

A REVIEW OF PROGRESS ON HIV, AIDS AND TUBERCULOSIS

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Given the intertwined TB and HIV epidemics, integration of HIV and TB services is critical, as well as HIV testing of TB patients and early initiation on ART. The government policy on initiation of ARV treatment in TB patients at a higher CD4 count level is important, given the high mortality rates in TB-HIV co-infected patients ...

As a United Nations member state, South Africa is signatory to the Millennium Declaration and is committed to achieve the Millennium Development Goals (MDGs) and targets for 2015. This chapter provides an overview of the status of South Africa's response to MDG 6 with a specific focus on the progress made to date with respect to HIV and tuberculosis (TB) – two intertwined epidemics contributing disproportionately to morbidity and premature mortality in South Africa. These epidemics are also closely linked to MDG 4 and 5 outcomes. Any progress made by South Africa to reverse current trends will have substantial implications for the global MDG targets as well as country level outcomes. This chapter will use available evidence to document the status of HIV and TB in South Africa relative to the South African Ministry of Health's strategy to address these diseases.

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Introduction

The focus of this chapter is Millennium Development Goal (MDG) 6, which aims to combat HIV, AIDS, tuberculosis (TB), malaria and cholera in order to halt and begin to reverse their spread. Given the limited availability of routinely collected data on cholera and malaria to monitor impact and temporal trends, these two diseases are not covered in this chapter as they do not make as substantial a contribution to morbidity and mortality rates in South Africa as do HIV and TB. South Africa is at the epicentre of the HIV pandemic and, as the epidemic has matured, the numbers with advancing HIV-related diseases have grown. TB is the most common opportunistic infection intertwining the HIV and TB epidemics and exacerbating an already severe existing TB epidemic.

Globally, two important targets were set for MDG 6:

- by 2010 to achieve universal access to treatment for HIV and AIDS for all those who need it; and
- by 2015 to halt and begin to reverse the incidence of major diseases such as HIV, TB and malaria.

The HIV and AIDS and STI Strategic Plan (NSP) for South Africa, 2007-2011 has similar goals which are set to achieve the following:

- 50% reduction in HIV incidence rates; and
- 80% treatment coverage of those in need of HIV treatment.¹

The targets for the South African Tuberculosis Strategic Plan for 2007-2011 are as follows:²

- 70% TB case detection rate;
- 85% TB cure rate; and
- >85% TB treatment success rate

Key tools required in monitoring progress include:

- the availability of robust baseline information on these targets;
- establishing priorities and timelines for achieving the goals; and
- regular monitoring of progress and appropriate interventions if targets are not being met.

Very limited routine surveillance data is available to monitor progress on targets, or at the programmatic level, to identify bottlenecks for service delivery and coverage nationally, provincially or at a clinic level. Limited discussion occurs at the level of service delivery to set targets and timelines. This disconnect between policies, implementation and evaluation is a critical shortcoming in the planning process and a major obstacle to achieving goals. There is growing recognition globally and nationally that the diversity of epidemics

cannot be resolved through adopting a standard generic approach. Instead, interventions need to be based on local knowledge and responses customised to suit local conditions. Interventions must include creating co-ownership through engaging stakeholders, through supporting staff and through mobilising communities to increase awareness to ensure adequate coverage and to monitor progress.

The Motlanthe and Zuma administrations have demonstrated unequivocal leadership, substantial resource allocation, and clear goals and priorities to address the twin challenges of TB and HIV.³

HIV and AIDS

What is needed to meet the NSP goals?

In this, the third decade of the pandemic, UNAIDS recommends “know your epidemic, and customise your response accordingly”.^{4,5} This entails harvesting knowledge on prevalence, incidence rates, most at risk populations and factors contributing to the spread of HIV. Strong health information systems as well as local and national surveillance are critical to generate this information.

In terms of available prevention interventions, the “ABC approach” viz. Abstinence, Behaviour change/ Be faithful and use of male and female Condoms remains the foundation of HIV prevention. Two additional Cs have been added to this – knowledge of HIV status through Counselling and HIV testing as well as medical male Circumcision. There are clear limitations for women who are unable to negotiate faithfulness or condom use.⁶ The results of the CAPRISA 004 tenofovir gel trial, demonstrating a 39% reduction in HIV infection and 51% reduction in genital herpes, provides hope for women-initiated HIV prevention methods.^{7,8} Confirmation of the results, to allow licensing of the product, is necessary before it can become available for use.

South Africa has one of the largest antiretroviral therapy (ART) programmes in the world but questions remain about whether it is reaching the levels of coverage needed to see population level reversals in morbidity and mortality trends.⁹

A key gateway to prevention and treatment services is knowledge of HIV status: this remains low in South Africa and is the rationale for the South African government’s national HIV counselling and testing (HCT) campaign.^{10,11}

The HIV epidemic in South Africa

About five million of approximately 50 million South Africans are currently living with HIV, accounting for 35% of the global burden of HIV infection.¹² An estimated 281 400 AIDS related deaths, and 410 000 new HIV infections occurred in 2010.¹² The South African HIV epidemic is described as a “generalised, hyper-endemic epidemic”, to demonstrate the unprecedented high HIV prevalence rate and continued rates of new HIV infections.^{4,13} Despite HIV being rare prior to 1990, the epidemic has evolved rapidly to an unprecedentedly high HIV prevalence, in excess of 15% for people aged between 15 to 49 years.^{10,14,15} New infection rates are more than 5% per year,¹⁶⁻¹⁹ with high and increasing morbidity and mortality rates.^{13,20-24} The high HIV prevalence places all sexually active persons at substantial risk of acquiring HIV infection. The majority of the new HIV infections are taking place in young adults under the age of 30, with young women under the age of 20 having three to six-fold higher rates of HIV infection compared to their male counterparts in this age group.

The predominant mode of HIV transmission in South Africa is through heterosexual sex, accounting for about 80% of all HIV infections, and by mother-to-child transmission.^{10,13} The major drivers of HIV include: social incohesion resulting from the migrant labour system;²⁵⁻²⁷ “no sense of future” resulting from high unemployment rates; low perceptions of self-risk; multiple concurrent sexual partnerships; poor internalisation of HIV statistics and its implications for HIV risk; high prevalence and incidence rates of HIV; peer pressure for young people to be sexually active; lack of knowledge of HIV status; gender and power disparities that restrict young women’s ability to negotiate monogamy or condom use; and high burden of other sexually transmitted diseases.²⁵⁻²⁹

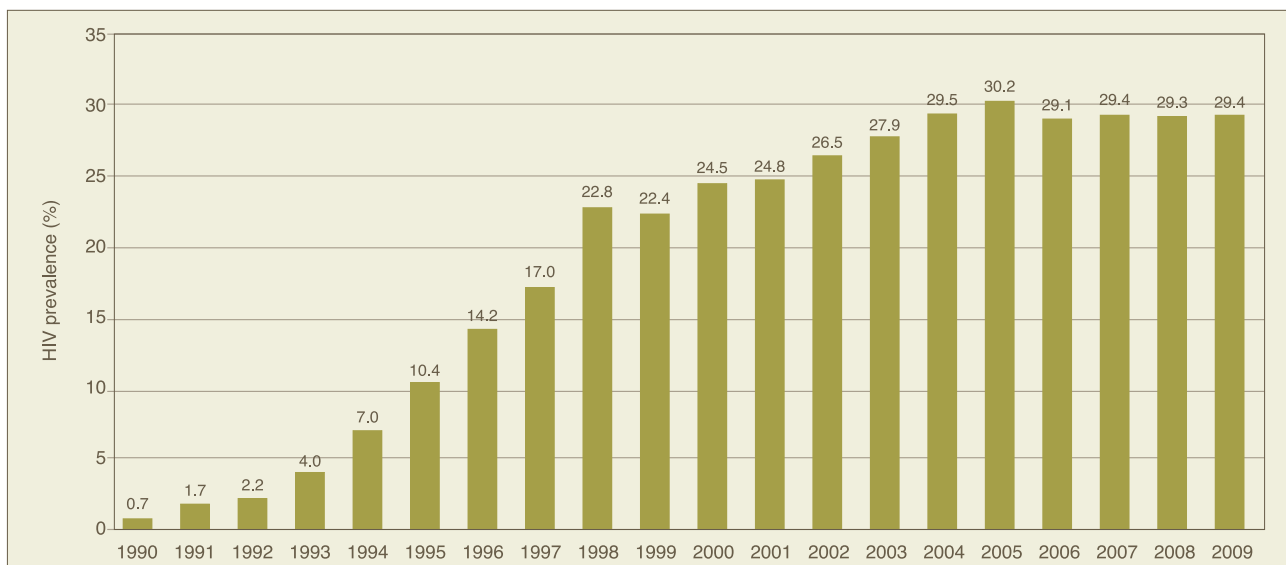
HIV prevalence

The National Antenatal Sentinel HIV and Syphilis Prevalence (ANC) surveys undertaken from 1990 provide the most reliable data to understand the evolving HIV epidemic in South Africa.³⁰ The temporal trends in national distribution of HIV infection from 1990 to 2009 are presented in Figure 1.

These surveys demonstrate that the HIV epidemic in South Africa peaked in the late 1990s and has now reached a stable state.^{13,30} This stabilisation of HIV prevalence suggests a steady state between the number of new HIV infections and numbers of deaths in this population. The data also demonstrate that the epidemic is most advanced in KwaZulu-Natal. In the 2008 survey, the highest HIV prevalence of 38.7% among pregnant women attending public sector clinics was in KwaZulu-Natal, and lowest in the Western Cape Province at 16.1%.³⁰

An analysis of the ANC survey data by age (Table 1) demonstrates that young pregnant women in the 15-24 year age group continue to have a high HIV prevalence. As HIV prevalence in this age group is regarded as a proxy of incidence rates, this is of concern.³¹ Whilst there has been a slight decline in the HIV prevalence in the 15-19 year age group from 15.9% in 2005 to 13.7% in 2009, the prevalence remains high. By age 30 years, more than a third of pregnant women nationally are already infected with HIV, highlighting the enormous burden of infection in young pregnant women. This burden in young women is higher and is reached earlier in life on the east coast of South Africa.

Figure 1: Prevalence of HIV infection among pregnant women attending public sector health care facilities in South Africa



Source: Department of Health, 2009.

Table 1: HIV prevalence among pregnant women by age groups, 2005-2008

Age group in years	HIV prevalence (%)				
	2005 N= 16 510	2006 N=33 034	2007 N=33 684	2008 N=33 927	2009 N=32 861
15-19	15.9	13.7	13.1	14.1	13.7
20-24	30.6	28.0	28.0	26.9	26.6
25-29	39.5	38.7	37.5	37.9	37.1
30-34	36.4	37.0	39.6	40.0	41.5
35-39	28.0	29.3	33.0	32.4	35.4
≥40	19.8	18.4	21.4	20.5	24.8
Total	30.2	29.1	29.4	29.3	29.4

Source: Department of Health, 2007; 2010.^{30,32}

HIV prevalence trends in pregnant women may not be representative of trends in all women. In the context of a maturing epidemic fertility rates decline in HIV-positive women, thus decreasing the reliability of the ANC data in terms of monitoring the evolving epidemic.^{33,34} Notwithstanding these limitations, the antenatal HIV surveillance of pregnant women remains an important source of data to monitor trends in HIV prevalence in the general population. Additionally, as prevention of mother-to-child transmission (PMTCT) services are strengthened, the ANC surveys provide one way to track the coverage and quality of services provided and to strengthen routine data collection at the point of service delivery. This can be used to enhance localised understanding of the epidemic and inform priority setting. It also provides an opportunity to link efforts to achieve MDGs 4 and 5.

It should be noted that as AIDS deaths lag behind new infections, HIV prevalence data in mature epidemics mask the ongoing increase of new HIV infections.³¹ Increasing access to ART and increased survival will also increase HIV prevalence. It is therefore important to augment HIV prevalence data derived from ANC surveys with data from other sources, including HIV incidence rate data. This is in order to get a more accurate indication of trends of HIV infection, guide HIV prevention efforts and planning for health care delivery. Measuring new HIV infections for sub-populations, such as young women in the 15-19 year age group, and acquiring knowledge of factors associated with HIV acquisition, are more sensitive ways to monitor HIV trends and target interventions for greater efficiency and impact but are expensive and logistically complicated to undertake. Given the close link between advancing HIV-related disease and TB, expanding surveillance to include TB populations is one way of monitoring trends in the HIV epidemic.³⁵

Population-based surveys generate important data by geography, age, sex and race and provide valuable information to supplement an understanding of the HIV epidemic in South Africa. The Human Sciences Research Council (HSRC) has undertaken three national HIV household surveys (HSRC Household Survey) in 2002, 2005 and 2008.^{10,14,15} These surveys demonstrate that HIV prevalence in the general

population in the 15-49 years age group increased from 15.6% in 2002, to 16.2% in 2005 and to 16.9% in 2008. The HIV prevalence among young men and women in the 15-24 year age group increased from 9.3% in 2002 to 10.3% in 2005, and decreased to 8.7% in 2008. A distinctive characteristic of the HIV epidemic is the age and sex difference in distribution of HIV infection, with young women acquiring HIV infection approximately five to seven years earlier than men. Age of partner is a key risk factor in HIV acquisition in young women under 20 years and this increases substantially if the male partner is four or more years older than the female partner.^{10,28}

HIV incidence rates

Monitoring changes in the rate of new HIV infections is critical to understanding the changing HIV transmission dynamics. National and provincial HIV incidence rates in South Africa have been generated from several studies and are presented in Table 2.

HIV incidence rates remain high.^{19,36} To estimate the HIV incidence from cross-sectional studies, the HIV-1 subtypes B, E, and D IgG-capture enzyme immunoassay (BED-CEIA) used in the 2005 HSRC Household Survey showed an overall HIV incidence rate of 1.4% per year amongst persons 2 years and older, and 2.4% among men and women aged 15-48 years. Young women in the age group 20-29 years had the highest rate of 5.6% compared to 0.9% amongst men in the same age group.¹⁷ Between 2003 and 2005, a prospective population based study conducted in rural KwaZulu-Natal showed the adjusted HIV incidence rate to be 7.9 per 100 person years for women 15-49 years of age, and 5.9 per 100 person years for men 15-54 years of age, confirming a high rate of new HIV infections.³⁷ However, modelling the HIV incidence estimate from HSRC surveys has shown an overall decline in HIV incidence rates from 2% per year in 2005 to 1.3% per year in 2008.³⁸

Amongst non-pregnant women, HIV incidence rates have exceeded 5 per 100 person years in both urban and rural settings, with the highest rate of 17.2 per 100 person years recorded in young urban women 14-19 years of age, though this estimate may be biased due to the small sample size.^{16,19,39,40} Among high risk women the HIV incidence rate was 7.2 per 100 person years, while in the Western Cape amongst 16-20 year old participants in a vaccine preparedness study the HIV incidence rate was 9.2 per 100 person years.^{18,41}

Table 2: National and provincial HIV incidence rates in South Africa

Reference	Sample	Method	HIV incidence		
National					
Rehle et al., 2010 ³⁸	Population based surveys	Modeling from prevalence		2005	2008
			Overall National	2.0	1.3
			Women (15-24 years)	5.5	2.2
			Men (15-24 years)	0.5	0.8
Rehle et al., 2007 ¹⁷	Population based survey	BED-HIV-1 capture enzyme immunoassay	Overall National (2 yrs and older)	1.4% per year	
			KwaZulu-Natal	1.7% per year	
			Women 20-29 years	5.6% per year	
			Men 20-29 years	0.9% per year	
Provincial					
Kharsany et al., 2010 ⁴⁰	Urban sexually transmitted disease clinic, KwaZulu-Natal (women)	HIV-1 RNA nucleic acid amplification test	15.6% per year		
Kharsany et al., 2010 ⁴²	Rural pregnant women		11.2% per year		
Ramjee et al., 2008 ¹⁶	Rural general population, Hlabisa, KwaZulu-Natal (women)	Longitudinal studies	6.0 per 100 person years		
	Urban general population, KwaZulu-Natal (women)		5.0 per 100 person years		
Abdool Karim et al., 2010 ¹⁹	Rural family planning clinic, KwaZulu-Natal (women)		6.5 per 100 person years		
	Urban sexually transmitted disease clinic, KwaZulu-Natal (women)		6.4 per 100 person years		
van Loggerenberg et al., 2008 ¹⁸	Urban sex workers (women)		7.2 per 100 person years		
Barnighausen et al., 2008 ³⁷	Population based survey, Hlabisa, KwaZulu-Natal		Follow-up survey	Men	5.1 per 100 person years
		Women		7.9 per 100 person years	
Moodley et al., 2009 ⁴³	Urban and rural pregnant women KwaZulu-Natal, Eastern Cape, Mpumalanga public sector clinics	Retesting	Overall	10.7 per 100 person years	
			Urban	12.4 per 100 person years	
			Rural	9.1 per 100 person years	

Government's response to HIV and AIDS

A key response to HIV and AIDS is President Zuma's announcement on World AIDS Day in 2009 in which the following prevention initiatives were prioritised:

- Information, education and mass mobilisation;
- STI detection and management;
- HIV testing and counselling to know one's status;
- Widespread provision of condoms (male and female);
- PMTCT;
- Safe blood transfusion;
- Post-exposure prophylaxis (PEP)
- Life skills education;
- Medical male circumcision; and
- Strengthening co-operation with international partners.

At the core of this plan lies the implementation of an extensive social mobilisation campaign to promote knowledge of HIV status. The national launch of the HCT campaign occurred on Sunday, 25 April 2010 at Natalspruit Hospital in Gauteng. Branded under the World AIDS Day theme,

"I am Responsible, We are Responsible, South Africa is taking Responsibility", the HCT Campaign seeks to achieve the following broad objectives:

- mobilise people to know their status;
- support people with key prevention messages in order to encourage them to take proactive steps towards a healthy lifestyle – irrespective of HIV status;
- increase the incidence of health seeking behaviour; and
- increase access to treatment, care and support services.

The NSP provides government departments, development partners and all sectors of civil society with information regarding policy, implementing interventions, monitoring and evaluation and surveillance as shown in Table 3. This does not, however, necessarily translate into effective service delivery on the ground, or the uptake and consistent uptake of treatment by patients.

Several other commitments and initiatives have been made in South Africa that impact on mitigating the effect of HIV, AIDS and TB. These include the following:

- The conditional HIV and AIDS grant in the national health budget has increased from R4.3 billion in 2008 to an estimated R5.3 billion.

Table 3: Current status and progress on HIV prevention and treatment in relation to the NSP, 2007-2011

NSP Target	Progress	Current status in achievements
Improvement of blood and blood product safety	100% of donated blood units are screened for HIV. ⁴⁴	<ul style="list-style-type: none"> ➤ 100% of blood donations are screened using nucleic acid amplification testing. ➤ Decline in HIV transmission through blood from an average of 2 persons per year to zero.^{44,45}
Prevention of mother-to-child transmission of HIV	Training of nurses at all primary health care (PHC) facilities to implement integrated services for PMTCT. Dual therapy has been introduced to almost 98% of health facilities through the intensified National PMTCT Accelerated Plan in 2008/09. ⁴⁴	<ul style="list-style-type: none"> ➤ 89% of all first time ANC clients are tested for HIV. ➤ Target of 95% has not been achieved, resulting in 25 848 new infections in children, with a national HIV perinatal transmission rate of 10.8.⁴⁴
Information, education and mass mobilisation HIV prevention media campaigns	Exposure to South Africa's HIV prevention communication through media campaigns is high, targeting 15-24 year olds for intensive HIV prevention programmes. ⁴⁴	<ul style="list-style-type: none"> ➤ 80% of sample surveyed had HIV prevention knowledge.⁴⁴ ➤ Exposure of media campaigns to population aged 50 and older still remains low.⁴⁴ ➤ Knowledge about HIV prevention improved with an increase in household wealth and for those living in urban areas.⁴⁶
Life skills HIV education	Full integration of the HIV based Life Skills programme in all learning areas has been achieved. ⁴⁴	<ul style="list-style-type: none"> ➤ Inconsistencies in the delivery of programmes.
Condom provision	Approximately 400 million male condoms are distributed annually with 2.5 billion male condoms expected to be distributed in 2010. ⁴⁴	<ul style="list-style-type: none"> ➤ Male and female condom distribution at no cost has been extended to truck stop clinics and to high transmission areas such as correctional service centres, tertiary institutions, hostels, taxi ranks and through mobile units targeting farming areas. ➤ Condom use has increased sharply in males and females from 2005 to 2008, especially among females with multiple partners where use has increased from 52.5% in 2005 to 67.5% in 2008.⁴⁴ ➤ The proportion of adults reporting condom use during the most recent episode of sexual intercourse in South Africa increased from 31.3% in 2002 to 64.8% in 2008.⁴⁷ ➤ A major challenge has been the consistency in the maintenance of regular supply of both male and female condoms.
Treatment of sexually transmitted infections (STIs)	The prevalence of syphilis has shown a steady decline from 1997 (11.2%) to 1.9% in 2008. ⁴⁴	<ul style="list-style-type: none"> ➤ Decline in syphilis rates attributed to more effective syndromic STI management, and possible shift in behaviour from HIV prevention messages. ➤ Effective syndromic management of STIs available through PHC facilities. ➤ Effective treatment rate of partners remains low. STI partner-tracing rate was 21% compared to the target of 40%.⁴⁸ ➤ Ongoing training of health care personnel is required for sustained care and management of STIs. ➤ Community information and education on STI health seeking behaviour is urgently needed.
HIV counselling and testing (HCT)	HCT, a key prevention strategy, serves as an entry point for HIV care and treatment services. ⁴⁴ Government health care facilities offering HCTs increased from 88% in 2005-06 to 96% currently. The number of sexually active population tested rose from 25% in 2008 to 37% in 2009. ⁴⁷	<ul style="list-style-type: none"> ➤ Delivery of HCT has been faced with several challenges of staff shortages, space and budget constraints. ➤ Recent legislation, which will expand testing to trained health care workers, is expected to provide wider coverage in achieving the goals of HCT. ➤ Only 8% of the population are tested for HIV every year when 25% need to be tested annually.
Medical male circumcision (MMC)	The South African government has adopted MMC as a HIV prevention tool, and rollout has started in pilot sites.	<ul style="list-style-type: none"> ➤ Voluntary MMC programme launched in April 2010 in KwaZulu-Natal. ➤ Start of the voluntary MMC programme on 13 June 2010 at Eshowe Further Education and Training College with 202 initiates circumcised without any post operative complications. ➤ Voluntary MMC is expected to be rolled out throughout the country by 2011. ➤ Targets for MMC in KwaZulu-Natal are 186 703 by June 2011 with 5 571 achieved as of June 2010.⁹
Antiretroviral therapy rollout	The NSP target is to initiate 1.5 million people on lifelong ART treatment by 2011. The percentage of adults and children with advanced HIV infection receiving ART has increased.	<ul style="list-style-type: none"> ➤ In 2010, 490 PHC facilities were accredited to provide ART. ➤ The government aims to increase these to 4 300 by 2011.⁴⁹ ➤ The treatment gap between those in need of ART and those taking up treatment remains high (Figure 2). ➤ The largest number of people who are in need of and not receiving treatment are in KwaZulu-Natal compared to the Western and Northern Cape (Figure 3), e.g. the province of KwaZulu-Natal has an HIV prevalence of 38.7% among public sector pregnant women in contrast to the Western Cape which has a prevalence 16.1%, yet the ART coverage in the Western Cape exceeds 74% compared to 43% ART coverage in KwaZulu-Natal.⁴⁴ ➤ Despite the roll-out of ART, adequate coverage levels are yet to be achieved to alter current epidemic trajectories. ➤ The current ART programme has not been adequately evaluated and there is no reliable baseline data to monitor progress.
Post-exposure prophylaxis (PEP)	Health care workers have a low but measurable risk of HIV infection after accidental exposure to infected blood or body fluid.	<ul style="list-style-type: none"> ➤ Prevention strategies include post-exposure prophylaxis with ART available in all health care settings. ➤ Poor recording and reporting of PEP coverage for rape victims.

a Personal Communication: S Dhlomo, July 29, 2010.

- The National Department of Health TB Programme data showed an increase in TB HIV co-infected patients that received treatment for TB and HIV from 18% in 2008 to 42% in 2009. In 2008/09, 45% of HIV-positive patients were screened for TB, against the NSP target of 60%. Additionally, 3% of HIV-positive patients were put on isoniazid preventive treatment.
- The number of people living with HIV receiving nutritional support has increased to 734 900 for 2008/9, exceeding the NSP target of 500 000.
- The Social Relief of Distress budget was increased from R124 million to R624 million to alleviate poverty. Child support grants, foster care grants and care dependency grants all increased by an average of approximately 6% in 2009. Seventy-five per cent of orphaned and vulnerable children receive support.

- enroll 75% of eligible patients into HIV wellness programmes;
- increase the proportion of eligible adults receiving cotrimoxazole by 80%; and
- increase the number of new adults starting ART to 1.375 million and children to 114 000, representing a potential coverage of 80% of new AIDS cases.

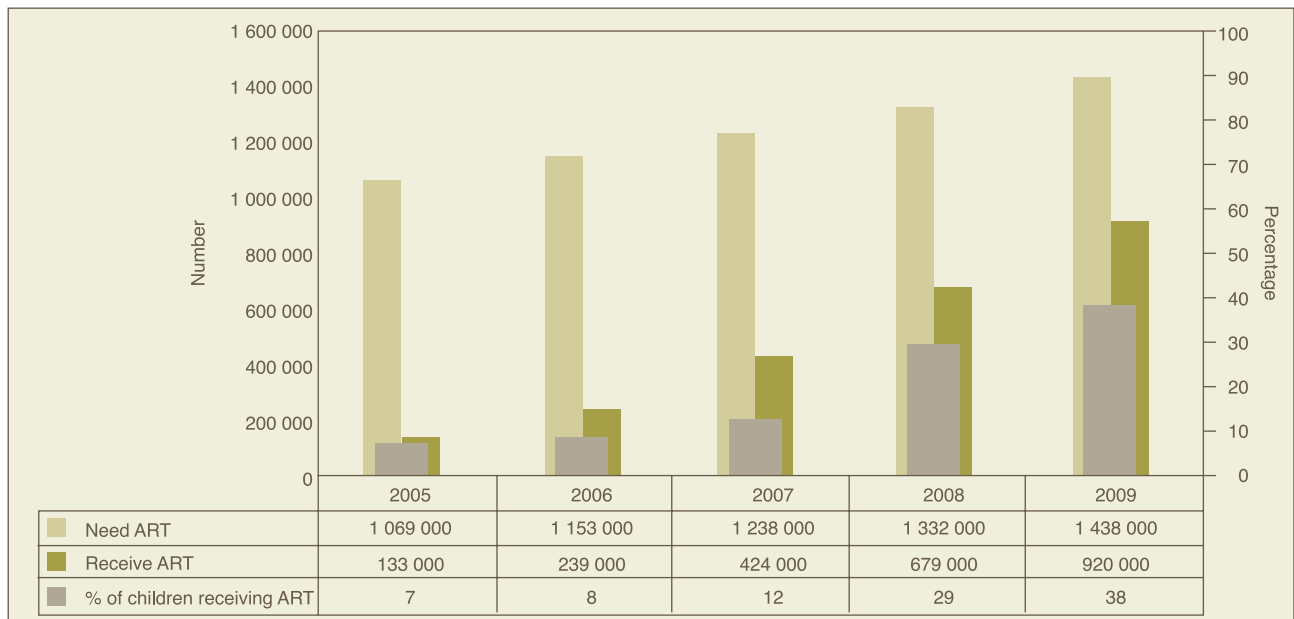
Estimates from Statistics South Africa (StatsSA) are that approximately 920 000 patients have currently been initiated on ART, representing 60% coverage of adults and 38% of the eligible paediatric population.¹²

Recently published outcomes data collected from eight ART public sector programmes across South Africa, which analysed data from 2002-2007, demonstrated a decrease in twelve-month mortality from 9% to 6% over five years, but an increase in the cumulative loss to follow-up from 14% at 12 months to 29% at 36 months. This highlights the need to improve strategies to monitor patient outcomes and maximise retention in care with increasing programme size.

Antiretroviral treatment provision

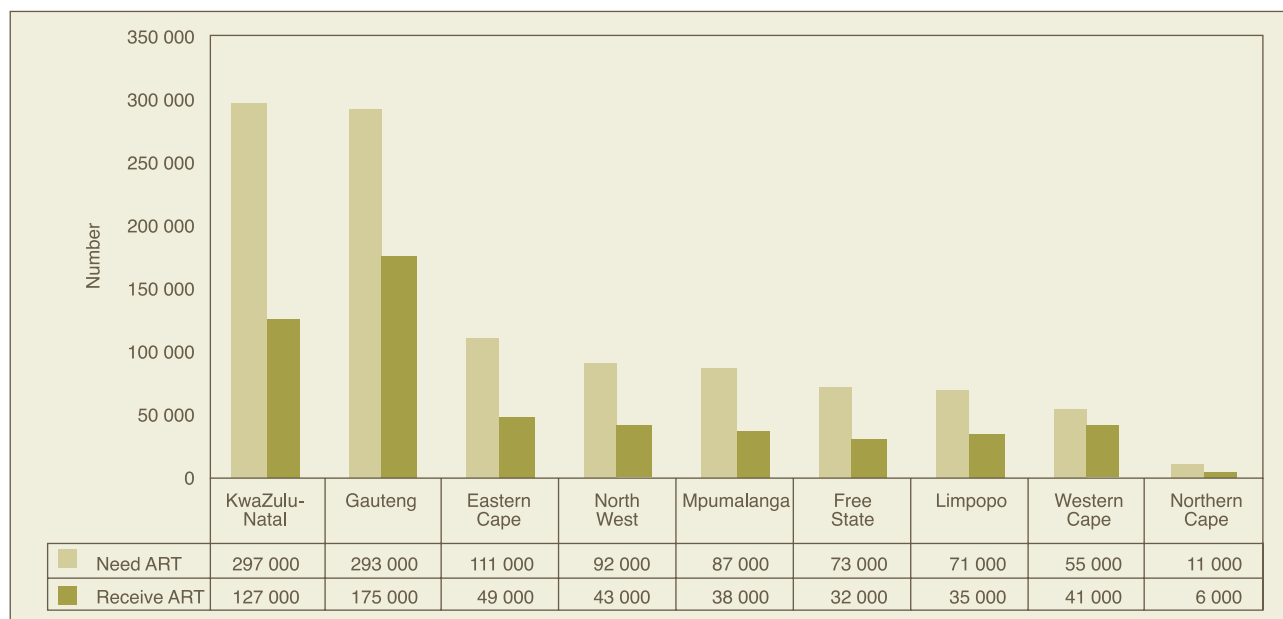
The key target in mitigating morbidity, mortality and other impacts of HIV and AIDS articulated in the NSP, is providing an appropriate package of treatment, care and support services of people living with HIV and their families. To achieve this, the NSP outlines the following targets to be met by 2011:

Figure 2: Distribution of number of people needing and receiving ART in South Africa



Source: StatsSA 2009; 2010.^{12,50}

Figure 3: Provincial distribution of number of people needing and receiving ART in 2008



Source: StatsSA, 2009;¹² 2010;⁵⁰ Nathea 2008.⁵¹

Tuberculosis

South Africa is estimated to have the fifth highest burden of TB disease in the world, which is further complicated by high HIV co-infection rates and a growing epidemic of drug resistant TB (Table 4).

The inception of the Revised National Tuberculosis Programme in 1996 enhanced the case detection rate for new smear positive TB cases over 10 fold, from 6.7% in 1997 to 78% in 2007. However the TB treatment success rate increased minimally from 63% in 2000 to 71% in 2005, well below the national target rate of 85%.² In 2005, South Africa declared a TB emergency and developed a TB Crisis Management Plan. The aim of this Plan was to prioritise the four districts with the highest TB burden and poor treatment outcomes (Johannesburg Metro, eThekweni District, Amathole and Nelson Mandela Metro) and, within one year, to increase smear conversion and cure rates by more than 10%. This is in

line with the MDG 6 objectives for TB which are:

- to detect at least 70% of new sputum smear-positive TB cases and cure at least 85% of these cases;² and
- to reduce TB prevalence and death rates by 50% relative to 1990 levels.⁴⁶

The 2001-2005 South African TB Strategic Plan centred on the Directly Observed Treatment Short course (DOTS) strategy. Evaluation of the 2001-2005 National TB Programme showed that the TB disease burden had almost doubled from 188 695 in 2001 to 341 165 in 2006, with an estimated HIV co-infection rate of 55%.² Cure and completion rates remained below target, case holding in the intensive phase of treatment ranged from 1% to 4%, and 7% of patients still remained smear positive at the end of the intensive phase of treatment. Finally, sputum smear to confirm cure for a large proportion

Table 4: Global estimate of epidemiological burden of TB in the top five countries, 2007

	Population 1 000	Incidence		Prevalence		Mortality				HIV Prev incident TB cases %
		All forms		All forms		HIV-negative		HIV-positive		
		Number 1 000	Per 1 000 Population per year	Number 1 000	Per 1 000 Population per year	Number 1 000	Per 1 000 Population per year	Number 1 000	Per 1 000 Population per year	
1. India	1 169 016	1 962	168	3 305	283	302	26	30	2.5	5.3
2. China	1 328 630	1 306	98	2 582	194	194	15	6.8	0.5	1.9
3. Indonesia	231 627	528	228	566	244	86	37	5.4	2.4	3.0
4. Nigeria	148 093	460	311	772	521	79	53	59	40	27.0
5. South Africa	48 577	461	948	336	692	18	38	94	193	73.0

Source: Extracted from WHO report on Global Tuberculosis Control 2009.⁵¹

of cases (11%) was not performed.⁵² Major deficiencies in the plan included the lack of TB and HIV integration; poor definition of roles and responsibilities; and lack of a clear monitoring and evaluation component (including surveillance).

One of the strengths of the TB programme is that TB is one of the few notifiable conditions that is being reported. While South Africa is one of few high burden TB countries to have analysed mortality using data from vital registration systems and mortality surveys, mortality and treatment interruption rates remain high. This is considered to be attributable to the high HIV infection rates and weak health care service delivery mechanisms. Importantly, improvements in reporting and case detection have resulted in an increase in TB notification rates and treatment cure rates in South Africa (Table 5). Data indicate heterogeneity across provinces, with published data in 2006 showing cure rates ranging from 53% in KwaZulu-Natal to over 77% in the Western Cape. Before the emergence of HIV, the Western Cape reported the highest rates of TB. However, in 2006 KwaZulu-Natal, with an antenatal HIV prevalence of 39.1%, exceeded the national HIV incidence rate, reporting a TB prevalence of 1 066 per 100 000 population. KwaZulu-Natal also had amongst the worst National TB Programme (NTP) performance indicators.¹³

Table 5: Case detection rate and treatment success in the DOTS programme for new smear-positive cases in South Africa 2000-2007, by percentage

	2000	2001	2002	2003	2004	2005	2006	2007
Case detection rate	63	60	71	77	75	72	77	78
Treatment success (2000-2006 cohorts)	66	65	68	67	70	71	74	N/A

Source: Adapted from WHO Report 2009, Global Tuberculosis Control.⁵¹

The challenges faced are substantial and include increasing caseloads in the face of an over-burdened health infrastructure, extremely poor cure rates in some provinces, high mortality, high treatment interruption rates, high levels of TB-HIV co-infection, increased levels of multi-drug resistant TB (MDR-TB) and the emergence of extensively drug resistant TB (XDR-TB). Of the high burden TB countries, South Africa has amongst the highest estimated costs for TB. This is due mainly to two reasons: the enormous cost of maintaining approximately 8 000 TB beds and the cost of diagnosing and treating drug resistant TB.⁵² Other challenges facing South Africa's ability to meet the MDGs are high treatment interruption rates, late presentation of patients to health facilities, insufficient community engagement, the HIV epidemic and poverty.

Despite these challenges, TB control in South Africa has improved somewhat in the last 10 years, albeit not enough. Failure to achieve the targets set by the World Health Assembly, the impact of HIV in fuelling TB and the problems with TB control in developing countries has led to a widespread recognition that TB control needs to extend beyond the DOTS strategy into combined prevention strategies that target multiple antecedents of TB.¹³

This raises important questions about the quality of treatment and follow-up, the quality of data collected and how this information could be used to improve treatment completion rates.

Multi- and extensively drug resistant TB

South Africa has made progress in diagnosing and treating multi- and extensively drug resistant TB (MDR- and XDR-TB) as reflected in the World Health Organization (WHO) indicators used to assess the management of drug-resistant TB. By 2007, South Africa had conducted drug resistance surveillance, had developed national guidelines and training material, conducted training, initiated scaling-up of treatment, fully integrated the drug resistant TB programme into activities of the NTP and had reported MDR-TB data.⁵²

Decentralising drug resistant TB management

Of the 2 472 and 2 572 cases of MDR-TB diagnosed in KwaZulu-Natal laboratories in 2005 and 2006 respectively, only 56% in 2005 and 28% in 2006 were treated in hospital.^b The remaining patients died while awaiting admission, were lost to follow-up or remained infectious in the community. This situation highlights the discordance between the number of central beds available for the management of drug resistant TB and the actual caseload. For this reason, the NTP has adopted a policy of decentralised management for MDR-TB. The centralised MDR-TB units (one in each province) will be responsible for initiating and monitoring treatment of MDR- and XDR-TB cases, in addition to providing support to the decentralised satellite MDR-TB units within that province. Decentralised MDR-TB units will initiate and monitor treatment of only MDR-TB cases. Mobile MDR-TB clinics and community supporters will provide treatment and support to MDR-TB patients after they have been discharged from both the decentralised and satellite units.

^b Personal Communication: I Master, February 4, 2010.

Challenges and opportunities

The diversity and complexity of the HIV epidemic in each of the nine provinces in South Africa requires a combination of a multi-level and multi-component approach that includes a diverse set of biomedical, behavioural and structural interventions, rather than a single solution approach. Identifying the appropriate mix and coverage for each province remains challenging.

An analysis of key HIV programme indicators demonstrates a shortage of information that reflects the fundamental dynamics of HIV in South Africa. For example, an assessment of literacy on HIV life skills education has not been conducted. Measuring achievements in HIV education cannot be computed unless comparable data of this nature is available across the provinces.

An audit of the training of health care personnel on syndromic STI management, as well as an audit of all health care facilities with respect to availability and access of patients to syndromic STI treatment, is non-existent.

There remains a disconnect in monitoring and evaluation for ART coverage between non-governmental organisations (NGOs), public and private sectors, resulting in an inability to predict numbers of patients eligible for ART, numbers on ART therapy, and case-holding within ART programmes. These aspects underscore the need for focused interventions to ensure system strengthening.

Since progress cannot be measured using non-specific data or data that is only available for certain regions, achievements in terms of the NSP goals are not available for South Africa. This information is a priority, as it is crucial to improving HIV programmes across the country.

To achieve the NSP goal of reducing new HIV infections by 50%, each province has to deal with different HIV epidemic dynamics in terms of AIDS deaths, the number in need of ART, the number on ART, the number of new HIV infections and, more importantly, to test and find interventions that will dramatically alter the course of the HIV epidemic in South Africa.

Only with a highly active HIV prevention strategy, widespread ART coverage, counselling of new HIV infections with behaviour change, biomedical intervention and treatment of STIs, is the trajectory of the HIV epidemic likely to change and impact on the rate of new HIV infections. This differential provincial response to the HIV and AIDS pandemics will also help South Africa to achieve its commitment to the Millennium Development Goals.

New legislation on HIV testing by lay counsellors, revised ART guidelines, dispensing of antiretroviral (ARV) medication by nurses, implementation of medical male circumcision programmes, and continued expansion of the ART programmes provide a solid and enabling context for substantial strengthening of the HIV and AIDS response in South Africa.

Continued effort with unprecedented partnerships, continued strong leadership, collective commitment and dedication is required to reverse the epidemic.

Knowledge of HIV status remains an important gateway for treatment and prevention services. Novel strategies to normalise HIV at a community level and overcome fears, stigma and discrimination is key. Home testing in partnership with community structures, social mobilisation and maximising opportunities to know one's status, e.g. during health facility visits, need to be proactively utilised.

School-based interventions to promote knowledge of HIV status and incentivise young people to remain uninfected as part of the national HCT campaign could impact on the rates of new infections but is a strategy that has received little attention to date. School-based interventions need to be rigorously evaluated and tough decisions made on retaining or removing interventions impacting HIV incidence rates. The school setting and the role of teachers in inculcating in learners a sense of future through high quality educational services that create good career opportunities for learners and build self-esteem and confidence in young people to be socially and economically productive members of society and realise their full potential needs more attention.

Teachers, as members of society, are also at risk of acquiring HIV infection and efforts to strengthen knowledge of HIV status and access to care is critically important for the survival of this sector that is under-skilled and under-staffed.

Schools are first points for identifying learners who come from vulnerable homes where they may be without adult supervision or caring for sick parents. Schools provide an opportunity to link these families to social service programmes.

Support for women-initiated biomedical interventions such as microbicides need to augment the current HIV prevention toolbox.

Postpartum visits are a missed opportunity to retest HIV-negative women and their partners to promote prevention, identify infection in the infants and initiate infants and children who need ARVs on treatment. Active screening for STIs and TB antenatally and postnatally is also missed and needs to be addressed.

South Africa has adopted the Stop TB Partnership Policy of the three I's (Intensified case finding, Isoniazid prophylaxis for latent TB and Infection control). These are in varying phases of implementation and have yet to be properly evaluated. It has been suggested that the 'Integration of TB and HIV management' should be added to this list. South Africa also subscribes to the Stop TB Partnership that envisages newer TB drugs, new diagnostics and a TB vaccine by 2015.

The Starting ARV treatment at three points in TB (SAPiT) study findings show that in TB-HIV co-infected patients with a CD4 cell count less than 500, the mortality rate was 56% lower when TB treatment was combined with ART's in comparison to delaying ART until completion of TB treatment.⁵³ This means that deaths can be more than halved by combining ART with TB treatment. The study provides compelling evidence for the integration of care and treatment programmes for both TB and AIDS. To ensure successful integration, all newly diagnosed TB patients in South Africa need to be offered an HIV test, while those who are HIV-positive need to be offered a CD4 count and those with a CD4 count below 500 cells per cubic millimetre must be offered ART in conjunction with TB treatment. The public health and clinical care approach to the joint TB and HIV epidemics has the potential to save lives. Given the intertwined TB and HIV epidemics, integration of HIV and TB services is critical, as well as HIV testing of TB patients and early initiation of TB patients on ART. The government policy on initiation of ARV treatment in TB patients at a higher CD4 count level is important, given the high mortality rates in TB-HIV co-infected patients.

Conclusion

South Africa's success towards achieving MDG 6, and indeed all the MDGs, requires partnership and collaboration of an unprecedented nature. The Zuma administration has provided unequivocal political leadership and commitment. International partners provided substantial support during the AIDS denialism era in very creative and novel ways to make treatment a reality. Global solidarity and local social movements have played important catalytic roles in getting the country to this positive point in response to the epidemic. Scientists, health-care workers and other professionals have been key to generating new knowledge and implementation. These partnerships and commitments must continue around a much more focused, priority-based agenda to make the MDGs a reality and sustain the gains we are making in HIV and AIDS and in TB and expand the impacts to other MDGs and other health challenges. South Africa cannot afford complacency or a loss of momentum.

South Africa's continued collective effort is essential and central to success and, most importantly, will benefit those most vulnerable and in need.

There remain numerous challenges, none of which are insurmountable with collective ownership, dedication and commitment.

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