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Fighting a dual epidemic

Treating TB in a high HIV prevalence setting in rural Swaziland
January 2008 – June 2010



Swazi people
fighting HIV & TB together in Shiselweni



Acknowledgements

The MSF supported programme in Shiselweni would not have achieved the successes outlined in this report without the tireless commitment of the nurses, expert clients, laboratory staff, pharmacy staff and doctors working throughout the region.

Most importantly, thanks are due to the many people with TB and living with HIV who have motivated their friends and family members to seek care and treatment early, and who continue to provide a positive role model for thousands of Swazis.



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Cover photo: *Clinic nurses work hand in hand with expert clients in dispensing antiretroviral drugs to patients*
Back cover photo: *For patients who adhere to their treatment, there is hope and the chance of a positive life*

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Executive summary

In Swaziland a dual epidemic of tuberculosis (TB) and HIV is threatening to wipe out entire generations. The country has the highest HIV prevalence in the world among adults, coupled with one of the highest incidence rates of TB. The great majority of TB patients are co-infected with HIV, and TB is the leading cause of mortality among HIV-positive patients. To add to this, a new challenge is emerging in the form of drug-resistant tuberculosis (DR-TB). The dual epidemic is taking a deadly toll on the people of Swaziland, whose life expectancy has halved over the past 20 years – from 60 to 31 years. People are dying in large numbers, children are being made orphans and the workforce is declining. It is a health emergency of huge proportions. Tackling this crisis is being hindered by an acute shortage of medical staff, by an inadequate diagnostic capacity and by patients failing to complete their treatment, often because of the prohibitive cost of making long and frequent journeys to distant health facilities.

Médecins Sans Frontières (MSF) and the Ministry of Health (MoH) of Swaziland are working together to fight the co-epidemic. In Shiselweni, the country's poorest and most remote region, they have adopted a decentralised, integrated and patient-centred approach.

Despite numerous challenges, the joint programme has had a considerable impact in the past two-and-a-half years. Twenty-one sites throughout Shiselweni region have been developed as fully integrated 'one-stop services' for HIV and TB care, offering treatment initiation and follow-up at primary care clinics. DR-TB care has been decentralised to the region's three main health facilities, with further decentralisation to clinics and communities for all DR-TB patients on injections in the intensive phase of treatment. More generally, outreach teams are extending the provision of HIV and TB services into outlying communities.

The result is that increased numbers of patients are being diagnosed and initiated on treatment earlier, fewer patients are defaulting from their treatment, and treatment outcomes have improved significantly. The number of people tested for HIV each month has more than tripled, the number of people initiated on antiretroviral therapy (ART) has doubled, and TB outcomes have seen a marked improvement.

In a national health crisis where financial and human resources are so limited, much of the success of this model of care delivery lies in task shifting. By using trained and supervised lower cadre health workers to provide more widespread access to HIV and TB care, MSF and the MoH have succeeded in keeping care within the community and tapping into the growing resource of expert clients with direct experience and knowledge of HIV, TB and related issues.

Decentralising services has also dramatically improved patients' access to care. Instead of having to make long, repetitive and expensive journeys to the region's health facilities, many patients can now access HIV and TB services close to their homes. Giving DR-TB patients the option to receive injections and oral drugs at home during the intensive phase of treatment has been another major step forward in adapting care to meet patients' needs and support treatment adherence.

Improved infection control measures have made healthcare environments safer for both staff and patients. Intensive case finding among HIV patients at all clinics is also improving infection control in the community by identifying TB patients and starting them on treatment earlier. Psychosocial support is increasing awareness of TB and HIV among patients and the wider community, contributing to more people coming forward for testing and treatment, better retention in care and a reduced risk of infection transmission within the community.

The challenge now is to build on these successes and develop fully MOH-managed decentralised HIV and TB services that overcome the geographical and financial barriers to care that many patients still face. Task shifting must be expanded to allow nurse initiation of ART and to manage the growing number of people with HIV in need of treatment. Laboratory capacity must be further strengthened and expanded in each clinic, to cope with the projected increase in people

with HIV in need of ART, and with the growing number of TB and DR-TB patients. Well-functioning, standardised systems of drug management and data management must also be introduced and maintained. Introducing these measures should be a top priority. The scale of the co-epidemic in Swaziland demands urgent political commitment translated into immediate action.

Médecins Sans Frontières/Ministry of Health of Swaziland joint decentralisation project of integrated HIV/TB services in Shiselweni region. Total population: 208,454.

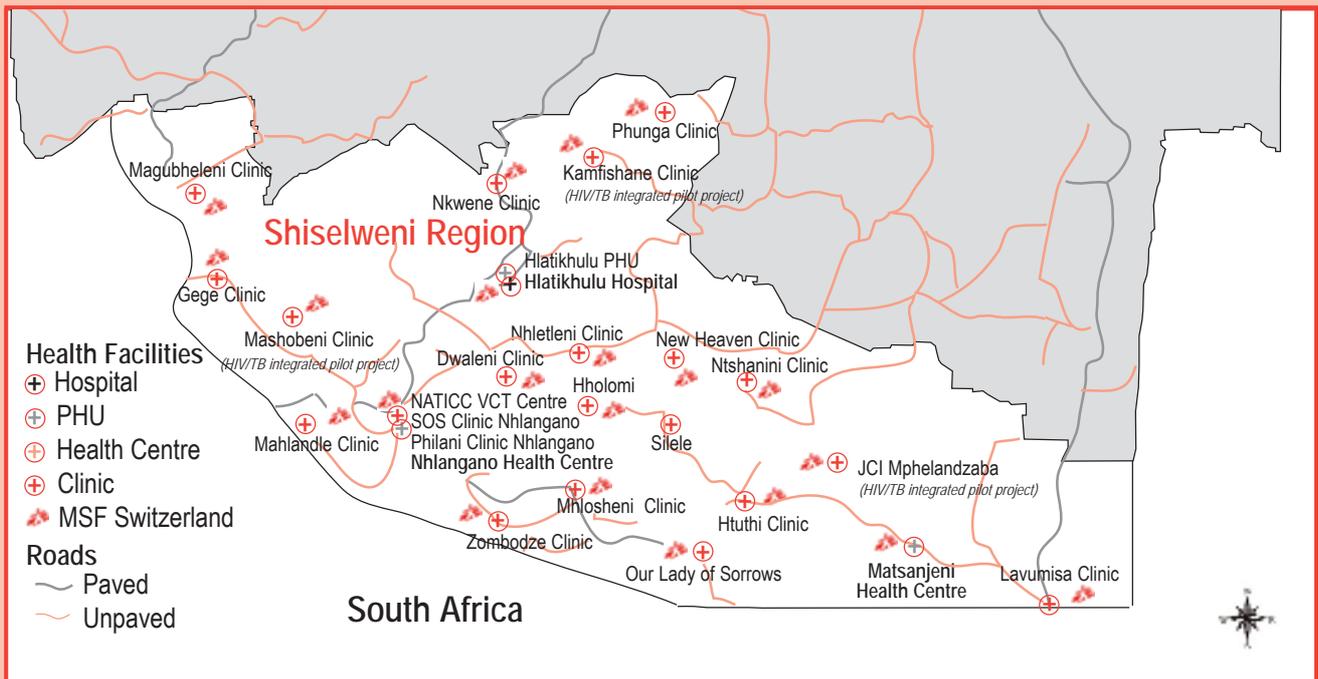




Photo © Aymeric Péguillan/MSF

People learn about tuberculosis at a community event in Mtsambama Thinkhundla on World TB Day 2008

Introduction

Swaziland (population 1.018 million) is a small, mountainous country landlocked by South Africa and Mozambique, and one of three monarchies in Africa. Despite its status as one of the 'wealthier' countries in sub-Saharan Africa, the kingdom is rated 142nd on the human development index (UNDP 2009), and an estimated 81% of the population live on less than US\$2 per day. The country's wealth lies in agriculture (sugar cane) and forestry resources (for paper pulp); however the majority of export commodities are manufacturing products sold on the South African and US markets, such as miscellaneous edibles (mainly soft-drink concentrates) and textile products. The economy is highly dependent on that of South Africa. Since the end of the 1990s, economic growth has decreased to below 0.4% in 2009^{1,2,3}.

Currently, Swaziland is in the grip of a dual health emergency. The country has the highest HIV prevalence worldwide among adults aged 15-49 years (26.1%)⁴ and one of the highest tuberculosis (TB) incidence rates (1,198 TB cases/100,000/year)⁵. TB is the leading killer among people living with HIV, and in Swaziland more than 83% of TB patients are co-infected with HIV⁶. The co-epidemic has contributed substantially to a halving of life expectancy within two decades – from 60 years in the 1990s to 31 in 2007⁷. The high mortality due to HIV and TB is a tragedy that is affecting communities and the economy: parents are dying, children are becoming orphans, and the workforce is slowly disappearing.

1 National Population and Housing Census, Swaziland 2007

2 UNDP Human Development Report, 2009. Available at <http://www.undp.org/hdr>

3 Central Bank of Swaziland, 2009

4 UNAIDS <http://www.unaids.org/en/CountryResponses/Countries/swaziland.asp>

5 WHO Swaziland TB Country Profile, estimates of epidemiological burden, 2007

6 UNDP Human Development Report 2009

7 UNAIDS Swaziland Country Progress report 2010

In 1999, the King of Swaziland, Mswati III, declared HIV as a national emergency. Since then, a National Emergency Response Council on HIV and AIDS (NERCHA) has been established and, in September 2009, the Ministry of Health (MoH) took an important step forward in HIV management through revision of its national antiretroviral therapy (ART) guidelines to increase the CD4 cut-off point for treatment initiation from <math><200/\text{mm}^3</math> to <math><350/\text{mm}^3</math>. Given the large – and growing – number of people living with HIV, urgent measures are necessary to address the HIV epidemic and get more patients on antiretroviral therapy. In 2009, an estimated 185,803 people were already living with HIV, and that figure is projected to rise to 216,735 by 2015. Although a decrease in the number of new annual HIV infections is forecast (from 12,281 in 2009 to 11,381 in 2015), AIDS-related deaths are also expected to rise in the same period, from 7,114 to 8,393. Women are disproportionately affected (with 30% prevalence, compared with 20% among men), while HIV prevalence by age peaks earlier among women than men, at 25-29 years and 35-39 years respectively⁸. The rate of infection among pregnant mothers has risen ten-fold, from 4% in 1992 to 42% in 2008⁹.

The outlook for TB is equally bleak. TB remains the leading cause of mortality among HIV-positive patients in Swaziland. The TB notification

rate has increased steadily (from 119 notified new smear-positive cases per 100,000 population in 2001 to 242 notified new smear-positive cases in 2007). Management of drug resistant TB (DR-TB) is a growing challenge – results from a national drug resistance survey show multidrug-resistant TB (MDR-TB) prevalence rates of 7.7% among new TB cases and 33.9% in previously treated cases¹⁰, far higher than the World Health Organization's (WHO) 2008 estimates of MDR-TB prevalence (0.9% among new cases and 9.1% among previously treated cases)¹¹. HIV co-infection was significantly associated with MDR-TB.

In 2006, the then Prime Minister Themba Dlamini made an urgent request for external help to fight the HIV and TB crisis sweeping the country. MSF launched a preliminary assessment in 2007 to identify areas for support, and found chronic staff shortages, poor-quality care provision, no integration of HIV/TB services, inadequate capacity to provide HIV care at primary clinics and a largely centralised service for the treatment of TB and DR-TB. Given the high costs of transport to health facilities providing HIV and TB services, care was, in practice, inaccessible for the majority of Swazis living below the poverty line.

Tackling Swaziland's human resource crisis

Swaziland's human resource crisis is one of the biggest obstacles to tackling the HIV/TB co-epidemic. In 2004, 44% of posts for doctors, 19% of posts for nurses and 17% of nursing assistant posts were unfilled¹². There is no medical school in Swaziland and, of the approximately 170 nurses and midwives who graduate each year, a large proportion emigrate. Staff attrition to HIV is high – at around 4% each year – and it is also high to TB. Currently, the Swazi health system is benefiting from an influx of skilled Zimbabwean healthcare workers. However, if the Zimbabwean economy recovers, many of these workers may repatriate. The staffing crisis is further exacerbated by absences from work due to training courses, holidays or sick leave – there is often only one nurse on duty for a catchment population of between 7,000 and 16,000. In rural areas, in particular, the lack of accommodation for health workers makes recruitment and retention of staff very difficult.

Task shifting is well recognised as a way of providing high quality care with limited human resources in contexts such as Swaziland¹⁴. Delegating tasks such as ART initiation, HIV counselling and testing and drug dispensing to lower cadres are key steps to unburdening existing health staff and increasing access to services essential to providing high quality, patient-oriented TB and HIV care¹⁵. Swaziland's Ministry of Health has taken steps towards shifting responsibilities from doctors to nurses, notably by supporting nurse-driven initiation of TB treatment. Yet the failure to delegate other healthcare responsibilities to lower cadre workers, such as ART initiation to nurses, is still hampering patients' access to care. Given the scale of the HIV/TB co-epidemic, its continued impact on mortality and the growing demand for treatment, an urgent and rapid expansion of task shifting to encompass a wide range of services must be prioritised.

8 UNAIDS 2010 Swaziland country progress report. Available at http://data.unaids.org/pub/Report/2010/swaziland_2010_country_progress_report_en.pdf

9 HIV Sentinel Surveillance

10 In 2009, a drug sensitivity testing (DST) survey conducted by Swaziland's National TB Control Programme, MSF, Epicentre and Borstel Supranational Reference Laboratory found 7.7% (95% CI 5.1-11.0) MDR-TB prevalence among new cases and 33.4% (95% CI 28.1-39.1) among previously treated cases.

11 WHO 2010. Multidrug and extensively drug-resistant TB (M/XDR-TB): 2010 Global Report on Surveillance and Response. Available at:

http://whqlibdoc.who.int/publications/2010/9789241599191_eng.pdf

12 National Population and Housing Census, Swaziland, 2007

13 Kober K, Van Damme W. Public sector nurses in Swaziland: can the downturn be reversed? *Human Resources for Health* 2006, 4:13

14 World Health Organization: Treat train retain. Task shifting: Global recommendations and guidelines. Geneva, 2007. Available:

http://www.who.int/healthsystems/task_shifting/en/. WHO/UNAIDS/PEPFAR: Task Shifting: Global Recommendations and Guidelines, Geneva, 2008. Available online at

http://www.who.int/healthsystems/task_shifting/en/index.html

15 Callaghan M, Ford N, Schneider H. A systematic review of task shifting for HIV treatment and care in Africa. *Human Resources for Health* 2010. 8:8.

Future approaches to TB and HIV management in Swaziland – an international consensus

In October 2009, national, regional and international representatives from governments, academic institutions and non-governmental organisations came together to define the best operational strategies for the implementation of a decentralised model of care in rural settings affected by high HIV and TB/DR-TB prevalence. Participants made a series of recommendations on improving TB and HIV care delivery, many of which mirror the model of care delivery that MSF is implementing in Shiselweni region:

- Task shifting is the most appropriate model of care delivery given the scale of the crisis and the limited human resources.
- Addressing the dual epidemic demands a patient-centred approach which prioritises the decentralisation and integration of HIV and TB services.
- Increased resources are necessary to improve the detection and management of DR-TB; widespread drug susceptibility testing and the establishment of a clinical expert committee to advise on difficult cases are two essential components of a comprehensive model of care.
- Minimum standards for infection control must be introduced.
- Strengthening health information systems is essential to manage the co-epidemic.
- Laboratory resources must be reinforced to cope with existing and growing numbers of patients.
- An uninterrupted supply of quality drugs must be guaranteed.
- All stakeholders need to recognise the state's duty to provide care and acknowledge the ethical dilemmas for management of DR-TB patients, namely the trade-off between protecting public health and respecting human rights.

In November 2007, MSF signed a memorandum of understanding with the Ministry of Health and Social Welfare to start providing HIV and TB care (including DR-TB care) throughout Shiselweni region, the poorest and most remote region of Swaziland with a population of approximately 208,454¹². The primary objective of the programme was to establish a patient-centred model of care delivery focusing on decentralised TB and DR-TB care; to establish fully-integrated HIV and TB care; and to improve infection control. To meet this objective, MSF is supporting MoH staff at all 21 government health facilities in Shiselweni, comprising 18 primary care clinics, one hospital (in Hlatikulu) and two large health centres with inpatient capacity (in Nhlanguano and Matsanjani). Given the dire shortage of health professionals, MSF has sought to scale up provision of care through task shifting from doctors to nurses and to free up nurses to perform clinical duties by delegating responsibilities for HIV testing and counselling to lay community health workers.

This report provides an overview of the services and outcomes during the first two-and-a-half years of the programme (January 2008 - June 2010) and discusses key challenges and priorities for the future.



HIV-positive activists march in Nhlanguano on World Aids Day 2009. HIV activism is key to influencing changes in treatment and care policies.



An MSF doctor attends to a patient at Matsanjeni Health Centre. Doctors are in short supply in Swaziland and attend to the sickest patients' needs

Programme services and outcomes

MSF supports decentralised, free-of-charge care and treatment for TB and HIV in Shiselweni region. A range of services is provided through all 21 government-run health facilities in Shiselweni region, including three main health facilities – at Nhlanguano, Hlatikhulu and Matsanjeni – and 18 smaller primary health clinics. These health facilities are part of the regional health network managed by the Ministry of Health, and MSF works in close collaboration with regional MoH staff.

The long-term goal is to establish 'one-stop services' providing fully integrated HIV and TB care at each of the 21 health facilities in Shiselweni region. The full service package includes: HIV and TB testing and counselling; treatment adherence counselling; TB treatment initiation, follow-up and termination; ART initiation and refill; follow-up for DR-TB treatment; and the prevention and management of opportunistic infections. These services have been introduced gradually and by mid-2010, 'one-stop services' were available in the three main health facilities and all of the 18 small primary care clinics, ten of which are supported by MSF outreach teams on a weekly basis, while the remaining eight offer 'one-stop services' on a permanent basis.

MSF supports a patient-centred approach to TB treatment. Currently, TB diagnosis, initiation and follow-up of treatment is available at the three

main health facilities and at eight primary care clinics in Shiselweni region. Nurses initiate treatment for smear-positive TB patients and provide follow-up care for all TB patients. Patients refill their prescriptions on a monthly basis and are supported to complete the self-administered, seven-days-per-week treatment regimen by expert clients.

Patients with DR-TB and/or complications are referred to a doctor at one of the main health facilities and undergo follow-up at this health facility. These DR-TB patients receive money to cover the cost of transport to and from the health facilities, and food packages where necessary. To facilitate better patient access to care, all TB and DR-TB patients in the intensive phase of treatment have the option to receive injectables at the primary care clinic nearest to their home (any one of the 18 clinics in Shiselweni region). In addition, DR-TB patients have the option to nominate a member of their community who is trained to provide injectables at the patient's home during the intensive phase of treatment.

ART initiation is only available in the presence of a doctor – either at the main health facilities or at a primary care clinic on the day when the doctor is visiting with the mobile team. ART refills are done by nurses and dispensers at any of the 18 primary care clinics.

Tuberculosis services

Until the first quarter of 2008, TB management in Shiselweni region was defined by a centralised model of care, where a clinical team based at the national TB centre in Manzini (in the centre of the country) made sporadic and irregular supervisory visits to each regional TB centre for initiation and termination of TB treatment. A policy of passive case detection, combined with poor quality samples (due to an unreliable transport system), poor quality microscopy and no proper training for staff, contributed to late diagnosis and poor treatment outcomes.

Since MSF started its programme, the treatment outcomes of TB patients enrolled from early 2008 onwards have improved significantly, with the treatment success rate for new smear-positive TB cases increasing from 54.8% in 2007 to 68.5% in the second quarter of 2009. This improvement is largely due to six factors: i) decentralising care from Manzini TB centre to regional health centres (in 2008) and primary care clinics (in early 2009); ii) improved adherence counselling and defaulter tracing as a result of increased staffing and better training and supervision; iii) improved case finding, contributing to early diagnosis and earlier initiation on treatment; iv) improved drug supply and laboratory services; v) initiation of ART for patients with TB (currently ensured by doctors); vi) integration of ART services into TB clinics.

Intensified case finding

Given that most TB transmission is assumed to occur when patients are still undiagnosed¹⁶, strategies to improve early case finding (and subsequently to initiate treatment earlier and increase infection control) have been a priority. From 2008, the MoH and MSF have

worked to increase case detection across Shiselweni region via intensified TB case finding (ICF) among HIV-positive patients attending primary care clinics.

All clinics and health centres have adopted a policy of ICF for HIV-positive patients upon initial diagnosis and at each follow-up. Suspect TB patients are those who meet one or more of five criteria: coughing >2 weeks; fever >2 weeks; night sweats >2 weeks; noticeable weight loss; and chest pains. All suspect patients then provide a sputum sample for analysis. Sputum samples are collected in designated areas by trained expert clients and sample quality is monitored by laboratory specialists working in purpose-designed laboratories, with follow-up training conducted at individual sites where lapses in quality are identified.

Since ICF was introduced in the third quarter of 2009, the number of HIV patients screened for TB at the primary care level has increased more than ten-fold from 469 in Q1 2009 to 5,278 in Q2 2010. ICF contributed to an increase in the number of TB suspects at the primary care level from 116 TB suspects in Q1 2009 to 685 in Q2 2010. In total, from Q1 2009 to Q2 2010, of 18,342 HIV patients screened, 2,172 were identified as TB suspects (11.8%), which reflects regional estimates of ICF yield in ART clinics¹⁷. ICF introduction at the primary care clinics contributed to an initial increase in TB cases registered per month throughout Shiselweni region in 2009 (see figure 1) (which could be due to detecting the pool of TB patients among the patients on ART), and has likely led to earlier detection of TB patients, thereby reducing TB transmission.

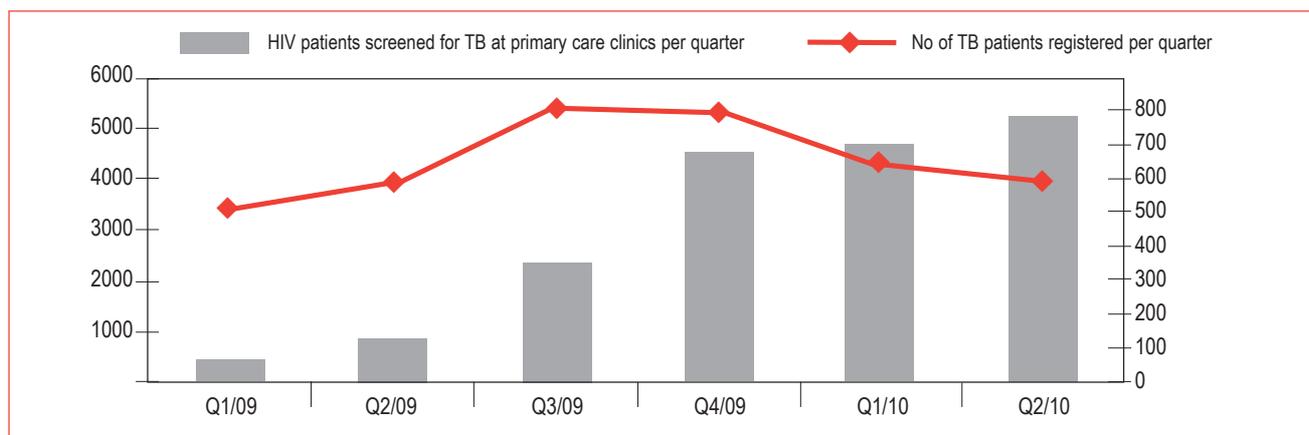
Task shifting 1: Nurse-driven TB care in primary care clinics

Given the acute shortage of doctors in Swaziland, scaling up TB treatment can only happen through a model of delivery involving non-physician clinicians as the central providers of care. Recognising the urgent need to increase access to treatment, Swaziland's Ministry of Health has embraced the concept of nurse-initiated treatment for smear-positive TB patients. However, in 2007, TB care was still centralised and patients were expected to travel to the TB centre in Manzini or wait for the outreach service to visit the regional health facilities. Since then, nurse-initiated TB care and follow-up has been rolled out to 21 health facilities in Shiselweni region, including 18 primary care clinics. Further decentralisation is critical to improving access to treatment; however, several barriers remain. The human resources crisis has meant that rural clinics are often understaffed and nurses are reluctant or unable to manage the additional workload presented by TB patients. Moreover, although they are at the forefront of care provision, nurses are not routinely trained to diagnose and initiate treatment for smear-negative TB patients, who represent the majority of TB co-infected patients. Additional training and introduction of lay counsellors to manage counselling and other non-clinical aspects of TB care must be prioritised to improve patient access to care.

16 Goemaere E, Ford N, Berman D, McDermid C, Cohen R. XDR-TB in South Africa: Detention Is Not the Priority. *Plos Medicine* 2007. 4;4:163-4.

17 Katharina Kranzer, Rein M.G.J. Houben, Judith R. Glynn, Linda-Gail Bekker, Robin Wood, Stephen D. Lawn. Yield of HIV-associated tuberculosis during intensified case finding in resource-limited settings: a systematic review and meta-analysis. *Lancet Infectious Diseases*. 2010; 10: 93-102.

Figure 1. Number of HIV patients screened for TB at the primary care level per quarter and total TB cases registered per quarter at primary care and large health facilities, 2009



An MSF lab technologist prepares sputum samples before microscopy at the Nhlngano Health Centre laboratory

Improved laboratory capacity

The strategy of intensified case finding has been supported by improved laboratory capacity and an MSF-funded sample transportation system, ensuring good quality samples and fast turnaround of results. Bleach concentration and LED fluorescence microscopy have been introduced at all TB laboratories in Shiselweni, contributing to improved sensitivity (15% more sensitive) and faster turnaround of sputum smear results. MSF has also funded a three-month buffer stock of reagents for laboratories to mitigate interruptions in laboratory services caused by stock ruptures. Since 2008, average quarterly sputum smear microscopy has almost doubled in Shiselweni, from an average of 2,740 sputum samples tested/quarter in 2008 to 4,477/quarter in 2010, including an increase in new diagnostic samples screened per quarter, from an average of 1,768 new samples/quarter in 2008 to an average of 2,454/quarter in 2010. This increase reflects the growing diagnostic demand due to intensified case finding. Regular internal and external quality control provides high confidence in the quality of laboratory diagnosis: quality control reports indicate low false negatives (<5%) and 0% false positives among all sputum microscopy. Of 22,538 diagnostic samples tested between 2008 and the first half of 2010, 3,614 were found to be sputum positive (16%), indicating a satisfactory quality of suspect finding in a high HIV prevalent context.

18 Deribe K, Hailekiros F, Biadgillign S, Amberbir A, Beyene BK. Defaulters from antiretroviral treatment in Jimma University Specialized Hospital, Southwest Ethiopia. *Trop Med Int Health* 2008.

19 Lesotho Ministry of Health and Social Welfare. Annual Joint Review Report 2009/10 FY. Health Planning and Statistics Department, May 2010.

Table 1. TB treatment outcomes in 2007, 2008 and first half of 2009 for new smear-positive cases

New smear-positive cases	2007 n=339	2008 n=691	1st half of 2009 n=373
Success rate	186/339 (54.8%)	500/684 (73.0%)	250/373 (67%)
Death rate	44/339 (12.9%)	100/684 (14.6%)	52/373 (13.9%)
Failure rate	24/339 (7.0%)	53/684 (7.7%)	21/373 (5.6%)
Defaulter rate	70/339 (20.6%)	26/684 (3.8%)	26/373 (6.9%)
Transferred out	15/339 (4.4%)	5/684 (0.7%)	24/373 (6.4%)

Tuberculosis outcomes

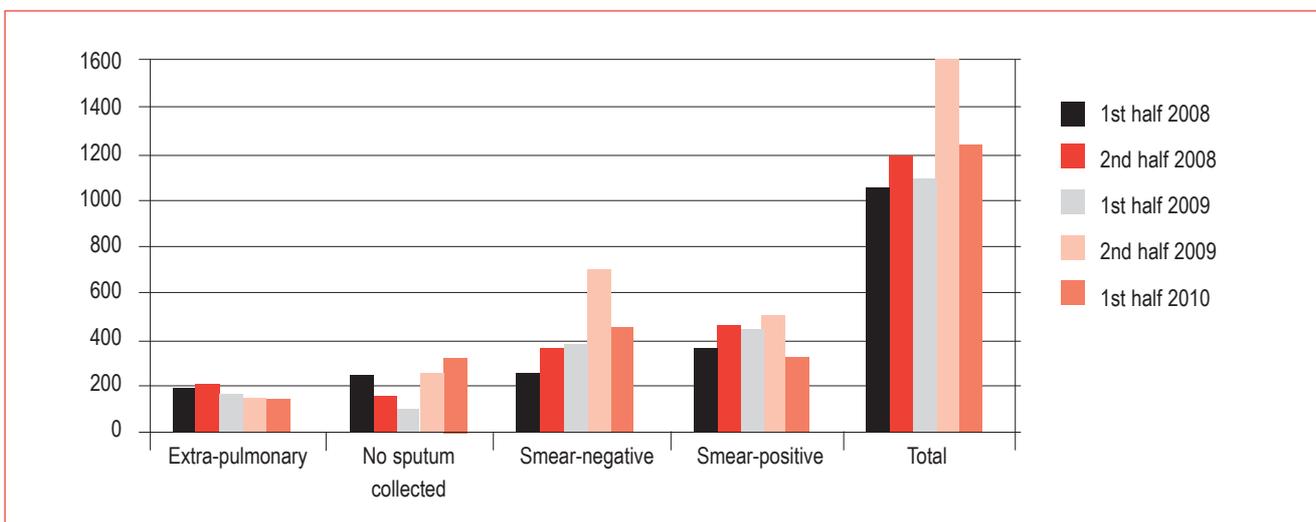
Since the programme began, treatment success among new smear-positive cases has increased from 54.8% in 2007 to 68.5% in 2009, mainly due to a significant decrease in the defaulter rate, which fell from 20.6% to 6.3% in the same period. This is a substantial improvement, and is due in part to increased defaulter tracing activities. The cost of transport is frequently cited as the main reason for patients defaulting from treatment¹⁸, and further decentralisation of treatment to primary care clinics in the coming years is essential to ensure successful outcomes among the growing number of TB patients initiated on treatment.

The death rate in the first half of 2009 (13.9%) is similar to that reported from a comparable setting in Lesotho (12%), where HIV and TB co-infection is around 80%¹⁹. In Swaziland, the high death rate appears to reflect several factors: HIV/TB co-infection; inadequate access to ART; poor inpatient care due to a lack of human resources; initiation on inappropriate TB treatment (due to a lack or delay of drug sensitivity testing and culture) and late presentation by patients unable to pay the cost of the journey to TB clinics. In addition, increased defaulter tracing activities since 2008 have probably contributed to the rise in the reported death rate.

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Diagnosis was very poor when I started working here. There was no way of knowing if the drugs were working. We just had to wait until the patient got really sick and then we suspected they were drug-resistant patients. Now we send a sputum sample for each patient as early as possible. And there are supervisors with experience in drug-resistant TB who know how to care for the patients. Things have definitely improved for the patient. But we get a lot of defaulters due to financial constraints, because patients can't afford to get to the clinic. When you look at Swaziland – where the patients live and where the clinics are – many travel a long way to get injections. It's a burden on the patient.

TB nurse

Figure 2. Number of TB cases registered from 2008 to first half of 2010

Overall, in the first half of 2010, 25.8% of registered TB cases were smear-positive (319/1237); the rest were smear-negative (extra-pulmonary, paediatric, clinically diagnosed), or no sputum provided. Among these, 81.4% of all patients registered were new patients (744/913) and 18.6% (169/913) were previously treated cases (this figure excludes cases where no sputum was available). Paediatric cases accounted for 14.1% of the total TB cases registered during the first half of the year.

In the next years, TB outcomes are expected to improve as a result of key initiatives introduced in 2009-10. These include task shifting of adherence counselling and defaulter tracing from nurses to trained lay counsellors to increase capacity and to allow nurses to concentrate on clinical work.

Drug-resistant tuberculosis

Drug-resistant tuberculosis (DR-TB) has traditionally been managed in Manzini, in the centre of Swaziland. In 2009, a new DR-TB hospital opened in Manzini. However, insufficient infection control planning meant that only 50 beds were safe for patients, far below the number estimated to require care. Outpatients from across Swaziland are expected to make long and expensive journeys for follow-up care. This heavy burden on patients, together with frequent ruptures in drug supplies, has contributed to initial poor treatment outcomes.

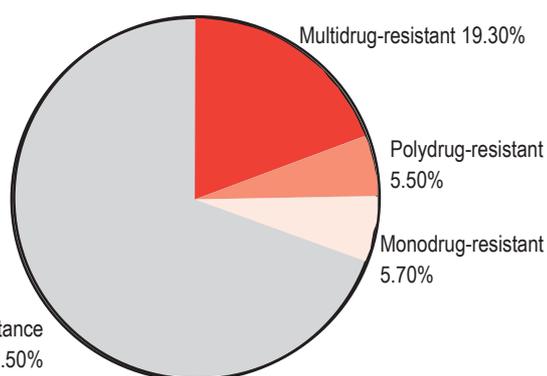
To improve patient access to DR-TB care, MSF has supported decentralisation of DR-TB care to Shiselweni region's three main

health facilities. Patients undergo three consecutive counselling sessions provided by lay counsellors trained in DR-TB treatment literacy, and MSF reimburses transport costs to attend treatment initiation and follow-up, including drug refills and monitoring of treatment uptake. Although patients must attend a TB clinic at one of the region's main health clinics for all medical follow-up, sufficient drugs are given to the patients to last one month, to be taken at home. Additionally, injectable drugs are made available at any health clinic in the region whenever needed. Multidrug-resistant TB (MDR-TB) patients also have the option to nominate a member from their community – a community treatment supporter – who is trained to provide injectables at the patient's home during the intensive phase of treatment. This decentralisation of injectables to primary care clinics and communities is an important step towards ensuring access to treatment and reducing defaulter rates. In TB clinic waiting areas, lay counsellors run health education sessions and facilitate monthly support groups for DR-TB patients. Defaulter tracing of MDR-TB patients is done by an outreach nurse.

Swaziland has seen an important turnaround in MDR-TB management since June 2009, when the MoH published new national guidelines for MDR-TB treatment and care. These new guidelines, to which MSF contributed with technical input, support a stronger drug regimen, improved drug management procedures and training for staff, as well as guidance for decentralised care, which includes a provision for community support treatment for DR-TB patients where no alternative care is possible. A DR-TB expert committee has also been established to provide clinical support for DR-TB case management.

MDR-TB prevalence – a national drug sensitivity survey

Result of drug-resistance survey (January 2009-February 2010)



Between January 2009 and February 2010, a cross-sectional survey was conducted to measure MDR-TB prevalence among all newly diagnosed smear-positive TB patients. Samples from 633 patients (352 new cases, 281 previously treated cases) were collected and shipped to the Supranational Laboratory for Mycobacteria in Borstel, Germany, for culture and drug susceptibility testing (DST).

Twenty-seven (7.7%; 95%CI: 4.8%-10.5%) MDR isolates were identified among new cases. Ninety-five (33.9%; 95%CI: 28.3% - 39.3%) MDR isolates were identified among previously treated cases. The prevalence of resistance was highest among patients 'previously treated with failure' (>85% MDR-TB). More than 60% of the resistant TB strains presented additional resistance to pyrazinamide. Ethionamide was the second line drug to which the strains presented resistance more frequently (>45%). One

extensively drug-resistant (XDR-TB) strain was identified among the previously treated cases.

This MDR-TB prevalence is higher than expected, and higher than the prevalence in neighbouring countries with more or less recent data. Indeed, the estimated MDR-TB prevalence in South Africa is 1.8% (95%CI: 1.5-2.3) in NC and 6.7% (95% 5.5-8.1) in PTC (data from the 2002 national drug resistance survey (11)); and in Mozambique it is 3.5% (95%CI 2.5-4.7) for NC and 11.2% (95%CI 4.2-30.0) for PTC (data from the 2006 national drug resistance survey and multidrug and extensively drug-resistant TB. 2010 global report on surveillance and response. Geneva: World Health Organization; 2010.). In light of the survey results, systematic drug susceptibility testing for all diagnosed TB cases is recommended before starting TB treatment, including the use of LPA (Line Probe Assay) for smear-positive patients.

Detection of patients with drug-resistant TB

In late 2007, when MSF started working in Shiselweni region, laboratory capacity for drug susceptibility testing (DST) was very limited and quality was poor due to understaffing, stock ruptures and inadequate space and equipment. As a result, culture and DST were only requested for people who had failed Category 1 or 2 treatments. It became apparent that the scale of DR-TB warranted a more aggressive case finding approach, and in June 2009 a new DR-TB case finding algorithm was introduced recommending culture and DST for all TB patients enrolled, before starting TB treatment.

To facilitate DST for TB patients enrolled, MSF has supported capacity development at the National Reference Laboratory in Mbabane. Recruitment of a laboratory technologist trained in culture and DST techniques has helped more than double the number of samples processed, from 1,875 in 2008 to 4,226 in 2009. MSF also funds a courier service to safely deliver sputum samples to the Supranational Reference Laboratory in Pretoria (MRC) for Line Probe Assay and/or culture and DST.

Overall, detection of DR-TB cases has increased in Shiselweni region from 42 cases enrolled on Category 4 treatment in 2007 and 2008, to 80 cases in 2009, and 27 cases in the first half of 2010. Data from the



A lab technician takes a blood sample from a patient. Phlebotomy is performed by lab technicians in the main centres, but additional cadres have been trained to take blood samples at clinics

Earlier diagnosis of MDR-TB patients

Rapid diagnosis and early initiation of effective treatment are essential to reduce the risk of transmission and improve treatment outcomes for the growing number of MDR-TB patients. To support early case detection of drug-resistant cases and prevent amplification of new drug resistance, MSF has decided to introduce routine Line Probe Assay and/or culture and DST screening for all TB patients in 2010, making use of the NRL in Mbabane and the Supranational Reference Laboratory in Pretoria. MSF also plans to support implementation of Line Probe Assay capacity at the National Reference Laboratory (by providing human resources, training and mentoring) and Thin Layer Agar (TLA) methodology for culture diagnostic and isoniazid and rifampicin susceptibility testing in Shiselweni region. By introducing the TLA technique at the new TB laboratory in Nhlhangano, MSF aims to demonstrate the benefits of this technique as a fast, simple, affordable and effective diagnostic measure appropriate for use in rural settings.

Task shifting 2: Providing injections for DR-TB treatment in the community

Even though the provision of injectables for MDR-TB treatment is decentralised to rural clinics, and transport costs from home to the clinic are reimbursed, patients on injectables are still expected to travel long distances to receive daily treatment. Often, this leads to problems related to competing priorities such as work or family support. Community treatment supporters are an innovative solution to making DR-TB treatment accessible to all who need it. The community treatment supporter is a community member selected by the patient – often an existing rural health motivator – who has a recognised role in the community. Community treatment supporters are provided with training and supervision from a nurse to provide daily injections and supervise treatment uptake at or near a patient's home for the duration of the intensive phase of treatment. MSF experience in 2009 demonstrated 100% adherence for injectables among MDR-TB patients who were supported by a community treatment supporter (15/15+5 in 2010) patients, including 8/15 who had completed treatment). Currently, the national health strategy concedes that community treatment supporters are a viable approach, but only in exceptional circumstances. Results from the recent DST survey provide compelling evidence for the need to urgently scale up effective MDR-TB treatment. Given the critical shortage of health workers and lack of inpatient capacity, and the large proportion of Swazis living in rural areas far from primary care clinics, the community treatment supporter approach is the only option to ensure treatment success for MDR-TB patients living in remote areas of Swaziland.

National TB Control Programme shows a progressive increase in the number of MDR-TB cases detected each year throughout Swaziland, from 35 cases registered in 2007 to 317 registered in 2009.

Anecdotal evidence from clinics in Shiselweni region where MDR-TB contacts were not screened for TB, even when associated with important risk factors (HIV-infected or children <5), suggests a need for intensified contact tracing, as well as addressing other missed opportunities for diagnosis.

Multidrug-resistant tuberculosis treatment outcomes

At the end of June 2010, 123 patients were on MDR-TB treatment in Shiselweni region. The increase in culture conversion at six months – from 9/32 (28%) in 2008 to 40/64 (62.5%) patients enrolled in the first three-quarters of 2009 – is an indication of improved treatment management, resulting from earlier diagnosis and initiation on appropriate treatment, as well as from improved follow-up. Although it is early to draw definite conclusions, these intermediate data are encouraging.

However, there are still barriers to sustainable DR-TB care. Due to the erratic supply and management of second line anti-TB drugs at a central level, MSF is currently ensuring that sufficient DR-TB drugs are provided to treatment facilities in Shiselweni. A complete and accurate supply must be taken on by the National TB Control Programme to ensure sustainability in the long run. In addition, even with injectables available at primary care clinics, treatment is still out of reach for many patients in

rural areas. Nationwide, the increasing number of MDR-TB patients demands a fully decentralised model of care, including the strengthening of DR-TB drug supply from a central to a peripheral level, and active participation by community treatment supporters in the intensive phase of treatment.

A 'one-stop service' for TB and HIV care

In Shiselweni, more than 80% of TB patients are HIV-positive, and TB is the leading cause of morbidity and mortality among HIV-positive people. Previously, there was no integrated HIV/TB service for co-infected patients, and TB patients were referred to ART clinics for separate care management. This contributed to an increased risk of nosocomial transmission, an unnecessary duplication of work by healthcare workers and confusion, and long waiting times for patients.

Integrating TB and HIV care for co-infected patients was identified as an urgent measure to improve treatment outcomes. MSF has developed 'one-stop services' for integrated HIV/TB care at 21 health facilities, including 18 primary care clinics and the three main health facilities in Shiselweni region. These 'one-stop services' provide a comprehensive package of care for TB patients and HIV co-infected patients, including routine HIV testing and counselling (HTC) for TB patients, education on HIV and TB transmission and treatment, adherence counselling and all TB treatment and ART with follow-up care. Care for HIV patients who do not have active TB is provided at separate ART clinics.

According to data from 2009, most (2,464/2,697=91%) of the patients on TB treatment accept the offer of HIV testing. As mentioned earlier, more than 80% of TB patients are co-infected with HIV. However, less than

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From where I live, the nearest road is 2 kilometres on foot. I went every day to the clinic for two months to get my daily streptomycin injection. I left the homestead at 4 am, arrived at 9 or 10 am at the clinic, then reached home again at around 4 pm. A few times I rented a donkey for transport. Now I have MDR-TB, it means I have to do this journey every day for six months! I'm a sick patient. How can I travel every day like this?

MDR-TB patient

The difference between patients I see at the clinics and those getting injections at home is really big. Before, some patients were failing to come to the clinic for their injections, and they had poor treatment outcomes. They were travelling long distances to get to the health clinic for the injections, and they were sick too. Now they are getting injections at home from the community treatment supporters. You can really notice them improving. It's what the patients want too.

Outreach nurse

At the end of May we had to initiate a school-going child on DR-TB treatment. He wanted to go to school – it was really important to him. But to get to the nearest clinic would take most of the day, and there would be no chance of him going to school for six to nine months. His aunt knew someone who could be a community treatment supporter, and this person was trained on the job at the homestead. She learned very quickly to do the injection – her husband was a diabetic and she had injected him before. The boy is so happy that he can take his exams and not lose a year of school.

DR-TB nurse



A community facilitator carries out an awareness session on TB and HIV, one of many that take place in rural communities

half (907/1,961 = 46.3%) of the patients with this dual infection receive both treatments (compared to 33% in 2008). The main reasons for this relatively low percentage are: a) a misperception among patients that ART and TB treatment should not be taken simultaneously, resulting in their refusing treatment; b) periods when it has been hard to access the CD4 test; and c) a complete dependence on doctors for the initiation of ART, who visit the clinics just once or twice per week.

Efforts need to be stepped up to improve service provision and get more co-infected patients on ART. The recently approved MoH strategy proposing ART initiation for all HIV-infected TB patients, irrespective of CD4 count, should go a long way towards ensuring this.

Psychosocial support among patients and in the community

Recognising the importance of awareness of HIV and TB among patients and the wider community, the programme has a psychosocial support component which aims to reduce stigma, encourage testing, improve early case finding and improve treatment adherence. Schools, traditional meeting places and workplaces provide opportunities for trained expert clients to run health awareness sessions and distribute information and condoms to the community. In health clinics, expert clients provide three pre-ART initiation counselling sessions for patients, as well as individual and group therapeutic education sessions to inform patients about their HIV and/or TB treatment and to promote positive living with HIV. Expert clients also run drama groups and other peer support groups to support adherence to DR-TB treatment.

In mid-2010, additional resources were allocated towards improving health awareness. A greater number of well trained, better-supervised staff has contributed to a two-fold increase in the number of pre-ART counselling sessions since the beginning of the year, and a three-fold rise in the number of health education sessions held. These additional resources, and the links forged between patients, communities and expert clients, are likely to contribute to better outcomes in terms of treatment adherence and defaulter tracing. An early indicator is a 40% reduction in the number of missed clinic appointments in June 2010 (54 patients) compared with the previous month (96 patients).

Infection control

Most TB transmission occurs among undiagnosed patients. For this reason, the best way of tackling infection control in the community is by improving case finding at the primary care level and supporting patients in completing their treatment. This is particularly important in a high HIV prevalence setting such as Swaziland, where TB continues to be the leading cause of mortality among people living with HIV and AIDS. Administrative, environmental and personal protective measures have been introduced at all healthcare facilities to reduce the risk of nosocomial TB transmission²⁰. For example, appropriate measures have been put in place to ensure safe sputum collection and diagnosis, including outside areas specifically designated for sputum collection. Cough triage is implemented in all outpatient facilities to identify promptly people with chronic coughs and to fast-track patients with TB symptoms so that they do not put other patients in waiting areas at risk.

Appropriate safety equipment is provided for laboratory technicians, and staff working in close contact with TB suspects use N-95 respirators. Infection control awareness is also an integral part of all training for healthcare workers. A sputum sample transportation system has contributed to faster turnaround times for smear testing and earlier initiation on treatment. To improve the management of infection control in the community, contact and defaulter tracing is increasingly handled by expert clients with the time and resources to provide a comprehensive tracing service. Expert clients also run awareness programmes for TB patients on household infection control measures such as cough hygiene, patients sleeping alone and receiving visitors outside, and keeping windows open. MDR-TB patients receive a home visit within two weeks of treatment initiation to improve infection control.

HIV testing and counselling

Testing and counselling is the entry point to effective HIV care, treatment and support. Rapid HIV testing is accessed via the regional health system's 18 primary care clinics; however, in clinics where there is often only one nurse on duty for a catchment population of between 7,000 and 16,000, and there are many urgent health needs, testing has not always been a priority.

MSF has boosted capacity for HIV testing and counselling in two ways: through the recruitment of skilled HIV tester/counsellors (HTCs) who work at the primary health clinics (either on a daily basis or as part of a mobile outreach team); and by increasing awareness of services

through expert clients working in health clinics and in the community to promote HIV testing and counselling and to reduce stigma. In 2009, the number of people testing for HIV each month at the primary clinic level nearly doubled, from 474 in January to 799 in December, reflecting the recruitment of an additional five new HTCs in February. Overall, 10,689 people were tested for HIV in 2009, representing approximately 6% (10,689/170,689) of the estimated catchment population for primary care clinics in Shiselweni. Of these, 2,415/10,689 (22.5%) were found to be HIV positive, and 1,045/2,415 patients who tested positive were initiated on ART treatment or referred for initiation.

In May 2010, MSF introduced permanent community-based tester/counsellors at each primary clinic in Shiselweni to increase the overall number of people tested for HIV, with a corresponding increase in HIV testing at clinics, from 911 patients tested in May 2010 to 1,617 tested in June 2010. The total number of people tested is expected to rise as the new permanent tester/counsellors undergo additional training and become well established in their roles. To further increase community awareness of testing and counselling services, MSF expects to increase its collaboration with the existing network of 1,050 rural health motivators, who have the capacity to reach more than 26,000 homesteads in Shiselweni region.

The diagnosis of HIV among children was greatly facilitated by the introduction of the Dried Blood Spot (DBS) test in August 2009. Since then, 227 children have undergone testing. However, the majority of children who are HIV-positive are still not on treatment as a result of poorly managed follow-up of at-risk children.

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I was not actually surprised when they told me I was HIV positive, because I knew I had had a lot of girlfriends and never used condoms. To me, being HIV positive has prompted me to change my behaviour in a big way, although it's unfortunate that it took that to make me change. Now I am an expert client and I encourage people to go for testing.

Sometimes there are people who do not believe me when I tell them my status because they see a healthy looking person. While it's surprising that people still think HIV status can be seen in someone's face, I must say I am encouraged when even elderly people stand up in these meetings to say that it's foolish to be afraid to know one's status in this day and age. Those who refuse to stand up and get tested are the ones who are getting buried daily.

HIV patient



Photo © Jonathan Heyer

Preparing drugs for patients is a task that dispensary assistants can perform under the supervision of nurses

Figure 3. HIV testing in Shiselweni region, January 2009-June 2010

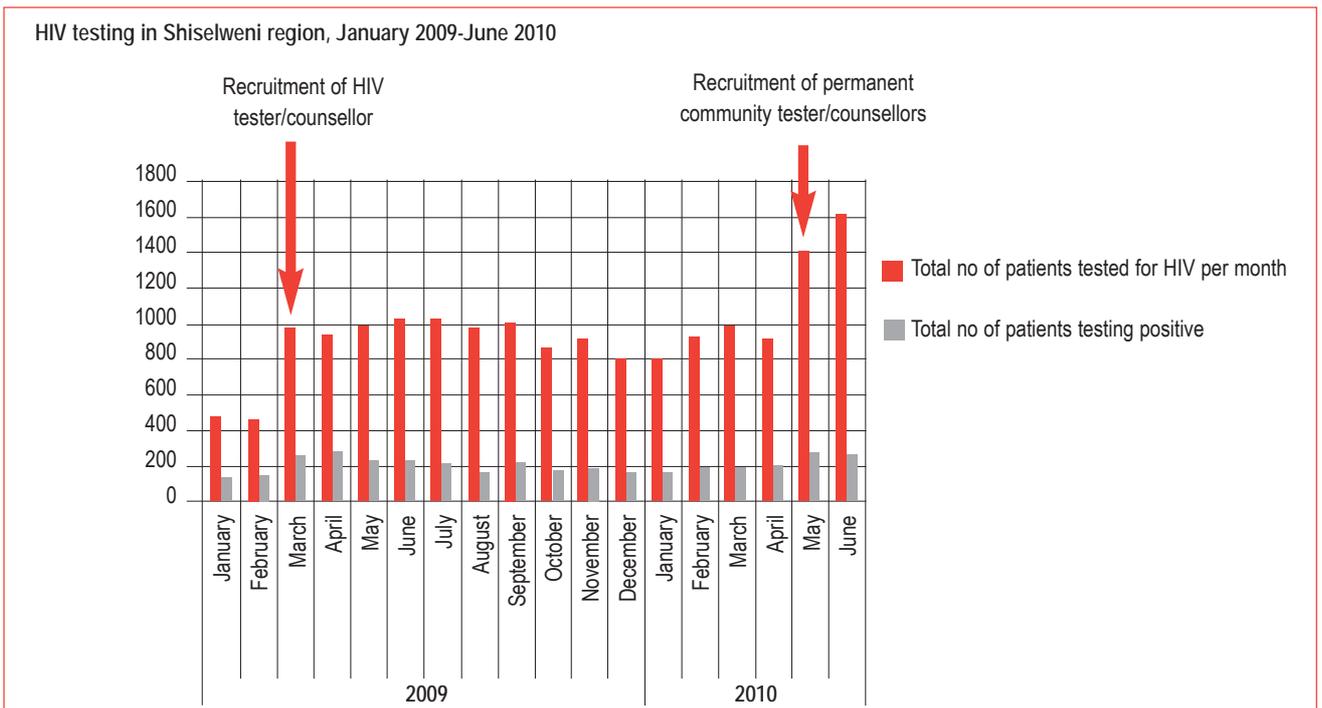
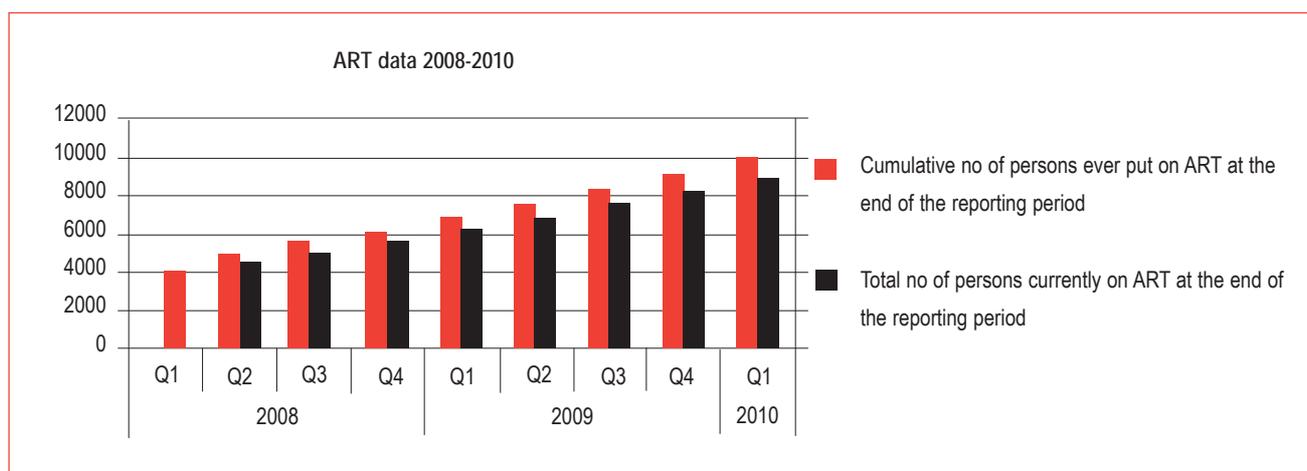


Figure 4. Cumulative number of persons ever initiated on ART and currently on ART in Shiselweni region, 2008-2010



Antiretroviral therapy

In Shiselweni region, an estimated 40,000 people are living with HIV, including an estimated 19,808 in clinical need of ART as of mid-2010²¹. One of the major objectives of the programme has been to make care and treatment for people living with HIV accessible at the primary care level. In 2008, MSF introduced access to ART refill at nine primary care clinics and, in mid-2009, ART initiation at the primary care level was implemented throughout the region, including local access to CD4 count testing via a blood sample transport service.

Decentralising access to ART has contributed to an increase in the total number of patients initiated on treatment in Shiselweni region. Since 2008, the cumulative number of patients ever initiated on ART and the number of patients currently on ART has increased: from 3,996 currently on ART in 2008 to 8,813 in the first quarter of 2010; and 4,865 ever initiated on ART in the second quarter of 2008 to 9,906 in the first quarter of 2010. The steady increase in the proportion of patients still on ART reflects efforts to provide regular therapeutic and adherence counselling for patients and defaulter tracing services provided by MSF outreach nurses.

In the first quarter of 2010, 9,906 (50% of estimated eligible patients) were on ART, which is below the recommendation that 85% of adults and 90% of children eligible for ART are on treatment. Currently, national recommendations stipulate that ART can only be initiated by a doctor, yet, with the national staffing crisis, the number of doctors in the country is nowhere near what is needed to initiate everyone in clinical need of ART. Although improvements in the procurement, supply and management of antiretroviral drugs were noted in the second half of 2009, supply to the clinics and overly bureaucratic drug ordering

processes remain an indication of the hurdles in improving decentralised ART initiation. Finally, demanding that patients attend three counselling sessions prior to starting ART is unrealistic, given the journey time and costs associated with travel to the clinic.

Isoniazid Preventive Treatment

MSF advocates isoniazid preventive therapy (IPT) for HIV-positive patients who do not have active TB. A pilot programme implementing IPT for all patients on ART who are co-infected with TB was launched in Nhlanguano's health centre and three primary care clinics in 2009. All patients on ART are screened for TB and put on a minimum six months of treatment with isoniazid; no tuberculin skin test is performed.

All patients enrolled on IPT are patients who are on ART without active TB. IPT is not yet offered to pre-ART patients. IPT is initiated by an MSF nurse in the clinic and only if the nurse encounters a problem is the patient referred for assessment by a doctor. Out of 292 patients enrolled on IPT, 91% completed treatment successfully. None of them died while on treatment. Only 1% developed active TB while on treatment, while 8% defaulted due to poor adherence or side effects.

Co-trimoxazole

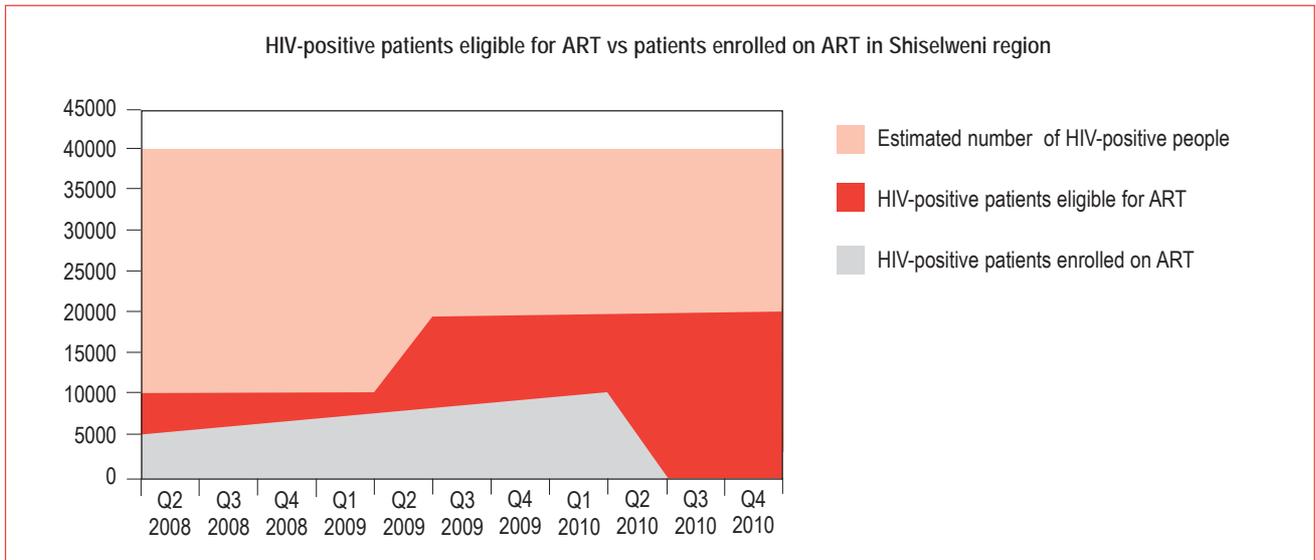
Efforts to provide co-trimoxazole prophylactic treatment (CPT) to patients who require it are hampered by delayed drug supply from the Central Medical Stores. MSF supports CPT for people with HIV who are on ART and contributes to supplying facilities to fill this supply gap. However, given the proven benefits of CPT, the uninterrupted supply of CPT should be addressed as a matter of urgency²².

In line with the most recent WHO recommendations, the CD4 count threshold for the initiation of ART has increased from 200 to 350. This change was adopted in Swaziland from mid-2009. It has had a significant impact on the number of HIV-positive people who are eligible for ART, which is probably twice what it was previously. The new situation raises many questions: foremost among them is whether the Swazi Ministry of Health has the financial, human and management capacity to respond to the needs of thousands more people eligible for treatment, unless increased decentralisation and the rapid implementation of task shifting strategies take place.

21 Based on new WHO criteria CD4 <350cells/ μ

22 Date A, Victoria M, Granich R, Banda M, Fox MY, Gilks C. Implementation of co-trimoxazole prophylaxis and isoniazid preventive therapy for people living with HIV Bulletin World Health Organization 2010; 88:253-259

Figure 5. HIV patients eligible for ART vs those enrolled on ART, 2008-2010



Task shifting 3: The role of the expert client HIV tester/counsellor

Given the acute shortage of professional health workers in Swaziland, delegating responsibility for HIV testing and counselling (including rapid testing, pre and post-ART counselling, including phlebotomy, CD4 count, haematology and biochemistry tests) from nurses and nursing assistants to expert client HIV tester/counsellors (HTCs) is one way to meet the increasing demand for ART. MSF is introducing an innovative and cost-effective approach to expanding HTC coverage by recruiting and training expert clients from the community. Utilising local capacity that involves patients in care management has several benefits: staff do not have to travel long distances to the clinic and are therefore more likely to reach work on time; staff do not require accommodation, thereby avoiding the problem of inadequate or non-existent housing for MoH staff; keeping responsibility for HTCs within the local community is empowering and can promote open discussion about HIV and ART and help to reduce stigma; and local staff have extensive local knowledge. Involving service users (expert clients) in service provision is also a way to tap into a growing resource of people with existing knowledge of TB and HIV. The HTCs represent a community-based health cadre that fulfils an essential role in ART scale-up and reflects the limitations of the national health budget. By demonstrating that HTCs can provide high quality services throughout Shiselweni region, MSF will advocate for absorption of the HTC function into the existing national healthcare system.



Expert clients play a key role in assisting patients at clinics and in the community



Photo © Jonathan Heyer

With some tasks being shifted to new cadres, nurses have more quality time to spend with patients

Strengthening the healthcare system to provide TB and HIV care

Task shifting

To address the human resource shortage and improve national healthcare capacity, MSF has adopted a strategy of task shifting, in which responsibilities for care are delegated to lower cadre health workers, who receive mentoring and supervision to ensure the continuous provision of high quality care (see boxes on task shifting from nurses to HIV tester/counsellors; from nurses to community treatment supporters; and from pharmacists to lay dispensary assistants).

Improving health system infrastructure

A significant investment in infrastructure has been vital to optimise capacity for a growing number of TB cases. MSF has subsidised the renovation of three new laboratories for TB diagnosis in Shiselweni's main health facilities. In 2010, MSF started construction of a new DR-TB ward that will allow for short-term hospital stays for DR-TB suspects in

single rooms with natural ventilation, reducing the risk of nosocomial transmission and increasing access to inpatient care (where necessary) at the regional level. MSF is also building a TB laboratory next to the new ward and situated behind Nhlango's health centre.

Staff health

A major cause of attrition among health workers in Swaziland is illness and death, including an estimated 3-4% loss of all staff to HIV/AIDS and TB each year. Healthcare workers are reluctant to seek care in the same facilities as their patients, and this stigma contributes to high morbidity and mortality rates. Improved healthcare for staff is an important means of improving the availability of health services. MSF advocates for regular health check-ups for all staff in Shiselweni region, and supports staff to attend the national 'Wellness Clinic', a mobile service established in 2006 that provides comprehensive healthcare to health workers in a confidential environment²³.

Mobile teams

In outlying clinics where staff shortages are particularly acute, MSF outreach teams have boosted MoH capacity. Each outreach team includes a doctor, a nurse, an HIV tester/counsellor, a data clerk and a pharmacy technician. The team provides support to MoH staff in testing and counselling for HIV; collecting blood samples for CD4 and biochemistry; sputum collection for microscopy; diagnosis of TB and opportunistic infections; initiating patients on ART and TB treatment; follow-up of patients on ART and TB treatment; and referral of patients to health centres and hospital when necessary. The team also assists in the dispensing of drugs as well as regularly collecting data.

The mobile service is logistically challenging: since the programme began, five teams have provided health services at least once a week to a maximum of 15 clinics spread out across an area spanning 3,790 km². In Swaziland, the outreach teams have enabled MSF to start providing healthcare support to outlying primary care clinics earlier than if the programme had relied exclusively on setting up permanent decentralised services. In the long term, mobile teams will be phased out and services will be provided on a permanent basis by boosting existing capacity at clinics through the recruitment of additional permanent trained staff members who will gradually be absorbed into the MoH. In 2010, the Shiselweni Regional Health Authority is expected to approve the integration of mobile team staff into three primary care clinics on a permanent basis. Given the challenges associated with running outreach teams, the direct integration of health services into existing health facilities is desirable and encouraged where resources allow.

Drug supply

TB drug management in Swaziland is currently overly bureaucratic and unreliable. There are three separate drug supply chains – for ARVs, for TB drugs, and for all other drugs – each with its own request form and transport system. Stock ruptures and incomplete supplies to facilities have been frequent. MSF is supporting the MoH in the short term through the provision of emergency back-up stocks – in 2009, for example, an emergency back-up stock of first and second line TB drugs was able to cover a gap left by a national drug stock-out. In parallel with these initiatives, MSF is supporting MoH nurses to place drug orders and is organising the delivery of drug requests and drug stocks between the National TB Control Programme and clinics in Shiselweni. In 2010, MSF has continued to cover the huge shortages in the supply of second line TB drugs throughout Shiselweni region and has received approval from the Green Light Committee to have access to second line drugs for 300 patients in Shiselweni region.

Improving laboratory services

Quality and continuity have been persistent problems in laboratories in Shiselweni region. Poor equipment maintenance has led to a frequent interruption of services at the laboratories, and the solution until now has been to transfer samples to the nearest working laboratory, doubling the workload for staff there as a result.

To improve overall laboratory capacity, MSF has supported the procurement of additional equipment (including for point-of-care biochemistry testing analyser for alanine aminotransferase, creatinine and potassium in case of laboratory malfunction) and has advocated for doubling up all equipment in all regional laboratories, both to ensure continuity of laboratory services and to increase capacity to deal with the growing number of HIV and TB patients as case finding increases. To bring essential tests closer to the patients, and to facilitate improved care and follow-up of patients, MSF has supplied the necessary tools for on-the-spot urine analysis as well as pregnancy, haemoglobin and syphilis tests at primary care clinics. HTCs are trained to conduct tests and interpret results accurately. Implementing this package in all primary care clinics would dramatically scale up patient management at the local level. In 2010, MSF introduced these diagnostic facilities at five additional clinics. Recent quality control of these tests performed at primary care clinics showed 100% concordance with the control results.

Laboratories are subject to quarterly internal and external control (via the South African National Health Laboratory Services)²⁴, involving a random rechecking of sputum samples. Consistently good results have been reported from all facilities. The maintenance and supervision of the use of diagnostic equipment at primary care clinics is done on a monthly basis.

Decentralising sample collection

MSF has established a well functioning sample transportation system for rapid turnaround of sputum testing for samples collected at 18 outlying clinics. As a result, patients no longer have to make expensive and lengthy journeys to laboratories to provide sputum samples, and fast, quality diagnosis allows treatment initiation for all smear-positive TB cases. This has contributed to improved treatment outcomes in 2009. The sustainability of this system, including training nurses to package and document samples in the future, may be guaranteed by a countrywide system for sample transportation currently being negotiated between the MoH and non-governmental partner organisations.

23 Baleta, A. Swaziland nurses the wellbeing of its health workers. *World Report. The Lancet* Vol 371 pp.1901-1902, June 7, 2008.

24 <http://www.nhls.ac.za/>

Task shifting 4: Training laboratory and lay dispensary assistants

Swaziland's human resource crisis has also hit laboratory and pharmacy services. There are no formal training courses for microscopy, pharmacy or laboratory technicians in Swaziland, and MSF has had to recruit from neighbouring countries to boost MoH capacity. In the long term, increasing the national skills base is critical in order to guarantee the future of laboratory services in Swaziland. The Ministry of Health acknowledges the importance of building capacity in laboratory skills, and in 2009 organised two week-long courses to train lay people in microscopy skills. A similar approach to increasing pharmacy capacity would lessen the burden for nurses, who are currently responsible for drug dispensing in most health facilities. MSF is currently developing a dispensary assistant training course, based on a successful model in Malawi, whereby educated lay people are selected for on-the-job training and mentoring by pharmacy technicians, following a fast-track curriculum modelled on existing courses in South Africa and expected to be accredited by the Swazi Ministry of Health.



Photo © Frédéric Matte

At the TB clinic at Matsanjeni Health Centre, co-infected patients can also receive treatment for HIV



Photo © Jonathan Heyer

Expert clients contribute a great deal to improving patients' treatment literacy and knowledge of HIV-related issues

Current challenges and future priorities

Improving human resources management

Given the severe shortage of health workers in Swaziland and the growing demand on healthcare resources, task shifting is vital to manage the HIV/TB co-epidemic. Delegating responsibilities to lower cadres of workers (from doctors to nurses, and from nurses to expert clients and dispensary assistants) is proven to be an effective model of care delivery in contexts comparable to Swaziland. Lower health cadres are also more likely to stay within their communities and offer a permanent service than more mobile, higher paid staff. Training, mentoring and supervision for all new recruits must be routinely provided through the MoH to improve the quality of care within the existing health network capacity. Reversing the brain drain on healthcare professionals through improved working conditions and better healthcare for staff to reduce attrition rates due to HIV/AIDS must also be prioritised.

In Shiselweni region, nurses and nursing assistants manage an average of 29 consultations per day per nurse. This suggests that in many clinics, nursing staff would have the capacity to manage additional clinical management workloads if health education, dispensing and counselling tasks were shifted to lower cadres of health worker.

Integrated HIV/TB care at primary care level

Providing integrated TB and HIV services at all primary care clinics in the region is an important step in providing universal coverage for TB patients and people living with HIV. Decentralisation will rely on recruiting well-trained and regularly supervised health workers, with

Task shifting 5: Nurse initiation on ART

More than a quarter of Swazis aged 15-49 are living with HIV. In Shiselweni region, an estimated 40,000 people are infected, including an estimated 19,808 in clinical need of ART in the first quarter of 2010. In early 2010, 9,906/19,808 (50%) were receiving the quality of care they needed. Urgent measures are required to increase capacity to manage the growing number of people in need of HIV-related care. By adopting a model of care delivery that relies on nurse initiation of treatment, Swaziland could start to rapidly scale up access to ART. Nurse-initiated ART is proven to be a safe and effective model of care delivery for adults and children in high HIV prevalence contexts^{26,27}; this has recently been confirmed in a randomised trial²⁸. In Rwanda, a study found that task shifting ART initiation and monitoring would increase doctor capacity for non-related HIV work by 183%.²⁹ In Lusikisiki, in rural South Africa, task shifting facilitated district-wide access to ART within two years³⁰. In Lesotho, a mountainous country with a large rural population and an HIV/TB co-infection rate comparable with that of Swaziland, a nurse-driven, community-supported HIV/AIDS programme at the primary care level enabled enrolment of 11,000 people in HIV care and treatment initiation of 4,000 patients within a three-year period, with 86% of adults and 93% of children remaining in care after 12 months on ART³¹. In Swaziland, the current model of care delivery relies on a doctor for ART initiation. This approach fails to meet the demand for treatment, which is already huge and is still increasing; it does not allow adequate time to provide quality care; and it is completely unsustainable. In Shiselweni, the differential capacity of nurses and doctors (there are 17 MoH doctors in the region, none of whom visit primary care clinics) reinforces the need for Swaziland to review its policy of ART initiation by doctors. Nurse-initiated ART must be introduced urgently to scale up access to treatment and to improve the overall quality of care for people living with HIV.

adequate drug supplies and appropriate infection control at health facilities. Efforts must focus on the simultaneous decentralisation of TB and HIV services to cater to the needs of co-infected patients, to increase treatment adherence and to reduce the risk of transmission or emergence of new drug resistance. By establishing permanent sites for ART and TB initiation and treatment, MSF will pave the way for long-term care at the local level.

Reinforcing drug supply and management

Currently, drug supply management is defined by parallel, unreliable and work-intensive ordering and transportation systems. Simplifying and streamlining these systems is necessary in order to meet growing treatment demand with the limited resources available. With routine supervision and mentoring, the new cadre of trained dispensary assistants will improve the capacity and accuracy of drug management at the clinic level; however, the inevitable increase in long term ART demand calls for more innovative solutions to drug dispensing. A model of chronic care for stable patients piloted in Khayelitsha, South Africa, where two-monthly and six-monthly ART refill is provided via 'adherence clubs', is a feasible option to maintain ART enrolment in a resource-limited setting at the same time as reducing waiting time for patients³².

At the national level, the introduction of treatment guidelines for hospital and primary care is strongly recommended to standardise drug use and

drug orders. A national essential drug list for Swaziland is currently under development and will contribute to this goal. The introduction of regional pharmacists and warehouses to manage drug orders at the regional level is currently under discussion, and is another step towards a more effective system of drug management. Finally, Swaziland's MoH must also commit to increasing the national budget to cover the growing cost of drugs related to an increase in the overall number of patients initiated on ART and TB treatment, and on DR-TB treatment in particular.

Data management

The current data management system at primary care clinics is complicated by the use of multiple registers and different systems (computerised and paper-based) for HIV, TB and DR-TB patients that hinder performance evaluation and duplicate the workload. Among the major challenges are the frequent breakdowns of computers and software used by the data clerks, combined with poor maintenance services. Another challenge is the access to raw data to analyse a cohort of patients enrolled in the ART programme. There is also an urgent need to analyse data collected since the start of the drug-resistance component of the TB programme, which requires an electronic database to be in place. There have been recent efforts to establish a combined database for both ART and TB services.

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Long term adherence to ART and TB treatment

As more people are initiated on ART, more needs to be done to ensure widespread adherence in the long term. Increasing treatment literacy among patients must therefore be prioritised in the coming months and years.

Drug-resistant TB

Drug resistance is a growing problem in Swaziland, as indicated by the recent drug sensitivity testing survey. Although progress has been made in improving DR-TB management, current national diagnostic and treatment capacity is still inadequate to cope with the suspected number of DR-TB patients. Boosting capacity through better training for health workers, routine drug sensitivity screening, improved drug supply and easy access to treatment via community treatment supporters are essential components of an improved model of DR-TB care.

Building national healthcare capacity

By the end of 2010, the Ministry of Health is expected to have taken over three nursing positions that were introduced by MSF to increase the capacity to provide TB and HIV care at three integrated primary care clinics. This is the first step in a multi-phase handover process that will involve ongoing advocacy for more government-funded positions throughout the health system in Shiselweni region to take over services provided at fully integrated primary care clinics. Given the financial limitations of the national health budget, MSF has taken measures to introduce new health cadres who are trained and supervised to provide effective, high quality care and unburden the existing network of healthcare staff. Currently, a number of services are provided by MSF doctors who – given the human resource crisis in the country – will be difficult to replace. Task shifting of ART initiation from doctors to nurses is an essential step in improving ART access with the limited resources available and in ensuring that the programme is sustainable. MSF mobile teams currently serving primary care clinics on a weekly basis will eventually be phased out and replaced by fully integrated teams of health workers based permanently at the primary care level. The MoH is not expected to maintain this complex, unsustainable, resource-intensive model of care delivery; instead, services provided by the mobile outreach teams will be gradually integrated into primary care clinics on a permanent basis.



A bedridden MDR-TB patient is surrounded by relatives at his homestead. Adapted home-based care and avoiding transmission to others are key priorities

Conclusion and recommendations

Experience from Shiselweni demonstrates the safety and effectiveness of a decentralised, integrated approach to care that caters to patients' needs. Since the programme began, the number of patients being tested and initiated on TB treatment and ART has significantly increased, as has retention in care.

Much of the success of this model of care delivery lies in task shifting as an effective way of managing the national health crisis with limited financial and human resources. By using trained and supervised lower cadre health workers to provide widespread access to HIV and TB care, the MoH and MSF have succeeded in keeping care within the community and tapping into the growing resource of expert clients with direct experience and knowledge of HIV, TB and related issues. Existing healthcare staff also acknowledge the benefits of this approach: by delegating tasks, nurses are freed up to do clinical work (which they frequently find both valuable and satisfying); staff are also supported in meeting the growing burden of care related to HIV and TB; and they have access to expertise in TB and HIV diagnosis and counselling. However, task shifting will not be embraced by all unless it is anchored in a regulatory framework.

Even more importantly, the decentralisation of services has also dramatically improved patient access to care and treatment. Instead of making long and expensive journeys to the region's health facilities, many patients now have access to integrated HIV and TB services nearer to home – a positive development which is clearly reflected in higher retention in care. Giving DR-TB patients the option to receive injectables at home during the intensive phase of treatment is another major step forward in adapting care to meet patients' needs and support treatment adherence. Generally, the integration of TB and HIV care and treatment at primary, secondary and tertiary levels should come as a direct result of joint planning and budgeting by the ART and national TB control programmes. Indeed, one HIV/TB integrated national programme would go a long way to ensuring continuity and consistency in the delivery of adapted services at all levels.

Improved infection control measures have made healthcare environments safer for both staff and patients, and are encouraging safer home environments for patients. Intensive case finding among HIV patients at all clinics is also improving infection control in the community by identifying TB patients and starting them on treatment earlier. The implementation of new diagnostic techniques at both rural and central levels is also an important step forward in boosting the national capacity to cope with a growing number of patients, in particular given efforts to increase HIV testing and TB case finding. It also aims to ensure early diagnosis and treatment of both TB and HIV. The sample transportation service MSF is running throughout Shiselweni is also helping to ensure a fast turnaround of diagnosis and allowing healthcare workers to start patients on the appropriate treatment as soon as possible. The current transportation system should be taken over by the MoH.

These are important steps forward, yet major challenges still lie ahead. The new health cadres advocated by MSF must be absorbed into the MoH health system, while existing health workers must be educated to accept these new functions, and patients must have access to information about the services available to them, if the country is to benefit from the decentralised approach to care. Laboratory capacity must be further strengthened to cope with the projected increase in people with HIV in need of ART and the growing number of TB and DR-TB patients. The bureaucracy that dominates management of the national drug supply must be phased out and replaced with a well-functioning standardised system that guarantees drug delivery on time and prevents drug stock-outs with devastating consequences for patients. Finally, care must be fully decentralised to all health facilities in Shiselweni region to remove the geographical and financial barriers to TB and HIV treatment that many patients still face.

In a context where the HIV/TB co-epidemic threatens to wipe out generations of Swazis, translating political commitment into further practical action is more urgent than ever.

