabisa show that this has now dropped to 25%, while Herpes Simplex Virus and *C.trachomatis* (Lympho granuloma

venereum-LGV) now account for almost 60%. The current recommendation of a 7-day course of erythromycin in combination with benzathine penicillin for the treatment of ulcerative STI caters for the treatment of chancroid and syphilis only and the shift in aetiology requires consideration for adjustment of this protocol with an additional 7 days of erythromycin to adequately treat LGV and prevent relapse or development of inguinal lymphadenopathy, which has been observed in several patients treated for 7 days as per the current national recommendation.[9]

### Behavioural sentinel surveillance

This is another form of sentinel surveillance that looks at behaviour of selected population groups who are considered to be at high risk. The BSS provide better understanding of behavioural aspects of STI epidemics. Changes in HIV infection rates over time have been hard to interpret in many contexts because programmes frequently lack complementary information behavioural changes.

BSS is a critical component of 'second generation' surveillance systems, which in addition to monitoring HIV/STI prevalence data, focuses more closely on segments of the population with high concentration of new infections. The STI initiative conducted a BSS in four sites around the country two years ago and a second round is currently being conducted in the same sites. A comparative analysis of the two sets of data will be done to determine if there are significant changes in behaviour. It is envisaged that this information will be of value to policy makers and STI programme managers. LoveLife is also frequently involved in surveys that target mainly adolescents and aimed at tracking changes in knowledge and attitudes with regards to sexual behaviour and reproductive health.

The NDoH introduced 'second generation' surveillance activities in 2001 in Gauteng province mostly as pilot projects. Plans are currently underway to build an expanded national surveillance system for STI/HIV/AIDS based on these principles.[7]

### Secondary level management

- **Establishment of a national referral system:** The concept of STI management and control using the syndromic approach was never intended to stop at PHC level. In fact, the referral of treatment failures, complicated cases and patients presenting with signs not falling under standard treatment algorithms is an essential component of the STI management concept. Currently, the referral system from clinics to hospitals is inadequate. This needs urgent attention, particularly as deficits in the referral process have now been identified as a major obstacle. In addition, **undergraduate curricula for medical students** does not cover syndromic approach. Training of, and support to medical doctors at district hospitals (often during their community service) and postgraduate specialist courses for doctors and nurses in STI

management including HIV/AIDS need to be reviewed, strengthened or established. Similarly, communication and clinical reporting need to be improved between facility levels. This, is also relevant to a comprehensive HIV/AIDS management package.[10]

### Condoms and microbicides

The NDoH is responsible for condom procurement, quality assurance, and distribution to primary sites in each province. Around 20 million quality approved condoms are distributed for free every month, mainly through the public sector. Free female condoms have also been introduced at selected public sites. National coordinating meetings synchronise efforts of the public sector condom social marketing initiatives. Marketing campaigns for the various target groups involve conducting sexual reproductive health education, using a range of communication channels such as, mass media and peer education. Ninety percent of the respondents in a recent national household surveyed,[11] indicated that the accessibility to quality condoms is good and their use is picking up.

The NDoH also supports research on other barrier methods, notably the microbicide. The MRC received substantial funding from the government for the establishment of an HIV Vaccine and Prevention Trials Research Unit, which tests barrier methods (such as the female condom) and microbicides. The unit has already completed the preliminary trial on a microbicide (nonoxynol-9), but the results are inconclusive and further research is needed.

### Key challenges ahead

- **Integration of HIV/AIDS/STI/TB services at service delivery level:** Recent estimates from the national household survey[9] indicate an HIV prevalence of some 40% among respondents with a history of STI. In the clinical setting, on average, every second client presenting with an STI syndrome can be expected to be HIV infected. Given the high number of STI treated at PHC level per year, it is reasonable to assume that the majority of asymptomatic HIV infected adults in the country are actually seen at STI service points. The STI service at PHC level is currently one of the major entry points for people with HIV infection. Therefore, all efforts should be made within the STI services to promote and make HIV diagnosis through VCT accessible. Consequently, all further HIV/AIDS related services within the facilities (including treatment and prophylaxis of opportunistic infections like TB) or linked to the facilities (care and support) need to be dealt with at **service delivery** level. At the same time, Antenatal Care (ANC) and Family Planning (FP) services are supposed to play a more pro-active role in the education of prevention and early diagnosis of STI including HIV infection. This integrated approach allows for better planning, monitoring and evaluation that is essential for all programmes.

- **Reviewing the need for a more comprehensive programme for High Transmission Areas (HTAs):** At a recent WHO Africa Region workshop in Harare, representatives from sub-Saharan African countries underlined the role of HTAs in the HIV/AIDS/STI epidemic. (HTAs can generally be defined as market places for the exchange of sex services). National and cross-border programmes mapping HTAs on a nationwide scale were proposed. Based on local situation analyses, intensified interventions should be promoted involving local public and private service providers as well as all local stakeholders. Services should be user friendly (for example, in terms of opening hours and accessibility). Peer education and community involvement are essential components. Advocacy for the legalisation of sex work was also proposed.

  In addition to syndromic STI management, periodic presumptive treatment was also suggested as a standard component of the treatment guidelines at HTAs. Further support to existing initiatives in South Africa such as projects in mining areas, at border sites, the project of the Road Freight Industry and other truck stop initiatives is therefore another priority in the STI control programme. Coordinating structures need to be improved, a broader coverage of sites needs to be achieved and open questions regarding efficacy of interventions and their impact need to be addressed through further research.

- **Developing and or strengthening collaborative efforts between role players:** in order to facilitate more efficient use of resources, there is need for the different stakeholders to work together and share information for project planning and evaluation.

## The Private Sector

### Overview

In South Africa, private general practitioners (GPs) play an important role in the provision of STI care. Even in low income and rural communities with relatively good public sector STI services, more than 50% of all STI patients prefer to be seen by private GPs.[12,13] Private services are generally preferred because of the physical accessibility of GP practices, with convenient operating hours as well as some GPs' good rapport with members of the community.[14,15] These characteristics of private sector providers enable them to foster continuity of care and gain a better understanding of community expectations and demands.

However, local research[16,17] indicates that the majority of cases in the private sector are treated with inappropriate/ineffective antibiotics, and managed with minimal counselling and health education. Promotion of VCT is minimal and there is no partner notification. By failing to treat STI adequately, the

private sector undermines the public sector control efforts. Disease morbidity and the spread of STI and HIV are increased, especially in disadvantaged populations. This simply entrenches current inequities in disease burden and health status.

## Challenges identified 4-5 years ago

It is important to note that the private sector fails to implement the Syndromic Management protocol adequately, despite being relatively better resourced than the public sector. There are more GPs in private practice than in the public sector.[18,19] Such GPs are generally better trained and skilled than nurses who are the front line providers in the public sector. GP practices also are more available (physically and opening hours are convenient to the employed population) and have access to sufficient, reliable equipment and a hospital referral network of good quality. Why then have GPs failed to comply with the SM protocol? Several explanations are raised in the literature[20,21] which suggests that:

- Awareness of the public health importance of STI needs to be raised amongst GPs to encourage their participation in STI control program.
- There is a need for improved undergraduate and postgraduate training and curricula that reflects a greater public health perspective as opposed to the more traditional and narrow clinical/ microbiological perspective.
- Knowledge of the microbiological and public health rationale of the syndromic approach to treatment is inadequate.
- There are no financial incentives to provide treatment that is in line with national/sub-national guidelines.
- The public sector has no capacity to regulate and monitor practices in the private sector and is unable to institute remedial action in cases of ineffective antibiotic prescribing.
- There is a need for appropriate public-private interactions at a variety of levels to ensure that curable STI are appropriately managed and that their incidence and prevalence is reduced.

## New initiatives, findings and observations

This section, reviews the context in which private providers operate, with special emphasis on the low-income community where the burden of disease is highest. It identifies the factors affecting practice, the coping strategies adopted by GPs and how these impact on quality of care.

### Contextual factors

Two main groups, namely the for-profit and the not-for-profit providers render STI care in the private sector at the primary care level. Most not-for-profit service providers are work-based clinics. The range of services provided at these clinics vary considerably, from very limited package of services such as

basic occupational health care to a much more comprehensive primary care service. Usually, the amount of available funds determines the package of services. Some clinics are fully funded by the employers to comply with occupational health regulations/requirements. Others are co-funded by employers' and employees' contributions. One such example is the clothing industry healthcare fund in Cape Town with over 100 000 members (workers and their families), which provides a basic healthcare package with ambulatory primary care elements.[22]

Many of the work-based clinics are run on managed care principles of cost saving and use cheaper formularies where possible. Whether the clinic employs nurses or doctors depends on the type of service (package) however, this may have implications on STI management as some personnel may be restricted in terms of what medication they are allowed to prescribe. **Section 22 of the Medicines and Related Substances Control Act** undermines the ability of some employment based clinics to provide drugs at their clinics while **Section 38A of the Nurses Act** limits occupational health nurses in terms of what medication they are allowed to dispense. These regulations need to be revised in order to allow for wider access to STI care.

In the for-profit-private sector the characteristics of the communities served determine fundamentally how the practice is managed.[23] Depending on the practice location, providers are subjected to different social and economic pressures that shape their behaviour and prescribing habits. In high-income communities, for example, practices are computerised to facilitate the claim process and providers have the option of to charging the higher South African Medical Association (SAMA) consultancy fee for services rendered. Often, patients are required to pay the provider cash upfront and later claim the medical expenses from the medical schemes/insurances. If the similar types of services are rendered to patients in low-income communities, they yield lower returns.

Furthermore, the difference in levels of education between poor and rich communities generates different levels of accountability, expectations of and demand for, quality of care received. However, GPs in low-income communities, attempt to offer the best possible care to the non-medical schemes/uninsured patients within the margin of the cash fee charged. Hence practicing medicine is not just about providing a service, but being champion and advocate for the people. Previously there were few GPs in the African communities and virtually no competition. Financial viability of the practice was not as much a concern as it is today and many practices introduced a lower 'cash fee' and 'credit' policy to cater for the poor in the community.

A recent study was conducted by the CHP on the design and evaluation of strategies to improve the quality of privately provided STI care in two low-income districts of Gauteng. Through key informants and interviews with GPs, it found that, depending on the primary motivation to practice in the private sector and management skills, three types of practitioners could be described. Using the words and typology of the informants:

The *'Ama-stupid'* (the 'stupid ones') are often young practitioner with very little clinical and management experience and see private practice as a quick way to get rich. There is a high turnover in this group because they quickly get into debt.

Eventually, they get out of private practice bankruptcy or become *'Ama-clever'*, the clever ones who have learned ways to secure income under adverse conditions resorting at times to unethical practices.

The *'Ama-steady'* (the steady ones) set their expenditure and lifestyle proportional to the practice income. They tend to have strong religious and community orientation and practice with integrity. These practitioners stay longer in the community and emerge as opinion leaders.

### Coping strategies of GPs working in poor communities

In view of the predominantly 'fee for service' system of remuneration, GPs need to offer quality services in order to attract and retain patients. For the GPs to maintain their income levels, GPs adopt several strategies:

- The use of 'charm': the provider identifies patient's expectations and attempts to meet them. This practice perpetuates myths such as the potency of red tablets and injections. Furthermore, some expectations from patients like the issue of sick notes for reasons other than medical are entertained.
- Adoption of measures to minimise costs such as the use of generic drugs. Dispensing is a significant income generating activity in the private sector. Medical schemes are providing incentives for GPs to use generic drugs especially for chronic conditions.
- Adoption of measures to maximise income by using electronic billing systems and itemised billing for cash paying patients. GPs who are still using a flat fee for cash patients are under pressure to dispense cheaper medication.
- Parallel business initiatives:
  - In the medical sector:
    - Operating more than one surgery to increase number of patients. Often a locum is employed to assist the GP when one or more surgeries get busy.
    - Partnerships with allied professionals such as dentists and physiotherapists to maximise internal referrals.
    - Sessions in public sector clinics or hospital casualty or workplace clinics for occupational health.

- Investment in non-medical business ventures such as, transport, restaurant, hair salons, bottle store, etc.

### Implication for quality and equity

The economic status of the patient and GP perceptions of patients' ability to pay has some bearing on the care provided to patients with or without medical scheme/insurance cover.[24,25] Cash paying patients are more likely to receive cheaper but less convenient treatment regimes (e.g. tetracycline in a six hourly-dose instead of doxycycline in a 12 hourly dose) that the lower fee can cover without the practice making a loss.[15] Payment mechanisms may also contribute to over-treatment in patients on medical scheme/insurance, excessive costs and wastage of resources.

Where infectious diseases are treated with inadequate courses of antibiotics, ramifications go beyond the immediate problems of disease transmission to include a growing problem of anti-microbial resistance by organisms causing STI.[26,27] This, in turn, will increase the future complexity and costs of STI care.

### Key areas of focus for initiatives to improve care in the private sector

A national symposium on STI management in the private sector was held in November 2001. The aim of the symposium was to share information on the state of the primary care level private sector services in the country, examine current clinical practices and draw lessons from local intervention models seeking to improve the management of STI in the private sector. A wide range of stakeholders including policy makers, health professionals and regulatory bodies, and researchers, participated in the symposium.

During this meeting, four key areas believed to highly influence the quality of care in the private sector were identified and task teams were formed to address them. A brief description of each key area is given below.

#### Public-Private Initiatives (PPIs)

The current government policy favours public-private collaboration in the delivery of health services.[28] However policies addressing the role of the private sector in the delivery of public health services are still poorly developed. It is within this context that the PPI task team formed at the national symposium set off, with the aim of developing recommended models for PPIs that could be adopted to improve access to and quality of care for STI patients around the country.

The task team sought to first identify the already existing STI-related PPIs in the country. Secondly, they analysed the progress of existing PPIs in achieving the goals for which they were originally set up for. A study was commissioned from July to Oct 2002 by the STI initiative in order to provide the task team with this information.

An assessment of seven existing PPIs for STI management (following a detailed review of literature and consultative process with stakeholders) was conducted in order to identify the strengths and weaknesses of current activities. Based on lessons learned and experiences of the projects that were assessed, key building blocks for successful PPIs were identified. The seven PPIs that participated in the study included:

- The East Rand CHP project (intervention research)
- The Hout Bay STI project (by city of Cape Town)
- The Carltonville STI project
- The South African Sentinel Practitioners Research Network (SASPREN)
- The Durban Metro STI project
- The Lesedi/Welkom STI project
- The Western Cape STI project.

The key building blocks for PPIs include:

- The need for political and management support
- The need to use existing and new Private Sector Networks
- Flexibility of the model in terms of funding and service provision
- The importance of quality improvement in both sectors (private and public) following the partnership
- Stakeholder and community participation in development and implementation of the partnership
- The need to address regulation issues (national treasury guidelines and others such as Medicines Control Council regulations) in developing the model
- An essential package of interventions must be implemented. The package should include:
  - IEC activities in communities are essential to increase demand for quality of service provision
  - Access to free drugs for STI patients through private providers
  - Information sharing between public and private sector providers in order to facilitate effective referral
  - Surveillance which is an essential component of PPI success. It provided a mechanism to monitor effectiveness, and hence facilitated adaptation and flexibility of the model
  - Trust and reciprocity in order to facilitate effective collaboration between the public and private sectors
  - Commitment of private sector to 'social investment' (i.e. investing in quality care of STI even in the absence of financial gains)

- Regular review and adaptation of the model in order to ensure its effectiveness.

Using this information, the task team has now developed and recommended models for PPIs for both for-profit as well as not-for-profit private - public partnerships. These models will be documented in a final report, which will be presented to key stakeholders at the next national symposium.

**Postgraduate training for GPs**

Studies have shown that patients attending private clinics for STI are likely to receive inappropriate treatment and one of the reasons for this is that general practitioners don't have access to current information on STI management.[30] Two key issues that were identified at the national symposium are:

- ➢ STI syndromic management, good doctor-patient interaction (including counselling) and public health are not given the profile and importance they deserve at undergraduate level.
- ➢ There is a need to develop a better postgraduate education and training programme for GPs, which will address national health priorities.

The Training Task team was thus commissioned to:

- ➢ Assess the situation in relation to training on STI for 'generalist doctors' (i.e. trainees, trainers, content of the programmes, resources and training site).
- ➢ Develop guidelines for effective training programmes and models of delivery of such programmes
- ➢ Participate in advocacy on training doctors in private practice on STI.

Following its first meeting, the task team developed a checklist to assess the training resources available to GPs in South Africa. This checklist was then used to develop an inventory of postgraduate training resources in the country. The aim of developing the inventory was to provide solid information on currently available training resources and inform the process of developing guidelines for training methods and models for GPs in practice. The task team plans to present the results of the inventory, develop training guidelines and recommendations on STI management for private GPs at their next meeting.

**Private Sector regulation**

Regulation of the private sector particularly in terms of access to drugs and prescriptions, were identified by delegates at the national symposium as the key issues that need to be addressed in order to improve quality of care in the private sector. The Private Sector Regulation Task Team was set up to:

- ➢ Develop strategies to improve quality of STI management in the private sector, focusing on legislation and re-imbursement

- Outline the impact of legislation and policy on quality of care and service provision (pharmaceutical, dispensing, medical schemes, PPIs)
- Develop strategies to address private financing issues involving stakeholders (GPs, pharmacists, medical schemes, consumers)
- Network with research institutions to assess and develop interventions to address the impact of various reimbursement mechanisms on the quality of STI treatment in the private sector.

**Research and surveillance**

Research and surveillance are critical components of efforts to address quality of care in the private sector. The research agenda needs to be based on identified gaps in knowledge around the three key areas discussed above. Aspects of quality control and financing, piloting new approaches of collaboration with service providers and Medical Schemes as well as the establishment of closer links with stakeholders in the private sector are necessary and are being planned by the task team.

Development of a national surveillance system for the private sector is also being planned, however, this has to be linked with the public sector surveillance system for the results to have a significant impact.

### Challenges ahead

- Developing tangible solutions to the private sector problems identified by engagement of all key stakeholders. Recommendations from the different task teams need to be followed by a process of advocacy and wide dissemination of those recommendations in order to facilitate the process of designing and implementing solutions.
- Developing a national policy that ensures quality of care for STI in the private sector. The policy should address all the key areas that influence quality of care as mentioned in earlier sections. This policy must be a collaborative effort between all stakeholders in order to get buy-in from all parties.

## Undergraduate Training

Studies done using tools such as the DISCA to evaluate quality of care indicate that many medical personnel lack adequate skills for appropriate management of patients with STI. One of the main problems identified is that, undergraduate training on STI management for nurses and doctors is not always in line with the national treatment guidelines. In addition, the content and method of teaching may not encourage syndromic management.

Plans to conduct research into training issues are underway, so that appropriate interventions can be implemented. Additionally, the STI initiative

is targeting nursing colleges tutors for training on STI syndromic management. In turn, tutors are encouraged to cascade STI syndromic management training in their institutions.

## Traditional Healers

Traditional Healers are recognised as important service providers for STI care. It is in this context that the NDoH has recently initiated a project to strengthen training, referral practices of Traditional Healers, and is coordinating structures in the process of the upcoming Bill of this profession. Through this, it is hoped that the quality of care of patients by traditional healers will be improved.

## Conclusion

Multi-pronged approaches implemented in collaboration with public and private sectors and other key stakeholders are essential, in order to successfully combat the spread of STI. This is the main challenge for STI control in South Africa.

## References

1 Centre for Disease Control and Prevention. Pelvic inflammatory Disease: Guidelines for Prevention and Management. MMWR 1991; 40: 1-25.

2 Moodley P. The Syndromic Management of Sexually Transmitted Diseases: clinical and microbiological response in relation to aetiology, susceptibility patterns and co-infection with HIV-1. [PhD thesis], University of Natal. Submitted Feb 2002.

3 National Department of health. National HIV and Syphilis Sero-Prevalence Survey of women attending Public Antenatal Clinics in South Africa. 2000.
URL: http://www.doh.gov.za/docs/index.html.

4 National Department of Health: HIV/AIDS/STD strategic plan for South Africa 2000-2005. Pretoria: Department of Health; 2000.

5 National Department of Health. Protocols for the management of a person with a Sexually Transmitted Disease according to the Essential Drugs List. Pretoria: Department of Health; 1998.

6 Colvin M, Medicines Research Council. Sexually Transmitted Diseases. Chapter 23. In: Barron P (Ed) South African Health Review. Durban: Health Systems Trust; 1997.

7 Ballard R, Htun Y, Fehler G, Neilsen G. The diagnosis and management of sexually transmitted infections in Southern Africa. (3rd Edition.)

8 Coetzee N, Magwaza S. Assessing the quality of care for STD patients in comprehensive PHC clinics; the development of an instrument for use by district supervisors. Durban: Health Systems Trust; 1998. URL: http://www.hst.org.za.

9 Moodley P, Sturm P, Vanmali T, Wilkinson D, Connolly C, Sturm W. Association between HIV-1 infection, the aetiology of genital ulcer disease and response to syndromic management. Abstracts of the 41st Interscience Conference on Antimicrobial Agents and Chemotherapy, September and December 2001; Abstract no. L-889: 456.

10 Modiba P, Schneider H, et al. The integration of HIV/AIDS care and support into primary health care in Gauteng. Centre of Health Policy, School of Public Health, Johannesburg: University of Witwatersrand; July 2002.

11 Nelson Mandela/HSRC Study of HIV/AIDS. South African national HIV prevalence, behavioural risks and mass media household survey. Cape Town: Human Sciences Research Council Publishers, 2002.

12 Wilkinson D, Connolly A, Harrison A, Lurie M, and Abdool Karim S. Sexually transmitted disease syndromes in rural South Africa: Results from health facility surveillance. Sexually Transmitted Diseases 1998; 25: 20-25.

13 Rispel L, Beattie A, Xaba M, et al. A description and evaluation of Primary Health Care services delivered by the Alexandra Health Centre and University clinic. Technical Report. Johannesburg: Centre for Health Policy; 1995.

14 Swan M and Zwi A. Private providers and public health: close the gap or increase the distance? PHP Publication no 24, Department of Public Health and Policy. London: London School of Hygiene and Tropical Medicine; 1997.

15 Aljunid S. The role of private medical practitioners and their interactions with public health services in Asian countries. Health Policy and Planning 1995; 10(4): 333-49.

16 Dartnall E, Schneider H, Hlatshwayo Z, Clews F. STD management in the private sector: A national evaluation. Paper no TK31, Johannesburg: Centre for Health Policy; 1997.

17 Chabikuli N, Schneider H, Blaauw D, Brugha R, Zwi A. Quality and equity of private sector care for sexually transmitted diseases in South Africa. Health Policy Plan 2002; 17:40-46.

18 Dingie van Rensburg, Nicolaas van Rensburg. Chapter 16: Distribution of Human Resources. In: Crisp N, Ntuli A (Eds). South African Health Review 1999. Durban: Health Systems Trust; 1999.

19 Goudge J, Cornell J, McIntyre D and Mbatsha S. Chapter 4: Private Sector Financing. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds) South African Health Review 2001. Durban: Health Systems Trust; 2001.

20 Schneider H, Blaauw D, Magongo B, Khumalo I. STD care in the private sector. In: Crisp N, Ntuli A (Eds) South African Health Review 1999. Durban: Health Systems Trust; 1999.

21 Wilkinson D, Abdool Karim SS, Lurie M, Harrison A. Public Private health sector partnerships for STD control in South Africa – perspectives from the Hlabisa experience. S Afr Med J 2001, 91, 6: 517-20.

22 Morar R. Managing Sexually Transmitted Infections. Clothing Industry Healthcare Fund: a private not-for-profit case study. Presentation at National STI Symposium. Benoni: South Africa; 2001.

23 Rivalland J, Rivalland T. SA practices in parallel universes. S Afr Med J 2002; 92,12: 944-5.

24 De Brock L, Arnould RJ. Utilisation control in health maintenance organisations. Quarterly Review of Economics and Finance1992; 32: 31-53.

25 Safran DG, Tarlov AR, Rogers WH. Primary care performance in fee-for-service and prepaid health care systems. Results from the Medical Outcomes Study. Journal of the American Medical Association 1994; 271: 1579–86.

26 Adu-Sarkodie YA. Antimicrobial susceptibility of Neisseria Gonorrhoea, the EDL and HIV control. Tropical Doctor1995; 25: 45.

27 West B, Changalucha J, Grosskurth H, et al. Antimicrobial susceptibility, auxotype, and plasmide content of NG in Northern Tanzania: emergence of high-level plasmide mediated tetracycline resistance. Genitourinary Medicine 1995; 71: 9–12.

28 National Department of Health. (1997b) White paper for the transformation of the health system in South Africa. Government Gazette Vol 382.
URL: http://www.doh.gov.za/docs/index.htm

29 Schneider H. Private providers provision of services of public health importance: practices, challenges and a framework for intervention. Presentation at National STI Symposium. Benoni: South Africa; 2001.

# Tuberculosis

# 15

**Samson Kironde[i] and Lesley Bamford[ii]**

[i]Independent Consultant, [ii]Health Systems Trust

*Although considerable progress has been made with tuberculosis control efforts in South Africa since 2000, there is little sign that the epidemic is abating.*

*The South African government adopted the resolutions of the March 2000 Amsterdam Declaration to Stop TB and a strategic plan for 2001-2005 for combating the tuberculosis epidemic is now in place.*

*Directly Observed Treatment Short-course (DOTS) activities have been expanded within South Africa. The percentage of districts operating as DOTS Demonstration and Training Districts increased from 66% in 1999 to 87% in 2002. The aspiration is to achieve full DOTS coverage in the country by the end of 2002.*

*However, efforts to provide effective TB treatment using DOTS at district and facility level are constrained by numerous factors. Whilst the national and provincial strategic plans provide a framework for addressing constraints in a systematic manner, effective TB control relies on the commitment of health workers and managers at facility and district level. A number of innovative approaches to improving TB control at these levels are therefore included in the chapter.*

*The Department of Health HIV/AIDS and TB Control Directorate also hopes to roll out integrated management of TB and HIV within the country based on lessons learnt from the four TB/HIV pilot sites that have been operational since 1999. The plan is to establish at least one training site for integrated TB/HIV management in every province by the end of 2002.*

*Partnerships with other stakeholders in TB control, at both international and local levels have also been strengthened. Several international agencies provide both financial and technical support to the National TB Control Programme. Examples of how local non-governmental organisations (NGOs) are participating in TB care delivery in the country are provided highlighting some of the challenges these organisations face.*

*Despite this progress however, the cure rate of 64% for new TB patients for 2001 still remains far below the internationally and nationally accepted target of 85%. There should be no room for complacency and sustained effort is required to ensure that better TB management at national level translates into improved outcomes for patients at primary health care level.*

## Introduction

This chapter reviews the current status of the tuberculosis epidemic in South Africa and outlines efforts to address the epidemic at global, national and district levels. The ProTEST initiative which aims to integrate HIV and TB management at district and facility level is also reviewed, as is the work of a number of non-governmental organisations which aim to support TB control efforts in South Africa. Finally 3 successful case studies are included to stimulate interest in provinces with similar constraints.

## Current Status of the TB Epidemic in South Africa

South Africa still has a high burden of tuberculosis. The (WHO) Report on the tuberculosis epidemic in 2002[1] indicates:

- Estimated incidence (all cases/100 000 population) 526
- Global rank (by estimated number of cases) 9[a]
- Regional rank (in WHO AFRO region) 3[b]
- Estimated adult (15-45) TB cases that are also HIV+ 60%

Key case finding and treatment outcome indicators for South Africa for 1996 to 2000 are shown below in Table 1, whilst the most recent figures are shown for each province in Table 2.

**Table 1: Case finding and treatment outcome figures for South Africa, 1996-2001[c]**

| Case finding indicators | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|
| Number of reported cases of PTB | 90 628 | 108 086 | 110 016 | 118 686 | 120 075 | 144 910 |
| Reporting rate | 64% | 69% | 71% | 85% | 83% | 97% |
| Bacteriological coverage rate | 81% | 85% | 88% | 89% | 90% | 80% |
| Percentage of new PTB cases which are smear positive | 65% | 72% | 79% | 79% | 80% | 72% |
| **Treatment Outcome Indicators** | | | | | | |
| Cure rate for new smear positive cases | 54% | 57% | 60% | 60% | 64% *54% | n/a |
| Successful treatment rate for new smear positive cases | 73% | 73% | 73% | 72% | 76% *63% | n/a |
| Interruption rate for new smear positive cases | 18% | 19% | 19% | 17% | 15% *13% | n/a |

* includes patients who were transferred out during treatment

a 9th out of 191 Member states of the WHO.
b 3rd out of 46 member states of the WHO regional office for Africa (AFRO).
c Carlina Idema – Deputy Director Department of Health, National Tuberculosis Control Programme – personal communication, November 2002.

## Case Finding Indicators

The number of reported pulmonary tuberculosis (PTB) cases has shown a steady rise during the period with a total of 144 910 cases reported for 2001. This reflects both a real increase in the number of cases and improved efficiency in reporting. The Western Cape, followed by the Limpopo Province and Eastern Cape, have the highest incidence of PTB as measured by the number of new cases per 100 000 people, with the Eastern Cape and KwaZulu-Natal having the highest burden of disease or number of PTB cases.

The bacteriological coverage rate rose steadily from 1996 to 2000 reaching the national target of 90%, but dropped back to 80% in 2001. The bacteriological coverage rate reflects the percentage of cases of PTB for which sputum microscopy results were available. As such, it reflects both the availability of laboratory services and compliance with the national TB guidelines which stress the use of sputum microscopy in the diagnosis of PTB. A bacteriological coverage rate of only 54% for KwaZulu-Natal suggests widespread and ongoing reliance on chest X-rays in the diagnosis of PTB.

The percentage of PTB patients who are smear positive, reflects the extent to which the diagnosis and treatment of new smear positive patients is prioritised as advocated by the DOTS strategy. Although sputum microscopy results should be available on all patients with suspected PTB (i.e. bacteriological coverage should be 100%), a certain proportion of patients with PTB will be smear negative. However a country such as South Africa which is still struggling to ensure acceptable cure rates in the face of a rising incidence of PTB, should prioritise the treatment of smear positive cases – thus the percentage of PTB patients who are smear positive should be high. The picture is complicated by the fact that the incidence of smear negative PTB is higher in HIV infected people – thus one might expect the percentage of PTB patients who are smear positive to fall as the HIV/AIDS epidemic progresses. As with the bacteriological coverage, the percentage of PTB cases, which were smear positive, rose between 1996 and 2000, but fell back in 2001. All provinces except KwaZulu-Natal appeared to perform relatively well for this indicator – the extremely low rate for the province (together with the low bacteriological coverage) suggests low reliance on sputum microscopy rather than increased diagnosis of HIV-related smear negative PTB.

**Table 2: Case-finding and treatment outcome indicators by province[c]**

| Case-finding indicators (2001) | Eastern Cape | Free State | Gauteng | Kwazulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | National |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of reported cases of PTB | 29 854 | 9 978 | 20 143 | 29 590 | 6 794 | 6 342 | 3 866 | 12 429 | 25 914 | 144 910 |
| Incidence of PTB per 100 000 people | 426 | 352 | 251 | 323 | 119 | 203 | 438 | 342 | 609 | 325 |
| Bacteriological coverage rate | 82% | 90% | 90% | 54% | 79% | 83% | 90% | 83% | 90% | 80% |
| Percentage of new PTB cases which are smear positive | 74% | 81% | 84% | 44% | 72% | 76% | 85% | 78% | 85% | 72% |
| **Treatment Outcome Indicators (2000)** | | | | | | | | | | |
| Cure rate for new smear positive cases | 59%<br>8 | 66%<br>3 | 70%<br>2 | 49%<br>9 | 62%<br>7 | 65%<br>5 | 63%<br>6 | 66%<br>3 | 71%<br>1 | 64% |
| Cure rate for new smear positive cases – transfers included | 46%<br>8 | 55%<br>4 | 68%<br>1 | 38%<br>9 | 49%<br>5 | 47%<br>7 | 56%<br>3 | 48%<br>6 | 63%<br>2 | 54% |
| Successful treatment rate for new smear positive cases | 76%<br>3 | 75%<br>6 | 76%<br>3 | 67%<br>9 | 78%<br>2 | 74%<br>7 | 70%<br>8 | 76%<br>3 | 80%<br>1 | 76% |
| Successful treatment rate for new smear positive cases – transfers included | 59%<br>6 | 63%<br>3 | 74%<br>1 | 52%<br>9 | 61%<br>5 | 53%<br>8 | 62%<br>4 | 55%<br>7 | 71%<br>2 | 63% |
| Interruption rate for new smear positive cases | 17%<br>7 | 13%<br>2 | 12%<br>1 | 21%<br>9 | 13%<br>2 | 14%<br>5 | 20%<br>8 | 13%<br>2 | 16%<br>6 | 15% |
| Interruption rate for new smear positive cases – transfers included | 13%<br>6 | 11%<br>4 | 12%<br>5 | 16%<br>8 | 10%<br>2 | 10%<br>2 | 18%<br>9 | 9%<br>1 | 14%<br>7 | 13% |

## Treatment Outcome Indicators

Key treatment outcome indicators include the cure rate (% of patients who are proven to be cured using smear microscopy at the end of treatment), the successful treatment completion rate (% of patients who are cured plus those who complete treatment but without laboratory proof of cure) and the interruption rate (% of patients who do not complete their course of treatment). The cure rate for new smear positive patients is regarded as the key indicator in high-burden countries. South Africa is working towards achieving the accepted WHO target of an 85% cure rate for new smear positive cases.

Although cure rates for new smear positive patients in South Africa have improved from 54% in 1996 to 64% in 2000, this is still far below the national target. Furthermore these rates were calculated using a system whereby patients who were transferred from one facility to another during the course of treatment were not included in the denominator when treatment outcomes were calculated. The national Department of Health has recently adopted a cohort system whereby such patients are included in the denominator. Cure rates calculated using this system are even lower than those calculated using the previous system – both sets of figures for 2000 are shown in Table 2. Using the internationally accepted cohort system, cure rates for new smear positive cases for 2000 were only 54% with successful completion of treatment rates of 63%.

Disaggregation of figures by province reveals considerable variation in performance regarding treatment outcomes. Western Cape and Gauteng achieved cure rates of 70% or above for new smear positive patients compared with only 49% for KwaZulu-Natal. It is of particular concern that the two provinces with the highest number of cases of PTB, namely KwaZulu-Natal and Eastern Cape also have the lowest cure rates.

## TB Control Efforts and Initiatives

### Global initiatives

On World TB Day, March 24, 2000, twenty ministers from the twenty-two countries that together account for 80% of the world's TB burden adopted the *Amsterdam Declaration to Stop TB*. Signatories of this declaration, which included the government of South Africa, committed themselves to accelerated action against TB, both globally and nationally by committing themselves to:

- Expanding DOTS to at least 70% of infectious (smear positive) TB cases by 2005
- Ensuring sufficient and sustainable resources to stop TB
- Ensuring adequate capacity to absorb and utilise resources effectively
- Implementing better monitoring and evaluation of national TB programmes
- Improving TB drug delivery to ensure quality, access, transparency and a timely supply
- Incorporating TB indicators in overall health sector performance measurement
- Promoting partnerships with all societal stakeholders to stop TB
- Participating actively in the global partnership to stop TB.

The theme for the World TB day 2001 – 'DOTS: TB cure for all' called for equitable access to TB services for anyone who has TB. The theme reiterated the important role governments and the private sector play in providing TB services and alluded to:

- The need for health services to be patient-centred and non-discriminatory
- The challenge to DOTS providers to continue to reach out and adapt DOTS to the needs of their TB patients
- The crucial role of DOTS workers and the community in ensuring that the right to health for each patient becomes a reality, even in remote communities and minority populations
- The need for civil society to provide an environment that encourages everyone with TB to seek treatment and cure.

## South African Initiatives

As a signatory to the *Amsterdam Declaration*, South Africa is committed to improving TB control through expansion of the DOTS strategy. Implementation of the DOTS strategy which began in South Africa in 1996, has resulted in a number of improvements including the establishment of TB control programmes in all nine provinces, the introduction of uniform treatment guidelines, the establishment of a standardised recording and reporting system and improvements in availability and supply of TB drugs. TB control programmes are in place in all provinces. DOTS coverage, as measured by the percentage cases diagnosed in districts which are committed to implementing the DOTS strategy, was extended to 87% of the country by the end of 2002 up from 66% in 1999. Two-thirds of estimated smear positive cases were detected in such districts hence bringing South Africa close to the WHO target of 70%.[1]

However making sure that TB control programmes function effectively and result in improved quality of care and outcomes for clients at PHC facilities throughout the country remains a key and ongoing challenge. Like many public health interventions, effective TB control depends on the health and other systems having the managerial capacity to implement simple and largely standardised procedures on a large scale.[4] In the South African context this means that staff at all Primary Health Care facilities have to have adequate resources and capacity to diagnose, manage and support TB clients through directly-observed treatment (which can be facility or community-based). Managers at district and provincial level need to identify constraints, and must be able to mobilise the financial and other resources which are required to overcome them. Ultimately an effective TB control programme depends on an adequately resourced and well-functioning District Health System.

Chapters in previous reviews have outlined numerous constraints to effective TB control at district level which include lack of management capacity, poor management systems, lack of adequate supervision, poor reporting systems with poor analysis and use of collected information, as well as staff who are poorly trained and motivated.[5,6]

The HIV epidemic adds urgency to the issue of improving TB control programmes at the primary level, with the close association between the HIV and TB epidemics necessitating the integration of HIV/TB care at district and facility level.

The rest of this chapter focuses on a number of initiatives which aim to address these constraints. These include:

- A review of the National TB Control programmes plan for actions to overcome constraints to DOTS expansion
- A number of case studies, which outline innovative approaches to TB control which have resulted in, improved patient care and outcomes
- A description of the ProTEST initiative which has piloted the integration of HIV and TB management in four districts in South Africa
- An outline of partnerships with other stakeholders including a number of NGOs which are active within the field of TB control.

## Constraints to Expansion of DOTS in South Africa

Constraints to expansion of DOTS as outlined by the National TB Control programme are shown in Table 5, together with planned remedial action. These plans were complemented by the development of Medium Term Plans for each province during 2002.

**Table 3: Constraints to DOTS expansion in South Africa and remedial actions planned within 2002[d]**

| Constraints to DOTS expansion and success | | Remedial action planned in 2002 |
|---|---|---|
| **Specific area** | **Constraints** | |
| Financial resources | ✧ Lack of adequate funding at provincial and district levels, especially for personnel deployment | ✧ Establishment of baseline budgets for TB by provinces and districts and proper usage of costing tools |
| Health services infrastructure | ✧ Inadequate integration of TB and HIV programme activities in the country<br>✧ Lack of full integration of the national strategic plan into provincial and district level TB control activities | ✧ Expansion of TB/HIV integrated management training districts to at least one in all the 9 provinces<br>✧ Extension of strategic plan to include formulation of province-specific plans |
| Health sector reform including private sector integration | ✧ Insufficient success at building and sustaining commitment to DOTS at all levels | ✧ Expansion of DOTS coverage to all districts by the end of 2002<br>✧ Implementation of DOTS monitoring against nationally agreed indicators on a quarterly basis<br>✧ Offer of 'best practice' management and supervision training to the weakest districts |
| Access to health care facilities and services | ✧ Inadequate reach of services to special populations (e.g. incarcerated persons and people in informal settlements) | ✧ Adoption of sector-specific sections of the national strategic plan and action steps |
| Staffing | ✧ Unsatisfactory treatment outcomes at district level in some provinces reflect inadequate staffing and skills | ✧ Training of all TB district management teams in current programme changes (e.g. the introduction of FDC drugs and the incorporation on other stakeholders such as NGOs and the community in TB management) |
| Management, Programme monitoring and surveillance | ✧ Need to ensure that TB remains a top health priority at all levels of the health service<br>✧ Lack of sufficient cohort analysis<br>✧ Persistently high rates of treatment interruption and insufficient defaulter tracing | ✧ Review of provincial and district TB management structures supported by training workshops where necessary<br>✧ Improvement of accuracy of data through correct classification of cases and accounting of transferred patients<br>✧ Implementation of the electronic TB register in 3 additional provinces<br>✧ Greater emphasis on proper monitoring and evaluation using the newly modified tools |
| Quality of TB services | ✧ Lack of adequate administrative tools to reduce risk of nosocomial (hospital associated) transmission of TB<br>✧ Overcrowding and lengthy admission of TB patients in specialised TB facilities<br>✧ Insufficient links between different components of the TB services (i.e. case finding and laboratory results) which reveals managerial and organisational weaknesses | ✧ Finalisation and publication of guidelines for prevention of nosocomial transmission of TB<br>✧ Restructuring of the management of specialised TB facilities (e.g. the SANTA hospitals)<br>✧ Comprehensive review of the TB laboratory services |

d Department of Health, National Tuberculosis Control Programme, personal communication.
World Health Organization, Global Tuberculosis Control Programme.

| Constraints to DOTS expansion and success | | Remedial action planned in 2002 |
|---|---|---|
| **Specific area** | **Constraints** | |
| Other issues | ✧ Lack of a uniform national approach to the Management of Drug Resistance (MDR) to TB | ✧ Completion of national drug resistance surveillance<br>✧ Analysis of preliminary results of MDR treatment outcomes<br>✧ Implementation of national MDR management guidelines |

## Case Studies

### Case Study 1: Eastern Cape

**Improving TB case finding and outcomes with streamlined information**

The TB statistics required by the National TB Control Program (NTBCP) from clinic nurses is enormous (over 178 data items). Faced with this challenge, the staff of the Nelson Mandela Metro Health Department, assisted by the EQUITY Project, decided to design a set of monthly TB data to improve monitoring and management of the 10 000 TB patients treated annually by the metro health services. Experienced TB nurses and supervisors guided by the TB coordinator identified what they needed to measure which included, case finding effort, sputum conversion, early defaulters – and their timely restart on treatment, contact treatment amongst children, and treatment outcomes.

A streamlined set of monthly TB data still uses standard definitions but with far fewer sub-categories (for example all sputum positive and retreatment Pulmonary Tuberculosis are considered together). A new grouping called 'suspenders' (those stopping treatment for 5 days) has been added and receives special attention to restart medication before interruption (2 months of defaulting). Based on the team's requirements, precise indicators, data definitions and simple collection tools for monthly data capturing were developed. The information is incorporated in the routine monthly Primary Health Care (PHC) data captured on the standard District Health Information System software. These indicators complement the current set of cohort-based NTBCP indicators as they allow rapid response to problem areas ('2/3 months examination rate', 'TB suspender restart rate') and track areas like the 'Suspected TB incidence' not currently contained within the standard set of national indicators. Indicators calculated from the monthly reports are shown in Table A.

Over the past year, clinic nurses have analysed data and observed progress. For example, case finding has improved (with more clinics exceeding the estimated suspect rate of 10 suspects per 1 000 adult head count). Sputa due for examination are clearly marked on the desk calendar (the date on which a sample should be sent in to the lab is noted with the name of the patient so the nurse can see each day of the month, which patients are due to give a sputum sample) and higher rates of both examination and conversion are achieved. The TB suspender restart rate has increased from 40% to over 70%. Monthly, outcomes are calculated based on data gathered that month. There is a steady increase in treatment completion of a full course of TB therapy. Best of all, nurses feel empowered by the information on how they are performing in each key TB programme.

Across the Province, a smaller set of these data items have been introduced and are serving to encourage case finding and DOTS treatment allowing for monthly results to be calculated and fed back to the health workers and communities. This feedback can drive a PHC programme.

**Jon Rohde – Equity Project**

**Table A: Monthly Indicators for Management of TB Programme**

| | Category | Indicator Name | Numerator | Denominator |
|---|---|---|---|---|
| Case finding | Suspected TB incidence | Suspected TB cases with sputum sent | Target population 12 years and older | |
| | Suspected TB rate | Suspected TB case | PHC headcount 5 years and older | |
| | New PTB smear+ rate | TB case diagnosed – new | Suspected TB case | |
| Prevalence | Tuberculosis treatment prevalence | TB patients currently under treatment | Target population | |
| | MDR rate | Number of MDR cases | Number of Tuberculosis cases under treatment | |
| | DOTS rate | TB cases under DOTS supervision in facility or community | TB cases under treatment (in register) | |
| Conversion | 2/3 months examination rate - All PTB | 2 month sputum sent | 2 month sputum due | |
| | 2/3 months conversion rate - All PTB | 2 month sputum positive | 2 month sputum sent | |
| Interrupt risk | Tuberculosis suspender rate | TB suspend – new | TB patient under treatment | |
| | Tuberculosis suspender restart rate | TB suspend – restarted | TB suspend – new | |
| Contacts | Child contact treatment rate | Tuberculosis contacts under 5 years who received treatment | Tuberculosis contacts under 5 years | |
| Drugs out of stock | % of Rifam/INH/PZA/Ethamb Out | Rifam/INH/PZA/Ethamb out of stock | Tracer item reports received | |
| | % of Rifampicin/INH Out | Rifampicin/INH out of stock | Tracer item reports received | |

## Case Study 2: Western Cape

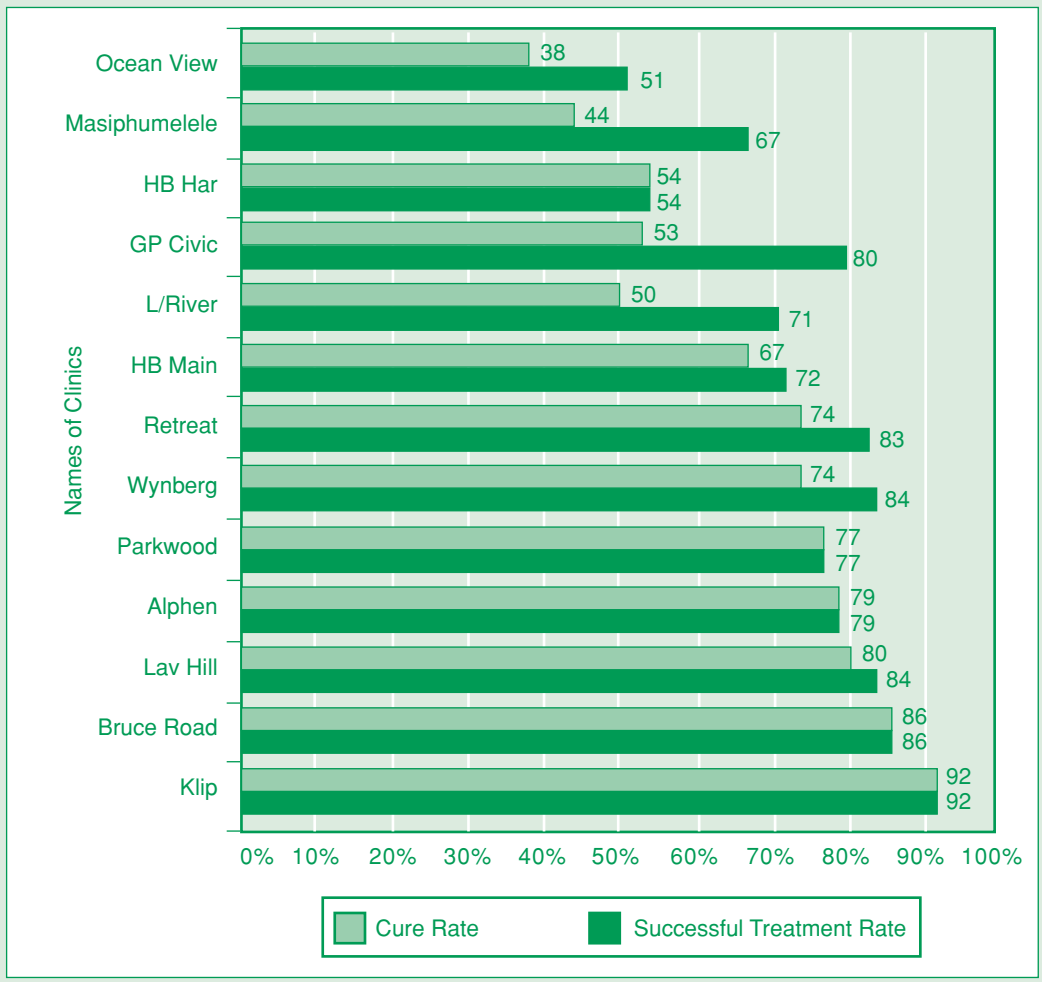
### Using Information for Action: Experience of South Peninsula Sub-District, City of Cape Town

The Southern Peninsula (SP) Sub-district increased its TB cure rate from 66% to 84%, between 1996 and 2001, treatment success rate increased from 75% to 88% and the interrupter rate dropped from 20% to 8% in the same period. This is how they did it.

In 1996 the SP Sub-district realised that their TB treatment outcomes were lower than the City's averages. This was a great embarrassment, as SP staff had developed a reputation for good TB services and was an important resource for TB training in the City. The sub-district had started the evaluation process 1 year ahead of the other sub-districts, and this poor performance was a very well kept secret. SP managers also doubted whether the WHO 85% cure goal was achievable. At the same time Local Government restructuring was in full swing and staff morale was low, and it was not clear what had to be done to motivate staff and improve TB treatment outcomes.

Using the information from TB quarterly reports, SP zoomed in on all municipal clinics in the sub-district and discovered huge variations in TB treatment outcomes (Figure A). The results were completely different from what SP had expected. It wasn't the caseload or the type of population served by the clinic that made the difference in treatment outcomes. For example some clinics operating under difficult circumstances had better treatment outcomes. However, SP managers were not aware of this. Affirming these clinics was as important as identifying poorly performing ones – and for the first time SP had proof that the 85% cure rate set as a goal by WHO was achievable and that the DOTS strategy made a difference.

**Figure A: City of Cape Town - South Peninsula, PTB New Smear Positive 96/97**



Armed with this knowledge, they started off by giving a feedback to staff on ALL the TB indicators. This caused information overload, resulting in confusion and disinterest among staff. SP managers responded to this by gradually reducing the number of indicators to three: cure, success and interrupter rates. While giving feedback it became apparent that most of the staff did not understand the basic concepts, such as rates and percentage, let alone the analysis and interpretation of data. This forced SP to go over the definitions of these basic concepts using staff's own data to make them more realistic and understandable. This was so effective that some of the staff became active 'trainers'.

End-of-the-Quarter workshops were organised to make sure that all mistakes made on the quarterly reports were fixed in one go. The TB module in the District Health Information Software (DHIS) from HISP, introduced in 1998, provided a range of semi-automatic tools for data validation and analysis. Later the clinics had most of their reports correct and more time was spent entering the data in the computer, analysing and interpreting the overall results. This led to a marked improvement in completeness, timeliness and quality of the information.

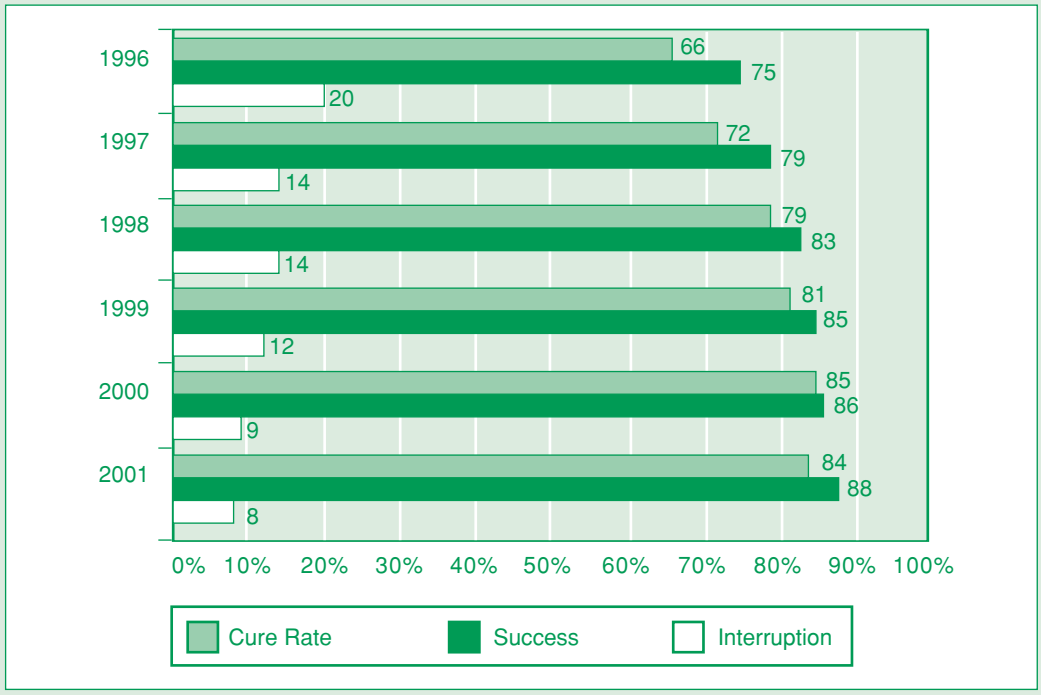
Meetings were held promptly at the end of each quarter to provide district level feedback, and senior management staff such as, the Director for Health and the District Manager were compelled to attend. Their non-availability to such meetings previously contradicted the message that TB control is a key priority. During the meetings, senior management acknowledged TB staff achievements and showed appreciation of progress made. This kept the staff motivated. Political councillors were also involved and quarterly feedback meetings were booked for the year and pencilled-in their diaries. They received reminders closer to the time and this promoted a new sense of staff accountability.

Using a peer review and support approach, successes and failures were shared between clinics and the reasons for under performing analysed. Each quarter the TB Coordinator worked with 3 under performing facilities to identify strategies to improve their outcomes. Long-term comprehensive plans were abandoned in favour of focused quarterly activities thought to be conducive to improving treatment outcomes. All clinics with poor TB treatment outcomes were publicised. Staff took it personally and felt very threatened. However, it resulted in a number of people coming-up to the clinics volunteering to help. In turn staff took great comfort in their support.

Initially the major focus was to reduce treatment interruptions. This quickly led to staff getting angry with patients who did not keep their treatment attendance schedules, creating tension in carer/patient relationship and making things worse. However, in the process of looking for ways to make rapid progress, it emerged that closing the gap between cure and completion rates would considerably improve cure rate with minimal effort. This amounts to a 'quick gain' and a manageable intervention, as all it required was to ensure that sputum tests are taken from patients who completed their treatment. This was another major turning point and it completely changed the nature of carer/ patient relationship. Instead of the clinic's performance depending on patient's whim to attend the daily treatment, staff was in 'control' again – good performance was 'NOT HAVING A GAP' and it depended on staff collecting the sputum.

At the same time a shift in staff attitude allowed the new infectious cases to be treated as 'Very Important Patients' (VIPs) which led to increased compliance. Interestingly, although clinics were focusing on 'closing the gap' not the 'interrupters', nevertheless interruption decreased overtime. Outcomes for re-treatment cases also improved. Figure B illustrate the improvements in cure, success and interruption rates from 1996 to 2001.

**Figure B: City of Cape Town - South Peninsula, PTB New Smear Positive 1996 - 2001**




Clinics performing above the average were affirmed and provided with incentives. Certificates were issued to those exceeding the set targets or who made the most progress. Small gift vouchers were also issued to the TB Sister and to the whole facility. This encouraged both individual and group responsibility. The decentralisation of data capture, validation and initial analysis at each facility greatly improved staff 'ownership' of their own data/information.

Similar methods were subsequently employed across the City of Cape Town, resulting in steadily increasing cure and success rates. The main elements of the approach used by SP are outlined below.

### Elements of a 'Different Management Approach' used by South Peninsula Sub-district

- Zoom in on clinic level
- Institute a routine and flexible monitoring system
- Use a minimum of key indicators to monitor progress
- Give regular and prompt feedback to staff
- Train staff to use information for action, and if possible to capture, validate and analyse their own information
- Focus efforts on under performing clinics
- Affirming clinics with good TB cure rates
- Look for 'quick gains'
- Introduce a system of incentives that rewards the individuals and teams
- Involve higher management in acknowledging achievements
- Involve political councillors, community and media to increase staff accountability and generate support for the campaign.

**Virginia Azevedo[i] and Natalie Leon[ii]**
[i]City of Cape Town, [ii]Health Systems Trust

## Case study 3: Eastern Cape

### Improving the TB Control Programme Through Innovative Transport Interventions

Transport is critical to move sputum specimens from clinics to nearby laboratories, to transport TB drugs to clinics and to reach out into communities in support and tracing of TB patients. Two transport innovations have had a substantial impact on the TB programme in Eastern Cape.

In Port St Johns,* the Eastern Cape Department of Health (ECDoH), the National Health Laboratory Service (NHLS) and the EQUITY Project combined forces to deal with the logistics of moving specimens. A motorcycle is used to collect specimens weekly on a scheduled day from each clinic and results are relayed back to the clinic using cell phones. This increased the number of specimens collected (from six clinics) from an average of 36 to 115 specimens per month. The turnaround time has been reduced to below 48 hours – even for remote rural clinics. The motorbike driver, when not transporting specimens has been doing case finding and follow-up in difficult to access rural areas.

In Cofimvaba, the ECDoH, taxi owners and the EQUITY Project, have contracted a number of taxis to transport sputum specimens between 21 clinics and the laboratory supporting them. Taxis normally plying the roads past the clinics stop twice a week to collect sputum (and other laboratory specimens) and transport them to the local laboratory. Results are carried back by the taxis to clinics with a turnaround time of less than 48 hours. This increased the number of specimens collected from these clinics from an average of 97 to 274 specimens per month. This reliable and consistent way of transporting sputum has enabled clinics to diagnose TB and initiate TB treatment without referring the TB suspect to the nearest hospital. Other benefits have followed – taxis sometimes transport drugs from the local depot to clinics and persons referred to the local hospital can use the same transport. Payments have flowed directly to the taxi owners originating from the local Cofimvaba community, indirectly benefiting the local community, rather than an outside courier firm.

These relatively simple yet highly innovative interventions have improved the performance of the TB programmes dramatically. Expected and unexpected benefits have occurred. The programme was started to solve the transport problem of sputum – however in both sites an integrated approach to managing TB has developed with contributions from TB programme managers, clinic staff, laboratory staff, TB field workers and communities representatives like DOTS supporters and taxi drivers. These benefits occurred independently of those responsible for designing and implementing the projects which illustrates how critical interventions and support, can enable local staff to take control and better manage their local situations.

** The Project received the 2002 Impumelelo Award.*

**Jon Rohde – Equity Project**

## Integrating HIV/AIDS and TB Care

An estimated 4.7 million South Africans are infected with HIV and 1.6 million of these will eventually develop TB.[7] The country is currently grappling with finding ways of how best to tackle this impending catastrophe.

The Department of Health (DoH) is participating in the WHO/UNAIDS ProTEST initiative, which seeks to increase access to voluntary HIV counselling and testing (VCT) and improve HIV/TB care. In order to more effectively achieve this aim, an HIV/AIDS and TB cluster comprising of three Directorates namely; HIV/AIDS and STI, Government AIDS Action Plan (GAAP) and Tuberculosis was formed in the DoH.

### The ProTEST initiative

Current estimates show that almost 50% of the current TB burden in South Africa is directly attributable to HIV infection. Sustained and successful measures are required to control both epidemics, which together form the biggest health challenges to South Africa. The ProTEST initiative is an integrated approach to the management of the TB and HIV/AIDS epidemics.

In 1999, WHO launched the ProTEST initiative which promotes voluntary HIV Testing as an entry point for TB control in high HIV prevalence settings. The rationale of this initiative is that the vast majority of the approximately 29.2 million people living with HIV in Africa are unaware of their HIV status. It is hoped that by linking access to TB detection and prevention with VCT, more people may decide to find out their HIV status. The goals of the ProTEST initiative are summarised in Table 4.

**Table 4: The Goals of the ProTEST Initiative**

| Aim | Deliverable |
|---|---|
| ✧ To reduce HIV transmission | ✧ Good quality VCT |
| ✧ To reduce TB transmission | ✧ Improved TB case finding |
| ✧ To reduce TB reactivation in HIV+ patients | ✧ Preventive therapy for TB |
| ✧ To facilitate collaboration on TB and HIV between public and private stakeholders at district level | ✧ Increased collaboration between TB and HIV programmes as well as between all stakeholders in both epidemics |
| ✧ To improve comprehensive HIV/AIDS and TB management and referral to ensure a continuum of care. | ✧ Eventual reduction in the TB and HIV burden in South Africa. |

The ProTEST initiative currently focuses primarily on sub-Saharan Africa (which has the highest burden of both TB and HIV) and pilot projects have been underway in South Africa, Malawi, Uganda and Zambia since 1999. In South Africa, preliminary results from the four TB/HIV Pilot sites that were set up in four provinces in order to develop 'best practice' for this initiative have shown the following:[8]

- Of the 26 554 people that have tested for HIV using the VCT services, 34% were found to be infected
- VCT services are estimated to have averted an estimated 2 700 HIV infections and 900 TB cases
- The proportion of screened HIV+ people who started TB prophylaxis (isoniazid medication) varied from 23% in Langa Central District in the Western Cape to 52% in Ugu South in KwaZulu-Natal
- Adherence (defined by the investigators as the proportion of people receiving isoniazid who picked up 6 monthly pill packs over a period of 8 months) ranged from 13% in Ugu South to 63% in Langa Central District.

In the process, the following lessons have been learnt from these pilot sites in South Africa:

- Collaboration between TB and HIV programmes is feasible and advantageous
- Rapid HIV testing methods are important for the increased uptake of VCT
- District health committees and incorporation of other stakeholders are critical for programme collaboration and success
- Adherence to Isoniazid Preventive Therapy (IPT), Cotrimoxazole Preventive Therapy (CPT) and TB case finding is still sub-optimal.

The South African DoH HIV/AIDS and TB Directorate has now put in place a plan to expand ProTEST activities in the country with the aim of achieving coverage to 174 districts by 2006. Key elements of this initiative include:

- Enhanced district collaboration between TB and HIV service providers including both government and non-governmental organisations
- Mobilisation of communities to assist in TB/HIV prevention and care
- Increased access to VCT services, with a focus on self referred clients. By 2004, 12.5% of the adult population and 80% of TB patients should have been tested through VCT
- Enhanced case finding for TB among HIV+ clients, with 90% of symptomatic HIV clients being screened for TB through sputum microscopy
- Better diagnosis and treatment of opportunistic infections

- Provision of cotrimoxazole prophylaxis to 90% of those who are eligible
- Improved referral networks between existing organisations providing services or support.

Expansion of the initiative will place an additional burden on district and primary level services which in many cases are already overstretched. Initially, only districts with well-functioning TB control programmes (as evidenced by high conversion and cure rates) and sufficient personnel including healthcare workers, lay counsellors, home-based carers, DOTS supporters will be targeted.

Other challenges, which will also have to be met, include:

- Certification of lay counsellors to perform rapid HIV tests in the planned districts
- Quality assurance for rapid HIV testing
- Standardisation of prophylaxis and treatment for opportunistic infections
- Logistical problems – e.g. the supply of HIV rapid test kits, prophylaxis drugs (Isoniazid, Cotrimoxazole etc.) in all the ProTEST districts
- Adaptation of the recording and reporting systems to integrate TB and HIV management
- Integration and/or coordination of TB/HIV management with other initiatives like prevention of mother-to-child transmission of HIV (PMTCT)
- Need for greater community mobilisation including non-governmental organisations, community based organisations and Lay Volunteers
- Need to mobilise enough capacity within the health system to enable the programmes to be efficiently run at primary health care level.

## Partnerships with other stakeholders

The South African DoH collaborates with a number of other stakeholders in its TB control efforts in the country. Technical partnerships have been established through innovative collaboration with local non-governmental organisations (NGOs), the university research community, the Medical Research Council and other government departments, as well as with the international community.

## International community involvement in TB care delivery in South Africa

The International Union Against Tuberculosis and Lung Disease (IUATLD) and the World Health Organization (WHO) provide overall technical support for TB control in South Africa. The National TB Control Programme is also supported by the UK Department for International Development (DFID) and the United States Centres for Disease Control and Prevention (CDC). DFID assists the programme with operational research and with programme strengthening at district level while the CDC has helped to establish a standard electronic reporting and recording system that was described in the last review on tuberculosis in 2000.

Additionally, the Royal Tuberculosis Association of the Netherlands (KNCV) has helped with developing the 2001-2005 strategic plan for TB and the United States Agency for International Development (USAID), DFID and the Government of Belgium, provide financial support for TB drug resistance research and monitoring, strategic planning, advocacy and TB/HIV collaboration.

## Local NGO contributions to TB care delivery in South Africa

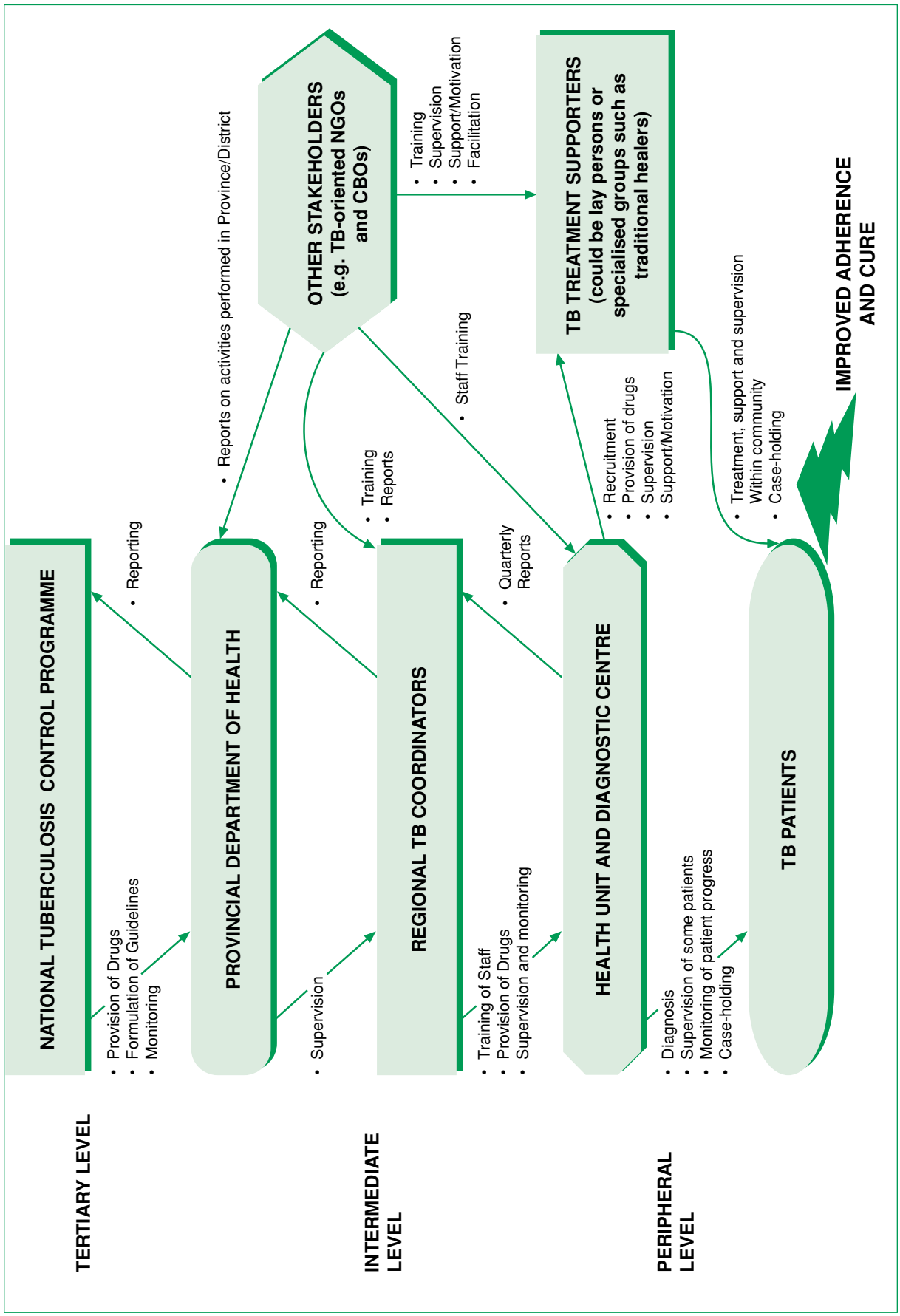
The need to involve other stakeholders such as the community and NGOs in TB control efforts is not new. It was well recognised in the Ninth Report of the WHO Expert Committee on Tuberculosis as far back as 1974, and was clearly stated as follows:

**"It is important that the community be involved in the tuberculosis programme, including its leaders; such as village elders, tribal chieftains, or other influential persons and welfare organisations including the voluntary agencies and the laity."**[9]

Despite this need however, until relatively recently, the focus of activities to strengthen national TB programmes in most high TB burden countries has been much more aimed towards the general health services themselves than on harnessing civil society contribution.[5,10] This lack of inclusion of other stakeholders other than government has often been seen as the weak link in the implementation of many primary health care programmes.[6,11]

Figure 1 below illustrates a conceptual framework of how the National TB Control Programme in South Africa could work with other stakeholders, notably local NGOs and the community in delivering improved TB services in the country.

**Figure 1: Conceptual Framework for Integrated TB Care Delivery in South Africa**



Historically, the South African National TB Control Association (SANTA) has been the leading NGO in the field of TB control in South Africa. In recent years the organisation's activities have been focused on the provision of in-patient TB care through a number of specialised hospitals, and the support of DOTS implementation using its network of branches at provincial and local level.

During 2002, allegations of financial impropriety at the SANTA national office and poor standards of service delivery at some of the organisation's TB hospitals emerged and the Minister of Health, announced that management of the TB hospitals would be taken over by the provincial Departments of Health. While SANTA's national office and the hospitals are likely to undergo considerable restructuring in the near future, it is hoped that the local branches will continue to provide support to TB patients and lay and other health workers at the primary health care level.

Several other NGOs are also involved in the TB programme in the country. Two case studies to illustrate how NGOs participate in TB care delivery. Some of the challenges they face are also highlighted:

## Case Study 4: The TB Alliance DOTS Support Organisation (TADSA)

### Organisation's background

TADSA is a Cape Town-based NGO that was founded in 1997 following the dissolution of the TB Alliance Project that had operated in the Western Cape province from 1991-1996. The TB Alliance Project was initiated by the Community Health Association of South Africa to deal with the high TB burden and poor patient compliance to treatment in the Western Cape province. The Alliance project was largely responsible for developing many of the principles of community-based TB care delivery currently practised in the country, through the utilisation of lay workers as Directly Observed Treatment-Short course (DOTS) supporters for TB patients.

At the end of the Alliance project, TADSA inherited the training expertise of the project, refined the TB Alliance model and now specialises in district-based training and support for DOTS implementation and management. TADSA has been contracted by the National TB Control programme of South Africa to carry out this training on a national level in order to ensure uniformity in all DOTS Training and Demonstration Districts (DTDDs).

### Activities

The ultimate beneficiaries of TADSA's activities are TB and TB/HIV co-infected patients receiving treatment at primary health care facilities in districts where the NGO operates. TADSA reaches this target group through providing training in community-based TB care delivery as well as integrated TB/HIV management for the following categories of persons involved in TB management:

- Provincial TB Coordinators
- District-based TB Coordinators
- DOTS Trainers and Facilitators (Those who train lay volunteers and facilitate the DOTS process in an intervention area)
- Lay DOTS Treatment Supporters and Community Workers.

### An evaluation of TADSA's activities in DTDs

During 2001, TADSA with the help of an international NGO partner carried out a self-evaluation exercise of its programme activities in twenty-two clinics located in DTDs that TADSA worked in during the period 1998-2000. All nine provinces were represented.

Findings of this self-evaluation process revealed that in these 22 clinics, TADSA had trained 84 people as DOTS trainers, 88 people as DOTS facilitators, and 29 people in both training and facilitatory roles.

Additionally, TADSA participated in 8 'basic' training sessions for local DOTS supporters, usually as a demonstration exercise to show new DOTS trainers how this should be done in practice. The evaluation also revealed that the 16 DOTS trainers who provided TADSA with information about their training activities for 1998-2000, had trained a total of 781 DOTS supporters who were attached to 89 health facilities.

Furthermore, in the 22 clinics surveyed, TADSA found that on average, one-third of the TB patients received their treatment from the community with the help of treatment supporters who on average, had four TB patients each to supervise.

It was hard to accurately assess the independent effect of TADSA's interventions on the treatment outcomes of TB patients as at the time of the study, as some of the DOTS supporters at the clinics surveyed had received their training from non-TADSA trainers and no clinic distinguished outcomes of community-supervised patients from outcomes of other patients.

## Case Study 5: Comprehensive Health Care Trust (ChoiCE)

### Organisation background

CHoiCE is a Limpopo province based NGO that was founded in 1996. It works primarily in the Greater Tzaneen Municipal area. This district stretches from Haenertsburg to Gravelotte and includes Letsitele and Tzaneen. The area forms one of the five districts in the Mopani region of the Limpopo province and has a population of about 448 000 living mainly in impoverished rural areas. While the majority of ChoiCE's work takes place within the local areas mentioned above, the organisation is also frequently requested to present workshops in other areas.

### Activities

The ChoiCE health programme focuses primarily on training ancillary health workers in rural areas to prevent illness and promote health. This has the additional benefit of empowering rural people to learn health, hygiene and safety skills in order to take responsibility for their own and their communities' well being. A number of different projects are run by the organisation but this chapter will focus on the TB/DOTS project.

### The TB/DOTS project

Initially when this project was introduced, TB treatment supporters were trained separately but with the increasing experience from its home based care project, ChoiCE realised that very often many AIDS patients also have TB. Consequently, all care givers for the AIDS project are currently trained in TB care delivery using the DOTS approach and a generic approach to treating dually infected patients in the community is taken.

By June 2001, 335 TB patients had been identified by this project and of these 324 patients were being given community based directly observed treatment on a daily basis.[12]

Additionally, ChoiCE also runs DOTS training courses for treatment supporters within the communities where it operates, and in the conduct of its programmes, closely coordinates with other NGOs and role players such as the government, the farming community, and the corporate sector.

## Challenges to Local NGO Involvement in TB Care Delivery

Despite the useful role indigenous NGOs play in TB care delivery in South Africa as illustrated by the two case studies, NGOs face considerable problems in the conduct of their activities. These challenges and the innovations the NGOs have undertaken to combat them are discussed below.

### Access to financial resources

Many NGOs identify inadequate funding as a major constraint to their work. Although a number of NGOs receive funding from the national DoH, these funds are generally insufficient to enable them to scale-up their activities. NGOs need to look elsewhere for additional resources, mainly from the corporate sector and international organisations.

One problem with this alternative funding is that it is often a 'once-off' grant given for specific time bound activities that the donors may have an interest in and therefore there is no guarantee that such funding will be received on a regular basis. The NGOs have therefore developed innovative ways to enable their activities to be sustained, for example, some of ChoiCE's training activities are income generating.

### Evaluation of the impact of programmes

The inadequacy of financial resources noted above and the resultant paucity of human resources affect the scope of activities the NGOs can realistically carry out and hence vital tasks such as internal monitoring and rigorous evaluation of the impact of their programmes are often neglected. Paradoxically, this inability to collect consistent and reliable information about their impact, coupled with the fact that many external evaluators find data regarding the impact of NGO work is often difficult to obtain due to lack of systematically collected information,[13] means that government and other potential donors become even more reluctant to commit future funding for NGO activities.

The two NGOs described in the case studies have now taken steps to improve the self-evaluation component of their programmes. The new TADSA Community Outcomes Monitoring Project (COMP) aims to track the treatment outcomes for the ultimate beneficiaries of TADSA's training programmes. In addition, it also seeks to evaluate the impact of previous work done in intervention districts.

In 2001, ChoiCE also started a process of carrying out a Household Livelihood Survey that apart from enabling the NGO to identify the real needs of the communities in which the NGO operates, will also assist in assessing the impact of CHoiCE's programmes.

## Payment of Lay Volunteers

The issue of payment of lay volunteers has been fervently debated by the developers and implementers of community-based TB treatment in South Africa and elsewhere.[14] On one hand, there is a feeling that provision of monetary incentives to DOTS supporters as has been done elsewhere[15,16] is unsustainable in most developing countries and should not be attempted. On the other hand, some stakeholders believe that since TB affects mainly disadvantaged communities, it is unrealistic and perhaps exploitative to expect DOTS supporters, themselves with often similar socio-economic needs to the TB patients, to supervise daily treatment for long periods of time without payment for rendering this service.

A final resolution to this issue is still elusive[17] and should perhaps be context specific, and depends on the type of DOTS supporter involved in the TB programme in different areas. Research done within South Africa, reveals that varied groups of lay people are involved in DOTS activities in different areas of the country. For example, Kironde et al. found that in the Diamond Fields region of the Northern Cape province, DOTS supporters were mainly reasonably well educated young unemployed women who, in the absence of better opportunities, volunteered for the TB programme in the hope of eventual remuneration.[18]

On the other hand, in the Hlabisa district of KwaZulu-Natal, Wilkinson and colleagues found that local shopkeepers comprised a big proportion of the DOTS supporters in their programme. Other specialised groups of people, notably traditional healers have also been found to have great potential to deliver effective DOTS programmes in the KwaZulu-Natal province.[19]

These findings show that it is worthwhile to recognise the factors which motivate lay people to get involved in TB control programmes in different areas. As there is probably no 'one size fits all' answer to this question, decisions on whether lay workers in TB programmes should be paid could be made in a context-specific manner in addition to being dependent on other factors such as the resources that exist to pay them.[15]

## Conclusion and Recommendations

A remarkable amount of progress has been made in TB control efforts in South Africa since 1996 when the DOTS strategy was accepted. While there is need to consolidate this progress at all levels of TB control in the country, it is recommended that priority be accorded to the following key areas:

### Further expansion and success of DOTS

There is need to ensure full coverage of the country by the DOTS strategy. However, full coverage by itself is insufficient to guarantee successful treatment outcomes, and services have to be provided in a manner that is patient-centred

and convenient, if the strategy is to achieve its full potential.

### Improving the capacity of Primary Health Care Units to manage TB and HIV

Since TB management in South Africa is based on the District Health Service system whose core unit is the primary health care clinic, adequate resources and capacity at this level of care must be ensured. Clinic personnel need to be adequately trained and motivated. Training needs to include the 'new additions' to TB management such as the use of fixed dose combination drugs, integrated TB and HIV management, involvement of other stakeholders in the TB programme at clinic level (e.g. NGOs and lay workers) and usage of the electronic TB register in those provinces where it has already been introduced.

Districts with well functioning TB control programmes should be recognised and encouraged to maintain successful outcomes, while those with poorly performing programmes should receive additional support, supervision and encouragement. Best practice and innovative approaches should be identified and where possible scaled-up and/or introduced in new areas.

### Integrating the management of TB and HIV

Additionally, the integration of TB and HIV management has to be rolled out to reach other areas of need within the country. In doing this however, it is important to take heed of the lessons learnt from the pilot sites.

### Strengthening partnerships with other stakeholders

The high burden of TB in the country means that it is impossible for the government to provide the capacity and resources needed to effectively address all the TB programme requirements. Hence there is a need to further strengthen the collaboration between the formal health sector and other stakeholders (such as NGOs, CBOs, traditional healers etc.) in the provision of effective TB services.

### Increased technical and financial support to local NGOs involved in TB control

Local NGOs involved in TB treatment delivery in South Africa should be provided with more technical and financial support to enable them to scale up their activities and to develop the capacity to more rigorously monitor and evaluate their contribution to TB control in the country.

## References


1 World Health Organization. Global Tuberculosis Programme, Global Tuberculosis Control – WHO Report 2002. Geneva: WHO/CDS/TB/2002.295.

2 Pio A, Chaulet P. Tuberculosis Handbook. Global Tuberculosis Programme, Geneva: World Health Organization; 2002.

3 Bamford LJ. Tuberculosis. In: Crisp N and Ntuli A (Eds). South African Health Review 1999. Durban: Health Systems Trust; 1999.

4 Kironde S. Tuberculosis. In: Ntuli A, Crisp N, Clarke E and Barron P (Eds). South African Health Review 2000. Durban: Health Systems Trust; 2000.

5 Hausler H, Rowe K, Makhubele B, Pronyk P, et al. Providing care in South Africa – Lessons from TB/HIV pilot districts. February 2002 Insight Health Issue No. 2.
URL: http://www.id21.org/insights/insights-ho2/insights-iss02-art03.html

6 World Health Organization. Stop TB Partnership.Towards a TB-free future. Geneva: WHO/CDS/STB/2001.13.

7 World Health Organization. Expert Committee on Tuberculosis, Ninth Report. Technical Series 552. Geneva: WHO; 1974.

8 Maher D, van Gorkom JLC, Gondrie PCFM, Raviglione M. Community contribution to tuberculosis care in countries with high tuberculosis prevalence: past, present and future. Int J Tuberc Lung Dis 1999; 3(9): 762-68.

9 Jareg P, Kaseje DCO. Growth of civil society in developing countries: implications for health. Lancet 1998; 351: 819-22.

10 Comprehensive Health Care Trust. (ChoiCE). Annual Report 2001.

11 Boyd BL, Garrison J. NGO participation in HIV/AIDS Control Project in Brazil achieves results. Social Development Notes, Note No. 47; 1999.

12 Kironde S, Nasolo J. Combating Tuberculosis: barriers to widespread non-governmental organisation involvement in community-based tuberculosis treatment delivery in South Africa. Int J Tuberc Lung Dis 2002; 6(8): 679-685.

13 Frieden TR, Fujiwara PI, Washko RM, Hamburg MA. Tuberculosis in New York City: turning the tide. New Engl J Med 1995; 333: 229-33.

14 Chaulk CP, Pope DS. The Baltimore City Health Department Programme for directly observed therapy. Clin Chest Med 1997; 18(1): 149-54.

15 Kironde S, Bajunirwe F. Lay workers in directly observed treatment (DOT) programmes for tuberculosis for high burden settings: should they be paid? A review of behavioural perspectives. African Health Sciences 2002; 2(2): 73-78.

16 Kironde S, Klaasen S. What motivates lay volunteers in high burden but resource-limited tuberculosis control programmes? Perceptions from the Northern Cape province, South Africa. Int J Tuberc Lung Dis 2002; 6(2): 104-110.

17 Colvin M, Gumede L, Grimwade K, Wilkinson D. Integrating Traditional healers into a tuberculosis control programme in Hlabisa, South Africa. Medicine Research Council Policy Brief: No. 4 December 2001.

# TB and Malaria in SADC Countries

16

**Thuthula Balfour**
SADC Health Sector Coordinating Unit, Pretoria

*Despite major advances in medical technology in the last century, Southern Africa still faces major problems with the prevention and control of malaria and tuberculosis. Today Southern Africa's situation is not very different from that of Europe two centuries ago.*

*The control of communicable diseases especially malaria cannot be achieved solely through national activities. Rapid globalisation, migration, ease and swiftness of transportation all mean that countries need to complement their national activities with regional ones, through standardisation of approaches to the prevention and control of diseases, sharing of information and best practices, which in turn contribute to effective use of resources.*

*The Southern Africa Development Community (SADC) has placed prevention, control and treatment of key communicable diseases on its agenda. Malaria and TB, are one of the five priorities for the health sector for 1999-2002 period, and they are likely to continue being a priority in the next 10 years Regional Indicative Strategic Development Plan (RISDP).*

*This chapter explores some of the reasons for this state of affairs including: the factors that perpetuate it, the challenges for the SADC, the opportunities that exist and the possible ways to address continued high morbidity and mortality due to malaria and TB.*

## Introduction

The Southern Africa Development Community (SADC) is made up of 14 countries, namely: Angola, Botswana, Democratic Republic of Congo (DRC), Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Seychelles, Tanzania, Zambia and Zimbabwe. The total population of the region is 193 million.[1]

The objective of SADC is to achieve development and economic growth, alleviate poverty, enhance the standard and quality of life of the people of Southern Africa and support the socially disadvantaged through regional integration.[a]

SADC is one of the Regional Economic Community (REC) within the African Union (AU), and all RECs are expected to implement AU programmes, including the New Partnership for Africa's Development (NEPAD). The health aspirations for SADC and NEPAD are similar. Alleviation of poverty and the control of communicable diseases objectives features in both SADC and NEPAD programmes.

Several sectoral programmes, hosted by individual SADC countries, have been established by the organisation. The Health Sector was established in 1997 and was allocated to South Africa.

The goal of the Health Sector is to attain an acceptable standard of health for all citizens by promoting, coordinating and supporting the individual and collective efforts of Member States. Within this goal are two aims:

- To reach specific targets within the objective of 'Health for All' by 2020 in all Member States based on the primary health care strategy; and
- To ensure that health care is accessible to all within each Member State's economic reality.

## SADC Health Sector

The rationale for the establishment of the SADC Health Sector was the acknowledgement of the contribution that regional cooperation can make in addressing health problems of the region. The coordination of the SADC Health Sector was assigned to South Africa, until the restructuring of the institution in 2002. In September 2002 the activities of the Health Sector moved to a centralised SADC Secretariat in Gaborone, Botswana.

The SADC Health Sector's comparative advantage is that it is part of a regional organisation that was established by a treaty. Decisions of the SADC Summit of Heads of State and Government, or the Council of Ministers or Sectoral

a The SADC Parliamentary Forum (SADC PF) http://www.parliament.gov.zm/sadc.htm

Committees of Ministers are binding to Member States. Various protocols are also signed by the SADC Member States and these are also legally binding once two thirds of Member States have ratified them. The SADC Health Protocol was signed in August 1999, and as at the end of August 2002, seven member states had ratified it. It needs two additional states to ratify for it to enter into force.

Communicable diseases, including malaria and TB, are one of the five priorities for the Health Sector for the period 1999-2002, and they are likely to continue being priorities when SADC develops its 10 year Regional Indicative Strategic Development Plan.

## Epidemiology of Malaria and TB in SADC

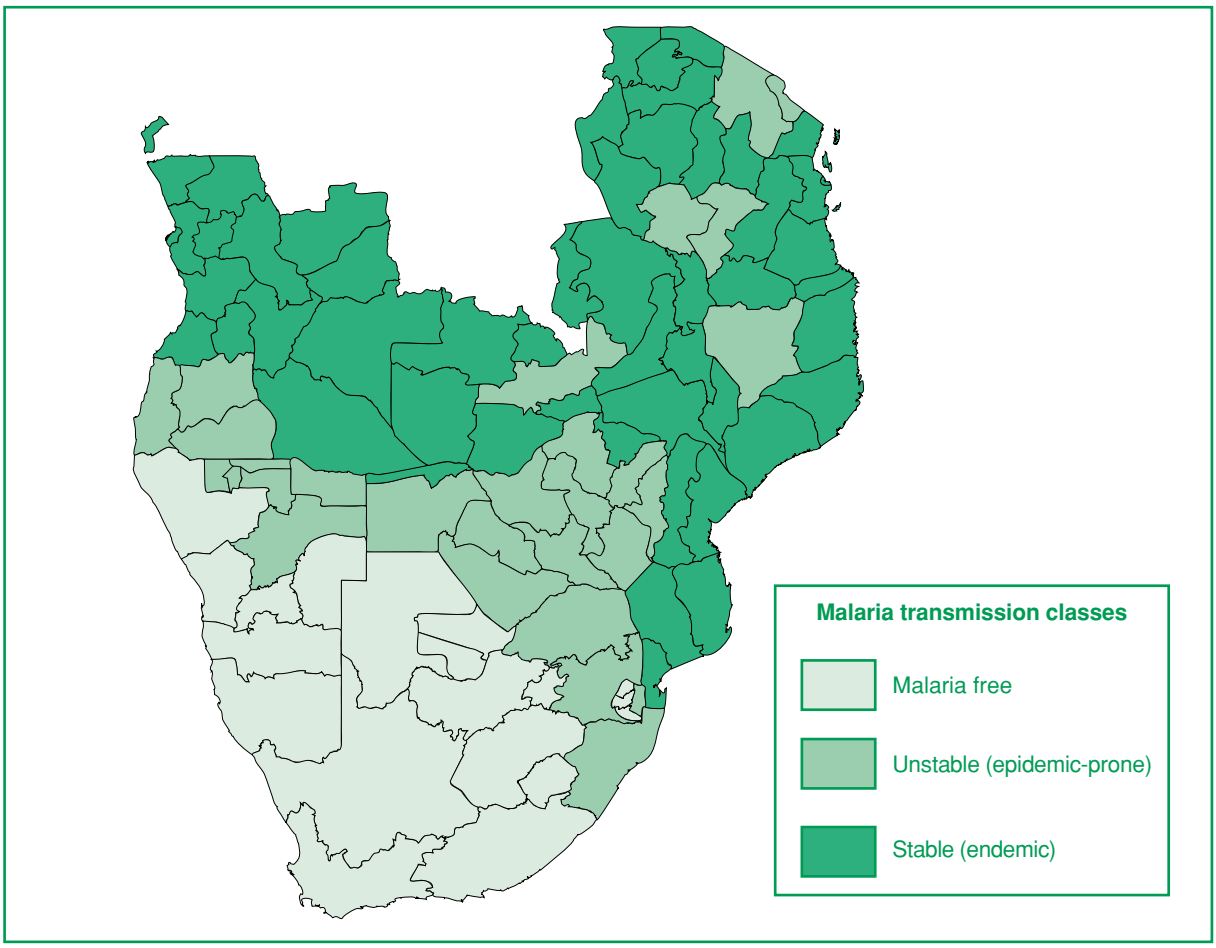
"The Commission has always insisted that the fight against malaria must be waged not as a separate and isolated task but as part of a general social, economic and sanitary campaign by an enlightened public health service which is able to obtain assistance from other Government departments and from unofficial agencies, and to secure continuity of action and unity of purpose." **League of Nations: Second General Report of the Malaria Commission (1927).**

Malaria transmission in the region can be broken down into three classes. There are:

- Malaria free
- Malaria unstable (epidemic prone)
- Malaria stable (endemic) areas.

Botswana, Namibia, South Africa, Swaziland and Zimbabwe, have predominantly unstable transmission and are thus epidemic areas. Lesotho, Mauritius and Seychelles do not have locally acquired malaria, and all their cases are imported. The remaining countries are endemic. Figure 1 is an illustration of the distribution of malaria in SADC. It must be noted that DRC is in the malaria endemic area.

**Figure 1: Malaria transmission in Southern Africa – SADC countries**




Excluding the DRC, where statistics for malaria were not available, it is estimated that 19-21 million people get malaria each year, and it is estimated that between 200 000 and 300 000 people die of malaria each year due to lack of access to basic health care.[2]

In malaria epidemic areas, all populations are at risk and are susceptible to malaria as a result of not developing sufficient immunity against malaria parasites. In malaria endemic areas the populations mostly at risk are children under 5 years, pregnant women and the immuno-compromised people. In all three groups there is lower immunity than in the general population. Malaria is a major cause of mortality among children in Southern Africa. Tables 1 and 2 indicate the total malaria mortality in the region (excluding the DRC) for all ages and for the under-fives. According to the estimates of the Southern Africa Malaria Control (SAMC) programme, 20% of all under-five mortality in Angola, Malawi, Mozambique, Tanzania and Zambia is due to malaria.

**Table 1: Malaria Mortality in SADC countries (All Ages) 2001[2]**

| Country | Malaria deaths per annum | Malaria mortality per 1 000 |
|---|---|---|
| Angola | 49 232 | 4.1 |
| Botswana | 413 | 0.3 |
| Malawi | 44 165 | 4.3 |
| Mozambique | 67 028 | 4.2 |
| Namibia | 393 | 0.2 |
| South Africa | 691 | 0.0 |
| Swaziland | 254 | 0.3 |
| Tanzania | 96 470 | 3.0 |
| Zambia | 27 999 | 3.2 |
| Zimbabwe | 13 672 | 1.1 |

**Table 2: Malaria Mortality in SADC countries (Under-fives) 2001[2]**

| Country | Under-five malaria deaths per annum | Under-five malaria mortality per 1 000 |
|---|---|---|
| Angola | 18 619 | 38.2 |
| Botswana | 100 | 1.9 |
| Malawi | 12 957 | 36.7 |
| Mozambique | 19 269 | 32.4 |
| Namibia | 104 | 2.0 |
| South Africa | 162 | 0.1 |
| Swaziland | 56 | 1.9 |
| Tanzania | 35 547 | 29.6 |
| Zambia | 10 725 | 27.5 |
| Zimbabwe | 1 493 | 4.0 |

Malaria incidence in the SADC region is comparable to that of other developing countries, especially those in Africa. One hundred countries in the world are considered malarious, and out of these, almost half are in sub-Saharan Africa. The incidence of malaria worldwide is estimated to be 300-500 million clinical cases per year, with about 90% of these occurring in sub-Saharan Africa. Malaria in sub-Saharan Africa is mostly caused by *Plasmodium falciparum* which is thought to kill between 1.1 and 2.7 million people worldwide, of which, 1 million are children less than 5 years.[3]

In malaria endemic areas, malaria consumes a considerable proportion of public health system resources. Recent estimates by WHO Southern Africa Malaria Control suggest that, malaria is responsible for:

- 30%-50% of inpatient hospital admissions

- Up to 50% of outpatient consultations
- 40% of total public expenditures on health.

According to the unpublished SADC Health Annual Report – 2001, SADC countries (excluding DRC), reported approximately 14.8 million cases of malaria in 2001. While there may be considerable overestimation due to misdiagnosis, malaria clearly remains a major public health problem in the region.

## Tuberculosis

The number of TB cases in the SADC region has been rising in recent years, due to the severe HIV/AIDS epidemic. While the SADC sub-region constitutes 23% of the total population of the continent, it has over the years contributed approximately 44% of all annually registered TB cases. The highest TB notification rates in the world, (ranging from 100 to 600 TB cases per 100 000 population), are reported in this sub-region.[4] Table 3 shows the number of reported TB cases.

**Table 3: Number of TB cases registered in the SADC Region between January and December 2000[4] Cases registered in all areas (DOTS[b] and non-DOTS)**

| Country | SM+VE[c] | SM-VE[d] | NNSD[e] | NEP[f] | Relapse | Total |
|---|---|---|---|---|---|---|
| Angola | 8 528 | 4 510 | 337 | 837 | 300 | 14 512 |
| Botswana | 3 091 | 847 | 3 942 | 1 231 | 181 | 9 292 |
| DRC | 36 123 | 8 089 | 0 | 13 785 | 2 630 | 60 627 |
| Lesotho | 3 041 | 1 486 | 1 352 | 2 520 | 424 | 8 823 |
| Malawi | 8 265 | 8 849 | 0 | 5 734 | 758 | 23 606 |
| Mauritius | 115 | 14 | 0 | 23 | 8 | 160 |
| Mozambique | 13 257 | 4 037 | 0 | 2 262 | 917 | 20 473 |
| Namibia | 3 911 | 2 198 | 2 327 | 1 437 | 601 | 10 474 |
| Seychelles | 11 | 7 | 0 | 2 | 0 | 20 |
| South Africa | 77 391 | 7 362 | 9 030 | 13 535 | 3 951 | 111 269 |
| Swaziland | 1 823 | 2 950 | 248 | 583 | 273 | 5 877 |
| Tanzania | 24 049 | 17 624 | 0 | 10 997 | 1 772 | 54 442 |
| Zambia | 12 927 | 25 222 | 0 | 10 202 | 1 455 | 49 806 |
| Zimbabwe | 15 455 | 16 079 | 0 | 8 837 | 0 | 40 371 |
| Total | 207 987 | 99 274 | 17 236 | 71 985 | 13 270 | 409 752 |
| Proportion | 50.8 | 24.2 | 4.2 | 17.6 | 3.2 | 100 |

b DOTS (Directly Observed Treatment Short-course)
c Sputum smear positive
d Sputum smear negative
e New no smear done
f New extra pulmonary

According to the Draft World Health Organization (WHO) Africa Regional Office (AFRO) TB Surveillance report, a total of 409 752 cases of TB were registered in the SADC region in 2000.

Five Southern African countries, DRC, Mozambique, South Africa, Tanzania and Zimbabwe are among the 22 countries in the world that account for 80% of the world's TB burden.

## Obstacles to control

The biggest obstacles to control of malaria and TB in the region are poverty, weak health systems, and inadequate resources.

### Poverty

*Malaria has been variously defined as a 'social', 'entomological' a 'rural', a 'poverty' or a 'socio-economic' problem.*

Poverty and disease are inter-linked and poverty is the underlying factor in both malaria and TB. It is therefore not surprising that developing and poor countries in the world have the highest rates of these diseases. Affected communities are resource-poor, have limited access to health and other social services and low levels of literacy. Equally, treatment-seeking behaviour may be influenced by lack of education as well as inability to pay transport, consultation and treatment fees at health facilities.

At the same time, diseases affect poverty. In poor households, a greater proportion of income is likely to be spent on treatment than in richer households. A negative spiral thus develops with disease causing and deepening poverty, which, in turn, exacerbates inequalities in society.

Half[g] of the countries in SADC are listed as least developed, while others are placed either as low-income, lower middle-income and upper middle-income categories. Table 4 shows the Gross Domestic Product (GDP) per capita of SADC countries.

g Angola, DRC, Lesotho, Malawi, Mozambique, Tanzania, Zambia.

**Table 4: GDP per Capita (US$) of SADC Countries[5]**

| Country | GDP per capita, 2000 |
|---|---|
| Angola | 2 187 |
| Botswana | 7 184 |
| DRC | 765 |
| Lesotho | 2 031 |
| Malawi | 615 |
| Mauritius | 10 017 |
| Mozambique | 854 |
| Namibia | 6 431 |
| Seychelles | 12 508 |
| South Africa | 9 401 |
| Swaziland | 4 492 |
| Tanzania | 523 |
| Zambia | 780 |
| Zimbabwe | 2 635 |

## Weak health systems

Spending on health has generally been reducing in a number of countries. This has led to weakening of public health systems, especially in poorer countries. The Commission on Macroeconomics and Health report notes that in some of the world's poorest countries, the coverage of many basic interventions is falling.[6] This is despite the evidence that well funded health interventions can make a difference in accelerating socio-economic growth, and can lead to eradication of diseases such as polio.

A number of countries in the region rely on donor support to fund their health programmes. This includes services for disease prevention and control, like immunisation, TB and malaria programmes. Between 1981 and 1986, external assistance for health sector development, from official and private voluntary sources averaged more that US$ 1.50 per capita in sub-Saharan Africa, equivalent to 20% of average government expenditure on health. By 1990 this had climbed to US$ 2.50.[7] This reliance on external partners makes country programmes vulnerable should any donor stop supporting the country. Equally, challenging is how to match the country and donor needs.

## Inadequate resources

According to the Report of the Commission on Macroeconomics and Health, it is estimated that US$ 30-US$ 45 per person is required to cover essential interventions including the most commonly occurring communicable diseases. However, in 1997 most low-income countries spent about $ 11 per capita on

health. Thus a financing gap of between US$ 19 and US$ 34 (56%-76%) per person exists in most low-income countries.[6]

Low-income countries find it very hard to access additional resources for health due to a limited general national budget. A number of SADC countries are also Highly Indebted Poor Countries (HIPC), and have to use their scarce national resources to pay off their debt burdens. The repayment of debt often has to supersede allocation to national needs such as health and education.

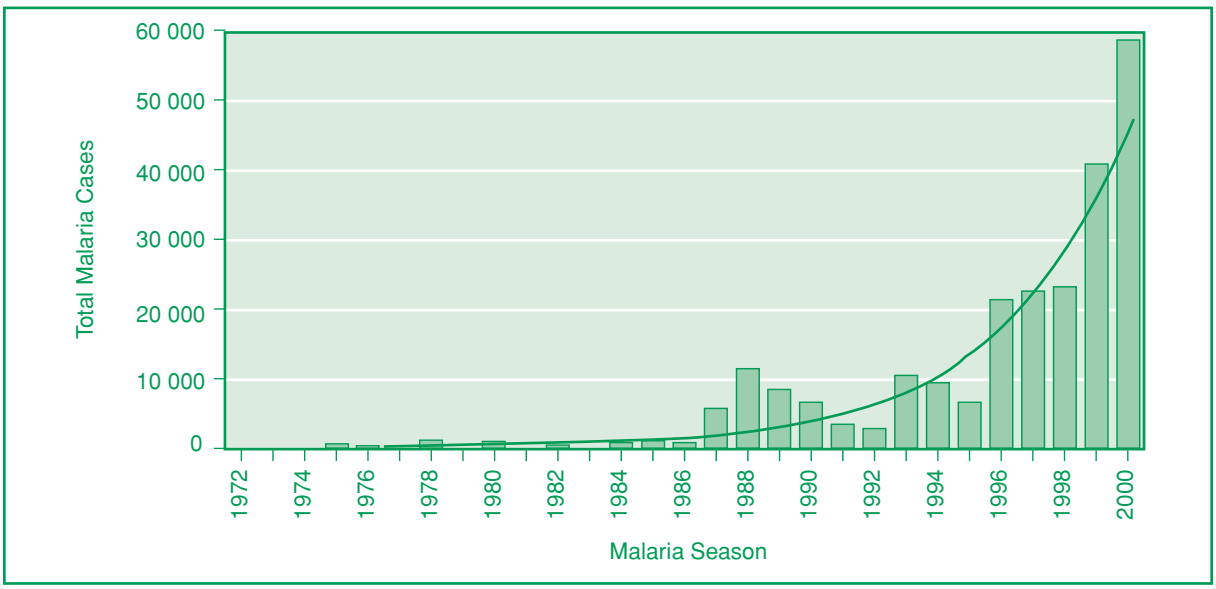
## Challenges in Malaria Prevention, Control and Treatment

### Africa and the Global Malaria Eradication Programme

Africa was left out of the Global Malaria Eradication programme of the 1950s. This meant that the burden of mosquitoes and malaria parasites was never addressed, as was the case in other regions of the world. By the time the eradication programme was discontinued in the Americas, Europe and Asia, the burden of disease in those regions had dropped markedly and control measures could be used to sustain lower levels of malaria.

Malaria control in Africa is thus disadvantaged as there was never any meaningful well-funded systematic programme to reduce the disease burden. South Africa did however benefit from the eradication era as massive resources were put into the malaria programme with extensive indoor residual spraying programmes that shifted malaria prevalence from as far inland as around Pretoria in the 1940s, to the present malaria transmission areas, which are mainly around the north eastern borders of the country. However, there has been a marked increase in malaria transmission in South Africa since 1996, as shown in Figure 2.

**Figure 2: Malaria case totals for South Africa aggregated by season from July 1971 to June 2000[8]**



New challenges for the region have been the increased development of resistance to insecticides and drugs by mosquitoes and parasite respectively. The recent increase in malaria cases has been attributed to these 2 factors.

The Regional Malaria Control Commission (RMCC) found that the underlying reasons for the increase were difficult to quantify, but two proven factors were the rediscovery of *Anopheles funestus* in sprayed houses in the malaria areas, which had been shown to be resistant to synthetic pyrethroids (the insecticide used to spray the houses) and the high levels of resistance to first line malaria treatment in KwaZulu-Natal (sulphadoxine/pyrimethamine) caused by the *Plasmodium falciparum*.

## Resistance to drugs

Community based drug efficacy studies conducted in KwaZulu-Natal showed parasitological resistance levels greater than 62% to sulphadoxine/pyrimethamine. Based on these facts, the first line therapeutic drug for malaria had to be revised and the decision was taken to change from monotherapy to a drug combination of artemisinin and lumafantrene (co-artemether), which was introduced in KwaZulu-Natal in February 2001.[10]

According to WHO and SAMC, drug resistance towards chloroquine appears to be growing in the region. Botswana, Malawi, South Africa and Tanzania use Sulphadoxine-pyrimethamine as their first line drug. Mozambique, and Zimbabwe are currently reviewing their drug policy with continued monitoring of drug resistance, while Namibia and Swaziland continue to use chloroquine. In 2002 Zambia changed its treatment policy by adopting Artemether-Lumefantrine (Coartem®)[h]

## Challenges in TB control

The main challenges for the SADC TB programme, as defined by the Southern Africa TB Control Initiative (SATCI) are:

## High prevalence of HIV/AIDS

As stated before, HIV/AIDS has worsened the TB situation in the region. The impact of HIV/AIDS on the TB programmes is felt in the increased caseloads, crippling even the most effective TB control programmes. This situation is likely to get worse before getting better as the large number of HIV infected people get sick and many SADC countries start experiencing the peak effects of the AIDS epidemic. In most SADC countries, the proportion of TB cases attributable to HIV infection ranges from 50%-80%, and up to 40% of deaths in people living with HIV/AIDS (PLWA) are believed to be due to TB.[4]

h Personal communication, Central Board of Health, Zambia.

### Multiple drug resistance to TB

Estimates of Multiple Drug Resistance (MDR) to TB in SADC put the problem at 1% of all new patients and 4% of all retreated patients in South Africa, 1.1% of all patients in Zambia and less than 2% of all patients in Zimbabwe.[9]

**Lack of adequate human resources to manage TB and HIV/AIDS**

Capacity in the management of TB and HIV/AIDS is limited due to human resource constraints. As country health systems have become poorer, they have found it more difficult to replace or train their human resources adequately. In most countries the increasing number of TB patients has accentuated the need for additional workers. Health workers are also not spared to HIV/AIDS and some have succumbed to the disease. Also sustaining human resources for DOTS programmes in poor communities has been an ongoing challenge.

### Health sector reforms

The ongoing Health Sector Reforms in the SADC countries have led to basket funding and a move away from vertical programmes. While this is good for the health system as a whole as it can lead to general strengthening of the system, the immediate impact on dedicated vertical programmes like TB and malaria can be destabilising initially, leading to poor morale and a slump in programme performance. Health Systems can also suffer from a loss of experienced and technical staff though movement during restructuring and the resultant lack of appreciation for the specialised technical aspects of TB and malaria.[3]

### Slow DOTS expansion

DOTS coverage ranges from 36% in Angola to 100% in most other countries while the average regional detection and treatment success rates are 60% and 70% respectively. The global target by year 2005 is for a case detection rate of 70% and a treatment success rate of 85%.

## Why a Regional Response to Malaria and TB?

The control of communicable diseases especially malaria cannot be achieved solely through national activities. The rapid globalisation of the world, migration, ease and swiftness of transportation all means that countries need to complement their national activities with regional ones. A regional response complements country responses through standardisation of approaches to the prevention and control of disease, sharing of information and best practices. It also contributes to effective use of resources.

The SADC regional response to both malaria and TB is a combination of activities by mainly WHO AFRO, and the SADC Health Sector. There is

collaboration between the two organisations, with mutual attendance of meetings and joint planning. For example the SADC TB plan was developed with assistance from WHO which also funded some of the SADC Health Sector TB activities.

## SADC health sector response

### Response to malaria

SADC political commitment for combating malaria is high. In 2000 two Malaria Consultation Meetings attended by five SADC Health Ministers from Botswana, Mozambique, South Africa, Swaziland and Zimbabwe, were held in response to the increased risk of malaria epidemics in the flood-affected Member States following cyclone Elaine.

One of the outcome these meetings was the ministerial endorsement of a regional framework for malaria control. This framework was presented and endorsed by the Annual SADC Health Ministers meeting in Malawi in May 2000. A task force was established to draw up an effective SADC malaria control plan. The plan was based on the framework adopted by the Ministers at both meetings, and the SADC Health Ministers formally adopted the SADC Malaria Control Plan in April 2001. The policy framework of the malaria plan is as follows:

**Vector control, and insecticide resistance**

The Southern African region has used vector control measures with great success in keeping malaria under control. Given the unstable nature of malaria in Southern Africa, vector control through residual house spraying is a major strategy to be employed. This will be done through:

- Proper timing of spraying activities
- Use of insecticides to which vector sensitivity is known
- Stratification of malaria risk areas for targeted spraying
- Monitor vector susceptibility.

**Surveillance, forecasting and epidemic preparedness**

Collection of epidemiological, environmental, geographical, meteorological and entomological data are essential for forecasting epidemics. The information system is to be strengthened through the following:

- Creation of sentinel sites at various localities within the region to provide comprehensive data that can be used to forecast epidemics
- Regular sharing of information collected at a regional level to facilitate the early detection and monitoring of epidemics.

### Case management

Prompt and correct diagnosis and appropriate treatment of malaria cases is essential for effective case management. This is to be achieved through:

- Strengthening clinical and laboratory diagnosis
- An efficient drug distribution system
- Developing clear treatment regimens using evidence based methods
- Training of staff in treatment regimens
- Continued monitoring of drug resistance.

### Drugs, Insecticides and, Insecticide treated materials (ITMs)

It is essential to ensure the availability of quality, cost effective drugs, insecticides and insecticide treated materials as these collectively form the cornerstone of malaria control programmes. This will be ensured by:

- Exploring regional bulk procurement of drugs and insecticides
- Having a central quality control centre utilising standard criteria for evaluating quality of drugs and insecticides
- Responsible use of both insecticides and drugs
- Discouraging monopolies in drugs and ITMs supplies.

### Operational research

Operational research should be coordinated in the region to achieve a balance between basic and operational research, which focuses on problems that need to be addressed by malaria control programmes. This can be ensured through:

- Sharing of research capacity
- Harmonisation, where possible of research priorities
- Building research capacity within the region.

### Community mobilisation

A high level of awareness on malaria in the community is critical for effective control of malaria, as without their participation control programmes cannot be effective. Communities will be mobilised through health education to:

- Recognise signs and symptoms of malaria
- Develop early treatment seeking behaviour
- Utilise personal protective measures
- Provide home based treatment.

### Capacity building

Given that the burden of malaria is growing, it will be important to ensure sufficient and sustainable human resource development within the region, by:

- Identifying and supporting centres of excellence that are used for regional training
- Promoting study tours and sharing of expertise.

Source: SADC Health Sector Coordinating Unit

## Activities

Despite its approval by Ministers in 2001, no funds were secured for the SADC Malaria Plan. Activities that took place were therefore those that could be funded by Member States. One such activity was the celebration of SADC Malaria Day.

Resource mobilisation for the Plan is now also being done within the framework of the Global Fund to Fight AIDS, TB and Malaria (GFATM). Commitment to increasing resource mobilisation for health was given impetus when the African Heads of States and Governments committed themselves in Abuja, Nigeria on 27 April 2001 to set a target of allocating at least 15% of annual budgets to improvements in health. In August 2001, the SADC Council of Ministers agreed to the monitoring of this target.

## WHO Southern Africa Malaria Control and Roll Back Malaria

Within WHO AFRO, which serves forty-six African countries, the Southern African Malaria Control (SAMC) programme was set up in 1997, with the support of Department for International Development (DIFD) and Australian Government's overseas aid programme (AusAid). This was after the Organisation for African Unity (OAU) adopted the Harare Declaration on Malaria Prevention and Control in the context of African Economic Recovery and Development. SAMC serves Angola, Botswana, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania and Zimbabwe.

SAMC describes its comparative advantage as providing technical leadership in public health and malaria. It has the capacity, with its partners, to mobilise science, medicine and academy to support malaria control.

The SAMC is the main body in the SADC region charged with overseeing the implementation of the WHO initiated Roll Back Malaria.

## Lubombo Spatial Development Initiative: Malaria Control Programme

The malaria control programme of the Lubombo Spatial Development Initiative (LSDI), serves as a good example of regional collaboration multisectoral and private public partnerships.

The LSDI is a concerted programme by the governments of Swaziland, Mozambique and South Africa to encourage new investment in the geographical area broadly comprising eastern Swaziland, southern Mozambique, and northeastern KwaZulu-Natal in South Africa. In July 1999, President Mbeki, President Chissano and His Majesty, King Mswati III signed the General Protocol which puts in place a platform for regional cooperation and delivery.

The LSDI malaria control programme was officially inaugurated by the 3 country ministerial signing of a protocol of agreement, during October 1999. The signing of this protocol legally constituted the RMCC, a commission

comprised of malaria scientists, and control and public health specialists from the three countries.

Baseline surveys were conducted by RMCC in December 1999, in 8 localities in Maputo Province, Mozambique; 4 localities in Swaziland; and 3 localities in South Africa to document the extent of the malaria problem prior to malaria vector interventions in these areas and to allow for post intervention comparison. These surveys were on *Plasmodium falciprum* infections (prevalence), entomological data, and knowledge, practices and behaviour in the affected communities.

Results from the first prevalence survey revealed that there was a marked difference in prevalence rates between the three countries. The lowest infection rates were recorded in Swaziland where the prevalence ranged from 1% to 5%. In KwaZulu-Natal, the prevalence varied between 9% and 42%; and in Mozambique between 22% and 90%. RMCC conducts annual surveys of plasmodium infection prevalence as part of its programme.

In South Africa, in 2001, malaria cases in KwaZulu-Natal decreased by over 75% from the previous year. Cases in Swaziland and southern Mozambique decreased by over 60% and 40% respectively. This is thought to be partly a result of the re-introduction of DDT spraying and the change of the first-line treatment for malaria to co-artemether, as well as a regional approach to malaria control in the LSDI.[i]

This regional approach led to a review of the type of insecticide used by Mozambique. In 1999, *A. funestus* resistance to synthetic pyrethroids had been recorded in KwaZulu-Natal, and tests showed similar resistance in Mozambique.[8] Agreement was thus reached to change the insecticide to carbamates. The value of regional interaction is thus important.

i Personal communication, South African Department of Health.

**The case of DDT – Key Developments**

The use of DDT increased enormously on a worldwide basis after World War II, primarily because of its effectiveness against the mosquito that spreads malaria and the lice that carry typhus. The World Health Organization estimates that during the period of its use approximately 25 million lives were saved.

DDT seemed to be the ideal insecticide as it is cheap and of relatively low toxicity to mammals (oral LD50 is 300 to 500 mg/kg). However, problems related to extensive use of DDT began to emerge in the late 1940s. Many species of insects developed resistance to DDT, and DDT was also discovered to have a high toxicity toward fish.

DDT was the insecticide used in South Africa for indoor malaria mosquito control from the 1940s until 1996 when synthetic pyrethroids were introduced.

The use of DDT is regulated by the United Nations Environment Programme (UNEP), as a persistent organic pollutant (POP).[j]

In response to reports in the region of resistance by mosquitoes to the newer synthetic pyrethroids, a decision was thus taken by the SADC Health Ministers in May 2000 to support the continued use of DDT for malaria control.

The meeting of the Intergovernmental Negotiating Committee for a Legally Binding Treaty on Certain Persistent Organic Pollutants (POPs) that took place in December 2000, Johannesburg SA resolved to keep DDT on the list of chemicals that can be used for health purposes, specifically for malaria control. The final resolution taken by the meeting accommodated the use of DDT for countries that appear in the DDT Registry. South Africa and Swaziland have since applied for the continued use of DDT and this was granted.

During their annual sectoral meeting held in Pretoria in April 2002, SADC Health Ministers decided to explore a block application as a region for using DDT, and this is still being pursued.

The adoption of the use of DDT by the SADC Health Ministers did not preclude countries from taking individual country positions on the use of the substance. The malaria control programme of the LSDI is a good example of choices being made by countries. South Africa and Swaziland use DDT to control mosquitoes, while Mozambique uses carbamates, as it still opposes to the use of DDT.

## SADC Response to TB

The Southern Africa Tuberculosis Control Initiative (SATCI) is an initiative aiming at a cooperative fight against tuberculosis in the SADC Region. Unlike other SADC Health Sector subcommittees that had to be established by the SADC Health Ministers after 1997, SATCI was an initiative that was established by the SADC TB managers in 1995. It was later approved as a technical subcommittee of the SADC Health Sector.

The overall purpose of SATCI is to promote a strong foundation and facilitate necessary change for effective TB control throughout the SADC Region.

j Persistent Organic Pollutants (POPs) are chemical substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the environment. With the evidence of long-range transport of these substances to regions where they have never been used or produced and the consequent threats they pose to the environment of the whole globe, the international community has now, at several occasions called for urgent global actions to reduce and eliminate releases of these chemicals.

SATCI in particular, aims to promote the goals of the WHO framework for TB control and related endorsed international activities like the STOP TB initiative.[9]

## Activities

Some of the activities of SATCI are:

- Training of laboratory workers in TB diagnostics
- Production of a TB laboratory manual and a TB/HIV pocket guide for health workers
- Training using the TB electronic register
- Conducting a study on the bulk procurement of TB drugs.

## WHO response

The current WHO AFRO TB Control Strategic Plan 2001-2005 identifies DOTS as the key strategy for controlling TB in the Africa region and has further identified several approaches to help increase population coverage with quality DOTS services in the context of overall Health sector development plans. This includes the promotion of public-private mix in the delivery of TB services, increased access to quality anti-TB drugs, phased implementation of collaborative HIV/AIDS and TB control strategies in all countries severely affected by the dual TB/ HIV epidemic, community TB care initiatives and monitoring and evaluation of the epidemic and control programme activities.

## Stop TB initiative

WHO launched the Stop TB Initiative in Bangkok in November 1998. This initiative is a partnership of organisations hosted by WHO that aims to accelerate control of TB by expanding the global coalition of partners working to control the disease, pushing TB higher on the international political and health agendas, and significantly increasing the investment in TB control.[10]

One of the major achievements of the initiative has been the Global Drug Fund, which aims to provide universal availability of TB drugs in improved forms, specifically fixed drug combinations, to achieve more cures and minimise the emergence of drug resistance.

The initiative focuses on 22 countries (i.e. large countries with the highest burden and on smaller ones with very high incidences) within SADC, DRC, Mozambique, South Africa, Tanzania and Zimbabwe are part of the initiative.

## Global Fund to Fight AIDS, TB, and Malaria

The UN Secretary General, Mr Kofi Annan, established this fund during the UN General Assembly Special Session (UNGASS) on HIV/AIDS of June 2001. Its establishment was following the suggestion of the African Heads of State and Government in Abuja, Nigeria in April 2001 that such a fund be established. The fund is intended to serve as a means for mobilising resources to address the challenge of the TB and malaria epidemics and the threat posed by HIV/AIDS.

The fund has established eligibility criteria for countries to use as a guide for applying for funds. All applications are to have the approval of country coordinating mechanisms (CCM).

SADC several countries were successful in securing funds from the GFATM. Out of a total disbursement to countries in the region totalling around US$ 321 million, US$ 220 million was for HIV/AIDS, $ 71 million for TB/HIV/AIDS, and almost $ 30 million for malaria. Unfortunately no funds were awarded for TB, although US$ 60 million was pending to Zambia for TB, should some revisions be made to their proposal. A summary of the allocations to countries in the region is shown in Table 5. SADC continues to monitor the allocation of funds by the GFATM, and advocates at all times for the use of burden of disease as a criterion for allocation of funds. SADC is represented by South Africa as an alternate member to Uganda on the Board of the Fund and should thus able to influence Board decisions.

**Table 5: First round allocation of funds to SADC countries by the Global Fund to Fight AIDS, TB and Malaria[11]**

| Proposals/Components Approved for Funding with No or Minor Adjustments | | | | | |
|---|---|---|---|---|---|
| **Country** | **Agency** | **Title** | **Component** | **Year 1 in US$ millions** | **Total in US$ millions** |
| Malawi | National AIDS Commission | The Comprehensive HIV/AIDS management strategy for Malawi | HIV/AIDS | 13 | 19.6 |
| Tanzania | CCM Tanzania | National insecticide treated nets implementation plan (NATNETS) support | Malaria | 4.16 | 19.8 |
| South Africa | KwaZulu-Natal Provincial Coordinating Mech-anism (KZN PCM) | Enhancing the Care of HIV/AIDS infected and affected patients in resource-constraint settings in KwaZulu-Natal | HIV/TB | 11.49 | 71.97 |
| South Africa | CCM South Africa (South African National Aids Council – SANAC) | Strengthening national capacity for treatment, care and support related to HIV and TB, building on successful behaviour change | HIV | 13. 37 | 93.31 |
| Tanzania | Zanzibar Global Fund CCM | Implementation of new malaria treatment policy in Zanzibar | Malaria | 0.41 | 1.15 |
| Zambia | CCM Zambia | Zambia's Coordinated Proposal to Combat HIV/ AIDS, TB and Malaria | HIV | 19.86 | 92.85 |
| Zimbabwe | CCM Zimbabwe | Proposal to strengthen and scale up disease prevention and care for HIV/AIDS, TB and Malaria in Zimbabwe (2002) | Malaria | 4.75 | 8.88 |
| Zimbabwe | CCM Zimbabwe | Proposal to strengthen and scale up disease prevention and care for HIV/AIDS, TB and Malaria in Zimbabwe (2002) | HIV | 5.3 | 14.1 |

The SADC regional proposal was submitted to the GFATM during the first call for proposals. The proposal was not considered, as it had not been signed by all 14 SADC country coordinating mechanisms.

Despite requests to be allowed to submit proposals through a single mandated signatory, the GFATM insisted that 14 signatures had to be obtained from countries for the Fund to consider proposals from SADC. During the second round of proposals that closed in September 2002, SADC managed to submit three proposals on HIV/AIDS, TB and Malaria. The collation of signatures was a major challenge, but ultimately all these were duly submitted.

In the future, consideration will have to be given to identifying a single signatory that can be recognised by the Fund. The most likely possibility is using the Chairperson of the SADC Council of Ministers, to sign on behalf of all member states.

## Conclusions

- The SADC region is facing serious threats to the well being of its citizens. The HIV/AIDS epidemic has led to a worsening of the already bad TB situation, and as the AIDS epidemic progresses the TB epidemic will get worse.
- Malaria has never been well controlled in most SADC countries and funding has always been inadequate, given the magnitude of the problem.
- Both malaria and TB programmes are not doing well mainly due to poorly functioning health systems.
- Good control measures exist for both TB and malaria and WHO is giving leadership on technical matters.
- Innovative ways of addressing funding for health care are being implemented, in the form of Roll Back Malaria, Stop TB and the Global Fund to fight AIDS, TB and Malaria.
- A regional approach to these diseases enhances country initiatives and can lead to synergies between country programmes.

## Recommendations

1. African leaders need to continue to advocate for the control of communicable diseases and to maintain the world's attention on the impact these disease have on development.
2. In order to ensure more accurate data for guiding countries to set specific and realistic targets and strategies towards the 2005 Global Stop TB targets, and to monitor programmes and trends, a uniform surveillance system that facilitates accurate quantification of the TB burden, needs to be established at both country and regional levels.
3. More funding for public health services is essential for the success of the TB and malaria programmes. Monitoring how much is spent on health, and on individual programmes is a good start. Countries should make an effort to allocate more resources for health.
4. Regional programmes should be encouraged and strengthened. Regional organisations have a role to play in the sharing of experiences on disease control, in standardise control measures where applicable, and in monitoring the performance of all countries in the region.
5. The new advocacy and funding mechanisms such as the Stop TB Initiative, Roll Back Malaria Initiative and the GFATM should be supported. Resources are available through these initiatives and countries must submit proposals. Involvement by countries can also ensure that these funding mechanisms address the funding of health systems, in addition to programmes.
6. Since communities are a prerequisite for the success of TB and malaria programmes their participation should be encouraged and strengthened.

## References


1. World Health Organization (Geneva), The World Health Report 2000. Health Systems: Improving Performance. Geneva: WHO; 2000. URL: http://www.who.int/whr2001/2001/archives/2000/en/
2. World Health Organization (Geneva), WHO Southern Africa Malaria Control. URL: http://www.malaria.org.zw/malaria_burden.html
3. World Health Organiszation (Geneva), WHO Expert Committee on Malaria, 20th Report, 892, WHO, 2000. URL: http://mosquito.who.int/docs/ecr20.pdf
4. World Health Organization African Regional Office, 2000 TB Case Finding and 1999 Treatment Outcomes Report, Tuberculosis Control Program, WHO AFRO Regional Office, 2002.
5. Human Development Report 2002, United Nations Development Programme. Published for the United Nations Development Programme (UNDP), New York, Oxford, 2002. URL: http://hdr.undp.org/reports/global/2002/en/
6. Jeffrey Sachs, Macroeconomics and Health: Investing in Health for Economic Development, Report of the Commission on Macroeconomics and Health, World Health Organization, 2001 (p 56). URL: http://www3.who.int/whosis/cmh/cmh_report/e/e/htm/000-200/000-200.html

7 Better Health in Africa, Experiences and Lessons Learned, A World Bank Publication, The International Bank for Reconstruction and Development, Washington 1994 (p 152).
URL: http://publications.worldbank.org/ecommerce/

8 Regional Malaria Control Commission, Lubombo Spatial Development Initiative.
URL: http://www.lubombo.org.za
URL: http://www.malaria.org.za/lsdi/Overview/Regional_Malaria_Control_commi/regional_malaria_control_commi.html

9 Southern African Development Community Health Sector Coordinating Unit, Tuberculosis, Defying a Common Foe. Southern Africa Tuberculosis Control Initiative, TB Advocacy Report, 2000.

10 WHO Stop TB Initiative.
URL: www.stoptb.org

11 Global Fund to Fight AIDS, TB and Malaria.
URL: http://www.globalfundatm.org/

# Nutrition Policy Implementation

17

**Nelia Steyn[i] and Demetre Labadarios[ii]**

[i]Chronic Diseases of Life Style Unit, Medical Research Council

[ii]Department of Human Nutrition, University of Stellenbosch

*Both primary and secondary nutrition interventions are essential in South Africa, a country with an infant mortality rate of 45.2 deaths per 1000 live births, under-five mortality rate of 61 per 1000 live births and an estimated low birth weight rate prevalence of 8.3%. Additionally, the National Food Consumption Survey (NFCS) has recently reported that approximately one in five children aged 1-9 years of age in South Africa are stunted (21.6%) and one in ten (10.3%) are underweight for age. The survey also reported overweight/ obesity in 6% of the sample at the national level increasing to 12% of children of well-educated mothers.*

*In this chapter the focus areas of the Integrated Nutrition Programme (INP) have been examined and critically discussed in order to determine whether targets planned for 2002 were met and how they are envisioned to change by 2007. These areas include: contribution to household food security; disease-specific nutrition support; growth monitoring and promotion; nutrition promotion and advocacy; promotion and support of breastfeeding; micronutrient malnutrition control; and food service management.*

*It is recommended that on the basis of the experience accrued so far, policy implementation should focus on the lowest level of primary and secondary health care. In addition the Directorate should be afforded the necessary resources to address the repeatedly documented lack of capacity at these levels, which could, arguably, be considered as the main impediment to the successful implementation of its programmes.*

## Introduction

Malnutrition is one of the key priority issues which the new government undertook to address in 1994. An *Integrated Nutrition Strategy for South Africa* was formulated and adopted by the Department of Health's White Paper for the Transformation of the Health System in South Africa[1] and subsequently developed into the Integrated Nutrition Programme (INP) for South Africa.[2] The INP adopted the United Nations Children's Fund (UNICEF) nutrition conceptual framework.[3] The latter defines malnutrition as an outcome of complex and interrelated causes, which are addressed in the context of an ongoing process of *Assessment, Analysis* and *Action* (The triple A cycle).[4] It was envisioned that this approach would encourage and support programmes that are integrated, sustainable and community-driven as opposed to the fragmented and mostly food-based approaches of the past.[5]

The INP focuses on seven focus areas/strategies, namely:

i Contribution to household food security

ii Disease-specific nutrition support, treatment and counselling

iii Growth monitoring and promotion

iv Nutrition promotion, education and advocacy

v Promotion, protection and support of breastfeeding

vi Micronutrient malnutrition control and

vii Food service management.

In order to support the implementation of the defined focus areas three support systems were identified, namely: a nutrition information system; a human resource plan and a financial and administrative system.[6] Following a period of extensive consultation and discussion with a wide variety of role players, the objectives and targets of the different focus areas were decided upon and are revised annually. The most recent objectives and targets were set by the Department of Health in September 2002 (Table 1). This chapter looks at the progress achieved so far on the earlier objectives and identifies possible factors that impede implementation of nutrition policy and targets. It should however, be kept in mind that the focus areas overlap and compliment each other. Therefore, it is difficult to discuss these objectives in isolation.

**Table 1: Integrated Nutrition Programme objectives and targets for the year 2007**

| Focus Area | Strategic objective | Current Status | Target by 2007 | Strategy |
|---|---|---|---|---|
| Contribution to household food security | To ensure that other sectors receive adequate nutrition support | Not given | 13/13 ISRDP Nodal Sites with nutrition activities | ✧ Nutrition education, promotion and advocacy<br>✧ Technical support/advice to other sectors<br>✧ School feeding |
| | To alleviate short-term hunger among primary school learners | Actual feeding days 85% of target (PS Survey) | Coverage of targeted 100% | |
| Disease-specific nutrition support, treatment and counselling | To contribute to a reduction in the prevalence of low birth weight and underweight in pregnant/lactating women | 8.3% LBW<br>(SADHS) | National target not available | ✧ Improve nutrition management<br>✧ Intersectoral action<br>✧ Nutrition support & counselling during disease and recovery<br>✧ Growth monitoring<br>✧ Promotion/support of breastfeeding<br>✧ Nutrition education<br>✧ Dietary modification<br>✧ Management of malnutrition<br>✧ Follow-up actions<br>✧ Referrals<br>✧ Support groups |
| | To reduce malnutrition in under 5 year olds | 10.3% underweight<br>21.6% stunting<br>3.7% wasting<br>(NFCS) | 8% underweight<br>18% stunting<br>2% wasting | |
| | To contribute to a reduction in the prevalence of under 5 mortality rate | 61/1000<br>(SADHS) | 30% reduction | |
| | To contribute to reduction of nutrition-related diseases of life-style (obesity, CHD, hypertension and type 2 diabetes) | Overweight<br>19.8% in males<br>26.1% in females<br>(SADHS)<br>Obesity<br>9.3% males<br>30.1% females | Overweight<br>15% in males<br>20% in females<br><br>Obesity<br>7% in males<br>25% in females | |
| | To contribute to reduction of chronic debilitating diseases | Not given | Not given | |
| Growth monitoring and promotion | To prevent/reduce growth faltering in 0-24 month olds | Not given | Not given | ✧ Provision of growth card to all caregivers<br>✧ Regular growth monitoring<br>✧ Detection of growth faltering<br>✧ Counselling of caregivers |
| | To ensure all new babies receive a growth card | Not given | 100% | |

**Table 1: Integrated Nutrition Programme objectives and targets for the year 2007 (cont)**

| Focus Area | Strategic objective | Current Status | Target by 2007 | Strategy |
|---|---|---|---|---|
| Nutrition promotion, education and advocacy | To improve awareness of the INP | Not given | Not given | ✧ Nutrition education<br>✧ Nutrition promotion<br>✧ Nutrition advocacy |
| | To improve nutritional knowledge, practices and attitudes | Not given | Not given | |
| | To ensure development of policies contributing to objectives of INP | Not given | Not given | |
| Promotion, protection and support of breastfeeding | To increase prevalence of mothers who breastfeed exclusively | 0-3 months 10.4%<br>4-6 months 1.2 %<br>0-6 months 7.0%<br>(SADHS) | 0-3 months 12.0%<br>4-6 months 2.5%<br>0-6 months 10.0% | ✧ Baby Friendly Hospital Initiative<br>✧ Implementation of International Code of Marketing Breast milk Substitutes<br>✧ Lactation management<br>✧ Provision of support to caregivers<br>✧ Nutrition education, promotion and advocacy<br>✧ Support groups |
| | To increase % who breastfeed up to 24 months | 12-23 months<br>32.7% (SAVACG) | Not given | |
| | To ensure baby-friendly maternal facilities | 58/480 (12%) baby-friendly facilities | 72/480 (15%) | |
| | To ensure that mothers who do not breastfeed practise appropriate options | Not given | Not given | |
| Micronutrient malnutrition control | Elimination of micronutrient deficiencies | Vitamin A deficiency: 33.3% (SAVACG)<br>Iodine deficiency: 10.6% (NIS)<br>Iron deficiency: 10% (SAVACG) | Vitamin A deficiency: 19%<br>Iodine deficiency: 5%<br>Iron deficiency: 7.5% | ✧ Dietary diversification<br>✧ Micronutrient supplementation<br>✧ Food fortification<br>✧ Nutrition promotion education/ advocacy<br>✧ Supporting/promoting agricultural interventions to increase availability of micronutrient rich foods<br>✧ Quality control of food<br>✧ Linkages with other public health measures i.e. immunisation and parasite control |
| | To decrease the proportion of children with an intake of vitamins and minerals < 50% | Less than 50% (NFCS) | Less than 40% | |
| | To contribute to increasing proportion of households consuming adequate iodised salt | 62% of households have adequate iodised salt (NIS) | 80% of households have adequate iodised salt | |

**Table 1: Integrated Nutrition Programme objectives and targets for the year 2007 (cont)**

| Focus Area | Strategic objective | Current Status | Target by 2007 | Strategy |
|---|---|---|---|---|
| Food service management | To ensure adequate and culturally acceptable meals | Not given | To ensure that clients of at least 80% of public institutions receive acceptable/adequate meals | ✧ Provision of meals<br>✧ Maintaining food service systems<br>✧ Technical support by dieticians |
| Nutrition information system | To assess the nutritional status of the population through regular surveys | Four since 1994: SAVACG NFCS; PS Survey; NIS | Not given | ✧ Surveys<br>✧ Surveillance<br>✧ Management information<br>✧ Monitoring<br>✧ Evaluation<br>✧ Research |
| | To monitor the nutritional status of the population through the DHIS | 7/7<br>Nutrition indicators in DHIS | 7/7<br>Nutrition indicators in DHIS | |
| Human resource plan | To develop and implement the INP human resource plan | 100% of national posts filled<br>61% of provincial posts filled | 100% posts filled<br>100% of new staff complete induction courses<br>70% of staff receive in-service training | ✧ Recruitment<br>✧ Placement and performance management of staff<br>✧ Capacity building and training |
| Financial and administrative system | To adhere to the requirements of the Financial Management Act | Conditional grant 82%<br>Poverty relief 33% expenditure | 100% expenditure on Conditional Grant<br>At least 80% expenditure on Poverty Relief Allocation | ✧ Management of financial allocations<br>✧ Office administration<br>✧ Planning |

Source of targets for 2005: Integrated Nutrition Programme Strategic Plan 2001/02 to 2006/07,[6]
Directorate of Nutrition, Strategic Plan 2002/03 to 2006/07,[26] DOH personal communication.
SADHS: South African Health & Demographic Survey 1998 (In: Department of Health. Draft Strategic Plan 2001-2004,[5] Integrated Nutrition Programme Strategic Plan 2001/02 to 2006/07[6]
NFCS: National Food Consumption Survey 2000[13]
SAVACG: South African Vitamin A Consultative Group[14]
PS Survey: Primary School Feeding Survey[9]
NIS: National Iodine Survey[35]
DHIS: District Health Information System
ISRDP: Integrated Sustainable Rural Development Programme

## Contribution to household food security

The original INP framework[2] placed considerable emphasis on the development of Community Based Nutrition Projects (CBNPs) as a means of addressing malnutrition in South Africa. The major thrust was to provide multi-sectoral government support to communities to 'solve' their own nutritional problems. The focus of CBNPs efforts to improve household food security was on food-based income generation projects, with a long term objective set in 1994 for each health district in South Africa to establish two CBNPs by the year 2001.

The provincial Departments of Health in each of the nine provinces committed themselves to implementing three pilot projects per province during 1998. In 1999, the national Department of Health commissioned an evaluation of CBNPs in order to test this commitment and to evaluate barriers to their implementation.[7] It was reported that only three out of the nine provinces had implemented pilot CBNPs. Furthermore, a number of general management aspects were identified as constraints in the implementation of CBNPs at provincial level, which included: complex financial procedures and delays in funding; lack of staff, inadequate staff training and inadequate technical support, such as teaching new skills to project leaders/managers. In addition, the interpretation of CBNPS varied among provinces to the extent that professionals and health workers at different levels were found to have differing understanding of the goals and aims of the CBNPs, such as the importance of developing sustainable programmes. In addition the evaluation noted that the understanding of the goals and aims of CBNPs varied among provinces. Clearly, the original intention of the INP as a vehicle for promoting CBNPs was not met and this objective was not retained in the most recent list of objectives developed for 2001-2007.[6]

This experience highlights the crucial gap between policy and successful implementation. It emphasises the importance of setting realistic objectives and providing appropriate resources for success. However, the exit of the CBNPs has also happened because of the introduction of a more recent initiative known as the Integrated Sustainable Rural Development Strategy (ISRDS), which was initiated by the Office of the President in 2001. This programme addresses rural development in a broader framework of intersectoral cooperation to improve health and social development. One of its key activities is the development of income-generating projects. Thirteen locations have been identified for inclusion into the initial pilot group known as nodal sites. Here the Nutrition Directorate is one of many directorates providing technical support such as nutrition knowledge and food management expertise and skills. Since this venture is still in its infancy it is not yet possible to comment on its progress.

### School feeding

School feeding, the second strategic objective for addressing household food security, was implemented on 1 September 1994.[8] Since its inception and up to 31 March 2002, an average of approximately 15 000 schools have participated in the school feeding component of the PSNP with an average of 5 million learners benefiting annually during this period. Substantial financial resources (R3.9 billion) were made available for school feeding over the past 8 financial years (1994/95 to 2001/02).

In 2001, the Directorate of Nutrition commissioned a qualitative survey of 149 randomly selected schools in all provinces in order to evaluate the school feeding programme in terms of:[9] targeting, coverage, menu options, cost effectiveness as well as food quality and safety (Table 2).

Provinces wanted to cover as many schools and feed as many children as possible – an approach that resulted in compromises in the quality and quantity of the food provided which was 'diluted' and hence did not provide optimal feeding as was originally planned by the DoH.

The dilution caused by the inclusion of schools that were not necessarily the most needy resulted in providing meals on less than 80% of annual school days in 6 provinces, frequently with poor adherence to menu options and defined guidelines. Eight of the provinces provided less than 20% of the daily energy requirements compared with a minimum of 25% specified in the guidelines. Food quality and safety were a concern, since 30% of the schools did not have running water on the premises. In addition to the survey findings, there have been frequent news reports of allegations of fraud and corruption at certain schools in different provinces.

A qualitative survey[8] indicates that the programme made a major social contribution to schools in terms of difficult to measure qualities, such as more alert children who seemed to benefit intellectually and emotionally. As long as unemployment remains high (29.9%),[10] supplementary school meals for needy school children should be continued. However, assessment of the cost-effectiveness of this programme in the future, should quantify benefits both in terms of physical and improved intellectual performance of new learners at schools at the beginning of the programme and after implementation.

It is rather disappointing to note that so many of the problems, which were highlighted by the survey of schools undertaken in 1996,[11] were still the main problems experienced in 2001. It is also unfortunate that many of the excellent recommendations made by the earlier survey have not been implemented. This relates particularly to the targeting and coverage strategies, which still remain a problem at both school and geographical level.

**Table 2: A summary of the evaluation of school feeding programme in South Africa (n = 149 schools)**

| Evaluation criterion | Norm/Standard (DOH) | Actual findings of evaluation |
|---|---|---|
| Targeting | Targeting should take place at two levels, geographic targeting and then selected schools within the designated geographic areas.<br>Priority should be given to rural and peri-urban areas, including schools serving informal settlements. Targeting should adhere to the criteria of reaching those schools serving the most needy, within the framework of affordability. | ✧ National targeting directives were not adhered to at provincial level and provincial directives were not adhered to at school level. Targeting was undermined by a political imperative to cover as many schools as possible. Because of financial constraints on the programme, the non targeting approach compromised the quality and quantity of food items. This defeated the purposes of school feeding programme - namely to relieve short-term hunger to enhance active learning capacity.<br>✧ The abandonment of individual targeting in schools also led to smaller portions being served to learners. However, teachers' perceptions were that individual targeting led to intimidation, victimisation and stigmatisation. |
| Consistency and Coverage | Provinces had the prerogative to decide on the number of feeding days for school feeding and they were encouraged to feed for as many school days as possible in order to provide optimal benefits. | ✧ Inconsistency and low coverage of the number of feeding days in comparison to the number of school days, and number of planned feeding days.<br>✧ Actual feeding days covered between 52% and 92% of school days with 6 provinces covering less than 80% of school days.<br>✧ Actual feeding days covered between 64% and 97% of planned feeding days with 2 provinces covering less than 80% of planned feeding days.<br>✧ In three provinces, over 30% of targeted schools missed 25 or more feeding days, while 2% of schools had no feeding during the year of evaluation (2 provinces). |

| Evaluation criterion | Norm/Standard (DOH) | Actual findings of evaluation |
|---|---|---|
| Menus options, food quantity and feeding time | Nutritional criteria<br>✧ The food option or combination of options selected should provide a balance of nutrients and not less than 25% of the RDA for energy for the 7 and 10 year old target group and not less than 20% of the RDA for energy for the 11-14 year old target group.<br>✧ Menu options should make use of already available food products, that are culturally acceptable, commonly consumed and that fit in with the local eating habits.<br>✧ School feeding seeks to address the effects of short-term hunger on active learning capacity and school attendance. Energy-rich food should be served preferably before 09:00. | ✧ National guidelines on menu options were not adhered to at provincial and school levels. There was considerable variation between the provinces. Actual servings did not comply with national or provincial criteria. The actual servings varied between 22.3% of the RDA for energy to 11.5% of the RDA for energy, with the majority of provinces (8) providing less than 20% of the RDA for energy.<br>✧ Neither the national criteria nor the provinces provided guidelines for the level of fortification of food items for micronutrients, although a balance of nutrients was called for. This balance of nutrients was not addressed by any of the provinces.<br>Menu options were generally healthy and culturally acceptable.<br>✧ National guidelines on feeding times are not adhered to at provincial and school levels. Only 2% of schools served the food before 09:00, 7% served between 09:00 and 10:00, 42% between 10:00 and 11:00, 35% between 11:00 and 12:00 and 13% after 12:00. |
| Cost benefit and cost effectiveness | Provinces could decide on costs within their own budgets | ✧ Constraints and advantages existed in procurement systems, but the tender system was preferred in terms of economic scales, government resources required, quality control, control over prices, and limited risk of fraud.<br>✧ Inadequate contract management. |
| Food quality and food safety | ✧ Food had to comply with the food quality criteria in terms of: Nutritive value, colour, texture, flavour and safety.<br>✧ Food had to comply with the food safety criteria in terms of conditions necessary during the production, processing, storage, distribution and preparation of food to ensure that it is safe, wholesome and fit for human consumption. | ✧ Inadequate food quality.<br>✧ Inadequate and unhygienic storage facilities, which contributed significantly to overall unhygienic conditions, theft, pilferage, wastage, and poor quality and quantity, control.<br>✧ Basic hygiene was compromised in some schools due to the lack of water and adequate infrastructure for food preparation.<br>✧ 30% of the sample schools did not have water on site and collected water from rivers, streams, tanks and dams in nearby villages. Of great concern was that most menu options require water for preparation. |

| Evaluation criterion | Norm/Standard (DOH) | Actual findings of evaluation |
|---|---|---|
| Adverse effects | Should be minimal | ✧ Low incidence of littering and wasting<br>✧ 17% of learners brought money to school every school day to buy food<br>✧ Majority of learners bought sweets and snacks<br>✧ Majority of learners did not bring lunch boxes to school (73%)<br>✧ Majority of schools (85%) indicated that school feeding did not take up too much time<br>✧ Majority of schools (88%) indicated that school feeding did not infringe on learning time. |

Source: External evaluation of certain aspects of primary school feeding[9]

## Disease-specific Nutrition Support, Treatment and Counselling

This focus area encompasses nutrition and dietary practices for the prevention and rehabilitation of nutrition-related diseases and illnesses through counselling, support and treatment.[12] The nutrition-related diseases and illnesses include both those that relate to under-nutrition and those that relate to obesity. Diarrhoeal disease and other common childhood illnesses are the most significant that are locked into a vicious cycle with nutrient deficiencies relating to under-nutrition.

### Under-nutrition

Both primary and secondary nutrition interventions are essential in South Africa, a country with an infant mortality rate of 45.2 deaths per 1000 live births, under-five mortality rate of 61 per 1000 and an estimated low birth weight rate prevalence of 8.3%.[5,6] Additionally, The National Food Consumption Survey (NFCS)[13] has recently reported that approximately one in five children aged 1-9 years of age in South Africa are stunted (21.6%) and one in ten (10.3%) are underweight for age (Table 3). The prevalence of stunting was highest in the 1-3 year old group (25.5%) and lowest in the 7-9 year olds (13%). In terms of overnutrition, the survey also reported overweight/obesity in 6% of the sample at the national level, a prevalence that increased to 12% of children of well educated mothers living in urban areas. Identified risk factors for stunting are those which contribute to poor household food security (Table 4).

**Table 3: The anthropometric status of children aged 1-9 years by age group and area of dwelling: South Africa 1999**

| Anthropometric indicators | Age groups | | | Areas | | |
|---|---|---|---|---|---|---|
| | 1-3 years | 4-6 years | 7-9 years | Urban | Rural | South Africa |
| Number (n) | 1 198 | 975 | 440 | 1 309 | 1 304 | 2 613 |
| %H/A < -2SDs | 25.5 | 20.7 | 13.0 | 16.7 | 26.5 | 21.6 |
| 95% CI | 23.0-27.9 | 18.2-23.3 | 9.8-16.1 | 14.7-18.8 | 24.1-28.9 | 20.0-23.2 |
| %W/A < -2SDs | 12.4 | 8.8 | 7.7 | 7.7 | 12.8 | 10.3 |
| 95% CI | 10.5-14.2 | 7.0-10.6 | 5.2-10.2 | 6.3-9.2 | 11.0-14.6 | 9.1-11.4 |
| %W/H < -2SDs | 4.0 | 3.4 | 3.4 | 2.4 | 4.9 | 3.7 |
| 95% CI | 2.9-5.1 | 2.2-4.5 | 1.7-5.1 | 1.6-3.3 | 3.7-4.9 | 3.0-4.4 |
| %H/A < -3SDs | 8.2 | 5.4 | 4.3 | 4.7 | 8.4 | 6.5 |
| 95% CI | 6.6-9.7 | 40.0-6.9 | 2.4-6.2 | 3.5-5.8 | 6.9-9.9 | 5.6-7.5 |
| %W/A < -3SDs | 2.2 | 0.8 | 0.7 | 1.1 | 1.8 | 1.4 |
| 95% CI | 1.3-3.0 | 0.3-1.4 | 0.0-1.4 | 0.5-1.6 | 1.0-2.5 | 1.0-1.9 |
| %W/A < -3SDs | 0.8 | 0.7 | 1.1 | 1.8 | 1.4 | |
| 95% CI | 1.3-3.0 | 0.3-1.4 | 0.0-1.4 | 0.5-1.6 | 1.0-2.5 | 1.0-1.9 |
| %W/A < -3SDs | 0.8 | 0.9 | 0.7 | 0.4 | 1.3 | 0.8 |
| 95% CI | 0.3-1.4 | 0.3-1.5 | 0.0-1.4 | 0.0-0.7 | 0.7-1.9 | 0.5-1.2 |
| %W/H > +2SDs | 6.6 | 5.2 | 6.1 | 7.6 | 4.4 | 6.0 |
| 95% CI | 5.2-8.0 | 3.8-6.6 | 3.9-8.4 | 6.2-9.1 | 3.3-5.5 | 5.1-6.9 |

Source: The National Food Consumption Survey (NFCS)[13]
W/A= weight for age; H/A= height for age; H/W= weight for height;
2SD = 2 standard deviations from the median value of the NCHS percentiles, CI = Confidence Interval
Stunting (H/A = < -2SDs), Severe stunting (H/A = < -3SDs),
Underweight (W/A = < -2SDs), Severely Underweight (W/A = < -3SDs),
Wasting (W/H = < -2SDs), Severe Wasting (W/H = < -3SDs), Overweight (W/H = > +2SDs)

**Table 4: Variables which were associated with stunting of children in the NFCS**

| Risk factors | Height-for-Age % < -2 SD Stunted | Height-for-Age % > 0 SD Non-stunted | OR (95% CI) Odds Ratio | |
|---|---|---|---|---|
| Number (n) | 558 | 605 | | |
| **Food intake variables** | | | | |
| 1. On bread: H margarine/none | 81 | 70 | 1.75* | (1.35 – 2.33) |
| 2. Milk: Non-dairy creamer | 16 | 15 | 1.12 | (0.82 – 1.56) |
| 3. Bread: Brown | 58 | 53 | 1.22 | (0.97 – 1.54) |
| 4. Child shared a plate | 11 | 10 | 1.15 | (0.79 – 1.67) |
| 5. Granny decides on food | 32 | 27 | 1.28 | (0.99 – 1.64) |
| **Poverty-related variables** | | | | |
| 1. Father not head of household | 62 | 55 | 1.30* | (1.03 – 1.64) |
| 2. Reside in mud or tin house | 35 | 20 | 2.13* | (1.64 – 2.78) |
| 3. More than 4 share room | 14 | 10 | 1.47* | (1.03 – 2.13) |
| 4. Mother is unemployed | 54 | 44 | 1.49* | (1.18 – 1.85) |
| 5. Father is unemployed | 17 | 14 | 1.32 | (0.96 – 1.82) |
| 6. One person contributes to income | 64 | 51 | 1.68* | (1.33 – 2.12) |
| 7. Income less than R1000/month | 44 | 29 | 1.92* | (1.52 – 2.44) |
| 8. Less than R150 on food/week | 57 | 49 | 1.39* | (1.10 – 1.75) |
| **Environmental factors** | | | | |
| 1. Use communal tap or river | 46 | 30 | 1.92* | (1.52 – 2.44) |
| 2. Use bucket toilet | 8 | 4 | 1.79* | (1.09 – 2.94) |
| **Food preparation variables** | | | | |
| 1. Use paraffin or fire to cook | 53 | 30 | 2.56* | (2.00 – 3.23) |
| 2. No cold storage facilities | 60 | 34 | 2.94* | (2.33 – 3.70) |
| 3. Use a primus stove | 57 | 42 | 1.85* | (1.47 – 2.33) |
| 4. Have no hot plate | 78 | 75 | 1.18 | (0.90 – 1.54) |
| 5. Have no stove | 52 | 36 | 1.92* | (1.52 – 2.38) |
| **Educational variables** | | | | |
| 1. Mother has primary or less schooling | 43 | 24 | 2.38* | (1.85 – 3.03) |
| 2. Caregiver has primary or less schooling | 31 | 20 | 1.72* | (1.28 – 2.27) |
| 3. No radio or TV in the house | 20 | 9 | 2.44* | (1.72 – 3.45) |

Source: The National Food Consumption Survey (NFCS)[13]
W/A= weight for age; H/A= height for age; H/W= weight for height;
2SD = 2 standard deviations from the median value of the NCHS percentiles.
An odds ratio of greater than one indicates an increased risk of disease and an odds ratio of less than one is associated with a decreased risk of disease. The odds ratio is significant when accompanied by a *

As a result of the high prevalence of under-nutrition[14] and micronutrient deficiencies[15] it has been necessary to introduce a practical strategy for dealing with these nutritional disorders. One strategy centres on the strengthening of nutritional *management* of malnutrition particularly that of the mother and child, which incorporates both primary (nutrition education and vitamin A supplementation) and secondary (provision of supplementary food in order to afford interim nutrition rehabilitation to specified target groups) interventions[12] (Table 5). These interventions have been implemented in conjunction with growth monitoring, promotion of breastfeeding and nutrition education.

## Management of acute severe PEM

Guidelines for the in-patient management of acute, severe Protein Energy Malnutrition (PEM) were developed in 2000 and are based on the WHO Ten Steps.[16] The guidelines include primary and secondary interventions, products for nutritional rehabilitation, entry and exit criteria for food supplementation and the management and treatment of under-nutrition. The guidelines were piloted at health facilities in the Eastern Cape Province, and according to the DoH (Nutrition Directorate) and based on these guidelines; mortality rates among severely malnourished children at these pilot health facilities have decreased from 28% to 14% in 2001.[a] The WHO Ten Steps, together with the Guidelines on Nutrition Interventions and the Integrated Management of Childhood Illnesses, have been implemented and expanded to all health facilities in the nine provinces.

a Ms Maudie de Hoop, Nutrition Directorate DoH, personal communication 2002.

**Table 5: Entry and exit criteria for nutrition supplementation by the Department of Health**

| Group at Risk | Entry Criteria | Exit Criteria | Type of Supplements |
|---|---|---|---|
| Malnourished infants (0-6 months) | Severely ill babies; very low birth weight infants; pre-term babies; infants of HIV+ mothers; orphans, infants with mothers who are mentally handicapped or on contraindicated medications | Sustained adequate weight gain over 3 months | One soy-based breast milk substitute<br>Two brands of cows milk-based breast milk substitutes |
| Malnourished infants (6-71 months) | Early growth faltering (1-2 months)<br>Prolonged growth faltering (>3months)<br>Severe weight loss | Sustained adequate weight gain over 3 months | Full cream milk<br>One brand of staple food fortified with vitamin A and iron |
| At risk pregnant women | - Women weighing less than 50kg or who are underweight (< 85% of standard weight for height)<br>- Inadequate weight gain (0.23kg at 1st treatment, <4.6kg gain at 2nd treatment)<br>- Excessive weight gain (0.91kg with 3rd treatment) | Until sufficient weight has been gained i.e. 1.5kg/month in last 6 months | One brand of staple food, fortified with nutrients including vitamin A and iron |
| At risk lactating women | Those with a BMI < 18.5 who have a significant weight loss | When BMI ≥ 20 | One brand of staple food, fortified with nutrients including vitamin A and iron |
| Elderly and chronically ill | Those with a BMI < 18.5 who have a significant weight loss | When BMI ≥ 20 | One brand of staple food, fortified with nutrients including vitamin A and iron. |

Source: Statistics in Brief 2000[12]

## Dietary Intake of Children

In 1999, the first National Food Consumption Survey (NFCS)[13] was initiated by the DoH in order to make recommendations and enact legislation with respect to fortification of foods for the population at large. The survey population comprised of 3 120 children aged between 1 and 9 years. Dietary data were obtained on 2 894 of the children by means of interviews with their caregivers using, among others, the 24-hour recall and quantified food frequency dietary methodology. The mean energy intake of these children at the national level ranged from 4 200-5 800kJ. Younger children in rural areas had the lowest such intake. The mean intake for calcium, iron and zinc was significantly lower than the dietary reference intake for each age group studied. A large percentage of children were also found to have an inadequate intake of folate, vitamins A, E, riboflavin, niacin, B6, B12 and C. The mean energy and nutrient intake of non-urban children was generally significantly lower than those of children living in urban areas. The overall conclusion of

the NFCS was that a great majority of children consumed a diet deficient in energy and poor in nutrient density. The NFCS also identified the most commonly eaten food items by these children in the country.[13] Maize was the food item most commonly consumed (Table 6), followed by white sugar, tea, whole milk and brown bread. More than 72% of children ate maize and sugar. Bread consumption was relatively low during the first three years of life, with only about 33% of children consuming brown bread. The consumption of the latter increased to 44% in 7-9 year olds.

**Table 6: Frequency of food items eaten by children in South Africa (NFCS) (n = 2 894) as determined by the 24 hour recall method**

| Food item | No of children eating it | Average portions | Portion size (g) per day |
|---|---|---|---|
| 1. Maize porridge | 2 226 | 2.0 | 221 |
| 2. White sugar | 2 187 | 1.5 | 14 |
| 3. Tea | 1 327 | 1.2 | 196 |
| 4. Whole milk | 1 200 | 1.8 | 93 |
| 5. Brown bread | 1 067 | 1.3 | 78 |
| 6. White rice | 773 | 1.2 | 117 |
| 7. White bread | 771 | 1.4 | 69 |
| 8. Hard margarine | 761 | 1.4 | 9 |
| 9. Chicken | 726 | 1.2 | 67 |
| 10. Potatoes | 647 | 1.3 | 90 |
| 11. Beef | 493 | 1.2 | 90 |
| 12. Fruit (other)* | 440 | 1.4 | 114 |
| 13. Cabbage group | 415 | 1.2 | 71 |
| 14. Squash ‡ | 393 | 1.4 | 211 |
| 15. Eggs | 374 | 1.1 | 67 |
| 16. Green leaves/spinach | 351 | 1.4 | 101 |
| 17. Rooibos tea | 336 | 1.3 | 185 |
| 18. Sour milk | 328 | 1.2 | 258 |
| 19. Vegetables (other)** | 317 | 1.2 | 68 |
| 20. Non-dairy milk | 299 | 1.2 | 6 |
| 21. Salty snacks | 257 | 1.1 | 27 |
| 22. Pumpkin | 248 | 1.2 | 77 |
| 23. Peanut butter | 245 | 1.1 | 13 |
| 24. Breakfast cereals | 230 | 1.1 | 36 |
| 25. Legumes | 228 | 1.2 | 138 |

Source: The National Food Consumption Survey (NFCS)[13]

* Fruit other than vitamins C-rich and vitamins A-rich

** Vegetables other than green leafy, cabbage group or pumpkin group

‡ Cordial made with water

## Obesity and Chronic Diseases

The South African Demographic and Health Survey (SADHS) undertaken in 1998 reported that 26.1% of adult women and 19.8% of men were overweight (BMI ≥25). Furthermore 9.3% of men and 30.1% of women were obese (BMI ≥30).[6] Since obesity is a major risk factor for hypertension and type 2 diabetes, the high prevalence of obesity is of concern and adds to the complexity of addressing the wide spectrum of nutritional disorders prevalent in the country. The SADHS also reported that 16% of adult women and 13% of men were hypertensive.[6] In this regard, the Directorate of Nutrition has recently initiated a series of nutrition management guidelines for obesity,[17] type 2 diabetes,[18,19,20] hypertension[21] and dyslipidaemia,[22] by a National Disease Specific Nutrition Working Group. This is indeed a development to be welcomed, most likely reflects the emerging realisation of the immense impact that nutrition-related chronic diseases of lifestyle are likely to have on the health budget in the future.

## Growth Monitoring and Promotion

Growth monitoring and promotion are an integral part of primary health care since growth monitoring provides valuable information regarding the nutritional status of infants and children.[23] A new *Road to Health Chart* and a complementary *Training Module for Growth Monitoring and Promotion*[24] have been developed. The new chart includes a vitamin A supplementation table to ensure that supplementation is undertaken according to the directed guidelines. It also comprises relatively minor changes/additions to the previous growth chart such as inclusion of "*immunisation batch numbers*" and "*presence of allergies*", to improve the relevant system of growth monitoring and immunisation.

Health workers are trained in completing The *Road to Health Chart,* which is used to record all information pertaining to the infant and young child growth, immunization status, vitamin A supplementation and other vital health indicators such as feeding practices and morbidity patterns. In 1998, it was reported that 74.6% of mothers with young children aged 12-13 months had a *Road to Health* growth chart[6] and this is targeted to increase to 100% by 2007.[25] Since 1998, training of health workers with regard to growth monitoring and promotion has been conducted in seven provinces. To date more than 500 health workers have been trained by the Nutrition Directorate to use the *Road to Health* chart. In October 2002 the new chart was reportedly being used in all provinces, by all health authorities. It is reported that the growth monitoring system will be evaluated once all health workers in all provinces have received training.[b]

b Jan Booysen, Nutrition Directorate, personal communication.

## Nutrition Promotion, Education and Advocacy

The Nutrition Directorate has been very active in the area of nutrition promotion. In the past seven years, a series of policy documents aimed at promoting nutrition in all sectors at all levels have been developed.

**Nutrition Related Policy Documents Developed between 1995 and 2002**

- Breastfeeding policy and guidelines for health workers[26] and a pamphlet on exclusive breastfeeding[27]
- Development of national nutritional guidelines for people living with TB, HIV/AIDS and other chronic debilitating conditions[28]
- Development of a vitamin A supplementation information leaflet and poster for health workers, and a pamphlet for caregivers.[15] Development of training modules for growth monitoring.[24]
- Guidelines for nutrition interventions at health facilities to prevent and manage child malnutrition[11,16]
- Development of a booklet and poster on iodine-deficiency disorders[29]
- Development of Food Fortification Legislation, which will make the fortification of all maize meal and wheat flour in South Africa mandatory by March 2003
- Development of a food fortification communication strategy by which the importance of micronutrients and fortified food will be communicated to the public. Part of this strategy involves the development of a *"Question and Answer"* document from which a brochure and poster will be developed.

The DoH has indicated that all their educational brochures are translated into the 11 official languages, after which they are sent to provincial offices for feedback and input. Some of these materials (i.e. AIDS and vitamin A brochures) have also been tested on women attending local health clinics. This testing phase was part of the tender specifications for the development of nutrition health educational materials. Although the Directorate staff have developed the majority of these publications, some were developed by outside consultants under the auspices of the Directorate. This remarkable achievement, which included extensive consultation with a wide spectrum of role players, is not only going to help the Directorate in achieving its future targets but it has also created capacity and additional support structures for implementation and monitoring.

## Promotion, Protection and Support of Breastfeeding

In 1995, the South African Vitamin A Consultative Group (SAVACG)[14] reported that over the preceding five years of the survey, there was a tendency for younger children who if breastfed at all, to be breastfed for less than 3 months. This trend was particularly prominent in urban communities.[14] Data from the SADHS of 1998, found that only 10% of infants between the ages of 0-3 months were exclusively breastfed, while about half (48.3%) of them

were bottlefed. The exclusive breastfeeding rate for 0-6 months was 7%.[6] These findings prompted the Department of Health to adopt the latest joint UNICEF/WHO recommendations of exclusive breastfeeding for 6 months.[30,31] Prior to this a period of 4-6 months was advocated.

The breastfeeding focus area includes the International Code of Marketing Breast Milk Substitutes[30,31] and the Baby Friendly Hospital Initiative, which was launched by the United Nations in 1992. Through these initiatives it is hoped that 15% of all health facilities with maternity beds will be baby-friendly by year 2007.

In order to achieve these objectives, 206 health professionals have been trained in lactation management and 27 assessors have been trained for the Baby-friendly Hospital Initiative (BFHI). Fifty-eight hospitals have to date been declared as baby-friendly and a breastfeeding week is now held nationally every year. Two assessments per year are planned including re-assessment of health facilities.

In terms of HIV+ women, the choice of infant feeding method is regarded as the mother's choice. The BFHI also recommends that the mother should be appropriately trained in order to implement her decision safely. The role of the health worker in a BFHI facility is to provide information regarding infant feeding methods to the mother and to provide support needed to make the mother's choice as safe and as appropriate for her circumstances as possible.

## Micronutrient Malnutrition Control

This focus area addresses micronutrient deficiencies in the population through a combination of strategies, namely, supplementation, food fortification, the promotion of dietary diversification and related public health measures.

### Vitamin A supplementation programme

Data from 1994 indicated that marginal vitamin A deficiency (serum retinol <20 ug/dl) was prevalent in 33% of preschool children (6-72 months of age).[14] The 1999 findings of the NFCS[13] were consistent with this. One out of two children had a dietary vitamin A intake of less than half of the recommended level. In the short term, therefore, the DoH has focused on a supplementation programme as a primary prevention strategy, to form part of the routine mother and child health activities. Some provinces have already introduced the vitamin A supplementation programmes targeting all children aged between 6 and 60 months, and postpartum women in the 6-8 weeks period after delivery.[15] In addition, vitamin A supplementation is provided to children who suffer from severe under-nutrition, xerophthalmia, persistent diarrhoea and measles.

## Fortification of food

With respect to fortification of staple foods, a National Food Fortification Task Group has developed a framework for key activities.[32] These included examining results of the national food consumption survey (a situation analysis), stability tests (with regard to the added nutrients) by industry as well as an organoleptic (sensory) evaluation of fortified maize and wheat. The Directorate of Nutrition also completed stability and organoleptic evaluations of maize and wheat. Furthermore, a National Committee for Food Fortification Communication was formed and has subsequently commissioned and developed a 'Food Fortification Communication Strategy' incorporating market research in the rural areas as well as the development and subsequent market research of a logo which will be used to identify fortified foodstuffs.[c] Based on the findings of the NFCS, the Fortification Task Group[33] recommended that maize and wheat flour be fortified to provide a person of 10 years or older, from 200g raw maize meal/wheaten flour, the following:

i Vitamin A, thiamin, niacin, pyridoxine – 25% of the RDA

ii Folate – 50% of the RDA

iii Riboflavin – 17% for maize and 20% for wheat flour of the RDA

iv Iron about 25% of the RDA

v Zinc – 20% of the RDA.

## Iodation of salt

In 1998, a survey was undertaken in order to assess the extent and prevalence of iodine deficiency in South African school children.[34] This was initiated by the DoH in order to test the effectiveness of mandatory salt iodation, which was introduced in 1995. Compared with earlier smaller scale surveys, this national study showed a substantial improvement in iodine status. Two national surveys confirm the marked progress in addressing iodine deficiency in South Africa. However, it is clear that minor weaknesses still exist in the national salt iodation programme, such as the domestic use of non-iodated agricultural salt in 6.5% of households (reportedly 20% in the Limpopo Province), and the under- or non-iodation of a substantial percentage of household salt.

c The draft regulations have been published in the government gazette for comment during the latter part of 2002.

## Food Service Management

Food service management encompasses all those activities and functions relating to the preparation and delivery of food (meals) to persons residing in state institutions. Typically these would include the food services at hospitals, orphanages, geriatric homes and similar institutions.

A national assessment of food service management in State institutions in South Africa was undertaken in 2000.[35] Results show that:

- There were no standardised guidelines for food service management in certain provinces
- Inadequately and inappropriately trained personnel managed the food services
- The State decentralised the tendering system for food service to provinces, which did not necessarily have the capacity to manage it. In this regard, it is to be noted that the tender boards give preference to Small Micro Medium Enterprises (SMMEs). Since many of the SMMEs do not appear to have sufficient experience in large scale catering or to have previously rendered a service to institutions, this approach appears to have resulted in services, which are often inefficient, and of poorer quality.

The Nutrition Directorate is aware of these problems and has taken certain steps to remedy the situation. The first step being to appoint an expert in food service management at their head office. Although still in the early stages, the Directorate has embarked on a programme, which includes the standardisation of manuals and guidelines for all institutions. It is hoped that this initiative will lead to substantial improvements in institutional food services by 2007.

## Conclusions and Recommendations on the Integrated Nutrition Programme

The INP has succeeded remarkably with regard to certain aspects of nutritional policy and development of guidelines for the improvement of the nutritional status of vulnerable groups. The Nutrition Directorate's continuing and ongoing monitoring and evaluation of existing programmes is most certainly commendable, and it is to be encouraged. Undoubtedly, by setting targets and objectives as well as strategies for their implementation, the Directorate has successfully created the necessary assessment framework for future evaluation of its programmes, and the impact thereof on the improvement of the nutritional status of the population at large. Equally commendable, is the emerging acknowledgement of the potential, and real, consequences the chronic diseases of lifestyle are likely to have in the future, as well as the intense promotion, education and advocacy in matters relating to nutrition.

In this regard, the published guidelines and educational materials aimed at the alleviation of the most common nutritional disorders seen in the country including primary and secondary interventions for dealing with protein-energy malnutrition, have created the necessary intersectoral framework for collaboration, monitoring and evaluation of progress in the future.

However, the enormous challenge for improvements in the *implementation* of these programmes needs due and urgent attention. On the basis of the experience accrued so far, policy implementation should focus on the lowest level of primary and secondary health care. Secondly, the Nutrition Directorate should be afforded the necessary resources to address the repeatedly documented lack of capacity at these levels, which could, arguably, be considered as the main impediment to the successful implementation of its programmes.

## References


1 Department of Health. An integrated nutrition strategy for South Africa. Report of the Nutrition Committee to the Minister of Health, Pretoria: Department of Health; 1994.

2 Department of Health. Integrated Nutrition Programme for South Africa. Summary of Broad Guidelines for Implementation. (Draft Document 5); January 1998.

3 United Nations Children's Fund. Conceptual framework for improved nutrition of children and women in developing countries. New York: UNICEF; 1990.

4 Engle P, Lhotska L. The care initiative. Assessment, Analysis and Action to improve care for nutrition. New York: UNICEF; 1997.

5 Department of Health. Draft Strategic Plan 2001-2004. Pretoria: Department of Health; 2001.

6 The National Directorate: Nutrition and Provincial Nutrition Units. Integrated Nutrition Programme Strategic Plan 2001/02 to 2006/07; November 2001.

7 Bengu-Baloyi L, Watson F. Department of Health Directorate, Nutrition. Evaluation of Pilot Community-Based Nutrition Development Projects; December 1998.

8 Department of Health. Primary School Nutrition Programme (PSNP). National Framework and Operational Guide, Pretoria: Department of Health; 1993.

9 Louw R, Bekker E, Wentzel-Viljoen E. External evaluation of certain aspects of primary school feeding. Department of Health; 2001.

10 Statistics South Africa: Statistics in Brief 2000. Pretoria: Statistics South Africa; 2000.
URL: http://www.statssa.gov.za

11 McCoy D. An Evaluation of the Primary School Nutrition Programme. Durban: Health Systems Trust; 1997.
URL: ftp://ftp.hst.org.za/pubs/other/psnp.pdf

12 Department of Human Nutrition: University of Stellenbosch. Guidelines for Nutrition Interventions at Health Facilities to Manage and Prevent Child Malnutrition (Pt 1: Under-nutrition). Pretoria: Department of Health; 2001.

13 Labadarios D, (Ed). The National Food Consumption Survey (NFCS): children aged 1-9 years in South Africa, 1999. Pretoria: Department of Health; 2000.

14 Labadarios D, Van Middelkoop AM. The South African Vitamin A Consultative Group. Children aged 6-71 months in South Africa, 1994: Their anthropometric, vitamin A, iron and immunisation coverage status. Isando: SAVACG; 1995.

15 Department of Health. Information for health workers on vitamin A supplementation. Pretoria: Department of Health; January 2002.

16 Ashworth A, Khanum S, Jackson A, et al. Guidelines for the inpatient treatment of severely malnourished children. Geneva: World Health Organization; 1998.

17 Disease Specific Nutrition Working Group. National Management Guidelines for Obesity [First Draft]. Pretoria: Department of Health; 2002.

18 Disease Specific Nutrition Working Group. National Management Guidelines for Diabetes mellitus in adults. [First Draft]. Pretoria: Department of Health; 2002.

19 Disease Specific Nutrition Working Group. National Management Guidelines for Diabetes Mellitus in children. [First Draft]. Pretoria: Department of Health; 2002.

20 Disease Specific Nutrition Working Group. National Management Guidelines for Gestational Diabetes Mellitus [First Draft]. Pretoria: Department of Health; 2002.

21 Disease Specific Nutrition Working Group. National Management Guidelines for Hypertension [First Draft]. Pretoria: Department of Health; 2002.

22 Disease Specific Nutrition Working Group. National Management Guidelines for Dyslipidaemia [First Draft]. Pretoria: Department of Health; 2002.

23 Morley D, Woodland M. See how they grow. Monitoring child growth for appropriate health care in developing countries. London: Macmillan Press; 1979.

24 Department of Health: Directorates of Nutrition and Child health. Training modules for growth monitoring and promotion. Pretoria: Department of Health.

25 Directorate of Nutrition. Strategic Plan 2002/03 to 2006/07. Pretoria: Department of Health; 2001. Updated September 2002.

26 Department of Health/UNICEF. South African Breastfeeding Guidelines for Health Workers. Pretoria: Department of Health.

27 Department of Health/UNICEF. Exclusive Breastfeeding. Pretoria: Department of Health.

28 Department of Health/UNICEF. South African national guidelines on nutrition for people living with TB, HIV/AIDS and other debilitating conditions. Pretoria: Department of Health; 2001.

29 Department of Health/UNICEF. Iodine Deficiency Disorders (IDD), [brochure]; 2001.

30 WHO/UNICEF. Protection, promotion and support of breastfeeding. Geneva: World Health Organization; 1990.

31 IOCU/IBFAN. Protecting Infant Health: A health workers guide to the international code of marketing of breast milk substitutes. Penang: International Union of Consumers Unions; 1993.

32 National Food Fortification Task Group. Department of Health; 1998.

33 National Food Fortification Task Group. Department of Health; 2002.

34 Department of Health: Directorate Nutrition and The South African Institute for Medical Research. Report of the South African Institute for Medical Research (SAIMR) on the Iodine Deficiency Disorder (IDD) Survey of Primary School Learners for the Department of Health, South Africa; March 2000.

35 Department of Health. Findings of the Food Service Management and Administration Consultancy Report, Pretoria: Nutrition Directorate, Department of Health; 2000.

# Support Systems

Chapter 18 Transport for Health Care Delivery

Chapter 19 Public Health Data Sources

Chapter 20 Disease Registries

Chapter 21 Health and Related Indicators

# Transport for Health Care Delivery

# 18

**Wendy Hall,[i] Dawie du Plessis[ii] and David McCoy[i]**

[i]Health System Trust

[ii]Private Consultant

*The lack of transport to ensure timeous transfer of patients between levels of health care facilities and for delivery of medicines, vaccines, and other essential equipment is a commonly heard cry from health workers, particularly from those working in rural areas, but is often overlooked and rarely researched.*

*It is essential to have the correct vehicle mix and a sound transport management system to ensure efficient and effective health service delivery. Public sector transport policies and management systems in South Africa are complex. Policy decisions for the management of the national fleet are set by the national Department of Transport, remote from the level of service delivery. The provincial Departments of Transport lease vehicles for service delivery to user departments, such as the Department of Health. A Fleet Management Service Provider is contracted to the national Department of Transport to coordinate fuel and oil purchases and maintenance of the national fleet.*

*Management of the national fleet has been identified by the national Department of Transport (NDoT) as not being part of the core business of the department. The policy direction of the NDoT is to outsource the management of the national fleet, (as has been done in the Northern Cape Province), and improve the subsidised car scheme for public servants. How these policy decisions will affect health service delivery is not known, particularly within a decentralised health system.*

*This chapter explores some of the complexities of the present transport management systems for health service delivery within the public sector through three provincial case studies, namely Limpopo, Mpumalanga and Gauteng. Some recommendations for improved management and for further research are made.*

## Introduction

The lack of transport to ensure timeous transfer of patients between levels of health care and for delivery of medicines, vaccines, and other essential equipment is a commonly heard cry from health workers, particularly from those working in rural areas, but is often overlooked and rarely researched. A multi-country study on transport management in the health sector carried out in four sub-Saharan countries demonstrated the importance of a functional transport system for ensuring the effective and efficient delivery of health services.[1] The same is true in South Africa; not only in the rural areas but also in the expanding informal settlements, urban and semi-urban areas. The annual peri-natal care surveys in 2000 and 2001 identified problems with transport as a direct avoidable cause of peri-natal deaths (2.6% in 2000 and 5.3% in 2001).[2] Lack of transport for moving patients between institutions accounted for 13.6% of maternal deaths reported in the 1998.[3] The problem of transport is probably even greater than indicated in these reports as the delays in transporting pregnant women from their homes to health institutions is difficult to estimate.

Transport is required for:

- *Delivery of health services* – mobile health services, supervision and support visits to clinics and communities, outreach programmes, school health services, support of home based care, TB treatment programmes and other community-based health programmes
- *Patient transfers* – elective and emergency
- *Support services* – collection and delivery of supplies and drugs, general administration, staff attending meetings and training workshops.

South Africa, like the rest of the developing world is faced with a challenge of providing adequate vehicles for equitable health service delivery. However, vehicles are expensive to purchase and to maintain. Therefore, sound management systems with clear policies and controls are essential. Where there is a shortage of vehicles, their use to carry out administrative functions, rather than service delivery functions such as clinic visits, community meetings and patient referrals can take precedence.[4] Consequently, utilisation of vehicles needs to be carefully managed and focused on health service delivery, with appropriate support put in place to ensure that this is the case. The South African health services policy focus is primary health care, which includes community participation and it is therefore essential for health workers to gain access to and interact with the communities they serve.

Currently the South African public sector transport policies and management systems are complex. This chapter explores some of these complexities through a review of the public sector transport systems in Limpopo, Mpumalanga and Gauteng. The review is based on research set up to describe the distribution of vehicles available for health services delivery in the three

provinces, the constraints to a fairer re-distribution of vehicles, and the challenges to a more effective and integrated transport management system at the health district level.[a] In undertaking the research it became apparent that many constraints for efficient health transport management lay outside the Department of Health (DoH) and that it is important for these to be addressed.

## National and Provincial Government Systems

The management of transport at national and provincial spheres of government is closely inter-related. Details of the relationship between and within these spheres are described in the following sections of this chapter. The local government sphere is not subject to national transport policy and operates according to locally established policies.

The national Department of Transport (NDoT) is responsible for a wide range of functions, including public transport systems, railways, roads, airports, road safety and management of the government motor fleet. The role of the NDoT is to set policy, ensure synergy between the provinces, standardisation of the provincial policies and monitoring of the performance of the provincial departments of transport.

Government Motor Transport is a Subdivision of the Corporate Service Division of the national Department of Transport (a small portion of the total work of the department). The subdivision is responsible for transport in all government sectors within the national and provincial spheres.

The management of the national government transport fleet has been identified by the NDoT as not being part of the core business of the department. The department may be required to provide the service but not necessarily to own and manage the vehicles. The Government Motor Transport Subdivision is required to "manage the national government's motor fleet", through strategies that ensure "an effective fleet management system with effective controls; reduces fleet management costs" and that includes strategies of "implementation of PPPs (private-public partnerships) where appropriate; improved reliability and availability of subsidised transport".[5] In line with general government policy for outsourcing all non-core functions and focusing on core service delivery areas, the NDoT has developed its broad strategic policies to include outsourcing of the national transport fleet to the private sector and to improve the current subsidised car scheme.

a The review is part of a Local Government and Health in South Africa research project coordinated by the Health Systems Trust to monitor decentralisation and development of the District Health System. Transport is used as a 'tracer' for monitoring changes in management of easily re-distributable resources. In the first phase the specific objectives were to develop an asset register of all vehicles available or designated for health care services in three provinces, describe the transport management systems of the provincial and local spheres of government and make recommendations for the smoother and more effective management of vehicles allocated for health care.

## Subsidised car scheme

A subsidised car scheme has been operating within the government sector for many years and is a means of supplementing the pool of vehicles available for service delivery. Through this scheme an official in the department is able to purchase a vehicle for his/her official duties. The department reimburses the official for work related trips and at the end of the contract period the vehicle becomes the property of the official. Pre April 2001, the department provided the finance for the scheme and the vehicles were purchased through a Government Contract (RT77) at a favourable price. The department paid a monthly capital, fuel (dependent on the official kilometres travelled and the size and model of vehicle), maintenance and insurance allowances.

In April 2001 a new subsidised car scheme with two options (Scheme A and Scheme B) was introduced. In Scheme A, a private financial service provider (presently Wesbank) provides the initial capital for the purchase of the vehicle, operating a transactional relationship with the official in the same way as for a standard financial loan. The department pays fuel and capital costs to the official through their salary, but pay maintenance charges to Wesbank who operates a maintenance account for the vehicle on behalf of the individual and the department. In Scheme B the official is able to purchase a new or second hand car less than 2 years old. The department pays for a contribution towards fuel and maintenance costs but not for insurance or capital costs.

To participate in either the A or B Scheme the official must meet certain prescribed criteria that include requiring the vehicle as a work facility, travel more than a prescribed distance each month and satisfy Wesbank financing requirements. An application for an official to have a subsidised vehicle must be accompanied by a full motivation that is supported by his/her immediate supervisor. The application is passed through further channels, which vary between provinces. All applications are signed by the head of the department before being submitted to Wesbank for clearance and are then passed to the provincial DoT through whom the vehicle is purchased. The NDoT monitors the schemes.

By joining the subsidised car scheme, the individual commits to ensure that the vehicle is available for official use. If it is unavailable the official must provide alternative transport and may not request the use of a government owned vehicle. The official must provide regular monthly programmes of planned official travel and submit monthly logbooks recording actual official and private use of the vehicle. The Transport Officer, who administers the scheme, authorises the individual's travel claims, which must be supported by his/her immediate supervisor.

The scheme has a number of advantages over the using of government owned vehicles. In particular, an individual is able to move more freely when required. For example, a government vehicle may not be kept at an officials home overnight or at weekends and can only be collected from the garage at 08:00 am and must be returned by close of business on the same day. This limits

the time that the official has for visiting clinics or other projects that are far from their work place. With a subsidised vehicle there is no such restriction and the official can leave earlier and return later, thus giving more time in the field.

However, there are intrinsic problems with the scheme, as highlighted by a number of the provincial transport managers. These include: difficulty with monitoring of kilometres travelled for official and private use, reluctance of officials to use their own vehicles on poor roads and therefore requesting use of government vehicle for such trips, and less coordination of trips as officials prefer to drive alone to ensure they complete their required monthly official kilometres.[b]

The provision of vehicles to individuals does potentially increase the availability of transport for carrying out their functions, but the scheme requires good management to ensure that the criteria are adhered to and that the vehicles are used for health service delivery. In addition, through this scheme many more government officials have access to owning their own vehicle, which they would otherwise not be able to afford, and has decreased the budgetary risks for the government. All subsidised vehicles are monitored by the NDoT through electronic printouts. This information is available to all user departments.

## Outsourcing

The NDoT's stated policy direction is to outsource fleet management through public-private partnerships (PPP). Through PPPs the risks are said to be shared with private sector companies whose core business is fleet management. The private company will manage the government fleet and be responsible for ensuring that vehicles are available at all times for service delivery. The decision is in part an acknowledgement that the government does not have the capacity to manage the national fleet.

The policy decision was made by MinCom, a committee comprised of the national Minister for Transport and the nine provincial MECs for Transport. The decisions relate to government transport in all provinces and for all government departments are included in the NDoT's strategic plans for 2002-2003.

The NDoT has spearheaded a number of PPPs. These include the outsourcing of the fleet management for all national departments in 1999 and the outsourcing of the entire Northern Cape government fleet in November 2001. Other pilot projects include the outsourcing of emergency services in Limpopo Province (to be finalised by April 2003). The outsourcing of the entire government fleet in the Eastern Cape was expected to be finalised by the end of November 2002.[5] National Treasury PPP Department guidelines have been followed in setting up these PPPs.

b Reported at Transport Workshop of 27 September 2002 with transport managers from Mpumalanga, Gauteng and Limpopo Departments of Health.

A private fleet management service provider has been contracted for several years by the NDoT to improve the monitoring and control of vehicles and to reduce fuel fraud. The vehicles remain the property of the government, which is also responsible for purchase of new and replacement vehicles. Wesbank First Auto (through Contract RT46) at present holds this contract, which is valid until 31 March 2004. Essentially the contract provides 'garage cards' for drivers, and a facility to link fuel tagging systems to enable drivers to procure fuel and maintenance services at a number of approved garages throughout the country. The responsibilities of First Auto[c] include:

- Evaluating and approving maintenance quotations
- Inspecting vehicles before and after repairs
- Scrutinising invoices submitted by garages
- Paying suppliers
- Providing daily electronic (internet based) reporting
- Providing monthly electronic and printed reporting
- Rendering a fleet management consultancy function.

## Role of the Provincial Departments of Transport

The provincial departments of transport are required to establish a Motor Transport Advisory Committee for transport management within the province. Each provincial user department (e.g. health, welfare, education) is represented on that committee.[6] The provincial Departments of Transport (PDoT), through the Government Garages, are responsible for the management (including licensing), procurement, maintenance, repair and disposal of all vehicles used in government service within their provinces. User departments, such as health, welfare and education, hire vehicles for their use from the PDoT and all queries are passed from the user department to the PDoT. The user departments budget for all recurrent running costs. New and replacement vehicles can be purchased through a tender (Tender RT77) available through the NDoT. The provincial Department of Finance (PDoF), however, is responsible for release of the funds.

Requests for new or replacement vehicles are processed from the health district or institution, to the transport section in provincial Department of Health (PDoH) who in turn submits them to the PDoT. Purchases can be made on confirmation from the PDoH and PDoF that funds are available. The PDoT purchases vehicles at preferential prices on the national tender, RT77. The final decision, however, as to the model and make of vehicle to be purchased rests with the PDoT government garage. This decision is dependent on supply from the manufacturers and overall demand for vehicles within the public

c du Toit, P; First Auto (Pty) Ltd; Consultancy Functions for the RT46 Contract.

sector. It is possible for the PDoT to purchase three sedan vehicles to satisfy the wider sector demands instead of purchasing at a similar cost one four-by-four or other specialised vehicle for one department. The purchase of a new or replacement vehicle for services to be rendered at a health district or institution is thus dependent on a negotiation process between the PDoH, PDoT and PDoF and is governed by policies set by the NDoT.

Requests for renewal of licences, maintenance and repairs of any vehicles follow a similar path i.e. from the health district or institution, to the PDoH and then to the PDoT and PDoF for authorisation.

This arrangement means that there are three departments involved in release of funds for the management and payment of the fleet. An arrangement that not only leads to many delays in transactions taking place, but also can result in each department blaming the other for non-delivery. This lengthy process results in many vehicles continuing in service long after their economic life span or lying idle while awaiting authority for repairs. The fleet service management service provider, First Auto, is facilitating some of these services with a positive improvement being noted.

In some provinces the relationship between the departments is changing. For example, in Gauteng the PDoT is working closely with user departments in implementing new systems of monitoring the use of vehicles, and in Limpopo the full responsibility for transport management is expected to be delegated to the user departments from 1 April 2003. However, it is anticipated that the PDoT will continue to have a monitoring and policy formulation role to play.

When the fleet management is outsourced, such as in the Northern Cape, the PDoT remains responsible for managing and monitoring the contract, but the user departments are responsible for the financing of the hire of vehicles from the private company involved in the PPP.[7] The head of the user department, such as health, must account for all expenditure in terms of the Public Finance Management Act (PFMA).[8]

Each PDoT also signs a service level agreement with First Auto (the present fleet management service provider contracted to NDoT) for the services to be provided by them within their province. This includes coordinating payment to providers for fuel, repairs and maintenance of all government vehicles. First Auto maintains a large database on all government vehicles and the system has the potential to provide detailed information that can be used to calculate standard monthly transport management indicators – such as kilometres travelled, fuel utilisation, running cost per kilometre, availability, utilisation and needs satisfaction. In terms of the contract there are a number of other service options available to the provincial departments, such as valet services and the installation of vehicle tracking devices.

## Provincial Department of Health Transport Management Case Studies

Case studies of fleet management for health were undertaken in Limpopo, Gauteng and Mpumalanga provinces between April and July 2002. The studies were undertaken through interviews with key officials in the Departments of Health and Transport in the three provinces. In each province one selected district or metro municipality and a health sub-district within the selected district or metro municipality, participated in the study. Policy and other documents, obtained from these departments or through the departmental websites, were analysed. Meetings were also held with the manager of the First Auto contract, the TransAid Worldwide[d] South African representative and NDoT. A workshop comprising representatives from the three provinces was held to identify some of the key root problems with transport management pertaining to policy, operational control, management information systems, fleet management and human resources.[9] A summary of the key issues identified in each of these components for each province is given in the Table 1. The asset register from First Auto for September 2002 was used for analysis as complete registers were not available from the provincial departments of health at the time of the study. A short summary highlighting some key points of interest in each province is also included.

### Limpopo Department of Health and Welfare

In Limpopo, health services are combined with welfare into the Department of Health and Welfare (DoH&W). The transport management system in the department is below optimum. Health care workers experience difficulties in accessing transport. There are no clear departmental policies for management of the fleet, including vehicle replacement and allocation of new vehicles for expansion of services, such as community outreach services. The problems are being addressed and during 2002, TransAid Worldwide provided management training for all transport officers in the department and new management systems are being developed. Also the PDoT is expected to decentralise the management of the government owned vehicles to the DoH&W from 1 April 2003.

The fleet is ageing (Table 1 and Figure 1). Of the 1 528 vehicles on the Asset Register for the DoH&W obtained from First Auto, only 173 (11%) are less than five years old. An increasing number of health officials are joining the subsidised car scheme with 626 at present owning such vehicles, the majority qualifying to join Scheme A. No analysis has been done as to which officials have subsidised vehicles or the health service function for which they are being used. In Greater Tzaneen Health Sub-District it was noted that none of the five Community Liaison Officers who are responsible for coordinating

d TransAid Worldwide is a not-for-profit organisation committed to improving transport management systems in developing countries. The organisation trained transport officers in departments of health in seven of the nine provinces in South Africa between 1996 and 2001.

| FUNCTION | LIMPOPO | MPUMALANGA | GAUTENG |
|---|---|---|---|
| **Asset Register:**<br>*(Full list of vehicles available for service)* | Total government vehicles = 1528*<br>Under 5 yrs = 173 (11%)<br>6 to 10 Yrs = 1125 (74%)<br>Over 10 yrs = 230 (15%)<br>Total subsidised vehicles = 626 | Total government vehicles = 643*<br>Under 5 yrs = 186 (29%)<br>6 to 10 Yrs = 322 (50%)<br>Over 10 yrs = 135 (21%)<br>Total subsidised vehicles = 200 | Total government vehicles = 884*<br>Under 5 yrs = 228 (26%)<br>6 to 10 Yrs = 425 (48%)<br>Over 10 yrs = 231 (26%)<br>Total subsidised vehicles = not available |
| **Policy:**<br>*(Rules guidelines written and unwritten)* | • Asset register not available at Head Office<br>• Policy outdated – no update since 1996<br>• Policy requires top management approval | • Asset register available at Head Office<br>• Policy in place and adhered to at all levels<br>• EMS under Transport Division not Health – outsourced<br>• De-concentrated to three district offices – operating from hospitals<br>• Budgets held at district offices | • Asset register available at Head Office<br>• Policy in place and regularly updated<br>• Strong management with good top management support<br>• De-concentrated to three regional offices – each with own management |
| **Operational Control:**<br>*(Internal control procedures for misuse, optimal utilisation and to ensure availability)* | • Poor planning and control at Head Office; this is generally better at institution and district level<br>• Disciplinary procedures poor<br>• Poorly trained – but being addressed by TransAid | • Trips well planned and controlled through trip authorities<br>• Monitoring system being installed in all new vehicles<br>• Transport officers well trained<br>• EMS – three control centres<br>• Good disciplinary system in place and used | • Trips well planned and monitored through issue of trip authorities<br>• Emergency trips require director's signature<br>• No keeping vehicles at home<br>• Transport officer follows up traffic offences<br>• Asset register checked against physical presence of vehicles |
| **Management Information System:**<br>*(A tool to collect relevant data for analysis and corrective action)* | • Log sheets accumulated in Head Office Dept of Transport – do not want these<br>• No feedback on indicators given to institutions or districts/sub-districts<br>• First Auto – used for fuel, maintenance and repairs. Payments in arrears.<br>• In some areas – lack of capacity to cope with repairs and problems experienced with use of electronic fuelling<br>• No vehicle replacements | • Only 50% return of monthly forms from institutions and districts<br>• Monitoring of fleet therefore difficult<br>• Indicators used at local level for fleet management<br>• Replacement of vehicles are budgeted for<br>• Management of 48 ambulances is outsourced – but contract will not be renewed due to the high expense | • Regional offices receive monthly reports on indicators – forwarded to head office quarterly<br>• First Auto and SQL systems integrated – used daily to identify over fills<br>• Government Garage working closely with user departments – introducing a computerised system for trip authorities |

| FUNCTION | LIMPOPO | MPUMALANGA | GAUTENG |
|---|---|---|---|
| **Fleet Management:**<br>*(Management of vehicles from purchase to disposal)* | • Poor communication within the department leads to fragmented management<br>• Poor communication between Dept of Health and Dept of Transport<br>• Delays experienced with Government Garage with repairs, licensing and fuel cards | • First Auto system used for monitoring and improving availability – tracking system supports this system<br>• Problems experienced with electronic fuelling system<br>• Private companies paid within 36 hrs of completing repairs | • First Auto card system used – for planned maintenance and repairs<br>• System working well |

* Asset Register from First Auto Data Base was used in the analysis as a full Asset Register was not available from all three provinces at the time of the study

the primary health services within a defined local area had joined the scheme and all relied on government transport to visit clinics and the community. The reasons for this were not clear.

There are however islands of excellence in health transport management within the province, for example:

- The transport manager at Polokwane Hospital has developed an effective system to manage his fleet, adheres to the policy and, although having old vehicles, achieves a high level of functionality.
- The Greater Tzaneen Health Sub-District management team communicates regularly with the local government garage officials to ensure a high level of availability.

The running cost of the fleet (fuel, oil, repairs and servicing) in Limpopo DoH&W is approximately R37 million per year.[e] This is 1.3%[f] of the annual budget for the PDoH&W. This excludes the cost of new or replacement vehicles purchased during the year and the subsidised car scheme.

## Gauteng Department of Health

The management system in Gauteng is largely computerised. The provincial Department of Transport is supportive of the user departments and provides regular training on the new electronic systems being introduced. Health care providers experience few problems with transport.

The fleet is ageing. Of the 884 vehicles on the First Auto Asset Register for the PDoH, 228 (26%) are less than 5 years old. Officials have joined the subsidised car scheme, which is strictly controlled and mostly limited to Scheme B, which is less popular with the officials.

The running cost of the fleet is approximately R12 million per annum,[e] which is 0.17%[10] of the annual departmental budget. This excludes the cost of new or replacement vehicles purchased during the year and the subsidised car scheme.

## Mpumalanga Department of Health

In Mpumalanga transport management systems are in place and there are generally few complaints from health care workers. The department has recently purchased 200 new vehicles. All new vehicles are being fitted with a tracking system, Digicare, which is an option within the First Auto contract at an approximate cost of R10 000 per vehicle. This system monitors the movement of vehicles in motion and acts as a monitoring system as well as a security device in case of hi-jacking or other such incidents.

e First Auto (Pty) Ltd. Expenditure reports for 6 months between April 2002 and September 2002 and doubled for projected annual expenditure.
f Limpopo Budget Hearings, Presentation to National Health Portfolio Committee, 14 May 2002, Total health budget = R2.9 billion for 2002/2003.

Vehicles have been pooled at the district offices. According to a clinic sister this has led to some delays in the transfer of patients from the clinic to hospital and limits their ability to run community outreach programmes to the community. Previously, a vehicle was stationed at her clinic for transfer of patients and for outreach programmes.

Like the other provinces, the fleet is ageing. Of the 643 vehicles on the First Auto Asset Register, 186 (29%) are less than 5 years old. Similarly, many officials have taken advantage of subsidised vehicle schemes, mostly qualifying for Scheme A, which takes pressure off the pool vehicles. For example at the Barberton Hospital, the superintendent, matron and administrator each have subsidised cars, which are used for attending regional and head office meetings. There are a total of 200 subsidised vehicles in the Mpumalanga provincial Department of Health.

The cost of running the fleet is approximately R22 million per annum,[e] which is 1.3%[g] of the annual departmental budget. This excludes the capital value of the vehicles, the cost of new or replacement vehicles purchased during the year and the cost to the department of the subsidised car scheme.

Poor road infrastructure, in parts of the province and the ageing fleet means that repair costs are higher than maintenance costs.

## Local Government

In municipalities fleets are small and in the smaller ones, vehicles are pooled to provide services for all departments. In the metros and larger municipalities there is a degree of de-concentration of management to departments. Few problems are experienced with service delivery. The geographical area served by the metro or municipality is relatively smaller and the health services provided by local government are limited to non-hospital primary health care and some environmental health services.

In The Greater Tzaneen Local Municipality in Limpopo, transport for health services is drawn from the pool of vehicles garaged at the municipal offices. The local municipality is responsible for one PHC clinic and some environmental health services. Transport management or provision is not a problem. There is no sharing of transport resources with the provincial services.

g Mpumalanga Dept of Health, budget report to the Provincial Health, Social Services, Population and Development Portfolio Committee, 4 June 2002. Total budget for health = R1.6 billion for 2002/2003.

In Tshwane Metro, transport is managed as a subsection of Support Services within the health department. The Tshwane Corporation, through a service level agreement between the Tshwane Corporation and the Health Department, allocates fifteen vehicles to Health. The Health Department is responsible for all costs associated with transport, including budgeting for new or replacement vehicles. All vehicles over 10 years are subject to annual assessment for possible replacement. Transport is only used for health service delivery, such as patient transfers and delivery of medicines and other medical sundries. In some areas of the Metro, patient transport services have been outsourced to local community organisations. Staff members have access to a vehicle subsidy scheme or are reimbursed for use of public or private transport when on official business, such as attending meetings. No disciplinary problems are experienced with use of transport. Monitoring and control of the fleet is done through a simple paper based system from which all the standard transport indicators can be calculated.

## Major Issues

### Fleet size and age

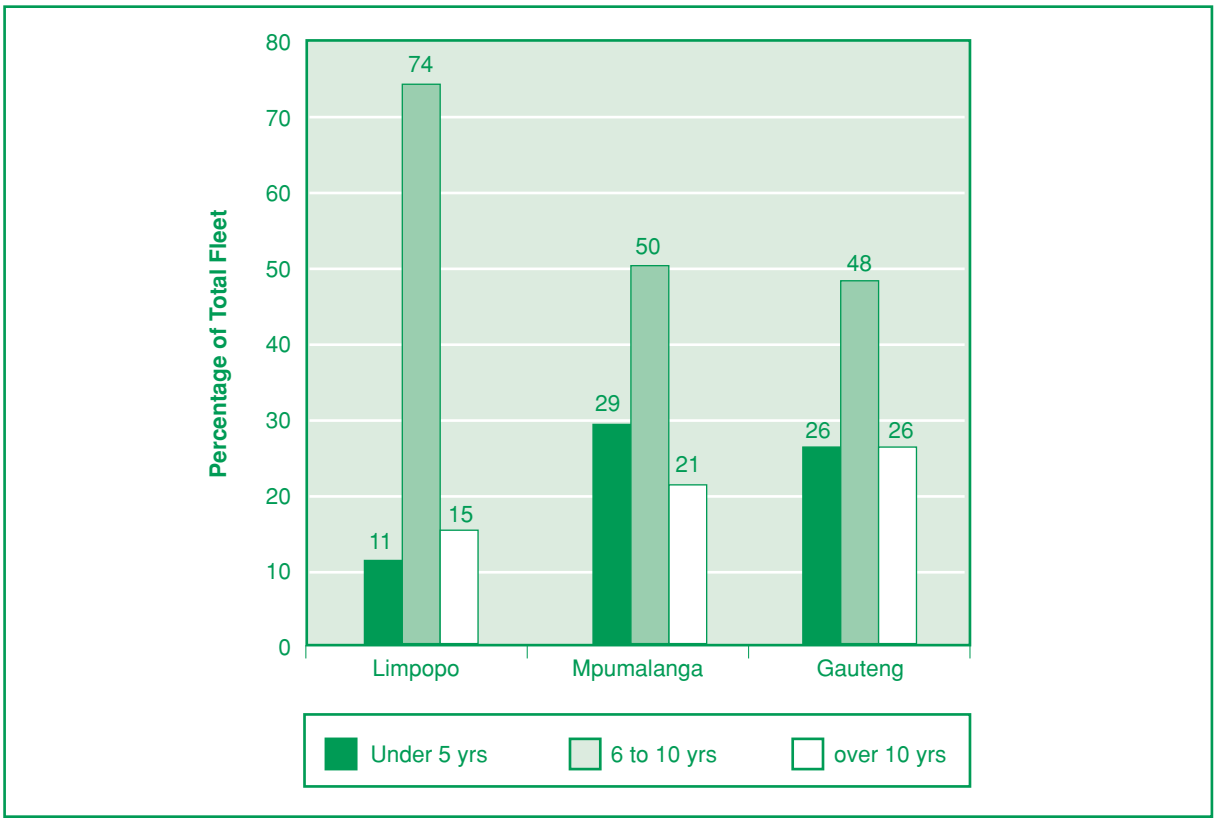
There is no standard method for determining the ideal vehicle mix and number for a health district. A six-step method that includes an analysis of the present fleet and a need analysis for transport is outlined in the Transaid Transport Management Manual. The method is more subjective than objective and dependent on the health managers' own interpretation of what is required.

As expected the most urban and wealthy province (Gauteng) appears to experience fewer problems with transport for health service delivery. The rural provinces (Mpumalanga and Limpopo) struggle with insufficient and unsuitable vehicles. Whether this is a genuine lack of vehicles or indicates that vehicles are being used for non-health service delivery purposes, or mismanagement of the fleet is not clear.

The three provincial case studies all show an ageing fleet, despite Mpumalanga reporting the recent purchase of 200 new vehicles. The majority of vehicles in the three provinces are between 6 and 10 years old – see Figure 1.

Of particular concern is Limpopo. Very few new vehicles have been purchased in recent years. The reasons for this are not known, but may in part be compensated for by the high number of subsidised cars within the department.

**Figure 1: Fleet age in Limpopo, Mpumalanga and Gauteng Provinces**




## Subsidised Vehicles

The number of officials taking advantage of the subsidised car scheme has increased since the introduction of the current scheme in April 2001. Theoretically the scheme improves the availability of transport for service delivery and reduces the size of the government fleet. However, as mentioned previously, there are a number of inherent problems with the scheme and it is at present being revised.

The use of the subsidised car scheme as an alternative to government vehicles needs further research as to its effectiveness for health service delivery and the cost to the department. The scheme is a policy of the NDoT who view its success at a macro level, with little apparent assessment of the effects of these policy decisions on service delivery.

## Relationship between National and Provincial Departments of Transport and the User Departments

The relationship between these departments has been problematic. Control has been centralised to the Department of Transport with the user departments having little or no autonomy. The multiple levels through which even the simplest requests must pass for processing have led to long delays. This

includes obtaining permission to carry out repairs, renewing licences and fuel cards for vehicles and the replacement of vehicles. From health service delivery level the request passes to the health sub-district office, to the regional office and then to the PDoH, who then refers the request to PDoT and/or PDoF. First Auto are required to coordinate the arrangements for repairs and payments, which brings a fourth stakeholder into the equation.

The net result is that many vehicles remain idle for long periods of time and compromise the service. Many health workers are acutely aware of the problems that arise through lack of transport being available for service delivery. Because provincial staff are not at the coalface of service delivery they experience less pressure to ensure prompt service delivery and it may be that the people making the decisions regarding transport are too far removed from the point of delivery.

This relationship is further complicated by the centralised policy direction from the NDoT, which can impact directly on the services rendered by one of the provincial user departments. For example, the decision to privatise the emergency services in Limpopo Province were taken by the NDoT while the responsibility for financing and implementation rests with the Limpopo DoH&W. The central pressure to implement policies that are politically driven may not necessarily be in the best interest of service delivery.

There is a move for the provincial Departments of Transport to work more closely with their user departments (such as in Gauteng) and to decentralise the management of transport to the user departments (as in Limpopo). This will facilitate the ability of the Head of Department to account for all transport related expenditures as required by the Public Finance Management Act, as the PDoH will have increased management control over the transport.

First Auto is contracted through the NDoT and PDoTs, but serves the user departments, with whom they have no contractual arrangement. Until recently contact between First Auto and user departments was discouraged by the DoT. User departments can, however, now negotiate services from First Auto, such as the Digitec tracking system being installed in Health vehicles in Mpumalanga.[h]

As part of the RT46 contract with the NDoT,[c] First Auto has become pro-active in engaging with user departments and has been responsible in some provinces for setting up regular meetings between the user departments and DoT. User departments have had increasing freedom to contact First Auto for assistance with resolving problems of non or late payment of accounts. This new arrangement has a positive effect on the ability of the department to manage their fleet and for improving service delivery. However, there are

h The tracking system used by First Auto has the potential to provide detailed information on all government vehicles and can be used to calculate the standard transport management indicators – such as kilometres travelled, fuel utilisation, running costs, availability and utilisation.

still problems such as the delay in relaying information on redeployment of vehicles within the department to update the transport asset register. Since First Auto captures all financial transactions on each vehicle according to cost centres, the incorrect allocation of a vehicle in the system can result in the incorrect cost centre being debited for the cost of running a particular vehicle.

## Personnel

Any system is only as good as the people who are running it. The islands of excellence, which were observed, seem to exist because the person in charge is a 'champion' for an effective transport management system. The Trans Aid Transport Management manual devotes a chapter to issues of personnel. The importance of organisational structures, clear job descriptions and clear lines of communication are stressed. Feedback and proper evaluation of the system, the organisation and the fleet management is important. Where this is done the number of complaints with regard to lack of transport is notably fewer, even where the vehicles are old.

### Organogram

The rank of transport managers at provincial level varies from being a senior clerk to an assistant director. At institutional or district level, the transport manager may be a senior driver who may not be fully literate, as found particularly in the more rural areas. In some places the management of transport is an additional responsibility for an administrative officer. This may be appropriate in a small facility with few vehicles, but at higher level within the system, such as regional or provincial, a dedicated official, with clear job description and scope of responsibility is required. This issue is being addressed in some provinces, such as Mpumalanga and Limpopo, where new organograms that include Transport Officers are waiting approval. A possible career path for Transport Officers is being developed, which will probably encourage those who have been trained to remain in the public service.

Top management in some provinces appear to pay little attention to transport. However, the importance of top management in support of transport management cannot be over emphasised. Where this is strong, vehicles will be more readily available for essential health service delivery. Transport issues should be a standing item on the agenda of management meetings at all levels of the system, with improved understanding of the indicators used for transport management. Recently the Provincial Transport Manager in Limpopo has been submitting a quarterly report to top management, but it

is too soon to know the role this report plays in management decisions.

## Training

TransAid Worldwide provided training in transport management for health services in seven of the nine provinces between 1996 and 2000. More recently training has been focused in Limpopo Province, one of the provinces not included in the first round. First Auto, in terms of their contract, is committed to training of provincial transport officers from all government sectors. In addition the provincial departments of health have their own training sections. There appears to be little or no coordination between these three training programmes, nor linking these with the Skills Development Plan within the department.

TransAid is assisting to develop training programmes that provide an internationally recognised qualification in transport management. This is designed to encourage a career path in transport within the department. The process is frustrated by the fact that this qualification is not accredited in South Africa. All provinces, except Limpopo and Western Cape, are participating in this programme.[j]

## Management Information System

There are seven recognised standard key performance indicators for fleet management.[9] These are:

1. Kilometres travelled – total kilometres in a month
2. Fuel utilisation – kilometres per litre of fuel used
3. Running cost per kilometre – includes fuel, maintenance, repairs, tyres etc.
4. Availability – how much time a vehicle is ready for use and how much time it is in the garage for repair or maintenance
5. Utilisation – of the days that a vehicle is available, how many days it is actually used
6. Needs satisfaction – the number of trips authorised that were actually met with the available vehicles
7. Safety record – a measure of the number of accidents and reported incidents.

These indicators can be calculated from information available at institution and district level; i.e. at the operational level. They can be used locally for transport management and passed up the levels to the provincial transport

j Personal communication. Ms Pumza Tuswa, South African TransAid Worldwide representative.

managers. How this information is used varies between institutions and levels of the system. It appears not to be used at top management level within all the provincial Departments of Health. Some of these indicators can also be calculated from data collected and collated by First Auto, and greater use of this facility could be made to save duplication. Indicators of particular use to management are:

- Running costs per kilometre
- Availability and utilisation.

A low availability indicates that vehicles are not being used for service delivery through either being in a garage for repair or not having a current license or some other system failure. An extended period of low availability requires investigation by management.

Transport management indicators should be related to health service delivery, the core business of the department. A review of the allocation of vehicles in one rural health district according to its main use each day (including weekends and holidays) showed that on only 26% of the days were vehicles used for direct patient care, such as transfer of patients, mobile clinic services, school health services, clinic and community visits and supervision. Vehicles remained idle, on stand-by or awaiting repair for 45% of the days and were used for administrative purposes or attending meetings for 26% of the days.[4] Clear guidelines for prioritising use of transport within the health district are required to ensure that health and patient care functions are given precedence over meetings and administrative functions. A health professional should be involved in the daily allocation of vehicles in support of the guidelines.

## Conclusions

Support services, such as transport, are essential for delivery of cost effective, efficient health services. Attention needs to be given to strengthening the management, monitoring and evaluation of these services. At present, transport in the provincial public sector is managed through a centralised, bureaucratic system with decisions for purchase, allocation and management of vehicles being made by people who are distant from the point of service delivery and who appear to have little understanding of the area in which the vehicles will be used. This is particularly true in rural areas.

In local and district municipalities, the management system is much closer to the point of service delivery and can therefore be more responsive to and understanding of the local needs.

## Recommendations

The recommendations below are drawn from the three provincial case studies outlined above and from a workshop of representatives from the Limpopo, Mpumalanga, Gauteng and Northern Cape provincial Departments of Health (Transport Section), the Gauteng provincial Department of Transport, a health service manager from a rural health sub-district, NGOs involved in transport management and First Auto.

1 Transport management for health services should be decentralised to the health district level. The local health management team are conscious of the need for reliable transport for service delivery. The centralised management system is not in the interests of service delivery – those making the decisions are too remote from the coalface of service delivery. In local government, the system is different and decisions and control are based locally. By drawing on local and international experience, models for transport management for health services at a district level can be developed. Local knowledge within each health district is vital for determining the best system for each district. This will require commitment to research and using this to develop a new policy approach for transport management at the district level.

2 The effect on health service delivery of the current policy direction of NDoT requires investigation to establish their effect on health service delivery. The current policies of outsourcing and the use of subsidised car schemes may not be in the best interest of health services.

3 Human resource development for transport managers and officers is required for all levels of the system. The important role of people in managing the systems needs to be recognised and a clear policy on such things as minimum qualifications, rank levels and training requirements developed. Support needs to be given to the development of a recognised qualification in transport management, such as the Vocational Qualification in Transport Management.

4 Management information systems for transport are available and should be used for management decisions. Inclusion of one or two of these indicators in the National Essential Data Set would bring prominence to this. These indicators could further be linked to the District Health Information System.

## References


1 Nancollas, S. Transaid Worldwide. Transport in Primary Health Care. A study to determine the key components of a cost effective transport system to support the delivery of primary health services. August 2001.

2 Saving Babies: A Perinatal Care Survey of South Africa 2000 and 2001. Compiled by: The MRC Unit for Maternal and Infant Care Strategies, PPIP Users and the National Department of Health; 2001.

3 Saving Mothers: Report on Confidential Enquiries into Maternal Deaths in South Africa 1998. Edited by Prof Bob Pattinson; Medical Research Council.

4 Hall, W and McCoy, D. No Transport, No Primary Health Care! Durban: Health Systems Trust; March 2000.

5 National Department of Transport Strategic Plan 2002/2003. URL: http://www.transport.gov.za

6 Department of Transport. Transport Policy. Transport Circular No 4 of 2000.

7 National Treasury Website – PPP Projects in Progress – January 2002. URL: http://www.finance.gov.za

8 Public Finance Management Act No 1 of 1999. URL: http://www.polity.org.za/html/govdocs/legislation/1999/act.pdf

9 TransAid Worldwide, Transport Management Manual, 2001. Published by TransAid Worldwide. p 167.

10 Gauteng MEC for Health, Budget Speech for 2002/2003, 30 May 2002.

# Public Health Data Sources

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**Kobus Herbst,[i] Andy Burn[ii] and Nompu Nzimande[iii]**

[i]Africa Centre for Health and Population Studies

[ii]European Union Technical Assistant at the Department of Health

[iii]School of Development Studies, University of Natal

*In this chapter a spectrum of data sources available to public health decision makers are presented. The intention is not only to describe the data sources, but also to identify gaps in information availability and integration.*

## Household Surveys on Health Service Utilisation

### October Household Surveys (OHS) of 1994 - 1999

**Background**

Statistics South Africa conducted these surveys annually every October from 1994 to 1999, except for 1996 when the survey was conducted in November due to the census which was conducted in October. This survey was replaced by the Labour Survey. The sample size was 30 000 households for most years except for 1996 when the sample was reduced to 16 000 households. These surveys collected information on access to health care and asked questions on health service utilisation for each of the households visited. This section asked questions on which health facility the members of households report to when they are ill, whether they would go to a public or a private health care centre or other facilities. The distance from the dwelling to this health centre and the duration it takes for them to reach it is asked, and the closest public hospital and social welfare service point is also identified. In addition, the proportion of the population covered by medical insurance is also identified.[1]

**Availability**

These data are available free from South African Data Archives (SADA). It can be accessed from their web site, which is http://www.nrf.ac.za/sada

### Demographic and Health Survey (DHS) 1998

**Background**

This survey was conducted by the Department of Health with the help from the Medical Research Council and Macro-international. DHS is a survey conducted in a number of developing countries, some of which have completed three waves. South Africa conducted wave 1 in 1998 and currently plans for the second wave. This is a survey whose main respondents were women aged between 15 and 49. These 11 735 women were identified from the 12 638 households interviewed. In addition, this survey collected information on adult health from 13 827 adults.[2] The results of this survey are intended to assist policy makers and programme managers in evaluating and designing programmes and strategies for improving health services in the country. The survey collected information on maternal and child health, and adult health.

**Availability**

DHS is available on line from the Department of Health web site: http://www.doh.gov.za or on order from the Measure DHS web-page: http://www.measuredhs.com/

## A National Survey of Health Inequalities in South Africa

### Background

This nationally representative survey of 4 000 households, was commissioned by the Henry J. Kaiser Family Foundation and conducted by the Community Agency for Social Enquiry (CASE) in June of 1994. The survey was to gather baseline information on health indicators and perceptions among South Africans. The indicators collected are: health-status, access to health-care, utilisation of services, quality of care and health outcomes.

### Availability

The report from this survey is available from Health Systems Trust, and can be downloadable from their web site http://www.hst.org.za. The data set should be requested directly from the Henry J. Kaiser Family Foundation.

**Table 1: Summary of household surveys**

| Survey title | Brief description | Availability |
|---|---|---|
| National Survey of Health Inequalities in South Africa 1994 | This is a household survey of 4 000 households. | The data should be requested from Henry J. Kaiser Family Foundation |
| October Household Survey (OHS) 1995 - 1999 | Conducted by Statistics South Africa. The survey interviewed 16 000 households in 1996 and 30 000 households in other years. | This data set is available from South Africa Data Archives (SADA) |
| Demographic and Health Survey 1998 | 12 247 households with 11 735 women between 15 and 49 of age interviewed. | Available from Macro DHS+ |
| Other surveys | SADA has a variety of household and individual based surveys on health and other social issues. Most of those not mentioned here are not national surveys, but are conducted provincially or in smaller areas. These are very useful for evaluating health care in specific areas. | The SADA office can be accessed from www.nrf.ac.za/sada<br>Or<br>e-mail: sada@nrf.ac.za<br>Tel: +27 (0)12 481 4158<br>Fax: +27 (0)12 481 4020 |

## Nelson Mandela/HSRC Study of HIV/AIDS Household Survey 2002

### Background

This is the first systematically sampled national community-based survey of prevalence of HIV in South Africa. This is a household survey of 9 963 individuals, of which 8 840 were tested for their HIV status. The study investigated key socio-cultural, political, economic and structural context within which HIV-related behaviour occurs. The survey covered all provinces in the country.[3]

### Availability

The report from this survey is available from Human Sciences Research Council (HSRC), and can be downloadable from their web site: http://www.hsrcpublishers.co.za/hiv.html.

## Population Census 1996

### Background

The 1996 population census enumerated all individuals who were present in the Republic of South Africa on the census night.[4] The census is an important source of both household and population level information. Household resources and services are collected from each household, which makes it possible to establish community access to services. The census collects necessary information for estimation of adult mortality and maternal and child health indicators.

### Availability

Census 1996 is available from Statistics South Africa.
http://www.statssa.gov.za

## Population Census 2001

Like census 1996, in 2001 the whole population of South Africa was enumerated and similar indicators were collected. Census 2001 is expected to be available in 2003.

## Routine Data Sources on Health Service delivery

The most important source for health care service delivery is the District Health Information System (DHIS), which has been accepted by the National Health Information System (NHIS/SA) as the standard source of health care data in all provinces. The DHIS is built around a comprehensive index of public health care facilities and administrative organisations (i.e. the sub-district, district and provincial hierarchy). This structure is an extremely useful data source in itself, and includes reference data such as the type and location of the facility, and descriptive data such as contact details, the number of beds and the available public utilities. Spatial data (GPS reference data) are also available for public health care facilities, though the quality of the data for one or two provinces is poor. Private health facilities are included in the organisational index, although this is not comprehensive. During the last three years the public health sector has implemented a flexible routine information system based on Minimum Data Sets (MDS) at all administrative levels, and these data sets, along with the organisational structure, comprise the DHIS. The term flexible means that each administrative level, while providing the minimum data needed for the level above, is free to add data

elements and indicators considered essential for their local environment. It also means that Minimum Data Sets should be reviewed and revised regularly to ensure that every single datum element collected actually is being used for monitoring and/or decision-making. The DHIS is a dynamic data source, and additional data sets are being added frequently. Recent additions include data sets for client satisfaction and Prevention of mother-to-child transmission (PMTCT) for the pilot projects.

## Primary Health Care Data Set

### Background

Several provinces started defining their first Primary Health Care (PHC) MDS in 1997 and 1998. The results from a survey of existing data sets, combined with recommendations from the NHIS/SA Committee, resulted in a National Minimum Data Set for PHC being adopted by the NHIS/SA in April 1999. This MDS for Primary Health Care is still in use and contains 20 compulsory and 18 optional items. However, the National Minimum Data Set (NMDS) has recently been revised and a proposal has been made to change the terminology to Essential Data Set (EDS) and this is awaiting ratification by the Provincial Health Restructuring Committee (PHRC).

### Content

After routine data have been captured or collated at district level, the sub-set that belongs to the provincial MDS is submitted electronically (from the DHIS), from the district to the provincial office. Provinces are expected to submit NMDS data items to the national Department of Health on a monthly basis, but there are still delays and interruptions in these data flow for a range of reasons that will receive attention during 2002 and 2003. Some of the interruptions in the data flow occur at or below the provincial level, and are often linked to re-organisation or staff turnover (many districts and even provinces have very few or no staff dedicated to health information). Nevertheless, the major milestone of 95% national data coverage has been reached.

Data from private health providers e.g. Hospital Association of South Africa (HASA), and Non Governmental Organisations (NGOs) are also on the increase, even if most provinces are concentrating on improving the timeliness and quality of public sector PHC data before expanding to the multitude of private health providers. It must be stressed that whereas all districts and provinces are striving to reach 100% data input coverage, additional data beyond 95% will have limited impact on the value of most indicators at provincial or national levels.

### Availability

The national database is held at the national Department of Health by the Health Information Systems cluster. It is a DHIS data set, and the national department updates the data issued on the DHIS CD at every DHIS release.

## Child and Youth Health Data (Including Nutrition for Children under 5 years)

### Background

The national Expanded Programme of Immunisation (EPI) manages routine immunisation data and information, as well as surveillance data on Acute Flaccid Paralysis (AFP), Measles, Neonatal Tetanus (NNT) and Adverse Events Following Immunisation (AEFI).

In 2001 valid information on routine immunisation coverage could not be obtained for South Africa, because three different software tools, as well as a combination of these, were being used by different provinces. The national EPI decided to use the DHIS software as the only system from September 2001 (in line with NHIS/SA) and the Directorate: Child and Youth Health now addresses routine information needs for the directorate that includes EPI, in an integrated way. Currently routine data and information are available in the DHIS software for all provinces except for one, in a fairly valid, reliable and user friendly way.

Purpose of Data sets

- Monitoring routine immunisation coverage, nutrition status and priority diseases e.g. diarrhoea and lower respiratory infections. This helps with the planning, implementation and monitoring of strategies that optimise protection of children and prevention of conditions that impact on under 5 morbidity and mortality.
- Monitoring progress towards reaching global targets for immunisation as well as other aspects regarding the eradication of polio and the elimination of measles and NNT.
- Assisting with the monitoring of the availability, acceptability, accessibility, quality, effectiveness and efficiency of Child and Youth Health Services in South Africa.

### Routine data

The standardised routine system in SA (DHIS software) is used for all routine data and information. The data input coverage for 2000 and 2001 are above 95% for all provinces except for one, where the latest version of the DHIS software has not yet been implemented and therefore data are not available. The contents of the system are in line with the National Minimum Data Set for EPI, Child & Youth Health and Nutrition for children under 5 years of age. It includes data on routine immunisation doses and coverage for selected vaccines, dropout rates, incidence of lower respiratory infections, diarrhoea

and malnutrition, as well as the pregnancy rate of women under 18 years of age.

### Surveillance data

Surveillance data on AFP, NNT and Measles is entered into EPI INFO at national level, based on World Health Organization (WHO) standards, by magisterial districts. This system is in the process of being adapted according to the demarcation boundaries set in the year 2000 in South Africa and to be linked to the DHIS software, enabling integrated analysis and reporting.

### Availability

Routine information is part of the National Routine Information System, managed by the Health Information System Offices at different levels and relevant data are extracted as needed. Data are updated by means of CD's distributed by the HISP Team until data are available on line and updated routinely by the National Information Unit. EPI surveillance data sets are kept at the National EPI sub-directorate. Contact: Christa van den Bergh (berghc@health.gov.za)

## Hospital data sets

### Background

The hospital minimum data set was implemented in April 2000. It is a national minimum data set, i.e. all public hospitals in the country are required to submit it, on a monthly basis. The data set is relatively simple. It does not include all the data that would be useful to manage a hospital, nor does it even provide an overview that would be adequate for provincial planning. However, it is a major step forward, as all hospitals now collect data according to nationally agreed definitions, which means that we can determine the volume of services being delivered, compare services between provinces, and calculate some simple performance indicators. The purpose of the data set is to set up national standards for hospital information so that facility managers could assess the performance of their hospital against others. It also provides useful information for provincial and national planning exercises.

### Data quality

Well over 90% of the hospitals have actually submitted data on a monthly basis since April 2000, which is a huge achievement. However, there are still some problems with the quality of data. The quality of data submitted by hospitals has improved, but the major problem remains the incomplete implementation of the data set in two provinces.

### Content

The data set is built on an index of hospitals, which in itself is very useful. The data set primarily deals with patient volumes. These data enables the calculation of indicators such as length of stay, bed occupancy rate and patient

day equivalent. Indicators for deliveries and births can be calculated, such as the caesarean section rate and still birth rate. In combination with financial and human resource data, unit cost and productivity indicators can also be calculated.

There are two other data sets for hospital services that are available in the DHIS:

1 Revitalisation data set (implemented April 2002).

2 Tertiary services data set (implemented April 2002).

Both of these data sets were implemented with effect from April 2002. The revitalisation data set primarily covers organisational development issues (such as the existence of hospital boards and the use of business plans) in those hospitals included in Hospital Revitalisation Project. At present this includes 27 hospitals (3 from each province).

The tertiary services data set was implemented to monitor patient services funded by the National Tertiary Services Grant. This includes the ten central hospitals, and any other hospital providing tertiary services. The data set is primarily concerned with the volume of the services provided, and access to the services for patients from the various provinces.

### Availability

The national database is held at the national Department of Health, in the Hospital Services cluster. It is a DHIS data set, and the national department at every DHIS release updates the data issued on the DHIS CD.

## The Electronic TB Register

### Background

The first prototype of the 'Electronic TB Register' computer programme was developed in Botswana in 1995 through a collaboration between the Ministry of Health, Botswana, and the Centres for Disease Control, Atlanta Georgia, USA. The aim of the programme is to collect, assimilate, and analyse data on tuberculosis. This is a user friendly, menu driven computer programme, based on Epi-Info (version 6). The initial software was revised several times (in 1996, 1997, 1999 and 2000) to make improvements and to add new features. In 1999 and 2000, a considerable effort was made to make the programme more generic, in order to suit situations other than that in Botswana. In 2002, version 2.2 incorporated South Africa-specific enhancements including a sub-district-level export to DHIS, facility-level profile reports and a function to export aggregate data from province to national.

The Electronic TB Register (ETR) was piloted in Mpumalanga and North West provinces during 2000. In May 2001 approval was given by NHISSA to roll the system out to the rest of the country. KwaZulu-Natal started from the 1st of July 2001 and Gauteng from the 1st of October 2001. Western

Cape is to implement the system from July 2002 (with the exception of the Metropole).

The WHO recommended reporting system for tuberculosis control programmes is based on a standard recording format from which quarterly reports on new cases, smear conversion and outcome of tuberculosis treatment are being generated. These reports serve as important management tools to assess programme performance and to determine possible interventions and future direction.

### Data quality and content

Data quality depends on the completeness and correctness of the manual recording tools, especially the register. Upon implementation of the ETR, provinces have had to concentrate effort on improving register completeness. The degree of completeness of registers varied across provinces but is improving. One feature of the use of the patient-based register is to detect such gaps, which was previously not possible via the aggregate system. The data set is patient-based at sub-district up to provincial level. The value of this is to be able to trace patients who 'moved' within the sub-district and/or have been 'transferred' outside sub-districts.

### Availability

Aggregated data are also exported to DHIS and are available from the regular DHIS distributions.

## Corporate Information Systems in Public Health Services

### Background

All national and provincial public health services use common mainframe computer systems to manage personnel and financial data. The personnel information system used is PERSAL and has been in use by all provincial health departments since the mid-nineties. In the late nineties some provinces still used their own propriety financial management systems, but since 2000 all provinces have standardised on either Financial Management System (FMS) or Basic Accounting System (BAS). Both systems are supported by the National Treasury and provide essentially the same functionality. The National Treasury has developed a management information system known as Vulindlela that provides summarised information from PERSAL and the financial information systems in a user friendly format. Information is not yet available for all provinces on Vulindlela, the exceptions being Eastern Cape, KwaZulu-Natal and the Northern Cape. Financial and personnel information for local authorities is managed in a range of different information systems with little standardisation between municipalities, making it very difficult to obtain comparable information across local authorities.

**Information Content**

Financial Systems

The financial systems contain budget, expenditure and revenue data down to facility level, or in some cases down to cost centre level within facilities. The financial data are classified using a three axis hierarchical coding the system. The three axes are:

a) Responsibility. Organisational component (hierarchy from department to facility or cost centre level).

b) Objective. This is a classification of the function on which the money is spend, for example hospital services, administrative support, emergency services, etc.

c) Item. This is a classification of the nature of the expenditure or revenue, ranging in a hierarchy with the so-called standard items of personnel, administration, equipment, supplies and livestock, professional services as the top level of the hierarchy and very specific line items at the lower end of the hierarchy.

PERSAL

The personnel system PERSAL contains a wide variety of data related to personnel administration in national and provincial health authorities. The primary function of the system is to manage salary payments. This is both a strength and a weakness of the system. It is a strength in the sense that the basic data are up to date and accurate, but a weakness in that this function dominates the use of the system to the detriment of the accuracy of non-salary information in the system. PERSAL contains the following categories of information:

a) Member data. This ranges from basic demographic data of salaried individuals to information such as medical aid membership.

b) Job information. A three part system is used. Occupational classification, following the international standard occupational categories; post class or rank classification following the nationally standardised CORE job classification system and finally a job title description which is not standardised across provinces.

c) Organisational structure. A series of hierarchical component and sub-component codes provide for the documentation of arbitrarily complex organisational structures from department level down to the smallest organisational unit. The number of approved posts and filled posts can be derived from these structures. Unfortunately this is the part of PERSAL that is not consistently kept up to date, with the result that it rarely reflects accurately the actual organisational structures at facility level.

d) Salary information. Detail information on annual salary, actual salary, benefits and deductions are available. Unfortunately information of total numeration package is not directly available and it has to be inferred from paid benefits and deductions as well as external information such as percentage contribution by the employer to pension funds.

**Availability**

The primary source of corporate data are the Vulindlela system and contact information is available on their web site (http://www.vulindlela.gov.ac). Detailed extractions of PERSAL data are provided in a set of text files (so-called MIS data set) on a monthly basis. The files can be requested through the provincial PERSAL system managers (they can be contacted through the provincial treasury departments). Extracted data are less readily available for the financial systems.

## Demographic Surveillance Systems

**Background**

Demographic surveillance systems (DSSs) follow all individuals in a circumscribed geographic area longitudinally over time. After an initial census where all individuals (and optionally their membership to household) and their place of residence are recorded, regular visits to homesteads then records all births, deaths and migrations continuously. In this way accurate demographic information regarding mortality, fertility and net migrations rates are obtained. Information collected in DSSs is not restricted to this basic set of demographic variables and DSSs are seldom initiated primarily to collect demographic data only and act as platforms for other research.

Three 'In-Depth' demographic surveillance sites are operating in South Africa:[5]

a) Agincourt DSS. The DSS is situated in the Bushbuckridge area of the Limpopo Province. The baseline census was done in 1992 and annual data collection rounds took place since then. The original objective was to provide essential information for district-level programmes. The Agincourt Health and Population Programme (AHPP), a research initiative of the University of the Witwatersrand, operates the DSS. The AHPP is part of the Health Systems Development Unit of the Faculty of Health Sciences. The total surveyed population is approximately 67 000.

b) Dikgale DSS. The DSS is situated in the Mankweng district of the Limpopo Province. The baseline census was done in 1995 with annual data collection rounds since then. The original objective of the site was to assess the prevalence and incidence of diseases in the area. The University of the North operates the DSS. The total surveyed population is approximately 8 000.

c) Africa Centre DSS. The DSS is situated in the southern-most part of the Hlabisa district of KwaZulu-Natal. The baseline census was done in 2000 with approximately three data collection rounds per year since then. The original objective of the site was to describe the demographic, social and health impact of a rapidly spreading HIV epidemic in the population. The Africa Centre for Health and Population Studies, a consortium of the Universities of Natal and Durban-Westville and the Medical Research Council, operates the site. The total surveyed population is approximately 90 000.

## Information Content

### Demographic information

a) Population structure. A detailed breakdown of the population by age and sex can be obtained. Information on residency is available with an indication of the proportion of people that spend the majority of their time in the surveillance area as opposed to those that return only on occasion.

b) Fertility. Total and age specific fertility rates area available with annual trends depending on how long the DSS has been in operation. Through the collection of maternity histories retrospective fertility trends can also be calculated.

c) Mortality. Accurate age specific fertility rates can be calculated. Through the use of verbal autopsies cause specific mortality is also available.

**Other information content**

a) All the South African DSSs collect socio-economic data, providing information on employment, education, assets, income and expenditure of rural populations. Agincourt and the Africa Centre also collects information on welfare payments such as old age pensions and child grants.

b) Depending on the DSS, additional information on nutrition, morbidity, sexual behaviour or population-based HIV status may be available.

**Availability**

Information from the sites is published in journal articles and monographs. The sites can also be contacted directly for more detailed aggregated information. Due to the complexity of the data and confidentiality concerns, anonymous individual level data are usually made available only in the context of on-site scientific collaboration.

**Table 2: Additional sources of Public Health Data**

| Data Source | Content | Availability |
|---|---|---|
| Notifiable Medical Conditions | 33 conditions notified by health care practitioners to local authorities. Local authorities send weekly summaries to provincial departments, who update a national database of notifiable cases and deaths. | Department of Health, Cluster: Health Monitoring and Evaluation |
| Birth Defects Surveillance | Notification of congenital defects. Genetic nurses complete notification forms which are sent directly to National Health for capture and analysis. | Department of Health, Directorate: Maternal, Child and Women's Health |
| Birth and Death Notification | Health facilities, forensic departments, traditional leaders and local authorities collaborate to submit birth and death notification to the population register maintained by the Dept of Home Affairs. Death notifications are coded by Statistics South Africa who then produces cause specific mortality rates for the country. | Department of Health (National Health Information System), Home Affairs and Statistics South Africa |
| Annual HIV sero-prevalence survey of women attending antenatal clinics | Unlinked anonymous surveillance at antenatal clinics with data entry at provincial level. National and provincial HIV prevalence rates calculated annually on the basis of this data. | Department of Health, Cluster: Health Monitoring and Evaluation |
| Saving Mothers, Confidential Enquiries into Maternal Deaths (1998) | Notification of maternal deaths to provincial health authority. Data entered and collated by secretariat of National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD). | Department of Health, Cluster: Maternal, Child and Women's Health. |
| The South African Vitamin A Consultative Group (SAVAG) (1995) | 1994 Survey of children aged 6 to 71 months in South Africa, their anthropometric, vitamin A, iron and immunisation coverage status. | Department of Health Directorate: Nutrition http://www.sahealthinfo.org/nutrition/vitamina.htm |
| National Food Consumption Survey (1999) | A national survey of children aged 1-9 years. A total of 3 120 children were included in the sample. | Department of Health, Directorate: Nutrition |
| National Iodine Survey (1999) | A survey of 200 schools (50 pupils at each school) to assess the prevalence of iodine deficiency disorders. | Department of Health, Directorate: Nutrition |
| Youth Risk Behavioural Survey | A school based survey of all 9 provinces, of learners in Grades 8-11, in both urban and rural areas. Focused on behaviours causing important health problems. | Medical Research Council, Health Promotion Research and Development |
| National Disability Survey – "We also count!" (1999) | A survey of disability including communication, movement activity, seeing, hearing, daily life activities, intellectual, learning and emotional disabilities. | Department of Health, Directorate: Chronic Diseases, Disabilities and Geriatrics |
| Pharmaceutical Management Information System (PharMIS) | Supplies detailed processed information on medical items to national provincial, district and municipality government levels. | Department of Health Cluster: Pharmaceutical Policy and Planning http://pharmis.pwv.gov.za/ |
| National PHC Facilities Survey 2000 Health Systems Trust 2000 | A survey of PHC facilities covering 445 facilities (10% from each province) focused on: range of services, human resources, equipment, infrastructure, drugs and supplies, supervision, and record keeping. | Health Systems Trust http://www.hst.org.za |

| Data Source | Content | Availability |
|---|---|---|
| Fatal injuries in South Africa in 2000 (2001) | Annual report of the National Injury Mortality Surveillance System | Medical Research Council |
| Monitoring Alcohol & Drug Abuse Trends, SA Community Epidemiology Network on Drug Use (1999) | Various reports with data on regional trends in drug abuse. | Medical Research Council, Mental Health & Substance Abuse Division |

## Conclusions and Recommendations on Data Sources for Public Health Service Planning and Evaluation

The breadth of information available for health care planning and evaluation has increased. In particular routine health information systems have become much more established in the past 2 to 3 years, and provide a valuable resource for managers. These data sources are important for equity oriented analysis. The population based surveys give us a measure of equity in terms of development and demographic indicators. The health service utilisation statistics provide us with measures of inequity of access on a geographical basis. The corporate systems provide us with measures of equity in health care expenditure and the case of the personnel system also measures of employment equity in the health sector.

The major challenge is to increase the use made of this resource, and this can only be achieved by:

- Further management development, particularly at local level
- Increased delegation to local managers, so that decision making at local level becomes a reality.

There is very little integration of information across the domains listed here (i.e. quality, disease monitoring, patient volumes, finance). Information from corporate information systems are not integrated with service and utilisation data available in systems such as DHIS. Without the integration of data across the various domains, information will always be of limited use. This is a lost opportunity for public health resource planners.

## References


1 South African Data Archives (SADA). Data Catalogue: 2001, National Research Foundation (NRF), Pretoria; 2001.
URL: http://www.nrf.ac.za/sada

2 Department of Health. South Africa Demographic and Health Survey 1998: Department of Health. Pretoria; 1999.
URL: http://www.doh.gov.za

3 Human Sciences Research Council (HSRC). Nelson Mandela/HSRC Study of HIV/AIDS: HSRC; 2002.
URL: http://www.hsrcpublishers.co.za/hiv.html

4 Statistics South Africa. The People of South Africa Population Census, 1996. Census in Brief. Report No 03-01-11. Statistics South Africa. Pretoria; 1996.
URL: http:/www.statssa.gov.za

5 INDEPTH. Population and Health in developing countries. Volume I. Population, health and survival at INDEPTH sites; International Development Research Centre 2002.

# Disease Registries

# 20

**Nokuzola Mqoqi,[i] Freddy Sitas[ii] and Janet Halkett[iiia]**

[i]National Cancer Registry, National Health Laboratory Services, Johannesburg

[ii]New South Wales Cancer Council, Woolloomooloo, Australia

[iii]Consultant Nephrologist, Division of Nephrology, Groote Schuur Hospital

*This chapter reviews the disease registries that are currently operating in South Africa. These include: the national and hospital based cancer registries, the dialysis and transplantation registry, the birth defects registry and the surveillance registry of work-related and occupational respiratory diseases in South Africa (SORDSA).*

*These registries are not covered by legislation regarding disease notification and were initiated largely as a result of scientific interest and operate with minimal resources. Despite these limitations they provide invaluable information, which would otherwise not be available from routine surveillance systems.*

*The chapter attempts to demonstrate the importance of disease registries in contributing to public health planning and evaluation. They do not only contribute to policy formulation but are used in monitoring and managing patients (the dialysis and transplantation registry) as well as in formulation of hypotheses for epidemiological research. Recommendations on how to improve the quality of existing registries and their uses are made.*

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## Introduction

Information from classical epidemiological sources such as notifiable disease registries and vital statistical records on deaths is often inadequate for monitoring public health impact of certain diseases and interventions.[1] Hence, in recent years there has been a notable increase in the use of other registry data for surveillance and other medical or public health activities, especially in developed countries. This chapter reviews the status, operations and use of registries that are not currently covered by legislation and explores ways in which these could be strengthened. These include registries reporting on cancers, occupational respiratory diseases, renal dialysis and transplant and birth defects. There may be other registries in the same category that are implemented in the country but they are not included in this review.

In all registries, a permanent record needs to be kept for each individual. This is because information regarding the diagnosis of a patient is usually drawn from diverse sources for example, hospital records, pathology, X-ray and death notifications. As registries usually need to count incident cases, information from these sources needs to be compiled so that each new case is not counted more than once. In the absence of proper patient identifiers, over-counting is a serious problem.[2]

Ideally, the objectives of disease registries are mainly to:

- Assess the magnitude of disease burden in relation to the characteristics of the person, place and time
- Measure disease trends and likely future evolution
- Provide information on survival (if the data are linked to deaths)
- Monitor referral pathways and treatment outcome
- Plan treatment facilities and purchasing of drugs
- Monitor the effects of prevention, early detection or screening, treatment and palliative care
- Provide a basis for research into causes and prevention.

If possible, a registry should record in an ongoing way, all cases of a particular condition arising from a defined, well enumerated population base so that incidence rates can be calculated. However, in practice, registries differ in their completeness and cover, resulting in various biases.[3]

It should be pointed out that due to the 'voluntary' nature in compiling and maintaining the registries, the review may not be as comprehensive as it ought to be, but it serves the purpose of giving visibility to registries as an important sources of data for public health planning and evaluation.

## Types of Registries

- **Diagnosis specific based registries** *(e.g. laboratory based disease registries)* record all new cases of disease diagnosed via a specific diagnostic technique. Such registries are limited by the accuracy of the tests used, and provide minimal incidence rates.[2,3] While the diagnosis of the condition may be 'accurate', many patients (rural, poor) may not have access to these diagnostic tests, and thus incidence patterns can be distorted.
- **Hospital based registries** record all cases admitted in a particular hospital irrespective of method of diagnosis. The advantage of these registries is that they provide a complete record of conditions diagnosed and listings of patients for further research into treatment effectiveness as well as facility planning. The main disadvantage of hospital based registries is that incidence rates cannot be calculated since the background population size from which the cases were drawn is not known.[3] Consequently, the real needs of a community cannot be inferred and moreover, this type of registry may be biased by specialist interest in a particular condition or, specialist interest in favour of stages of particular conditions.
- **Population based registries** record all cases, irrespective of method of diagnosis from a population residing in a defined well-enumerated area. Data from these can be used to calculate disease incidence (i.e. the true burden of disease) without bias, and hence measure geographical variation, survival, unmet need and cost effectiveness of interventions. For example the World Health Organization (WHO) recommends use of population-based cancer registries.[3] Currently only five registries in Africa meet this criterion.[4]

## Active Versus Passive Surveillance

A key determinant of the completeness of registries is whether or not an active system of patient recruitment is used to accrue cases. This is especially relevant to registries that rely on multiple sources of information, for example, cancer registries. Active surveillance systems are therefore preferable in that there is more complete reporting of conditions.[5]

## Legislation Governing Disease Registries in South Africa

Aside from legislation regarding notifiable conditions, there is no legislation that governs the establishment of other disease registries in South Africa. Registries record only new cases of disease and there is a need to avoid duplication, especially if information comes from multiple sources. Data that

are currently available in most health facilities do not have unique identifiers for patients. This results in difficulty in linking records of the same individual. Names are therefore needed, together with other variables, for example gender, age, date of diagnosis to identify duplicates. Given the constitutional right to privacy of individuals and revised national ethical guidelines, many registries would need to ensure that procedures are put in place to maintain such personalised data within current ethical and legal guidelines.[6] Recording patients' unique national identity numbers would be a useful intervention to address this.

Cancer registry data are used to calculate cancer incidence, establish trends and for research purposes. Although the existing registry data are considered to be minimal because of the passive data collection from selected data sources, these are the primary source of cancer information in the country. These data had had a valuable role to play in the development of the national Cancer Control Programme (CCP) guidelines, the Cervical Cancer Screening and Anti-Tobacco Smoking legislation. They are used as baseline data for these new programmes and play an essential role in setting monitoring targets stipulated in the national CCP guidelines.

## Cancer Registries

### Historical perspective

A cancer registry is an essential surveillance component for measuring the effectiveness of any cancer control programme. It provides a framework for measuring the impact of cancer in communities.

Attempts to describe the occurrence of cancer in SA started in KwaZulu-Natal, then Natal and Zululand) as early as 1925. Official Cancer registries were established in Johannesburg in 1953-55, in the Cape Province in 1955, in Natal in 1966-69, and in the Transkei region of the Eastern Cape since the early 1950s.[7,8] Most of these are no longer operating. The cancer registries that are currently in operation are the main sources of cancer information in the country and are outlined below.

### The South African National Cancer Registry

The South African National Cancer Registry (SANCR) is pathology-based, and was established by the South African Institute of Medical Research (SAIMR), now the National Health Laboratory Services (NHLS) in 1986.[9] The SANCR is a collaborative project of the National Health Laboratory Services (NHLS), the national Department of Health (NDoH), the Cancer Association of South Africa (CANSA) and the participating haematology, histology and cytology laboratories throughout the country.

The SANCR uses a passive data collection system. It receives reports from all public and private laboratories in the country. Defaulting laboratories are

reminded on a monthly basis, and nil monthly reports are also requested. There are 79 laboratories that sent data through to the registry in 2001. The minimum data items that the registry collects are patient name, date of birth, age, gender, population group, diagnosing laboratory, diagnosis data, and tumour topography and morphology codes.

The SANCR receives an average of 70 000 cancer cases annually. After data cleaning and removal of duplicates, it is left with at least 50 000 new cancer cases. About 900 of these cases are childhood cancers. Between 1986 and 1997, the SANCR recorded approximately 600 000 cases of primary cancer.

## Eastern Cape Rural Cancer Registry

This population-based cancer registration is implemented in four districts – Butterworth, Centane, Lusikisiki and Bizana, of the Transkei region of the Eastern Cape province by the Programme on Mycotoxins and Experimental Carcinogenesis (PROMEC) of the Medical Research Council (MRC) of SA. It uses both active and passive data collection methods to collect data on new cancer cases from these districts. Data are physically abstracted from patients' files in local hospitals and in certain neighbouring hospitals, including Umtata General hospital, which is the regional referral centre. Case finding also extends to hospitals and pathology laboratories outside Transkei. These include Frere hospital in East London and since 2000, three referral hospitals in KwaZulu-Natal were included. These are King Edward VIII, King George V and Addington hospitals in Durban.[10] The main objectives of this cancer registry are to:

- Monitor the burden of cancer in the four selected districts of the former Transkei
- Detect unusual geographical clusters with a view to intervention and further investigation into causes
- Provide a reliable information base for conducting cancer epidemiology and clinical research, for the formulation, monitoring and evaluation of cancer control
- Estimate the number of cancer cases in the near future, thus facilitating planning.

The PROMEC cancer registry currently receives an average of 400 cancer cases annually. After data cleaning and removal of duplicates, it is left with approximately 350 new cancer cases. From its inception in 1955 (initially as an oesophageal cancer registry) to 2000, the PROMEC registry had recorded approximately 15 693 cancer cases. About 9% (1 394) of these cancers were diagnosed between 1996 and 2000.[10]

## Hospital-based cancer registries

### Western Province Children's Tumour Registry

The Western Cape Province Children's Tumour Registry was established in 1999 by the Department of Paediatrics, University of Stellenbosch to describe the epidemiology of childhood cancer in the Western Cape province. The ultimate goal is to expand this registry to a national children's tumour registry.[11] Currently, the primary objectives for Western Cape Children's Tumour Registry are to:

- Record all cases of childhood cancer and determine the incidence of childhood cancers in the Western Cape province
- Determine the relative frequency of childhood cancer
- Determine the age specific total incidence as well as the age specific rates of the different cancers occurring in children
- Map the occurrence of childhood cancer in the province.

The Western Cape Children's cancer registry uses both passive and active data collection methods. Data on all new cases of childhood cancer is mainly collected from childhood cancer treatment centres in the Western Cape including the Red Cross Children's hospital, Department of Paediatrics at Tygerberg Hospital and the SA National Cancer Registry in Johannesburg. Reported information includes patients' demographic information and tumour characteristics.

The Children's registry receives on an average 78 cases annually. Between 1999 and 2002, the registry has recorded approximately 234 cases of primary cancer. Funding of active case finding in peripheral hospitals is the major impediment to the programme.

### Other hospital-based registries

Other registries exist at Umtata general hospital in the Eastern Cape province, Elim hospital registry in the Limpopo province, and the Hlabisa hospital registry in KwaZulu-Natal. These registries record all cancer cases presented at these hospitals.

## Cancer incidence

Tables 1 and 2 summarise the statistics on the five leading cancers in South African males and females.[12] In 1995, the lifetime risk of getting cancer (i.e. from age zero to 74 years) in males was 1 in 6 whilst in females it was 1 in 7. The highest age standardised rates were recorded among White males and females, being 252 per 100 000 and 290 per 100 000 respectively.

**Table 1: Summary cancer statistics, 1995[12]**

| Population | Gender | N | Crude 100 000 | ASIR per | LR (0-74 yrs) 1 in |
|---|---|---|---|---|---|
| Indians | Females | 552 | 102 | 188 | 5 |
| | Males | 385 | 71 | 159 | 6 |
| Africans | Females | 6 856 | 43 | 84 | 11 |
| | Males | 6 191 | 40 | 94 | 9 |
| Coloureds | Females | 768 | 43 | 84 | 11 |
| | Males | 1 599 | 41 | 104 | 8 |
| Whites | Females | 9 762 | 235 | 252 | 4 |
| | Males | 11 719 | 241 | 290 | 3 |
| All | Females | 22 832 | 95 | 128 | 7 |
| | Males | 24 028 | 90 | 152 | 6 |

Notes: N = Average number of reported cases 1993-1995 including Basal Cell Carcinoma (BCC) and Squamous Cell Carcinoma (SCC)
ASIR = Age standardised incidence rate, per 100 000; LR = Lifetime Risk, (0-74 years)
All rates exclude BCC and SCC, and are adjusted for age, population and unknown gender.

Excluding basal and squamous cell skin cancers, prostate, lung, oesophagus, bladder and colorectal cancers were the top five leading cancers in males consecutively. In females, breast, cervix, colorectal, lung and oesophagus were the top five leading cancers consecutively (Table 2).

**Table 2: Lifetime risks of top five cancers by population group, 1995 (ASR/100 000)[12]**

| | Males | | Females | |
|---|---|---|---|---|
| **Population group** | **Cancer** | **LR (0-74 yrs)** | **Cancer** | **LR (0-74 yrs)** |
| **Indian** | Colorectal | 1 in 43 | Breast | 1 in 21 |
| | Prostate | 1 in 47 | Cervix | 1 in 54 |
| | Bladder | 1 in 51 | Uterus | 1 in 68 |
| | Stomach | 1 in 51 | Colorectal | 1 in 79 |
| | Lung | 1 in 62 | Stomach | 1 in 120 |
| | **All cancers** | **1 in 6** | **All cancers** | **1 in 5** |
| **African** | Oesophagus | 1 in 59 | Cervix | 1 in 34 |
| | Prostate | 1 in 61 | Breast | 1 in 81 |
| | Lung | 1 in 67 | Oesophagus | 1 in 141 |
| | Liver, Bile duct | 1 in 227 | Uterus | 1 in 238 |
| | Larynx | 1 in 204 | Lung | 1 in 313 |
| | **All cancers** | **1 in 9** | **All cancers** | **1 in 11** |
| **Coloured** | Prostate | 1 in 50 | Cervix | 1 in 52 |
| | Lung | 1 in 68 | Breast | 1 in 63 |
| | Stomach | 1 in 78 | Lung | 1 in 172 |
| | Oesophagus | 1 in 101 | Uterus | 1 in 189 |
| | Bladder | 1 in 147 | Stomach | 1 in 250 |
| | **All cancers** | **1 in 8** | **All cancers** | **1 in 11** |
| **White** | Prostate | 1 in 14 | Breast | 1 in 13 |
| | Bladder | 1 in 29 | Colorectal | 1 in 44 |
| | Colorectal | 1 in 34 | Melanoma | 1 in 56 |
| | Lung | 1 in 34 | Lung | 1 in 61 |
| | Melanoma | 1 in 45 | Cervix | 1 in 93 |
| | **All cancers** | **1 in 3** | **All cancers** | **1 in 4** |
| **All** | Prostate | 1 in 31 | Breast | 1 in 36 |
| | Lung | 1 in 52 | Cervix | 1 in 41 |
| | Oesophagus | 1 in 71 | Colorectal | 1 in 130 |
| | Bladder | 1 in 83 | Lung | 1 in 147 |
| | Colorectal | 1 in 94 | Oesophagus | 1 in 169 |
| | **All cancers** | **1 in 6** | **All cancers** | **1 in 7** |

Notes: Excluding BCC and SCC

A regional variation in comparison to the national picture is shown in Tables 3 and 4. Overall incidence rates in four districts of the Eastern Cape in African males and females are lower than those reported nationally (Table 3). The pattern in leading cancers differs from that observed nationally. In the Eastern

Cape, cancer of the oesophagus is the most common cancer in both males and females with ASR of 31.2/100 000 and 21.8/100 000 respectively. Among males, oesophagus, lung, liver and prostate cancers are the top four leading cancers consecutively. Amongst females, oesophagus, cervical, breast and lung cancers are the top four leading cancers consecutively (Table 4).[10]

**Table 3: Comparison of cancer incidence by registries[b]**

| Registry | Period | Gender | N | Crude/100 000 | ASR/100 000 |
|---|---|---|---|---|---|
| SANCR | 1993-1995 | Females | 20 573 | 43.3 | 83.66 |
| | | Males | 18 569 | 39.6 | 93.94 |
| Eastern Cape Rural | 1991-1995 | Females | 881 | 39.77 | 74.3 |
| | | Males | 672 | 45.97 | 98.2 |
| Eastern Cape Rural | 1996-2000 | Females | 842 | 47.04 | 50.3 |
| | | Males | 552 | 37.94 | 44.8 |

**Table 4: ASR of four leading cancers in the four districts of the Eastern Cape[10]**

| Males (n=552) | | | Females (n=842) | | |
|---|---|---|---|---|---|
| Site | % | ASR/100 000 | Site | % | ASR/100 000 |
| Oesophagus | 16.86 | 31.2 | Oesophagus | 19.7 | 21.8 |
| Lung | 2.7 | 6.3 | Cervix | 17.6 | 19 |
| Liver | 1.8 | 3.8 | Breast | 5.6 | 7.6 |
| Prostate | 1.2 | 3.6 | Lung | 0.9 | 1.5 |

Note: Cancer incidence data are published in annual reports, and the latest data can be found on the Cancer Associations website (www.cansa.org.za).

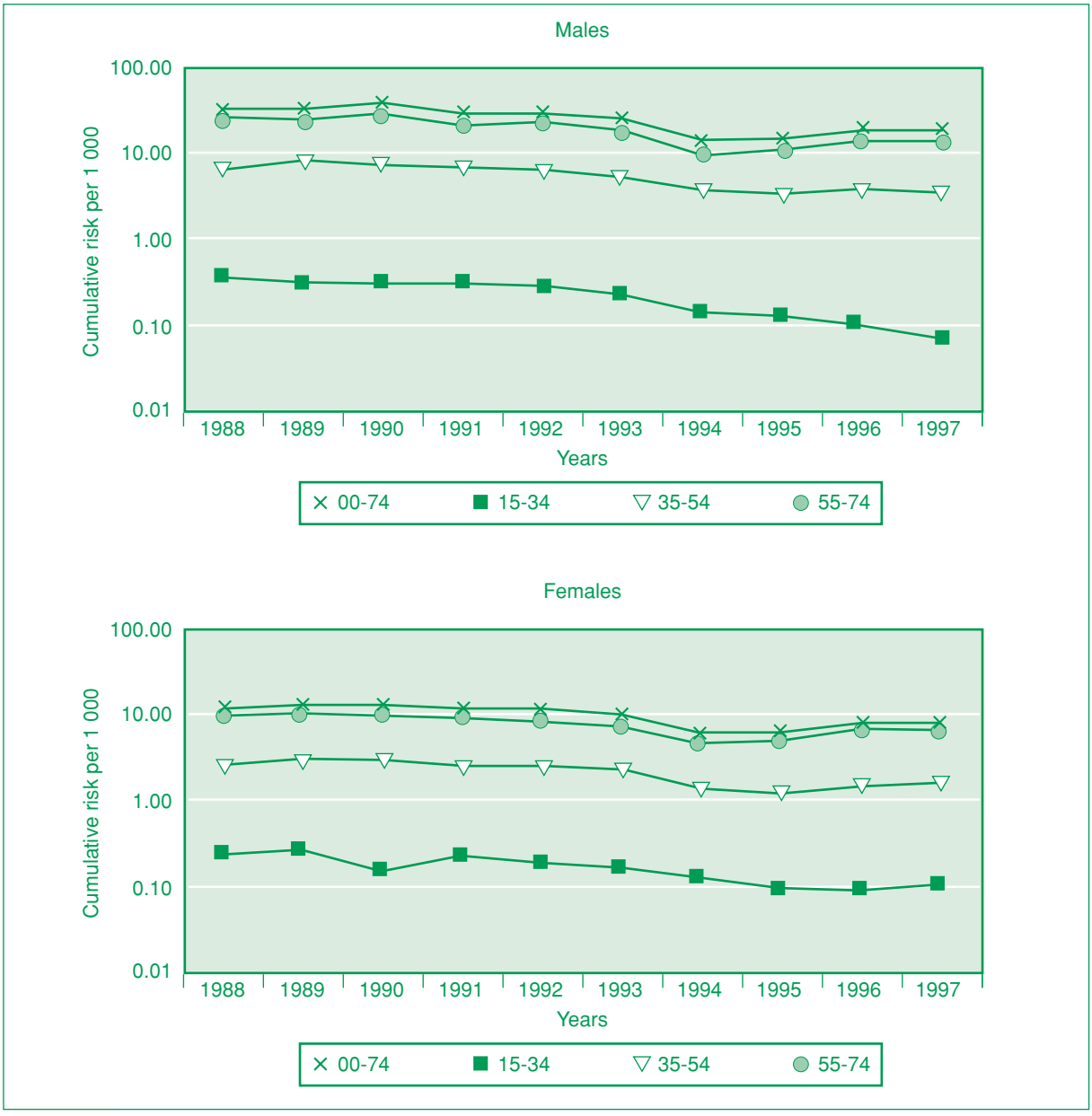
## Cancer trends

Earlier reports on oesophageal cancer trends in African males and females in the Eastern Cape province showed increasing trends in proportion of oesophageal cancers to all other cancers. Such trends were explained as reflecting improvement in service utilisation rather than being a true reflection of the oesphageal cancer trends.[13] Lately, oesophageal cancer incidence rates in African males and females show a declining trend (Table 3, notably Eastern Cape and Figure 1) while increases are noted in the incidence of cancers associated with HIV/AIDS, such as Kaposi's sarcoma.[c,10,14,15]

b Somdyala NIM, Marasas WFO, Venter FS, Vismer HF, Gelderblom WCA and SA. Swanevelder. Cancer patterns in four districts of the Transkei region, 1991-1995. S Afr Med J 2002. (in press).

c SANCR report, in preparation.

**Figure 1: Oesophageal cancer trends in African males and females, 1988-1997[c]**




## Cancer research

Cancer registry data are used to describe cancer patterns[16,17,18] whilst a wide range of cancer researchers use these data to conduct epidemiological studies that establishes risk factors on leading or emerging cancer types.[19,20,21,22] They are also used to answer service delivery questions, for example the per capita distribution of radiation therapy facilities.[23] Other users of the data include students, pharmaceutical and insurance industries.

## Surveillance of Work-Related and Occupational Respiratory Diseases in South Africa

The surveillance of work-related and occupational respiratory diseases in South Africa (SORDSA) is a collaborative surveillance project of the National Centre for Occupational Health (NCOH), Department of Health, Department of Labour, the South African Thoracic Society, the South African Society of Occupational Medicine, and the South African Society for Occupational Health Nurses. SORDSA is a national occupational respiratory disease registry that was established in 1996 and is implemented by the NCOH. It receives support from the SA technical cooperation programme of the WHO.

SORDSA was established as a result of poor compliance with Section 25 of Occupational Health and Safety Act of 1993. The Act requires medical practitioners to report occupational disease cases to the chief inspector of occupational health and safety. However, few cases were reported, hence a more active surveillance system was developed. SORDSA therefore strives to improve diagnosis and reporting of work related diseases and inform interventions for prevention.[24]

The main purpose of this registry is to monitor trends in occupational respiratory disease incidence and to evaluate the most important diseases associated with occupations and industries together with their causative agents. The objectives of SORDSA are to:

- Monitor the extent and distribution of work-related respiratory diseases in South Africa
- Identify hazardous industries, occupations and agents
- Develop a model surveillance system for occupational diseases in SA
- Increase awareness of work-related respiratory diseases and their causes
- Evaluate trends, and
- Set priorities for prevention.

Respiratory physicians, occupational health professionals and general practitioners are recruited to submit data on newly diagnosed cases of occupational disease from non-mining industries and among former mine workers.[25] Data are collected using a specially designed SORDSA reporting form that is distributed by the NCOH to all participating officers. Completed forms with cases diagnosed with work-related and occupational respiratory diseases are submitted to the NCOH. Data collected include basic demographic information of the patient, diagnosis, province and industry where exposure occurred, occupation and the suspected causal agents. In each province, trained SORDSA representatives assist general practitioners with diagnosis. Data are analysed by gender, province, and occupational status.

Between 1996 and 2002, the SORDSA database had approximately 6 522 cases of occupational respiratory disease reported, on average – 1 087 cases per year. In 2002, 87% of all cases were reported from the Gauteng province. Over the past 5 years, pneumoconiosis, inhalation accidents, pneumoconiosis and tuberculosis (TB) and chronic obstructive pulmonary disease (COPD) and pneumoconiosis were the top four frequently reported diseases consecutively (Table 5). Occupational Asthma due to latex is one of the most frequently reported conditions and has been reported as one of the five leading occupational diseases. There has however, been a notably decrease in number of reported cases which is attributed the voluntary nature of the registry and reporter fatigue.[26]

**Table 5: Total SORDSA cases reported between 1996 and 2001 by disease group[d,25]**

| Disease | Frequency, 1996-2001 |
|---|---|
| Pneumoconiosis | 3 664 |
| Inhalation accident | 564 |
| Pneumoconiosis and TB | 433 |
| COPD and pneumoconiosis | 353 |
| Occupational asthma with latency | 303 |
| TB | 162 |
| Bronchitis | 157 |
| Non malignant pleural disease | 156 |
| COPD | 109 |
| Asthma induced by irritants | 97 |
| Latex allergy | 91 |
| Mesothelioma | 70 |
| Rhinitis | 47 |
| Other | 35 |
| Lung cancer | 31 |
| Irritant reaction | 24 |
| Byssinosis | 20 |
| Total | 6 316 |

The key users of SORDSA statistics include the NCOH, DoH, Department of Labour, WHO, medical societies such as South African Thoracic Society, South African Society for Occupational Medicine and South African Society for Occupational Nursing Practitioners, scientists and occupational hygienists.

Results of this registry are disseminated through a bi-annual SORDSA

d Information about SORDSA is available from www.asosh.org/programmes/SORDSA/SORDSA.html

newsletter and published in peer reviewed scientific journals. These are further presented to reporting medical societies and their members. SORDSA has contributed to the increased public and professional awareness of occupational lung diseases and their causative agents through posters, brochures and hazard-alert documents, which are provided free by the NCOH.

### Research on occupational respiratory diseases

In order to understand the epidemiology of work-related and occupational respiratory diseases in SA better, the registry data are utilised for research purposes. The goal is to use the SORDSA database in conducting follow-up and intervention studies. The implementation of SORDSA has led to better understanding of the nature, extent and the distribution of occupational respiratory diseases. Based on these data, intervention programmes to reduce incidence of occupational asthma due to spray paints containing isocyanates was implemented in Gauteng in 2002.[27]

SORDSA identifies priority exposures, industries and diseases by province. Therefore, it has great potential to inform departments of health and labour on formulation of targeted policies on intervention and health promotion activities. The success this registry has achieved with minimal resources has led to its invitation to participate in the International Labour Organisation ILO/WHO **Global Elimination of Silicosis Programme.** The aim of the programme is to reduce the incidence rate and ultimately eliminate silicosis worldwide.[28]

## South African Dialysis and Transplantation Registry

Initiatives to establish a national registry for dialysis and transplantation activities started in the late 1970s at the University of Witwatersrand. The South African Dialysis and Transplantation Registry (SADTR) was established in 1981 and is based at the University of Cape Town (UCT). Initially, the Provincial Laboratory for Tissue Immunology implemented it and since 1998 it was moved and is now implemented by the Division of Nephrology, UCT and Groote Schuur hospital. The DoH and the Cape Provincial Administration Department of Hospital Services initially provided funding for the registry and later, limited financial support was received from the pharmaceutical industry.

SADTR implements a passive and voluntary data collection system. Standardised questionnaires are sent to all centres involved in renal replacement in all nine provinces. In 1998, 35 centres sent data through to the registry (Table 6). Data items collected include patient demographic features, primary renal disease and date of diagnosis, tissue type, malignancies, treatment information and treatment outcome. If the patient died, the main cause of death is recorded. For patients who received kidney transplants, the

source of kidney, donor, donor typing and the clinical status at the time of transplantation are recorded. The registry uses a customized database programme which is modelled on the European Registry programme.

**Table 6: Registered centres for renal replacement treatment, 1998[e]**

| Province | No. of centres |
|---|---|
| Western Cape | 6 |
| Eastern Cape | 2 |
| Kwazulu-Natal | 3 |
| Mpumulanga | 1 |
| Northern Province | 1 |
| Northern Cape | 2 |
| Free State | 6 |
| Gauteng | 11 |
| North West Province | 2 |
| Namibia | 1 |
| Total registered centres | 35 |
| Number returning data | 29 |
| Private sector centres returning data | 2 |

Note: There has been an explosion of private dialysis facilities in the past 5 years. The majority of these were not included in the 1998 report.

Between 1981 and 1984 whilst the infrastructure to maintain the local registry was being developed, the European Dialysis and transplantation Registry processed SADTR data. The first locally produced report was published in 1985 and reports were published until 1998. Data analysis and presentation included demographic features on treated patients, survival curves for both dialysis and transplant patients, and information on the causes of death. For the transplant population, causes of graft failure are analysed and malignancy rates are reported.

In 1998 there were 262 reported new patients and from its inception, the database contained 3 766 live patients. One hundred and fifty renal transplants were performed in 1998 (Table 7). Most of the treated patients ranged between ages 20 and 49 years. The leading causes of end stage renal failure remained renovascular disease, including hypertension and chronic glomerulonephritis.

e SADTR report, 1998.

**Table 7: SADTR summary data, 1998[e]**

| | 1994 | 1998 |
|---|---|---|
| Treatment centres | 33 | 35 |
| Living patients on file | 3 399 | 3 766 |
| New patients | 574 | 262 |
| Renal transplants | 299 | 150 |

It is well recognised that there has been substantial under-report between 1994 and 1998 which accounts for a 54% and 50% decline in new patients reported and renal transplants done respectively. This is attributed mainly to lack of support from the DoH, lack of commitment from some of the centres and most importantly, lack of funding to recruit the necessary support staff, appropriate skills and to put appropriate systems in place for data collection and processing.

Whether the formulation of a legislation that compels treatment centres to return accurate and complete data would be the best way to go needs to be explored. Despite the difficult challenges that SADTR is faced with, the Division of Nephrology is working hard to resuscitate and put the registry back on track. With the support of key stakeholders including the DoH, the National Kidney Foundation and the Pharmaceutical Industry, data quality could be improved and reliable data for policy and planning an organised health care system would be available.

## South African Birth Defects Surveillance System

The South African Birth Defects Surveillance System is implemented by the School of Public Health and Primary Health Care, University of Cape Town. It was established in 1988 in collaboration with the Human Genetics Services of the DoH and various participating hospitals throughout the country. The main objectives of the birth defects surveillance system are to:

- Detect and report the frequency of clinically detectable birth defects over time
- Detect temporal or spatial clustering of specific birth defects in order to investigate the impact of known or suspected risk factors
- Provide a resource (information) for detailed epidemiological studies both locally and internationally
- Provide information about the extent of disabling conditions in the community for the planning of programmes for prevention and rehabilitation.[21]

The SA Birth Defects Surveillance System is modelled on the requirements of the International Clearinghouse of Birth Defects Monitoring Systems

(ICBDMS). It is also one of the 32 members of the ICBDMS and the only birth defect monitoring programme in Africa. Cases reported are only those with defects that could be diagnosed clinically at birth or within seven days of life.[22]

Initially this hospital based registry covered 11 sentinel sites over the country with approximately 75 000 annual or 5% of all births per annum. Participation in the programme is entirely voluntary. The hospitals included were: Chris-Hani Baragwanath hospital in GP, Pelonomi and Universitas in the Free State, Addington, King Edward, R.K. Khan and Prince Mshiyeni hospitals in KwaZulu-Natal; Frere hospital in the Eastern Cape and Somerset, Paarl and Eben Donges hospitals in the Western Cape.

Detailed birth defect notifications are obtained from delivery units and paediatric units of the participating hospitals. The coding system used for classifying birth defects is a modification of the British Paediatric Association (BPA) coding system adopted by the Centres for Disease Control (CDC).

The top five leading birth defects reported in 1999 were hydrocephaly, Down's syndrome, hypospadias, spina bifida and oesphageal atresia/stenosis with or without fistula consecutively (Table 8). Rates of Down's syndrome increased with the mother's age from 1.5 per 10 000 live births at age 20-24 years to 86.96 per 10 000 live births for those aged 45 and older[29] (Table 9).

Some of the limitations for the registry are that the total births for some participating hospitals are not accurately known. Although most of the existing sentinel sites represent the majority of the population, data are not available from private hospitals. There is also no exposure information routinely available in relation to these birth defects. Therefore, funding is needed for epidemiological research to be carried out to establish the risk factors.

**Table 8: SABDSS rates per 10 000 live births, 1999[f]**

| Birth Defects | Cases | Rates/10 000 |
|---|---|---|
| Anencephaly | 7 | 3.05 |
| Spina bifida | 12 | 5.23 |
| Encephalocele | 4 | 1.74 |
| Hydrocephaly | 16 | 6.97 |
| Cleft palate without cleft lip | 7 | 3.05 |
| Cleft lip with or without cleft palate | 7 | 3.05 |
| Oesophageal atresia / stenosis with or without fistula | 10 | 4.36 |
| Small intestine atresia / stenosis | 2 | 0.87 |
| Anorectal atresia / stenosis | 6 | 2.61 |
| Hypospadias | 12 | 5.23 |
| Epispadias | 1 | 0.44 |
| Total Limb reduction defects (include unspecified) | 6 | 2.61 |
| Diaphragmatic hernia | 2 | 0.87 |
| Total Abdominal wall defects (include unspecified) | 8 | 3.48 |
| Omphalocele | 5 | 2.18 |
| Gastroschisis | 3 | 1.31 |
| Down's syndrome | 13 | 5.66 |

**Table 9: Reported Down's syndrome rates by mothers' age groups, 1999[f]**

| Age groups | Number | Rate/10 000 |
|---|---|---|
| <20 | 0 | 0.00 |
| 20-24 | 1 | 1.50 |
| 25-29 | 4 | 6.70 |
| 30-34 | 1 | 2.72 |
| 35-39 | 3 | 16.33 |
| 40-44 | 1 | 21.79 |
| 45+ | 1 | 86.96 |
| Unknown | 2 | |

f Annual Report 2001, ICBDMS.

## Challenges and General Limitations of Registry Data

**Quality of data:** In the National Cancer Registry, the incidence data are analysed and reported by age, gender and population groups. Due to the diverse population structure in South Africa and the different life styles led by the different population groups, it is crucial that the population group of cancer cases be recorded. Since 1992, there has been an increasing proportion of records received with no indication of the patient's population group. In addition, information on the actual residential address of the cases is about 25%, mostly from reports coming from the private sector. The lack of information on 'usual' address makes it difficult to map the geographic distribution of cancers.

**Timeliness of data:** The voluntary nature of submission of data to these registries and the passive data collection methods makes it difficult to process data timeously. Lack of funding plays a critical role in ensuring timely processing and dissemination of information.

### Under-reporting

Although registries in SA provide valuable data for planning and for informing policy, the data underestimate the magnitude of the cancer status, with probably gross under-reporting in the African population. For example, in comparing SA cancer rates to those of Zimbabwe, SA's rates are lower for several of the leading cancers such as the cervix cancer (26.5 versus 67 per 100 000). This is because, in SA **only** figures of cancers confirmed in the laboratory are used for comparison while other countries cancers figures include those diagnosed through other methods including laboratory, clinical diagnosis, X-rays etc. For this reason, the WHO recommends establishment of population-based cancer registries for countries to gain a comprehensive picture of the local cancer profile. The proposed National Cancer Control Programme in SA recommends the establishment of at least two population based cancer registries in each of the nine provinces to gain an overall picture of distribution. However, current data fall short in mapping cancer patterns in the country. An attempt was made to record postal codes at the National Cancer Registry, but only 25% of the pathology reports (mainly from the private sector) report the actual residential address of the patient.

**Confidentiality and ethical issues:** Registries collect data on cases from numerous sources and consequently there is significant duplication that needs to be sorted in order to report incident cases only. In the absence of other identifiers (e.g. identity numbers) some form of identification is therefore critical. Recent ethical guidelines suggest that notification of disease status to a third party would normally require patient consent. The National Cancer Registry deemed this impractical and a successful application was made to the Ethics Board to continue using named information from the pathology reports without the consent of the patient.

## Conclusions and Recommendations

It is clear that existing registries operate with minimal resources. This has a direct bearing on the quality and completeness of their information. Despite these limitations these registries continue to provide a wide range of useful and valuable information for policy formulation and research, which would otherwise not be available from routine surveillance systems.

Effective surveillance systems depend upon a continuing commitment of resources. Funding registry operations is traditionally considered to be a state function, hence the endorsement of disease registries together with political and financial commitment by the DoH are crucial if the existing registries in SA are to be sustained. It is also clear that significant disease registration takes place without due legal recognition. It is unclear whether new legislation is required to cover the operation of these registries or whether **Ethics** approval would be sufficient.

With regard to cancer, the WHO recommends the establishment of population-based registries for collection of reliable information. The proposed guidelines for the SANCC programme recommends the establishment of these registries in each provinces. Intensive piloting of one or two population based registries would give clues about the extent of the cancer burden and help to inform establishment of other registries in a cost-effective manner.

Other registries may have different requirements. For example, the childhood and renal transplant registry ought to continue aiming for a national presence, whilst occupational disease registries may benefit from a population based approach. However the key issue is that surveillance is invariably expensive, and sufficient ongoing resources are required to ensure high quality information (albeit in certain areas) for effective planning.

## References

1 Goldberg J, Gelfand HM, Levy PS. Registry evaluation methods: a review and case study. Epidemiol Rev 1980; 2: 210-20.

2 Stroup NE, Zack MM, Wharton M. Sources of routinely collected data for surveillance. In: Teutsch SM, Churchhill RE (Eds). Principles and practice of public health surveillance. New York: Oxford University Press; 1994. p. 31-85.

3 Jensen OM, Parkin DM, MacLennan R, Muir CS, Skeet RG (Eds). Cancer registration: principles and methods. Lyon: IARC Scientific Publications No. 95; 1991.

4 Parkin DM, Whelan SL, Ferlay J, Raymond L, Young J (Eds). Cancer incidence in five continents. Volume VII. Lyon: IARC Scientific Publications No. 143; 1997.

5 Teutsch SM. Considerations in planning a surveillance system. In: Teutsch SM, Churchhill RE (Eds). Principles and practice of public health surveillance. New York: Oxford University Press; 1994. p. 31-85.

6 Medical Research Council. Guidelines on ethics on medical research – general principles. 4th edition. 2002.

7 Burrel RJW. Oesophageal cancer in the Bantu. S. Afr. Med. J. 1957; 31: 401-409.

8 Rose EF. Oesophageal cancer in the Transkei: 1955-69. J. Natl. Cancer Inst. 1973; 51: 7-16.

9 Sitas F, Blaauw D, Terblanche M, Madhoo J, Carrara H. Incidence of histologically diagnosed cancer in South Africa, 1992. National Cancer Registry of SA, SAIMR 1997.

10 Somdyala NIM. Cancer surveillance, a missing link in the health care delivery system of South Africa. MSc dissertation, University of Free State; 2002.

11 Wessels G, Hesseling PB, Hartley PS, Stones D, Wainwright L, Poole J, et al. the South African children's tumour registry – research protocol. 2002. 15p.

12 Sitas F, Madhoo J, Wessie J. Incidence of histologically diagnosed cancer in South Africa, 1993-1995. National Cancer Registry of SA, SAIMR 1998.

13 Day NE, Muñoz N. Esophagus. In: Schottenfeld, Fraumeni JF (Eds). Cancer Epidemiology and prevention. Philadelphia: WB Saunders Co. 596-623.

14 Sitas F and Newton R. Kaposi's sarcoma in South Africa. J. Natl Cancer Inst Monogr; 2000; 28: 1-4.

15 Newton R, Sitas F, Dedicoat M, Ziegler JL. HIV infection and cancer. 386-404 In: Esgender M, Mboup S, Kanki PJ, Marlink RG, Tlou SD (Eds). AIDS in Africa. 2nd edition. New York: Kluwer Academic/Plenum Publishers; 2002.

16 Makaula NA, Marasas WF, Badenhorst CJ, Bradshaw D and Swanevelder S. Oesophageal and other cancer patterns in four selected districts of Transkei, Southern Africa: 1985-1990. Afr J Health Sci. 1995; 2(3): 333-337.

17 Sitas F, Pacella-Norman R, Carrara H, Patel M, Ruff P, Sur R, et al. 2000. the Spectrum of HIV-1 related cancers in South Africa. Int J. Cancer 2000; 88(3): 489-92.

18 Sitas F, Carrara H, Terblanche M, Madhoo J. Screening for cancer of the cervix in South Africa. S Afr Med J. 1997; 87(5): 620-2.

19 Pacella-Norman R, Urban MI, Sitas F, Carrara H, Sur R, Hale M, et al. Risk factors for oesophageal, lung, oral and laryngeal cancers in black South Africans. British Journal of Cancer 2002; 86: 1751-1756.

20 Mzileni O, Sitas F, Steyn K, Carrara H and Bekker P. Lung cancer, tobacco, and environmental factors in the African population of the Northern Province, South Africa. Tobacco Control, 1999; 8: 398-401.

21 Sitas F, Carrara H, Beral V, Newton R, Reeves G, Bull D, et al. Antibodies against human herpesvirus 8 in black South African patients with cancer. The New England Journal of Medicine 1999; 340: 1863-71.

22 Rheeder JP, Marasas WFO, Farina MPW, Thompson GR and Nelson PE. Soil fertility factors in relation to oesophageal cancer risk in areas in Transkei, southern Africa. European Journal of Cancer Prevention 1994; 3: 49-56.

23 Levin CV, Sitas F, Odes RA. Radiation therapy services in South Africa. S Afr Med J 1994; 84: 349-351.

24 Hnizdo E, Rees D, and Noeem S. 1996. Occupationally related lung diseases in SA. National safety, p33.

25 Esterhuizen T, Hnizdo E, Rees D, Lalloo UG. Editorial. Setting the scene for SORDSA – the importance of occupational respiratory disease surveillance in South Africa. S Afr Med J 2001; 91(6): 498-99.

26 Esterhuizen T. SORDSA news. July - December 2001; 5(2): 1-4.

27 Esterhuizen TM, Hnizdo E, Rees D, Lalloo UG, Kielkowski D, van Schalkwyk EM, et al. Occupational respiratory diseases in South Africa – Results from SORDSA, 1997-1999. S Afr Med J 2001; 91(6): 502-508.

28 Esterhuizen T. SORDSA news. January – June 2001; 5(1): 2.

29 International Clearinghouse for Birth Defects Monitoring Systems, Italy (2000). Annual Report, 2001. ISSN 0743-5703.

# Health and Related Indicators

21

**Candy Day[i] and Andy Gray[ii]**

[i]Health Systems Trust

[ii]Dept of Experimental and Clinical Pharmacology, University of Natal

## Introduction

The objective of this chapter of the Health Review is to present the best available data on a wide range of health and related indicators. Where possible, data from multiple years are presented. However, all data from previous versions of the Review have not necessarily been repeated. Caution should be used when attempting comparisons across time and especially between different sources, as not all sources are comparable. Local knowledge of cross-border patient flows, organisation of services, socio-economic issues, and infrastructure are in many cases a pre-requisite for correct interpretation of the situation at sub-provincial levels. Data quality also varies considerably between sources. Where possible, the necessary cautions about poor or unreliable data have been included. Notwithstanding such concerns, the range and depth of data available continues to improve. There are also very encouraging signs of increased collaboration and information sharing between Government departments and other stakeholders involved in collecting routine or survey data, thereby increasing data set compatibility. Positive examples are the decision by StatsSA to make Census 2001 data available for free, and the National Health Information Systems Committee of South Africa (NHISSA) decision to use its routine information system (DHIS) as a standard list of health (sub-) district and facility names.

Where possible the means to access the raw and complete data electronically has been identified. It should however be noted that specific Uniform Resource Locators (URLs) are not always available for the exact document sought. In such cases, the location of the issuing authority's web site has been provided (e.g. Statistics SA can be accessed at http://www.statssa.gov.za).

## Organisation of Health Indicator Data in this Health Review:

- Background information about indicators and data sources
  - Classes of Indicators
  - Data sources and collection
  - General Indicator-related definitions
- South African indicators, with data presented by province and, where possible, by population group
  - Demographic Indicators
    - Population
    - Distribution
  - Socio-Economic Indicators
  - Health Status Indicators
    - Mortality
    - Disability
    - Infectious Disease
    - HIV/AIDS
    - Reproductive Health
    - Nutrition
    - Child Health
    - Other Morbidity and Risk Behaviour
  - Health Services Indicators
    - Health Facilities
    - Health Personnel
    - Health Financing
- International data for a set of selected indicators
- Decentralisation - district level data
- Acknowledgements
- References

Reference sources in the text are indicated by the use a short name for the reference enclosed in square brackets e.g. [Design HIS]. For the data tables, the short name of the reference/source is given in the footnotes to each table e.g. 'StatsSA Mid-Year Estimates' (together with any specific notes about the section of the reference used, or notes about the data ). At the end of the chapter full details of each reference are supplied, ordered by the short names of the references.

The indicators presented in the Health Review represent an output from an ongoing project. An electronic repository of such data has been created and will be maintained by the Health Systems Trust. Additional information, notes and details on sources can be accessed from that site http://www.hst.org.za/indic/.

## Classes of Indicators

The World Health Organization publication 'Design and implementation of health information systems' divides indicators that contribute to a health management information system into four major classes [adapted from Design HIS]: inputs, process, output and outcome. The table below has been adapted from this text. Where possible, examples of indicators found in this chapter have been used, but there are several classes of indicators included in this table for which South African data are not available or not presented.

| Class of Indicator | Definition and example |
|---|---|
| *Inputs* | |
| Availability of resources | Human and financial resources, physical facilities, operational policies that enable services to be delivered in the health system<br>e.g. Professional nurses per 100 000 population |
| Health determinants | Conditions that contribute to or are precursors of disease - human behavioural factors or unhealthy environmental conditions such as smoking, alcohol use, obesity, low birth weight<br>e.g. Prevalence of smoking |
| *Process* | |
| Service delivery and support activities | Should form the bulk of process indicators reported and may include indicators of:<br>✧ community participation<br>✧ supervision<br>✧ human resources (training, incentives)<br>✧ financial management (public funding and cost recovery)<br>✧ drug management<br>✧ maintenance<br>e.g. Percentage of PHC clinics where condoms are freely available |
| Quality of services | Seek to address how well the staff perform their tasks as well as whether appropriate medical supplies and medications are available<br>e.g. Percentage of pregnant women who are effectively immunised against tetanus |
| Financial accessibility | Measure the extent to which people are able to pay for care and are usually measured through a community-based willingness and ability to pay survey<br>e.g. Proportion of people able to pay for a particular service |
| Geographic accessibility | Measure the extent to which services are available and accessible to the population, linked to the distribution of infrastructure but also to the actual offering of these services at these facilities, and will vary according to local means of transportation as well as local topography<br>e.g. Proportion of population living within walking distance from a health centre |
| Cultural accessibility | Consider whether access to health services are impeded by cultural taboos, such as gender, ethnic issues and use of health services for 'natural' process such as pregnancy<br>e.g. Proportion of pregnant women who can independently choose to go to a clinic for treatment of a STI |
| *Output* | |
| Use | Use is the expression of the demand for services<br>e.g. Utilisation Rate of PHC services |
| Coverage | Measure the proportion of a target group that has received a particular service<br>e.g. Percentage of pregnant women who received antenatal care |

| | |
|---|---|
| Financial performance | Measure the financial viability of the organisation<br>e.g. Percentage of health expenditure on personnel |
| Acceptability | Also called 'perceived quality'; considers the extent to which patients are satisfied with the services offered<br>e.g. Proportion of patients who are satisfied with the service provided and would return to the provider for future care |
| Behavioural changes | Consider whether clients change their health-related conduct as a result of contact with a health care facility or its information, education, and communication campaigns<br>e.g. Proportion of mothers breastfeeding exclusively for 6 months before/after an intervention |
| *Outcome* | |
| Health outcomes | Measure the mortality and the morbidity for certain health conditions; since facility-based information systems give only a limited perspective on the health status of a population, these should be supplemented with information from community-based surveys, vital registration, censuses and other data collection instruments to fully understand health outcomes within a population. Health outcome indicators from a routine information system are important, though, because they monitor the conditions that impact on the management of health services and help managers make resource allocation decisions.<br>e.g. Maternal mortality ratio |
| Effectiveness | Extent to which objectives are achieved<br>e.g. Immunisation coverage of children < 1 year (compared with the national objectives) |
| Efficiency | Extent to which objectives are achieved by minimising the use of resources<br>e.g. Cost per child vaccinated |
| Sustainability | The ability or prospect to continue, prolong, keep something up<br>e.g. Proportion of donor funding to total funding |
| Equity | Whether health services are provided 'justly' within a population. Indicators include accessibility of health services, use of health services by demographic or socio-economic groups, inequalities in mortality and morbidity among different subgroups of the population, unequal distribution of health resources.<br>e.g. Proportion of health personnel per population in different provinces or districts, or per different ethnic groups. |

The selection of health and related indicators included in the South African Health Review is largely based on availability. Attempts have been made to include indicators relevant to the Department of Health's Strategic Framework [Strategic Framework 2004] where possible.

This Framework includes a ten-point plan, which proposes to strengthen the implementation of efficient, effective and high quality services throughout the health system, including the following components:

- Reorganisation of support services
- Legislative reform
- Improving quality of care
- Revitalisation of hospital services
- Speeding up delivery of an essential package of services through the district health system

- Decreasing morbidity and mortality rates through strategic interventions
- Improving resource mobilisation and the management of resources without neglecting the attainment of equity in resource allocation
- Improving human resource development and management
- Improving communication and consultation within the health system and between the health system and the communities served; and
- Strengthening cooperation with partners internationally.

However, many of the goals have not been expanded to measurable indicators, or are not directly amenable to measurement. Such goals are instead usually measured indirectly through *proxy* indicators. For instance, the impact on quality of care by 'revitalisation of hospital services' can be measured through regular Client Satisfaction Index surveys. 'Strengthening cooperation with partners internationally' can be measured through the average time it takes foreign doctors/nurses to obtain a work permit in South Africa, or through the number of health interventions that involve health personnel in more than one country. 'Improving communication … between the health system and the communities served' can be monitored through the percentage of health data/information available in the public domain no later than six months after it was collected/collated.

The last few years have seen the development and refinement of national and provincial Minimum Indicator/Data Sets (also called Essential Data Sets) to enable the calculation of key indicators. The latest National Minimum Data Set for PHC allows the calculation of among others the following indicators:[a]

**Current National Minimum Data Set for Primary Health Care**

(This is being updated at present, but is still awaiting approval from the PHRC at time of collation)

| Indicator | Numerator | Denominator |
|---|---|---|
| **Management** | | |
| Utilisation rate (PHC) | PHC total headcount | Total population |
| Utilisation rate under 5 years (PHC) | PHC headcount under 5 years | Population under 5 years |
| **Child Health and IMCI** | | |
| Children under 5 weighed | Child under 5 years weighed (1st weighing in month) | PHC headcount under 5 years |
| Not gaining weight under 5 | Not gaining weight under 5 years this month | Child under 5 years weighed |
| Underweight for age | Underweight for age under 5 years – new cases | Child under 5 years weighed |
| Incidence of severe malnutrition under 5 | Severe malnutrition under 5 years – new cases | Population under 5 years |

a Personal communication NHISSA.

| Indicator | Numerator | Denominator |
|---|---|---|
| Incidence of diarrhoea under 5 | Diarrhoea under 5 years – new cases | Population under 5 years |
| Incidence of Lower Respiratory Infection under 5 | Lower respiratory infection under 5 years – new cases | Population under 5 years |
| **EPI** | | |
| Immunisation coverage under 1 year | Immunised fully under 1 year – new cases | Target population under 1 year |
| Immunisation drop-out rate (DPT-Hib3 – Measles1) | Measles 1st doses minus DPT-Hib 3rd doses to under 1 year old children | DPT-Hib 3rd dose |
| Immunisation drop-out rate (DPT-Hib 1 – DPT-Hib 3) | DPT-Hib 3rd doses minus DPT-Hib 1st doses to under 1 year old children | DPT-Hib 1st dose |
| OPV 1st dose coverage | OPV 1st doses | Target population under 1 year |
| OPV 3rd dose coverage | OPV 3rd doses | Target population under 1 year |
| HepB 3rd dose coverage | HepB 3rd doses | Target population under 1 year |
| Measles coverage under 1 year (annualised) | Measles 1st doses before 1 year | Target population under 1 year |
| Measles 2nd dose coverage (annualised) | Measles 2nd doses | Target population of 1 year olds |
| BCG coverage | BCG doses under 1 year | Target population under 1 year |
| **Women's/Maternal Health** | | |
| Antenatal visits before 20 weeks rate | Antenatal 1st visits before 20 weeks | Antenatal 1st visit before 20 weeks + Antenatal 1st visit 20 weeks or later |
| Antenatal coverage | Antenatal 1st visits before 20 weeks + Antenatal 1st visits after 20 weeks | Expected deliveries in population (mid-year estimate for children under 1 year + 7%)[1] |
| Antenatal visits per antenatal client | Antenatal 1st visits before 20 weeks + Antenatal 1st visits 20 weeks or later + Antenatal follow-up visit | Antenatal 1st visit before 20 weeks + Antenatal 1st visit 20 weeks or later |
| Tetanus Toxoid coverage of pregnant women | Tetanus Toxoid 2nd doses to pregnant women | Expected deliveries in population (mid-year estimate for children under 1 year + 7%)[1] |
| Institutional delivery coverage | Total deliveries | Expected deliveries in population |
| Institutional delivery rate to women under 18 years | Deliveries to women under 18 years | Total deliveries |
| Low birth weight rate | Live births under 2 500g | Live births |
| Still birth rate | Still births | Live births + Still births |
| Women year protection rate (annualised)[2] | Condoms distributed /200<br>IUCD inserted /4<br>Norethisterone enanthate injection /6<br>Medroxyprogesterone injection /4<br>Oral pill cycle /13 | Female target population 15-44 years |
| **STI/HIV** | | |
| Cases treated as STI incidence | Cases treated as STI using the syndromic approach | Target population 15 years and older |

| Indicator | Numerator | Denominator |
|---|---|---|
| Male urethral discharge incidence | Male urethral discharge – new cases | Male target population 15 years and older |
| STI contact tracing rate | Cases treated as STI that came in with a contact slip | STI contact slips issued |
| Condom distribution rate (annualised) | Condoms distributed | Male target population 15 years and older |
| **Chronic Diseases** | | |
| Prevalence of Hypertension | Hypertension visits | Population 45 years and older |
| Prevalence of Epilepsy | Epilepsy visits | Total population |
| Prevalence of Diabetes Mellitus | Diabetes mellitus visits | Population 45 years and older |
| **Data/Information Flow** | | |
| Data input coverage | Data submission rate, with each facility weighed according to its total headcount | All expected PHC data for area |

1 The census-based number of children is adjusted upwards by 7% to cater for infant mortality and stillbirths. Spontaneous abortions before 28 weeks and terminations of pregnancy are not taken into account, since those women in most cases will not require antenatal care.

2 Women Year Protection Rate is based on the assumption that any of the following constitutes 'protection for one year' for the 'average' woman aged 15-44 years: 200 condoms (60% utilised for sex), 6 norethisterone enanthate injections, 4 medroxyprogesterone injections, or 13 oral pill cycles.

## General Indicator-related definitions

**Proportion:** The relation of a subgroup to the entire group; that is the subgroup divided by the entire group. Often proportions are expressed as percentages.

**Rate:** The frequency of events in a population during a specified time period (usually a year) divided by the population 'at risk' of the event occurring during that time period. Rates tell how common it is for a given event to occur. Rates are often expressed per 1000 population. Crude rates are computed for an entire population, while specific rates may be computed for subgroups such as certain age groups.

**Ratio:** The relation of one population subgroup to the total population or to another subgroup; that is, one subgroup divided by another. Also used for indicators where the numerator and denominator are completely different entities, like 'patients per usable bed' (bed occupancy ratio).

**Incidence:** the number of new cases arising in a given period in a specified population.

**Prevalence:** the number of cases in a defined population at a specified point in time. Note that 'prevalence' indicators based on routine data may not reflect true prevalence. For example, for the indicator 'prevalence of hypertension' mentioned in the section on 'Other Morbidity and Risk Behaviour', the numerator is visits by hypertensive patients per month. Although it might be expected that such patients visit the facility once per

month, it is possible that some do not visit at all while others visit more than once. Such indicators provide approximate and not true prevalence. True prevalence can only be accurately measured through mass screening surveys. Household surveys are also approximate because a number of hypertensive individuals may not (yet) be aware of their condition.

## Data sources and collection

Various methods may be used to collect data for indicators including routine reporting systems, surveys, demographic surveillance systems (DSSs) and specific research studies. Data validity and comparability can be a problem with all these methods, particularly when data collection times are far apart, or when all data come from only one survey or source. DSSs allow detailed analysis of data over time (longitudinal analysis) but are complex and expensive, and are generally only feasible in selected geographic areas rather than entire countries. Comparability over time is only reliable where the data collection methodology and confounding factors remain constant. In many developing countries such comparability is particularly difficult due to civil strife, rapidly changing socio-economic conditions, and/or the HIV/AIDS pandemic. Other chapters in this and previous Reviews provide more background on health information systems and data sources for public health service planning and evaluation [SAHR 2002 Ch19, SAHR 2001 Ch6].

The main data sources used to update this chapter for 2002 include:

| Data source/organisation | Indicators |
|---|---|
| Statistics South Africa (www.statssa.gov.za) | Demographic and socio-economic indicators |
| Department of Health (www.doh.gov.za) | Routine data; infectious disease incidence, antenatal HIV prevalence |
| Reproductive Rights Alliance – RRA Barometer | Termination of Pregnancy indicators |
| Actuarial Society of South Africa (ASSA) | HIV/AIDS projections |
| PERSAL (Vulindlela) (www.vulindlela.gov.za) | Public sector health personnel |
| Medical Schemes Council (www.medicalschemes.com) | Private sector health financing |
| HSRC Study of HIV/AIDS Household Survey | Population HIV prevalence |
| District Health Information System (DHIS) (Health Information Systems Programme - www.hisp.org) | Routine health service delivery monitoring data |

The last October Household Survey (OHS) was completed in 1999. This has been replaced with a Labour Force Survey, from which limited health-related data can be extracted. Additional socio-economic data were obtained from the South African Demographic and Health Surveys, however the most recent report available was still that for the 1998 survey. This remained the key source for health status indicators. More recent sources include the Confidential Enquiries into Maternal Deaths and the publications of the Reproductive Rights Alliance on termination of pregnancy. Other regular

sources include the annual antenatal HIV prevalence survey and the infectious diseases data issued by the Department of Health. In addition to the reports issued by the Actuarial Society of South Africa, Metropolitan Life and the Institute for Futures Research, an important new source of HIV data was the Nelson Mandela Foundation/HSRC national prevalence study [HIV Household Survey 2002].

Since no new versions of National Health Accounts are available, public sector financial data remain largely unchanged. While the private sector remains under-reported in many ways, the reports of the Council for Medical Schemes carry increasingly accessible data. Public sector personnel data continue to be difficult to access, with the Personnel Administration system (PERSAL) the only source.

There are currently many processes aiming at interfacing and/or integrating data from multiple sources through a set of common identifiers. South Africa is still plagued by its legacy of highly fragmented management and information systems, but the situation is slowly improving. An example has been set by the Municipal Demarcation Board, which has placed its information in the public domain through a web site (www.demarcation.org.za) and the 'SA Explorer' CD. Both the Department of Health web site (www.health.gov.za) and the web site and email discussion lists hosted by the Health Systems Trust (www.hst.org.za) are emerging as key conduits for free sharing of health data and information. Another important development is the increasing support for 'Open Source Software' expressed by the Government Information Technology Council (GITOC), which is a factor in improving access to data.

As before, international comparative data for a selection of middle-income countries with comparable gross national incomes per capita have been included. International comparative data are available from a range of sources, including the World Health Organization, World Bank, the United Nations Development Programme and the Population Reference Bureau.

A number of international publications providing global comparative data on various health indicators have also been released including:

- WHO World Health Report 2002 (Focus this year is on causes of death, burden of disease) (www.who.int)
- UNDP Human Development Report 2002 (www.undp.org)
- PRB World Population Data Sheet 2002 (www.prb.org)
- UNAIDS - various documents on HIV/AIDS (www.unaids.org)
- UNICEF Childinfo web site (www.childinfo.org)
- Various other WHO/UNICEF/UNAIDS publications covering specific health issues such as TB, immunisation and tobacco.

## Demographic Indicators

The three basic input variables for population projections are fertility, mortality and migration. The first of these, fertility, is theoretically linked with socio-economic development - fertility is assumed to decline faster in conditions of higher economic growth, urbanisation and improved status of women in society. South Africa has a fertility rate that is markedly lower than that for other countries in Southern and East Africa. However, uncertainty surrounds the local figure, with some experts claiming an under-estimate of fertility and others suggesting a decline in fertility due to HIV. Population distribution in South Africa reflects the impact of past policies - with large differences in population density between provinces combined with large intra-provincial variability. Population densities are relatively high in former homeland areas. Such areas are also largely under-served, with low levels of infrastructure and employment, and consequent high levels of poverty and vulnerability [SA Pop Report 2000].

Public sector dependent populations have been quantified in order to provide explicit provincial denominators for many of the indicators in other sections that reflect public health services delivered by the State. The way in which the public sector dependent population has been estimated ignores the very real degree to which indigent patients purchase health-related goods and services in the private sector. In addition there is the growing problem of accurately estimating the public sector dependent population other than at national level, since there are no new data since the 1999 October Household Survey on medical aid coverage by province or ethnic groups. Significant cross-border patient flows, both between provinces and between SADC countries, complicate any assessment.

Although a Census was completed in 2001, the figures presented here are still based on the 1996 Census. Results of the 2001 Census are only expected in 2003.

No major new actuarial projections were made available, although the ASSA2000 model has been extended to include provincial data, and a number of new publications are available which analyse and interpret results from the various projection models.

Statistics SA issues exponential growth and adjustment factors that allow for estimates for later years to be calculated. What must be borne in mind though, when using any population figures, is that they involve a high degree of uncertainty. This section has also drawn on a number of models that have sought to accommodate these uncertainties:

- The StatsSA mid-year estimates from 2000 include scenarios that ignore the impact of HIV/AIDS ('Without AIDS') or attempt to take into account the additional deaths that might have occurred due to HIV/AIDS ('With AIDS'). These estimates are based on the translation of the antenatal sero-prevalence data to 'additional deaths due to HIV/

AIDS', using several assumptions outlined in the 2000 P0302 Statistical Release.

➢ The Actuarial Society of South Africa has developed a series of models - this section has used outputs from the ASSA2000 model. This model is able to produce output scenarios for differing levels of change, particularly with respect to HIV risk behaviour and intervention. The change scenario is included not so much because this is a likely scenario but in order to break away from the tradition of only showing what is expected to happen if nothing is done. It comprises the following assumptions:

- no antiretroviral therapy (ART)
- mother-to-child transmission intervention (phased in from 40% of births in the year starting 1 July 2001 to 90% in five years time, and assumed to 50% effective)
- treatment of sexually transmitted infections (STIs) such that these are reduced by 15% phased in over the five years starting 1 July 2001
- a doubling in condom usage over the next five years
- a decrease in the number of new sexual partners by 15% over the next five years.

The provincial projection results added this year are based on the assumption of no-change for all provinces except the Western Cape. In the case of the Western Cape a change scenario specific to that province has been incorporated to allow for the fact that the province has been intervening to prevent the spread of the epidemic.

➢ Another proprietary model, referred to as the Metropolitan Life/Doyle model, is sometimes quoted.

➢ The Institute for Futures Research at the University of Stellenbosch has provided projections in the form of high, medium and low scenarios.

- High population projections: The demographic impact of HIV/AIDS is not incorporated, therefore life expectancy at birth increases throughout the projection period; fertility rates decline steadily; and a high degree of in-migration (200 000 per annum) is assumed.
- Medium population projections: The impact of the HIV/AIDS epidemic is incorporated from 2011 onwards; fertility rates in black/African and coloured women decline more rapidly than in the high projections; and a medium degree of in-migration (150 000 per annum) is assumed.
- Low population projections: The impact of HIV/AIDS epidemic is incorporated from 1996 onwards; fertility rates are similar to those of the medium projections; and a low degree of in-migration (100 000 per annum) is assumed.

Data from the 2001 MRC report on the impact of HIV/AIDS on mortality were not included since the ASSA2000 data provides more up-to-date projections than the ASSA600 model used in the MRC report. However the other sources of population projections show general agreement with the findings reported by the MRC. In 2002, a StatsSA assessment of causes of mortality based on death certificate data [StatsSA Causes of Death] confirmed the general trends noted by the MRC report.

## Population

**Definitions:**

**Annual Population Growth Rate:** The rate at which the population is increasing or decreasing in a given year expressed as a percentage of the base population size. It takes into consideration all the components of population growth, namely births, deaths and migration.

**Average Household Size:** Average number of people living in each household where household is defined as a person, or a group of persons, who occupy a common dwelling (or part of it) for at least four days a week and who provide themselves jointly with food and other essentials for living. In other words, they live together as a unit. People who occupy the same dwelling, but who do not share food or other essentials, are enumerated as separate households.

**Crude Death Rate:** Number of deaths in a year/population at mid-year per 1000 population.

**Public Sector Dependent Population:** This is an adjustment of the total population to the number assumed to be dependent on services in the public health sector based on medical scheme (health insurance) coverage. It is calculated by subtracting the number of people with medical scheme cover (determined from medical scheme membership reports, or surveys indicating percentage of population on medical schemes) from the total population to obtain a population assumed to be dependent on the public sector.

**Total Fertility Rate:** The average number of children that a woman gives birth to in her lifetime, assuming that the prevailing rates remain unchanged.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Annual Population Growth Rate** | | | | | | | | | | |
| 1993[1] | 2.6 | 1.5 | 1.3 | 2.8 | 4.0 | 3.0 | 0.8 | 3.1 | 1.7 | 2.4 |
| 1996[2] | 2.2 | 1.4 | 1.7 | 1.6 | 3.0 | 2.1 | 1.0 | 1.5 | 1.5 | 1.9 |
| **Average Household Size** | | | | | | | | | | |
| 1996[3] | 4.6 | 4.1 | 3.7 | 5.0 | 4.9 | 4.6 | 4.3 | 4.6 | 3.9 | 4.4 |
| **Crude Death Rate** | | | | | | | | | | |
| 1994[4] | 5.7 | 5.8 | 6.1 | 3.5 | 2.6 | 3.2 | 8.5 | 5.7 | 6.8 | 4.9 |
| 2001 low estimate[5] | 13.0 | 12.0 | 10.7 | 11.5 | 12.8 | 11.8 | 10.6 | 12.5 | 9.8 | 11.7 |
| **Population** | | | | | | | | | | |
| **Statistics South Africa Census and Projections[3,6]** | | | | | | | | | | |
| 1996 | 6 302 525 | 2 633 504 | 7 348 423 | 8 417 021 | 4 929 368 | 2 800 711 | 840 321 | 3 354 825 | 3 956 875 | 40 583 573 |
| 1998 | 6 519 300 | 2 724 600 | 7 627 600 | 8 726 300 | 5 178 700 | 2 924 400 | 861 400 | 3 481 200 | 4 086 900 | 42 130 500 |
| 1999 | 6 658 670 | 2 714 654 | 7 807 273 | 8 924 643 | 5 337 267 | 3 003 327 | 875 222 | 3 562 280 | 4 170 971 | 43 054 306 |
| 2000 With AIDS | 6 811 373 | 2 760 558 | 7 780 631 | 8 857 615 | 5 495 679 | 3 004 916 | 869 248 | 3 532 824 | 4 178 598 | 43 291 441 |
| 2001 With AIDS | 6 978 387 | 2 817 076 | 7 966 712 | 9 070 458 | 5 671 050 | 3 090 946 | 879 675 | 3 604 472 | 4 249 547 | 44 328 322 |
| 2002 With AIDS | 7 132 141 | 2 859 081 | 8 106 190 | 9 212 123 | 5 843 851 | 3 156 272 | 888 390 | 3 659 902 | 4 313 959 | 45 171 908 |
| 2002 Without AIDS | 7 158 843 | 2 878 993 | 8 170 386 | 9 308 565 | 5 857 622 | 3 181 041 | 890 864 | 3 686 053 | 4 321 844 | 45 454 211 |
| **ASSA2000 Model[7]** | | | | | | | | | | |
| 2000 change/no change | 6 897 865 | 2 862 088 | 8 765 262 | 9 211 922 | 5 277 432 | 3 054 973 | 955 010 | 3 753 128 | 4 399 414 | 45 078 805 |
| 2005 change | - | - | - | - | - | - | - | - | 4 725 994 | 47 516 461 |
| 2005 no change | 7 431 019 | 2 945 537 | 9 218 283 | 9 663 375 | 5 687 848 | 3 196 436 | 1 040 329 | 3 961 890 | - | 47 485 369 |
| 2010 change | - | - | - | - | - | - | - | - | 4 893 421 | 47 591 195 |
| 2010 no change | 7 680 901 | 2 871 268 | 8 956 913 | 9 589 177 | 5 949 799 | 3 191 618 | 1 078 984 | 3 950 663 | - | 47 392 059 |
| 2015 change | - | - | - | - | - | - | - | - | - | 47 311 669 |
| 2015 no change | - | - | - | - | - | - | - | - | - | 46 599 840 |
| **Metropolitan/Doyle Model[8]** | | | | | | | | | | |
| 2000 Metropolitan | - | - | - | - | - | - | - | - | - | 43 324 080 |
| 2005 Metropolitan | - | - | - | - | - | - | - | - | - | 44 721 605 |
| 2010 Metropolitan | - | - | - | - | - | - | - | - | - | 44 570 608 |
| 2015 Metropolitan | - | - | - | - | - | - | - | - | - | 43 798 319 |
| 2020 Metropolitan | - | - | - | - | - | - | - | - | - | 42 800 799 |
| **Institute for Futures Research Model[9]** | | | | | | | | | | |
| 2006 high estimate | 7 811 127 | 3 340 271 | 9 551 552 | 10 762 197 | 6 500 835 | 3 819 661 | 966 296 | 4 244 008 | 4 691 292 | 51 692 700 |
| 2006 low estimate | 7 321 958 | 3 087 389 | 8 658 883 | 10 006 973 | 5 965 006 | 3 436 345 | 927 353 | 3 927 744 | 4 447 797 | 47 781 800 |
| 2011 high estimate | 8 639 180 | 3 676 491 | 10 523 509 | 11 940 669 | 7 390 819 | 4 353 705 | 1 027 778 | 4 683 900 | 5 022 832 | 57 267 000 |
| 2011 low estimate | 7 672 769 | 3 207 489 | 8 982 380 | 10 510 225 | 6 366 327 | 3 659 914 | 953 329 | 4 090 776 | 4 587 026 | 50 032 600 |
| 2016 high estimate | 9 437 717 | 3 986 387 | 11 436 693 | 13 062 132 | 8 274 427 | 4 878 779 | 1 084 012 | 5 100 686 | 5 327 516 | 62 599 000 |
| 2016 low estimate | 7 984 898 | 3 305 004 | 9 260 184 | 10 950 386 | 6 735 843 | 3 864 938 | 977 892 | 4 232 431 | 4 713 375 | 52 026 900 |
| 2031 high estimate | 11 446 802 | 4 784 260 | 13 915 443 | 15 945 622 | 10 589 740 | 6 297 653 | 1 200 907 | 6 166 726 | 6 048 177 | 76 414 300 |
| 2031 low estimate | 8 431 788 | 3 418 842 | 9 639 595 | 11 608 682 | 7 377 072 | 4 235 578 | 995 043 | 4 404 705 | 4 853 241 | 54 965 400 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Population % by Province[3,6]** | | | | | | | | | | |
| 1996 | 15.5 | 6.5 | 18.1 | 20.7 | 12.1 | 6.9 | 2.1 | 8.3 | 9.7 | 100.0 |
| 2002 With AIDS | 15.8 | 6.3 | 17.9 | 20.4 | 12.9 | 7.0 | 2.0 | 8.1 | 9.6 | 100.0 |
| **Public Sector Dependent Population** | | | | | | | | | | |
| 1998[10] | 5 952 174 | 2 216 772 | 4 526 042 | 7 517 110 | 4 655 349 | 2 472 521 | 681 468 | 2 961 703 | 2 924 544 | 33 907 683 |
| 1998 NHA[11] | 6 060 194 | 2 257 550 | 4 629 085 | 7 676 044 | 4 836 889 | 2 548 324 | 685 783 | 3 027 929 | 2 972 027 | 34 693 825 |
| 1998 non med scheme[12] | - | - | - | - | - | - | - | - | - | 35 138 989 |
| 1999 non med scheme[12] | - | - | - | - | - | - | - | - | - | 36 065 167 |
| 2000 non med scheme[12] | - | - | - | - | - | - | - | - | - | 36 271 218 |
| 2001 non med scheme[12] | - | - | - | - | - | - | - | - | - | 37 307 516 |
| 2001 With AIDS[13] | 6 266 592 | 2 400 149 | 5 823 666 | 7 918 510 | 5 177 669 | 2 652 032 | 711 657 | 3 135 891 | 3 000 180 | 37 058 477 |
| 2002 With AIDS[13] | 6 404 663 | 2 435 937 | 5 925 625 | 8 042 183 | 5 014 024 | 2 553 424 | 811 100 | 3 184 115 | 3 045 655 | 37 763 715 |
| **Total Fertility Rate** | | | | | | | | | | |
| 1991[14] | 4.6 | 3.7 | 3.0 | 4.3 | 5.8 | 4.3 | 2.9 | 4.5 | 2.7 | 3.3 |
| 1998[15] | 3.5 | 2.2 | 2.3 | 3.3 | 3.9 | 3.1 | 2.7 | 2.4 | 2.3 | 2.9 |
| 2011 high estimate[16] | 2.9 | 2.9 | 2.7 | 2.9 | 3.0 | 3.0 | 2.3 | 3.0 | 2.2 | 2.6 |
| 2011 low estimate[16] | 2.6 | 2.5 | 2.4 | 2.5 | 2.6 | 2.6 | 2.1 | 2.6 | 2.0 | 2.2 |
| 2026 high estimate[16] | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 1.8 | 2.1 | 1.8 | 1.8 |
| 2026 low estimate[16] | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.7 | 1.6 | 1.5 |

| | African | Coloured | Indian/Asian | White | Other/ Unstated | All groups |
|---|---|---|---|---|---|---|
| **Average Household Size** | | | | | | |
| 1996[3] | 4.7 | 4.7 | 4.3 | 2.9 | - | 4.4 |
| **Crude Death Rate** | | | | | | |
| 2001 low estimate[5] | 12.6 | 9.0 | 5.6 | 9.0 | - | 11.7 |
| **Population** | | | | | | |
| **Statistics South Africa Census and Projections[3,6]** | | | | | | |
| 1996 | 31 127 631 | 3 600 446 | 1 045 596 | 4 434 697 | 375 204 | 40 583 573 |
| 1998 | 32 449 200 | 3 721 000 | 1 074 900 | 4 500 400 | 385 100 | 42 130 500 |
| 1999 | 33 329 879 | 3 792 631 | 1 092 254 | 4 538 727 | 390 815 | 43 054 306 |
| 2000 Without AIDS | 33 879 852 | 3 796 858 | 1 092 522 | 4 521 664 | 394 803 | 43 685 699 |
| 2001 Without AIDS | 34 668 864 | 3 869 035 | 1 109 122 | 4 533 091 | 380 532 | 44 560 644 |
| 2002 Without AIDS | 35 474 192 | 3 918 048 | 1 121 815 | 4 555 289 | 384 867 | 45 454 211 |
| **Institute for Futures Research Model[9]** | | | | | | |
| 2006 high estimate | 41 741 400 | 4 119 800 | 1 190 500 | 4 641 000 | - | 51 692 700 |
| 2006 low estimate | 37 950 300 | 4 000 000 | 1 190 500 | 4 641 000 | - | 47 781 800 |
| 2011 high estimate | 47 001 200 | 4 342 800 | 1 245 000 | 4 678 000 | - | 57 267 000 |
| 2011 low estimate | 39 995 900 | 4 113 700 | 1 245 000 | 4 678 000 | - | 50 032 600 |
| 2016 high estimate | 52 082 200 | 4 539 500 | 1 286 800 | 4 690 300 | - | 62 599 000 |
| 2016 low estimate | 41 826 000 | 4 223 600 | 1 286 800 | 4 690 300 | - | 52 026 900 |
| 2021 high estimate | 56 982 500 | 4 698 700 | 1 315 700 | 4 670 300 | - | 67 667 200 |
| 2021 low estimate | 43 331 700 | 4 296 300 | 1 315 700 | 4 670 300 | - | 53 614 000 |
| 2026 high estimate | 61 601 000 | 4 811 600 | 1 333 600 | 4 621 700 | - | 72 368 000 |
| 2026 low estimate | 44 324 900 | 4 318 600 | 1 333 600 | 4 621 700 | - | 54 598 900 |
| 2031 high estimate | 65 628 900 | 4 889 700 | 1 344 300 | 4 551 500 | - | 76 414 300 |
| 2031 low estimate | 44 765 200 | 4 304 300 | 1 344 300 | 4 551 500 | - | 54 965 400 |
| **Population % by ethnic group** | | | | | | |
| 1996[3] | 76.7 | 8.9 | 2.6 | 10.9 | 0.9 | 100.0 |
| 2002 Without AIDS[6] | 78.0 | 8.6 | 2.5 | 10.0 | 0.8 | 100.0 |
| 2031 high estimate[9] | 85.9 | 6.4 | 1.8 | 5.9 | - | 100.0 |
| 2031 low estimate[9] | 81.5 | 7.8 | 2.4 | 8.3 | - | 100.0 |
| **Public Sector Dependent Population** | | | | | | |
| 2001 Without AIDS[13] | 31 756 679 | 3 044 931 | 788 586 | 1 459 655 | 202 847 | 37 252 698 |
| 2002 Without AIDS[13] | 32 494 360 | 3 083 504 | 797 610 | 1 466 803 | 157 443 | 37 999 720 |
| **Total Fertility Rate** | | | | | | |
| 1998[15] | 3.1 | 2.5 | - | 1.9 | - | 2.9 |
| 2011 high estimate[16] | 2.8 | 1.8 | 1.7 | 1.5 | - | 2.6 |
| 2011 low estimate[16] | 2.4 | 1.8 | 1.7 | 1.5 | - | 2.2 |
| 2026 high estimate[16] | 1.8 | 1.5 | 1.5 | 1.5 | - | 1.8 |
| 2026 low estimate[16] | 1.5 | 1.5 | 1.5 | 1.5 | - | 1.5 |

1 Note: For 1985-1993
Ref: Development Bank 1994 (Table 1: Annexure A pg 81)

2 Note: Growth rates are for 1996-2002. StatsSA usually only provide such growth rates by province and gender. More accurate intra-provincial population growth rates are required to provide meaningful denominator data for the calculation of a range of health indicators at district level.
Ref: StatsSA Mid-Year Estimates

3 Ref: Census 96

4 Ref: Bradshaw 1995

5 Note: Estimated for 1996-2001. Low population projections: The impact of HIV/AIDS epidemic is incorporated from 1996 onwards; fertility rates are similar to those of the medium projections; and a low degree of in-migration (100 000 per annum) is assumed.
Ref: IFR Projections 1999 (Fig 4.5 pg 165)

6 Note: Figures may not add up due to rounding at source. A new feature from the 2000 mid year estimates was that two population estimates were provided, one taking into account the estimated additional deaths that might have occurred due to HIV/AIDS (With AIDS). The assumptions that underpinned these estimates are outlined in the relevant P0302 Statistical release. StatsSA do not provide projections 'With AIDS' by population group, therefore these data is only available 'Without AIDS'.
Ref: StatsSA Mid-Year Estimates

7 Note: Data for 2000 represent the starting point for projections from this model, and therefore there is not yet any difference between the change and no change scenarios.
Ref: ASSA 2000

8 Ref: Metropolitan 2001

9 Ref: IFR Projections 1999 (Table 2.7 pg 29, Table 3.7 pg 99, Table 4.7 pg 169)

10 Ref: SAHR 1999 Ch 16 (pg 214. Also based on information in Chapter 13 of South African Health Review 1998)

11 Ref: NHA Public 2000 (Annex 4: Population Estimates)

12 Note: Calculated from total number of beneficiaries subtracted from the total population.
1998 - Beneficiaries: 6 991 511 Population: 42 130 500
1999 - Beneficiaries: 6 989 139 Population: 43 054 306
2000 - Beneficiaries: 7 020 223 Population: 43 291 441
2001 - Beneficiaries: 7 020 806 Population: 44 328 322
Ref: Medical Schemes 1999, 2000, 2001

13 Note: Calculated using provincial medical schemes coverage (quoting October Household Survey 1999) and StatsSA population estimates for 2001, 2002 (with AIDS) using racial medical schemes coverage (quoting October Household Survey 1999) and StatsSA population estimates for 2001, 2002 (without AIDS).
Ref: Fiscal Review 2001

14 Ref: Development Bank 1994 Table 24: Annexure A pg 90

15 Note: The 1998 national TFR is considered to be an under-estimate. The real figure is considered to be about 3.2 (see Udjo EO, Lestrade-Jefferis J. Fertility and mortality in South Africa. (on request from StatsSA)) Differences between subgroups show that fertility rates are correlated with education level, urban/rural residence, province and population group. [SAHR 2000 Ch 4]
Ref: SADHS 1998 Table 11 pg 19

16 Note: Estimates for 2011-2016, 2026-2031
Ref: IFR Projections 1999 (Table 2.7 pg 29, Fig 4.7 pg 167)

## Distribution

**Definitions:**

**Non-Urban Percentage:** Proportion of population living in a non-urban environment. Non-urban, or rural areas include commercial farms, small settlements, rural villages and other areas that are further away from towns and cities. The definition includes semi-urban areas that are not part of a legally proclaimed urban area, but adjoin it.

**Urban Percentage:** Proportion of population living in urban environment. An urban area is one that has been legally proclaimed as being urban e.g. towns, cities and metropolitan areas.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Area (square km)** | | | | | | | | | | |
| 1996[1] | 169 580 | 129 480 | 17 010 | 92 100 | 123 910 | 79 490 | 361 830 | 116 320 | 129 370 | 1 219 090 |
| **Area as a % of total area of South Africa** | | | | | | | | | | |
| 1996[1] | 13.9 | 10.6 | 1.4 | 7.6 | 10.2 | 6.5 | 29.7 | 9.5 | 10.6 | 100.0 |
| **Non-Urban Percentage** | | | | | | | | | | |
| 1996[1] | 63.4 | 31.4 | 3.0 | 56.9 | 89.0 | 60.9 | 29.9 | 65.1 | 11.1 | 46.3 |
| **Urban Percentage** | | | | | | | | | | |
| 1996[1] | 36.6 | 68.6 | 97.0 | 43.1 | 11.0 | 39.1 | 70.1 | 34.9 | 88.9 | 53.7 |
| **Population density (people per km²)** | | | | | | | | | | |
| 1996[1] | 38.4 | 21.0 | 448.4 | 95.1 | 41.7 | 36.7 | 2.3 | 29.9 | 31.5 | 34.4 |

1 Ref: Census 96 (Table 1.1, Table 2.4)

## Socio-Economic Indicators

The basic indicators of low socio-economic development are illiteracy, unemployment and lower education. Measured at the national level, this can be expressed by the gross domestic product (GDP) per capita. However, comparison between countries requires that incomes first be converted to a common currency. International practice is to do so using 'purchasing power parities' (PPPs) rather than exchange rates. A summary measure of human development is the Human Development Index (HDI) - this measures achievements in three basic areas: longevity, knowledge and income [HDR 2001].

A South African version of the Human Development Report has also been produced [HDR 2000 SA]. It seeks to track progress in the transformation of South African society, to one characterised by 'substantive democracy and people-centred development'. The relevance of the socio-economic indicators reflected here can be seen in their use as the goals of overall government economic policy, which include:

- Creating productive employment opportunities for all citizens at a living wage
- Alleviating poverty, low wages and extreme inequalities in wages and wealth
- Meeting basic needs and ensuring that every citizen enjoys a decent living standard and economic security.

However, even though the indicators reveal considerable inter-provincial differences (e.g. in HDI), the fact that these conceal even greater inequities should be recognised. As South Africa's Human Development Report notes (drawing on the Poverty and Inequality Report), "although South Africa is an upper-middle-income country in per capita terms, most households experience outright poverty or vulnerability to poverty".

Available estimates of the prevalence of poverty in South Africa range from 11.1% to 56.9%, depending on the poverty line, the method employed in measuring poverty and whether poverty is measured at the household or at the individual level [Chronic Diseases in SA]. The poverty estimates published by Statistics South Africa, based on a poverty line of a household income of R800/month, assessed the percentage of households living in poverty to be 52% in 1996. A chapter in the MRC report on poverty and chronic diseases explores the problem of measuring poverty, and the difficulty in using any standard socio-economic indicators as a proxy, particularly in countries such as South Africa with substantial inequalities.

The latest UNFPA report on The State of the World Population [SWP 2002] focuses on reducing poverty in developing countries, discussing how poor health (particularly reproductive health) and poverty feed off each other. A high prevalence of disease and poor health in a country harms economic performance while higher life expectancy, a key indicator of health status, stimulates economic growth. The report considers what health sector reform measures are required to support more equitable health care.

**Definitions:**

**General Socio-Economic:**

**GDP per capita (PPP US$):** Gross Domestic Product (GDP) - the total output of goods and services for final use produced by an economy, by both residents and non-residents, regardless of the allocation to domestic and foreign claims. It does not include deductions for depreciation of physical capital or depletion and degradation of natural resources. Purchasing Power Parity (PPP) - A rate of exchange that accounts for price differences across countries allowing international comparisons of real output and incomes. At the PPP US$ rate, PPP US$1 has the same purchasing power in the domestic economy as $1 has in the United States.

**Human Development Index:** The HDI is a summary measure of human development. It measures the average achievements in a country in three basic dimensions of human development:

- A long and healthy life, as measured by life expectancy at birth
- Knowledge, as measured by the adult literacy rate (with two-thirds weight) and the combined primary, secondary and tertiary gross enrolment ratio (with one-third weight)
- A decent standard of living, as measured by GDP per capita (PPP US$).

Calculation of HDI is an evolving methodology, and comparisons should not be made between years (when methods might have varied) but can be made between countries, as issued by the same source.

**Human Development Index Rank:** Rank from 1 to end given to each country according to value of HDI. (Data reported in International indicators section only.)

**Poverty prevalence:** Proportion of people/households living in poverty. Depending on the poverty line and the methodology used there, are various estimates of the extent of poverty, therefore caution should be observed in comparing estimates from different sources, and comparative reliability can be assessed from the rank order correlation between different sets of estimates.

**Education:**

**Adult literacy rate:** Percentage of people aged 15 and above who are literate.

**Education Level:** Percentage of people in a given age group who have received a particular level of education

**Employment:**

**Age dependency ratio:** The ratio of the combined child population (0-14 years) and the aged population (65 years and over) - persons in the 'dependent' ages - to every 100 people of the intermediate age population (15-65 years) - 'economically active' ages. Where more detailed data are lacking, the age-dependency ratio is often used as an indicator of the economic burden the productive portion of a population must carry - even though some persons defined as 'dependent' are producers and some persons in the 'productive' ages are economically dependent. The higher the ratio, the greater the number of people dependent on the economically active.

**Unemployment rate (expanded and official definitions):** The official definition of the unemployed is that they are those people within the economically active population who (a) did not work during the 7 days prior to the interview, (b) want to work and are available to work within a week of the interview, and (c) have taken active steps to look for work or to start some form of self-employment in the 4 weeks prior to the interview. The expanded definition excludes criterion (c). It therefore includes discouraged work seekers who have failed to take active steps to obtain employment in the 4 weeks prior to the interview.

**Household Facilities:**

**Percentage households with telephone:** Includes households with a telephone in the dwelling or a cellular telephone.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **GDP per capita (PPP US$)** | | | | | | | | | | |
| 1996[1] | 2 856 | 5 185 | 11 862 | 4 563 | 2 019 | 6 105 | 6 513 | 3 509 | 9 381 | 5 916 |
| 1996 Rural[1] | - | - | - | - | - | - | - | - | - | 2 314 |
| 1996 Urban[1] | - | - | - | - | - | - | - | - | - | 9 023 |
| **Human Development Index** | | | | | | | | | | |
| 1996[1] | 0.643 | 0.671 | 0.771 | 0.658 | 0.629 | 0.657 | 0.679 | 0.608 | 0.762 | 0.688 |
| 1996 Rural[1] | - | - | - | - | - | - | - | - | - | 0.618 |
| 1996 Urban [1] | - | - | - | - | - | - | - | - | - | 0.731 |
| 2010 With AIDS[2] | 0.493 | 0.548 | 0.621 | 0.498 | 0.431 | 0.522 | 0.567 | 0.527 | 0.659 | 0.542 |
| 2010 Without AIDS[2] | 0.608 | 0.662 | 0.722 | 0.614 | 0.544 | 0.640 | 0.644 | 0.642 | 0.714 | 0.654 |
| **Poverty prevalence** | | | | | | | | | | |
| 1998[3] | 66.5 | 28.4 | 13.1 | 46.8 | 62.6 | 44.1 | 19.9 | 38.2 | 7.5 | 40.0 |
| **Education** | | | | | | | | | | |
| **Adult literacy rate** | | | | | | | | | | |
| 1996[1] | 76.5 | 88.8 | 98.1 | 89.2 | 77.7 | 79.4 | 83.8 | 73.2 | 95.8 | 85.9 |
| 1996 Rural[1] | - | - | - | - | - | - | - | - | - | 76.4 |
| 1996 Urban[1] | - | - | - | - | - | - | - | - | - | 94.5 |
| **Education Level** | | | | | | | | | | |
| 1991 No schooling[4] | 9.4 | 9.7 | 8.7 | 11.3 | 8.6 | 8.5 | 7.3 | 13.7 | 6.4 | 9.6 |
| 1996 No schooling[5] | 20.9 | 16.1 | 9.5 | 22.9 | 36.9 | 29.4 | 21.7 | 22.7 | 6.7 | 19.3 |
| **Employment** | | | | | | | | | | |
| **Age dependency ratio** | | | | | | | | | | |
| 1996[6] | 83.5 | 56.4 | 42.0 | 68.2 | 92.4 | 68.3 | 62.3 | 63.5 | 52.4 | 64.4 |
| 2002[7] | 83.4 | 56.4 | 42.9 | 68.2 | 91.7 | 71.7 | 63.1 | 64.1 | 52.4 | 64.6 |
| 2011 high estimate[8] | 61.8 | 58.7 | 52.4 | 59.7 | 61.8 | 57.5 | 48.6 | 59.5 | 46.6 | 57.2 |
| 2011 low estimate[8] | 52.9 | 49.7 | 44.5 | 51.1 | 52.9 | 49.3 | 42.9 | 50.2 | 41.8 | 49.0 |
| 2021 high estimate[8] | 52.4 | 49.7 | 46.0 | 49.7 | 52.2 | 49.5 | 46.2 | 50.4 | 43.3 | 49.3 |
| 2021 low estimate[8] | 41.4 | 39.7 | 38.3 | 40.4 | 41.0 | 39.7 | 39.9 | 36.4 | 38.5 | 39.9 |
| 2031 high estimate[8] | 43.7 | 47.1 | 48.6 | 44.7 | 42.7 | 44.3 | 44.3 | 46.2 | 45.1 | 45.3 |
| 2031 low estimate[8] | 33.9 | 37.7 | 41.4 | 35.9 | 32.5 | 35.3 | 38.1 | 36.4 | 40.4 | 36.6 |
| **Unemployment rate (expanded definition)** | | | | | | | | | | |
| 1998[9] | 51.9 | 31.6 | 32.6 | 42.7 | 49.2 | 34.9 | 29.8 | 41.3 | 20.9 | 37.5 |
| 1999[9] | 46.7 | 34.0 | 32.5 | 37.8 | 50.2 | 37.0 | 29.1 | 42.1 | 18.9 | 36.2 |
| 2002 [10] | 39.2 | 40.9 | 35.6 | 46.7 | 55.1 | 41.7 | 41.0 | 46.3 | 25.5 | 40.9 |
| **Unemployment rate (official definition)** | | | | | | | | | | |
| 1998[9] | 36.9 | 21.3 | 23.1 | 27.2 | 35.7 | 25.0 | 17.9 | 26.5 | 13.5 | 25.2 |
| 1999[9] | 29.8 | 23.3 | 20.6 | 25.9 | 34.0 | 24.4 | 18.1 | 23.5 | 13.7 | 23.3 |
| 2002[10] | 28.1 | 33.5 | 27.0 | 34.3 | 36.7 | 29.8 | 30.0 | 30.7 | 18.6 | 29.4 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Household facilities** | | | | | | | | | | |
| **Percentage households using electricity for cooking** | | | | | | | | | | |
| 1996[11] | 23.2 | 42.0 | 72.9 | 45.8 | 19.5 | 35.6 | 52.4 | 33.8 | 76.5 | 47.1 |
| 1999[12] | - | - | - | - | - | - | - | - | - | 52.7 |
| **Percentage households with no toilet** | | | | | | | | | | |
| 1996[11] | 29.1 | 8.8 | 2.5 | 15.2 | 21.1 | 8.7 | 10.7 | 6.3 | 5.4 | 12.4 |
| 1999[12] | 25.1 | 5.3 | 0.8 | 12.7 | 18.8 | 3.5 | 10.7 | 5.7 | 3.8 | 9.4 |
| **Percentage households with piped water inside** | | | | | | | | | | |
| 1996[11] | 24.7 | 40.6 | 67.7 | 39.8 | 17.8 | 37.3 | 50.0 | 30.6 | 76.4 | 44.7 |
| 1999[12] | 23.4 | 29.9 | 58.8 | 34.6 | 12.1 | 27.6 | 48.1 | 21.6 | 76.7 | 38.7 |
| **Percentage households with telephone** | | | | | | | | | | |
| 1996[11] | 15.6 | 22.9 | 45.3 | 26.9 | 7.4 | 18.2 | 30.8 | 16.8 | 55.2 | 28.6 |
| 1999[12] | - | - | - | - | - | - | - | - | - | 33.7 |

| | African | Coloured | Indian/Asian | White | Other/ Unstated | All groups |
|---|---|---|---|---|---|---|
| **GDP per capita (PPP US$)** | | | | | | |
| 1996[1] | 2 713 | 4 680 | 10 382 | 27 942 | - | 5 916 |
| **Human Development Index** | | | | | | |
| 1996[1] | 0.630 | 0.698 | 0.778 | 0.858 | - | 0.688 |
| **Education** | | | | | | |
| **Adult literacy rate** | | | | | | |
| 1996[1] | 83.0 | 91.4 | 95.6 | 99.3 | - | 85.9 |
| **Education Level** | | | | | | |
| 1996 No schooling[4] | 24.3 | 10.2 | 6.5 | 1.2 | - | 19.3 |
| **Employment** | | | | | | |
| **Age dependency ratio[4]** | | | | | | |
| 2011 high estimate | 60.8 | 41.4 | 43.3 | 44.1 | - | 57.2 |
| 2011 low estimate | 51.1 | 37.7 | 43.3 | 44.1 | - | 49.0 |
| 2021 high estimate | 50.4 | 40.3 | 43.5 | 47.3 | - | 49.3 |
| 2021 low estimate | 39.5 | 36.8 | 43.5 | 47.3 | - | 39.9 |
| 2031 high estimate | 44.9 | 42.0 | 46.2 | 53.1 | - | 45.3 |
| 2031 low estimate | 34.8 | 38.3 | 46.2 | 53.1 | - | 36.6 |

| | African | Coloured | Indian/Asian | White | Other/ Unstated | All groups |
|---|---|---|---|---|---|---|
| **Unemployment rate (expanded definition)** | | | | | | |
| 1998[9] | 46.0 | 23.8 | 19.4 | 6.4 | - | 37.5 |
| 1999[9] | 44.0 | 23.6 | 20.2 | 6.8 | - | 36.2 |
| 2002[10] | 47.8 | 32.4 | 24.8 | 9.9 | - | 40.9 |
| **Unemployment rate (official definition)** | | | | | | |
| 1998[9] | 32.0 | 15.8 | 14.7 | 4.4 | - | 25.2 |
| 1999[9] | 29.2 | 15.2 | 15.6 | 4.7 | - | 23.3 |
| 2002[10] | 35.2 | 24.6 | 18.7 | - | - | 29.4 |
| **Household facilities** | | | | | | |
| **Percentage households using electricity for cooking** | | | | | | |
| 1996[11] | 30.4 | 75.5 | 97.7 | 97.2 | 68.1 | 47.1 |
| 1999[12] | 39.3 | 78.2 | 96.6 | 97.8 | - | 52.7 |
| **Percentage households with no toilet** | | | | | | |
| 1996[11] | 16.4 | 5.1 | 0.2 | 0.1 | 7.1 | 12.4 |
| 1999[12] | 12.1 | 4.8 | 0.0 | 0.0 | - | 9.4 |
| **Percentage households with piped water inside** | | | | | | |
| 1996[11] | 27.3 | 72.4 | 96.4 | 97.6 | - | 44.7 |
| 1999[12] | 21.1 | 73.6 | 95.9 | 97.1 | - | 38.7 |
| **Percentage households with telephone** | | | | | | |
| 1996[11] | 11.3 | 43.4 | 76.9 | 88.5 | 49.7 | 28.6 |
| 1999[12] | 19.4 | 50.2 | 82.5 | 87.5 | - | 33.7 |

1 Ref: StatsSA HDI 2001 (Tables 1, 2, 3)

2 Note: Estimates of HDI with and without HIV/AIDS
Ref: HDR 2000 SA (Appendix 1 pg 204)

3 Note: The asset index derived from the SADHS data were employed to calculate estimates of the headcount poverty index for South Africa. The asset index value at the 40th population percentile is employed as the poverty line.
Ref: Chronic Diseases in SA Table 2.6

4 Note: Percentage of children aged 6-14 years not attending school
Ref: Development Bank 1994 Table 24: Annexure A pg 90

5 Note: Percentage of those aged 20 years or older who have received no schooling
Ref: Census 96 (Table 2.25)

6 Ref: Census 96

7 Ref: StatsSA Mid-Year Est. Hedberg (Calculated from data)

8 Ref: IFR Projections 1999 (Table 2.7 pg 29, Table 4.7 pg 169)

9 Ref: StatsSA OHS (OHS 1998, 1999)

10 Note: Sample size for Whites too small for reliable estimate.
Ref: Labour force survey (February 2002. Tables 2.4.1, 2.4.2, 2.5.1 and 2.5.2)

11 Ref: Census 96 (Calculated from Table 3.6, Tables 3.12 and 3.13, Tables 3.8 and 3.9 and figures on pg 78,79, Tables 3.10 and 3.11)

12 Ref: StatsSA OHS (Table 6.7, Table 6.10.1, Table 6.4, Table 6.12 OHS 1999)

## Health Status Indicators

### Mortality

A number of new publications providing information on mortality have recently been released, including the StatsSA report on Causes of death in South Africa [StatsSA Causes of Death] and the WHO World Health Report [World Health Report 2002], which describes the amount of disease, disability and death in the world today that can be attributed to a selected number of the most important risks to human health.

The results of the StatsSA study have shown that mortality patterns are changing over time. These changes have tended to affect South Africans differently, depending on population group, sex and age. While death due to unspecified unnatural causes (e.g. suicide, drowning, motor accidents) dominated mortality throughout the study period, the emergence of HIV, TB, and influenza and pneumonia as main causes of death is observed. The declining mortality in unspecified unnatural causes seems to have been offset by a steep rise in the other three causes.

Whereas males experienced the highest mortality attributable to unspecified unnatural causes in the age group 15-39, female South Africans in the same age category died primarily as a result of HIV infections. Levels of death among infants and young children arising from intestinal infections, although still high, have declined over time. In 2001 influenza and pneumonia became the leading cause of death among infants and young children. The prevalence of TB was lowest among children aged 0-14, the proportion dying due to this cause being approximately 2%.

The data show a clear racial and gender topology of mortality in the registered deaths. For African and Coloured males, the leading causes of death are unspecified unnatural causes and TB, while for Indian and White males the leading causes are cerebrovascular diseases and unspecified natural causes. By contrast, HIV is the leading cause of death among African females. Cerebrovascular disease is the leading cause of death among Coloured females and ischaemic heart disease the leading cause among Indian and White females. Results of this study show a high prevalence of HIV deaths for African females (13.5%). Most pronounced is the pattern of deaths related to HIV and its related diseases amongst children and the reproductive and economically active population group (i.e. the population aged 15-49) [StatsSA Causes of Death].

**Figure 1: Percentage of male deaths due to the five leading underlying causes of death, by year of death, 1997-2001**

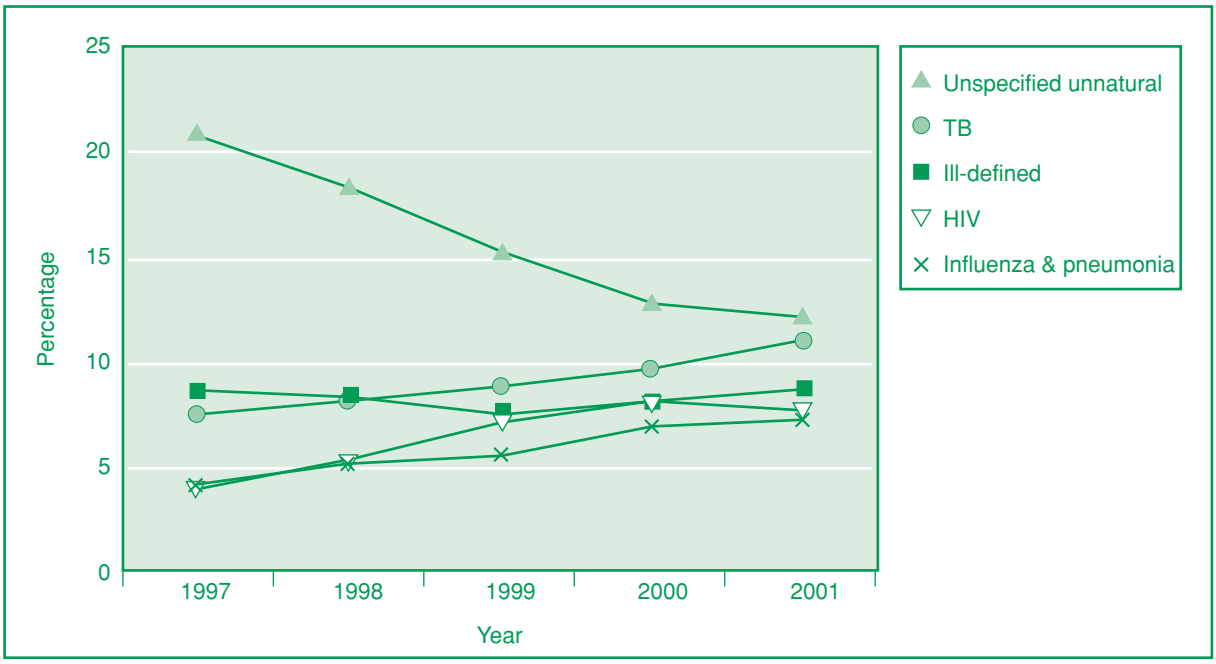



**Figure 2: Percentage of female deaths due to the five leading underlying causes of death, by year of death, 1997-2001**

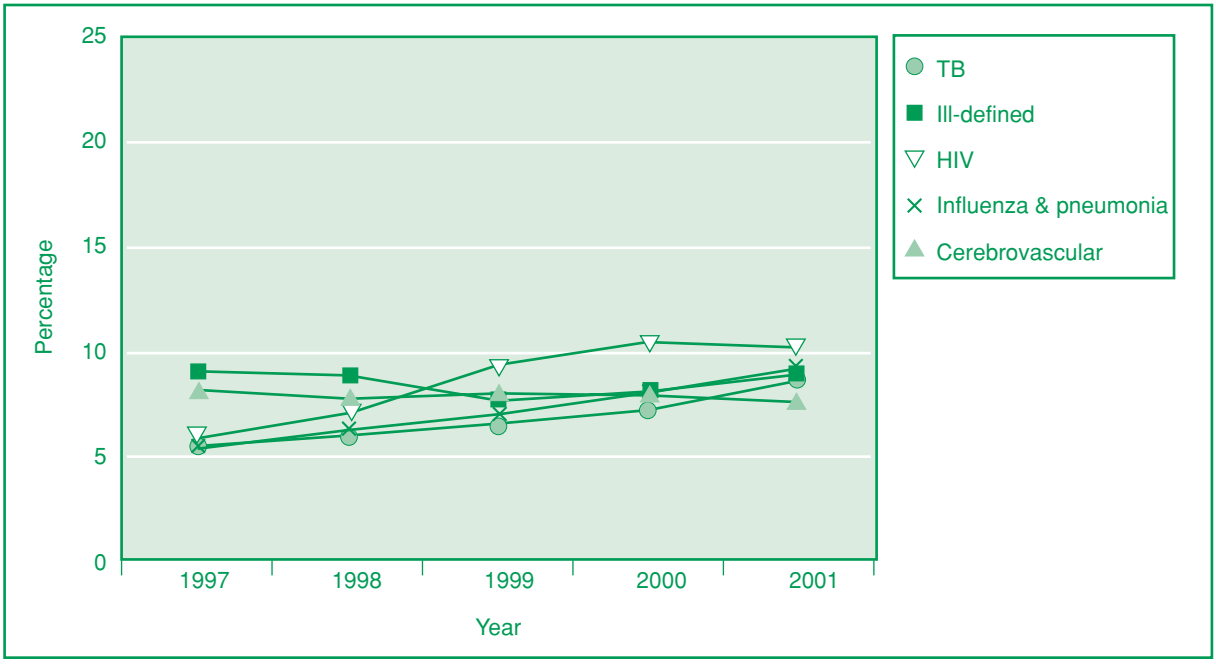


**Figure 3: Percentage of male deaths in each ethnic group due to the eight leading underlying causes of death, 1997-2001**

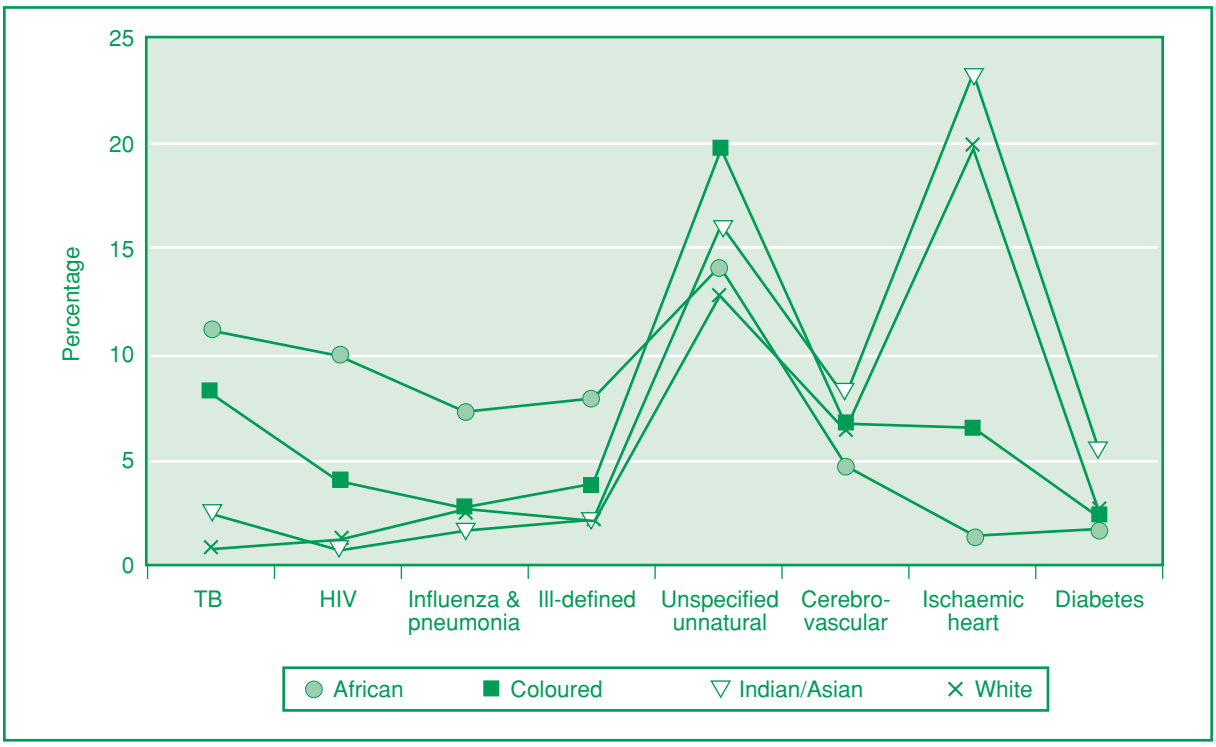
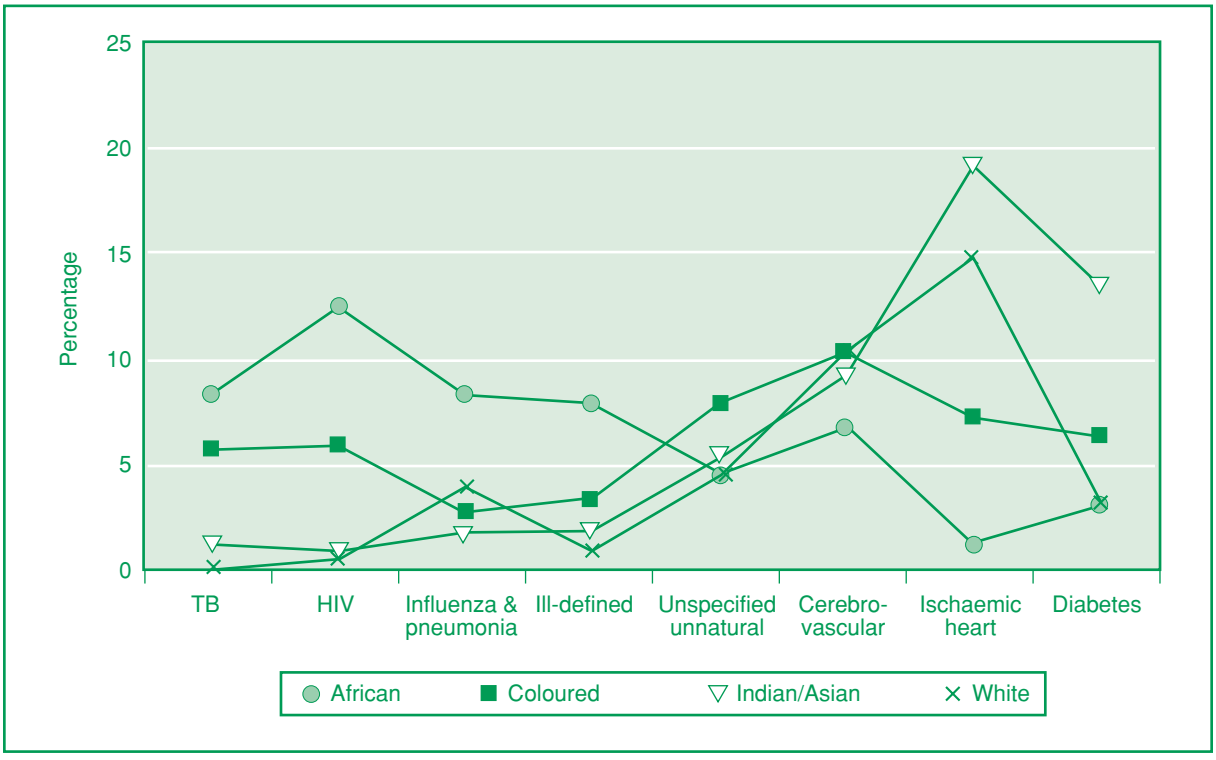



**Figure 4: Percentage of female deaths in each ethnic group due to the eight leading underlying causes of death, by year of death, 1997-2001**



In 2001 the MRC released a report [MRC AIDS Report] in which it was estimated that about 25% of all deaths were due to HIV/AIDS. The Statistics South Africa study found a lower percentage (9%) of deaths recorded as being due to HIV. A major reason for this difference is that these studies measure different things. The Statistics South Africa data reflect the information recorded on the death certificates. In the absence of HIV status of all deceased, death certificates will tend to reflect immediate cause of deaths or, in the case of AIDS, the indicator conditions. The MRC approach, however, was to assess the impact of HIV/AIDS as an underlying cause of death, based on the observed excess mortality among young adults. (http://www.afroaidsinfo.org/content/research/epidemiology/statssa.htm)

As much as 37% of child mortality (under age 5) may be attributed to HIV/AIDS for South Africa (53% and 71% respectively for Zimbabwe and Botswana) [Population Bulletin Sep 2002, AIDS Pandemic].

Detailed data from the 2002 World Health Report are not easy to represent in the format used for the Review, and interested readers should obtain the original report for more information [World Health Report 2002]. Estimates of healthy life expectancy at a national level were obtained from this report.

The key findings were as follows:

- The ten leading risk factors globally are: underweight; unsafe sex; high blood pressure; tobacco consumption; alcohol consumption; unsafe water, sanitation and hygiene; iron deficiency; indoor smoke from solid fuels; high cholesterol and obesity. Together these account for more than one-third of all deaths worldwide.
- The ten leading risk factors for the region including South Africa are: underweight; unsafe sex; unsafe water, sanitation and hygiene; indoor smoke from solid fuels; zinc deficiency; iron deficiency; Vitamin A deficiency; high blood pressure; tobacco consumption and high cholesterol. The 10 leading diseases/injuries are: HIV/AIDS; lower respiratory infections; diarrhoeal diseases; childhood cluster diseases; low birth weight; malaria; unipolar depressive disorders; ischaemic heart disease; tuberculosis and road traffic injury.

Another WHO report [WHO Violence and Health] considers the public health issue of violence, which results in a huge cost in terms of health expenditure and lost work days. The human cost in grief and pain cannot be calculated. This report includes data that attempt to quantify the extent of the problem internationally in terms of mortality and morbidity.

The third report on maternal deaths [Maternal Deaths 2000] includes detailed data on the confidential enquiries into maternal deaths from 1998-2000, and a comprehensive report based on this is expected shortly. This report showed that for 2000, the 'big five' causes of maternal death were non-pregnancy related sepsis (29.7% – mainly deaths due to AIDS), complications of hypertension in pregnancy (22.7%), obstetric haemorrhage (13.5%),

pregnancy related sepsis (12.4%) and pre-existing maternal disease (8.9%). Only 38% of maternal deaths had HIV testing, and 78% of these women were HIV infected. There has been a decline in the number of deaths due to abortion.

**Definitions:**

**Infant Mortality Rate:** The number of children less than one year old who die in a year, per 1000 live births during that year.

**Life expectancy at birth:** The average number of additional years a person could expect to live if current mortality trends were to continue for the rest of that person's life.

**Maternal mortality ratio:** The number of women who die as a result of childbearing, during the pregnancy or within 42 days of delivery or termination of pregnancy in one year, per 100 000 live births during that year.

**Number of maternal deaths:** The number of women who die as a result of childbearing, during the pregnancy or within 42 days of delivery or termination of pregnancy in one year. (Although this information is not generally reported as an indicator, it has been included due to the difficulty in obtaining the denominator data to calculate maternal mortality ratios accurately.)

**Perinatal Mortality Rate:** The number of perinatal deaths per 1000 births. The perinatal period starts as the beginning of foetal viability (28 weeks gestation or 1000g) and ends at the end of the 7th day after delivery. Perinatal deaths are the sum of stillbirths plus early neonatal deaths. Note that the current WHO definition of PNMR is different from the definition used in South Africa, being the number of deaths from 24 weeks gestation/500g to 28 days neonatal life. The PNMR is the most sensitive indicator of obstetric care. For developed countries the rate for babies over 1000g is usually less than 6/1000 births, whereas for developing countries PNMR ranges from 30-200.

**Under 5 mortality rate:** The number of children under 5 years who die in a year, per 1000 live births during the year.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Infant Mortality Rate** | | | | | | | | | | |
| 1998[1] | 61.2 | 36.8 | 36.3 | 52.1 | 37.2 | 47.3 | 41.8 | 36.8 | 8.4 | 45.4 |
| 1998 Rural[1] | - | - | - | - | - | - | - | - | - | 52.2 |
| 1998 Urban[1] | - | - | - | - | - | - | - | - | - | 32.6 |
| 1998 revised[2] | 61.2 | 53.0 | 36.3 | 52.1 | 37.2 | 47.3 | 41.8 | 42.0 | 30.0 | 45.0 |
| 2002[3] | 72.0 | 63.0 | 46.0 | 68.0 | 53.0 | 59.0 | 46.0 | 56.0 | 30.0 | 59.0 |
| **Life expectancy at birth** | | | | | | | | | | |
| 1996[4] | 60.4 | 52.8 | 59.6 | 53.0 | 60.1 | 53.5 | 55.6 | 53.3 | 60.8 | 57.0 |
| 1996 Rural[4] | - | - | - | - | - | - | - | - | - | 58.0 |
| 1996 Urban[4] | - | - | - | - | - | - | - | - | - | 56.2 |
| 2002[3] | 53.5 | 51.7 | 54.8 | 47.5 | 54.4 | 49.5 | 58.8 | 52.7 | 62.7 | 52.5 |
| 2000 ASSA2000 change/no change[5] | 57.0 | 56.0 | 59.0 | 53.0 | 58.0 | 54.0 | 61.0 | 57.0 | 64.0 | 56.0 |
| 2005 ASSA2000 change[5] | - | - | - | - | - | - | - | - | 61.0 | 47.0 |
| 2005 ASSA2000 no change[5] | 47.0 | 45.0 | 48.0 | 40.0 | 48.0 | 43.0 | 54.0 | 46.0 | - | 46.0 |
| 2010 ASSA2000 change[5] | - | - | - | - | - | - | - | - | 57.0 | 43.0 |
| 2010 ASSA2000 no change[5] | 40.0 | 39.0 | 42.0 | 37.0 | 42.0 | 39.0 | 49.0 | 40.0 | - | 41.0 |
| 2015 ASSA2000 change[5] | - | - | - | - | - | - | - | - | - | 46.0 |
| 2015 ASSA2000 no change[5] | - | - | - | - | - | - | - | - | - | 41.0 |
| 2011 high estimate[6] | 67.6 | 68.1 | 68.9 | 68.1 | 67.7 | 67.8 | 68.7 | 67.7 | 69.4 | 69.4 |
| 2011 low estimate[6] | 46.3 | 47.1 | 50.0 | 47.7 | 45.1 | 46.4 | 53.0 | 46.0 | 55.6 | 50.3 |
| 2026 high estimate[6] | 71.5 | 71.7 | 72.3 | 71.9 | 71.2 | 71.5 | 73.2 | 71.4 | 73.6 | 73.0 |
| 2026 low estimate[6] | 52.8 | 53.4 | 55.8 | 54.1 | 51.6 | 52.8 | 59.4 | 52.5 | 61.2 | 56.2 |
| **Maternal mortality ratio** | | | | | | | | | | |
| 1998[7,8] | - | 135 | 67 | - | - | - | - | - | 50 | 150 |
| **Number of maternal deaths[9]** | | | | | | | | | | |
| 1998 | 56 | 94 | 131 | 188 | 27 | 66 | 22 | 58 | 34 | 676 |
| 1999 | 93 | 79 | 138 | 246 | 63 | 71 | 17 | 53 | 30 | 790 |
| 2000 | 103 | 92 | 164 | 228 | 74 | 126 | 29 | 78 | 46 | 940 |
| **Perinatal Mortality Rate[10]** | | | | | | | | | | |
| 2000 Public sector | - | - | 32.1 | - | - | - | - | - | 18.4 | 40.0 |
| **Under 5 mortality rate** | | | | | | | | | | |
| 1998[1] | 80.5 | 50.1 | 45.3 | 74.5 | 52.3 | 63.7 | 55.5 | 45.3 | 13.2 | 59.4 |
| 1998 Rural[1] | - | - | - | - | - | - | - | - | - | 71.2 |
| 1998 Urban[1] | - | - | - | - | - | - | - | - | - | 43.2 |
| 1998 revised[2] | 80.5 | 72.0 | 45.3 | 74.5 | 52.3 | 63.7 | 55.5 | 56.0 | 39.0 | 61.0 |
| 2002[3] | 112.0 | 106.0 | 82.0 | 124.0 | 87.0 | 106.0 | 72.0 | 95.0 | 46.0 | 100.0 |

| | African | Coloured | Indian/Asian | White | Other/ Unstated | All groups |
|---|---|---|---|---|---|---|
| **Infant Mortality Rate** | | | | | | |
| 1998 revised[2] | 47.0 | 18.8 | - | 11.4 | - | 45.0 |
| **Life expectancy at birth** | | | | | | |
| 1996[4] | 55.5 | 58.6 | 61.5 | 65.5 | - | 57.0 |
| 2011 high estimate[6] | 68.5 | 70.2 | 74.3 | 75.7 | - | 69.4 |
| 2011 low estimate[6] | 47.2 | 58.7 | 74.3 | 75.7 | - | 50.3 |
| 2026 high estimate[6] | 72.2 | 74.8 | 77.8 | 77.8 | - | 73.0 |
| 2026 low estimate[6] | 53.2 | 64.0 | 77.8 | 77.8 | - | 56.2 |
| **Under 5 mortality rate** | | | | | | |
| 1998 revised[2] | 63.6 | 28.2 | - | 15.3 | - | 61.0 |

1 Note: Figures for the White population group Under 5 mortality rate are based on an inadequate sample.
Ref: SADHS 1998

2 Note: Comparison of the provincial estimates from different sources revealed that the SADHS 1998 estimates for three provinces required some adjustment.
Ref: SAHR 2000 Ch 4 (Table 4 pg 99)

3 Note: The model does not fit Limpopo Province very well and as a result probably overstates the impact of the epidemic.
Ref: HIV Indicators 2002

4 Ref: StatsSA HDI 2001 (Table 1)

5 Ref: ASSA 2000

6 Note: Estimate for 2011-2016 and 2026-2031
Ref: IFR Projections 1999 (Fig 2.8 pg 28, Fig 4.8 pg 168)

7 Note: The methodology of confidential enquiries makes them a poor public health tool for estimating maternal mortality ratios, primarily because reporting is health institution based and often under-reported. For 1998, the only provinces where there is a fair degree of confidence that the vast majority of deaths were recorded were Free State, Gauteng and Western Cape.
Ref: Maternal Deaths 1998 (Table 2.2)

8 Note: The 'big five' causes of maternal deaths in 1998 were complications of hypertensive conditions in pregnancy (23.2%), AIDS (14.5%), obstetric haemorrhage (13.3%), pregnancy related sepsis (11.9%) and pre-existing medical conditions, mainly pre-existing cardiac disease (10.4%). These five causes of deaths accounted for 73.3% of all the maternal deaths reported
Ref: SADHS 1998

9 Note: There is a significant increase in reported deaths in some provinces when compared with 1999. It is not known whether this is just due to improved reporting or due to an actual increase in maternal deaths. There remains concern that in the Eastern Cape and Limpopo that there is still significant under-reporting since the maternal deaths per 100 000 female population are much lower when compare to Mpumalanga and KwaZulu-Natal. All 4 provinces are similar and have similar problems, hence one would expect similar rates of maternal deaths.
Ref: Maternal Deaths 2000

10 Note: Data only available for perinatal care in public sector institutions. There is insufficient data to accurately calculate the national PNMR, however from existing data it is estimated that the rate is in the order of 40/1000 births
Ref: Saving Babies

The two sources of data for this section were the Census 1996 and the 1998 CASE Disability Survey of 10 000 households.

In the census questionnaire, respondents were asked to indicate whether or not there were any people with serious visual, hearing, physical or mental disabilities in the household. The seriousness of the disability was not clearly defined. Rather, the respondent's perceptions of seriousness were relied on. In the CASE Disability Survey people reported moderate to severe disability, where disability was defined as a limitation in one or more activities of daily living (seeing, hearing, communication, moving, getting around, daily life activities, learning, intellectual and emotional). Neither source therefore is a count of the number of people in South Africa who have an impairment or disability as defined by the World Health Organization. It has been pointed out that the disability data presented here are limited and misleading for the following reasons:[b]

- Census data on disability are often under-reported and there is no indication as to the level of under reporting.
- Prevalence rates are given as crude overall rates, not age or sex specific rates. This limits the use of the data for planning purposes at national, provincial and district level for all services for people with disabilities viz: rehabilitation, social security, education services.
- The terminology used is not defined – 'disability' in this context refers to an overall rate of disability, whereas the other categories are more specifically referring to impairment types e.g. hearing disability, mental illness, physical disability and sight disability.
- The specific 'disability' types are not inclusive of the whole range of disabilities experienced e.g. hearing, mental illness, physical and sight disabilities are included but speech, language, cognitive, and learning disabilities are excluded.
- The level of severity of disability is not defined – a person with hearing disability may be hard of hearing or deaf, a person with sight disability may have low vision or be blind, a person with physical disability may have an amputated leg, arm or be a paraplegic.

The recent WHO classification and terminology described in the International Classification of Functioning, Disability and Health (ICF 2001) provides a better basis for future disability prevalence studies. In the interim the following impairment categories have been suggested:

- **vision** – blind, partial sighted, deaf-blind
- **communication** – speech, voice, language, hearing, deaf
- **motor & locomotion** – ambulatory and non-ambulatory

b Personal communication with P. McLaren, J. Irlam, J. Couper.

- **mental/psychiatric** – seizures, substance abuse (alcohol, drugs)
- **cognitive/intellectual** – mild, moderate, severe 'mental retardation'
- **learning/perceptual**
- **multiple disability** – sensory, motor, cognitive.

A severity of impairment should be included e.g. mild, moderate or severe. Age-specific rates should also be used for all the impairment categories.

Current information in this area that addresses these limitations is scarce; available literature may be obtained from the Disability Action Research Team (dart@sai.co.za).

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Prevalence of disability (%)** | | | | | | | | | | |
| 1996[1] | 7.3 | 9.8 | 6.2 | 6.0 | 6.0 | 7.6 | 5.6 | 8.3 | 3.7 | 6.5 |
| 1998[2] | 8.9 | 5.8 | 5.2 | 6.7 | 6.3 | 4.5 | 4.5 | 3.1 | 3.8 | 5.9 |
| **Prevalence of hearing disability (%)** | | | | | | | | | | |
| 1996[1] | 1.1 | 1.3 | 0.8 | 0.9 | 1.1 | 1.2 | 0.8 | 1.6 | 0.5 | 1.0 |
| **Prevalence of mental illness (%)** | | | | | | | | | | |
| 1996[1] | 0.7 | 5.4 | 0.3 | 0.5 | 0.4 | 0.5 | 0.5 | 0.7 | 0.4 | 0.5 |
| **Prevalence of physical disability (%)** | | | | | | | | | | |
| 1996[1] | 1.9 | 1.6 | 1.0 | 1.6 | 1.5 | 1.1 | 1.2 | 1.8 | 0.9 | 1.4 |
| **Prevalence of sight disability (%)** | | | | | | | | | | |
| 1996[1] | 2.6 | 5.2 | 2.9 | 2.2 | 2.3 | 3.6 | 2.3 | 3.4 | 3.8 | 2.7 |

| | African | Coloured | Indian/Asian | White | Other/ Unstated | All groups |
|---|---|---|---|---|---|---|
| **Prevalence of disability (%)** | | | | | | |
| 1996[1] | 7.5 | 3.6 | 4.1 | 3.3 | 4.4 | 6.5 |
| 1998[2] | 6.1 | 4.5 | 4.8 | 5.3 | - | 5.9 |
| **Prevalence of hearing disability (%)** | | | | | | |
| 1996[1] | 1.1 | 0.4 | 0.5 | 0.6 | 0.6 | 1.0 |
| **Prevalence of mental illness (%)** | | | | | | |
| 1996[1] | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.5 |
| **Prevalence of physical disability (%)** | | | | | | |
| 1996[1] | 1.6 | 0.9 | 0.9 | 0.6 | 0.8 | 1.4 |
| **Prevalence of sight disability (%)** | | | | | | |
| 1996[1] | 3.2 | 1.0 | 1.5 | 0.7 | 1.3 | 2.7 |

1 Ref: Census 96 (Tables 2.22 and 2.23)

2 Note: National survey of nearly 10 000 households. In the Northern Province, Eastern Cape and North West Province, Whites had a higher prevalence rate than other races. No other race differences were found.
Ref: CASE Disability Survey

## Infectious Disease

The main source of infectious disease incidence data are the Department of Health Notifiable Disease Reporting System, which is however plagued by considerable under-reporting. This has been linked to the overwhelming volume of data related to tuberculosis. One indication of the level of under-reporting can be seen from the fact that only about half of all TB cases registered are notified (425.7 versus 234.9 per 100 000 in 2001).

Major changes have been made to the TB register in the last two years. Six out of nine provinces are using the Electronic TB Register - Free State, Gauteng, KwaZulu-Natal, Mpumalanga, North West and the Western Cape (excluding the Cape Metro). The Eastern Cape and Northern Cape already use the DHIS TB Module and Limpopo Province is in the process of moving to that system in the first quarter of 2003. All provinces will be on the Electronic TB Register by March 2004. The previous system, TBSYS, has almost entirely been phased out. Provinces that have started using the Electronic TB Register in the current year have still to complete treatment outcomes on patients registered on TBSYS during this reporting period.

The Electronic TB Register application stores patient based data, but resides at the sub-district level. One of its key objectives is to improve data validation at sub-district level. This can be done through data checks where one can look at 'List of all active patients not updated'; 'List of all patients' for a specified period, as well as 'List of TB cases having moved' and list of TB cases appearing more than once' for the full database. TB data in the DHIS are anonymised and aggregated to facility level. Quarterly TB data, anonymised and aggregated to facility or sub-district level, can now also be exported from the Electronic TB Register to the DHIS. This will enable integrated analysis of TB register data and other routine and survey data, in particular issues related to case detection and drug stock-outs. Several provinces have been collaborating with HISP to transfer all the old TBSYS data into the DHIS to facilitate long-term compatibility and trend analyses.

The targets for global TB control are: to treat successfully 85% of detected smear-positive TB cases, and to detect 70% of all such cases [Global TB Control]. This WHO report includes detailed international data on TB incidence and control, including profiles for high-burden countries. For South Africa, DOTS coverage was extended to 77% of the country by the end of 2000, with two thirds of estimated smear positive cases detected under DOTS. The estimated incidence (all cases/100 000 population) is 526, one of the highest in the world. Sixty percent of adult (15-49 years) TB cases are

estimated to be HIV+ [Global TB Control]. The real incidence of TB may even be higher than that estimated, due to low detection rates in many rural areas with poor laboratory services and/or overall low health service utilisation rates [SAHR 2002 Ch 15].

Syphilis prevalence rates by age in the different provinces, reflect a different trend from HIV infection. A steady decline in prevalence rates among pregnant women in all age groups was recorded at national level for the past few years. At national level, the syphilis infection rate is estimated to be 2.8% in 2001, 4.9% in 2000 compared to 6.5% in 1999 and 10.8% in 1998. However, provincial syphilis prevalence trends across the nine provinces showed less consistency than the age group estimates. There have been some problems with the provincial data supplied by the Department of Health and data given in the latest Antenatal Survey were withdrawn and updated by the Department for 1999-2001 (therefore syphilis prevalence data for 1999 and 2000 is different to that reported in the 2001 SAHR). In addition, it has been pointed out that DHIS data for 2000-2002 show a high degree of stability in the incidence of 'cases treated as STI using the syndromic approach'.[c]

**Definitions:**

**Reported cases:** Number of cases of the condition reported to the Department of Health per 100 000 population (for the year). Population denominators are from StatsSA mid-year population estimates for the relevant year. Where available estimates 'With AIDS' have been used. For TB, data from 2 different sources are presented i.e. the Notifiabable diseases reporting system (Notification) and the TB register/routine district health information system.

**Case Fatality Rate:** Number of deaths due to the condition divided by the number of cases, expressed as a percentage.

**New smear +ve cases cured (%):** Percentage of new smear positive pulmonary tuberculosis cases cured.

**Syphilis prevalence rate (%) (antenatal):** Percentage of women surveyed testing positive for syphilis.

c Personal communication with C. Hedberg.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Reported cases of cholera (per 100 000)** | | | | | | | | | | |
| 2000[1] | - | - | - | - | - | - | - | - | - | 23.5 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 221.2 |
| **Case Fatality Rate: cholera** | | | | | | | | | | |
| 2000[1] | - | - | - | - | - | - | - | - | - | 0.8 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 0.2 |
| **Reported cases of malaria (per 100 000)** | | | | | | | | | | |
| 1998[2] | 0.1 | 0.9 | 2.0 | 153.0 | 65.0 | 200.0 | 0.9 | 5.6 | 0.7 | 160.0 |
| 1999[3] | - | - | - | 305.2 | 210.4 | 390.9 | - | - | - | 119.5 |
| 2000[3] | - | - | - | 471.8 | 172.6 | 412.3 | - | - | - | 149.3 |
| 2001[3] | - | - | - | 104.4 | 126.9 | 293.1 | - | - | - | 59.8 |
| **Case Fatality Rate: malaria** | | | | | | | | | | |
| 1999[3] | - | - | - | 0.8 | 1.1 | 0.6 | - | - | - | 0.8 |
| 2000[3] | - | - | - | 0.8 | 0.7 | 0.4 | - | - | - | 0.7 |
| 2001[3] | - | - | - | 0.5 | 0.8 | 0.1 | - | - | - | 0.4 |
| **Reported cases of measles (per 100 000)** | | | | | | | | | | |
| 1998[2] | 1.30 | 3.50 | 1.50 | 1.60 | 5.60 | 2.70 | 1.20 | 0.70 | 2.30 | 1.90 |
| 1999[1] | - | - | - | - | - | - | - | - | - | 0.20 |
| 2000[1] | - | - | - | - | - | - | - | - | - | 0.19 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 0.02 |
| **Case Fatality Rate: measles** | | | | | | | | | | |
| 1999[1] | - | - | - | - | - | - | - | - | - | 0.0 |
| 2000[1] | - | - | - | - | - | - | - | - | - | 0.0 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 0.0 |
| **Reported cases of rabies (per 100 000)** | | | | | | | | | | |
| 1999[1] | - | - | - | - | - | - | - | - | - | 0.02 |
| 2000[1] | - | - | - | - | - | - | - | - | - | 0.02 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 0.02 |
| **Case Fatality Rate: rabies** | | | | | | | | | | |
| 1999[1] | - | - | - | - | - | - | - | - | - | 100.0 |
| 2000[1] | - | - | - | - | - | - | - | - | - | 100.0 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 100.0 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Reported cases of TB (all types) (per 100 000)** | | | | | | | | | | |
| **Notifiable Diseases System[1,2]** | | | | | | | | | | |
| 1998 | 201.0 | 245.0 | 123.0 | 110.0 | 40.0 | 106.0 | 300.0 | 160.0 | 464.0 | 169.0 |
| 1999 | - | - | - | - | - | - | - | - | - | 134.9 |
| 2000 | - | - | - | - | - | - | - | - | - | 214.0 |
| 2001 | - | - | - | - | - | - | - | - | - | 234.9 |
| **TB Reporting System[4]** | | | | | | | | | | |
| 1999 | 565.1 | 327.3 | 223.5 | 386.4 | 109.1 | 174.0 | 536.8 | 253.8 | 756.8 | 359.6 |
| 2000 | 424.5 | 341.0 | 319.5 | 316.6 | 86.2 | 177.7 | 448.2 | 345.1 | 810.0 | 349.4 |
| 2001 | 523.3 | 462.3 | 346.7 | 436.4 | 187.2 | 224.0 | 504.2 | 396.1 | 839.8 | 425.7 |
| **Case Fatality Rate: TB (all types)** | | | | | | | | | | |
| 1999[1] | - | - | - | - | - | - | - | - | - | 4.4 |
| 2000[1] | - | - | - | - | - | - | - | - | - | 4.8 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 4.7 |
| **New smear +ve cases cured (%)[5]** | | | | | | | | | | |
| 1998 Excl. 'transfer out' | 64.8 | 62.0 | 64.3 | 46.1 | 56.6 | 51.4 | 63.3 | 54.3 | 69.2 | 60.1 |
| 1999 Excl. 'transfer out' | 59.9 | 66.6 | 63.1 | 38.2 | 63.4 | 57.5 | 63.8 | 66.7 | 67.8 | 60.2 |
| 2000 Excl. 'transfer out' | 59.1 | 65.8 | 70.3 | 48.9 | 62.2 | 64.8 | 63.0 | 66.2 | 70.8 | 64.4 |
| 2000 | 46.3 | 54.9 | 68.1 | 38.1 | 48.7 | 46.7 | 56.2 | 47.2 | 63.4 | 53.8 |
| **Reported cases of tetanus (per 100 000)** | | | | | | | | | | |
| 1998[2] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.10 | 0.00 | 0.00 | 0.80 |
| 1999[1] | - | - | - | - | - | - | - | - | - | 0.03 |
| 2000[1] | - | - | - | - | - | - | - | - | - | 0.03 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 0.03 |
| **Case Fatality Rate: tetanus** | | | | | | | | | | |
| 2001[2] | - | - | - | - | - | - | - | - | - | 0.0 |
| **Reported cases of viral hepatitis (total) (per 100 000)** | | | | | | | | | | |
| 1998[2] | 0.9 | 1.4 | 2.7 | 2.3 | 2.7 | 1.7 | 3.2 | 0.5 | 7.8 | 2.6 |
| 1999[1] | - | - | - | - | - | - | - | - | - | 2.0 |
| 2000[2] | - | - | - | - | - | - | - | - | - | 1.5 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 1.1 |
| **Case Fatality Rate: Viral hepatitis (total)** | | | | | | | | | | |
| 1999[1] | - | - | - | - | - | - | - | - | - | 1.6 |
| 2000[2] | - | - | - | - | - | - | - | - | - | 3.4 |
| 2001[2] | - | - | - | - | - | - | - | - | - | 3.4 |
| **Syphilis prevalence rate (%) (antenatal)** | | | | | | | | | | |
| 1998[2] | 9.6 | 4.4 | 3.8 | 15.8 | 5.6 | 8.6 | 3.8 | 9.1 | 4.4 | 10.8 |
| 1999[6] | 4.4 | 15.8 | 9.6 | 3.8 | 8.6 | 9.7 | 3.8 | 5.6 | 4.4 | 7.3 |
| 2000[6] | 3.3 | 4.8 | 9.6 | 2.6 | 4.2 | 3.7 | 5.1 | 3.6 | 5.2 | 4.9 |
| 2001[6] | 3.3 | 2.0 | 2.7 | 1.3 | 4.9 | 2.0 | 6.2 | 4.0 | 2.9 | 2.8 |

1 Ref: Stats Notes Jan 2001

2 Ref: DOH Notification

3 Ref: DOH Malaria

4 Note:
1999: Number of cases: 154 804. Calculated using StatsSA 1999 mid-year population estimates. The national reporting rate for these data for 1999 is 78.2% (ranging from 53% in KwaZulu-Natal to 100% in Northern Cape, not given for Mpumalanga and North West).
2000: Number of cases: 151 239. Calculated using StatsSA 2000 mid-year population estimates With AIDS. The national reporting rate for these data for 2000 is 82.7% (ranging from 40.2% in KwaZulu-Natal to 98.8% in Western Cape, not given for Mpumalanga and North West).
2001: Number of cases: 188 695. Calculated using StatsSA 2001 mid-year population estimates With AIDS. The national reporting rate for these data for 2001 is 96.8% (ranging from 68.2% in KwaZulu-Natal to 100% in 5 provinces).
Ref: DOH TB

5 Note: Until 2000, these outcomes exclude 'Transfer out' (patients who transferred to another health facility or whose treatment outcome is not known). From 2000 the National TB Control Programme include 'Transfer out' in the denominator. This makes the cure rate appear worse as the denominator is bigger.
Ref: DOH TB

6 Ref: DOH Notification
Data from annual antenatal surveys. Data updated by DoH 2002 due to errors in previously published figures.

## HIV/AIDS

There has been a huge increase in the amount of literature and data on HIV/AIDS, including the release of a number of multi-country comparative figures on HIV/AIDS indicators from various organisations including WHO, UNAIDS and UNICEF. These documents are valuable to provide a global picture, for comparison, and to standardise definitions and methods for generating estimates and predictions. However all this work still depends on reliable country level information and will only be as accurate at the demographic and epidemiological data on which it is based.

In previous years there have been relatively few data available at a provincial or national level, or by population group, and hence the major starting point for HIV/AIDS prediction models have been the data collected in the national anonymous survey of HIV prevalence among women attending public antenatal clinics, performed annually by the Department of Health. This might well change after the release of the results of South Africa's first nationally representative study of HIV prevalence in December 2002 [HIV Household Survey 2002]. This study found that 11.4% of South Africans over the age of 2 years (4.5 million people) are living with HIV/AIDS. Selected findings, comments and cautions relating to this report are included here, however readers are encouraged to consult the full text of the document (which is available electronically) and future discussion around it before making use of the results.

Some limitations noted by the authors of this study included:

- The fact that surveys about knowledge, attitude, beliefs and behaviours toward HIV/AIDS are based on respondents' self-declarations
- That household type surveys exclude people not living in homes
- That this study excluded people confined to institutions (certain of these groups are known to have a higher HIV prevalence than the general community)

- That some sub-groups of the population were not represented by sufficient numbers to obtain reliable estimates
- That low HIV test participation rates in some groups made it difficult to determine HIV prevalence in these sub-populations; and
- That children under 2 years were excluded from the study.

The HIV prevalence was estimated using ratio estimation. The authors point out that, as a rule of thumb, a coefficient of relative variation (CVr) < 20% is used as a reference threshold to determine the validity of prevalence estimates. An estimate is considered to be imprecise if the confidence interval is too wide. Based on this method, the estimates of HIV prevalence found in this study were considered valid for the majority of the findings. However, for Whites, adults and youth living in rural areas or informal settlements, the imprecision of estimates were of substantive importance, and were therefore considered to be at the statistical borderline. These results should therefore be treated with caution. Very high CVr in some subgroups (Indian adults, White youth, White and Indian children, children living in informal settlements and tribal areas) clearly indicated that the survey was not able to produce valid estimations of prevalence due to response biases.

This survey found the highest HIV prevalence in the Free State, Gauteng, Mpumalanga followed by KwaZulu-Natal, although there are no statistically significant differences among the four provinces. Over-emphasis of the difference between this rank order and that shown in the antenatal surveys should therefore be avoided. Annual antenatal survey results have shown KwaZulu-Natal to have the highest prevalence. The primary explanation offered for this difference is the sampling frame, with all 36 KwaZulu-Natal antenatal sentinel sites along major roads, a known predictive factor for high HIV prevalence. The results of this study at a national level do correspond with the antenatal survey results, with a prevalence of 24% (CI: 15.8-34.8%) among women who reported being pregnant in the 12 months before the study compared to 24.8% for the 2001 antenatal survey.

This study found that HIV prevalence varied substantially by locality type, with people living in informal urban areas significantly more likely to be HIV positive than those living in formal urban areas, tribal areas or farms.

The table below also includes a variety of projections from mathematical simulation models, which are calibrated to antenatal data. These include estimates of HIV prevalence in the total population, of the number of persons with symptomatic AIDS, as well as of the number of AIDS orphans. That these projections vary should not be surprising. This does not however detract from their general usefulness as planning tools. Various sources, such as Gow and Desmond [Impacts & Interventions], discuss the relative merits of the different projection models, and in some cases compare post prevalences from the model with those from the antenatal surveys.

The most common measure of the HIV/AIDS epidemic is the *prevalence* of HIV infections among a country's adult population – the percentage of the adult population living with HIV. Prevalence of HIV provides a good picture of the overall state of the epidemic. But prevalence does not offer a clear picture of recent *trends* in the epidemic, because it does not distinguish between people who acquired the virus very recently and those who were infected a decade or more ago. A measure of HIV *incidence* – the number of new infections observed over a year among previously uninfected people – helps complete the picture of current trends. However measuring HIV incidence is expensive and complicated, to the point of being unfeasible on a regular basis at national level in most countries [AIDS Update 2002].

A report on orphan estimates and programme strategies [Children on the Brink 2002] contains statistics on children orphaned by HIV/AIDS from 88 countries, with analysis of the trends found in those statistics, and strategies and principles for helping the children. This report highlights the growing impact of the epidemic on children, with more than 13 million children under age 15 having lost one or both parents to AIDS, most of them in sub-Saharan Africa. With infection rates still rising and adults continuing to succumb to the disease, HIV/AIDS will continue to cause large-scale suffering among children. Information presented for South Africa includes the fact that by 2010 16% of all children will be orphans, more than 70% of whom will be orphaned due to AIDS. The impact of HIV/AIDS on children is complex and multi-faceted and has many implications for the planning of health services to care for children.

Johnson and Dorrington focus on quantification of the orphan population and the ASSA2000 Orphans model as a tool for projecting the size and demographic profile of this population [AIDS and Orphanhood]. They also analyse the effects of various interventions in terms of the number of orphans. For example it is estimated that implementing mother-to-child transmission prevention programmes would lead to a rise of roughly 250 000 maternal orphans under the age of 15. However, making antiretroviral drugs freely available would probably reduce significantly the number of orphaned children by extending the lives of HIV positive parents.

The ASSA2000 model predicts that during 2002, over 204 000 children will be newly orphaned. In all provinces except the Western Cape, more than half of all orphans are due to AIDS; overall AIDS will account for 73% of all new orphans [HIV Indicators 2002]. This source also provides some provincial indicators of the extent of implementation of different prevention strategies (such as condoms), STI incidence, access to the PMTCT programme and VCT. Detailed profiles based on the ASSA2000 model are provided for each province, showing the changes in key indicators over the period 1990 to 2010.

An MRC Policy Brief on Orphans of the HIV/AIDS Epidemic [MRC Orphans] presents some interesting perspectives on the orphan issue based on the

ASSA2000 projections. Most importantly is the progression of the epidemic from high incidence (new infections), to high prevalence (total number of people infected), to high AIDS deaths (expected to peak in 2010) to a wave of AIDS orphans, expected to peak at around 1.85 million in around 2015. They note that HIV positive orphans constitute a relatively small part of the orphan population, since about 2/3 of babies born to HIV positive parents will not be infected, and most infected children will not survive long enough to make up a sizeable proportion of the orphans.

Some of the other comprehensive publications on HIV/AIDS which may assist in understanding indicators relating to HIV/AIDS and which review current literature include:

- HIV/AIDS, Economics and Governance in South Africa [CADRE Lit Review 2002]
- Young People and AIDS: Opportunity in Crisis [Young People and HIV/AIDS]
- Report on the Global HIV/AIDS Epidemic 2002 [Global HIV/AIDS 2002].

**Definitions:**

**AIDS Orphans:** Number of children under 15 years whose mothers have died of HIV/AIDS. (This is the definition most frequently used, but some sources use 18 as an age limit and may consider maternal, paternal or dual (both parents dead) orphans.)

**AIDS sick:** Number of people estimated to be living with AIDS defining conditions.

**HIV Incidence rate:** The HIV incidence rate is the percentage of people who are uninfected at the beginning of the period who will become infected over the twelve months.

**HIV prevalence (%) (antenatal):** Percentage of women surveyed testing positive for HIV.

**HIV prevalence (%) (total population):** Percentage of population estimated to be HIV positive. Population used as denominator is generally the projected population calculated from the given model.
Note: this is equivalent to indicators called 'People living with HIV/AIDS'.

**Percentage of deaths due to AIDS:** Percentage of total deaths attributed to AIDS related causes.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **AIDS Orphans[1]** | | | | | | | | | | |
| **ASSA 2000 Model** | | | | | | | | | | |
| 2000 change/no change | 10 654 | 6 238 | 16 384 | 37 683 | 8 806 | 11 868 | 683 | 7 147 | 1 876 | 124 989 |
| 2005 change | - | - | - | - | - | - | - | - | 14 682 | 684 364 |
| 2005 no change | 75 038 | 36 913 | 104 449 | 202 277 | 57 898 | 59 098 | 5 474 | 45 084 | - | 685 354 |
| 2010 change | - | - | - | - | - | - | - | - | 44 358 | 1 502 457 |
| 2010 no change | 219 634 | 89 647 | 245 470 | 437 651 | 157 259 | 124 073 | 16 571 | 112 708 | - | 1 531 229 |
| 2015 change | - | - | - | - | - | - | - | - | - | 1 691 550 |
| 2015 no change | - | - | - | - | - | - | - | - | - | 1 854 462 |
| **AIDS sick[1]** | | | | | | | | | | |
| **ASSA2000 Model** | | | | | | | | | | |
| 2000 change/no change | 23 188 | 17 100 | 48 377 | 79 238 | 18 873 | 24 153 | 1 878 | 19 324 | 4 902 | 236 228 |
| 2005 change | - | - | - | - | - | - | - | - | 22 469 | 860 850 |
| 2005 no change | 100 826 | 66 126 | 199 745 | 261 660 | 76 414 | 76 324 | 9 582 | 78 137 | - | 899 071 |
| 2010 change | - | - | - | - | - | - | - | - | 45 259 | 1 278 030 |
| 2010 no change | 193 811 | 100 135 | 299 723 | 345 949 | 137 283 | 104 060 | 19 091 | 123 146 | - | 1 393 926 |
| 2015 change | - | - | - | - | - | - | - | - | - | 988 763 |
| 2015 no change | - | - | - | - | - | - | - | - | - | 1 240 148 |
| **Metropolitan/Doyle Model[2]** | | | | | | | | | | |
| 2000 Metropolitan | - | - | - | - | - | - | - | - | - | 234 984 |
| 2005 Metropolitan | - | - | - | - | - | - | - | - | - | 623 067 |
| 2010 Metropolitan | - | - | - | - | - | - | - | - | - | 903 925 |
| 2015 Metropolitan | - | - | - | - | - | - | - | - | - | 963 837 |
| 2020 Metropolitan | - | - | - | - | - | - | - | - | - | 963 538 |
| **HIV Incidence rate** | | | | | | | | | | |
| 2002 Perinatal (births)[3] | 5.5 | 6.5 | 5.6 | 8.3 | 5.2 | 6.9 | 3.4 | 5.9 | 1.5 | 6.0 |
| 2002 Total population[3] | 2.1 | 2.3 | 2.1 | 2.3 | 1.9 | 2.3 | 1.3 | 2.1 | 0.7 | 2.1 |
| **HIV prevalence (%) (antenatal)[4]** | | | | | | | | | | |
| 1998 | 15.9 | 22.8 | 22.5 | 32.5 | 11.5 | 30.0 | 9.9 | 21.3 | 5.2 | 22.8 |
| 1998 age <20 | - | - | - | - | - | - | - | - | - | 21.0 |
| 1998 age 20-24 | - | - | - | - | - | - | - | - | - | 26.1 |
| 1999 | 18.0 | 27.9 | 23.9 | 32.5 | 11.4 | 27.3 | 10.1 | 23.0 | 7.1 | 22.4 |
| 1999 age <20 | - | - | - | - | - | - | - | - | - | 16.5 |
| 1999 age 20-24 | - | - | - | - | - | - | - | - | - | 25.6 |
| 2000 | 20.2 | 27.9 | 29.4 | 36.2 | 13.2 | 29.7 | 11.2 | 22.9 | 8.7 | 24.5 |
| 2001 | 21.7 | 30.1 | 29.8 | 33.5 | 14.5 | 29.2 | 15.9 | 25.2 | 8.6 | 24.8 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **HIV prevalence (%) (total population)** | | | | | | | | | | |
| 1995[5] | 2.4 | 4.4 | 4.8 | 7.3 | 1.9 | 6.5 | 2.1 | 3.3 | 0.7 | 4.5 |
| 1996[5] | 3.3 | 5.8 | 6.1 | 9.2 | 2.7 | 8.2 | 2.7 | 4.5 | 1.2 | 5.8 |
| 1997[5] | 4.5 | 7.6 | 7.7 | 11.6 | 3.7 | 10.4 | 3.5 | 6.2 | 1.9 | 7.6 |
| 1998[5] | 6.2 | 10.0 | 9.5 | 14.5 | 5.1 | 13.1 | 4.6 | 8.6 | 3.1 | 9.9 |
| 1999[5] | 8.6 | 13.3 | 11.7 | 17.8 | 7.1 | 15.8 | 6.0 | 12.0 | 4.3 | 12.9 |
| **ASSA2000 Model[1]** | | | | | | | | | | |
| 2000 change/no change | 8.6 | 13.9 | 13.4 | 16.3 | 8.7 | 14.4 | 5.9 | 12.4 | 3.0 | 11.7 |
| 2005 change | - | - | - | - | - | - | - | - | 5.4 | 14.9 |
| 2005 no change | 14.2 | 18.6 | 17.5 | 19.2 | 13.1 | 17.9 | 9.9 | 16.8 | - | 16.0 |
| 2010 change | - | - | - | - | - | - | - | - | 5.6 | 12.7 |
| 2010 no change | 15.6 | 17.1 | 15.3 | 16.7 | 13.4 | 16.6 | 10.5 | 15.5 | - | 15.3 |
| 2015 change | - | - | - | - | - | - | - | - | - | 10.5 |
| 2015 no change | - | - | - | - | - | - | - | - | - | 13.5 |
| **Metropolitan/Doyle Model[2]** | | | | | | | | | | |
| 2000 Metropolitan | - | - | - | - | - | - | - | - | - | 9.6 |
| 2005 Metropolitan | - | - | - | - | - | - | - | - | - | 13.6 |
| 2010 Metropolitan | - | - | - | - | - | - | - | - | - | 15.0 |
| 2015 Metropolitan | - | - | - | - | - | - | - | - | - | 15.5 |
| 2020 Metropolitan | - | - | - | - | - | - | - | - | - | 16.1 |
| **Adult population** | | | | | | | | | | |
| 1999 age 15-49[6] | - | - | - | - | - | - | - | - | - | 19.9 |
| 2001 age 15-49[7] | - | - | - | - | - | - | - | - | - | 20.1 |
| 2002 age 15-49[8] | 10.2 | 19.4 | 20.3 | 15.7 | 11.5 | 21.0 | 9.6 | 14.4 | 13.2 | 15.6 |
| **HSRC Household Survey[9]** | | | | | | | | | | |
| 2002 | 6.6 | 14.9 | 14.7 | 11.7 | 9.8 | 14.1 | 8.4 | 10.3 | 10.7 | 11.4 |
| 2002 Female | - | - | - | - | - | - | - | - | - | 12.8 |
| 2002 Male | - | - | - | - | - | - | - | - | - | 9.5 |
| 2002 age 2-14 | - | - | - | - | - | - | - | - | - | 5.6 |
| 2002 age 15-24 | - | - | - | - | - | - | - | - | - | 9.3 |
| 2002 age =>25 | - | - | - | - | - | - | - | - | - | 15.5 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Percentage of deaths due to AIDS** | | | | | | | | | | |
| **ASSA2000 Model**[1] | | | | | | | | | | |
| 2000 change/no change | 17.7 | 28.9 | 29.0 | 38.0 | 21.5 | 37.3 | 11.8 | 26.7 | 7.2 | 26.4 |
| 2005 change | - | - | - | - | - | - | - | - | 24.0 | 54.7 |
| 2005 no change | 46.6 | 59.3 | 59.9 | 65.5 | 51.1 | 64.0 | 37.7 | 57.3 | - | 55.8 |
| 2010 change | - | - | - | - | - | - | - | - | 37.0 | 63.7 |
| 2010 no change | 62.2 | 68.6 | 68.2 | 71.6 | 64.7 | 70.7 | 53.0 | 67.4 | - | 65.7 |
| 2015 change | - | - | - | - | - | - | - | - | - | 57.6 |
| 2015 no change | - | - | - | - | - | - | - | - | - | 63.2 |
| **Metropolitan/Doyle Model**[2] | | | | | | | | | | |
| 2000 Metropolitan | - | - | - | - | - | - | - | - | - | 35.7 |
| 2005 Metropolitan | - | - | - | - | - | - | - | - | - | 57.2 |
| 2010 Metropolitan | - | - | - | - | - | - | - | - | - | 63.7 |
| 2015 Metropolitan | - | - | - | - | - | - | - | - | - | 63.9 |
| 2020 Metropolitan | - | - | - | - | - | - | - | - | - | 63.6 |

| | African | Coloured | Indian/ Asian | White | All groups |
|---|---|---|---|---|---|
| **HIV prevalence (%) (total population)** | | | | | |
| 2002[10] | 12.9 | 6.1 | 1.6 | 6.2 | 11.4 |
| 2002 age 15-49[11] | 18.4 | 6.6 | 1.8 | 6.2 | 15.6 |

1 Ref: ASSA 2000

2 Ref: Metropolitan 2001

3 Ref: HIV Indicators 2002

4 Ref: Antenatal Survey 1998, 1999, 2000, 2001

5 Note: Based on Marais (2000), Kipps and Gouws (1998) and Dorrington (1999).
Ref: SA Uncertain Demographics (Table 3 pg 6)

6 Ref: HDR 2001 (7: Leading Global Health Crises and Challenges pg 163)

7 Ref: HDR 2002 (Table 7: Leading global health crises and challenges)

8 Note: Male: 12.8% Female: 17.7% The results for Whites and Indians have wide confidence interval, largely due to a low response rate.
Ref: HIV Household Survey 2002

9 Note: Prevalence estimates for the general population aged 2 years and older. See source document for details of methodology, limitations of the survey, and results that are of variable reliability due to sampling and other issues. Reported figures should also be viewed together with the confidence intervals to get a better understanding of the reliability of the estimates. The imprecision of estimates for Western Cape, Northern Cape and Limpopo is at the statistical borderline.
Ref: HIV Household Survey 2002

10 Note: The imprecision of the estimate for Whites is at the statistical borderline.
Ref: HIV Household Survey 2002

11 Note: The results for Whites and Indians have wide confidence intervals, largely due to a low response rate.
Ref: HIV Household Survey 2002

**Figure 5: Overall HIV prevalence by province with 95% CI, 2002 (≥ 2 years) [HIV Household Survey 2002]**

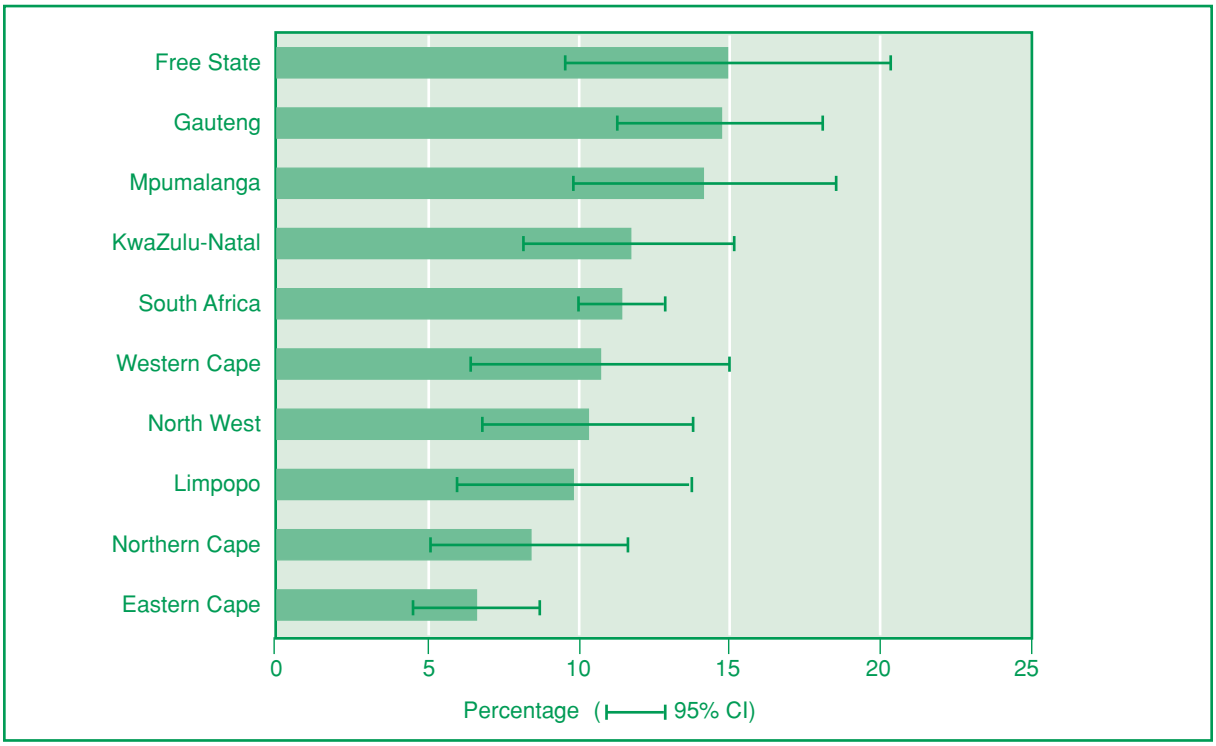
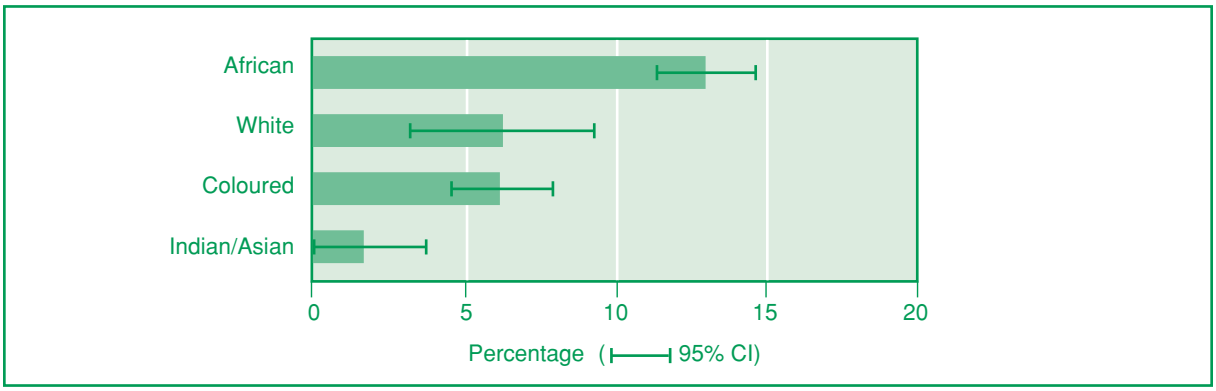



**Figure 6: Overall HIV prevalence by ethnic group with 95% CI, 2002 (≥ 2 years) [HIV Household Survey 2002]**



**Maternal care:**

The indicator 'Percentage pregnant women who received antenatal care' in the SADHS 1998 is based on women who reported receiving antenatal care from a nurse, midwife or doctor. While antenatal care coverage reported by the SADHS is high among all groups of women, the type of provider varies considerably – e.g. in Eastern Cape and Northern Province almost all care is obtained from nurses, while in Gauteng, Western Cape and Northern Cape more than 40% of care is provided by doctors. Similar trends are observed for women receiving medical assistance at delivery.

Data from the DHIS indicate that 80%-90% of pregnant women receive at least some antenatal care. Data from those provinces that collect first ANC visits before and after 20 weeks into the pregnancy indicate that only around 40% of antenatal clients show up before 20 weeks. The modest national target is that all pregnant women should have a minimum of three visits, one in each trimester.

The indicator 'Antenatal visits per antenatal clients' is used as a proxy to monitor the target of a minimum of 3 visits per pregnant woman. Data from the DHIS show that five out of nine provinces have reached that target. Data down to health district level are presented in the Decentralisation section later in this chapter. These data provide good examples of intra-provincial variation. For example, while the Eastern Cape average for 2001 is 3.3 ANC visits per client, drilling down to health district level shows a range from 2.5 visits per client in Ukhahlamba to 5.3 visits per client in the Nelson Mandela Metropolitan area.

Two important issues must be noted: Public hospitals are, with few exceptions, not currently reporting antenatal visits. Hospitals would primarily provide follow-up antenatal care to risk pregnancies referred from PHC facilities, so future inclusion of such data should increase average number of visits. Private providers are also not reporting antenatal visits.

The Caesarean section rate was 19.5% for deliveries in hospitals in 2001 [DHIS]. Rates varied considerably between provinces: Eastern Cape 12.1%, Free State 16.5%, Gauteng 22.6%, KwaZulu-Natal 23.2%, Limpopo 14.3%, Mpumalanga 13.4%, North West 15.4%, Northern Cape 14.5%, and the Western Cape 18.8%. Note that these rates were based on data from all public and some private hospitals plus deliveries in PHC facilities (like Midwife Obstetric Units) that have delivery beds. Random/emergency deliveries in other PHC facilities were not included. In a study on TOP in Soweto (state health services), Buchmann et al. found the caesarean section rates to be 11.1% (age < 20), 13.4% (age 20-34) and 17.2% (age ≥ 35 years) [SAMJ 92(729-31)].

Data on teenage pregnancies are starting to be collected routinely. The percentage of deliveries to women under 18 years is being used in the DHIS

as a proxy. Since comprehensive data are not available for all provinces, this source has not been included in this edition.

**Sexually Transmitted Infections (STI):**

Male urethral discharge (MUD) incidence rate is often used as a direct proxy for sexually transmitted infections since such cases are invariably STI. This is the best indicator available for Sexually Transmitted Infections incidence, since practically all cases are sexually transmitted. DHIS data on MUD are based on the numbers seeking treatment at public sector PHC facilities and is not directly comparable with the SADHS figures of men reporting symptoms, since not all cases experienced may seek care in the public sector.

Data for the indicator STI incidence may be over-reported as some cases treated as STIs may be other genito-urinary tract infections, particularly in women.

**Terminations of Pregnancy (TOPs):**

During the first 5 years after the implementation of the Choice on Termination of Pregnancy Act (CTOP), quantitative data were collected on the numbers of TOPs, gestational and age group breakdowns of TOPs performed. This period ended on 31 January 2002. Of the 220 888 TOPs in this period, 73% were under 12 weeks gestational age, and 12% were minors (excluding Gauteng figures which do not report maternal age). Over the 5 year period there has continued to be varied access to services, with by far the greatest service provision in Gauteng. As with many other health services, intra-provincial variations in service provision also exist. Data on accessibility issues in some provinces indicate that some requests for second trimester terminations are directly related to women's constraints to reach facilities, although several complex factors contribute to the problem of second trimester TOPs. [RRA Barometer May 2002]

A key rationale for the passing of the Act was the impact of unsafe abortion on women's health. In 1999 the DOH commissioned a study to evaluate the health impact of the CTOP Act. This study demonstrated a decrease in morbidity from unsafe abortions, although the incidence of incomplete abortion (per 100 000 women aged 12-49) was similar.

Buchman et al. conducted a study in Soweto to determine the proportion of pregnancies that end in TOP, with special reference to maternal age, and to measure trends from 1999 to 2001 [SAMJ 92(729-31)]. They found the TOP rate (proportion of pregnancies ending in TOP) to be 16.1 and 13.6% (difference not significant). TOP rates were highest at the extremes of reproductive age – 22.3% in 1999 and 16.3% in 2001 for teenagers (women less than 20 years of age). In 2001, 27% of TOPs were second-trimester terminations as compared to the routinely reported figure of 23.2% for Gauteng.

Data on TOP have been published by the Department of Health [DOH TOP]

and Reproductive Rights Alliance [RRA Barometer Aug 2001]. There are some small differences in the two data sources. However, since the RRA data provide a more detailed breakdown by maternal and gestational age, these data have been used in this chapter. Figures have been calculated from monthly provincial totals.

Indicators for TOP services such as TOP rate (number of TOPs per 1000 women of reproductive age) and TOP ratio (number of abortions per 1000 live births), have been suggested but are not routinely reported in South Africa [PRB Handbook].

**Definitions:**

**ANC coverage:** Proportion of pregnant women receiving some antenatal care. Estimated from number of 1st antenatal client (ANC) visits divided by population <1 year (as proxy for number of pregnant women). ANC coverage indicates how accessible ANC services are to pregnant women in general.

**Antenatal visits per client:** Total number of ANC visits divided by the number of 1st antenatal client (ANC) visits. This indicator is a measure of the quality of maternal care.

**Caesarean Section rate:** Percentage of births that are by caesarian section.

**Male urethral discharge incidence:** Number of cases of male urethral discharge per 1000 male population age ≥ 15 years.

**Percentage men with painful urination, genital symptoms:** Percentage of men 15+ years with painful urination, penile discharge or genital sores in the last 3 months.

**Percentage of pregnant women who received tetanus toxoid vaccine:** Tetanus toxoid injections are given during pregnancy in order to prevent neonatal tetanus, a frequent cause of infant deaths when sterile procedures are not observed in cutting the umbilical cord following delivery.

**Percentage pregnant women who received antenatal care:** Percentage pregnant women who received antenatal care from a nurse, midwife or doctor.

**Percentage women 15-49 who use a modern contraceptive method:** Percentage of surveyed women aged 15-49 who are currently using a modern contraceptive method (including Pill, IUD, Injections, Diaphragm/Foam/Jelly, condom, Female/Male sterilisation)

**Percentage women with medical assistance at delivery:** Percentage of women who gave birth in the 5 years preceding the survey who received medical assistance at delivery from either a doctor, a nurse or a midwife.

**STI incidence:** Cases treated as sexually transmitted infections (STI) per 1000 population age ≥ 15 years.

**Teenage Pregnancy:** Percentage of women aged 15-19 who are mothers or who have ever been pregnant. The percentage of women who are mothers at

the time of the survey is a more restrictive definition.

**Terminations of Pregnancy (TOPs):** The number of terminations of pregnancy.

**TOPs by gestational age (%):** Percentage of total terminations of pregnancy for various gestational ages.

**TOPs by maternal age (%):** Percentage of total terminations of pregnancy for various maternal ages.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **ANC coverage** | | | | | | | | | | |
| 2000[1] | 78.5 | 94.7 | 74.3 | 59.2 | 86.6 | 93.2 | 76.9 | 106.1 | 79.4 | 78.8 |
| 2001[1] | 78.3 | 104.5 | 73.9 | 94.1 | 87.0 | 111.4 | 87.4 | 103.1 | 91.6 | 89.0 |
| 2002[1] | 77.4 | 101.9 | 77.5 | 89.0 | 82.3 | 110.0 | 63.2 | 82.4 | 57.6 | 82.8 |
| **Antenatal visits per client** | | | | | | | | | | |
| 2000[1] | 3.4 | 3.9 | 3.6 | 4.3 | 3.6 | 3.6 | 4.2 | 3.9 | 4.6 | 3.9 |
| 2001[1] | 3.3 | 4.3 | 3.8 | 4.1 | 3.9 | 3.8 | 4.2 | 4.1 | 4.6 | 4.0 |
| 2002[1] | 3.3 | 4.3 | 3.8 | 4.0 | 3.9 | 3.7 | 4.0 | 4.2 | 4.7 | 3.9 |
| **Caesarean Section rate** | | | | | | | | | | |
| 2000 Public sector[2] | - | - | 15.0 | - | - | - | - | - | - | - |
| **Male urethral discharge incidence** | | | | | | | | | | |
| 2000[3] | 50.0 | 30.6 | 26.3 | 32.4 | 48.6 | 36.3 | 7.1 | 44.9 | 22.5 | 34.7 |
| 2001[3] | 38.1 | 34.2 | 24.7 | 42.3 | 50.2 | 38.8 | 27.0 | 45.2 | 21.6 | 35.2 |
| 2003[3] | 33.7 | 29.9 | 19.8 | 40.9 | 46.5 | 40.1 | 16.8 | 29.5 | 19.4 | 32.1 |
| **Percentage men with painful urination, genital symptoms** | | | | | | | | | | |
| 1998[4] | 15.1 | 15.2 | 5.5 | 18.9 | 11.5 | 20.1 | 6.7 | 8.4 | 5.6 | 11.9 |
| **Percentage of pregnant women who received tetanus toxoid vaccine** | | | | | | | | | | |
| 1998[4] | 57.4 | 75.8 | 37.6 | 74.9 | 80.8 | 61.8 | 53.4 | 56.3 | 17.8 | 58.8 |
| **Percentage pregnant women who received antenatal care** | | | | | | | | | | |
| 1998[4] | 94.7 | 94.8 | 94.8 | 94.4 | 94.1 | 94.0 | 93.3 | 94.1 | 91.7 | 94.2 |
| **Percentage women 15-49 who use a modern contraceptive method** | | | | | | | | | | |
| 1998 sexually active[4] | 59.9 | 67.9 | 60.9 | 57.1 | 53.3 | 53.2 | 65.9 | 69.6 | 73.7 | 61.2 |
| **Percentage women with medical assistance at delivery** | | | | | | | | | | |
| 1998[4] | 74.6 | 88.0 | 94.0 | 82.6 | 78.5 | 76.0 | 90.3 | 88.3 | 96.1 | 84.4 |
| **STI incidence** | | | | | | | | | | |
| 2000[1] | 61.3 | 51.2 | 54.6 | 85.5 | 72.3 | 60.9 | 38.5 | 72.1 | 36.0 | 62.6 |
| 2001[1] | 56.6 | 58.2 | 52.7 | 81.5 | 82.9 | 72.0 | 43.9 | 73.6 | 36.0 | 63.2 |
| 2002[1] | 43.3 | 50.7 | 47.8 | 77.7 | 78.7 | 53.0 | 26.9 | 58.9 | 32.8 | 56.4 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Teenage Pregnancy** | | | | | | | | | | |
| 1991[5] | 13.1 | 14.9 | 12.9 | 15.3 | 16.4 | 13.5 | 12.8 | 12.6 | 11.8 | 14.6 |
| 1998 ever pregnant[4] | 18.2 | 12.6 | 9.5 | 16.7 | 20.0 | 25.2 | 18.0 | 13.4 | 16.4 | 16.4 |
| 1998 ever pregnant rural[4] | - | - | - | - | - | - | - | - | - | 20.9 |
| 1998 ever pregnant urban[4] | - | - | - | - | - | - | - | - | - | 12.5 |
| 1998 mothers[4] | 14.8 | 8.4 | 8.9 | 13.8 | 14.9 | 18.8 | 15.2 | 11.0 | 13.7 | 13.2 |
| **Terminations of Pregnancy (TOPs)[6]** | | | | | | | | | | |
| 1997 | 2 670 | 2 527 | 13 497 | 1 259 | 570 | 1 489 | 429 | 218 | 3 796 | 26 455 |
| 1998 | 2 938 | 4 107 | 19 005 | 5 167 | 823 | 1 857 | 552 | 455 | 5 008 | 39 912 |
| 1999 | 3 109 | 4 062 | 19 195 | 5 766 | 1 288 | 2 269 | 642 | 2 166 | 5 741 | 44 238 |
| 2000 | 3 264 | 6 919 | 15 172 | 11 592 | 1 962 | 3 697 | 583 | 2 286 | 6 697 | 52 172 |
| 2001 | 4 652 | 4 824 | 19 970 | 4 688 | 4 254 | 3 520 | 738 | 3 021 | 8 300 | 53 967 |
| **TOPs by gestational age (%)[6]** | | | | | | | | | | |
| 1997 >12 wks | 42.2 | 47.7 | 35.0 | 30.7 | 8.4 | 25.1 | 44.3 | 23.9 | 20.1 | 33.5 |
| 1998 >12 wks | 24.0 | 58.5 | 28.2 | 24.9 | 42.0 | 25.8 | 41.5 | 18.9 | 20.4 | 29.9 |
| 1999 >12 wks | 15.7 | 50.8 | 23.2 | 15.8 | 48.4 | 32.3 | 33.2 | 4.0 | 23.0 | 24.6 |
| 2000 >12 wks | 13.2 | 38.8 | 29.1 | 18.5 | 40.7 | 39.2 | 24.5 | 9.1 | 23.3 | 26.5 |
| 2001 >12 wks | 16.7 | 32.4 | 23.2 | 23.2 | 17.5 | 38.7 | 27.0 | 5.8 | 22.5 | 23.0 |
| **TOPs by maternal age (%)[6]** | | | | | | | | | | |
| 1997 <18 yrs | 13.9 | 14.3 | 0.0 | 6.6 | 5.6 | 12.2 | 38.5 | 10.1 | 21.9 | 7.7 |
| 1998 <18 yrs | 8.2 | 16.9 | 0.0 | 12.0 | 14.9 | 12.6 | 28.3 | 12.1 | 17.2 | 7.5 |
| 1999 <18 yrs | 8.1 | 12.7 | 0.0 | 5.3 | 14.8 | 12.2 | 19.9 | 8.6 | 14.9 | 6.1 |
| 2000 <18 yrs | 5.8 | 6.6 | 0.0 | 4.8 | 16.0 | 11.5 | 20.8 | 15.4 | 15.6 | 6.6 |
| 2001 <18 yrs | 6.0 | 8.0 | 0.0 | 9.5 | 9.2 | 10.9 | 17.2 | 41.2 | 15.4 | 8.4 |

| | African | Coloured | Indian/ Asian | White | All groups |
|---|---|---|---|---|---|
| **Percentage men with painful urination, genital symptoms** | | | | | |
| 1998[4] | 12.1 | 5.6 | 3.8 | 1.7 | 11.9 |
| **Percentage of pregnant women who received tetanus toxoid vaccine** | | | | | |
| 1998[4] | 65.3 | 31.0 | 34.4 | 11.3 | 58.8 |
| **Percentage pregnant women who received antenatal care** | | | | | |
| 1998[4] | 94.8 | 91.8 | 93.4 | 88.4 | 94.2 |
| **Percentage women 15-49 who use a modern contraceptive method** | | | | | |
| 1998 sexually active[4] | 57.6 | 68.4 | 80.1 | 74.9 | 61.2 |
| **Percentage women with medical assistance at delivery** | | | | | |
| 1998[4] | 82.1 | 94.8 | 99.1 | 99.0 | 84.4 |
| **Teenage Pregnancy** | | | | | |
| 1998 ever pregnant[4] | 17.8 | 19.3 | 4.3 | 2.2 | 16.4 |
| 1998 mothers[4] | 14.2 | 15.7 | 2.9 | 2.2 | 13.2 |

1 Note: 2002 data are preliminary.
Ref: DHIS

2 Note: Data only available for perinatal care in public sector institutions.
Ref: Saving Babies

3 Note: Not directly comparable with the SADHS figures since not all cases experienced seek care in the public sector. 2002 data are preliminary.
Ref: DHIS

4 Ref: SADHS 1998

5 Note: Definition according to source is: Percentage of all live births during a specific year, to women younger than 20 years of age irrespective of their marital status.
Ref: Development Bank 1994 (Table 24: Annexure A pg 90)

6 Note: Calculated from monthly provincial totals. Caution should be exercised in interpreting the percentage of TOPs by maternal age, due to the high proportion of unknown data. In particular, the province providing the most TOPs, Gauteng, does not supply any data by maternal age, which therefore also distorts the national average.
Ref: RRA Barometer Aug 2001, RRA Barometer May 2002

## Nutrition

Protection, promotion and support of infant and young child feeding are critical to preventing malnutrition and ensuring the healthy growth and development of children. A recent WHO report summarises the current global burden of malnutrition in infants and young children, and reports on progress in protecting and supporting infant and young child feeding [WHO Childhood nutrition].

Despite the competing demands of communicable disease control, nutritional interventions have not been neglected by government. For example, further moves to legislate for the enrichment of foods (beyond the addition of iodine to salt) were gazetted for comment in the latter part of 2002 (see http://www.doh.gov.za/docs/pr/2002/pr1018.html).

Iodine deficiency disorders (IDDs) result in a spectrum of ill health, such as mental and psychomotor impairment, and cretinism in severe cases. Past surveys have identified widespread iodine deficiency, evidenced by a high goitre prevalence, resulting in government regulations to enforce a minimum iodate concentration in all salt. The IDD Survey 2000 found just over 10% of schools whose pupils had low median iodine concentrations, indicating a degree of dietary iodine deficiency. Over 25% of salt samples had <10mg/kg iodine, suggesting that there may be several iodine deficient communities. Despite these areas of concern, the iodate fortification policy has improved the proportion of the population who are iodine replete. However other studies such as a recent national survey of iodine content showed that only 62.4% of households use adequately iodised salt, considerably short of the international goal of 90%. Recommendations to improve iodisation and monitoring are provided in an MRC Policy Brief [MRC Iodine].

The recent National Food Consumption Survey has shown little improvement in the nutritional status of young children when compared to the 1994/5 SAVACG survey. One out of 10 children aged 1-9 years was underweight and just more than one in five was stunted – mostly in rural areas, and linked to poor maternal education. By contrast one out of 13 children was overweight in urban areas, with a higher prevalence among children of well-educated mothers. A standardised analysis of surveys from 94 countries [Overweight prevalence] indicates a global overweight prevalence of 3.3% (6.5% for Southern Africa) of children aged <5 years around 1995. The SADHS also reflects a growing problem of obesity, particularly amongst urban African women where over 35% are obese. Since obesity has been found to predispose towards the development of hypertension and diabetes, interventions to reduce obesity are important to reduce these important causes of morbidity in adults.

**Definitions:**

**Iodine Deficiency:** Indicator may be reported using a number of definitions:
Iodine deficient school (narrow definition) = median urinary iodine concentration < 100mcg/litre
or
Iodine deficient school (comprehensive definition) = median urinary iodine concentration < 100mcg/litre or >= 20% with urinary iodine < 50mcg/litre
Iodine deficient child = urinary iodine concentration < 100mcg/litre
Indicator reported as proportion of schools or proportion of children as appropriate.
Note: The WHO definition of adequate iodine intake is a median urinary iodine concentration of >= 100mcg/litre and a goitre prevalence of less than 5%.
Since goitre prevalence was not related to urinary iodine levels in any school surveyed, this South African survey used an adapted definition.

**Iodised salt consumption:** Proportion of households' salt samples with specified iodine concentrations. The legal concentration at packaging is 40-60mg/kg. A concentration <10mg/kg is probably insufficient to prevent iodine deficiency disorder.

**Obesity (%):** A body mass index (BMI) (body mass in kg divided by the square of the height in m) equal to or more than 30kg/m2.

**Overweight (%):** Proportion of children with weight for height over 2 standard deviations from the norm (reference population median).

**Stunting (%):** Proportion of children with height for age under 2 standard deviations from the norm (reference population median).

**Underweight (%):** Proportion of children with weight for age under 2 standard deviations from the norm (reference population median).

**Wasting (%):** Proportion of children with weight for height under 2 standard deviations from the norm (reference population median).

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Iodine Deficiency[1]** | | | | | | | | | | |
| 1998 children <100mcg/l rural | 29.8 | 42.1 | 19.7 | 20.8 | 36.7 | 44.7 | 7.4 | 13.1 | 22.5 | - |
| 1998 children <100mcg/l urban | 9.2 | 18.9 | 24.9 | 6.4 | 11.7 | 50.5 | 10.8 | 30.2 | 35.0 | - |
| 1998 children <50mcg/l rural | 15.0 | 17.0 | 5.0 | 8.0 | 22.0 | 24.0 | 3.0 | 15.0 | 10.0 | - |
| 1998 children <50mcg/l urban | 3.0 | 10.0 | 8.0 | 3.0 | 3.0 | 27.0 | 0.3 | 7.0 | 5.0 | - |
| 1998 schools (comprehensive) | 19.0 | 25.0 | 18.8 | 4.2 | 25.0 | 58.3 | 0.0 | 28.6 | 7.7 | 16.2 |
| 1998 schools (narrow) | 9.5 | 16.7 | 6.3 | 4.2 | 25.0 | 41.7 | 0.0 | 0.0 | 3.8 | 10.6 |
| **Iodised salt consumption[1]** | | | | | | | | | | |
| 1998 <10mg/kg | 24.0 | 29.0 | 30.0 | 24.0 | 31.0 | 25.0 | 15.0 | 46.0 | 16.0 | 25.5 |
| **Obesity (%)[2]** | | | | | | | | | | |
| 1998 Men | 9.8 | 8.0 | 9.8 | 10.2 | 6.1 | 7.2 | 7.5 | 5.4 | 12.8 | 9.1 |
| 1998 Women | 28.9 | 29.1 | 34.7 | 34.2 | 19.4 | 25.4 | 24.5 | 18.8 | 30.8 | 29.4 |
| **Overweight (%)** | | | | | | | | | | |
| 1999 Age 1-9 years[3] | 7.9 | 6.4 | 5.6 | 6.5 | 3.7 | 16.7 | 4.4 | 0.9 | 5.2 | 6.0 |
| **Stunting (%)** | | | | | | | | | | |
| 1994 Age 6-71 months[4] | 28.8 | 28.7 | 11.5 | 15.6 | 34.2 | 20.4 | 22.8 | 24.7 | 11.6 | 22.9 |
| 1999 Age 1-9 years[3] | 20.5 | 29.6 | 20.4 | 8.5 | 23.1 | 26.4 | 29.6 | 24.9 | 14.5 | 21.6 |
| 1999 Age 12-71 months[3] | - | - | - | - | - | - | - | - | - | 23.8 |
| **Underweight (%)** | | | | | | | | | | |
| 1994 Age 6-71 months[4] | - | - | - | - | - | - | - | - | - | 9.3 |
| 1999 Age 12-71 months[3] | - | - | - | - | - | - | - | - | - | 11.1 |
| 1999 Age 1-9 years[3] | 7.1 | 14.3 | 8.8 | 6.0 | 15.0 | 4.2 | 23.7 | 15.3 | 8.3 | 10.3 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Wasting (%)** | | | | | | | | | | |
| 1994 Age 6-71 months[4] | 3.2 | 4.5 | 1.2 | 0.7 | 3.8 | 2.5 | 1.7 | 4.5 | 1.3 | 2.6 |
| 1999 Age 12-71 months[3] | - | - | - | - | - | - | - | - | - | 3.6 |
| 1999 Age 1-9 years[3] | 1.8 | 3.4 | 1.2 | 4.3 | 7.5 | 2.8 | 9.6 | 5.7 | 0.9 | 3.7 |
| 1999 Age 1-9 years rural[3] | - | - | - | - | - | - | - | - | - | 4.9 |
| 1999 Age 1-9 years urban[3] | - | - | - | - | - | - | - | - | - | 2.4 |

| | African | Coloured | Indian/ Asian | White | All groups |
|---|---|---|---|---|---|
| **Obesity (%)** | | | | | |
| 1998 Men[2] | 7.7 | 9.1 | 8.7 | 19.8 | 9.1 |
| 1998 Women[2] | 30.5 | 28.3 | 20.2 | 24.3 | 29.4 |

1 Ref: Iodine Deficiency 2000 (Table 6.1.4, Table 6.1.5, Table 6.3.1)

2 Ref: SADHS 1998

3 Ref: Food Consumption Survey (Table 4.14, Table 4.31)

4 Ref: SAVACG Survey

## Child Health

Health care for children is a high priority issue, that is also linked to general development, since many preventable diseases can be addressed by improving basic health conditions such as water and sanitation, good nutrition and access to health resources. Internationally, the leading causes of child death are injuries (19%), intestinal infections (14%) and respiratory infections (11.5%) [Children in 2001, End Decade Report on Children].

HIV/AIDS is also affecting children in many ways, ultimately increasing child mortality and the number of orphans. There are many factors that contribute to child health, and indicators reflecting progress in these areas are also included in other sections of this chapter e.g. maternal mortality ratios, infant and under 5 mortality, and HIV/AIDS indicators. The Population Reference Bureau has produced a useful compilation of international child health indicators [Kids Count] and the Human Development Report is also a comprehensive source of international indicators [HDR 2002]. The Child Trends Databank (www.childtrendsdatabank.org) includes a comprehensive set of child-oriented indicators. Although US oriented, the definitions,

commentary and links to international comparators where available make this a useful resource.

The incidence of diarrhoea is used to determine the health status of children and identify potential environmental hazards (e.g. contamination of water sources). Diarrhoeal disease is one of the leading causes of infant mortality, and is closely related to both socio-economic situation and environmental health issues like access to clean water.

Immunisation has revolutionised child health throughout the world, but there is growing inequity in the access of children to immunisation programmes. The latest WHO report on vaccination status [Vaccines & Immunization] reviews the growing divide in access and warns of the global consequences, including the re-emergence of diseases, the spread of diseases to countries where they had been eliminated and the immense social cost of disease in countries worst affected. Inequity in access to new vaccines has also increased, as new life-saving vaccines become available at prices most low-income countries cannot afford. However health service delivery problems are also to blame, as is the inadequacy of disease surveillance, making it difficult to establish the burden of disease and potential cost-effectiveness of new vaccines. This report considers coverage levels with DTP one of the best indicators of health systems performance. For SA Immunisation coverage (percentage of target population that has been vaccinated) for 3 doses of DTP is reported as 79%

Several effective health and social interventions are available which have been shown to improve life expectancy and quality of life in HIV-infected children. A research study conducted by the Children's Institute, UCT [HIV Children Services] reported on a rapid appraisal of primary level health care services to determine the extent to which some of these interventions are available to children. The study highlights the need for improved monitoring and evaluation of the implementation of existing policies and guidelines and for training of primary level health care staff on the appropriate management of HIV in children. For example, the study found that only 20% of clinics had knowledge of the comprehensive guidelines entitled 'Managing HIV in Children' (National Department of Health, March 2000) and only 9% of clinics were using these guidelines. Only one third of clinics had a policy in place for the administration of prophylactic cotrimoxazole to HIV-infected children, and most of these were prescribing the drug incorrectly. Other indicators relating to Vitamin A supplementation, TB contact tracing, nutritional supplementation and Social assistance grants are also included.

The Workshop Report on the National Children's Forum on HIV/AIDS [Children's HIV Forum] provides a human aspect to the numeric indicators on HIV and children presented elsewhere in this chapter and source documents.

Data from the pilot sites for the prevention of mother-to-child transmission of HIV are becoming available and new data will be published shortly.

**Definitions:**

**Diarrhoea Incidence <5 per 1000:** The number of children under 5 years with diarrhoea per 1 000 children under 5 years in the target population. Diarrhoea is formally defined as 3 or more watery stools in 24 hours, but any episode diagnosed and/or treated as diarrhoea after an interview with the adult accompanying the child should be counted.

**Exclusive breastfeeding rate:** Percentage of living children receiving only breast milk from birth to various ages. Optimal breastfeeding practices include exclusive breastfeeding (breastmilk with no other foods or liquids) for the first six months of life, followed by breastmilk and complementary foods (solid or semi-solid foods) from about six months of age on, and continued breastfeeding for up to at least two years of age while receiving complementary foods. (http://www.childinfo.org/eddb/brfeed/)

**Immunisation coverage of children <1 year:** Calculated from the number of children fully immunised (defined as first visit where all required vaccinations are completed) divided by the population <1 year.
The primary course of immunisation includes BCG, OPV 1,2 & 3, DTP-Hib 1,2 & 3, HepB 1,2 & 3, and 1st measles at 9 months.

**Immunisation coverage of children 12-23 months (%):** Percentage of children aged 12 to 23 months who had received BCG, 3 doses of DTP and polio, and Measles vaccine, but not necessarily Hepatitis B.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Diarrhoea Incidence <5 per 1000** | | | | | | | | | | |
| 1998[1] | 275.6 | 197.5 | 204.0 | 386.3 | 316.8 | 351.5 | 225.7 | 264.7 | 214.8 | 286.4 |
| 2000[2] | | 71.8 | 66.1 | 173.3 | 180.0 | 120.1 | | 272.5 | 91.5 | 144.8 |
| 2001[2] | 131.0 | 88.4 | 60.2 | 272.4 | 196.5 | 139.5 | 264.3 | 227.4 | 91.0 | 164.5 |
| 2002[2] | 93.9 | 78.1 | 59.4 | 211.5 | 162.6 | 126.7 | 127.0 | 154.2 | 94.1 | 133.4 |
| **Exclusive breastfeeding rate** | | | | | | | | | | |
| 1998 < 3 months[3] | - | - | - | - | - | - | - | - | - | 10.4 |
| 1998 4-6 months[3] | - | - | - | - | - | - | - | - | - | 1.2 |
| **Immunisation coverage of children <1 year** | | | | | | | | | | |
| 2000[4] | 60.8 | 67.7 | 63.9 | 50.1 | 61.0 | 66.8 | 72.3 | 85.7 | 79.4 | 63.7 |
| 2001[4] | 59.1 | 80.6 | 68.0 | 79.2 | 66.0 | 81.4 | 76.7 | 78.5 | 72.7 | 71.6 |
| 2002[4] | 61.7 | 82.6 | 60.7 | 75.3 | 67.8 | 79.3 | 52.7 | 62.5 | 56.4 | 67.5 |
| **Immunisation coverage of children 12-23 months (%)** | | | | | | | | | | |
| 1998[5] | 52.6 | 67.8 | 72.4 | 49.5 | 74.9 | 67.2 | 80.8 | 60.6 | 64.2 | 63.4 |

1 Note: Data calculated from percentage of children with diarrhoea in previous 2 weeks reported in SADHS 1998 to approximate an annual incidence.
Ref: DHIS Dec 2001

2 Note: This refers to the number of children seeking treatment for diarrhoea from PHC facilities. This is about half the number of cases expected based on the number of cases reported in the SADHS 1998 survey to have experienced diarrhoea in the 2 weeks prior to the survey.
Ref: DHIS

3 Ref: SADHS 1998

4 Note: Nearly all provinces were initially struggling with the data element 'Immunised fully under 1 year – new' because many health workers counted every child visiting that had been fully immunised instead of only counting them once when receiving the last dose in the primary course. Such erroneous data records, mainly in 2000 and to a lesser extent in 2001, have been programmatically replaced by a copy of the number of Measles 1st doses, which usually is the last dose given.
Ref: DHIS

5 Note: Percentage with health cards seen by interviewer and percentage who have received each vaccine by the time of the survey.
Ref: SADHS 1998

## Other Morbidity and Risk Behaviour

A recent MRC publication [Chronic Diseases in SA] presents a detailed analysis of mortality data from 1996 vital registration and chronic disease and risk factor data from the 1998 SADHS. The findings reveal complex patterns of mortality, morbidity, risk factors and unhealthy lifestyles. With the type of epidemiological transition taking place in South Africa, chronic diseases tend to be inadequately provided for due to the demands of more acute and urgent conditions, and a focus on curative rather than preventative care.

A new study estimated smoking prevalence among different demographic and income segments for the period 1993 to 2000 based on a commercially generated database, the All Media and Products Survey (AMPS), compiled by the South African Advertising Research Foundation. The study found that from 1993 to 2000 aggregate cigarette consumption decreased by 22%. Smoking prevalence decreased from 32.6% to 27.1% of the adult population. This is ascribed mostly to the sharp increase in cigarette prices, and to a lesser extent to the passing of anti-smoking legislation and increasing public awareness of the health impact of smoking. Sixty percent of the decrease in per capita consumption is explained by a reduction in average consumption of smokers and the other 40% is explained by a reduction in smoking prevalence. The most significant decreases have been reported for males, Blacks, young adults and low-income households. [SAMJ 92(468-72)]

The National Tobacco Information Online System [NATIONS] includes data for many countries on aspects of tobacco consumption (such as smoking prevalence) and smoking-related disease impact. For South Africa the 1990 annual mortality rates (per 100 000 population) from diseases of the trachea, lung and bronchitis were 99.6 (males) and 24.1 (females). The respective rates for lip, oral and pharynx cancer were 46.8 and 8.8.

The South Africa Global Youth Tobacco Survey [SA GYTS] includes data on prevalence of cigarette and other tobacco use as well as information on five determinants of tobacco use: access/availability and price, environmental

tobacco smoke exposure (ETS), cessation, media and advertising, and school curriculum. These determinants are components South Africa could include in a comprehensive tobacco control program. The South Africa GYTS was a school-based survey of students in grades 8-10, conducted in 1999. This survey also found that environmental tobacco smoke exposure is very high – almost half of students live in homes where others smoke; almost 6 in 10 are exposed to smoke in public places; almost half have parents who smoke. Even if legislation limiting smoking in public places is effective, young people are clearly still exposed to a high level of smoke at home.

About 50% of men in developing countries smoke. Trends in both developed and developing countries show that male smoking rates have now peaked and are declining. However this is a slow trend, and in the meantime millions are dying from tobacco [Tobacco Atlas].

**Definitions:**

**Hypertension prevalence measured (%):** Measured hypertension refers to those with blood pressures greater than or equal to 160/95 mm Hg and those who are taking hypertension medication.

**Percentage adults experienced work related illness/injuries:** Proportion of working adults (adults = 15+ years) who reported suffering from a work-related illness or injury.

**Prevalence of smoking (%):** Percentage of population who currently smoke.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hypertension prevalence measured (%)** | | | | | | | | | | |
| 1998 Men[1] | 12.5 | 14.5 | 11.7 | 11.1 | 6.4 | 6.2 | 14.2 | 11.8 | 10.9 | 11.0 |
| 1998 Women[1] | 14.2 | 15.5 | 13.1 | 14.7 | 6.6 | 8.5 | 17.0 | 16.2 | 14.2 | 13.2 |
| **Percentage adults experienced work related illness/injuries** | | | | | | | | | | |
| 1998[1] | 6.3 | 5.1 | 8.0 | 9.0 | 8.2 | 7.1 | 7.4 | 2.8 | 8.2 | 7.3 |
| **Prevalence of smoking (%)** | | | | | | | | | | |
| 1993[2] | - | - | - | - | - | - | - | - | - | 32.6 |
| 1998[1] | - | - | - | - | - | - | - | - | - | 24.0 |
| 1998 Men[1] | 46.0 | 44.0 | 42.0 | 38.0 | 29.0 | 40.0 | 58.0 | 45.0 | 49.0 | 42.0 |
| 1998 Women[1] | 11.0 | 11.0 | 12.0 | 5.0 | 2.0 | 6.0 | 31.0 | 8.0 | 29.0 | 11.0 |
| 1999 Youth[3] | - | - | - | - | - | - | - | - | - | 32.5 |
| 2000[2] | - | - | - | - | - | - | - | - | - | 27.1 |
| 2000 Men[2] | - | - | - | - | - | - | - | - | - | 44.0 |
| 2000 Women[2] | - | - | - | - | - | - | - | - | - | 11.7 |

| | African | Coloured | Indian/Asian | White | All groups |
|---|---|---|---|---|---|
| **Hypertension prevalence measured (%)** | | | | | |
| 1998 Men[1] | 10.3 | 12.4 | 9.9 | 15.2 | 11.0 |
| 1998 Women[1] | 13.0 | 17.1 | 9.3 | 12.0 | 13.2 |
| **Percentage adults experienced work related illness/injuries** | | | | | |
| 1998[1] | 6.6 | 8.6 | 6.3 | 8.9 | 7.3 |
| **Prevalence of smoking (%)** | | | | | |
| 2000[2] | 22.7 | 48.7 | 28.2 | 36.6 | 27.1 |

1 Ref: SADHS 1998

2 Ref: SAMJ 92(468-72)

3 Note: Definition: Students in grades 8-10 currently using any tobacco product (Male = 38%, Female = 26.5%)
Ref: SA GYTS

## Health Services Indicators

### Health Facilities

The number and type of health facilities in the country is undergoing constant change. One particular area of continued confusion is the number of beds in each category in the public sector. While hospitals have generally been designated as either district, regional or central in nature, they may include 'beds' of a combination of types. For instance, a regional hospital may continue to provide some district-level services and have wards allocated accordingly. The major source of data for the private sector remains the Hospital Association of South Africa (HASA) [Health Annals 2002]. Since virtually all private sector hospitals with inpatient facilities are members of HASA, their figures are taken as a reasonably accurate reflection of the sector. However, not all day clinics and stand-alone operating facilities may be included. Another source is the annual Hospital & Nursing Yearbook [Hosp Yearbook 2002]. However, even here issues of definition remain a problem: for example, the number of beds reported does not include institutions licensed under the Mental Disorder Act, Oral and Dental Hospitals, Mining clinics and hospitals and SANTA Tuberculosis hospitals

While the number of facilities and their distribution are an indicator of access, their level of equipment is an indicator of quality. Clearly, much more data will be needed in the future to allow comparisons between districts and to track progress towards equity.

Utilisation may depend on many things like accessibility, acceptably and appropriateness of services, as well as the legacy of apartheid with its gross inequity in resources and personnel. national PHC models generally calculate a need for 3-3.5 visits per capita per year. The PHC utilisation rate is therefore roughly half the expected value for the full range of PHC services. Some inaccuracy may result from confusion about the definition of headcount and procedures for calculating it, especially in provinces that use multiple categories to determine headcount (such as age break-down, gender break-down).

At the primary level, the results of the biennial Facilities Survey remain the major source of data. The Eastern Cape have also produced a useful collation of primary health care data, although most of the data are organized by old health districts and regions, so were not included in this chapter [PHC in Eastern Cape 1997-2000].

**Definitions:**

**Utilisation Rate PHC:** Number of visits per person to PHC health facilities per year. Calculated from PHC headcount divided by total population (Census 96 population estimates for the appropriate year).

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number of Health Facilities** | | | | | | | | | | |
| 1998 Private total[1] | 14 | 7 | 66 | 27 | 2 | 5 | 4 | 10 | 27 | 162 |
| 1998 Provincial-aided hosp[2] | - | - | - | - | - | - | - | - | - | 43 |
| 1998 Public CHC[2] | - | - | - | - | - | - | - | - | - | 101 |
| 1998 Public clinics[2] | - | - | - | - | - | - | - | - | - | 2 604 |
| 1998 Public hosp total[2] | - | - | - | - | - | - | - | - | - | 343 |
| 1999 Private total[3] | 18 | 11 | 85 | 28 | 2 | 8 | 3 | 9 | 36 | 200 |
| 2001 District Hospitals[4] | 63 | 24 | 7 | 40 | 32 | 18 | 21 | 15 | 27 | 247 |
| 2001 National Central Hosp[4] | 0 | 1 | 4 | 2 | 0 | 0 | 0 | 0 | 3 | 10 |
| 2001 Provincial Tertiary Hosp[4] | 1 | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 6 |
| 2001 Regional Hospitals[4] | 8 | 6 | 12 | 9 | 5 | 5 | 1 | 4 | 10 | 60 |
| 2001 Specialised Hospitals[4] | 11 | 1 | 5 | 8 | 3 | 1 | 3 | 2 | 18 | 52 |
| 2001 Public hosp total[4] | 83 | 33 | 28 | 60 | 42 | 25 | 25 | 21 | 58 | 375 |
| 2002 HASA[5] | 14 | 9 | 75 | 27 | 1 | 6 | 6 | 10 | 30 | 178 |
| 2002 Private hosp total[6] | 40 | 19 | 114 | 49 | 2 | 11 | 13 | 16 | 86 | 350 |
| 2002 Public hospitals total[6] | 68 | 31 | 28 | 65 | 42 | 29 | 34 | 31 | 45 | 373 |
| 2002 District Hospitals[7] | 63 | 25 | 7 | 39 | 36 | 18 | 24 | 17 | 28 | 257 |
| 2002 National Central Hosp[7] | 0 | 1 | 4 | 3 | 0 | 0 | 0 | 0 | 3 | 11 |
| 2002 Provincial Tertiary Hosp[7] | 1 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | 7 |
| 2002 Regional Hospitals[7] | 11 | 6 | 13 | 11 | 5 | 5 | 2 | 3 | 10 | 66 |
| 2002 Specialised Hospitals[7] | 12 | 3 | 6 | 8 | 3 | 1 | 3 | 3 | 19 | 58 |
| 2002 Public hosp total[7] | 87 | 36 | 30 | 62 | 46 | 25 | 29 | 24 | 60 | 399 |
| **Number of beds** | | | | | | | | | | |
| 1998 Private sector[1] | 1 207 | 827 | 10 049 | 3 371 | 273 | 627 | 288 | 928 | 3 338 | 20 908 |
| 1998 Public sector[2] | - | - | - | - | - | - | - | - | - | 107 634 |
| 1999 Private sector[3] | 1 224 | 937 | 10 605 | 4 974 | 273 | 804 | 297 | 795 | 3 797 | 23 706 |
| 1999 Public sector[3] | - | - | - | - | - | - | - | - | - | 105 441 |
| 2000 National Central Hosp[4] | - | 630 | 6 532 | 1 952 | - | - | - | - | 2 662 | 11 776 |
| 2002 HASA[5] | 1 283 | 1 647 | 11 631 | 3 471 | 186 | 785 | 386 | 883 | 3 770 | 24 042 |
| 2002 Private sector[6] | 3 147 | 2 492 | 16 013 | 7 170 | 269 | 1 133 | 663 | 987 | 5 797 | 37 671 |
| 2002 Public sector[6] | 16 957 | 5 278 | 17 909 | 27 790 | 12 334 | 4 568 | 1 856 | 7 518 | 11 874 | 106 084 |
| **Percentage PHC facilities where HIV testing is made available** | | | | | | | | | | |
| 1998[8] | 39.0 | 79.0 | 75.0 | 48.0 | 20.0 | 79.0 | 100.0 | 46.0 | 97.0 | 56.0 |
| 2000[9] | 44.0 | 87.5 | 100.0 | 40.0 | 14.6 | 57.1 | 100.0 | 53.1 | 100.0 | 56.2 |
| **Percentage PHC facilities where condoms are freely available** | | | | | | | | | | |
| 1998[8] | 76.0 | 79.0 | 100.0 | 97.0 | 57.0 | 91.0 | 89.0 | 65.0 | 84.0 | 79.0 |
| 2000[9] | 86.2 | 84.0 | 100.0 | 92.5 | 85.4 | 78.6 | 91.7 | 90.6 | 74.1 | 86.9 |
| **Percentage clinics with EPI services every week day** | | | | | | | | | | |
| 1998[8] | 76.0 | 79.0 | 69.0 | 52.0 | 93.0 | 42.0 | 67.0 | 54.0 | 44.0 | 67.0 |
| 2000[9] | 89.0 | 72.0 | 50.0 | 85.0 | 97.9 | 32.1 | 66.7 | 71.9 | 40.0 | 73.7 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Percentage clinics with STD services every week day** | | | | | | | | | | |
| 1998[8] | 100.0 | 93.0 | 94.0 | 94.0 | 100.0 | 92.0 | 100.0 | 93.0 | 78.0 | 94.0 |
| 2000[9] | 97.8 | 100.0 | 89.3 | 95.0 | 100.0 | 82.1 | 83.3 | 100.0 | 90.0 | 94.9 |
| **Percentage clinics with TB services every week day** | | | | | | | | | | |
| 1998[8] | 85.0 | 82.0 | 94.0 | 65.0 | 82.0 | 79.0 | 82.0 | 89.0 | 84.0 | 82.0 |
| 2000[9] | 94.5 | 100.0 | 89.3 | 57.5 | 81.3 | 60.7 | 83.3 | 93.8 | 86.7 | 84.1 |
| **Percentage clinics with antenatal services every week day** | | | | | | | | | | |
| 1998[8] | 59.0 | 71.0 | 25.0 | 26.0 | 91.0 | 33.0 | 33.0 | 39.0 | 22.0 | 50.0 |
| 2000[9] | 78.0 | 44.0 | 32.1 | 70.0 | 95.8 | 21.4 | 50.0 | 56.3 | 10.0 | 59.3 |
| **Percentage clinics with emergency response < 1 hour** | | | | | | | | | | |
| 1998[8] | 37.0 | 61.0 | 79.0 | 29.0 | 65.0 | 65.0 | 71.0 | 27.0 | 77.0 | 55.0 |
| 2000[9] | 40.0 | 54.0 | 71.4 | 55.3 | 52.1 | 65.3 | 91.7 | 60.0 | 76.7 | 57.7 |
| **Percentage clinics with family planning services every week day** | | | | | | | | | | |
| 1998[8] | 94.0 | 96.0 | 81.0 | 58.0 | 100.0 | 58.0 | 89.0 | 79.0 | 72.0 | 83.0 |
| 2000[9] | 96.7 | 96.0 | 82.1 | 95.0 | 100.0 | 46.4 | 87.5 | 87.5 | 70.0 | 87.1 |
| **Utilisation Rate PHC** | | | | | | | | | | |
| 2000[10] | 2.1 | 1.5 | 1.2 | 1.1 | 1.7 | 1.4 | 2.3 | 2.3 | 2.5 | 1.7 |
| 2001[10] | 2.0 | 1.9 | 1.3 | 1.8 | 2.0 | 1.8 | 2.3 | 2.6 | 2.5 | 1.9 |
| 2002[10] | 1.9 | 1.3 | 1.2 | 1.7 | 2.2 | 1.8 | 1.5 | 2.2 | 2.4 | 1.8 |

1 Note: Based on membership of the Hospital Association of South Africa. Virtually all private hospitals with inpatient treatment facilities are members of HASA. The figure quoted may therefore not include all day clinics or stand-alone operating facilities.
Ref: SAHR 1998 Ch 13 (Table 5 pg 148)

2 Note: Provincial-aided hosp: Also referred to as Private sector not-for-profit hospitals.
CHC: Community Health Centres or day hospitals
Ref: SAHR 1999 Ch 9 (Figure 1 pg 104)

3 Note: Hospitals and Day Clinics
Ref: NHA Private 2001 (Table 2.2 pg 8)

4 Note: Public sector health facilities. National Central Hosp includes Universitas, Chris Hani Baragwanath, Ga Rankuwa, Johannesburg, Pretoria Academic, King Edward VIII, Wentworth, Groote Schuur, Red Cross and Tygerberg.
Ref: Fiscal Review 2001 (Table 4.14 pg 54)

5 Ref: Health Annals 2002

6 Ref: Hosp Yearbook 2002

7 Ref: DHIS (Extracted December 2002)

8 Ref: Facilities Survey 1998

9 Ref: Facilities Survey 2000

10 Note: National PHC models generally calculate a need for 3-3.5 visits per capita per year. The DHIS data are therefore roughly half the expected value for the full range of PHC services.
Ref: DHIS

## Health Personnel

Together with the data on the number and type of health facilities, these data are an indicator of physical access. The population denominator used was that considered to be dependent on the public sector (as shown in the section on Demographic Indicators).

PERSAL remains the major source of public sector data, but interpretation of these data is still difficult. Specifically, it should be noted that vacancy rates for the individual professions could not be obtained, and that only the overall public sector rate for each provincial Department of Health and the national total could be portrayed. The apparent decrease in vacant posts (and therefore also in the total number of health sector posts) is almost entirely due to cleaning of the database, rather than a real change. The South African public sector figures given are the totals for all the provinces, and do not include the relatively small numbers of health professionals employed by the national Department of Health.

The greatest changes have been made in the total number of posts in the Eastern Cape and Limpopo Province. It is noticeable that the vacancy rates in the remainder of the provinces have remained static. The Eastern Cape vacancy rate is still the highest, despite the reduced total number of posts. It is not clear to what extent this remains attributable to inaccurate data.

Reductions in the total number of some key health personnel are apparent including dentists, medical specialists and professional nurses.

As with the facility data, provincial averages hide all manner of regional and sub-regional differences. In time, as district data become available, more meaningful comparisons will be possible.

Also provided are the numbers of health workers (medical practitioners, dentists, and pharmacists) performing community service in each province. New data are only available for pharmacists (from the SA Pharmacy Council) as no response was received from the DoH. As was noted in the 2001 Review, a considerable percentage of total pharmacist posts filled is accounted for by CSPs. However of greater concern this year is the reduction in the total number of CSPs allocated for 2003. The total number placed has dropped from 406 in 2001 to 341 in 2003. There is also a marked difference in the percentage of available CSP posts taken up in each province, ranging from 28% in Limpopo Province to 91% in KwaZulu-Natal and the Western Cape. Overall 40% of available CSP posts will not be taken up in 2003. A detailed review of the opportunities and challenges presented by community service for health professionals is presented earlier in this Review [SAHR 2002 Ch 8

**Definitions:**

**Total number of health sector posts:** Total number of health sector posts including dental, medical, nursing, pharmacy, occupational therapy, physiotherapy, radiography and psychology professions.

**Percentage of health sector posts vacant:** Percentage of all public health sector posts that are vacant. Note that data are not available by occupational category, so there is no way of knowing in which occupations the greatest shortages exist.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dental** | | | | | | | | | | |
| **Number of Dental Practitioners[1]** | | | | | | | | | | |
| 2000 Public sector | 47 | 25 | 225 | 61 | 30 | 45 | 11 | 41 | 112 | 597 |
| 2001 Public sector | 54 | 31 | 226 | 52 | 46 | 50 | 14 | 50 | 111 | 634 |
| 2002 Public sector | 37 | 33 | 220 | 56 | 39 | 53 | 12 | 42 | 110 | 602 |
| **Dental practitioners per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 0.80 | 1.10 | 4.90 | 0.80 | 0.60 | 1.80 | 1.60 | 1.40 | 3.80 | 1.70 |
| 2001 Public sector | 0.90 | 1.29 | 3.88 | 0.66 | 0.89 | 1.89 | 1.97 | 1.59 | 3.70 | 1.71 |
| 2002 Public sector | 0.58 | 1.35 | 3.71 | 0.70 | 0.78 | 2.08 | 1.48 | 1.32 | 3.61 | 1.59 |
| **Number of Dental Specialists[1]** | | | | | | | | | | |
| 2000 Public sector | 0 | 1 | 34 | 4 | 0 | 2 | 0 | 0 | 12 | 53 |
| 2001 Public sector | 0 | 0 | 31 | 3 | 0 | 2 | 0 | 0 | 9 | 45 |
| 2002 Public sector | - | - | 43 | 3 | - | 2 | - | - | 9 | 57 |
| **Dental specialists per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 0.00 | 0.00 | 0.70 | 0.10 | 0.00 | 0.10 | 0.00 | 0.00 | 0.40 | 0.20 |
| 2001 Public sector | 0.00 | 0.00 | 0.53 | 0.04 | 0.00 | 0.08 | 0.00 | 0.00 | 0.30 | 0.12 |
| 2002 Public sector | 0.00 | 0.00 | 0.73 | 0.04 | 0.00 | 0.08 | 0.00 | 0.00 | 0.30 | 0.15 |
| **Number of Dental Therapists[1]** | | | | | | | | | | |
| 2000 Public sector | 3 | 1 | 28 | 31 | 22 | 8 | 2 | 15 | 2 | 112 |
| 2001 Public sector | 3 | 2 | 29 | 27 | 31 | 9 | 1 | 16 | 2 | 120 |
| 2002 Public sector | 4 | 3 | 28 | 29 | 32 | 7 | 1 | 17 | 2 | 123 |
| **Dental therapists per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 0.00 | 0.00 | 0.60 | 0.40 | 0.50 | 0.30 | 0.30 | 0.50 | 0.10 | 0.30 |
| 2001 Public sector | 0.05 | 0.10 | 0.50 | 0.34 | 0.60 | 0.34 | 0.14 | 0.51 | 0.07 | 0.32 |
| 2002 Public sector | 0.06 | 0.12 | 0.47 | 0.36 | 0.64 | 0.27 | 0.12 | 0.53 | 0.07 | 0.33 |
| **Nursing** | | | | | | | | | | |
| **Number of Enrolled Nurses[1]** | | | | | | | | | | |
| 2000 Public sector | 3 586 | 815 | 2 159 | 6 521 | 3 077 | 1 087 | 302 | 1 397 | 1 782 | 20 726 |
| 2001 Public sector | 3 282 | 731 | 2 285 | 6 740 | 2 981 | 1 224 | 291 | 1 323 | 1 833 | 20 691 |
| 2002 Public sector | 3 006 | 680 | 2 460 | 7 098 | 2 778 | 1 234 | 272 | 1 247 | 1 814 | 20 590 |
| **Enrolled nurses per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 59.2 | 36.1 | 46.6 | 85.0 | 63.6 | 42.7 | 44.0 | 46.1 | 60.0 | 59.7 |
| 2001 Public sector | 52.4 | 30.5 | 39.2 | 85.1 | 57.6 | 46.1 | 40.9 | 42.2 | 61.1 | 55.8 |
| 2002 Public sector | 46.9 | 27.9 | 41.5 | 88.3 | 55.4 | 48.3 | 33.5 | 39.2 | 59.6 | 54.5 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number of Nursing Assistants[1]** | | | | | | | | | | |
| 2000 Public sector | 4 381 | 2 131 | 5 010 | 5 508 | 2 786 | 1 519 | 564 | 2 395 | 3 900 | 28 194 |
| 2001 Public sector | 4 096 | 2 170 | 5 434 | 5 816 | 2 658 | 1 366 | 558 | 2 488 | 4 060 | 28 646 |
| 2002 Public sector | 3 838 | 2 278 | 5 491 | 5 804 | 2 690 | 1 362 | 626 | 2 464 | 4 108 | 28 661 |
| **Nursing Assistants per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 72.3 | 94.4 | 108.2 | 71.8 | 57.6 | 59.6 | 82.2 | 79.1 | 131.2 | 81.3 |
| 2001 Public sector | 65.4 | 90.4 | 93.3 | 73.5 | 51.3 | 51.5 | 78.4 | 79.3 | 135.3 | 77.3 |
| 2002 Public sector | 59.9 | 93.5 | 92.7 | 72.2 | 53.6 | 53.3 | 77.2 | 77.4 | 134.9 | 75.9 |
| **Number of Professional Nurses[1]** | | | | | | | | | | |
| 2000 Public sector | 6 429 | 2 909 | 7 984 | 9 195 | 5 058 | 2 306 | 839 | 2 855 | 4 159 | 41 734 |
| 2001 Public sector | 5 713 | 3 004 | 8 078 | 9 058 | 5 264 | 2 359 | 852 | 3 002 | 4 125 | 41 460 |
| 2002 Public sector | 4 799 | 3 023 | 8 074 | 8 770 | 5 538 | 2 288 | 869 | 2 996 | 3 958 | 40 318 |
| **Professional nurses per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 106.1 | 128.9 | 172.5 | 119.8 | 104.6 | 90.5 | 122.3 | 94.3 | 139.9 | 120.3 |
| 2001 Public sector | 91.2 | 125.2 | 138.7 | 114.4 | 101.7 | 89.0 | 119.7 | 95.7 | 137.5 | 111.9 |
| 2002 Public sector | 74.9 | 124.1 | 136.3 | 109.0 | 110.5 | 89.6 | 107.1 | 94.1 | 130.0 | 106.8 |
| **Number of Student Nurses[1]** | | | | | | | | | | |
| 2000 Public sector | 1 282 | 501 | 2 005 | 1 420 | 715 | 377 | 89 | 326 | 794 | 7 509 |
| 2001 Public sector | 1 309 | 289 | 1 836 | 1 256 | 639 | 405 | 89 | 435 | 749 | 7 007 |
| 2002 Public sector | 1 377 | 118 | 1 888 | 1 625 | 587 | 454 | 101 | 405 | 694 | 7 249 |
| **Student Nurses per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 21.2 | 22.2 | 43.3 | 18.5 | 14.8 | 14.8 | 13.0 | 10.8 | 26.7 | 21.6 |
| 2001 Public sector | 20.9 | 12.0 | 31.5 | 15.9 | 12.3 | 15.3 | 12.5 | 13.9 | 25.0 | 18.9 |
| 2002 Public sector | 21.5 | 4.8 | 31.9 | 20.2 | 11.7 | 17.8 | 12.4 | 12.7 | 22.8 | 19.2 |
| **Doctors** | | | | | | | | | | |
| **Number of Medical Practitioners[1]** | | | | | | | | | | |
| 2000 Public sector | 745 | 548 | 1 693 | 1 842 | 604 | 419 | 198 | 361 | 1 181 | 7 591 |
| 2001 Public sector | 765 | 532 | 1 670 | 1 764 | 634 | 434 | 187 | 382 | 976 | 7 352 |
| 2002 Public sector | 723 | 570 | 1 727 | 1 804 | 456 | 425 | 196 | 374 | 1 008 | 7 287 |
| **Medical Practitioners per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 12.3 | 24.3 | 36.6 | 24.0 | 12.5 | 16.4 | 28.9 | 11.9 | 39.7 | 21.9 |
| 2001 Public sector | 12.2 | 22.2 | 28.7 | 22.3 | 12.2 | 16.4 | 26.3 | 12.2 | 32.5 | 19.8 |
| 2002 Public sector | 11.3 | 23.4 | 29.1 | 22.4 | 9.1 | 16.6 | 24.2 | 11.8 | 33.1 | 19.3 |
| **Number of Medical Specialists[1]** | | | | | | | | | | |
| 2000 Public sector | 160 | 247 | 1 500 | 566 | 48 | 31 | 14 | 46 | 1 269 | 3 881 |
| 2001 Public sector | 165 | 223 | 1 434 | 514 | 43 | 17 | 17 | 52 | 1 336 | 3 812 |
| 2002 Public sector | 147 | 225 | 1 481 | 507 | 36 | 18 | 18 | 49 | 1 197 | 3 685 |
| **Medical Specialists per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 2.6 | 10.9 | 32.4 | 7.4 | 1.0 | 1.2 | 2.0 | 1.5 | 42.7 | 11.2 |
| 2001 Public sector | 2.6 | 9.3 | 24.6 | 6.5 | 0.8 | 0.6 | 2.4 | 1.7 | 44.5 | 10.3 |
| 2002 Public sector | 2.3 | 9.2 | 25.0 | 6.3 | 0.7 | 0.7 | 2.2 | 1.5 | 39.3 | 9.8 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Other health professionals** | | | | | | | | | | |
| **Number of Environmental Health Practitioners[1]** | | | | | | | | | | |
| 2002 Public sector | 81 | 39 | 18 | 131 | 156 | 51 | 6 | 41 | 13 | 537 |
| **Environmental Health Practitioners per 100 000 population[1]** | | | | | | | | | | |
| 2002 Public sector | 1.26 | 1.60 | 0.30 | 1.63 | 3.11 | 2.00 | 0.74 | 1.29 | 0.43 | 1.42 |
| **Number of Medical Researchers[1]** | | | | | | | | | | |
| 2002 Public sector | - | 17 | 56 | 5 | 2 | - | - | 1 | 60 | 189 |
| **Medical Researchers per 100 000 population[1]** | | | | | | | | | | |
| 2002 Public sector | 0.00 | 0.70 | 0.95 | 0.06 | 0.04 | 0.00 | 0.00 | 0.03 | 1.97 | 0.50 |
| **Number of Occupational Therapists[1]** | | | | | | | | | | |
| 2000 Public sector | 14 | 32 | 115 | 69 | 54 | 21 | 5 | 18 | 86 | 414 |
| 2001 Public sector | 10 | 34 | 119 | 57 | 57 | 15 | 6 | 16 | 87 | 402 |
| 2002 Public sector | 11 | 39 | 121 | 59 | 60 | 21 | 5 | 17 | 85 | 419 |
| **Occupational Therapists per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 0.2 | 1.4 | 2.5 | 0.9 | 1.1 | 0.8 | 0.7 | 0.6 | 2.9 | 1.2 |
| 2001 Public sector | 0.2 | 1.4 | 2.0 | 0.7 | 1.1 | 0.6 | 0.8 | 0.5 | 2.9 | 1.1 |
| 2002 Public sector | 0.2 | 1.6 | 2.0 | 0.7 | 1.2 | 0.8 | 0.6 | 0.5 | 2.8 | 1.1 |
| **Number of Pharmacists[1]** | | | | | | | | | | |
| 2000 Public sector | 141 | 52 | 238 | 253 | 97 | 58 | 16 | 48 | 182 | 1 085 |
| 2001 Public sector | 115 | 73 | 268 | 279 | 116 | 82 | 22 | 75 | 219 | 1 260 |
| 2002 Public sector | 109 | 84 | 275 | 272 | 109 | 74 | 23 | 62 | 222 | 1 238 |
| **Pharmacists per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 2.3 | 2.3 | 5.1 | 3.3 | 2.0 | 2.3 | 2.3 | 1.6 | 6.1 | 3.1 |
| 2001 Public sector | 1.8 | 3.0 | 4.6 | 3.5 | 2.2 | 3.1 | 3.1 | 2.4 | 7.3 | 3.4 |
| 2002 Public sector | 1.7 | 3.5 | 4.6 | 3.4 | 2.2 | 2.9 | 2.8 | 1.9 | 7.3 | 3.3 |
| **Number of Physiotherapists[1]** | | | | | | | | | | |
| 2000 Public sector | 37 | 27 | 120 | 115 | 42 | 13 | 4 | 11 | 85 | 454 |
| 2001 Public sector | 28 | 33 | 116 | 111 | 42 | 9 | 5 | 14 | 101 | 459 |
| 2002 Public sector | 19 | 29 | 125 | 118 | 45 | 11 | 4 | 20 | 91 | 462 |
| **Physiotherapists per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 0.60 | 1.20 | 2.60 | 1.50 | 0.90 | 0.50 | 0.60 | 0.40 | 2.90 | 1.30 |
| 2001 Public sector | 0.45 | 1.37 | 1.99 | 1.40 | 0.81 | 0.34 | 0.70 | 0.45 | 3.37 | 1.24 |
| 2002 Public sector | 0.30 | 1.19 | 2.11 | 1.47 | 0.90 | 0.43 | 0.49 | 0.63 | 2.99 | 1.22 |
| **Number of Psychologists[1]** | | | | | | | | | | |
| 2000 Public sector | 23 | 11 | 97 | 35 | 5 | 2 | 1 | 10 | 54 | 238 |
| 2001 Public sector | 25 | 10 | 107 | 38 | 14 | 1 | 2 | 12 | 49 | 259 |
| 2002 Public sector | 25 | 12 | 114 | 36 | 14 | 1 | 2 | 10 | 52 | 267 |
| **Psychologists per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 0.40 | 0.50 | 2.10 | 0.50 | 0.10 | 0.10 | 0.10 | 0.30 | 1.80 | 0.70 |
| 2001 Public sector | 0.40 | 0.42 | 1.84 | 0.48 | 0.27 | 0.04 | 0.28 | 0.38 | 1.63 | 0.70 |
| 2002 Public sector | 0.39 | 0.49 | 1.92 | 0.45 | 0.28 | 0.04 | 0.25 | 0.31 | 1.71 | 0.71 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Number of Radiographers[1]** | | | | | | | | | | |
| 2000 Public sector | 237 | 192 | 634 | 361 | 81 | 44 | 21 | 63 | 483 | 2 116 |
| 2001 Public sector | 233 | 166 | 606 | 343 | 90 | 41 | 23 | 61 | 496 | 2 061 |
| 2002 Public sector | 217 | 153 | 587 | 334 | 93 | 41 | 22 | 62 | 497 | 2 009 |
| **Radiographers per 100 000 population[1]** | | | | | | | | | | |
| 2000 Public sector | 3.9 | 8.5 | 13.7 | 4.7 | 1.7 | 1.7 | 3.1 | 2.1 | 16.3 | 6.1 |
| 2001 Public sector | 3.7 | 6.9 | 10.4 | 4.3 | 1.7 | 1.6 | 3.2 | 1.9 | 16.5 | 5.6 |
| 2002 Public sector | 3.4 | 6.3 | 9.9 | 4.2 | 1.9 | 1.6 | 2.7 | 1.9 | 16.3 | 5.3 |
| **Total health sector posts** | | | | | | | | | | |
| **Total number of health sector posts[2]** | | | | | | | | | | |
| 2001 Public sector | 97 929 | 14 103 | 42 899 | 39 591 | 22 603 | 9 472 | 3 820 | 15 570 | 21 659 | 268 122 |
| 2002 Public sector | 29 752 | 14 284 | 43 148 | 41 401 | 18 082 | 9 843 | 3 937 | 15 756 | 21 328 | 197 898 |
| **Percentage of health sector posts vacant[2]** | | | | | | | | | | |
| 2001 Public sector | 83.9 | 48.1 | 48.1 | 34.2 | 44.2 | 36.5 | 45.9 | 49.1 | 34.3 | 57.3 |
| 2002 Public sector | 51.6 | 48.9 | 47.4 | 35.6 | 30.1 | 38.6 | 45.2 | 50.5 | 34.7 | 42.5 |
| **Community Service Professionals** | | | | | | | | | | |
| **Number of CSP Dentists** | | | | | | | | | | |
| 2001[3] | 15 | 10 | 12 | 32 | 15 | 25 | 8 | 26 | 10 | 164 |
| **Number of CSP Doctors** | | | | | | | | | | |
| 2001[3] | 149 | 79 | 126 | 271 | 150 | 107 | 34 | 97 | 141 | 1 194 |
| **Number of CSP Pharmacists** | | | | | | | | | | |
| 2001[3] | 33 | 39 | 68 | 82 | 33 | 39 | 5 | 31 | 48 | 406 |
| 2003[4] | 27 | 22 | 70 | 69 | 22 | 19 | 6 | 27 | 57 | 341 |

| | African | Coloured | Indian/ Asian | White | All groups |
|---|---|---|---|---|---|
| **Dental** | | | | | |
| **Number of Dental Practitioners[1]** | | | | | |
| 2001 Public sector | 172 | 45 | 125 | 292 | 634 |
| 2002 Public sector | 170 | 40 | 137 | 255 | 602 |
| **Number of Dental Specialists[1]** | | | | | |
| 2001 Public sector | 4 | 0 | 9 | 32 | 45 |
| 2002 Public sector | 7 | 0 | 12 | 38 | 57 |
| **Number of Dental Therapists[1]** | | | | | |
| 2001 Public sector | 102 | 0 | 14 | 4 | 120 |
| 2002 Public sector | 106 | 0 | 13 | 4 | 123 |
| **Nursing** | | | | | |
| **Number of Enrolled Nurses[1]** | | | | | |
| 2001 Public sector | 17 227 | 2 375 | 278 | 811 | 20 691 |
| 2002 Public sector | 17 209 | 2 367 | 268 | 746 | 20 590 |
| **Number of Nursing Assistants[1]** | | | | | |
| 2001 Public sector | 21 711 | 4 920 | 409 | 1 606 | 28 646 |
| 2002 Public sector | 21 850 | 4 875 | 404 | 1 532 | 28 661 |
| **Number of Professional Nurses[1]** | | | | | |
| 2001 Public sector | 32 747 | 4 360 | 892 | 3 461 | 41 460 |
| 2002 Public sector | 31 978 | 4 184 | 903 | 3 253 | 40 318 |
| **Number of Student Nurses[1]** | | | | | |
| 2001 Public sector | 5 063 | 775 | 300 | 869 | 7 007 |
| 2002 Public sector | 5 478 | 754 | 310 | 707 | 7 249 |
| **Doctors** | | | | | |
| **Number of Medical Practitioners[1]** | | | | | |
| 2001 Public sector | 2 042 | 267 | 1 365 | 3 678 | 7 352 |
| 2002 Public sector | 2 134 | 272 | 1 372 | 3 509 | 7 287 |
| **Number of Medical Specialists[1]** | | | | | |
| 2001 Public sector | 474 | 131 | 509 | 2 698 | 3 812 |
| 2002 Public sector | 494 | 124 | 526 | 2 541 | 3 685 |
| **Other health professionals** | | | | | |
| **Number of Environmental Health Practitioners[1]** | | | | | |
| 2002 Public sector | 445 | 16 | 14 | 62 | 537 |
| **Number of Medical Researchers[1]** | | | | | |
| 2002 Public sector | 33 | 10 | 13 | 133 | 189 |
| **Number of Occupational Therapists[1]** | | | | | |
| 2001 Public sector | 136 | 49 | 50 | 167 | 402 |
| 2002 Public sector | 152 | 50 | 58 | 159 | 419 |

| | African | Coloured | Indian/ Asian | White | All groups |
|---|---|---|---|---|---|
| **Number of Pharmacists[1]** | | | | | |
| 2001 Public sector | 290 | 74 | 290 | 606 | 1 260 |
| 2002 Public sector | 297 | 79 | 280 | 582 | 1 238 |
| **Number of Physiotherapists[1]** | | | | | |
| 2001 Public sector | 191 | 62 | 74 | 132 | 459 |
| 2002 Public sector | 202 | 60 | 81 | 119 | 462 |
| **Number of Psychologists[1]** | | | | | |
| 2001 Public sector | 69 | 17 | 27 | 146 | 259 |
| 2002 Public sector | 72 | 12 | 22 | 161 | 267 |
| **Number of Radiographers[1]** | | | | | |
| 2001 Public sector | 884 | 427 | 160 | 590 | 2 061 |
| 2002 Public sector | 851 | 430 | 162 | 566 | 2 009 |
| **Total number of health sector posts[2]** | | | | | |
| 2002 Public sector | 81 478 | 13 273 | 4 575 | 14 367 | 197 898 |

1 Note: Personnel per 100 000 population (public sector) are calculated using the population excluding medical aid members so as to approximate the public sector dependent population for the relevant year.
Ref: PERSAL (2000 data extracted 2000-12-14, 2001 data extracted 2001-11-30, 2002 data extracted 2002-09-30)

2 Note:
2001: Note that this total includes 153 727 vacant posts across the various professions. Total for South Africa is the total of all the provincial figures, and does not include 476 posts within the national Department of Health (of which 379 are vacant).
It is generally considered that the Eastern Cape data may be highly inaccurate. According to Eastern Cape HR personnel (Chauke Ngoma) the number of health sector posts in the Eastern Cape as at 13/03/2002 was Filled: 29691 Vacant: 16805 Total: 46496 Percentage vacant: 36.1%
2002: Note that this total includes 84 205 vacant posts across the various professions. Total for South Africa is the total of all the provincial figures, and does not include 367 posts within the national Department of Health (of which 290 are vacant). The number of posts in 2002 is substantially lower than the total in 2001 primarily due to the reduced number of vacant posts reflected in the PERSAL system.
Environmental health practitioners were only included in the total health sector posts from 2002.
Ref: PERSAL (2001 data extracted 2001-11-30, 2002 data extracted 2002-09-30)

3 Note: Community Service Professional Posts are allocated against existing (vacant) posts, therefore these health professionals form part of the figure reported by PERSAL for the relevant profession. The national figure also includes CSPs allocated to SA Military Health Services - SAMHS (11 dentists, 40 doctors, 14 pharmacists) and is therefore greater than the sum of provincial figures.
Ref: DOH Annual Report 2000/2001

4 Note: Community Service Professional Posts are allocated against existing (vacant) posts, therefore these health professionals form part of the figure reported by PERSAL for the relevant profession. The national figure also includes CSPs allocated to SA Military Health Services - SAMHS (15) and Department of Correctional Services (7) and is therefore greater than the sum of provincial figures.
Ref: Pharmaciae Oct 2002

The National Health Accounts (NHA) and the Intergovernmental Fiscal Review 2001 remain the only readily available sources of information on health expenditure in the public sector. Unless otherwise indicated, data from the NHA are presented using 'Full' public health expenditure where 'Full' is defined as direct expenditure by the provincial and national Departments of Health (Narrow) plus by Departments of Works and Local Authorities (which is then defined as Core) plus expenditure by other national departments and institutions e.g. Defence, Road Accident Fund. The Narrow expenditure may be 25% smaller than the Full definition.

The current World Health Report [World Health Report 2002] includes selected National Health Accounts Indicators for member states for 1995 to 2000. For example, out-of-pocket expenditure as a % of total expenditure on health is given as 12.6 for 2000 (ranging from 10-6-12.6 over the period reported). Per capita total expenditure on health at average exchange rate (US$) is 255 for 2000. Note that this figure is not directly comparable with other data reported in this review, which is in Rands, but does enable cross-country comparisons.

The section also provides various indications of the degree to which South Africans are covered by medical aids. Provincial coverage rates are still calculated based on 1999 OHS as no other source exists for these data. The number of medical aid beneficiaries reported by the Medical Schemes Council is sometimes restated in subsequent reports due to late reporting of data. However the original figures are retained for the purpose of this report. The reports of the Medical Schemes Council are increasingly useful in that they provide detailed breakdowns of expenditure by type of scheme and per beneficiary per month. Trends in such expenditure can indicate areas of concern. For example the 2001 report places greater emphasis on the disproportionate rise on non-health expenditures between 2001 and 2000. Administration expenses increased by 11.2% for restricted schemes, 52.7% for open schemes and 41.7% for all excluding bargaining council schemes. While the percentage of expenditure on medicine did not change appreciably, trends within sub-categories are of concern: for example, while per beneficiary expenditure on medicine in ambulatory settings (dispensed by pharmacists and practitioners) increased by 8.0% that for medicines dispensed in private hospitals increased by 43.5% from 2000 to 2001.

**Definitions:**

**Health Expenditure % of GDP:** Percentage of national Gross Domestic Product that is spent on health care.

**Health as percentage of total expenditure:** Percentage of total (government) expenditure on health. Data are often reported for financial years, which may not correspond to calendar years. The year reported is the one with the most months in the given reporting period.

Note that provinces with central hospitals have a higher share.

**Medical Aid Coverage:** Proportion of population covered by medical schemes.

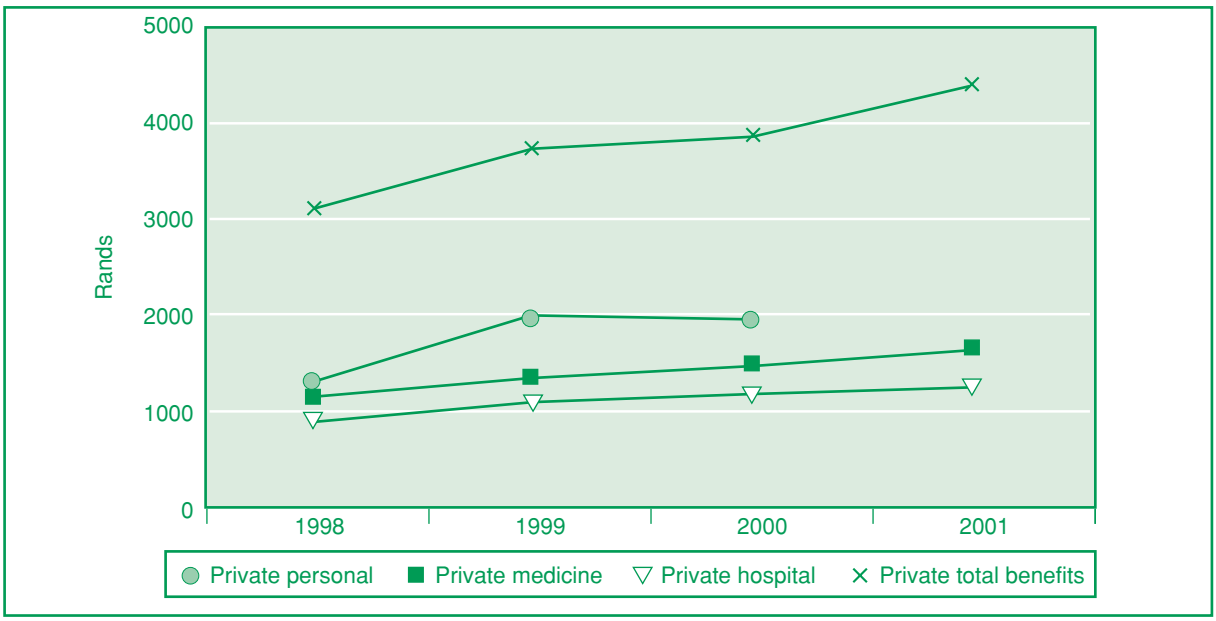
**Per Capita health expenditure:** Amount spent on health per person (in Rands) For the public sector, this is often calculated for the population without medical aid coverage.

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Health Expenditure % of GDP** | | | | | | | | | | |
| 1998 Private sector[1] | - | - | - | - | - | - | - | - | - | 3.8 |
| 1998 Public sector[2] | - | - | - | - | - | - | - | - | - | 3.3 |
| 1998 Public sector NHA[3] | - | - | - | - | - | - | - | - | - | 4.1 |
| 2000 Total[4] | - | - | - | - | - | - | - | - | - | 8.8 |
| **Health as percentage of total expenditure[5]** | | | | | | | | | | |
| 1997 Actual | 18.8 | 24.2 | 34.0 | 25.0 | 17.0 | 17.4 | 15.9 | 17.8 | 27.7 | 23.4 |
| 1998 Actual | 19.7 | 24.0 | 33.8 | 26.5 | 17.3 | 17.4 | 16.4 | 17.3 | 28.8 | 24.0 |
| 1999 Actual | 21.5 | 23.9 | 33.3 | 26.6 | 17.5 | 17.6 | 17.4 | 16.9 | 29.1 | 24.2 |
| 2000 Estimated | 20.9 | 24.2 | 32.7 | 26.7 | 17.8 | 15.9 | 16.7 | 17.0 | 30.0 | 24.0 |
| 2001 Medium term est. | 19.6 | 22.8 | 33.3 | 26.7 | 17.1 | 17.4 | 17.4 | 17.6 | 29.5 | 23.9 |
| 2002 Medium term est. | 19.0 | 22.6 | 32.8 | 26.0 | 17.1 | 17.1 | 17.2 | 17.7 | 28.7 | 23.4 |
| 2003 Medium term est. | 19.4 | 22.5 | 32.4 | 25.0 | 17.1 | 18.0 | 17.5 | 18.0 | 28.9 | 23.3 |
| **Medical Aid Coverage** | | | | | | | | | | |
| 1995 OHS[6] | 8.1 | 17.7 | 40.3 | 13.1 | 7.6 | 14.0 | 20.9 | 13.6 | 28.5 | 18.1 |
| 1996 OHS[7] | - | - | - | - | - | - | - | - | - | 18.1 |
| 1998 OHS[7] | - | - | - | - | - | - | - | - | - | 14.1 |
| 1999 OHS[6] | 10.2 | 14.8 | 26.9 | 12.7 | 8.7 | 14.2 | 19.1 | 13.0 | 29.4 | 16.4 |
| 1998 NHA[8] | 8.0 | 18.0 | 40.0 | 13.0 | 8.0 | 14.0 | 21.0 | 14.0 | 28.0 | 18.6 |
| **Based on medical schemes beneficiaries[9]** | | | | | | | | | | |
| 1998 | - | - | - | - | - | - | - | - | - | 16.6 |
| 1999 | - | - | - | - | - | - | - | - | - | 16.2 |
| 2000 | - | - | - | - | - | - | - | - | - | 16.2 |
| 2001 | - | - | - | - | - | - | - | - | - | 15.8 |

| | Eastern Cape | Free State | Gauteng | KwaZulu-Natal | Limpopo | Mpumalanga | Northern Cape | North West | Western Cape | South Africa |
|---|---|---|---|---|---|---|---|---|---|---|
| **Per Capita health expenditure** | | | | | | | | | | |
| 1996 Public PHC[10] | - | - | - | - | - | - | - | - | - | 176 |
| 1997 Public PHC[10] | - | - | - | - | - | - | - | - | - | 202 |
| 1998 Public PHC[10] | - | - | - | - | - | - | - | - | - | 186 |
| 1996 Public (narrow)[11] | 510 | 562 | 703 | 618 | 489 | 313 | 477 | 506 | 606 | 532 |
| 1997 Public (narrow)[11] | 510 | 596 | 724 | 657 | 458 | 360 | 539 | 595 | 600 | 560 |
| 1998 Public (narrow)[11] | 474 | 579 | 714 | 606 | 412 | 282 | 467 | 660 | 598 | 533 |
| 1998 Public medicine[12] | 44 | 86 | 186 | 71 | 28 | 18 | 58 | 78 | 134 | 79 |
| 1998 Public personnel[12] | 349 | 541 | 802 | 465 | 341 | 226 | 273 | 490 | 719 | 480 |
| 1998 Public total[12] | 506 | 762 | 1234 | 598 | 420 | 298 | 453 | 659 | 1 024 | 670 |
| 2000 Public sector[13] | 670 | 792 | 1107 | 786 | 570 | 465 | 644 | 535 | 1 235 | 779 |
| 2000 Excl. grants[13] | 666 | 658 | 735 | 711 | 565 | 455 | 610 | 527 | 786 | 654 |
| 1998 Private med NHA[14] | - | - | - | - | - | - | - | - | - | 916 |
| 1998 Private med[15] | - | - | - | - | - | - | - | - | - | 974 |

| | African | Coloured | Indian/ Asian | White | All groups |
|---|---|---|---|---|---|
| **Medical Aid Coverage** | | | | | |
| 1996 OHS[7] | 10.0 | 21.7 | 29.5 | 68.8 | 18.1 |
| 1998 OHS[7] | 6.3 | 19.7 | 24.0 | 63.3 | 14.1 |
| 1999 OHS[6] | 8.4 | 21.3 | 28.9 | 67.8 | 16.4 |

**Figure 7: Per capita health expenditure[16]**



1 Ref: HDR 2002
Table 6: Commitment to health: access, services and resources

2 Ref: HDR 2001
16: Priorities in Public Spending pg 196

3 Note: Using 'Full' public health expenditure where Full is defined as direct expenditure by the provincial and national Departments of Health (Narrow) plus by Departments of Works and Local Authorities (which is then defined as Core) plus expenditure by other national departments and institutions e.g. Defence, Road Accident Fund. The Narrow expenditure may be 25% smaller than the Full definition.
Ref: NHA Public 2000
Table 3.1 pg 23

4 Note: Source indicates that this is made up by 57.8% from the private sector and 42.2% by the public sector.
Ref: World Health Report 2002
Annex Table 5: Selected National Health Accounts Indicators for all Member States, estimates for 1995 to 2000

5 Ref: Fiscal Review 2001 (Table 4.6 pg 46)

6 Ref: Fiscal Review 2001 (Quoting October Household Survey 1995, October Household Survey 1999)

7 Ref: StatsSA OHS 1995-9 (Quoting October Household Survey 1996, October Household Survey 1998)

8 Note: Calculated from Total population and population without medical scheme members published in National Health Accounts
Ref: NHA Public 2000

9 Note: Calculated from total number of beneficiaries (registered and exempt/bargaining council schemes) divided by total population.
1998 - Beneficiaries: 6 991 511 Population: 42 130 500
1999 - Beneficiaries: 6 989 139 Population: 43 054 306
2000 - Beneficiaries: 7 020 223 Population: 43 291 441
2001 - Beneficiaries: 7 020 806 Population: 44 328 322
Ref: Medical Schemes 1999, Medical Schemes 2000, Medical Schemes 2001

10 Note: Figures in 99/00 Rands for Primary Health Care. Calculated using public sector dependent population.
Ref: SAHR 2000 Ch 5 (Table 6 pg 136)

11 Note: Figures in 99/00 Rands. Calculated using public sector dependent population. Narrow health expenditure is defined as direct expenditure by the provincial and national Departments of Health.
Ref: NHA Public 2000 (Table 5.1a pg 58)

12 Note: Calculated from Line Item expenditures in each province (Table A7) and public sector dependent population (Annex 4). Figures in 99/00 Rands.
'medicine' - Medicine expenditure includes medicines and vaccines, and other medical consumables.
'personnel' - Personnel expenditure includes direct personnel costs (i.e. provincial DOH employees) and other personnel costs (e.g. professional fees paid to district surgeons).
'total' - total recurrent expenditure (excludes capital expenditure) includes expenditure on personnel, medicine, transport, laboratory services, maintenance and other recurrent costs.
Ref: NHA Public 2000

13 Note: Calculated for the public sector dependent population (using the October Household Survey medical aid coverage to estimate population). Note that the calculated populations used by this source are lower than those calculated using the StatsSA mid-year estimate for 2000, but data across provinces will still be comparable.
'Excl. grants' - Excluding central hospital and training grants (conditional grants).
Ref: Fiscal Review 2001 (Table 4.7 pg 46)

14 Note: Medical Schemes Medicines Benefits paid: Percentage of total benefits attributable to medicine (including hospital medicine) (Table 4.30) multiplied by total benefits (Table 4.27) divided by total beneficiaries (Table 4.4) for all medical schemes.
Ref: NHA Private 2001

15 Note: 'med' - Includes medicines only issued by hospitals, pharmacies and dispensing practitioners (and not medical consumables).
Ref: Medical Schemes 1999

16 Note: For the private healthcare sector.
'hosp' - Includes ward and theatre fees, global per diem fees, hospital medicines and consumables.
'medicine' - Includes medicines and medical consumables, issued by hospitals, pharmacies and dispensing practitioners.
'personnel' for private sector data are defined as the total of all professional fees paid to all categories of health personnel (including medical, dental, support and allied).
'total' - Calculated from all benefits paid divided by total beneficiaries (all types of medical schemes).
Ref: Medical Schemes 1999, Medical Schemes 2000, Medical Schemes 2001

## International Indicators

An increasing selection of international comparative data are becoming available. International organisations such as WHO and the UN are also working on methods to obtain data across countries that are more standardised with respect to data collection methods and indicator definitions.

It was noted last year that the World Health Report 2000, which attempted to make summary comparisons of health systems performance and the attainment of health systems goals, was roundly criticised by many Ministries of Health as unrepresentative of their true performance, and that a panel was investigating its methodology [World Health Report 2000]. In that report, while South Africa was ranked 57th in terms of per capita expenditure on health, it was ranked a lowly 151st in terms of health goal attainment and 175th out of 191 in terms of overall systems performance. The latest issue of the World Health Report has not repeated the ranking, but rather focused on burdens of disease and reducing risks to health [World Health Report 2002].

Perhaps an easier way of comparing performance is to look at the traditional indicators of health status (such as the total fertility rate, life expectancy at birth, infant and under 5 mortality rates, HIV prevalence). Such data are made available in the annual United Nations Development Programme's Human Development Reports. These reports also provide a summary statistic on quality of life – the human development index (HDI). It was decided to provide comparative data from the same selection of countries as before, chosen as follows:

- Middle-income countries with human development indices in the middle order. Those selected were from different parts of the globe, and included countries which South Africa is sometimes compared or contrasted with in terms of health policy approaches – Algeria, Ghana, Kenya, Thailand, Brazil, Mexico, Venezuela, Turkey
- A selection of South Africa's immediate neighbours – Botswana, Lesotho, Namibia, Zimbabwe
- As an indicator of the upper extremes of each measure, the country with the highest human development index – Norway.

In addition to the health status indicators, selected demographic and socio-economic variables were also listed (populations, adult literacy rates, HDIs, GDP per capita). The availability of health human resources was also listed for each (where available). In order to maintain consistency, the figures quoted in the same sources for South Africa were also provided. It should be noted however that these figures might vary slightly from those quoted in other parts of the Health and Related Indicators section. Nonetheless, this section should not only provide contextual detail for all those that precede it, but should stimulate thought and debate on the relationships between health

inputs, outputs and outcomes, and between health and economic factors.

**Definitions:**

**Adult literacy rate:** Percentage aged 15 years and above who are literate.

**GDP per capita (PPP US$):** Gross Domestic Product (GDP) - the total output of goods and services for final use produced by an economy, by both residents and non-residents, regardless of the allocation to domestic and foreign claims. It does not include deductions for depreciation of physical capital or depletion and degradation of natural resources. Purchasing Power Parity (PPP) - A rate of exchange that accounts for price differences across countries allowing international comparisons of real output and incomes. At the PPP US$ rate, PPP US$1 has the same purchasing power in the domestic economy as $1 has in the United States.

**Health Expenditure % of GDP:** Percentage of national Gross Domestic Product that is spent on health care.

**Health Systems Performance Rank:** Rank from 1 to end given to each country according to summary comparison of health systems performance and attainment of health systems goals. Note that the methodology for this assessment is highly controversial and is being reviewed prior to reassessment.

**Healthy life expectancy (HALE):** Healthy life expectancy or health-adjusted life expectancy is based on life expectancy at birth but includes an adjustment for time spent in poor health. It is most easily understood as the equivalent number of years in full health that a newborn can expect to live based on current rates of ill-health and mortality.

**HIV prevalence (%) (total population):** Percentage of population estimated to be HIV positive. Note: this is equivalent to indicators called 'People living with HIV/AIDS'.

**Human Development Index:** The HDI is a summary measure of human development. It measures the average achievements in a country in three basic dimensions of human development:

- A long and healthy life, as measured by life expectancy at birth
- Knowledge, as measured by the adult literacy rate (with two-thirds weight) and the combined primary, secondary and tertiary gross enrolment ratio (with one-third weight)
- A decent standard of living, as measured by GDP per capita (PPP US$).

Caution: Calculation of HDI is an evolving methodology, and comparisons should not be made between years (when methods might have varied) but can be made between countries, as issued by the same source.

**Human Development Index Rank:** Rank from 1 to end given to each country according to value of HDI.

**Infant Mortality Rate:** The number of children less than one year old who die in a year, per 1000 live births during that year.

**Life expectancy at birth:** The average number of additional years a person could expect to live if current mortality trends were to continue for the rest of that person's life.

**Medical Practitioners per 100 000 population:** Ratio of the number of medical practitioners (doctors) to the population (per 100 000). Note that the measure of the number of personnel may differ for the public and private sectors and also that the population may be adjusted to be the population assumed to be dependent on that sector.

**Nurses per 100 000 population:** Ratio of the number of nurses (nursing personnel) to the population (per 100 000). Note that the measure of the number of personnel may differ for the public and private sectors and also that the population may be adjusted to be the population assumed to be dependent on that sector.

**Population:** Total number of people.

**Total Fertility Rate:** The average number of children that a woman gives birth to in her lifetime, assuming that the prevailing rates remain unchanged. The TFR is one of the most useful indicators of fertility because it gives the best picture of how many children women are currently having.

**Under 5 mortality rate:** The number of children under 5 years old who die in a year, per 1000 live births during the year. It is a combination of the infant mortality rate, plus the age 1-4 mortality rate.

| | Algeria | Botswana | Brazil | Ghana | Kenya | Lesotho | Mexico | Namibia | Norway | South Africa | Thailand | Turkey | Venezuela | Zimbabwe | Global |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Adult literacy rate** | | | | | | | | | | | | | | | |
| 1999[1] | 66.6 | 76.4 | 84.9 | 70.3 | 81.5 | 82.9 | 91.1 | 81.4 | 99.0 | 84.9 | 95.3 | 84.6 | 92.3 | 88.0 | - |
| 2000[2] | 66.7 | 77.2 | 85.2 | 71.5 | 82.4 | 83.4 | 91.4 | 82.0 | 99.0 | 85.3 | 95.5 | 85.1 | 92.6 | 88.7 | - |
| **GDP per capita (PPP US$)** | | | | | | | | | | | | | | | |
| 1999[3] | 5 063 | 6 872 | 7 037 | 1 881 | 1 022 | 1 854 | 8 297 | 5 468 | 28 433 | 8 908 | 6 132 | 6 380 | 5 495 | 2 876 | 6 980 |
| 2000[4] | 5 308 | 7 184 | 7 625 | 1 964 | 1 022 | 2 031 | 9 023 | 6 431 | 29 918 | 9 401 | 6 402 | 6 974 | 5 794 | 2 635 | 7 446 |
| **Health Expenditure % of GDP** | | | | | | | | | | | | | | | |
| 1998 Public sector[5] | 2.6 | 2.5 | 2.9 | 1.8 | 2.4 | - | - | 4.1 | - | 3.3 | 1.9 | - | 2.6 | - | - |
| 1998 Private sector[6] | 1.0 | 1.5 | 3.6 | 2.9 | 5.5 | - | 2.8 | 3.3 | 2.2 | 3.8 | 4.1 | 1.4 | 1.6 | 4.0 | - |
| 2000 Total[7] | 3.6 | 6.0 | 8.3 | 4.2 | 8.3 | 6.3 | 5.4 | 7.1 | 7.8 | 8.8 | 3.7 | 5.0 | 4.7 | 7.3 | - |
| **Health Systems Performance Rank** | | | | | | | | | | | | | | | |
| 1997[8] | 81 | 169 | 125 | 135 | 140 | 183 | 61 | 168 | 11 | 175 | 47 | 70 | 54 | 155 | - |
| **Healthy life expectancy (HALE)** | | | | | | | | | | | | | | | |
| 2000[9] | - | - | - | - | - | - | - | - | - | 43.0 | - | - | - | - | - |
| 2001[9] | 57.8 | 32.9 | 56.7 | 47.8 | 40.8 | 33.4 | 63.8 | 40.4 | 70.8 | 41.3 | 58.6 | 59.8 | 61.1 | 31.3 | - |
| **HIV prevalence (%) (total population)** | | | | | | | | | | | | | | | |
| 1999 age 15-49[10] | 0.07 | 35.80 | 0.57 | 3.60 | 13.95 | 23.57 | 0.29 | 19.54 | 0.07 | 19.94 | 2.15 | 0.01 | 0.49 | 25.06 | 1.10 |
| 2001 age 15-49 [11] | 0.10 | 38.80 | 0.65 | 3.00 | 15.01 | 31.00 | 0.28 | 22.50 | 0.08 | 20.10 | 1.79 | 0.10 | 0.50 | 33.73 | 1.20 |
| 2002 age 15-49[12] | - | - | - | - | - | - | - | - | - | 15.60 | - | - | - | - | - |
| **Human Development Index** | | | | | | | | | | | | | | | |
| 1999[3] | 0.693 | 0.577 | 0.750 | 0.542 | 0.514 | 0.541 | 0.790 | 0.601 | 0.939 | 0.702 | 0.757 | 0.735 | 0.765 | 0.554 | 0.716 |
| 2000[4] | 0.697 | 0.572 | 0.757 | 0.548 | 0.513 | 0.535 | 0.796 | 0.610 | 0.942 | 0.695 | 0.762 | 0.742 | 0.770 | 0.551 | 0.722 |
| **Human Development Index Rank** | | | | | | | | | | | | | | | |
| 1999[3] | 100 | 114 | 69 | 119 | 123 | 120 | 51 | 111 | 1 | 94 | 66 | 82 | 61 | 117 | - |
| 2000[4] | 106 | 126 | 73 | 129 | 134 | 132 | 54 | 122 | 1 | 107 | 70 | 85 | 69 | 128 | - |

| | Algeria | Botswana | Brazil | Ghana | Kenya | Lesotho | Mexico | Namibia | Norway | South Africa | Thailand | Turkey | Venezuela | Zimbabwe | Global |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Infant Mortality Rate** | | | | | | | | | | | | | | | |
| 1999[13] | 36.0 | 46.0 | 34.0 | 63.0 | 76.0 | 93.0 | 27.0 | 56.0 | 4.0 | 54.0 | 26.0 | 40.0 | 20.0 | 60.0 | 56.0 |
| 2000[14] | 50.0 | 74.0 | 32.0 | 58.0 | 77.0 | 92.0 | 25.0 | 56.0 | 4.0 | 55.0 | 25.0 | 38.0 | 20.0 | 73.0 | 56.0 |
| **Life expectancy at birth** | | | | | | | | | | | | | | | |
| 1999[3] | 69.3 | 41.9 | 67.5 | 56.6 | 51.3 | 47.9 | 72.4 | 44.9 | 78.4 | 53.9 | 69.9 | 69.5 | 72.7 | 42.9 | 66.7 |
| 2000[4] | 69.6 | 40.3 | 67.7 | 56.8 | 50.8 | 45.7 | 72.6 | 44.7 | 78.5 | 52.1 | 70.2 | 69.8 | 72.9 | 42.9 | 66.9 |
| **Medical Practitioners per 100 000 population** | | | | | | | | | | | | | | | |
| 1998[15] | 84.6 | 23.8 | 127.2 | 6.2 | 13.2 | 5.4 | 186.4 | 29.5 | 413.0 | 56.3 | 24.0 | 121.0 | 236.3 | 13.9 | - |
| **Nurses per 100 000 population** | | | | | | | | | | | | | | | |
| 1998[15] | 297.8 | 219.1 | 41.3 | 72.0 | 90.1 | 60.1 | 86.5 | 168.0 | 1 840.0 | 471.8 | 87.0 | 109.0 | 64.4 | 128.7 | - |
| **Population (millions)** | | | | | | | | | | | | | | | |
| 2001[16] | 31.0 | 1.6 | 171.8 | 19.9 | 29.8 | 2.2 | 99.6 | 1.8 | 4.5 | 43.6 | 62.4 | 66.3 | 24.6 | 11.4 | 6 137 |
| 2002[16] | 31.4 | 1.6 | 173.8 | 20.2 | 31.1 | 2.2 | 101.7 | 1.8 | 4.5 | 43.6 | 62.6 | 67.3 | 25.1 | 12.3 | 6 215 |
| **Total Fertility Rate** | | | | | | | | | | | | | | | |
| 2000[17] | 3.3 | 4.4 | 2.3 | 4.6 | 4.6 | 4.8 | 2.8 | 5.3 | 1.8 | 3.1 | 2.1 | 2.7 | 3.0 | 5.0 | 2.8 |
| **Under 5 mortality rate** | | | | | | | | | | | | | | | |
| 1999[13] | 41.0 | 59.0 | 40.0 | 101.0 | 118.0 | 134.0 | 33.0 | 70.0 | 4.0 | 69.0 | 30.0 | 48.0 | 23.0 | 90.0 | 80.0 |
| 2000[14] | 65.0 | 101.0 | 38.0 | 102.0 | 120.0 | 132.0 | 30.0 | 69.0 | 4.0 | 70.0 | 29.0 | 45.0 | 23.0 | 117.0 | 81.0 |

1 Note: Adult literacy rates for Norway were not measured but were assumed for HDI calculation purposes.
Ref: HDR 2001 (Table 1: Human Development Index pg 142)

2 Note: Adult literacy rates for Norway were not measured but were assumed for HDI calculation purposes.
Ref: HDR 2002 (Table 1: Human Development Index)

3 Ref: HDR 2001 (Table 1: Human Development Index pg 142)

4 Ref: HDR 2002 (Table 1: Human Development Index)

5 Ref: HDR 2001 (Table 16: Priorities in Public Spending pg 196)

6 Ref: HDR 2002 (Table 6: Commitment to health: access, services and resources)

7 Note: Source indicates that this is made up by 57.8% from the private sector and 42.2% by the public sector (for South Africa).
Ref: World Health Report 2002 (Annex Table 5: Selected National Health Accounts Indicators for all Member States, estimates for 1995 to 2000)

8 Ref: World Health Report 2000

9 Ref: World Health Report 2002

10 Ref: HDR 2001 (Table 7: Leading Global Health Crises and Challenges pg 163)

11 Ref: HDR 2002 (Table 7: Leading global health crises and challenges)

12 Ref: HIV Household Survey 2002

13 Ref: HDR 2001 (Table 8: Survival: Progress and Setbacks pg 167)

14 Ref: HDR 2002 (Table 8: Survival: progress and setbacks)

15 Note: Not all country data are for 1998 exactly, but most are around 1998. Data presumably includes both public and private sector personnel. Occupational categories are not defined and therefore may not be entirely comparable with other data sources. These data are for 'Physicians' and 'Nurses'.
Ref: WHOSIS

16 Ref: PRB Pop Data Sheet 2001, PRB Pop Data Sheet 2002

17 Ref: HDR 2001 (Table 5: Demographic Trends pg 155)

## Decentralisation

In December 2000 the entire country was divided into a set of new local government structures, namely 6 category A municipalities (Metropolitan Councils), 47 category C municipalities (District Councils) and 232 category B municipalities (Local Councils). These 47 category C municipalities and 6 category A municipalities will comprise 53 'health districts'. In the case of category C municipalities, one or more category B municipalities can be grouped together to form a 'health sub-district'. In the case of a category A municipality, it may be sub-divided into smaller geographic administrative units which would then form 'health sub-districts'. Thus the South African terminology 'health sub-district' would be equivalent to the World Health Organization terminology of 'health district' and also equivalent to the 'old health districts' that were in place prior to the final local government demarcation process [SAHR 2001 Ch 2

Basic information on the new municipal structures is provided for each province. Population estimates for 2002 based on Census 96 [StatsSA Mid-Year Est. Hedberg] and land area ($km^2$) [Demarcation Board] are given for each category B municipality. Note that the summed area figures do not correspond exactly with the provincial totals given earlier in the Health and Related Indicators section, mostly due to rounding errors and problems

introduced by cross-border municipalities. An additional source of confusion is that there is an ongoing review of the position of the cross-border municipalities. Several districts have also changed their names since the publication of the 2001 Health Review.

New information added this year from the District Health Information System [DHIS] includes the number of health facilities in each district, and selected health indicators based on the Minimum Data Sets for PHC and public hospitals. Routine data collection across the country are still in the early stages, and these data should be interpreted with caution. Specific notes are included with the data where possible and the following general issues should be taken into consideration:

- Health facilities data are for the public sector.
- Indicator data are based on public and semi-private (e.g. SANTA) health facility data. The (annualised) indicators below have been extracted from the District Health Information Software (DHIS). See table below for an overview of the number of data elements collected by each province and current data input coverages. Even if the indicator values generally provide a clear picture of the situation, they must be used with caution due to a number of factors that might cause bias:
  - Several provinces only started collecting new MDS data in April 2000.
  - Around 70%-75% of expected data for 2002 were available at the time of this analysis. All indicators are annualised, but modest differences between the three years might therefore be caused by data completeness differences.
  - There are known problems with the Census 96 data used in most denominators, in particular significant under-estimation of young children for some areas. This would in particular affect ANC coverage, diarrhoea incidence, and immunisation coverage since those indicators use mid-year estimates for children under 1 year as the denominator. Data from the Census 2001, expected released in April 2003, will hopefully enable more accurate calculations.
  - Significant cross-border patient flows explain many of the very high or very low indicator values. For instance, a large percentage of people in Alfred Nzo District Municipality (Eastern Cape, generally low coverage rates) use health facilities in Sisonke District Municipality (KwaZulu-Natal, generally high coverage rates) due to infrastructure and possibly quality of services in the area. As can be seen from the map illustration below, the two Local Municipalities in Alfred Nzo - Umzimvubu and Umzimkulu - are split with Sisonke in between. A number of patients are also Lesotho residents.
  - There are still gaps and errors in the data set, even if overall data

quality has improved considerably over the last 3 years. Data quality is of particular concern in the provinces that started collecting MDS data (see Table 1 below).

- Where data are only collected by sub-sets of a province, or there are major omissions in data collection, these sections have been left blank, to avoid creating a distorted view of the data

The tables below will therefore be updated as better and more complete routine data and/or population data become available.

As an indication of the completeness of data collection from the DHIS, monthly data input coverage is used. This represents the percentage of expected data sets (number of facilities sending data and number of months of year), not the total number of expected single data records. In other words, a facility might submit data but they might not always be complete. This has up to now been a particular problem with some hospitals, and with one or two PHC data elements like 'Condoms distributed'. Random gaps are usually filled in by interpolation if the facility is unable to provide the exact figure – careful analysis has shown that such trend values introduce errors so small that they are well within the overall error margins in the data as it is collected in the facilities.

**Table 1: Number of data elements and monthly data input coverage by province [Personal communication with C Hedberg: extracted from HISP draft progress report to NHISSA, Jan 2002]**

| | | Monthly Data Input Coverage | | | |
|---|---|---|---|---|---|
| | Number of data elements | Calendar years | | Financial years | |
| | 2002 | 1998 | 1999 | 2000-01 | 2001-02 |
| Eastern Cape | 76 | 98% | 99% | 100% | 99% |
| Free State | 79 | No data | No data | 93% | 100% |
| Gauteng | 1 023 (317*) | No data | No data | 96% | 94% |
| KwaZulu-Natal | 79 | No data | Pilot areas | 92% | 99% |
| Limpopo | 60 | No data | No data | 93% | 97% |
| Mpumalanga | 120 | 50% | 60% | 91% | 99% |
| Northern Cape | 94 | 40% | 70% | 98% | 98% |
| North West | 91 | Pilot areas | Pilot areas | 98% | 99% |
| Western Cape | 97 | 99% (Jul->) | 99% | 99% | 99% |
| South Africa Minimum Data Set for PHC | 49 | 21% | 33% | 97% | 98% |
| National Hospital Minimum Data Set | 76 | No data | No data | 96% | 97% |

* Gauteng has amalgamated many data sets - no facility collects over 317 elements

**Definitions:**

**ANC coverage:** Proportion of pregnant women receiving some antenatal care. Estimated from number of 1st antenatal client (ANC) visits divided by population <1 year (as proxy for number of pregnant women). ANC coverage indicates how accessible ANC services are to pregnant women in general.

**Antenatal visits per client:** Total number of ANC visits divided by the number of 1st antenatal client (ANC) visits. This indicator is a measure of the quality of maternal care.

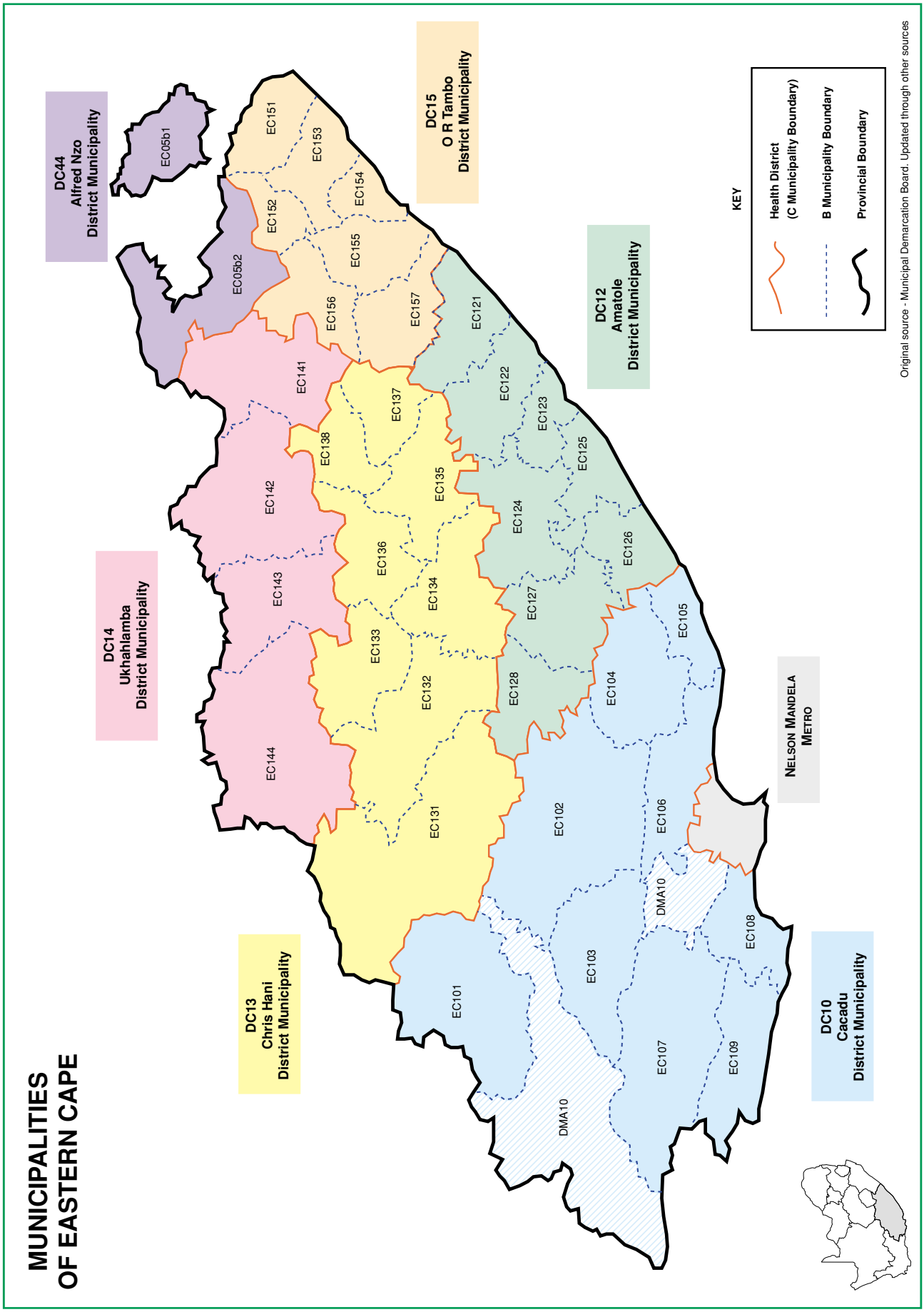
**Diarrhoea Incidence <5 per 1000:** The number of children under 5 years with diarrhoea per 1,000 children under 5 years in the target population. Diarrhoea is formally defined as 3 or more watery stools in 24 hours, but any episode diagnosed and/or treated as diarrhoea after an interview with the adult accompanying the child should be counted.

**Immunisation coverage of children <1 year:** Calculated from the number of children fully immunised (defined as first visit where all required vaccinations are completed) divided by the population <1 year.
The primary course of immunisation includes BCG, OPV 1,2 & 3, DTP-Hib 1,2 & 3, HepB 1,2 & 3, and 1st measles at 9 months.

**MUD (male urethral discharge) incidence:** Number of cases of male urethral discharge per 1000 male population age ≥ 15 years.

**Nurse clinical workload:** The number of patients seen per nurse per clinical work day. All nurses doing clinical work, whether professional, enrolled, or assistants, must be included in the clinical work days count. (Numerator: PHC total headcount, Denominator: Nurse clinical working days - Work days used for training, meetings and other non-clinical activities are NOT included in the denominator.)

**Utilisation Rate PHC:** Number of visits per person to PHC health facilities per year. Calculated from PHC headcount divided by total population (Census 96 population estimates for the appropriate year).


MUNICIPALITIES
OF EASTERN CAPE
DC44
Alfred Nzo
District Municipality
EC05b1
EC05b2
DC15
O R Tambo
District Municipality
EC151
EC153
EC152
EC154
EC155
EC156
EC157
DC12
Amatole
District Municipality
EC121
EC122
EC123
EC125
EC124
EC126
EC127
EC128
EC104
EC105
DC14
Ukhahlamba
District Municipality
EC141
EC142
EC143
EC144
EC138
EC137
EC135
EC136
EC134
EC133
EC132
EC131
DC13
Chris Hani
District Municipality
NELSON MANDELA
METRO
EC102
EC106
DMA10
EC103
EC101
EC107
EC109
EC108
DC10
Cacadu
District Municipality
KEY
Health District
(C Municipality Boundary)
B Municipality Boundary
Provincial Boundary
Original source - Municipal Demarcation Board. Updated through other sources

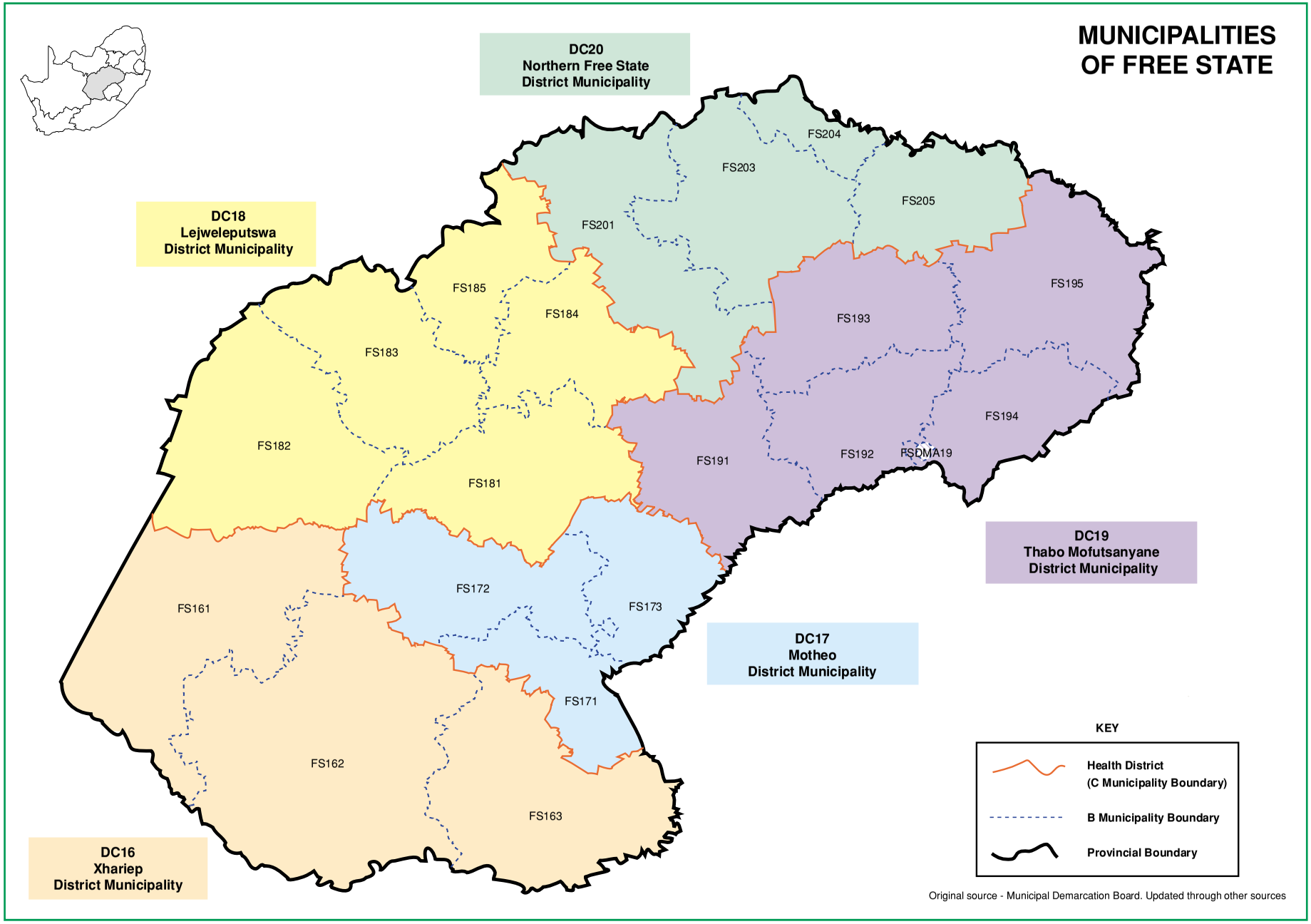
## Eastern Cape

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities: CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DC 10** | | | | | | | | | | | | | | |
| **Cacadu District Municipality** | EC101 | Camdeboo Municipality | 51 403 | 7 233 | 4 | 65 | 30 | 14 | 10 | 0 | 0 | 0 | 2 | 12 |
| | EC102 | Blue Crane Route Municipality | 38 889 | 9 831 | | | | | | | | | | |
| | EC103 | Ikwezi Municipality | 11 905 | 4 450 | | | | | | | | | | |
| | EC104 | Makana Municipality | 86 774 | 4 222 | | | | | | | | | | |
| | EC105 | Ndlambe Municipality | 53 727 | 2 001 | | | | | | | | | | |
| | EC106 | Sunday's River Valley Municipality | 49 419 | 3 508 | | | | | | | | | | |
| | EC107 | Baviaans Municipality | 17 093 | 7 724 | | | | | | | | | | |
| | EC108 | Kouga Municipality | 70 797 | 2 289 | | | | | | | | | | |
| | EC109 | Kou-Kamma Municipality | 31 924 | 3 703 | | | | | | | | | | |
| | ECDMA10 | Aberdeen Plains District Managed Area | 7 009 | 13 283 | | | | | | | | | | |
| **DC12** | | | | | | | | | | | | | | |
| **Amatole District Municipality** | EC121 | Mbashe Municipality | 276 417 | 3 030 | 6 | 204 | 36 | 2 | 14 | 0 | 1 | 1 | 3 | 19 |
| | EC122 | Mnquma Municipality | 329 813 | 3 323 | | | | | | | | | | |
| | EC123 | Great Kei Municipality | 45 354 | 1 736 | | | | | | | | | | |
| | EC124 | Amahlati Municipality | 155 632 | 4 266 | | | | | | | | | | |
| | EC125 | Buffalo City Municipality | 772 170 | 2 516 | | | | | | | | | | |
| | EC126 | Ngqushwa Municipality | 106 318 | 2 246 | | | | | | | | | | |
| | EC127 | Nkonkobe Municipality | 161 914 | 3 793 | | | | | | | | | | |
| | EC128 | Nxuba Municipality | 28 056 | 2 734 | | | | | | | | | | |
| **DC13** | | | | | | | | | | | | | | |
| **Chris Hani District Municipality** | EC131 | Inxuba Yethemba Municipality | 65 507 | 11 595 | 3 | 128 | 30 | 13 | 14 | 0 | 0 | 1 | 1 | 16 |
| | EC132 | Tsolwana Municipality | 39 708 | 6 087 | | | | | | | | | | |
| | EC133 | Inkwanca Municipality | 21 988 | 3 584 | | | | | | | | | | |
| | EC134 | Lukhanji Municipality | 202 235 | 4 191 | | | | | | | | | | |
| | EC135 | Intsika Yethu Municipality | 234 826 | 3 614 | | | | | | | | | | |
| | EC136 | Emalahleni Municipality | 141 672 | 3 238 | | | | | | | | | | |
| | EC137 | Engcobo Municipality | 169 229 | 2 259 | | | | | | | | | | |
| | EC138 | Sakhisizwe Municipality | 56 607 | 2 257 | | | | | | | | | | |
| | ECDMA13 | Mount Zebra National Park District Managed Area | 0 | 71 | | | | | | | | | | |
| **DC14** | | | | | | | | | | | | | | |
| **Ukhahlamba District Municipality** | EC141 | Elundini Municipality | 153 281 | 5 359 | 0 | 44 | 12 | 0 | 9 | 0 | 0 | 0 | 2 | 11 |
| | EC142 | Senqu Municipality | 147 913 | 6 771 | | | | | | | | | | |
| | EC143 | Maletswai Municipality | 36 470 | 4 358 | | | | | | | | | | |
| | EC144 | Gariep Municipality | 33 506 | 8 837 | | | | | | | | | | |
| | ECDMA14 | Oviston Nature Reserve District Managed Area | 0 | 77 | | | | | | | | | | |

## Eastern Cape

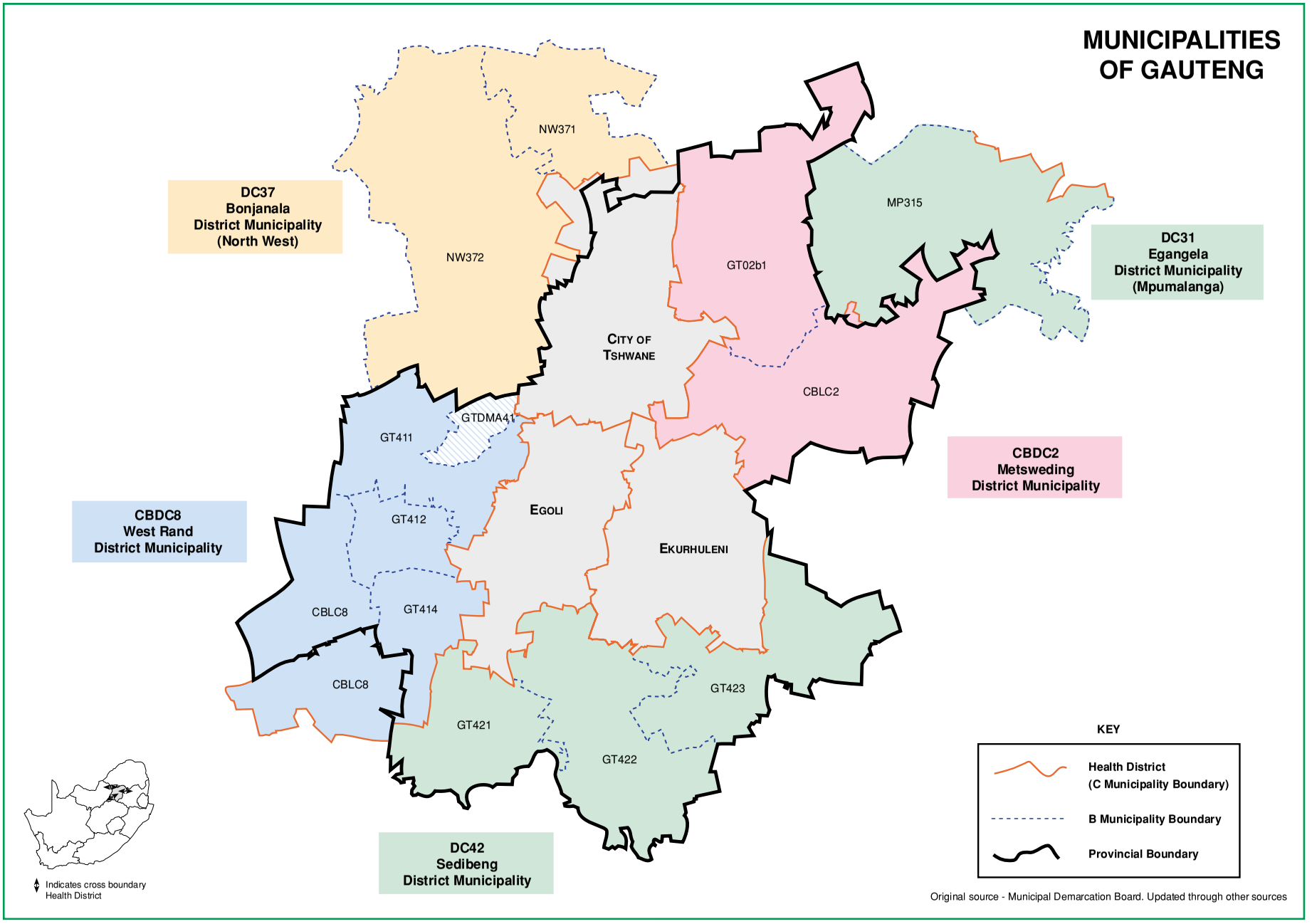
| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
| **DC15** | | | | | | | | | | | | | | |
| **O.R. Tambo District Municipality** | EC151 | Mbizana Municipality | 266 364 | 2 412 | 5 | 145 | 10 | 0 | 11 | 0 | 0 | 4 | 1 | 16 |
| | EC152 | Ntabankulu Municipality | 140 641 | 1 260 | | | | | | | | | | |
| | EC153 | Ingquza Municipality | 279 621 | 2 554 | | | | | | | | | | |
| | EC154 | Port St Johns Municipality | 163 339 | 1 288 | | | | | | | | | | |
| | EC155 | Nyandeni Municipality | 302 580 | 2 611 | | | | | | | | | | |
| | EC156 | Mhlontlo Municipality | 219 893 | 2 704 | | | | | | | | | | |
| | EC157 | King Sabata Dalindyebo Municipality | 447 704 | 3 020 | | | | | | | | | | |
| **DC44** | | | | | | | | | | | | | | |
| **Alfred Nzo District Municipality** | EC05b1 | Umzimkulu Municipality | 187 007 | 2 436 | 3 | 50 | 6 | 0 | 4 | 0 | 0 | 0 | 1 | 5 |
| | EC05b2 | Umzimvubu Municipality | 428 494 | 5 533 | | | | | | | | | | |
| **Nelson Mandela Metro** | | | 1 097 228 | 1 952 | 7 | 43 | 18 | 6 | 1 | 0 | 0 | 5 | 2 | 8 |
| **Eastern Cape** | | | **7 130 427** | **169 956** | **28** | **679** | **142** | **35** | **63** | **0** | **1** | **11** | **12** | **87** |

Note:
* Total provincial area also includes some nature reserve areas that are not indicated on the table or map.
Health facilities for the Eastern Cape are aggregated to Category C municipality level


MUNICIPALITIES OF FREE STATE
DC20 Northern Free State District Municipality
DC18 Lejweleputswa District Municipality
DC19 Thabo Mofutsanyane District Municipality
DC17 Motheo District Municipality
DC16 Xhariep District Municipality
FS204
FS203
FS205
FS201
FS185
FS184
FS183
FS182
FS181
FS193
FS195
FS194
FS191
FS192
FSDMA19
FS172
FS173
FS171
FS161
FS162
FS163
KEY
Health District (C Municipality Boundary)
B Municipality Boundary
Provincial Boundary
Original source - Municipal Demarcation Board. Updated through other sources

## Free State

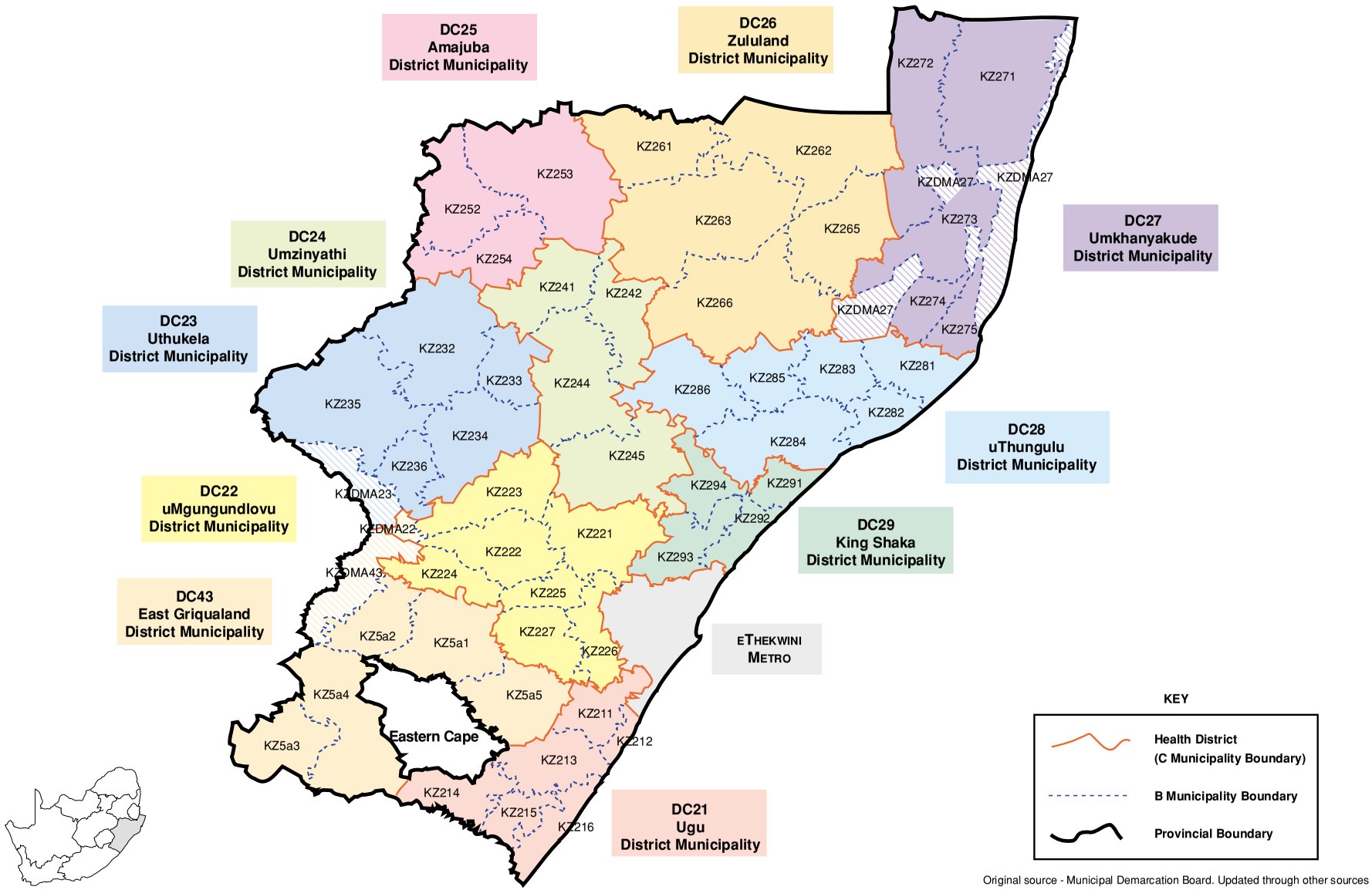
| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities: CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DC16** | | | | | | | | | | | | | | |
| **Xhariep District Municipality** | FS161 | Letsemeng Municipality | 38 604 | 10 227 | 1 | 4 | 7 | | | | | | | 0 |
| | FS162 | Kopanong Municipality | 54 150 | 15 243 | | 9 | 9 | | 1 | | | | | 1 |
| | FS163 | Mohokare Municipality | 39 316 | 8 779 | | 4 | 6 | | 3 | | | | | 3 |
| **DC17** | | | | | | | | | | | | | | |
| **Motheo District Municipality** | FS171 | Naledi Municipality | 27 026 | 3 424 | | 3 | 4 | | | | | | | 0 |
| | FS172 | Mangaung Municipality | 654 922 | 6 283 | 5 | 58 | 14 | 1 | 3 | 1 | 1 | 2 | 2 | 9 |
| | FS173 | Mantsopa Municipality | 54 344 | 4 290 | | 9 | 5 | | 1 | | | | | 1 |
| **DC18** | | | | | | | | | | | | | | |
| **Lejweleputswa District Municipality** | FS181 | Masilonyana Municipality | 71 457 | 6 797 | | 10 | 6 | | 1 | | | | | 1 |
| | FS182 | Tokologo Municipality | 29 038 | 9 326 | | 4 | 5 | | | | | | | 0 |
| | FS183 | Tswelopele Municipality | 56 038 | 6 523 | | 3 | 4 | | 1 | | | | | 1 |
| | FS184 | Matjhabeng Municipality | 517 193 | 5 155 | 2 | 25 | 10 | | 2 | | | 1 | 1 | 4 |
| | FS185 | Nala Municipality | 89 132 | 4 128 | | 4 | 6 | | 1 | | | | | 1 |
| **DC19** | | | | | | | | | | | | | | |
| **Thabo Mofutsanyane District Municipality** | FS191 | Setsoto Municipality | 119 112 | 5 966 | 1 | 11 | 5 | | 3 | | | | | 3 |
| | FS192 | Dihlabeng Municipality | 116 302 | 4 739 | 1 | 11 | 5 | 1 | 2 | | | 1 | | 3 |
| | FS193 | Nketoana Municipality | 69 756 | 5 611 | | 6 | 4 | | | | | | | 0 |
| | FS194 | Maluti a Phofung Municipality | 383 337 | 4 421 | | 35 | 9 | | 2 | | | 1 | | 3 |
| | FS195 | Phumelela Municipality | 49 151 | 7 548 | | 7 | 1 | | 1 | | | | | 1 |
| | FSDMA19 | Golden Gate Highlands National Park District Managed Area | 670 | 61 | | | | | | | | | | 0 |
| **DC20** | | | | | | | | | | | | | | |
| **Northern Free State District Municipality** | FS201 | Moqhaka Municipality | 183 822 | 7 900 | 3 | 10 | 8 | | | | | 1 | | 1 |
| | FS203 | Ngwathe Municipality | 130 231 | 7 079 | 2 | 11 | 7 | | 2 | | | | | 2 |
| | FS204 | Metsimaholo Municipality | 116 000 | 1 739 | 1 | 9 | 6 | | 1 | | | | | 1 |
| | FS205 | Mafube Municipality | 57 918 | 4 583 | | 8 | 2 | | 1 | | | | | 1 |
| **Free State** | | | **2 857 519** | **129 822** | **16** | **241** | **123** | **2** | **25** | **1** | **1** | **6** | **3** | **36** |


MUNICIPALITIES OF GAUTENG
DC37
Bonjanala
District Municipality
(North West)
NW371
NW372
MP315
DC31
Egangela
District Municipality
(Mpumalanga)
GT02b1
City of Tshwane
CBLC2
GTDMA41
GT411
CBDC2
Metsweding
District Municipality
CBDC8
West Rand
District Municipality
GT412
Egoli
Ekurhuleni
CBLC8
GT414
CBLC8
GT423
GT421
GT422
DC42
Sedibeng
District Municipality
KEY
Health District
(C Municipality Boundary)
B Municipality Boundary
Provincial Boundary
Indicates cross boundary
Health District
Original source - Municipal Demarcation Board. Updated through other sources

## Gauteng

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
| **CBDC2** | | | | | | | | | | | | | | |
| **Metsweding District Municipality** | CBLC2 | Kungwini Municipality | 78 407 | 2 117 | | 4 | | | | | | | 1 | 1 |
| | GT02b1 | Nokeng tsa Taemane Municipality | 45 873 | 1 954 | | 2 | 2 | 2 | | 1 | | | | 1 |
| **CBDC8** | | | | | | | | | | | | | | |
| **West Rand District Municipality** | CBLC8 | Merafong City Municipality | 230 758 | 1 630 | | 7 | 1 | | 1 | | | | | 1 |
| | GT411 | Mogale City Municipality | 247 493 | 1 100 | | 12 | 6 | 3 | | | | 2 | 1 | 3 |
| | GT412 | Randfontein Municipality | 118 784 | 477 | | 6 | 1 | | | | | | | 0 |
| | GT414 | Westonaria Municipality | 126 731 | 634 | | 5 | 1 | 2 | | | | | | 0 |
| | GTDMA41 | West Rand District Managed Area | 2 525 | 243 | | | | | | | | | | 0 |
| **DC42** | | | | | | | | | | | | | | |
| **Sedibeng District Municipality** | GT421 | Emfuleni Municipality | 659 303 | 987 | 4 | 29 | 6 | | | | | 2 | | 2 |
| | GT422 | Midvaal Municipality | 58 737 | 1 722 | | 5 | 2 | | | | | | | 0 |
| | GT423 | Lesedi Municipality | 73 007 | 1491 | | 6 | 4 | | 1 | | | | | 1 |
| **Ekurhuleni Metropolitan Municipality** | | | 2 234 445 | 1 924 | 7 | 73 | 12 | 12 | 1 | 0 | 0 | 5 | 0 | 6 |
| **City of Johannesburg Metropolitan Municipality** | | | 2 910 009 | 1 625 | 8 | 111 | 18 | 15 | 1 | 2 | 0 | 3 | 2 | 8 |
| **City of Tshwane Metropolitan Municipality** | | | 1 855 563 | 2 198 | 3 | 33 | 6 | 9 | 3 | 1 | 0 | 1 | 2 | 7 |
| **Gauteng** | | | **8 641 635** | **18 102** | **22** | **293** | **59** | **43** | **7** | **4** | **0** | **13** | **6** | **30** |

# MUNICIPALITIES OF KWAZULU-NATAL




Original source - Municipal Demarcation Board. Updated through other sources

## KwaZulu-Natal

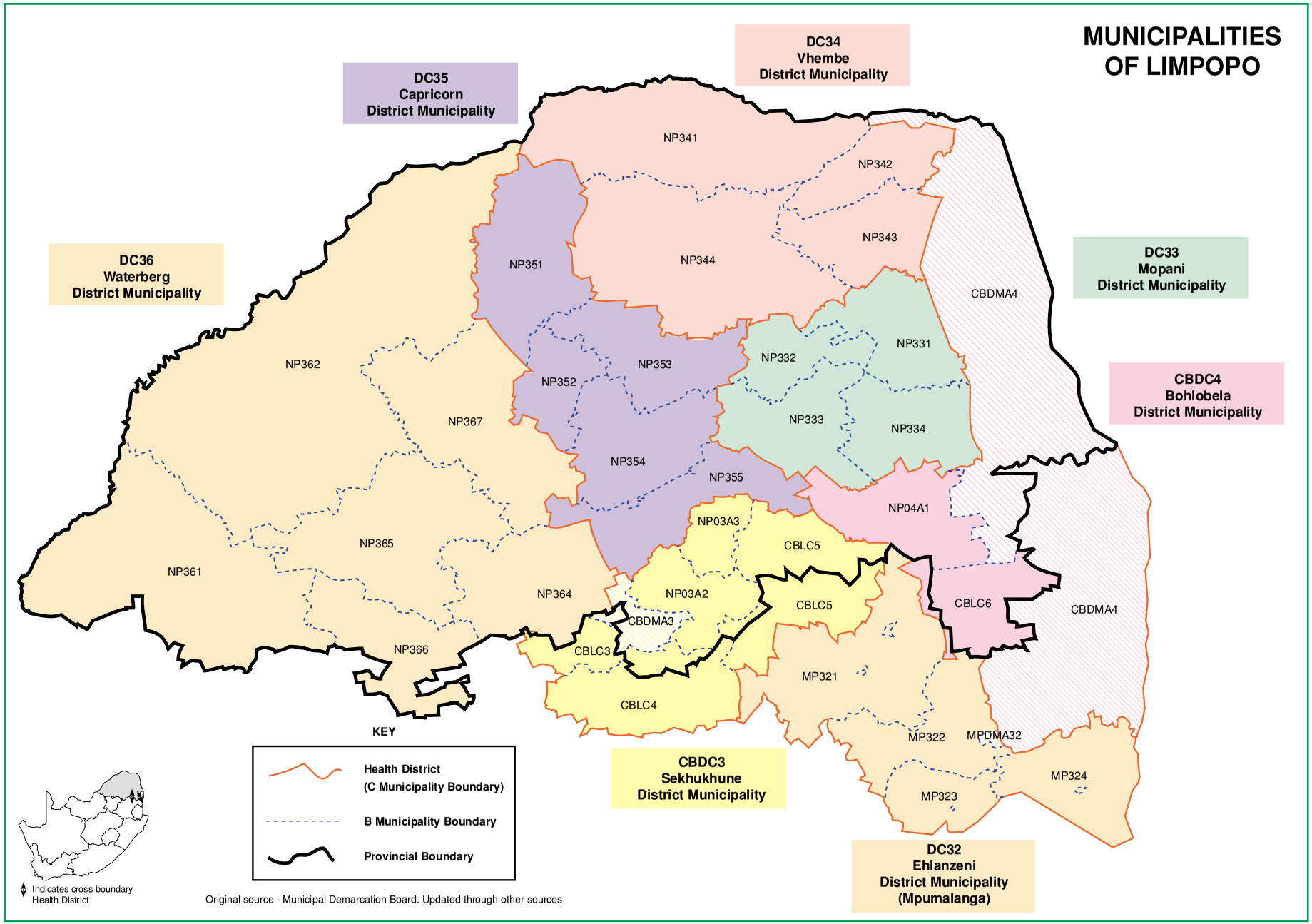
| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities: CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DC21** | | | | | | | | | | | | | | |
| **Ugu District Municipality** | KZ211 | Vulamehlo Municipality | 111 900 | 966 | | 7 | | | | | | | | 0 |
| | KZ212 | Umdoni Municipality | 59 341 | 238 | | 4 | 4 | | 1 | | | | | 1 |
| | KZ213 | Umzumbe Municipality | 180 366 | 1 259 | | 12 | | | | | | | | 0 |
| | KZ214 | uMuziwabantu Municipality | 89 877 | 1 107 | | 6 | 2 | | 1 | | | | | 1 |
| | KZ215 | Ezingoleni Municipality | 51 487 | 630 | | 3 | | | | | | | | 0 |
| | KZ216 | Hibiscus Coast Municipality | 211 170 | 839 | | 15 | 8 | | 2 | | | 1 | | 3 |
| **DC22** | | | | | | | | | | | | | | |
| **uMgungundlovu District Municipality** | KZ221 | uMshwathi Municipality | 124 939 | 1 811 | | 4 | 2 | | 1 | | | | | 1 |
| | KZ222 | uMngeni Municipality | 76 354 | 1 565 | | 3 | 2 | | | | | | 1 | 1 |
| | KZ223 | Mooi Mpofana Municipality | 27 129 | 1 736 | 1 | 3 | 1 | | | | | | | 0 |
| | KZ224 | Impendle Municipality | 38 693 | 946 | | 2 | 1 | | | | | | | 0 |
| | KZ225 | The Msunduzi Municipality | 574 728 | 648 | 1 | 29 | 3 | 2 | 1 | | 1 | 1 | 2 | 5 |
| | KZ226 | Mkhambathini Municipality | 50 447 | 915 | 1 | 4 | 1 | | | | | | | 0 |
| | KZ227 | Richmond Municipality | 67 981 | 1 232 | | 4 | 1 | | | | | | | 0 |
| | KZDMA22 | Highmoor/Kamberg Park District Managed Area | 113 | 167 | | | | | | | | | | 0 |
| **DC23** | | | | | | | | | | | | | | |
| **Uthukela District Municipality** | KZ232 | Emnambithi/Ladysmith Municipality | 195 435 | 2 965 | | 11 | 8 | 2 | | | | 1 | | 1 |
| | KZ233 | Indaka Municipality | 107 819 | 992 | | 6 | 3 | | | | | | | 0 |
| | KZ234 | Umtshezi Municipality | 51 709 | 2 186 | | 5 | 5 | 1 | 1 | | | | | 1 |
| | KZ235 | Okhahlamba Municipality | 130 157 | 3 483 | | 6 | 3 | | 1 | | | | | 1 |
| | KZ236 | Imbabazane Municipality | 122 932 | 718 | | 5 | 1 | | | | | | | 0 |
| | KZDMA23 | Giants Castle Game Reserve District Managed Area | 643 | 908 | | | | | | | | | | 0 |
| **DC24** | | | | | | | | | | | | | | |
| **Umzinyathi District Municipality** | KZ241 | Endumeni Municipality | 48 611 | 1 612 | | 6 | 2 | 1 | 1 | | | | | 1 |
| | KZ242 | Nqutu Municipality | 141 002 | 1 454 | | 10 | 3 | | 1 | | | | | 1 |
| | KZ244 | Msinga Municipality | 176 613 | 2 502 | | 16 | 2 | | 1 | | | | | 1 |
| | KZ245 | Umvoti Municipality | 101 130 | 2 509 | | 10 | 2 | | 1 | | | | | 1 |
| **DC25** | | | | | | | | | | | | | | |
| **Amajuba District Municipality** | KZ252 | Newcastle Municipality | 314 939 | 1 855 | | 12 | 4 | | | | | 2 | | 2 |
| | KZ253 | Utrecht Municipality | 26 190 | 3 539 | | 1 | 1 | | 1 | | | | | 1 |
| | KZ254 | Dannhauser Municipality | 108 626 | 1 516 | | 6 | | | | | | | | 0 |

## KwaZulu-Natal

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities: CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DC26** | | | | | | | | | | | | | | |
| **Zululand District Municipality** | KZ261 | eDumbe Municipality | 71 561 | 1 947 | | 6 | | 1 | | | | | | 0 |
| | KZ262 | uPhongolo Municipality | 107 596 | 3 235 | | 8 | 3 | | 1 | | | | | 1 |
| | KZ263 | Abaqulusi Municipality | 183 822 | 4 184 | | 14 | 3 | 1 | 1 | | | | 1 | 2 |
| | KZ265 | Nongoma Municipality | 206 870 | 2 185 | | 12 | 2 | | 1 | | | | | 1 |
| | KZ266 | Ulundi Municipality | 211 573 | 3 754 | | 17 | 3 | | 2 | | | | 1 | 3 |
| **DC27** | | | | | | | | | | | | | | |
| **Umkhanyakude District Municipality** | KZ271 | Umhlabuyalingana Municipality | 133 895 | 3 693 | | 15 | 4 | | 2 | | | | | 2 |
| | KZ272 | Jozini Municipality | 166 030 | 3 082 | | 16 | 5 | | 2 | | | | | 2 |
| | KZ273 | The Big 5 False Bay Municipality | 28 790 | 1 161 | | 3 | | | | | | | | 0 |
| | KZ274 | Hlabisa Municipality | 184 461 | 1 417 | | 11 | 3 | | 1 | | | | | 1 |
| | KZ275 | Mtubatuba Municipality | 28 071 | 705 | | 3 | | | | | | | | 0 |
| | KZDMA27 | St Lucia Park District Managed Area | 10 269 | 2 760 | | 1 | | | | | | | | 0 |
| **DC28** | | | | | | | | | | | | | | |
| **Uthungulu District Municipality** | KZ281 | Mbonambi Municipality | 105 365 | 1 209 | | 6 | | | | | | | | 0 |
| | KZ282 | uMhlathuze Municipality | 214 705 | 796 | | 9 | 5 | | 1 | | | 1 | | 2 |
| | KZ283 | Ntambanana Municipality | 79 596 | 1 083 | | 3 | | | | | | | | 0 |
| | KZ284 | uMlalazi Municipality | 253 130 | 2 214 | | 16 | 6 | | 3 | | | | | 3 |
| | KZ285 | Mthonjaneni Municipality | 40 319 | 1 086 | | 3 | 1 | | | | | 1 | | 1 |
| | KZ286 | Nkandla Municipality | 141 759 | 1 827 | | 15 | 2 | | 2 | | | | | 2 |
| **DC29** | | | | | | | | | | | | | | |
| **iLembe District Municipality** | KZ291 | eNdondakusuka Municipality | 122 490 | 582 | 1 | 5 | 1 | 1 | | | | 1 | | 1 |
| | KZ292 | KwaDukuza Municipality | 143 482 | 630 | | 7 | 3 | 2 | 1 | | | | | 1 |
| | KZ293 | Ndwedwe Municipality | 183 234 | 1 154 | 1 | 7 | 2 | | 1 | | | | | 1 |
| | KZ294 | Maphumulo Municipality | 136 492 | 894 | | 5 | 5 | | 2 | | | | | 2 |
| **DC43** | | | | | | | | | | | | | | |
| **Sisonke District Municipality** | KZ5a1 | Ingwe Municipality | 104 147 | 1 970 | 1 | 8 | 3 | | 1 | | | | | 1 |
| | KZ5a2 | KwaSani Municipality | 15 951 | 1 180 | 1 | 2 | 1 | | | | | | | 0 |
| | KZ5a3 | Matatiele Municipality | 11 096 | 1 417 | | 2 | 2 | | 1 | | | | | 1 |
| | KZ5a4 | Greater Kokstad Municipality | 38 034 | 2 683 | | 2 | 2 | | 1 | | | | | 1 |
| | KZ5a5 | Ixopo Municipality | 85 986 | 1 627 | | 7 | 3 | | 1 | | | | | 1 |
| | KZDMA43 | Mkhomazi Wilderness District Managed Area | 1 481 | 1 232 | | | | | | | | | | 0 |

## KwaZulu-Natal

| Category A and C Municipality | Category B Municipality | Population 2002 | Area (km²) | Number of public health facilities | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
| eThekwini Metropolitan Municipality | | 3 014 665 | 2 299 | 6 | 96 | 26 | 22 | 2 | 3 | | 3 | 3 | 11 |
| **KwaZulu-Natal** | | **9 215 201** | **92 304** | **13** | **489** | **144** | **33** | **39** | **3** | **1** | **11** | **8** | **62** |

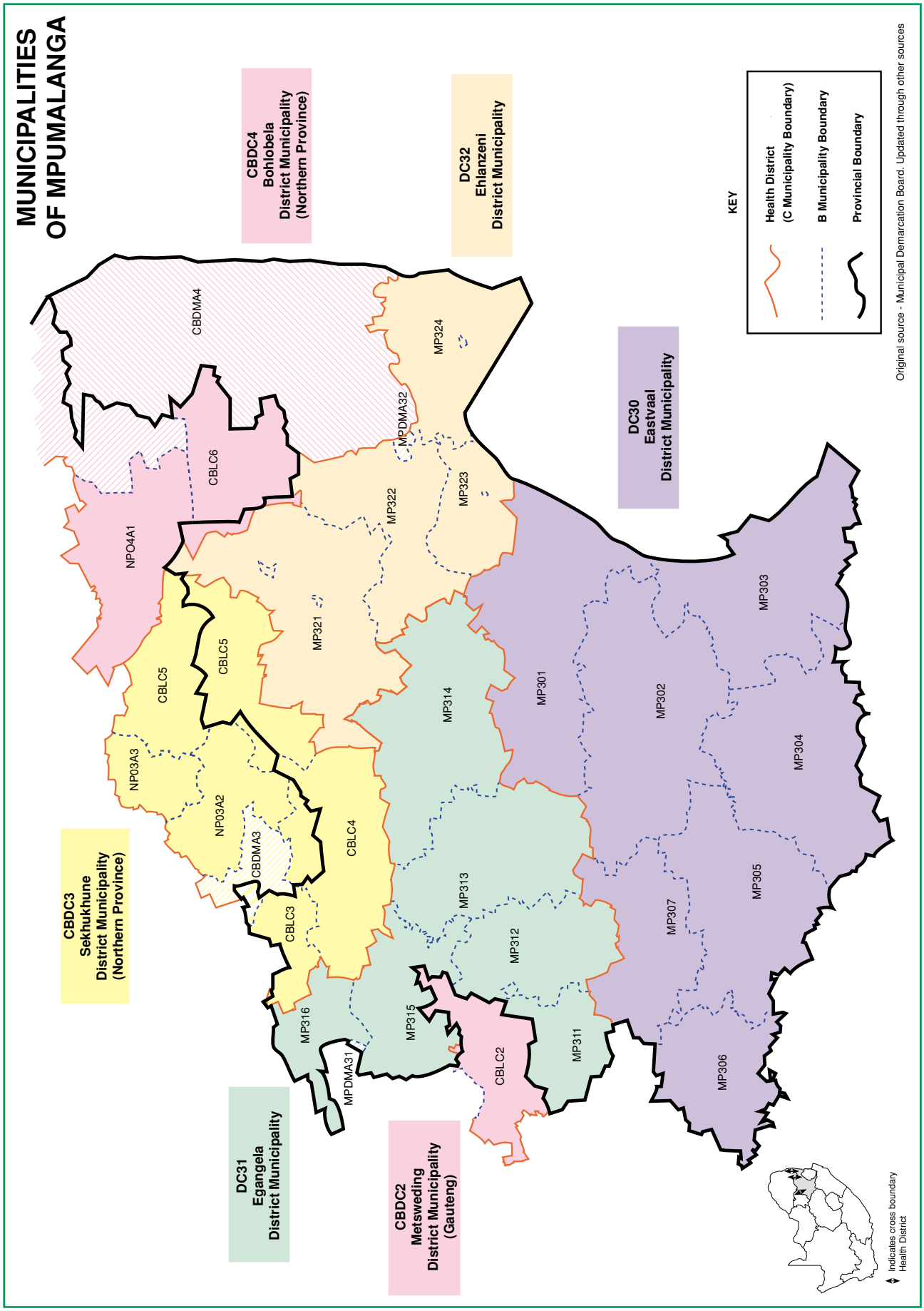

MUNICIPALITIES OF LIMPOPO
DC34 Vhembe District Municipality
DC35 Capricorn District Municipality
DC36 Waterberg District Municipality
DC33 Mopani District Municipality
CBDC4 Bohlobela District Municipality
CBDC3 Sekhukhune District Municipality
DC32 Ehlanzeni District Municipality (Mpumalanga)
NP341
NP342
NP343
NP344
NP351
NP352
NP353
NP354
NP355
NP331
NP332
NP333
NP334
NP04A1
NP03A3
NP03A2
NP362
NP367
NP365
NP361
NP364
NP366
CBDMA4
CBDMA3
CBLC5
CBLC6
CBLC3
CBLC4
MP321
MP322
MPDMA32
MP323
MP324
KEY
Health District (C Municipality Boundary)
B Municipality Boundary
Provincial Boundary
Indicates cross boundary Health District
Original source - Municipal Demarcation Board. Updated through other sources

## Limpopo

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities: CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CBDC3** | | | | | | | | | | | | | | |
| **Sekhukhune District Municipality** | CBDMA3 | Schuinsdraai Nature Reserve District Managed Area | 31 | 118 | | | | | | | | | | 0 |
| | CBLC3 | Greater Marble Hall Municipality | | | | 7 | | | | | | | | 0 |
| | CBLC4 | Greater Groblersdal Municipality | | | 1 | 7 | 2 | | 1 | | | | | 1 |
| | CBLC5 | Greater Tubatse Municipality | | | 2 | 18 | 4 | | 2 | | | | | 2 |
| | NP03A2 | Makhudutamaga Municipality | 319 953 | 2 228 | | 21 | 7 | | 2 | | | | | 2 |
| | NP03A3 | Fetakgomo Municipality | 115 008 | 1 123 | 1 | 11 | | | | | | | | 0 |
| **CBDC4** | | | | | | | | | | | | | | |
| **Bohlabela District Municipality** | CBDMA4 | Kruger National Park District Managed Area | 3 884 | 21 271 | | | | | | | | | | 0 |
| | CBLC6 | Bushbuckridge Municipality | 644 861 | 2 591 | 2 | 33 | 5 | | 2 | | | 1 | | 3 |
| | NP04A1 | Maruleng Municipality | 104 177 | 3 247 | | 9 | 2 | | 1 | | | | | 1 |
| **DC33** | | | | | | | | | | | | | | |
| **Mopani District Municipality** | NP331 | Greater Giyani Municipality | 257 531 | 2 967 | 2 | 20 | 4 | | 1 | | | | 1 | 2 |
| | NP332 | Greater Letaba Municipality | 238 217 | 1 871 | | 18 | 4 | | 2 | | | | | 2 |
| | NP333 | Greater Tzaneen Municipality | 408 849 | 3 260 | 4 | 30 | 11 | | 2 | | | 1 | | 3 |
| | NP334 | Ba-Phalaborwa Municipality | 129 063 | 3 000 | 1 | 8 | 3 | | 2 | | | | | 2 |
| **DC34** | | | | | | | | | | | | | | |
| **Vhembe District Municipality** | NP341 | Messina Municipality | 39 263 | 7 578 | | 2 | 2 | | 1 | | | | | 1 |
| | NP342 | Mutale Municipality | 82 091 | 2 293 | 1 | 14 | 3 | | 1 | | | | | 1 |
| | NP343 | Thulamela Municipality | 636 576 | 2 988 | 2 | 48 | 3 | | 2 | | | 1 | 1 | 4 |
| | NP344 | Makhado Municipality | 542 623 | 8 548 | 5 | 45 | 12 | | 3 | | | | | 3 |
| **DC35** | | | | | | | | | | | | | | |
| **Capricorn District Municipality** | NP351 | Blouberg Municipality | 179 104 | 4 541 | 2 | 14 | 3 | | 2 | | | | | 2 |
| | NP352 | Aganang Municipality | 174 485 | 1 852 | | 6 | 3 | | 1 | | | | | 1 |
| | NP353 | Molemole Municipality | 127 579 | 3 347 | | 6 | 1 | | 1 | | | | | 1 |
| | NP354 | Polokwane Municipality | 503 601 | 3 775 | 3 | 29 | 13 | | 2 | | 2 | | | 4 |
| | NP355 | Lepelle-Nkumpi Municipality | 278 337 | 3 470 | 1 | 19 | 6 | | 2 | | | | 1 | 3 |

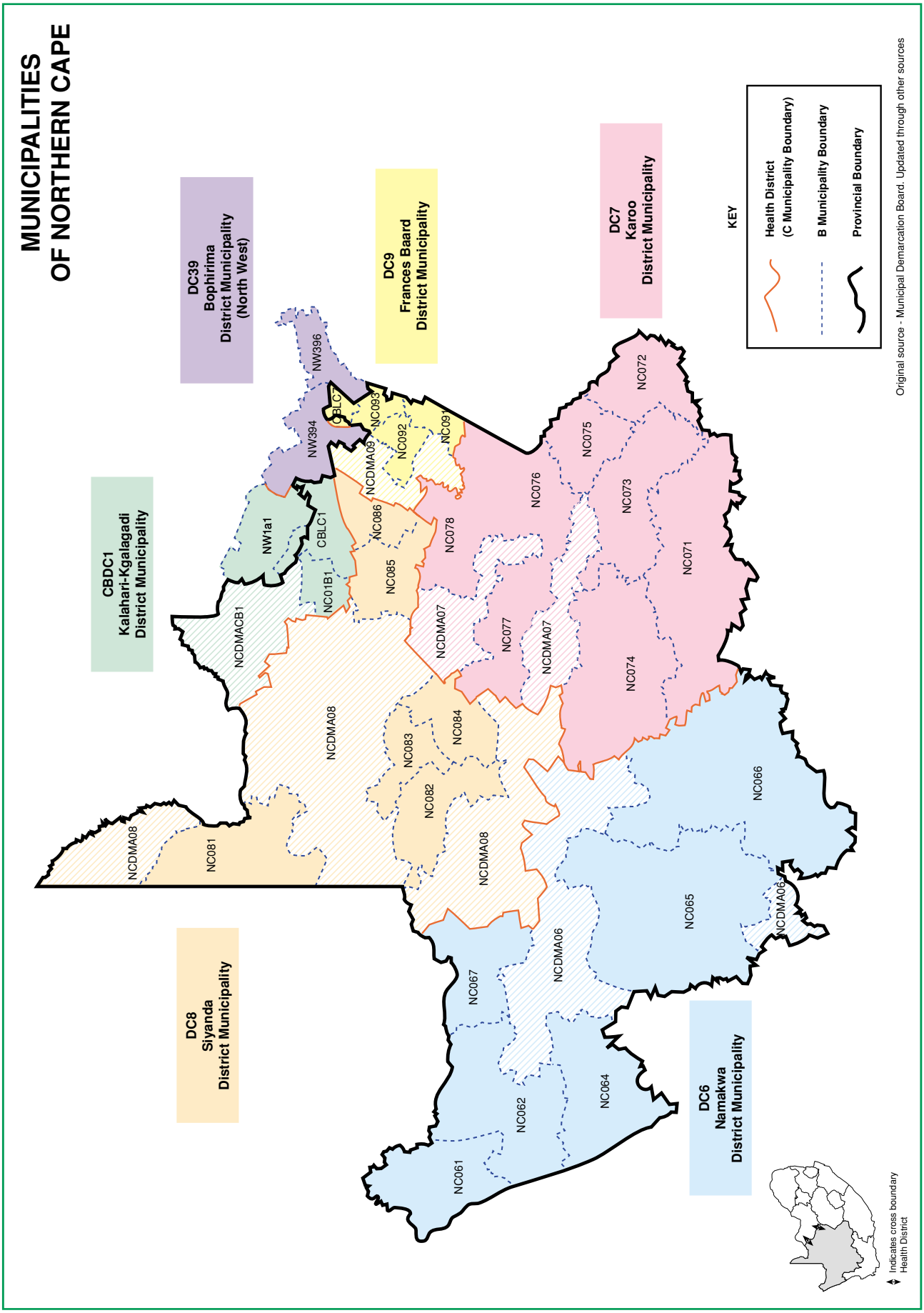
## Limpopo

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Number of public health facilities | | | | | | | | | |
| **DC36** | | | | | | | | | | | | | | |
| **Waterberg District Municipality** | NP361 | Thabazimbi Municipality | 69 747 | 9 855 | | 6 | 4 | | 1 | | | | | 1 |
| | NP362 | Lephalale Municipality | 103 095 | 19 605 | | 7 | 6 | | 2 | | | | | 2 |
| | NP364 | Mookgopong Municipality | 17 280 | 4 284 | | 3 | 1 | | | | | | | 0 |
| | NP365 | Modimolle Municipality | 59 407 | 6 228 | | 3 | 6 | | 1 | | | | | 1 |
| | NP366 | Bela-Bela Municipality | 56 459 | 3 373 | | 4 | 3 | | | | | 1 | | 1 |
| | NP367 | Mogalakwena Municipality | 333 395 | 6 184 | 1 | 26 | 9 | | 2 | | | 1 | | 3 |
| **Limpopo Province** | | | **5 424 585** | **129 479** | **25** | **382** | **111** | **0** | **33** | **0** | **2** | **5** | **3** | **43** |


MUNICIPALITIES OF MPUMALANGA
CBDC4 Bohlobela District Municipality (Northern Province)
DC32 Ehlanzeni District Municipality
DC30 Eastvaal District Municipality
CBDC3 Sekhukhune District Municipality (Northern Province)
DC31 Egangela District Municipality
CBDC2 Metsweding District Municipality (Gauteng)
CBDMA4
CBLC6
NPO4A1
MPDMA32
MP324
MP322
MP323
MP321
CBLC5
CBLC5
NP03A3
NP03A2
CBDMA3
CBLC3
CBLC4
MP314
MP313
MP312
MP316
MPDMA31
MP315
CBLC2
MP311
MP301
MP302
MP303
MP304
MP305
MP306
MP307
KEY
Health District (C Municipality Boundary)
B Municipality Boundary
Provincial Boundary
Original source - Municipal Demarcation Board. Updated through other sources
Indicates cross boundary Health District

## Mpumalanga

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities: CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CBDC3** | | | | | | | | | | | | | | |
| **Sekhukhune District Municipality** | CBLC3 | Greater Marble Hall Municipality | 111 612 | 1 747 | | 4 | 1 | | | | | | | 0 |
| | CBLC4 | Greater Groblersdal Municipality | 252 725 | 3 668 | | 6 | 12 | | 1 | | | 1 | | 2 |
| | CBLC5 | Greater Tubatse Municipality | 265 911 | 4 469 | 1 | | 2 | | | | | | | 0 |
| **DC30** | | | | | | | | | | | | | | |
| **Eastvaal District Municipality** | MP301 | Albert Luthuli Municipality | 205 419 | 5 573 | 1 | 17 | 4 | | 2 | | | | | 2 |
| | MP302 | Msukaligwa Municipality | 119 429 | 6 017 | | 12 | 4 | | 1 | | | | | 1 |
| | MP303 | Mkhondo Municipality | 112 920 | 4 868 | 1 | 9 | 5 | | 1 | | | | | 1 |
| | MP304 | Seme Municipality | 79 084 | 5 195 | 2 | 7 | 3 | 1 | 1 | | | | | 1 |
| | MP305 | Lekwa Municipality | 101 519 | 4 586 | | 7 | 4 | | 1 | | | | | 1 |
| | MP306 | Dipaleseng Municipality | 44 003 | 2 615 | 1 | 4 | 2 | | | | | | | 0 |
| | MP307 | Govan Mbeki Municipality | 236 212 | 2 959 | 2 | 11 | 5 | | 1 | | | 1 | | 2 |
| **DC31** | | | | | | | | | | | | | | |
| **Nkangala District Municipality** | MP311 | Delmas Municipality | 59 262 | 1 567 | | 3 | 6 | | 1 | | | | | 1 |
| | MP312 | Emalahleni Municipality | 266 701 | 2 673 | 2 | 15 | 10 | | 1 | | 1 | | | 2 |
| | MP313 | Middelburg Municipality | 152 502 | 4 554 | | 11 | 6 | | | | | 1 | | 1 |
| | MP314 | Highlands Municipality | 41 709 | 4 735 | 2 | 7 | 2 | | | | | | | 0 |
| | MP315 | Thembisile Municipality | 273 997 | 1 938 | 3 | 19 | 2 | | 1 | | | | | 1 |
| | MP316 | Dr JS Moroka Municipality | 292 705 | 1 402 | 6 | 21 | 2 | | 1 | | | | | 1 |
| | MPDMA31 | Mdala Nature Reserve District Managed Area | 22 | 14 | | | | | | | | | | 0 |
| **DC32** | | | | | | | | | | | | | | |
| **Ehlanzeni District Municipality** | MP321 | Thaba Chweu Municipality | 74 281 | 5 681 | | 12 | 6 | | 3 | | | | | 3 |
| | MP322 | Mbombela Municipality | 479 490 | 3 331 | 4 | 29 | 14 | | | | | 2 | 1 | 3 |
| | MP323 | Umjindi Municipality | 54 705 | 1 741 | 1 | 10 | 4 | | 1 | | | | | 1 |
| | MP324 | Nkomazi Municipality | 313 126 | 3 225 | 3 | 23 | 5 | | 2 | | | | | 2 |
| | MPDMA32 | Lowveld District Managed Area | 0 | 134 | | 1 | | | | | | | | 0 |
| **Mpumalanga** | | | **3 537 334** | **72 692** | **29** | **228** | **99** | **1** | **18** | **0** | **1** | **5** | **1** | **25** |

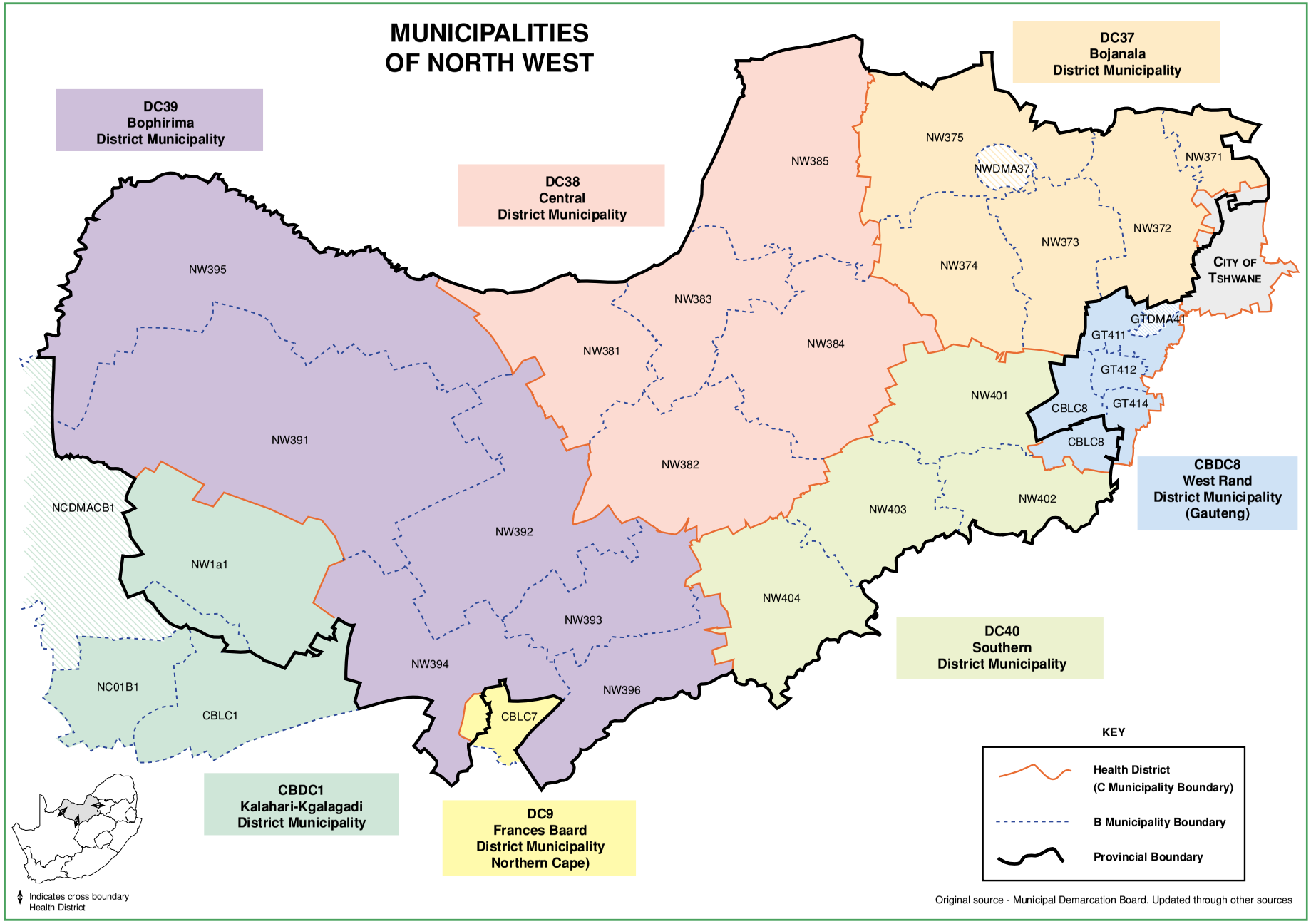

MUNICIPALITIES
OF NORTHERN CAPE
DC39
Bophirima
District Municipality
(North West)
DC9
Frances Baard
District Municipality
DC7
Karoo
District Municipality
CBDC1
Kalahari-Kgalagadi
District Municipality
DC8
Siyanda
District Municipality
DC6
Namakwa
District Municipality
KEY
Health District
(C Municipality Boundary)
B Municipality Boundary
Provincial Boundary
Original source - Municipal Demarcation Board. Updated through other sources
Indicates cross boundary
Health District
NW396
NW394
CBLC
NC093
NC092
NC091
NCDMA09
NW1a1
CBLC1
NC086
NC078
NC076
NC075
NC072
NC073
NC071
NCDMACB1
NC01B1
NC085
NCDMA07
NC077
NCDMA07
NC074
NCDMA08
NC083
NC084
NC082
NCDMA08
NC066
NCDMA08
NC081
NC065
NCDMA06
NCDMA06
NC067
NC062
NC064
NC061

## Northern Cape

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Number of public health facilities | | | | | | | | | |
| **CBDC1** | | | | | | | | | | | | | | |
| **Kgalagadi District Municipality** | CBLC1 | Ga-Segonyana M | 65 531 | 4 485 | | 2 | 5 | 1 | 1 | | | | | 1 |
| | NC01B1 | Gamagara Municipality | 15 871 | 2 468 | | 3 | 1 | 1 | | | | | | 0 |
| | NCDMACB1 | Kalahari Cross Boundary District Managed Area | 8 945 | 10 699 | | | | | | | | | | |
| **DC6** | | | | | | | | | | | | | | |
| **Namakwa District Municipality** | NC061 | Richtersveld Municipality | 12 406 | 9 670 | 1 | 2 | | 4 | 1 | | | | | 1 |
| | NC062 | Nama Khoi Municipality | 47 375 | 14 902 | | 7 | 6 | 6 | 3 | | | | | 3 |
| | NC064 | Kamiesberg Municipality | 11 655 | 11 737 | | 3 | 2 | 12 | 1 | | | | | 1 |
| | NC065 | Hantam Municipality | 20 185 | 27 975 | 2 | 2 | 4 | | 1 | | | | | 1 |
| | NC066 | Karoo Hoogland Municipality | 12 796 | 29 400 | 3 | | 3 | | | | | | | 0 |
| | NC067 | Khâi-Ma Municipality | 9 884 | 8 299 | 1 | | 1 | 6 | | | | | | 0 |
| | NCDMA06 | Namaqualand District Managed Area | 1 552 | 24 765 | | | | | | | | | | 0 |
| **DC7** | | | | | | | | | | | | | | |
| **Karoo District Municipality** | NC071 | Ubuntu Municipality | 20 831 | 20 389 | | 2 | 3 | 1 | 2 | | | | | 2 |
| | NC072 | Umsobomvu Municipality | 26 822 | 6 814 | | 5 | 2 | | 2 | | | | | 2 |
| | NC073 | Enthanjeni Municipality | 41 304 | 11 389 | 1 | 6 | 3 | | | | | 1 | | 1 |
| | NC074 | Kareeberg Municipality | 12 133 | 17 698 | 1 | 3 | 1 | | 1 | | | | | 1 |
| | NC075 | Renosterberg Municipality | 9 978 | 5 530 | | 2 | 2 | 1 | | | | | | 0 |
| | NC076 | Thembelihle Municipality | 14 021 | 6 978 | | 3 | 1 | | 1 | | | | | 1 |
| | NC077 | Siyathemba Municipality | 20 470 | 8 251 | | 3 | 3 | | 1 | | | | | 1 |
| | NC078 | Siyancuma Municipality | 35 938 | 10 027 | 1 | 4 | 3 | 3 | 1 | | | | | 1 |
| | NCDMA07 | Bo-Karoo District Managed Area | 4 878 | 15 689 | | | | | | | | | | 0 |
| **DC8** | | | | | | | | | | | | | | |
| **Siyanda District Municipality** | NC081 | Mier Municipality | 6 632 | 11 745 | 2 | | 1 | 2 | | | | | | 0 |
| | NC082 | !Kai! Garib Municipality | 61 213 | 7 450 | 1 | 3 | 7 | 7 | 2 | | | | | 2 |
| | NC083 | !Khara Hais Municipality | 80 436 | 4 308 | | 6 | 4 | 4 | 1 | | | | 1 | 2 |
| | NC084 | !Kheis Municipality | 14 917 | 5 522 | 1 | 1 | 2 | 3 | | | | | | 0 |
| | NC085 | Tsantsabane Municipality | 32 606 | 5 947 | | 3 | 2 | 4 | 2 | | | | | 2 |
| | NC086 | Kgatelopele Municipality | 17 833 | 3 650 | 1 | | 1 | 1 | | | | | | 0 |
| | NCDMA08 | Benede Oranje District Managed Area | 9 166 | 65 149 | | | | | | | | | | 0 |

## Northern Cape

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
| **DC9** | | | | | | | | | | | | | | |
| **Frances Baard District Municipality** | CBLC7 | Phokwane Municipality | 62 498 | 830 | | 3 | 2 | | 1 | | | | | 1 |
| | NC091 | Sol Plaatjie Municipality | 215 857 | 1 877 | 2 | 11 | | | | | | 1 | 2 | 3 |
| | NC092 | Dikgatlong Municipality | 39 056 | 2 378 | | 7 | 2 | 1 | 1 | | | | | 1 |
| | NC093 | Magareng Municipality | 23 745 | 1 542 | | 2 | 1 | 2 | 2 | | | | | 2 |
| | NCDMA09 | Diamondfields District Managed Area | 4 819 | 5 720 | | | | | | | | | | 0 |
| **Northern Cape** | | | **961 353** | **363 283** | **17** | **83** | **62** | **59** | **24** | **0** | **0** | **2** | **3** | **29** |

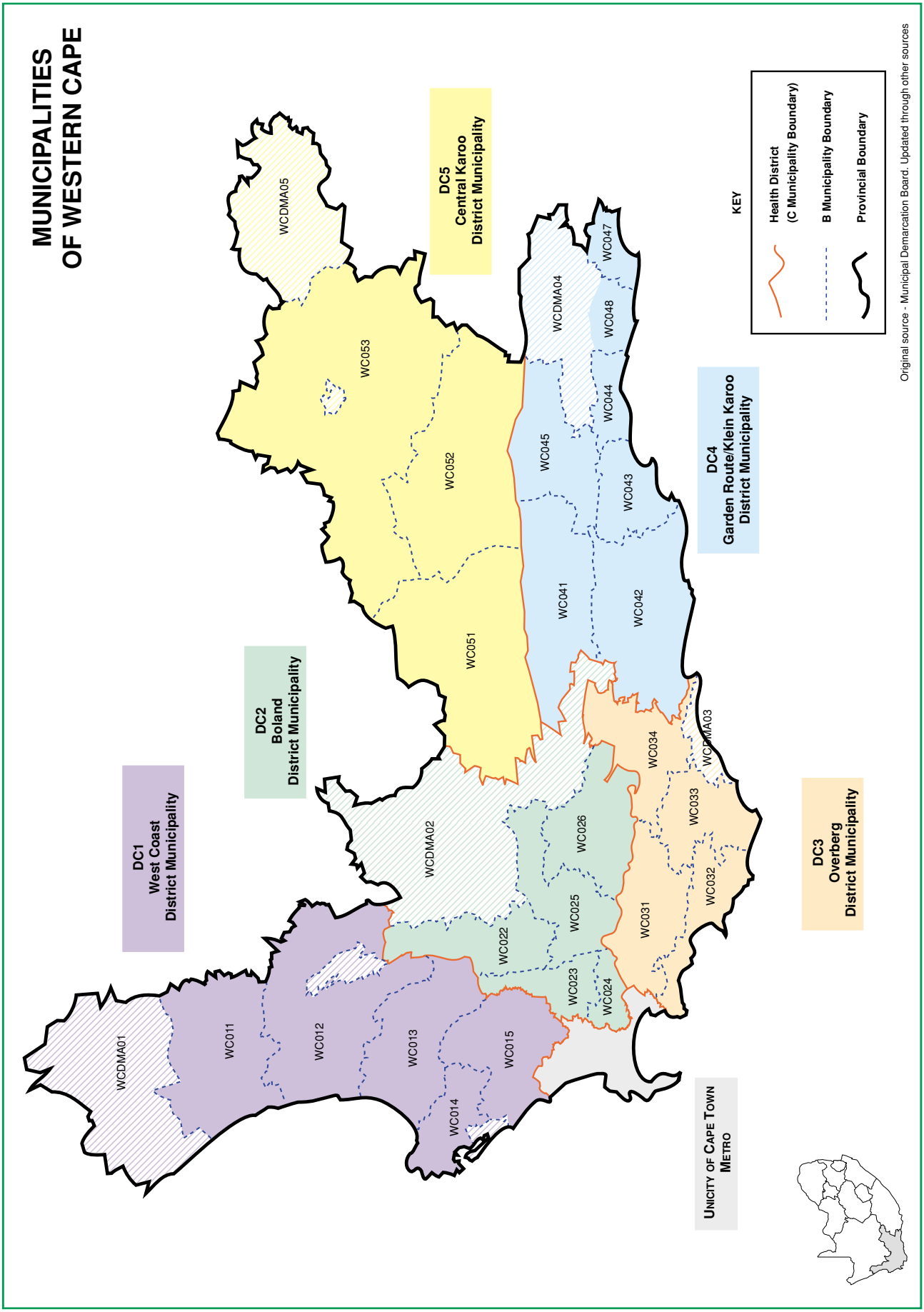

MUNICIPALITIES
OF NORTH WEST
DC39
Bophirima
District Municipality
DC38
Central
District Municipality
DC37
Bojanala
District Municipality
CBDC8
West Rand
District Municipality
(Gauteng)
DC40
Southern
District Municipality
CBDC1
Kalahari-Kgalagadi
District Municipality
DC9
Frances Baard
District Municipality
Northern Cape)
NW395
NW391
NW392
NW393
NW394
NW396
NW1a1
NCDMACB1
NC01B1
CBLC1
CBLC7
NW385
NW383
NW381
NW384
NW382
NW375
NWDMA37
NW371
NW373
NW372
NW374
CITY OF
TSHWANE
GTDMA41
GT411
GT412
GT414
CBLC8
CBLC8
NW401
NW403
NW402
NW404
KEY
Health District
(C Municipality Boundary)
B Municipality Boundary
Provincial Boundary
Indicates cross boundary
Health District
Original source - Municipal Demarcation Board. Updated through other sources

## North West

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities: CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CBDC1** | | | | | | | | | | | | | | |
| **Kgalagadi District Municipality** | CBLC1 | Ga-Segonyana Municipality | | | 1 | 4 | 2 | | 1 | | | | | 1 |
| | NW1a1 | Moshaweng Municipality | 104 146 | 5 863 | | 23 | | | | | | | | 0 |
| **DC37** | | | | | | | | | | | | | | |
| **Bojanala Platinum District Municipality** | NW371 | Moretele Municipality | 185 430 | 1 373 | 3 | 17 | 1 | | | | | | | 0 |
| | NW372 | Madibeng Municipality | 349 841 | 3 812 | 4 | 21 | 5 | | 1 | | | | | 1 |
| | NW373 | Rustenburg Municipality | 339 388 | 3492 | 3 | 22 | 8 | 1 | | | 1 | | | 1 |
| | NW374 | Kgetleng Rivier Municipality | 35 768 | 3 973 | 2 | 4 | 4 | | | | | | | 0 |
| | NW375 | Moses Kotane Municipality | 250 197 | 5 215 | 5 | 47 | 6 | | 2 | | | | | 2 |
| | NWDMA37 | Pilansberg National Park District Managed Area | 294 | 469 | | | | | | | | | | 0 |
| **DC38** | | | | | | | | | | | | | | |
| **Central District Municipality** | NW381 | Setla-Kgobi Municipality | 106 697 | 4 538 | 2 | 12 | 2 | | | | | | | 0 |
| | NW382 | Tswaing Municipality | 99 536 | 5 966 | 4 | 8 | 4 | | | | | | | 0 |
| | NW383 | Mafikeng Municipality | 264 166 | 3 800 | 4 | 26 | 4 | | 1 | | | 1 | 1 | 3 |
| | NW384 | Lichtenburg Municipality | 142 230 | 6 358 | 1 | 14 | 11 | 1 | 2 | | | | | 2 |
| | NW385 | Zeerust Municipality | 141 037 | 7 192 | 5 | 16 | 6 | | 2 | | | | | 2 |
| **DC39** | | | | | | | | | | | | | | |
| **Bophirima District Municipality** | NW391 | Kagisano Municipality | 101 285 | 14 857 | 4 | 17 | 5 | | 1 | | | | | 1 |
| | NW392 | Naledi Municipality | 59 792 | 7 264 | 2 | 2 | 14 | | 1 | | | | | 1 |
| | NW393 | Schweizer-Reneke Municipality | 46 618 | 3 615 | 1 | 3 | 3 | | 1 | | | | | 1 |
| | NW394 | Greater Taung Municipality | 201 132 | 5 640 | 2 | 16 | 2 | | 1 | | | | | 1 |
| | NW395 | Molopo Municipality | 14 624 | 12 588 | 1 | | | | | | | | | 0 |
| | NW396 | Lekwa-Teemane Municipality | 40 558 | 3 684 | 2 | 5 | 1 | 1 | | | | | | 0 |
| **DC40** | | | | | | | | | | | | | | |
| **Southern District Municipality** | NW401 | Ventersdorp Municipality | 34 822 | 3 764 | | 4 | 4 | 4 | 1 | | | | | 1 |
| | NW402 | Potchefstroom Municipality | 135 326 | 2 612 | | 8 | 2 | 1 | | | | 1 | 1 | 2 |
| | NW403 | City of Klerksdorp | 365 513 | 3 624 | 5 | 11 | 7 | 1 | | | | 1 | 1 | 2 |
| | NW404 | Maquassi Hills Municipality | 66 764 | 4 644 | 2 | 5 | 2 | | 1 | | | | | 1 |
| **DC9** | | | | | | | | | | | | | | |
| **Frances Baard District Municipality** | CBLC7 | Phokwani Municipality | | | 1 | 4 | | | | | | | | 0 |

## North West

| Category A and C Municipality | Category B Municipality | Population 2002 | Area ($km^2$) | Number of public health facilities | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
| City of Tshwane Metropolitan Municipality | | | | 3 | 14 | 2 | 2 | 2 | | | | | 2 |
| Merafong City Municipality | | | | | 5 | 2 | | | | | | | 0 |
| North West | | 3 085 164 | 114 343 | 56 | 304 | 95 | 11 | 16 | 0 | 1 | 3 | 3 | 23 |


MUNICIPALITIES
OF WESTERN CAPE
DC1
West Coast
District Municipality
DC2
Boland
District Municipality
DC3
Overberg
District Municipality
DC4
Garden Route/Klein Karoo
District Municipality
DC5
Central Karoo
District Municipality
UNICITY OF CAPE TOWN
METRO
WCDMA01
WC011
WC012
WC013
WC014
WC015
WCDMA02
WC022
WC023
WC024
WC025
WC026
WC031
WC032
WC033
WC034
WCDMA03
WC041
WC042
WC043
WC044
WC045
WCDMA04
WC047
WC048
WC051
WC052
WC053
WCDMA05
KEY
Health District
(C Municipality Boundary)
B Municipality Boundary
Provincial Boundary
Original source - Municipal Demarcation Board. Updated through other sources

## Western Cape

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities: CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| City of Cape Town | | | 2 794 693 | 2 488 | 54 | 106 | 10 | 16 | 3 | 3 | 0 | 7 | 13 | 26 |
| DC1 | | | | | | | | | | | | | | |
| West Coast District Municipality | WC011 | Matzikama Municipality | 43 371 | 5 539 | | 2 | 7 | 6 | 1 | | | | | 1 |
| | WC012 | Cederberg Municipality | 34 566 | 7 347 | 1 | 2 | 7 | 2 | 2 | | | | | 2 |
| | WC013 | Bergrivier Municipality | 40 365 | 4 263 | | 2 | 8 | 5 | 2 | | | | | 2 |
| | WC014 | Saldanha Bay Municipality | 61 542 | 1 908 | | 11 | 2 | 4 | 1 | | | | | 1 |
| | WC015 | Swartland Municipality | 70 806 | 3 701 | 1 | 3 | 5 | 6 | 1 | | | | 2 | 3 |
| | WCDMA01 | West Coast District Managed Area | 5 102 | 8 353 | | | 2 | 4 | | | | | | 0 |
| DC2 | | | | | | | | | | | | | | |
| Boland District Municipality | WC022 | Witzenberg Municipality | 78 625 | 2 982 | | 9 | 7 | | 1 | | | | | 1 |
| | WC023 | Drakenstein Municipality | 202 945 | 1 538 | 1 | 13 | 10 | 8 | | | | 1 | 1 | 2 |
| | WC024 | Stellenbosch Municipality | 113 088 | 812 | 1 | 9 | 8 | 1 | 1 | | | | | 1 |
| | WC025 | Breede Valley Municipality | 140 546 | 2 864 | 2 | 11 | 4 | | | | | 1 | 2 | 3 |
| | WC026 | Breede River/Winelands Municipality | 71 657 | 3 334 | | 14 | 15 | | 2 | | | | | 2 |
| | WCDMA02 | Brede River District Managed Area | 7 128 | 10 759 | | | | | | | | | | 0 |
| DC3 | | | | | | | | | | | | | | |
| Overberg District Municipality | WC031 | Theewaterskloof Municipality | 81 284 | 3 246 | 2 | 9 | 8 | | 1 | | | | | 1 |
| | WC032 | Overstrand Municipality | 40 850 | 2 125 | | 9 | 1 | | 1 | | | | | 1 |
| | WC033 | Cape Agulhas Municipality | 24 099 | 2 411 | 1 | 4 | 2 | | 1 | | | | | 1 |
| | WC034 | Swellendam Municipality | 26 947 | 3 001 | | 5 | 5 | | 1 | | | | | 1 |
| | WCDMA03 | Overberg District Managed Area | 142 | 608 | | | | | | | | | | 0 |
| DC4 | | | | | | | | | | | | | | |
| G Route/K Karoo District Municipality | WC041 | Kannaland Municipality | 23 104 | 4 759 | | 3 | 2 | | 1 | | | | | 1 |
| | WC042 | Langeberg Municipality | 42 030 | 5 731 | 2 | 6 | 4 | | 1 | | | | | 1 |
| | WC043 | Mossel Bay Municipality | 65 191 | 2 008 | 1 | 10 | 6 | | 1 | | | | | 1 |
| | WC044 | George Municipality | 117 928 | 1 045 | 4 | 6 | 4 | 1 | | | | 1 | | 1 |
| | WC045 | Oudtshoorn Municipality | 86 332 | 3 536 | 3 | 9 | 6 | | 1 | | | | | 1 |
| | WC047 | Plettenberg Bay Municipality | 20 094 | 991 | 1 | 4 | 4 | | | | | | | 0 |
| | WC048 | Knysna Municipality | 47 046 | 1 059 | | 6 | 4 | | 1 | | | | | 1 |
| | WCDMA04 | South Cape District Managed Area | 13 534 | 4 194 | | 1 | 1 | | 1 | | | | | 1 |

## Western Cape

| Category A and C Municipality | Category B Municipality | | Population 2002 | Area (km²) | Number of public health facilities | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CHC | Clinic | Mobile Service | Satellite Clinic | District Hospital | National Central Hosp | Provincial Tertiary Hosp | Regional Hospital | Specialised Hospital | Public hosp total |
| **DC5** | | | | | | | | | | | | | | |
| **Central Karoo District Municipality** | WC051 | Laingsburg Municipality | 6 456 | 8 781 | | 1 | 2 | | 1 | | | | | 1 |
| | WC052 | Prince Albert Municipality | 10 368 | 8 153 | | 3 | 2 | | 1 | | | | | 1 |
| | WC053 | Beaufort West Municipality | 36 911 | 16 334 | 1 | 5 | 4 | | 1 | | | | 1 | 2 |
| | WCDMA05 | Central Karoo District Managed Area | 7 446 | 5 585 | | 1 | 1 | | 1 | | | | | 1 |
| **Western Cape** | | | **4 314 196** | **129 455** | **75** | **264** | **141** | **53** | **28** | **3** | **0** | **10** | **19** | **60** |

## Table 2: Selected health indicators by municipality

| Cat A/C | District Municipality | ANC coverage | | | ANC visits/client | | | Diarrhoea incidence | | | Imm coverage | | | MUD incidence | | | Nurse clin workload | | | Utilisation rate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 |
| **Eastern Cape** | | | | | | | | | | | | | | | | | | | | | | |
| DC10 | Cacadu | 102.2 | 96.4 | 94.3 | 4.4 | 4.4 | 4.4 | | 129.1 | 110.6 | 88.0 | 83.3 | 78.0 | 33.9 | 28.7 | 25.4 | 32.7 | 35.5 | 38.4 | 2.9 | 2.8 | 2.7 |
| DC12 | Amatole | 76.5 | 70.5 | 67.0 | 4.0 | 4.1 | 3.9 | | 98.0 | 68.6 | 64.8 | 62.0 | 57.5 | 52.8 | 39.6 | 35.8 | 24.8 | 26.1 | 26.6 | 2.3 | 2.2 | 2.0 |
| DC13 | Chris Hani | 77.5 | 70.5 | 63.6 | 3.0 | 3.0 | 3.1 | | 126.0 | 99.5 | 68.4 | 65.3 | 66.0 | 39.2 | 34.2 | 29.8 | 17.4 | 17.3 | 15.4 | 2.0 | 1.8 | 1.6 |
| DC14 | Ukhahlamba | 111.5 | 122.3 | 113.4 | 2.8 | 2.5 | 2.5 | | 162.0 | 107.2 | 71.0 | 74.3 | 74.0 | 46.5 | 41.4 | 51.8 | 28.6 | 27.5 | 32.8 | 1.9 | 1.9 | 1.8 |
| DC15 | O.R. Tambo | 81.9 | 86.6 | 86.3 | 2.8 | 2.6 | 2.6 | | 185.9 | 127.2 | 45.1 | 45.0 | 53.8 | 57.1 | 43.0 | 41.5 | 20.9 | 21.1 | 21.4 | 1.7 | 1.5 | 1.5 |
| DC44 | Alfred Nzo | 60.0 | 53.6 | 52.6 | 2.9 | 3.0 | 2.9 | | 84.8 | 68.0 | 44.9 | 39.8 | 48.8 | 28.9 | 24.6 | 30.2 | 20.3 | 20.0 | 20.5 | 1.4 | 1.3 | 1.2 |
| Port Eliz | Nelson Mandela Metro | 67.7 | 74.4 | 85.6 | 5.6 | 5.3 | 4.5 | | 73.8 | 58.4 | 92.9 | 92.0 | 87.5 | 59.6 | 40.7 | 25.1 | 34.3 | 40.6 | 38.6 | 2.9 | 2.9 | 2.7 |
| Eastern Cape Total | | 78.5 | 78.3 | 77.4 | 3.4 | 3.3 | 3.3 | | 131.0 | 93.9 | 60.8 | 59.1 | 61.7 | 50.0 | 38.1 | 33.7 | 24.3 | 25.6 | 25.7 | 2.1 | 2.0 | 1.9 |
| **Free State** | | | | | | | | | | | | | | | | | | | | | | |
| DC16 | Xhariep | 54.7 | 95.4 | 98.1 | 4.1 | 4.6 | 4.2 | 105.8 | 169.3 | 123.3 | 43.4 | 72.5 | 74.3 | 11.4 | 22.9 | 34.4 | 20.3 | 19.0 | 15.5 | 1.3 | 2.6 | 2.5 |
| DC17 | Motheo | 95.3 | 104.9 | 98.9 | 4.7 | 4.7 | 4.6 | 77.0 | 93.8 | 64.3 | 70.9 | 79.4 | 77.7 | 31.1 | 34.2 | 32.0 | 18.5 | 19.3 | 9.7 | 1.7 | 1.9 | 0.9 |
| DC18 | Lejweleputswa | 118.5 | 108.1 | 98.7 | 3.2 | 3.6 | 3.9 | 73.8 | 56.5 | 54.1 | 79.4 | 79.5 | 78.0 | 27.1 | 25.4 | 22.8 | 29.0 | 28.5 | 16.3 | 1.5 | 1.7 | 1.0 |
| DC19 | Thabo Mofutsanyane | 77.9 | 101.8 | 100.2 | 4.4 | 4.6 | 4.7 | 59.6 | 95.1 | 92.6 | 62.2 | 81.5 | 86.3 | 36.5 | 44.0 | 36.8 | 22.7 | 24.3 | 17.7 | 1.6 | 2.2 | 1.4 |
| DC20 | Northern Free State | 92.8 | 105.4 | 115.4 | 3.8 | 4.5 | 4.1 | 72.9 | 92.9 | 97.5 | 60.0 | 85.2 | 94.0 | 33.7 | 40.5 | 30.1 | 25.6 | 22.6 | 25.0 | 1.3 | 1.9 | 2.0 |
| Free State Total | | 94.7 | 104.5 | 101.9 | 3.9 | 4.3 | 4.3 | 71.8 | 88.4 | 78.1 | 67.7 | 80.6 | 82.6 | 30.6 | 34.2 | 29.9 | 23.2 | 22.9 | 16.2 | 1.5 | 1.9 | 1.3 |
| **Gauteng** | | | | | | | | | | | | | | | | | | | | | | |
| CBDC2 | Metsweding | 61.5 | 54.9 | 41.4 | 3.8 | 4.4 | 4.8 | 49.1 | 40.4 | 25.2 | 41.3 | 36.4 | 39.2 | 16.0 | 16.1 | 10.5 | | | | 0.8 | 0.8 | 0.7 |
| CBDC8 | West Rand | 81.7 | 99.3 | 85.9 | 3.2 | 3.7 | 3.7 | 41.6 | 58.1 | 76.1 | 44.2 | 64.5 | 62.1 | 13.8 | 16.8 | 12.4 | | | | 0.8 | 1.2 | 1.1 |
| DC42 | Sedibeng | 103.3 | 83.8 | 79.2 | 3.8 | 4.5 | 4.4 | 69.3 | 71.5 | 57.9 | 73.2 | 81.1 | 69.8 | 30.3 | 23.6 | 22.5 | | | | 1.5 | 1.6 | 1.5 |
| Ekurhuleni | Ekurhuleni Metro | 67.2 | 68.2 | 76.6 | 3.2 | 3.6 | 3.8 | 46.1 | 38.3 | 39.9 | 67.9 | 69.4 | 74.4 | 26.0 | 28.7 | 27.8 | | | | 1.2 | 1.3 | 1.4 |
| Jhb | Johannesburg Metro | 74.3 | 62.2 | 60.9 | 3.4 | 3.3 | 3.1 | 69.2 | 60.6 | 56.7 | 72.6 | 67.7 | 42.2 | 31.6 | 25.8 | 15.1 | | | | 1.5 | 1.3 | 1.0 |
| Tshwane | Tshwane Metro | 70.5 | 87.4 | 96.5 | 4.3 | 4.4 | 4.0 | 90.5 | 84.6 | 84.3 | 53.4 | 64.8 | 61.9 | 24.5 | 23.0 | 18.6 | | | | 1.0 | 1.2 | 1.2 |
| Gauteng Total | | 74.3 | 73.9 | 77.5 | 3.6 | 3.8 | 3.8 | 66.1 | 60.2 | 59.4 | 63.9 | 68.0 | 60.7 | 26.3 | 24.7 | 19.8 | | | | 1.2 | 1.3 | 1.2 |
| **KwaZulu-Natal** | | | | | | | | | | | | | | | | | | | | | | |
| DC21 | Ugu | 61.5 | 82.2 | 82.7 | 4.1 | 4.3 | 3.8 | 179.4 | 238.7 | 180.0 | 56.4 | 86.3 | 79.4 | 36.7 | 46.0 | 44.8 | | | | 1.3 | 2.1 | 2.0 |
| DC22 | uMgungundlovu | 56.8 | 70.9 | 69.8 | 4.2 | 4.3 | 3.8 | 150.4 | 240.5 | 186.5 | 52.7 | 83.2 | 78.5 | 28.1 | 45.3 | 40.4 | | | | 0.9 | 1.8 | 1.7 |
| DC23 | Uthukela | 68.2 | 96.1 | 92.3 | 4.6 | 4.3 | 4.1 | 165.5 | 179.4 | 153.9 | 63.7 | 81.4 | 85.8 | 47.3 | 48.5 | 41.7 | | | | 1.3 | 1.7 | 1.8 |
| DC24 | Umzinyathi | 56.0 | 100.0 | 85.2 | 4.3 | 4.0 | 4.2 | 207.1 | 335.7 | 235.4 | 58.0 | 89.1 | 76.7 | 34.7 | 51.3 | 40.2 | | | | 1.1 | 1.9 | 1.8 |
| DC25 | Amajuba | 76.9 | 119.7 | 91.3 | 4.0 | 4.0 | 4.7 | 170.7 | 316.8 | 217.2 | 62.7 | 86.8 | 72.4 | 72.3 | 78.6 | 61.7 | | | | 1.2 | 2.0 | 1.9 |
| DC26 | Zululand | 83.1 | 112.2 | 92.7 | 3.7 | 3.6 | 3.5 | 222.8 | 380.5 | 290.7 | 44.4 | 66.4 | 77.2 | 51.7 | 48.4 | 44.2 | | | | 1.0 | 1.6 | 1.5 |
| DC27 | Umkhanyakude | 61.4 | 111.8 | 97.7 | 4.4 | 4.0 | 4.2 | 190.6 | 309.1 | 283.3 | 48.4 | 83.8 | 85.2 | 29.2 | 43.4 | 34.8 | | | | 1.3 | 2.2 | 2.1 |
| DC28 | Uthungulu | 31.2 | 92.8 | 100.9 | 5.4 | 4.0 | 3.8 | 225.8 | 341.1 | 289.7 | 46.7 | 95.4 | 96.7 | 27.8 | 52.0 | 51.6 | | | | 1.0 | 2.0 | 2.1 |
| DC29 | iLembe | 39.7 | 60.7 | 50.0 | 3.5 | 3.5 | 3.8 | 242.5 | 288.8 | 214.6 | 38.6 | 60.3 | 53.4 | 20.9 | 36.4 | 35.0 | | | | 0.8 | 1.5 | 1.5 |
| DC43 | Sisonke | 95.6 | 146.1 | 134.2 | 3.9 | 4.1 | 3.5 | 287.2 | 357.1 | 271.7 | 93.0 | 138.9 | 124.6 | 50.9 | 56.9 | 46.1 | | | | 1.6 | 2.8 | 2.5 |
| Durban | eThekwini Metro | 56.0 | 90.3 | 92.8 | 4.5 | 4.5 | 4.3 | 101.0 | 204.5 | 151.5 | 42.3 | 68.0 | 60.7 | 24.2 | 31.2 | 36.3 | | | | 0.9 | 1.6 | 1.6 |
| KwaZulu-Natal Total | | 59.2 | 94.1 | 89.0 | 4.3 | 4.1 | 4.0 | 173.3 | 272.4 | 211.5 | 50.1 | 79.2 | 75.3 | 32.4 | 42.3 | 40.9 | | | | 1.1 | 1.8 | 1.7 |

| Cat A/C | District Municipality | ANC coverage | | | ANC visits/client | | | Diarrhoea incidence | | | Imm coverage | | | MUD incidence | | | Nurse clin workload | | | Utilisation rate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 | 2000 | 2001 | 2002 |
| **Limpopo** | | | | | | | | | | | | | | | | | | | | | | |
| CBDC3 | Sekhukhune | 101.5 | 82.1 | 73.8 | 2.9 | 3.8 | 3.8 | 96.8 | 108.5 | 85.4 | 55.5 | 63.8 | 60.9 | 20.8 | 22.5 | 20.5 | | | | 1.2 | 1.4 | 1.3 |
| CBDC4 | Bohlabela | 31.6 | 80.1 | 80.9 | 4.0 | 3.8 | 3.7 | 61.8 | 155.6 | 164.7 | 21.4 | 46.9 | 57.1 | 29.6 | 60.1 | 56.3 | | | | 0.5 | 1.4 | 1.6 |
| DC33 | Mopani | 87.8 | 94.4 | 89.3 | 3.5 | 3.6 | 3.9 | 250.7 | 294.8 | 243.3 | 56.9 | 71.3 | 71.3 | 72.5 | 70.4 | 73.3 | | | | 2.3 | 2.8 | 3.0 |
| DC34 | Vhembe | 89.7 | 91.1 | 88.6 | 4.5 | 4.4 | 4.4 | 285.0 | 278.0 | 224.3 | 66.8 | 68.9 | 77.9 | 74.6 | 68.3 | 64.7 | | | | 2.6 | 2.8 | 3.3 |
| DC35 | Capricorn | 86.6 | 73.7 | 68.9 | 3.6 | 4.0 | 3.8 | 163.8 | 147.7 | 117.4 | 75.0 | 64.3 | 59.2 | 39.1 | 35.8 | 25.1 | | | | 1.3 | 1.5 | 1.5 |
| DC36 | Waterberg | 112.6 | 112.9 | 104.1 | 3.1 | 3.3 | 3.4 | 146.1 | 158.5 | 116.5 | 81.5 | 81.1 | 84.3 | 43.0 | 42.8 | 38.9 | | | | 1.5 | 1.7 | 2.0 |
| Limpopo Total | | 86.6 | 87.0 | 82.3 | 3.6 | 3.9 | 3.9 | 180.0 | 196.5 | 162.6 | 61.0 | 66.0 | 67.8 | 48.6 | 50.2 | 46.5 | | | | 1.7 | 2.0 | 2.2 |
| **Mpumalanga** | | | | | | | | | | | | | | | | | | | | | | |
| CBDC3 | | | | | | | | | | | | | | | | | | | | | | |
| DC30 | Eastvaal | 96.6 | 115.3 | 120.3 | 3.5 | 3.9 | 3.7 | 89.4 | 115.8 | 110.9 | 66.9 | 85.5 | 85.4 | 29.2 | 35.9 | 34.0 | | | | 1.2 | 1.5 | 1.6 |
| DC31 | Nkangala | 69.8 | 114.3 | 111.9 | 3.6 | 3.7 | 3.7 | 79.9 | 119.4 | 108.4 | 52.8 | 82.2 | 81.3 | 16.7 | 25.2 | 27.5 | | | | 1.0 | 1.7 | 1.6 |
| DC32 | Ehlanzeni | 113.9 | 105.2 | 100.6 | 3.7 | 3.9 | 3.8 | 186.9 | 180.8 | 156.9 | 80.7 | 77.2 | 72.8 | 67.7 | 59.0 | 60.7 | | | | 2.2 | 2.2 | 2.1 |
| Mpumalanga Total | | 93.2 | 111.4 | 110.0 | 3.6 | 3.8 | 3.7 | 120.1 | 139.5 | 126.7 | 66.8 | 81.4 | 79.3 | 36.3 | 38.8 | 40.1 | | | | 1.4 | 1.8 | 1.8 |
| **Northern Cape** | | | | | | | | | | | | | | | | | | | | | | |
| CBDC1 | Kgalagadi | 78.8 | 79.8 | 79.4 | 3.9 | 4.2 | 4.1 | | 447.9 | 238.5 | 64.0 | 76.3 | 54.4 | 37.1 | 42.6 | 22.7 | | | | 2.8 | 3.2 | 2.1 |
| DC6 | Namakwa | 65.3 | 80.9 | 44.4 | 5.8 | 4.8 | 5.4 | | 183.2 | 106.1 | 57.4 | 68.4 | 31.4 | 0.0 | 8.8 | 7.1 | | | | 2.6 | 2.5 | 1.5 |
| DC7 | Karoo | 73.3 | 99.4 | 77.1 | 5.4 | 4.4 | 4.3 | | 280.6 | 185.7 | 66.9 | 71.6 | 78.1 | 0.0 | 28.4 | 22.5 | | | | 2.7 | 2.4 | 2.1 |
| DC8 | Siyanda | 102.7 | 102.1 | 59.8 | 3.6 | 3.8 | 4.0 | | 241.1 | 84.0 | 69.2 | 67.2 | 40.6 | 0.0 | 17.3 | 12.5 | | | | 2.1 | 1.9 | 1.2 |
| DC9 | Frances Baard | 63.8 | 78.2 | 56.9 | 4.0 | 4.1 | 3.6 | | 171.0 | 81.3 | 88.2 | 89.2 | 53.9 | 4.1 | 31.8 | 17.9 | | | | 1.9 | 1.9 | 1.2 |
| Northern Cape Total | | 76.9 | 87.4 | 63.2 | 4.2 | 4.2 | 4.0 | | 264.3 | 127.0 | 72.3 | 76.7 | 52.7 | 7.1 | 27.0 | 16.8 | | | | 2.3 | 2.3 | 1.5 |
| **North West** | | | | | | | | | | | | | | | | | | | | | | |
| DC37 | Bojanala Platinum | 119.1 | 118.0 | 91.8 | 3.8 | 4.1 | 4.0 | 322.1 | 264.2 | 152.4 | 100.0 | 87.2 | 64.3 | 57.9 | 65.5 | 39.5 | 24.4 | 23.2 | 35.6 | 2.6 | 2.9 | 2.3 |
| DC38 | Central | 88.2 | 82.9 | 61.8 | 4.5 | 4.7 | 4.9 | 225.3 | 185.0 | 123.7 | 72.0 | 67.2 | 54.4 | 36.6 | 30.1 | 23.9 | 21.2 | 19.4 | 24.0 | 2.5 | 2.6 | 2.3 |
| DC39 | Bophirima | 86.5 | 88.1 | 77.7 | 4.1 | 4.1 | 4.0 | 297.2 | 266.3 | 194.1 | 74.5 | 78.7 | 66.8 | 40.3 | 35.9 | 20.7 | 14.4 | 17.9 | 25.1 | 2.3 | 2.6 | 2.2 |
| DC40 | Southern | 129.8 | 121.4 | 112.6 | 3.5 | 3.6 | 3.9 | 214.2 | 173.8 | 171.9 | 90.0 | 79.0 | 70.3 | 32.1 | 28.1 | 23.0 | 35.1 | 32.3 | 33.3 | 1.6 | 1.8 | 1.9 |
| North West Total | | 106.1 | 103.1 | 82.4 | 3.9 | 4.1 | 4.2 | 272.5 | 227.4 | 154.2 | 85.7 | 78.5 | 62.5 | 44.9 | 45.2 | 29.5 | 22.1 | 22.0 | 29.1 | 2.3 | 2.6 | 2.2 |
| **Western Cape** | | | | | | | | | | | | | | | | | | | | | | |
| DC1 | West Coast | 115.9 | 92.6 | 77.9 | 4.4 | 5.9 | 6.0 | 109.3 | 104.1 | 109.2 | 85.9 | 85.0 | 81.5 | 12.4 | 12.2 | 11.2 | | | | 2.8 | 3.2 | 3.2 |
| DC2 | Boland | 80.8 | 83.6 | 81.8 | 4.7 | 5.2 | 5.4 | 100.9 | 120.7 | 107.1 | 90.2 | 81.0 | 78.2 | 15.3 | 15.0 | 12.5 | | | | 2.5 | 2.6 | 2.4 |
| DC3 | Overberg | 91.2 | 110.0 | 103.8 | 4.5 | 4.8 | 5.1 | 131.1 | 121.6 | 113.1 | 113.0 | 111.4 | 103.4 | 15.0 | 16.5 | 16.2 | | | | 2.5 | 3.2 | 3.0 |
| DC4 | G Route/K Karoo | 99.4 | 108.9 | 87.0 | 6.0 | 5.2 | 4.8 | 81.5 | 78.9 | 63.4 | 99.4 | 43.1 | 0.0 | 25.8 | 23.1 | 18.4 | | | | 3.2 | 3.3 | 2.9 |
| DC5 | Central Karoo | 50.8 | 75.0 | 82.9 | 6.3 | 5.0 | 4.2 | 98.2 | 110.6 | 123.6 | 77.1 | 37.5 | 0.0 | 18.5 | 17.5 | 14.8 | | | | 3.7 | 4.1 | 3.4 |
| Cape Town | Cape Town | 73.7 | 90.2 | 45.4 | 4.3 | 4.2 | 4.2 | 87.2 | 83.3 | 91.8 | 72.8 | 72.7 | 54.9 | 24.8 | 23.7 | 22.0 | | | | 2.3 | 2.2 | 2.2 |
| Western Cape Total | | 79.4 | 91.6 | 57.6 | 4.6 | 4.6 | 4.7 | 91.5 | 91.0 | 94.1 | 79.4 | 72.7 | 56.4 | 22.5 | 21.6 | 19.4 | | | | 2.5 | 2.5 | 2.4 |
| **South Africa Total** | | **78.8** | **89.0** | **82.8** | **3.9** | **4.0** | **3.9** | **144.8** | **164.5** | **133.4** | **63.7** | **71.6** | **67.5** | **34.7** | **35.2** | **32.1** | **23.5** | **23.9** | **23.9** | **1.7** | **1.9** | **1.8** |

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## References

**AIDS and Orphanhood**

Johnson L, Dorrington R. The Impact of AIDS on Orphanhood in South Africa: A Quantitative Analysis. Cape Town: CARE Monograph 4; 2001.
URL: http://www.mrc.ac.za/
Details: Email: care@commerce.uct.ac.za ISBN: 0-7992-2089-2

**AIDS Pandemic**

Stanecki K. The AIDS Pandemic in the 21st Century.
URL: http://www.usaid.gov/pop_health/aids/Publications/docs/aidsdemoimpact.pdf
Details: This report features new Census Bureau data showing the tremendous impact of AIDS on the developing world. Life expectancy, population growth and mortality rates have all been dramatically affected.

**AIDS Update 2002**

AIDS epidemic update December 2002. Geneva: UNAIDS and WHO; 2002.
URL: http://www.unaids.org/worldaidsday/2002/press/Epiupdate.html

**Antenatal Survey 1998**

1998 National HIV sero-prevalence survey of women attending public antenatal clinics in South Africa. Pretoria: Department of Health; 1999.

**Antenatal Survey 1999**

Makubalo LE, Levin J, Muluma R. Survey of HIV prevalence among women attending antenatal clinics in South Africa - 1999. Department of Health. Pretoria, 1999.
Details: In the 1999 survey a total of 16 841 women participated from 487 sentinel sites (clinics) throughout the nine provinces. Sentinel sites were selected on the basis of a systematic random sampling in which weighting is conducted using the probability proportional to size (PPS) technique. Blood specimens were tested using the ELISA test. In the last three years modifications have been made to the methodology to incorporate more stringent quality control measures and therefore achieve greater reliability with respect to laboratory quality procedures,

data entry and analysis. Data were analysed using the STATA and EPI INFO statistical packages.

**Antenatal Survey 2000**

National HIV and Syphilis sero-prevalence survey of women attending public antenatal clinics in South Africa 2000. Department of Health. 2001.
URL: http://www.doh.gov.za/docs/reports/2000/hivreport.html
Details: ftp://ftp.hst.org.za/pubs/govdocs/antenatal_2000.pdf

**Antenatal Survey 2001**

National HIV and Syphilis sero-prevalence survey of women attending public antenatal clinics in South Africa - 2001. Pretoria: Department of Health; 2002.

**ASSA 2000**

Actuarial Projection of the Epidemic: Summary Statistics. AIDS Committee of Actuarial Society of South Africa. Downloaded 14/10/2002.
URL: http://www.assa.org.za/downloads/aids/summarystats.htm
Details: The change scenario is included not so much because this is a likely scenario but in order to break away from the tradition of only showing what is expected to happen if nothing is done. It comprises the following assumptions: * no antiretroviral therapy * mother-to-child transmission intervention (phased in from 40% of births in the year starting 1 July 2001 to 90% in five years time, and assumed to 50% effective) * treatment of sexually transmitted diseases (STDs) such that these are reduced by 15% phased in over the five years starting 1 July 2001 * a doubling in condom usage over the next five years * a decrease in the number of new sexual partners by 15% over the next five years. The provincial projection results are based on the assumption of no-change for all provinces except the Western Cape. In the case of the Western Cape a change scenario specific to that province has been incorporated to allow for the fact that the province has been intervening to prevent the spread of the epidemic.

**Bradshaw 1995**

Bradshaw D et al. Estimated cause of death profiles for the nine new provinces based on 1990 data. Medical Research Council; 1995.
URL: http://www.mrc.ac.za

**CADRE Lit Review 2002**

Kelly K, Parker W, Gelb S (Eds). HIV/AIDS, Economics and Governance in South Africa: Key Issues in Understanding Response. A Literature Review 2002. CADRE; 2002.
URL: http://www.cadre.org.za/

**CASE Disability Survey**

Community Agency for Social Enquiry. "We also count"! The extent of moderate and severe reported disability and the nature of the disability experience in South Africa. Department of Health; 1999.
URL: http://www.doh.gov.za/facts/1997/case.pdf
Details: Also available from http://www.case.org.za/htm/wecount2.htm

**Census 96**

Statistics South Africa. Census in Brief. The people of South Africa population census 1996. Pretoria: Statistics South Africa; 1998.
URL: http://www.statssa.gov.za/

**Childinfo web site**

UNICEF Childinfo web site: Progress since the World Summit for Children.
URL: http://www.childinfo.org/

**Children in 2001**

Children in 2001. A Report on the State of the Nation's Children. Pretoria: National Programme of Action for Children in South Africa; 2001.
URL: http://www.children.gov.za
Details: Available from: Office on the Rights of the Child Tel: +27-12-3375216 jabu@po.gov.za

**Children on the Brink 2002**

Dennis M, Ross J, Smith S (Eds). Children on the Brink 2002: A Joint Report on Orphan Estimates and Program Strategies. Washington DC: The Synergy Project; 2002.
URL: http://www.unaids.org/barcelona/presskit/childrenonthebrink.html

**Children's HIV Forum**

Giese S, Meintjies H, Proudlock P. National Children's Forum on HIV/AIDS Workshop Report. Children's Institute University of Cape Town; 2002.
URL: http://www.uct.ac.za/depts/ci/frames_ncf_report.htm

**Chronic Diseases in SA**

Bradshaw D, Steyn K (Eds). Poverty and Chronic Diseases in South Africa: Technical Report 2001. Medical Research Council; 2002.
URL: http://www.mrc.ac.za/bod/povertyfinal.pdf
Details: ISBN: 1-919809-17-1

**Demarcation Board**

Municipal Demarcation Board
URL: http://www.demarcation.org.za/

**Design HIS**

Lippeveld T, Sauerborn R, Bodart C. Design and implementation of health information systems. Geneva: World Health Organization; 2000.

**Development Bank 1994**

Erasmus J (Ed). South Africa's nine provinces: A human development profile. Midrand: Development Bank of Southern Africa; 1994.
Details: Publication not available electronically. Organisation web site http://www.dbsa.org/

**DHIS**

District Health Information System Database. National Department of Health.

**DHIS Dec 2001**

District Health Information System (DHIS) database. Data extracted by Calle Hedberg Dec 2001.
Details: Data is for the 2000/2001 financial year. Data input coverage for this period is estimated at around 95%.

**DOH Annual Report 2000/2001**

Department of Health. Department of Health Annual Report April 2000 - March 2001. Pretoria: Department of Health; 2001.
URL: http://www.doh.gov.za/docs/reports/annual/2000-01/index.html

**DOH Malaria**

Malaria Cases per Year. Department of Health. Last downloaded 2002-10-21.
URL: http://www.doh.gov.za/issues/malaria/updates/aug02.htm

**DOH Notification**

Department of Health (Directorate: Health Systems Research and Epidemiology). Notification System, Pretoria.
Details: http://www.doh.gov.za/facts/notify/

**DOH TB**

Department of Health (TB section). Pretoria.

**DOH TOP**

Termination of Pregnancy Update. Department of Health. May 2001.
URL: http://www.doh.gov.za/facts/abortion0524-01.pdf

**End Decade Report on Children**

End Decade Report on Children - South Africa. Pretoria: National Programme of Action for Children in South Africa; 2001.
URL: http://www.children.gov.za
Details: Available from: Office on the Rights of the Child Tel: +27-12-3375216 jabu@po.gov.za

**Facilities Survey 1998**

Measuring quality of care in South African Clinics and Hospitals; Technical Report to Chapter 14 of the South African Health Review 1998. Durban: Health Systems Trust; 1998.
URL: http://www.hst.org.za/sahr/98/Care/

**Facilities Survey 2000**

Viljoen R, Heunis C, van Rensburg EJ et al. The National Primary Health Care Facilities Survey 2000. Durban: Health Systems Trust; 2000.
URL: http://www.hst.org.za/pubs/nphc.htm

**Fiscal Review 2001**

Intergovernmental Fiscal Review 2001. Pretoria: National Treasury Republic of South Africa; October 2001.
URL: http://www.treasury.gov.za

**Food Consumption Survey**

Labadarios, D (Ed). The National Food Consumption Survey (NFCS): Children aged 1-9 years, South Africa, 1999. Pretoria: Department of Health; 2000.
URL: http://www.sahealthinfo.org/Modules/Nutrition/foodconsumption/foodconsumption.html

**Global HIV/AIDS 2002**

Report on the Global HIV/AIDS Epidemic 2002. Geneva: UNAIDS; 2002.
URL: http://www.unaids.org/barcelona/presskit/barcelona report/contents.html

**Global TB Control**

World Health Organization. Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2002. Geneva; WHO: 2002.
URL: http://www.who.int/gtb/publications/globrep02/

**HDR 2000 SA**

Taylor, V. UNDP South Africa Human Development Report 2000. United Nations Development Programme; 2000.
URL: http://www.undp.org.za/sahdr2000/sahdr20002.html

**HDR 2001**

Human Development Report 2001: Making new technologies work for human development. New York: United Nations Development Programme; 2001
URL: http://www.undp.org/hdr2001/

**HDR 2002**

Human Development Report 2002: Deepening democracy in a fragmented world. New York: United Nations Development Programme; 2002.
URL: http://www.undp.org/hdr2002/

**Health Annals 2002**

Steyn N (Ed). Health Annals 2002. Johannesburg: Hospital Association of South Africa (HASA); 2002.
URL: http://www.hasa.org.za/

**HIV Children Services**

Giese S, Hussey G, compilers. Rapid Appraisal of Primary Level Health Care Services for HIV-Positive Children at Public Sector Clinics in South Africa. Durban: Health Systems Trust; 2002.
URL: http://www.hst.org.za/research/phc_hiv.htm

**HIV Household Survey 2002**

Shisana O, Principal Investigator. Nelson Mandela/HSRC Study of HIV/AIDS - South African National HIV Prevalence, Behavioural Risks and Mass Media Household Survey 2002. Cape Town: Human Sciences Research Council; 2002.
URL: http://www.hsrcpublishers.co.za/hiv.html
Details: Overall, a total of 14 450 potential participants composed of 4 001 children, 3 720 youths and 6 729 adults were selected for the survey and 13 518 (93.6%) were actually visited. A small proportion (6.4%) of potential respondents could not be approached due to logistic constraints that were unavoidable in a study of such magnitude. Among the 13 518 individuals who were selected and contacted for the survey, 9 963 (73.7%) persons agreed to be interviewed, and 8 840 (65.4%) agreed to also give a specimen for an HIV test. Thus 88.7% of those who agreed to be interviewed also gave a specimen for testing.

**HIV Indicators 2002**

Dorrington RE, Bradshaw D, Budlender D. HIV/AIDS profile of the provinces of South Africa – indicators for 2002. Centre for Actuarial Research, Medical Research Council and the Actuarial Society of South Africa; 2002.
URL: http://www.mrc.ac.za
Details: AIDSIndicators2002.pdf

**Hosp Yearbook 2002**

Young S (Ed). 2002 Hospital & Nursing Yearbook for Southern Africa. 42nd ed. Pretoria: Pharmaceutical Printers and Publishers; 2002.
Details: ISSN 0449-2613. ppp-awh@mweb.co.za

**IFR Projections 1999**

Haldenwang BB. High, Medium and Low Projections of the South African Population, 1996-2031. Cape Town: Institute for Futures Research; 1999.
URL: http://www.ifr.sun.ac.za/
Details: High population projections: The demographic impact of HIV/AIDS is not incorporated, therefore life expectancy at birth increases throughout the projection period; fertility rates decline steadily; and a high degree of in-migration (200 000 per annum) is assumed. Medium population projections: The impact of the HIV/AIDS epidemic is incorporated from 2011 onwards; fertility rates in black/African and coloured women decline more rapidly than in the high projections; and a medium degree of in-migration (150 000 per annum) is assumed. Low

population projections: The impact of the HIV/AIDS epidemic is incorporated from 1996 onwards; fertility rates are similar to those of the medium projections; and a low degree of in-migration (100 000 per annum) is assumed.

**Impacts & Interventions**

Gow J, Desmond C (Eds). Impacts and Interventions: The HIV/AIDS Epidemic and the Children of South Africa. South Africa: University of Natal Press; 2002.
URL: http://www.unpress.co.za/

**Iodine Deficiency 2000**

Report of the South African Institute for Medical Research on the Iodine Deficiency Disorder (IDD) Survey of Primary School Learners for the Department of Health, South Africa. Pretoria: SAIMR; 2000.

**Kids Count**

Haub C, Rogers M. Kids Count International Data Sheet. Washington; Population Reference Bureau: 2002.
URL: http://www.kidscount.org/

**Labour force survey**

Statistics South Africa: Statistical release P0210; Labour force survey. (various years)
URL: http://www.statssa.gov.za/

**Maternal Deaths 1998**

Pattinson RC (Ed). Saving Mothers: Report on Confidential Enquiries into Maternal Deaths in South Africa 1998. October 1999.
URL: http://www.doh.gov.za/docs/reports/mothers/contents.html
Details: Note that the methodology of confidential enquiries make them not an ideal public health tool for estimating maternal mortality ratios, primarily because reporting is health institution based and often under-reported. For 1998, the only provinces where there is a fair degree of confidence that the vast majority of deaths were recorded were Free State, Gauteng and Western Cape.

**Maternal Deaths 1999**

National Committee for Confidential Enquiries into Maternal Deaths. Second Interim Report on Confidential Enquiries into Maternal Deaths in South Africa: Maternal Deaths for 1999. Pretoria: Department of Health; 2000.
URL: http://www.doh.gov.za/docs/reports/1999/interim-rep.pdf

**Maternal Deaths 2000**

National Committee for Confidential Enquiries into Maternal Deaths. Third Interim Report on Confidential Enquiries into Maternal Deaths in South Africa: Changing Patterns in Maternal Deaths 1998-2000. Pretoria: Department of Health; 2001.
Details: ISBN: 1-875017-60-7

**Medical Schemes 1999**

Report of the Registrar of Medical Schemes 1999. Pretoria: Council for Medical Schemes; 2000.
URL: http://www.medicalschemes.com

**Medical Schemes 2000**

Report of the Registrar of Medical Schemes 2000. Pretoria: Council for Medical Schemes; 2002.
URL: http://www.medicalschemes.com

**Medical Schemes 2001**

Annual report of the Registrar of Medical Schemes 2001. Pretoria: Council for Medical Schemes; 2002.
URL: http://www.medicalschemes.com
Details: ISBN: 0-621-33457-X

**Metropolitan 2001**

Kramer S. Mortality & Population: The Doyle Model. Metropolitan. 2001. (PowerPoint presentation and spreadsheet.)
Details: skramer@metropolitan.co.za

**MRC AIDS Report**

Dorrington R, Bourne D, Bradshaw D, Laubscher R, Timaeus IM. The impact of HIV/AIDS on adult mortality in South Africa. Medical Research Council; Sep 2001.
URL: http://www.mrc.ac.za/bod/

**MRC Iodine**

Joose P, de Hoop M, Pretorius A, Jatji J. Supporting Salt Producers Towards Optimal Iodisation of Household Salt in South Africa. MRC Policy Brief Sep 2002; 4.
URL: http://www.mrc.ac.za/

**MRC Orphans**

Bradshaw D, Johnson L, Schneider H, Bourne D, Dorrington R. Orphans of the HIV/AIDS Epidemic. MRC Policy Brief May 2002; 2.
URL: http://www.mrc.ac.za

**NATIONS**

National Tobacco Information Online System (NATIONS).
URL: http://apps.nccd.cdc.gov/nations/

**NHA Private 2001**

Cornell J, Goudge J, McIntyre D, Mbatsha S. National Health Accounts. The Private Sector Report. Pretoria: Department of Health; March 2001.

**NHA Public 2000**

Thomas S, Muirhead D. National Health Accounts Project: The Public Sector Report. Pretoria: Department of Health; November 2000.

**Overweight prevalence**

de Onis M, Blossner M. Prevalence and trends of overweight among preschool children in developing countries. Am J Clin Nutr 2000; 72: 1032-9.
URL: http://www.who.int/nutgrowthdb/

**PERSAL**

PERSAL Personnel Administration System.

**Pharmaciae Oct 2002**

South African Pharmacy Council. Pharmaciae 2002; 10(4): 24-25.

**PHC in EC 1997-2000**

Mahlalela X, Rohde J, Meidany F, Hutchinson P, Bennett J. Primary Health Care in the Eastern Cape Province 1997-2000. East London: The EQUITY Project; 2001.
URL: http://www.equityproject.co.za/Documents/PHC.htm

**Population Bulletin Sep 2002**

Lamptey P, Wigley M, Carr D, Collymore Y. Population Bulletin 2002 Sep; 57(3).
URL: http://www.prb.org/

**PRB Handbook**

Haupt A, Kane TK. Population Reference Bureau's Population Handbook. 4th International Ed. Washington DC: Population Reference Bureau; 2000.
URL: http://www.prb.org

**PRB Pop Data Sheet 2001**

2001 World Population Data Sheet. Washington DC: Population Reference Bureau; May 2001.
URL: http://www.prb.org/Content/NavigationMenu/Other_reports/2000-2002/2001_World_Population_Data_Sheet.htm

**PRB Pop Data Sheet 2002**

2002 World Population Data Sheet. Washington DC: Population Reference Bureau; August 2002.
URL: http://www.prb.org/

**RRA Barometer Aug 2001**

Braam, T (Ed). Barometer (7). Johannesburg: Reproductive Rights Alliance; August 2001.
URL: http://www.hst.org.za/rra/
Details: rracoord@sn.apc.org Note that there are some discrepancies between the TOP data presented by RRA and the data published by the Department of Health. However the RRA data provides a more detailed breakdown by maternal and gestational age, although there are some problems with these breakdowns, where for example the number of TOPs at <12 weeks and >12 weeks is more than the total reported TOPs.

**RRA Barometer May 2002**

Braam, T (Ed). Barometer. Johannesburg: Reproductive Rights Alliance; May 2002.

URL: http://www.hst.org.za/rra/barometer/may2002.htm

**SA GYTS**

South Africa Global Youth Tobacco Survey (GYTS) Fact Sheet.
URL:http://www.cdc.gov/tobacco/global/gyts/factsheets/SA_factsheet.htm
Details: The South Africa GYTS includes data on prevalence of cigarette and other tobacco use as well as information on five determinants of tobacco use: access/availability and price, environmental tobacco smoke exposure (ETS), cessation, media and advertising, and school curriculum. These determinants are components South Africa could include in a comprehensive tobacco control program. The South Africa GYTS was a school-based survey of students in grades 8-10, conducted in 1999.

**SA Pop Report 2000**

National Population Unit. The State of South Africa's Population Report 2000. Pretoria: Department of Social Development; 2000.
URL: http://www.gov.za/reports/2000/population/

**SA Uncertain Demographics**

Lutz W, Scherbov S, van Aardt C. South Africa's Uncertain Demographic Present and Future. Austria: International Institute for Applied Systems Analysis; 2001.
URL: http://www.iiasa.ac.at

**SADHS 1998**

South Africa Demographic and Health Survey 1998. Preliminary Report. Department of Health, Medical Research Council, Macro International; 1999.
URL: http://www.healthnet.org.za/Publications/DemographicSurvey/demographicsurvey.htm

**SAHR 1998 Ch13**

Soderlund N, Schierhout G, van den Heever A. Private Health Sector Care. In: Ntuli A (Ed). South African Health Review 1998. Durban: Health Systems Trust; 1998.
URL: http://www.hst.org.za/sahr/98/chap13.htm

**SAHR 1999 Ch16**

Van Rensburg D, van Rensburg N. Distribution of human resources. In: Crisp N, Ntuli A (Eds). South African Health Review 1999. Durban: Health Systems Trust; 1999.
URL: http://www.hst.org.za/sahr/99/chap16.htm

**SAHR 1999 Ch9**

Kawonga M, Knight S. State-aided Hospitals. In: Crisp N, Ntuli A (Eds). South African Health Review 1999. Durban: Health Systems Trust; 1999. URL: http://www.hst.org.za/sahr/99/chap9.htm

**SAHR 2000 Ch4**

Bradshaw D, Masiteng K, Nannan N. Health Status and Determinants. In: Ntuli A, Crisp N, Clarke E, Barron P (Eds). South African Health Review 2000. Health Systems Trust. 2001.
URL: http://hst.org.za/sahr/2000/chapter4.htm

**SAHR 2000 Ch5**

Thomas S, Muirhead D, Doherty J, Muheki C. Public Sector Financing. In: Ntuli A, Crisp N, Clarke E, Barron P (Eds). South African Health Review 2000. Durban: Health Systems Trust; 2000.
URL: http://www.hst.org.za/sahr/2000/chapter5.htm

**SAHR 2001 Ch2**

Barron P, Asia B. The District Health System. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds). South African Health Review 2001. Durban: Health Systems Trust; 2002.
URL: http://www.hst.org.za/sahr/2001/chapter2.htm

**SAHR 2001 Ch6**

Williamson L, Stoops N. Using Information for Health. In: Ntuli A, Suleman F, Barron P, McCoy D (Eds). South African Health Review 2001. Durban: Health Systems Trust; 2002.
URL: http://www.hst.org.za/sahr/2001/chapter6.htm

**SAHR 2002 Ch8**

Reid S. Community Service for Health Professionals. In: Ijumba P, Ntuli A, Barron P (Eds). South African Health Review 2002. Durban: Health Systems Trust; 2003.
URL: http://www.hst.org.za/sahr/

**SAHR 2002 Ch19**

Herbst K, Burn A, Nzimande N. Public Health Data Saources. In: Ijumba P, Ntuli A, Barron P (Eds). South African Health Review 2002. Durban: Health Systems Trust; 2003.
URL: http://www.hst.org.za/sahr/

**SAHR 2002 Ch15**

Kironde S and Bamford L. Tuberculosis. In: Ijumba P, Ntuli A, Barron P (Eds). South African Health Review 2002. Durban: Health Systems Trust; 2003.
URL: http://www.hst.org.za/sahr/

**SAMJ 92(468-72)**

Van Walbeek C. Recent trends in Cigarette Smoking Prevalence in South Africa: Some evidence from AMPS data. S Afr Med J 2002; 92(6): 468-72.

**SAMJ 92(729-31)**

Buchmann EJ, Mensah K, Pillay P. Legal Termination of Pregnancy among Teenagers and Older Women in Soweto, 1999 - 2001. S Afr Med J 2002; 92: 729-31.

**SAVACG Survey**

Children aged 6-71 months in South Africa 1994: their anthropometric, vitamin A, iron and immunisation coverage and status. The South African Vitamin A Consulting Group (SAVACG); 1995.

**Saving Babies**

Pattinson, RC (Ed). Saving Babies: A perinatal care survey of South Africa 2000. South Africa: Medical Research Council; 2000.
URL: http://www.hst.org.za/doh/saving_babies.htm

**Stats Notes Jan 2001**

Chief Directorate: Health Monitoring and Evaluation. Statistical Notes 3(1). Pretoria: Department of Health; January 2001.
URL: http://www.doh.gov.za/
Details: Also available from http://www.doh.gov.za/facts/stats-notes/2000/oct00-notify.pdf

**StatsSA Causes of Death**

Statistics South Africa. Causes of death in South Africa 1997-2001: Advance release of recorded causes of death (P0309.2). Pretoria: Statistics South Africa; 2002.
URL: http://www.statssa.gov.za/

**StatsSA HDI 2001**

Human Development Index. Pretoria: Statistics South Africa; June 2001.
URL: http://www.statssa.gov.za/
Details: Under Statistical Releases. Saved as human_dev_index.pdf

**StatsSA Mid-Year Est. Hedberg**

Hedberg, C. Calculated Population Estimates based on published StatsSA model.
URL: http://hst.org.za/local/docs/popdata.htm

**StatsSA Mid-Year Estimates**

Statistics South Africa: Statistics release P0302; Mid-year estimates. (various years)
URL: http://www.statssa.gov.za/
Details: A new feature of the 2000 mid year estimates was that two population estimates were provided, one taking into account the estimated additional deaths that might have occurred due to HIV/AIDS (With AIDS) and one that does not attempt to model the impact of AIDS (Without AIDS). The assumptions that underpinned these estimates are outlined in the relevant P0302 Statistical release.

**StatsSA OHS**

Statistics South Africa. October Household Survey, Statistical Release PO317. Pretoria. (various years)

URL: http://www.statssa.gov.za

Details: The 1999 OHS survey gathered detailed information on approximately 140 000 people living in 30 000 households. The survey covers a range of development and poverty indicators, including unemployment rates. The OHS of 1999 was drawn from a master sample, in which households from the same primary sampling until will be visited for a variety of surveys. This was the first time that a master sample was used to select households to be interviewed. Altogether 3000 EAs were drawn in 1999. The 1999 OHS, in common with the 1997 and 1998 OHS, was weighted to reflect estimates of the population size based on the population census of 1996.

**StatsSA OHS 1995-9**

Hirschowitz R, Sekwati W, Budlender D. South Africa in transition: Selected findings from the October household survey of 1999 and changes that have occurred between 1995 and 1999. Pretoria: Statistics South Africa; 2001.

URL: http://www.gov.za/reports/2001/survey.pdf

Details: Available from www.statssa.gov.za

**Strategic Framework 2004**

Health Sector Strategic Framework 1999 - 2004. Pretoria: Department of Health; 1999.

URL: http://www.doh.gov.za/docs/policy/framewrk/index.html

**SWP 2002**

Marshall A (Ed). The State of World Population 2002: people, poverty and possibilities. New York: United Nations Population Fund; 2002.

URL: http://www.unfpa.org/swp/swpmain.htm

**Tobacco Atlas**

Mackay J, Eriksen M. The Tobacco Atlas. WHO; 2002.

URL: http://www5.who.int/tobacco/page.cfm?sid=84

**Vaccines & Immunization**

WHO/UNICEF/The World Bank. State of the World's Vaccines and Immunization. Geneva: UNICEF; 2002.

URL: http://www.unicef.org/noteworthy/sowvi/

**WHO Childhood nutrition**

World Health Organization. Childhood nutrition and progress in implementing the International Code of Marketing of Breast-milk Substitutes EB109/11. World Health Organization; 2001.

URL: http://www.who.int/gb/EB_WHA/PDF/EB109/eeb10911.pdf

**WHO Violence and Health**

Krug EG, Dahlberg LL, Mercy JA, Zwi AB, Lozano R (Eds). World report on violence and health. Geneva: World Health Organization; 2002.

URL: http://www.who.int/violence_injury_prevention/

**WHOSIS**

WHO Estimates of Health Personnel.

URL: http://www-nt.who.int/whosis/statistics/menu.cfm

Details: Link to Health Personnel

**World Health Report 2000**

World Health Organization. The World Health Report 2000. Health Systems: Improving Performance. Geneva: World Health Organization; 2000.

URL: http://www.who.int/health-systems-performance/whr2000.htm

Details: As at January 2002, how to proceed with subsequent inter-country comparisons of health systems performance is still being debated by the World Health Organization. Report of the working group was submitted to the WHO Executive Board - see http://www.who.int/gb/EB_WHA/PDF/EB109/eeb1096.pdf

**World Health Report 2002**

World Health Organization. The World Health Report 2002. Reducing Risks, Promoting Health Life. Geneva: World Health Organization; 2002.

URL: http://www.who.int/whr/2002/en/

**Young People and HIV/AIDS**

Young People and HIV/AIDS: Opportunity in Crisis. United Nations Children's Fund, Joint United Nations Programme on HIV/AIDS and World Health Organization. 2002.

URL: http://www.unaids.org/barcelona/presskit/youngpeople/

# Glossary

| | | |
|---|---|---|
| AC | Administrative Clerk or Accreditation Committee | |
| AEFI | Adverse Events Following Immunisation | |
| AFA | Aid For Aids | www.aidforaids.org |
| AFP | Acute Flaccid Paralysis | |
| AHPP | Agincourt Health and Population Programme | www.indepth-network.org/ dss_site_profiles/agincourtprofile.htm |
| AIDS | Acquired Immune Deficiency Syndrome | |
| AMPS | All Media and Product Survey | |
| ANC | African National Congress<br>or<br>Antenatal Care | www.anc.org.za |
| ART | Antiretroviral therapy | |
| ARV | Antiretroviral | |
| ASIR | Age Standardised Incidence Rate | |
| ASSA | Actuarial Society of South Africa | www.assa.org.za |
| AU | African Union | www.africa-union.org |
| AusAID | Australian Government's overseas aid program | www.ausaid.gov.au/scholar/default.cfm |
| AZT | Azidothymidine | |
| BAS | Basic Accounting System | |
| BCC | Basal Cell Carcinoma | |
| BCG | Bacille Calmette Geurin (TB vaccine) | |
| BMI | Body Mass Index | |
| BSS | Behaviour Sentinel Surveillance | |
| CANSA | Cancer Association of South Africa | www.cansa.org.za |
| CARE | Centers for Actuarial Research | www.commerce.uct.ac.za/care |
| CASE | Community Agency for Social Enquiry | www.case.org.za |
| CBHP | Community Based Health Programme | |
| CBHW | Community Based Health Worker | |
| CBNP | Community Based Nutrition Project | |
| CBO | Community Based Organisation | |
| CCM | Country Coordinating Mechanism | |

| | | |
|---|---|---|
| CDC | Centres for Disease Control and Prevention | www.cdc.gov |
| CHC | Community Health Committee | |
| CHF | Community Health Facilitator | |
| CHOiCE | Comprehensive Health Care Trust | |
| CHP | Centre for Health Policy | www.hst.org.za.chp |
| CHW | Community Health Worker | |
| COMP | Community Outcome Monitoring Project | |
| COPD | Chronic Obstructive Pulmonary Disease | |
| CORP | Community Resource Person | |
| COSATU | Congress of South African Trade Unions | www.cosatu.org.za/ |
| CPT | Cotrimoxazole Preventive Therapy | |
| CRF | Community Rehabilitation Facilitator | |
| CS | Community Service | |
| CTOP | Choice on Termination of Pregnancy | |
| DBBS | Deprivation-Based Budgeting Score | |
| DEAT | Department of Environmental Affairs and Tourism | www.environment.gov.za |
| DENOSA | Democratic Nursing Organisation of South Africa | www.denosa.org.za |
| DFID | Department for International Development | www.dfid.gov.uk |
| DHA | District Health Authority | |
| DHC | District Health Council | |
| DHIS | District Health Information System | |
| DHS | District Health System | |
| DIS | Deprivation Index Score | |
| DISCA | District STI Quality of Care Assessment | |
| DMP | Disease Management Programme | |
| DoH | Department of Health | www.doh.gov.za |
| DOTS | Directly Observed Treatment Short-course | |
| DPT/DTP | Diptheria Pertussis Tetanus/Diptheria Tetanus Pertussis | |
| DRC | Democratic Republic of Congo | |
| DSS | Demographic Surveillance System | |
| DTDD | DOTS Training and Demonstration District | |
| DWAF | Department of Water Affairs and Forestry | |
| EC | Eastern Cape | www.ecprov.gov.za |

| | | |
|---|---|---|
| ECI | Ebony Consulting International | www.eciafrica.co.za |
| EDS | Essential Data Set | |
| ECDoH | Eastern Cape Department of Health | |
| EHA | Environmental Health Assistant | |
| EHD | Environmental Health Directorate | |
| EHP | Environmental Health Practitioner | |
| EPI | Extended Programme on Immunisation | |
| ETR | Electronic TB Register | |
| EST | Equitable Share Transfer | |
| ETS | Equitable Target Share<br>or<br>Environmental Tobacco Smoke exposure | |
| FBO | Faith Based Organisation | |
| FEDUSA | Federation of Unions for South Africa | www.fedusa.org.za |
| FHI | Family Health International | www.fhi.org |
| FMS | Financial Management System | |
| FS | Free State | |
| GDP | Gross Domestic Product | |
| GEAR | Growth Employment and Redistribution Strategy | |
| GFATM | Global Fund to Fight AIDS, TB and Malaria | |
| GITOC | Government Information Technology Council | |
| GNP | Gross National Product | |
| GP | General Practitioner | |
| GT | Gauteng | www.gauteng.net/ |
| GYTS | Global Youth Tobacco Survey | www. cdc.gov.tobacco/global/GYTShtm |
| H/A | Height for Age | |
| HAART | Highly Active Antiretroviral Therapy | |
| HAC | HIV/AIDS Communicator | |
| HALE | Healthy Life Expectancy | |
| HASA | Hospital Association of South Africa | www.hasa.co.za/ |
| HBC | Home Based Care or Home Based Caregiver | |
| HDI | Human Development Index | |
| HEARD | Health Economics and HIV/AIDS Research Division | www.und.ac.za/und/heard/ - |
| HER | Health Expenditure Review | |

| | | |
|---|---|---|
| Hib | Haemophilus Influenza Type B Vaccine | |
| HIV | Human Immunodeficiency Virus | |
| HIV/AIDS | see HIV and AIDS | |
| HIV/AIDS/STI | see HIV and AIDS and STI | |
| HR | Human Resources | |
| HRD | Human Resources Development | |
| HSP | Health Service Provider | |
| HSRC | Human Sciences Research Council | www.hsrc.ac.za |
| HST | Health Systems Trust | www.hst.org.za |
| HTA | High Transmission Area | |
| H/W | Height for Weight | |
| ICBDMS | International Clearing House for Birth Defects Monitoring System | |
| IDD | Iodine Deficiency Disorder | |
| IDP | Integrated Development Plan | |
| IEC | Information Education and Communication | |
| IGFR | Intergovernmental Fiscal Review | |
| ILO | International Labour Organisation | www.ilo.org/ |
| IMCI | Integrated Management of Childhood Illnesses | |
| INP | Integrated Nutrition Programme | |
| IPF | Inter Provincial Financing | |
| IPT | Isoniazid Preventive Therapy | |
| ISC | Iodised Salt Consumption | |
| ISRDP | Integrated Sustainable Rural Development Site | www.ecprov.gov.za |
| ITM | Insecticide Treated Material | |
| IUATLD | International Union Against Tuberculosis and Lung Disease | www.iuatld.org/ |
| KAP | Knowledge Attitude and Practice | |
| KNCV | Royal Tuberculosis Association of Netherlands | www.artsen.net/kncv/ |
| KZN | KwaZulu-Natal | www.kzn.org.za |
| LBW | Low Birth Weight | |
| LGV | Lympho Granuloma Venereum | |
| LP | Limpopo | www.limpopo.gov.za |
| LSDI | Lubombo Spatial Development Initiative | www.lubombo.org.za |
| MDR | Multiple Drug Resistance | |

| | | |
|---|---|---|
| MDS | Minimum Data Set | |
| MEC | Member of Executive Committee | |
| MEDUNSA | Medical University of South Africa | |
| MHA | Municipality Health Authority | |
| MHS | Municipality Health Services | |
| MINMEC | Minister/Members of the Executive Committee | |
| MIS | Management of Information System | |
| MP | Mpumalanga | www.mpumalanga.com |
| MRC | Medical Research Council | www.mrc.ac.za |
| MSF | Médecins Sans Frontières | www.msf.org/ |
| MTEF | Medium Term Expenditure Framework | |
| MUD | Male Urethral Discharge | |
| NACTU | National Council of Trade Unions | www.nactu.co.za |
| NAFCI | National Adolescent Friendly Clinic Initiative | |
| NATIONS | National Tobacco Information Online System | apps.nccd.cdc.gov/nations/ |
| NC | Northern Cape | www.northerncape.org.za |
| NCOH | National Centre for Occupational Health | www.hoh.gov.za/department/ncoh.html |
| NDoH | National Department of Health – see DoH | |
| NDoT | National Department of Transport | www.transport.gov.za |
| NEDLAC | National Economic Development and Labour Council | www.nedlac.org.za |
| NEPAD | New Partnership for Africa's Development | www.nepad.org.za |
| NFCS | National Food Consumption Survey | |
| NGO | Non Governmental Organisation | |
| NHA | National Health Accounts | |
| NHISCSA | National Health Information Systems Committee of South Africa | |
| NHIS/SA | National Health Information Systems /SA | |
| NHIS | National Health Information Systems | |
| NHLS | National Health Laboratory Services | |
| NIS | National Iodine Survey | |
| NNRTI | Non-Nucleoside Reverse Transcriptase Inhibitor | |
| NNT | Neonatal Tetanus | |
| NTBCP | National TB Control Programme | |
| NUM | National Union of Miners | |

| | | |
|---|---|---|
| NW | North West | www.nwpg.org.za |
| OAU | Organisation of African Unity (now AU) | |
| OHS | Oral Health Services<br>or<br>October Household Survey | |
| OHSAS | Occupational Health and Safety Act, No 85 of 1993 | www.parliament.gov.za/acts/1993/act93.85 |
| OPV | Oral Polio Vaccine | |
| OVC | Orphans and Vunerable Children | |
| PBM | Prescribed Minimum Benefit | |
| PBR | Performance Based Reimbursement | |
| PCM | Provincial Coordinating Mechanism | |
| PCR | Polymarase Chain Reaction | |
| PDoT | Provincial Department of Transport | |
| PEM | Protein Energy Malnutrition | |
| PERSAL | Personnel Administration System | |
| PFMA | Public Finance Management Act | www.finance.gov.za/legislation/acts/pfma.htm |
| PHA | Provincial Health Authority | |
| PHAC | Provincial Health Advisory Committee | |
| PharMIS | Pharmaceutical Management Information System | www.pharmis.pwv.gov.za |
| PHAST | Participatory Hygiene and Sanitation Transformation | |
| PHC | Primary Health Care | |
| PHRC | Provincial Health Restructuring Committee | |
| PHRU | Perinatal HIV Research Unit | www.hivsa.com/phru/default2.asp |
| PLWH | People Living with HIV<br>or<br>People Living with AIDS, People Living with HIV/AIDS | |
| PMTCT | Prevention of Mother-to-Child Transmission | |
| PNMR | Prenatal Mortality Rate | |
| POP | Persistent Organic Pollutants | |
| PP | Public-Private<br>or<br>Poverty Prevalence | |
| PPI | Private-Public Initiative | |
| PPP | Private Public Partnership<br>or<br>Purchasing Power Parity | |

| | | |
|---|---|---|
| PROMEC | Programme on Mycotoxins and Experimental Carcinogenesis | www.mrc.ac.za/promec/contents.htm |
| PSNP | Primary School Nutrition Programme | |
| PTB | Pulmonary TB | |
| RDA | Recommended Daily Allowance | |
| REC | Regional Economic Community | |
| RHRU | Reproductive Health Research Unit | www.rhru.co.za |
| RISDP | Regional Indicative Strategic Development Plan | |
| RMCC | Regional Malaria Control Commission | www.malaria.org.za/lsdi/overview/regional_malaria_control_commi.html |
| SA | South Africa | |
| SA GYTS | South Africa Global Youth Tobacco Survey | |
| SADA | South African Data Archives | www.nrf.ac.za/sada/ |
| SADC | Southern Africa Development Community | www.sadc.int |
| SADTR | South African Dialysis and Transplantation Registry | www.uct.ac.za/depts/immun/regis.htm |
| SAHR | South African Health Review | www.hst.org.za/sahr/ |
| SAHDS | South Africa Health Demographic Survey | |
| SAIMR | South African Institute of Medical Research | |
| SAMA | South African Medical Association | www.samedical.org |
| SAMC | Southern Africa Malaria Control | www.malaria.org.zw |
| SAMRC | South Africa Medical Research Council see MRC | www.mrc.ac.za |
| SANAC | South African National AIDS Council | |
| SANCR | South Africa National Cancer Registry | www.cansa.co.za/registry.asp |
| SANTA | South African National TB Control Association | |
| SAQA | South African Qualification Authority | www.saqa.org.za |
| SATCI | Southern Africa TB Control Initiative | |
| SAVACG | South Africa Vitamin A Consultative Group | www.sahealthinfo.org/nutrition/vitamina.htm |
| SCC | Squamous Cell Carcinoma | |
| SD | Standard Deviation | |
| SM | Syndromic Management | |
| SME | Small and Medium Enterprise | |
| SORDSA | Surveillance of Work-related and Occupational Respiratory Diseases in South Africa | www.asosh.org/Programmes/SORDSA/SORDSA.htm |
| StatsSA | Statistics South Africa | www.statssa.gov.za |

| | | |
|---|---|---|
| STD | Sexually Transmitted Diseases | |
| STI | Sexually Transmitted Infections | |
| TAC | Treatment Action Campaign | www.tac.org.za |
| TADSA | TB Alliance DOTS Support Organisation | |
| TB | Tuberculosis | |
| TB/DOTS | see TB and DOTS | |
| TB/HIV | see TB and DOTS and HIV | |
| TBSYS | TB System | |
| UCT | University of Cape Town | www.uct.ac.za |
| UNAIDS | Joint Programme of United Nations on HIV/AIDS | www.unaids.org |
| UNICEF | United Nations Children's Fund | www.unicef.org |
| UNPFA | United Nations Population Fund | www.unpfa.org |
| URL | Uniform Resource Locator | |
| USAID | United States Agency for International Development | www.usaid.gov |
| VCT | Voluntary Counselling and Testing | |
| VHW | Village Health Worker | |
| VIP | Very Important Patient | |
| VLP | Volunteer Lay People | |
| W/A | Weight for Age | |
| WC | Western Cape | www.westerncape.gov.za |
| W/H | Weight for Height | |
| WHO | World Health Organization | www.who.int |

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