

## ABSTRACT

The national Department of Health estimates that 5.54 million South Africans were living with HIV in 2005, an estimated prevalence of 10.8%. Partly as a result of HIV, South Africa is one of 22 high burden TB countries and has the fifth highest number of notified TB cases in the world. The number of TB cases reported annually has quadrupled from 61 486 in 1988 to 279 260 in 2004. TB is the most common opportunistic infection and is the most significant cause of mortality in people living with HIV in developing countries where access to ART is limited. Obtaining good TB treatment outcomes is critical to decreasing HIV-related morbidity and mortality. Likewise, access to appropriate treatment and care for HIV is essential to containing TB.

Collaborative care that engages the interconnectedness of these infections is critical to controlling these epidemics. In 1997, the National HIV/AIDS/STI review recommended improved collaboration between the TB and HIV/AIDS programmes. Whilst there has been progress in TB/HIV collaboration, it appears to have been slow (although assessing progress is made difficult by a lack of implemented standardised reporting systems). Progress is hampered by a range of factors including constraints in access to essential medicines and antiretroviral therapy as well as community adherence support and mobilisation around TB and antiretroviral treatments.

The promotion and strengthening of integrated care should be pursued and other models for scale-up explored. Integrated care should include HIV counselling and testing and routine TB case finding at every HIV clinical visit. Initiatives to increase treatment adherence such as dedicated community adherence workers and simplified drug regimens, especially for paediatrics are critical. The intransigent dilemmas of improving staffing levels and morale need to be addressed as well as task-shifting explored as components of integrated HIV and TB care.

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## INTRODUCTION

Local and internationally generated statistics indicate that the HIV epidemic in SA will continue to grow and pose a significant threat to meeting the global development agenda.<sup>1</sup> It specifically threatens to undermine the achievement of the United Nations (UN) Millennium Development Goals (MDGs) including global and national efforts to combat tuberculosis (TB).

HIV is fuelling the local, regional and international TB epidemic. In sub-Saharan Africa some countries have seen a four-fold increase in TB incidence.<sup>2</sup> In Africa, 34% of adults with newly diagnosed TB were also infected with HIV in 2004.<sup>3</sup> Data show that as the prevalence of HIV increases, the proportion of notified tuberculosis patients who are women increases, and the mean age of tuberculosis cases decreases.<sup>4</sup>

The World Health Organization (WHO) has declared TB an emergency in Africa calling for urgent and extraordinary action<sup>5</sup> including expanded access to antiretroviral therapy (ART) therapy for TB patients co-infected with HIV and isoniazid TB preventative therapy (IPT) in HIV-positive patients. There is also growing international recognition of the importance of collaboration between TB and HIV and AIDS programmes reflected in policy directives issued by the WHO in 2004.<sup>6</sup>

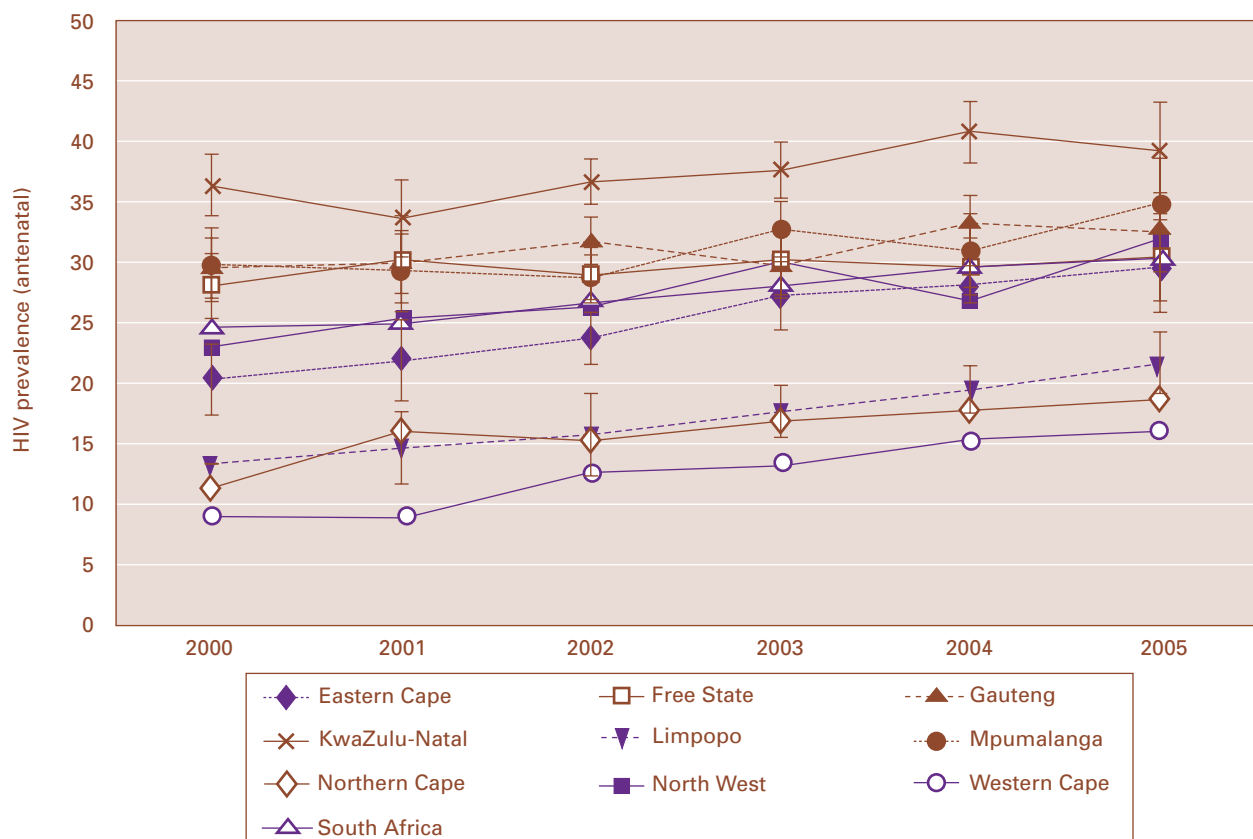
Given the high levels TB and HIV co-infection, access to appropriate care for both infections, including access to ART, plays a critical role in containing both the HIV and TB epidemics. This chapter describes the two epidemics and assesses progress that has been made in providing collaborative care. It then explores relevant issues that impact on South Africa's ability to provide collaborative care including access to medicines and ART, staffing and patient adherence among others. It then concludes with some recommendations.

## HIV AND TB IN SOUTH AFRICA

The national Department of Health (DoH) estimates that 5.54 million South Africans were living with HIV in 2005.<sup>7</sup> The Human Science Research Council (HSRC) survey of 2005<sup>8</sup> indicates a prevalence of 10.8% of the total mid-year population of 46 888 200. The Actuarial Society of South Africa (ASSA) model estimates 5 million<sup>9</sup> and the Joint Programme of United Nations on HIV/AIDS (UNAIDS) 5.5 million with a prevalence of 18.8% in adults aged 15-49yrs.<sup>10</sup>



FIGURE 1:  
HIV prevalence among pregnant women at public sector clinics 2000 to 2005 by province



Source: DoH, 2006.<sup>7</sup>

SA is one of 22 high burden TB countries and has the fifth highest number of notified TB cases in the world.<sup>4</sup> Partly as a result of HIV, the number of TB cases reported annually has quadrupled from 61 486 in 1988 to 279 260 in 2004. Although TB incidence continues to increase, the rate of annual increase has decreased in recent years (Table 1).<sup>11</sup> TB case fatality has also risen from 3% in 1993 to 7.4% in 2003.

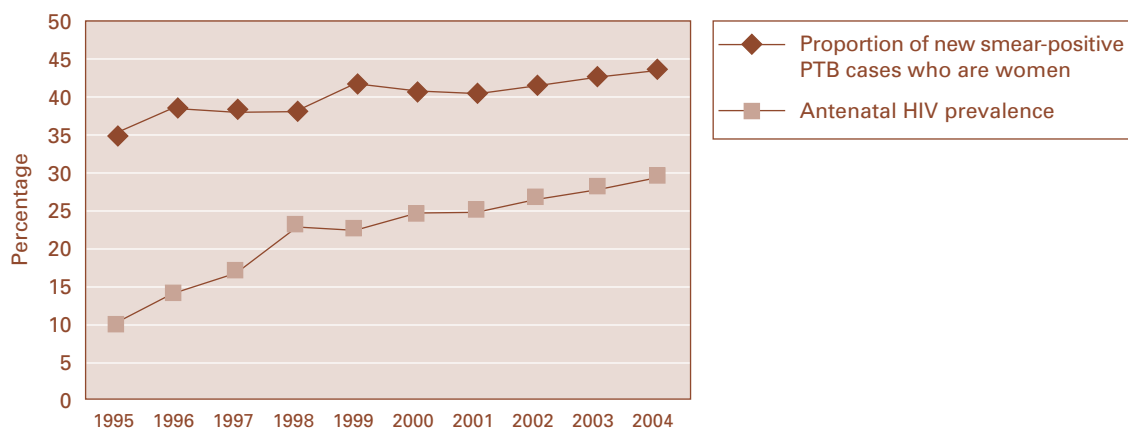
TABLE 1:  
Total TB cases and new pulmonary smear-positive pulmonary TB cases registered, South Africa, 2001-2004.

	2001	2002	2003	2004
Total TB cases*	188 695	224 420	255 422	279 260
Increase over previous year	24.8%	18.9%	13.8%	9.3%
New smear-positive	83 808	98 800	116 337	117 971
New smear-positive rate per 100 000	188.1	217.4	250.6	253.2

\* New, relapses, and re-treatment of failures and defaulters

Source: WHO and DOH, 2006.<sup>12</sup>

FIGURE 2:  
Increasing proportion of new smear-positive pulmonary TB cases who are women, South Africa, 1995-2004



Source: National TB Control Programme, 2006<sup>11</sup> and DoH 2005.<sup>7</sup>

As HIV prevalence in SA has increased, the proportion of women with TB has increased from 34.9% in 1995 to 43.5% in 2004<sup>a</sup> (as shown in Figure 1). Also as a result of HIV, the proportion of TB patients with extrapulmonary (EP) TB is high at 16.1%.<sup>12</sup> In new and re-treatment pulmonary TB cases, 64.4% were smear-positive, 12.6% were smear-negative and 22.9% had no smear results available in 2004.

A national survey of TB drug resistance in all newly registered culture-confirmed TB cases was conducted by the Medical Research Council (MRC) in 2001-2002. Linked anonymous HIV testing was done on sputum specimens and revealed that HIV prevalence in TB patients was 55.3% (62.2% in females and 51.5% in males). HIV prevalence in TB patients was more than twice as high as in pregnant women and there were large variations by province (Table 2).

a National TB Control Programme, 2006.



TABLE 2:  
HIV prevalence in pregnant women and TB patients

Province	Antenatal HIV Prevalence (% , 2002) <sup>a</sup>	HIV Prevalence Among Culture-Confirmed TB Patients (% , 2001-2002) (n=4 639) <sup>b</sup>		
		Females	Males	Total
KwaZulu-Natal	36.5	69.6	61.3	64.4
Mpumalanga	28.6	70.7	65.3	67.2
Free State	28.8	73.8	70.7	71.9
North West	26.2	69.7	64.5	66.0
Gauteng	31.6	74.5	57.4	63.8
Eastern Cape	23.6	36.7	27.5	30.5
Limpopo	15.6	58.5	48.5	52.4
Northern Cape	15.1	*	*	*
Western Cape	12.4	33.1	26.1	28.2
South Africa	26.5	62.2	51.5	55.3

Source: DoH 2003,<sup>13</sup> Weyer et al., 2004.<sup>14</sup>

## MDR AND XDR TB

The MRC survey<sup>14</sup> found that multi-drug resistant TB (resistance to rifampicin and isoniazid) was low in new patients at 1.6% but much higher at 6.6% in patients who had prior TB treatment. The MDR prevalence in new patients varied from 0.9% in the Western Cape to 2.6% in Mpumalanga. WHO defines an MDR 'hot spot' as an area where the prevalence of MDR-TB in new patients exceeds 3%.<sup>14</sup> There was no difference in HIV prevalence in TB patients and MDR-TB patients ( $p = 0.575$ ). There was a strong association of previous treatment and MDR-TB (OR: 4.4; 95% CI 2.8-6.9;  $p < 0.001$ ). Unfavourable outcomes of previous treatment (failure or default) were associated with MDR-TB (OR: 3.7; 95% CI 1.6-8.7;  $p = 0.004$ ) as was previous treatment in hospital (OR: 2.9; 95% CI 1.6-5.1;  $p < 0.001$ ).<sup>14</sup>

Extensive drug resistant TB or XDR-TB (also referred to as extreme drug resistance) is MDR-TB that is also resistant to three or more of the six classes of second-line drugs. The description of XDR-TB was first used in 2006 following a joint survey by WHO and the United States (US) Centres for Disease Control

and Prevention (CDC).<sup>15</sup> The recent outbreak of XDR-TB in KwaZulu-Natal showed alarmingly high mortality rates and attracted international attention.<sup>16</sup> A cross-sectional study<sup>16</sup> was done of TB patients with treatment failure, re-treatment cases and patients admitted to the TB ward at a rural district hospital. Of 544 patients with cultures positive for *Mycobacterium tuberculosis*, 221 had MDR-TB and 53 (24%) of the MDR-TB patients had XDR-TB. Of the 53 patients, 44 had been tested for HIV, all were HIV-positive and 15 were on ART. All but one (52) of the XDR-TB patients died with a median survival from sputum collection of 16 days (range 2-210 days). XDR-TB has subsequently been identified in several other public hospitals in KwaZulu-Natal. The study showed that XDR-TB is an important cause of death in TB/HIV co-infected patients even where ART is available. It has also highlighted the need for improved drug resistance surveillance, contact tracing and infection control in health care facilities.

b Northern Cape was excluded from the national survey because patient intake was too low and there were serious concerns about selection bias.

## TB TREATMENT OUTCOMES

TB is the most common opportunistic infection (OI) and is the more significant cause of mortality in people living with HIV in developing communities. Obtaining good TB treatment outcomes is therefore critical to decrease HIV-related morbidity and mortality.

Treatment success is the combination of cure and completion rates. The treatment success rate was low for patients registered in 2003 (62.9%) (Table 4). The high death rate (7.4%) is most likely due to HIV-related illnesses. A high proportion of patients defaulted (11.5%) and were not evaluated (9.8%). High default and loss to follow up rates could be improved through strengthened directly observed treatment (DOT) and community adherence programmes. Community workers could assist by confirming addresses, educating patients about the importance of good adherence, encouraging patients to go to health facilities for sputum smear examinations at the end of the intensive and continuation phases and tracing defaulters. ART programmes have achieved over 90% adherence at 6 months. There is a need to explore similar adherence support strategies in TB patients that are used in patients on ART.

In March 2006 a National TB Crisis Management Plan was launched. The plan mandates each province to address critical issues including the improved management of co-infected patients.<sup>17</sup> The plan maps a comprehensive and ambitious path to addressing urgent needs and identifies the critical challenges to effective TB control as being:

- ◆ Poor financial and human resources support to the TB programme;
- ◆ Poor support of the TB programme especially at provincial level;
- ◆ Poor management of patients which leads to patients defaulting from treatment;
- ◆ High mobility of patients especially in the urban areas and poor referral systems;
- ◆ Late detection of patients;
- ◆ Inaccessible and of questionable quality laboratory services;
- ◆ Lack of knowledge about TB and the importance of completing treatment;
- ◆ Poverty; and
- ◆ Co-infection of patients with TB and HIV.

TABLE 3:  
Treatment outcome in new smear-positive pulmonary TB. South Africa, 2003.

	Total Cases	% Cured	% Completion	% Died	% Failed	% Defaulted	% Transferred	% Not Evaluated
Eastern Cape	17 678	41.8	19.7	7.2	1.6	12.0	4.3	13.5
Free State	8 315	63.1	10.1	10.0	1.8	6.8	5.5	2.7
Gauteng	20 015	58.9	8.1	9.1	1.3	9.6	9.3	3.6
KwaZulu-Natal	34 126	35.2	14.8	7.7	1.0	15.3	8.8	17.2
Mpumalanga	5 578	32.8	16.7	8.8	0.8	8.8	5.7	26.5
North West	11 179	54.3	12.2	7.5	1.3	8.4	7.4	8.9
Northern Cape	3 298	64.6	8.2	4.9	3.2	11.5	7.6	-
Limpopo	3 210	53.6	19.9	10.8	2.4	8.1	6.0	-
Western Cape	17 639	70.9	7.4	3.4	1.2	11.6	4.1	1.4
Total	121 038	50.1	12.8	7.4	1.3	11.5	6.9	9.8

Source: WHO and DoH.<sup>12</sup>



## ANTIRETROVIRAL TREATMENT IN SOUTH AFRICA

From 2004, as part of a comprehensive response to the HIV epidemic, ART has been made available in the public sector. The SA government estimates that as of March 2006, 141 774 people<sup>c</sup> were accessing ART in the public sector. It is estimated that there are also about 90 000-100 000 people on treatment in the private sector.<sup>18</sup> However, the pace of the roll-out is slow with around two thirds of the 600 000 plus who need ART unable to access treatment (Figure 3a and 3b). Even though SA is treating over 25% of all patients in sub Saharan Africa (SSA), data indicate that the capacity to treat more people exists in SA because of a higher Gross Domestic Product (GDP) and a larger budget.<sup>19</sup>

At the end of 2005, about 245 000-300 000 children were estimated to be living with HIV. Some experts suggest that about 40-60% of all HIV-positive children need immediate access to ART. At present it is estimated that only about 10 000-15 000 children are receiving ART, about 10% of the total patients on treatment, while others argue that the figure is substantially less. It is known that in many less resourced provinces, the number of children on treatment is far below 10%<sup>20</sup> (for more details see the chapter on Management of HIV-infected Children in this Review).

Challenges that are being faced by the Department of Health include scaling up HIV counselling and testing services, recruitment and retention of health staff, delays in accreditation of health facilities and limited laboratory equipment for CD4 and viral load testing, infrastructure development as well as the availability of unregistered illegal 'treatments'.

In November 2005, the International Treatment Preparedness Coalition (ITPC) reported the following major impediments to scaling up access to treatment in six different countries (these broad international observations are applicable to the SA context):<sup>21</sup>

- ◆ Inadequate national leadership that fails to dedicate sufficient resources;
- ◆ Non-collaborative global systems unable to efficiently address bottlenecks;
- ◆ Inadequate and uncertain funding levels for programmes and financing mechanisms impacting

on countries' ability to manage long-term sustainable treatment services;

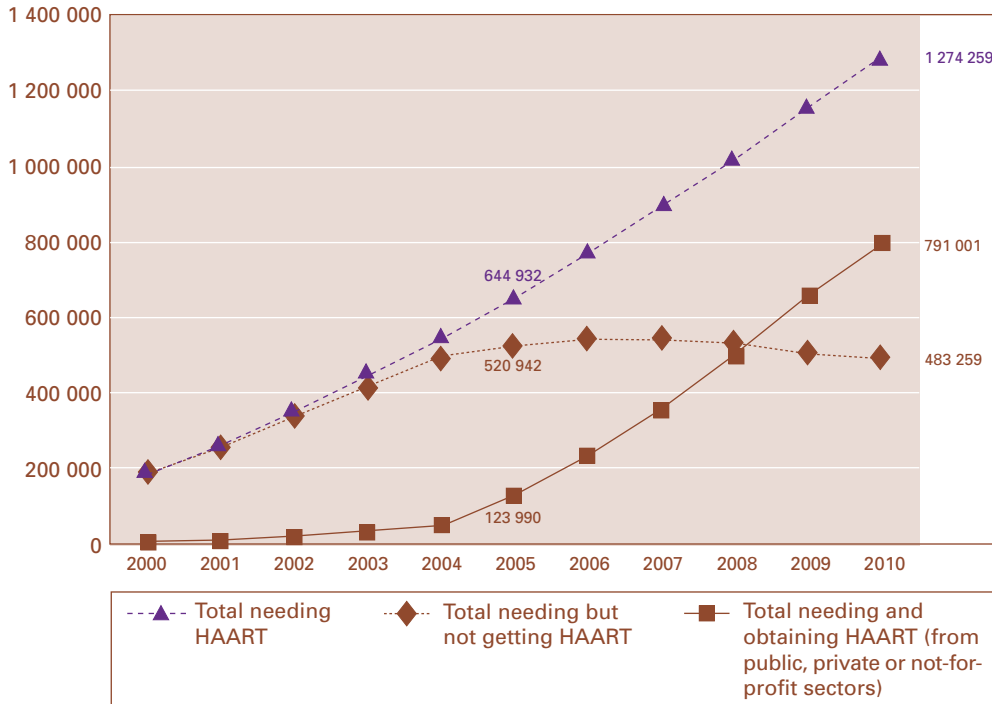
- ◆ Bureaucratic delays preventing urgently needed resources for developing and maintaining treatment programmes;
- ◆ Procurement and logistics challenges requiring comprehensive and effective technical assistance;
- ◆ Pervasive stigma against people living with HIV/AIDS that requires moral leadership at the global, national and community levels.

The ambiguity of some officials in government towards antiretrovirals (ARVs) has confused patients, promoted HIV and AIDS denialism, and led to a level of antagonism and resistance at several strata of health governance at a time when urgent collective action and leadership is required. The lack of explicit acknowledgement of the importance and complementarity of both treatment and nutrition on the part of the country's most senior leadership is regrettable. Government has failed to warn patients of the dangers of untested remedies and in some cases appears to actively promote them. Treatment advocates have pointed out that there are increasing numbers of accounts of patients stopping their ARVs in pursuit of unproven remedies. This unfortunate polarisation has compromised both the roll-out of ARVs as well as the effective assessment and testing of more traditional remedies.

c Personal communication, Dr Kalombo SA DoH June 2006.

Figure 3a:

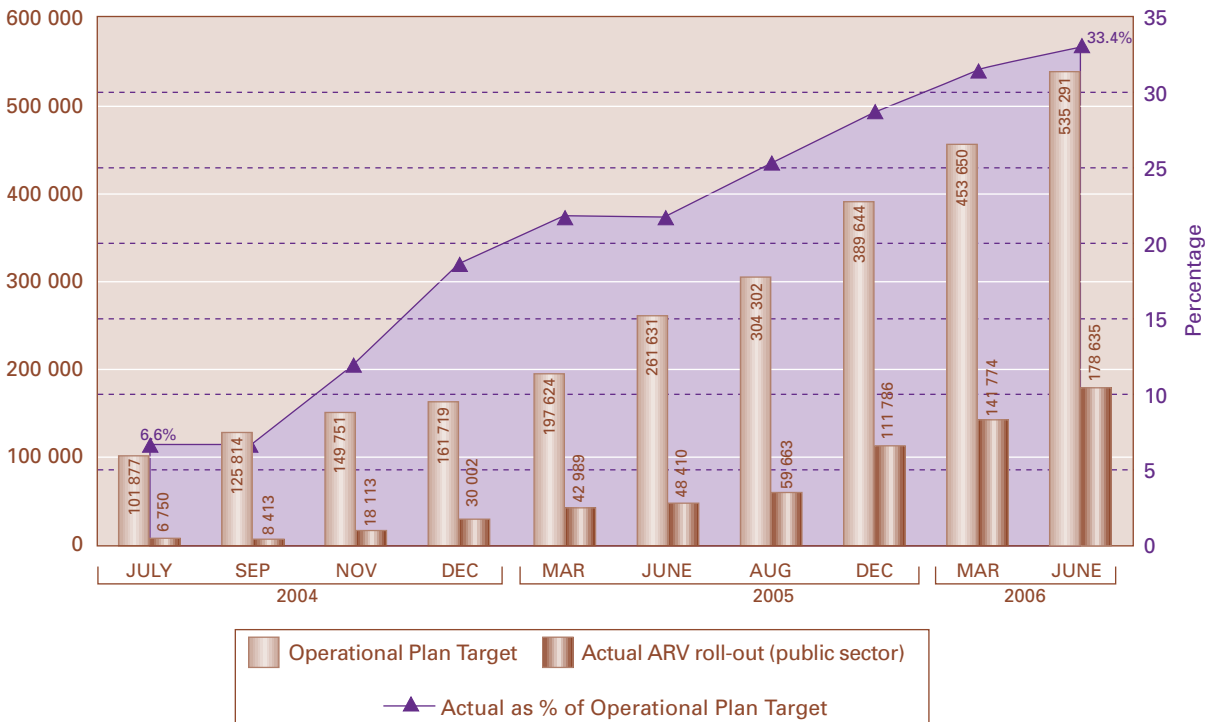
People needing and obtaining Highly Active Antiretroviral Therapy (HAART) (mid points for each year) whether from the Public or the Private Sectors (based on a CD4 count <200)



Source: ASSA 2003<sup>9</sup> and Natrass 2006.<sup>19</sup>

FIGURE 3B:

Planned and Actual Growth in the Provision of Antiretroviral Treatment in the Public Sector



Source: ASSA 2003,<sup>9</sup> Hassan and Bosch 2006,<sup>18</sup> Natrass 2006.<sup>19</sup>



The health departments in the provinces differ with respect to infrastructure, management structure and style, staffing, and systems of operation. These factors as well as differences between provinces in HIV prevalence, population, number of doctors and nurses per capita, and GDP per capita have resulted in large differences in ART coverage (Table 4). The Western Cape is in the best position to achieve high ART coverage as it has lowest HIV prevalence of any province, the highest number of doctors per 100 000 uninsured persons, the second highest GDP per capita, the highest public sector health expenditure per capita, and the longest running ART and care programme. Its relatively high spending on health is in part a consequence of its economic and demographic profile, but also because of political decisions to prioritise health (including the ART roll-out).<sup>19, 22</sup> The Western Cape has also provided an environment conducive to NGO involvement,<sup>23</sup> which has resulted in support to programmes at the primary care level.<sup>24</sup> All these factors have facilitated a more efficient, and arguably a more sustainable programme (Figure 4).

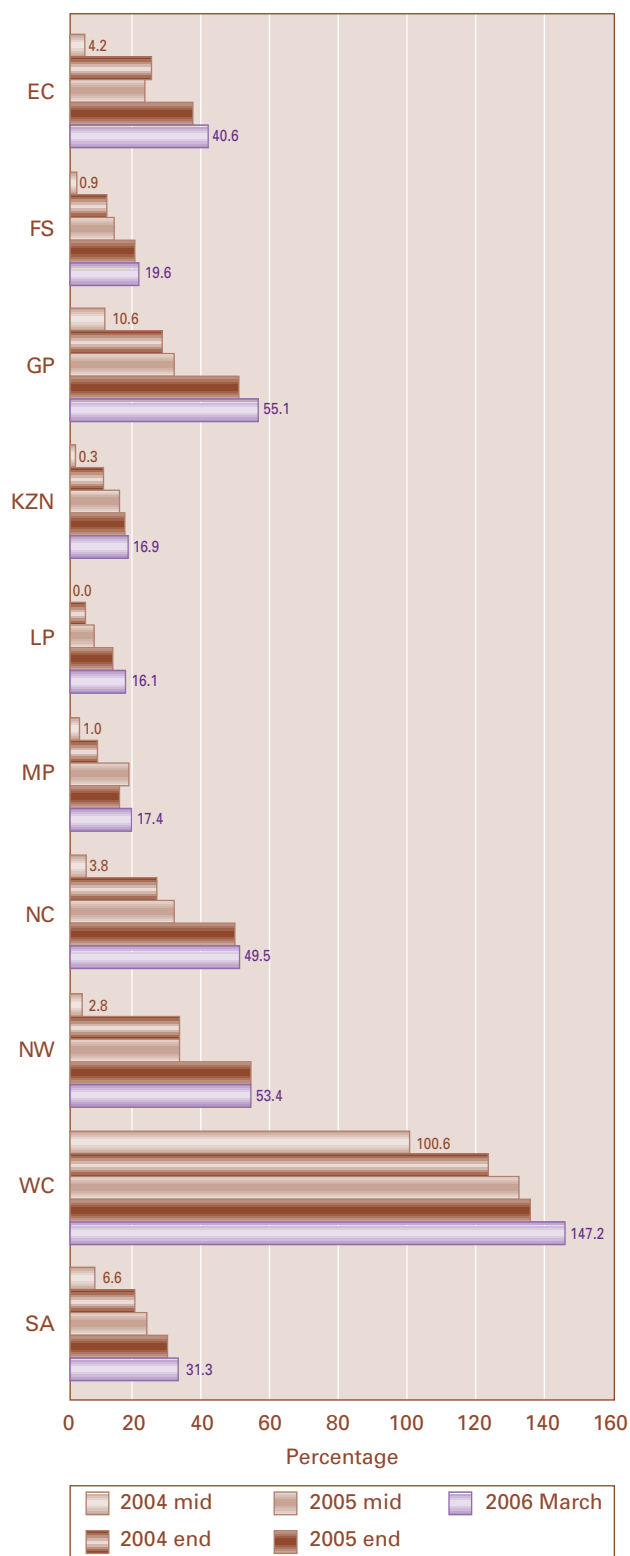
TABLE 4:  
Treatment roll-out in the provinces (adults)<sup>13</sup>

	Start of the Roll-out	HIV prevalence 2005 – ASSA2003 %	Share of the total population %	Doctors per 100 000 uninsured persons 2005	Nurses per 100 000 uninsured persons 2005	GDP per capita 2003 R	Per capita govt health spending (R per uninsured person) 2004/05	Total HAART coverage (end of 2005)* %
EC	May 2004	9.5	14.2	17	108	R12 185	R873	21.8
FS	May 2004	13.7	6.0	32	143	R21 437	R1 193	21.0
GP	April 2004	14.3	20.1	42	105	R36 913	R1 179	29.6
KZN	April 2004	15.6	20.7	27	107	R18 528	R1 017	20.0
LP	Aug 2004	6.7	12.0	14	111	R12 040	R829	27.3
MP	Aug 2004	13.3	7.0	19	93	R20 499	R774	20.9
NC	July 2004	6.5	1.9	38	141	R24 922	R1 238	32.3
NW	June 2004	12.5	8.0	13	90	R17 198	R767	24.5
WC	May 2001	5.0	10.3	55	106	R30 628	R1 433	55.7
Total		11.0	100	28	109	R22 569	R1 014	25.2

\* The numbers of people on HAART in the public and private sectors as a percentage of the number of people estimated to need HAART (from ASSA 2003 demographic model).

Source: ASSA 2003,<sup>9</sup> ALP 2006,<sup>25</sup> Natrass 2006.<sup>19</sup>

Figure 4:  
Provincial HAART Roll-out as a % of the Operational  
Plan Target



Source: ASSA 2003,<sup>9</sup> Hassan and Bosch 2006,<sup>18</sup> Natrass 2006.<sup>19</sup>

It is estimated that by March 2007, the Western Cape will have more than 22 500 patients on ARV treatment<sup>d</sup> and several thousands more receiving general HIV care. This requires an increase in the number of sites able to provide ongoing care for stable patients able to initiate therapy. Through support from NGOs, the province plans to refer stable patients from tertiary and secondary levels of health care to primary health care clinics. Other provinces will experience a patient initiation backlog if systems for down referral are not able to take into account the increasing number of new patients needing care.

### TB/HIV COLLABORATION

People living with HIV are more vulnerable to developing TB irrespective of whether they are receiving ARVs. TB also hastens the progression of HIV. Integrated care addressing the interconnection between these infections is critical to controlling both HIV and TB. The WHO makes several important recommendations for collaborative TB/HIV activities listed in Table 5.

Table 5:  
Recommended Collaborative TB/HIV activities

A	Establish the mechanisms for collaboration (joint TB/HIV planning, monitoring and evaluation).
B	Decrease the burden of tuberculosis in people living with HIV/AIDS (intensified TB case finding and isoniazid preventive therapy).
C	Decrease the burden of HIV in tuberculosis patients (HIV counselling and testing, cotrimoxazole preventive therapy and ARV therapy for TB patients).

Source: WHO, 2004.<sup>6</sup>

In SA the national HIV/AIDS/STI review in 1997<sup>26</sup> recommended improved collaboration between the TB and HIV/AIDS programmes. In 1999, SA participated in the WHO-sponsored ProTEST initiative by establishing four TB/HIV pilot districts<sup>27</sup> which implemented and evaluated a comprehensive programme of TB/HIV/STI prevention, care and support. Based on the success of the TB/HIV Pilot Districts, the DoH developed a Joint Strategy for HIV/AIDS&STD and TB Control and provinces committed to implement the lessons

<sup>d</sup> Personal correspondence with Dr K Cloete, Acting Chief Director, DoH, Western Cape, March 2006.



learned from the TB/HIV Pilot Districts in TB/HIV Training Districts from 2001 to 2005.

While there has been progress in TB/HIV collaboration in SA it has been slow. Through donor funding, provincial TB/HIV coordinators were employed in all provinces since 2004. These TB/HIV coordinators report TB/HIV indicators at quarterly national meetings. Unfortunately, the data are incomplete and some provinces fail to report outcomes.

TABLE 6:  
TB/HIV Indicators

1	Entry Point: HIV and AIDS patients	Q1	Q2	Q3	Q4	Total NDoH
	% of patients tested HIV-positive	29	17	45	40	32
	% of HIV-positive patients screened for TB	27	25	8	13	16
	% of HIV-positive patients with confirmed TB (new TB cases)	25	72	55	34	44
	% of PPD done to HIV-positive patients	0	0	0	0	0
	% of HIV-positive patients started IPT	1	4	11	4	4
	% of HIV-positive patients started CPT	27	23	22	18	21
	% of HIV-positive patients referred for ART assessment	0	8	6	3	4
2	Entry Point: TB					
	% of TB patients counselled for HIV	46	39	53	51	45
	% of counselled TB patients tested for HIV	69	67	90	69	72
	% of TB patients testing HIV-positive	61	43	56	59	52
	% of TB/HIV patients starting CPT	109	136	93	70	102
	% of TB/HIV patients referred for ART assessment	105	26	26	6	30

Note: Q1: Data missing from EC, KZN, MP, NW, WC  
Q2: Data missing from EC, KZN, NW, WC  
Q3: Data missing from EC, GP, KZN, WC  
Q4: Data missing from GP, KZN, WC

Source: Personal communication, Dr K Vilakazi, Medical Coordinator, TB/HIV Collaboration Unit, national DoH, April 2006.

Only 16% of HIV-positive patients were screened for TB and the proportion of HIV-positive patients with confirmed TB was high (44% among those who were screened for TB). This was higher than the 6.3% diagnostic yield found in South African ProTEST sites when screening was done on all HIV-positive patients,<sup>28</sup> suggesting that only people who appear ill are being screened for TB. Only 30% of TB/HIV patients were assessed for ARV eligibility in 2005.

The fact that only 189 234 TB patients were registered in the TB/HIV data set in 2005<sup>e</sup> reflects incomplete reporting from some provinces. Although data on the number of TB patients registered for 2005 is not yet available from the National TB Control Programme (NTCP), 279 260 TB patients were registered in 2004.<sup>12</sup>

<sup>e</sup> Personal communication, Dr K Vilakazi Medical Coordinator, TB/HIV Collaboration Unit, national DoH, April 2006.

Only 45% of registered TB patients were offered Voluntary Counselling and Testing (VCT) and a significant proportion (28%) did not accept testing after pre-test counselling.<sup>f</sup> Contributing factors include the reluctance of staff to propose VCT at the time of TB diagnosis and the reluctance of TB patients to accept HIV testing due to fears of HIV diagnosis related stigma.

Assessing TB/HIV collaboration in SA is problematic because there is no standardised recording and reporting system in place. The NTCP has piloted a revised TB register that records whether patients are counselled and tested for HIV, records their results and indicates whether they have started cotrimoxazole preventive therapy (CPT) or been referred for ART. There are now plans for wider implementation. A new register is required to measure what proportion of HIV-positive patients are screened for TB, diagnosed with TB, receive Purified Protein Derivative (PPD) testing or are started on Isoniazid Preventive Therapy (IPT). Some provinces have implemented a pre-ART register that could be modified to capture this information for all HIV-positive patients.

### ACCESS TO ART SERVICES

All health districts are providing ART through designated sites.<sup>29</sup> The department reports that by December 2005 there were 204 sites accredited and operational to provide ART. However, a good number of sites are not accessible and in some districts there are too few sites.

Many districts have not implemented services at appropriate primary locations, citing limited human and infrastructure resources as a barrier. This means that many primary level care patients are being seen at higher levels of care which is inappropriate and unsustainable.<sup>30</sup> In the majority of health districts, treatment efforts are hampered by infrastructure needs with serious staff shortages as well as other operational issues. Productive public-private partnerships (PPPs) are also undermined by a bureaucracy that is unable to respond timeously to local changing needs and demands.

The acute shortage of doctors, pharmacists and nurses in many primary treatment sites, places an enormous burden on staff working at these sites, resulting in potentially poor treatment outcomes and rapid staff turnover. Staffing problems are also exacerbated by staff who themselves are HIV-positive and ill, impacting on the quality of care provided.<sup>5</sup> Many primary facilities lack basic equipment for examination, from thermometers to vaginal speculae (even torch batteries), with staff citing lack of support from their local districts in the purchase of these.<sup>h</sup> Staff shortages could be addressed by task-sharing within the clinic team (described as task-shifting) to ensure that skills of staff are used appropriately and efficiently to avoid burn-out of those who carry the bulk of the clinical responsibility as well as accelerating ART initiation and patient monitoring.

The lack of widespread knowledge on HIV Polymerase Chain Reaction (PCR) diagnostic tests availability and procedure for infants, coupled with the difficulties involved in drawing blood from infants, is hampering the ability of health care workers to determine the HIV status of these children early in their infection.<sup>31</sup> The heel prick test to obtain blood spots on blotting paper for HIV PCR has not been universally promoted. For more details see the chapter on Management of HIV-infected Children in this Review.

Access to district and tertiary hospitals is critical for the support of primary level staff in their investigation and treatment of patients. Most special investigations for patients in primary care require referral up the care chain, but these visits are costly for indigent patients and waiting lists are often long. Establishing rapid diagnostic centres for the investigation of complicated opportunistic infections, such as at G. F. Jooste Hospital, Cape Town, has improved the management of primary level patients. Immune reconstitution in recently treated patients with low CD4 (<50c/ml), with undiagnosed opportunistic infections poses a major management burden on primary care staff. Urgent referral for patient workup and adequate staff support and supervision is critical.<sup>32</sup>

f Personal communication, Dr Mavuso, Temba Hospital, August 2005.

g In 2005 Nkandla hospital, KZN lost 10% (14/140) staff to AIDS, in addition to losing 7% (10/140) the previous year. Personal communication Dr Maria Lindner, previous hospital clinical manager, Jan 2006.

h A Grimwood, assessment of local services in planning support of ART services at agreed primary health care sites with the various provincial departments of health from Jan 2004-July 2006.



## ACCESS TO MEDICINES

Limited availability of child-appropriate medicines (for example, syrups or smaller tablets or appropriate fixed drug combinations) and simpler regimens are problematic. Limited access to comprehensive pharmaceutical services has slowed down access to treatment at many secondary sites.<sup>f</sup> With the undersupply of pharmacists, especially in the rural areas, some provinces are considering employing post-basic pharmacy assistants to dispense ARVs who will be supervised by off-site pharmacists who will oversee several clinics in a district.

The use of stavudine at recommended dosages per weight (current meta-analysis suggests lowering of dose from 40 to 30mg;<sup>33</sup> 1st line per treatment protocol) has led to several cases of lactic acidosis,<sup>23</sup> but this has not prevented patients seeking treatment.<sup>34</sup> The extent to which lipodystrophy is presenting is unclear and is currently under investigation. Clinicians recommend,<sup>33,35,36</sup> that stavudine should be substituted for women with high Body Mass Indexes (BMIs), or dosage reduced in general. The substitution should either be zidovudine or tenofovir disoproxil fumerate to reduce the incidence of adverse drug reactions (such as lactic acidosis). As tenofovir is not currently registered, if zidovudine is used with lamivudine, there is only didanosine with stavudine for the NRTI backbone for the second regimen where there is virological failure. This combination is not recommended by local as well as international HIV clinical treatment guidelines. The addition of abacavir to the government treatment protocols will go some way in increasing treatment options.

While IPT has been shown to decrease the incidence of TB in HIV-infected PPD-positive patients by 60% in clinical trials,<sup>37</sup> it has not been adequately implemented in SA (only 4% of HIV-positive patients were started on IPT in 2005). One reason for this is that programme managers and health workers are inappropriately fearful that IPT will increase isoniazid resistance in communities even though this is not supported by data from clinical and community trials. Missing the diagnosis of subclinical TB by using current WHO recommendations to exclude active TB (i.e. primarily based on symptom screening) would not result in widespread isoniazid resistance and treatment failures.<sup>38</sup>

This is because early studies of isoniazid monotherapy showed success rates of around 70%<sup>39</sup> and because patients with isoniazid-resistant TB respond well to 4-drug regimens that contain rifampin.<sup>40</sup>

CPT decreases hospitalisation in symptomatic HIV-positive patients<sup>41</sup> and decreases mortality in HIV-positive TB patients.<sup>42</sup> In SA, 21% of HIV-positive patients were initiated on CPT in 2005 and all TB/HIV patients were started on CPT. One of the reasons that more than 100% of TB patients are recorded to be on CPT may be that TB patients who were registered in previous time periods may be reported to be on CPT.

## ADHERENCE

Adherence is critical in the management of patients with TB and for those on ART. While little is known about what guarantees adherence,<sup>43,44</sup> at a minimum, patients have to be educated about the need for adherence. Community interventions are important to support programmes that provide information, education and communication as well as to offer general psycho-social support.<sup>i</sup>

Falling adherence to ART is worrying. Early data from KwaZulu-Natal indicate that of the 217 patients initiated on ART, those attending uMphumulo Hospital, iLembe District, KwaZulu-Natal, where there is no community adherence programme, have a 22% (48 patients) defaulter rate compared to Sundumbili Community Health Care Centre where there is a pilot patient advocate programme, (6.5% defaulter rate - 48/736 patients).<sup>45</sup> The Directly Observed Treatment Short course strategy (DOTS) model, developed to support TB patients maintain their medicine regimes has not been entirely successful in stemming patients from defaulting on treatment, with 11.5% patients purportedly defaulting.<sup>17</sup>

Unfortunately the national HIV and AIDS programme has not yet been able to provide any educational materials, tools or pill boxes to support patient adherence. Some donors such as Absolute Return for Kids (ARK) have developed ARV pill boxes with detachable compartments for each day of the week to help those who work away from home.

<sup>i</sup> There are several community adherence models for supporting the patient and their families. These have not been objectively measured for the more effective and efficient of these models for wide scale implementation.

In most cases, patient adherence support is provided by NGOs, community organisations and the academic sector providing patient ART. These adherence programmes have a strong community component, relying on patient ‘buddies’ nominated by patients to support them and / or community adherence workers who conduct home visits and provide ongoing support within the communities where patients live. Several patient support models are being used in provinces but only a few focus on patient adherence.<sup>j</sup> The Eastern Cape is proposing to use government funded community health workers to provide community adherence support, whereas KwaZulu-Natal will be using both community home based carers and community health care workers.

Community Adherence Workers (CAWs) are trained to recognise and report psychosocial issues that can potentially undermine adherence. Depression, problems with disclosure, domestic violence, food insecurity as well as drug and alcohol abuse are some of the issues reported to clinic staff – and in many cases this is before patients commence ART.<sup>46</sup> They also report to clinic staff about any early signs of non-adherence. Once patients commence ART and are stable with suppressed viral loads, they require less intensive follow up. These community workers can then support more patients, as is the case in KwaZulu-Natal where community care workers each support over 100 patients. Ongoing sustainability of such patient adherence support programmes is at risk in provinces where there are no government-funded programmes.<sup>46</sup>

## CONCLUSION AND RECOMMENDATIONS

While there has been some progress in strengthening collaborative treatment, the progress on health outcomes is likely to be limited without a more determined push to achieve integrated care of HIV, TB (and STIs). This chapter has focused on collaborative initiatives and has concentrated on assessing health systems progress in providing access to treatment. Integrated care acknowledges the links between HIV and TB (and

STIs), and implies a strong emphasis upon prevention as well as on integrated medical care, since “one of the most powerful interventions for HIV patients is to prevent TB; and....the most powerful intervention to reduce TB is to prevent new HIV infections”.<sup>47</sup> Given the benefits to staff and patients, the successful implementation of integrated care could go some way to overcoming challenges and difficulties identified in this chapter. Re-orientation of staff, including community health workers and DOTS supporters through training is an important component of supporting this integrated approach. Clinic supervisors can contribute by advocating for and monitoring this comprehensive strategy.<sup>47</sup>

The introduction of provider initiated counselling and HIV testing is being recommended internationally and the introduction of this model as a routine component of care within TB, STI, antenatal and family planning services could play an important role in strengthening care in SA. A service in which the health worker routinely offers testing represents a significant paradigm shift from that in which the onus is on the patient to request testing. To ensure that patient rights are protected it would be important that health workers still be required to counsel and educate patients and obtain their written consent before doing an HIV test.

Alongside the introduction of provider initiated testing, the expansion of cadres of health workers authorised to do the testing and increasing the number of quality-assured testing sites to venues outside health facilities (e.g. taxi ranks, schools, factories and shopping centres) are necessary to increase access, particularly for men and youth who are less likely to attend health facilities than women. Rural areas represent an ongoing challenge as potential venues for this type of service expansion are limited.

TB case finding should be routinely done at every HIV clinical visit. The implementation of IPT should be accelerated. A policy directive should be sent to provinces encouraging IPT implementation. The implementation of cotrimoxazole prophylaxis should be expanded. All HIV-positive patients, especially pregnant women and patients with TB/HIV co-infection should be routinely offered CD4 monitoring to accelerate their access to Highly Active Antiretroviral Therapy (HAART).

<sup>j</sup> The Western Cape is considering introducing a generic community care worker programme as part of the Expanded Public Works Programme Planning to support the financing of the community adherence programmes. In the interim it relies on several community based and NGO funded and managed models to provide this support.



Access to newer drugs as well as new formulations and dosing is critical for improving overall care of patients. Reducing adverse drug events and pill burden by including fixed dose combinations and simpler dosage schedules would help improve adherence. The current national treatment guidelines therefore requires regular review of treatment regimens as new drugs are developed and registered for use in SA. While newer drugs and better formulations will cost more, the SA government needs to continue price and licensing negotiations directly with manufacturers and through partnerships with international advocacy organisations such as the Clinton Foundation to ensure a sustainable and affordable supply of medicines. The need for training in this area remains critical.<sup>k</sup> There is also the need for specific training materials and tools to be made available for CAWs assisting families with children on ART. Some institutions have developed site-specific training materials to support adherence in children which need to be made widely available at the community level to support paediatric access.

Adherence monitoring for patients on ART is essential. Proper monitoring will help in evaluating the different approaches that support adherence. However, at present, there are no national guidelines to measure adherence. Though several measures exist, provinces and donors are using several different approaches that might not necessarily identify non-adherence timeously.

Accreditation of sites should also be accelerated. At present, sites can only be accredited if they have all the components of a 'comprehensive service' in place. District health teams should define their health needs and be supported in the development of relevant services. There is also a critical need for proper coordination of services provided by local authorities and provincial health departments to maximise the use of available staff and available infrastructure. This applies to the coordination of external agencies like NGOs at the district level as well.

<sup>k</sup> ARK's community adherence curriculum developed in collaboration with the AIDS and Society Research Unit, University of Cape Town is currently under review in three provinces for adaptation to the local context. This programme allows for the training and mentoring of community adherence workers by clinic staff. These community adherence workers act as the interface between the clinic staff and the community, helping patients understand their treatment and health condition, assisting them increase their circle of disclosure, and helping their families support their adherence. They are taught to recognise adverse events and one was even able to prevent a lactic acidosis crisis by early appropriate referral.

As ARVs can only be dispensed by a registered pharmacist, there is a need to review relevant regulations that constrain adequate dispensing of medicines. Special dispensation needs to be considered for patients needing referral to higher levels of care as they are charged for these services. Not only are there associated transport costs but patients are also charged up to R79 per visit at hospitals in Gauteng for example.<sup>48</sup>

Adequate staffing, especially in rural and historically under-served areas is perhaps the most intractable and long term challenge to providing effective HIV and TB care. Ensuring appropriate financial incentives is one component of achieving the required staffing levels. A variety of non-financial incentives also have a role to play, and perhaps especially ensuring that working conditions are as attractive and safe as possible. Valuing staff and recognising their contribution, as well as strengthening the person to person management skills of supervisors and managers are interventions that could yield increased commitment without requiring large budgets to implement.

District teams must be permitted to make flexible use of existing staff.<sup>l</sup> Registration of foreign doctors in the public sector should be expedited. Integration of services with the private sector, especially general practitioners, managed health care providers and industry is also critical within every health district. District health management teams need support to develop and implement down-referral strategies from secondary to primary care as well as be able to implement other models of service provision. Down-referral requires staff training, infrastructure support and the implementation of management information systems.

HIV and TB will certainly be with us for the next 25 years and beyond, embedded in the complex and interrelated realities of our societies, economies, cultures and medical responses, and combining to form an enduring and unrelenting public health crisis. A united, evidence-based, and integrated response,

<sup>l</sup> Many other options to support care are possible, as can be seen in other similar resource-limited settings in Africa. In Zambia, post-basic pharmacy assistants / technicians help with dispensing and clinical officers help doctors with clinical support of patients. In South Africa welfare officers can be used to assist with accessing disability and other grants if mechanisms are put in place that would allow this.

informed by scientific knowledge and leadership that is able to leverage local and national resources and capabilities, is essential if the challenges posed by such a crisis are to be overcome.

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