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Joint Review of HIV, TB and PMTCT Programmes in South Africa

Main Report

April 2014

Under the supervision of the Joint HIV, TB and PMTCT Review Steering committee:

Dr Yogan Pillay: Deputy Director for HIV/AIDS, TB and Maternal & Child Health, National Department of Health

Mr David Mametja: Chief Director, TB Cluster, National Department of Health

Dr Thobile Mbengashe: Former Chief Director, HIV/AIDS and STI Cluster, National Department of Health

Ms Sesupo Makakole-Nene: Chief Director for Global Finds

Dr Mazuwa Andrew Banda: Senior Technical Officer, Strategic Information and Planning, WHO/Head Quarter/Geneva

Dr Nellie Gqwaru: Senior TB Advisor, USAID Country Office

Dr Lindiwe Mvusi: Director, DOT Strategic Coordination, TB Cluster, National Department of Health

Dr Peter Barron: Technical Assistant, National Department of Health

Dr Ntombi Mhlongo – Sigwebela: Senior TB/HIV Technical Advisor, URC/National Department of Health

Dr Sanjana Bhardwaj: Chief of Health & Nutrition, UNICEF Country Office

Dr Alasdair Reid: Senior Strategic interventions advisor, UNAIDS country Office

Dr Augustin Ntilivamunda: Medical officer - HIV/AIDS WHO Country Office

Dr Babatunde Sanni: National Professional Officer-TB WHO Country Office

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Abbreviations

ANC	Antenatal Care
ART	Antiretroviral Therapy
APT	Annual Planning Tool
ASSA	Actuarial Society of South Africa
CCMT	Comprehensive Care management and Treatment
CHW	Community Health Worker
CPT	Cotrimoxazole Preventive Therapy
DCS	Department of Correctional Services
DDG	Deputy Director General
DHIS	District Health Information System
DOH	Department of Health
DOTS	Directly Observed Treatment Short Course
DST	Drug Susceptibility Testing
EC	Eastern Cape
EID	Early Infant Diagnosis
EPI	Expanded Programme on Immunisation
FDC	Fixed-Dose Combination
FP	Family Planning
FS	Free State
GP	Gauteng Province
HAART	Highly Active Antiretroviral Therapy
HAST	HIV/AIDS/STI/TB
HCT	HIV Counselling and Testing
HCW	Health Care Worker
HDACC	Health Data Advisory and Co-ordination Committee
HE2RO	Health Epidemiological and Economic Research Office
HIS	Health Information System
HSRC	Human Sciences Research Council
HSS	Health Systems Strengthening
HW	Health Worker
IMCI	Integrated Management of Childhood Illnesses
ID	Identity
IPT	Isoniazid Preventive Therapy
ISHP	Integrated School Health Programme
LPA	Line Probe Assay
MCC	Medicines Control Council
MCH	Maternal and Child Health
MCWH	Maternal, child and Women's Health
MDG	Millennium Development Goal
MDR-TB	Multidrug-Resistant Tuberculosis
M&E	Monitoring and Evaluation
MMC	Medical Male Circumcision
MNCH	Maternal, New-born and Child Health
MRC	Medical Research Council

MSM	Men who have Sex with Men
MTCT	Mother-to-Child Transmission
MTSF	Medium Term Strategic Framework
NACM	National ART Cost Model
NC	Northern Cape
NDOH	National Department of Health
NGO	Non-Governmental Organisation
NHLS	National Health Laboratory Services
NIMART	Nurse Initiated Management of ART
NSP	National Strategic Plan
OPD	Outpatients Department
PEPFAR	President's Emergency Plan for AIDS Relief
PHC	Primary Health Care
PICT	Provider Initiated Counselling and Testing
PLHIV	People Living with HIV
PMTCT	Prevention of Mother-to-Child Transmission of HIV
PPSD	Pharmaceutical Procurement and Supply System
PWID	People Who Inject Drugs
PYAR	Person Years At Risk
QA	Quality Assurance
QI	Quality Improvement
RIF	Rifampicin
SANAC	South African National AIDS Council
SOPs	Standard Operating Procedures
STI	Sexually Transmitted Infections
TB	Tuberculosis
TDF	Tenofovir Disoproxil Fumarate
TTT	Technical Task Team
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
UNICEF	United Nations Children's Fund
UNODC	United Nations Office on Drugs and Crime
UVG	Ultraviolet Germicidal
WC	Western Cape
WHO	World Health Organization
WBOTs	Ward Based Outreach Teams
XDR-TB	Extensively Drug-Resistant Tuberculosis

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Executive Summary

The National Department of Health (NDOH) commissioned a Joint Review of the HIV, TB and PMTCT Programmes to be undertaken in 2013. The main purpose of this independent Review, carried out by a multi-disciplinary team of South African and international reviewers, was to assess performance of the programmes and provide options for improvement. The focus of the Joint Review was on issues critical to effective delivery and impact of HIV, TB and PMTCT services - to assess progress made, identify challenges, and highlight best practices. The Review was also to recommend strategic and operational approaches for further scale-up, improvement of quality and increasing value for money of key HIV, TB and PMTCT services.

The objectives of the Review were as follows:

1. To review progress and capacity requirements towards reaching national health sector targets for HIV and TB.
2. To review the level of integration of management and services between HIV and TB programmes at all levels.
3. To assess quality and effectiveness of HIV and TB services and the extent to which previous reviews and emerging science are incorporated into delivery of HIV and TB services.
4. To assess existing capacities and challenges and propose options for further strengthening of cross-cutting systems for service delivery such as supply chain, information systems, laboratory and health workforce.
5. To analyse current investments, value for money and investment priorities in the short and medium term for the TB and HIV programmes.

Overall strategic guidance to and oversight of the Review was provided by a Steering Committee chaired by the National Department of Health in which a wide range of national stakeholders and development partners were also represented.

Methods

The Review was carried out using a combination of methods. A desk review of epidemiological data, policies and strategies, and financing data of HIV, TB and PMTCT services was conducted. Interviews were carried out with key informants at national, provincial, district and sub-district levels. Site visits were undertaken to health facilities, medicine depots and laboratories, and discussions were held with community representatives. Limited preliminary analyses of data emerging from some of the information systems were carried out.

The desk review was completed in the first three weeks of September and the field review was undertaken in the first two weeks of October. Over 160 individuals representing 29 different institutions took part in the Review. A total of 21 districts and about 100 health facilities were visited.

Main findings

Achievement of national targets

The Review found that the country had made impressive strides in the implementation of HIV, TB and PMTCT programmes during the period since the previous reviews were conducted in 2009. Most of the key recommendations from the 2009 TB and HIV reviews appear to have been taken into consideration in on-going programme development and contributed to rapid scale up of key interventions. The impact of these efforts is also beginning to show in declining numbers of new HIV infections, TB infections and low rates of new infections in children. HIV and TB mortality is declining, with a corresponding decline in all natural cause mortality. Maternal mortality, though, appears to be increasing.

There has been rapid scale up of ART services resulting in a four-fold increase in the number of people receiving ART between 2009 and 2012. The HIV Counselling and Testing (HCT) campaign resulted in about 15-20 million tests for HIV and over three million people screened for TB. There is universal coverage of PMTCT services. TB case detection has increased and the number of sites initiating MDR-TB treatment has increased from 11 to 45. The Department of Health (DOH) appears to be on course to meeting its targets as defined in the National Strategic Plan on HIV, STIs and TB (2012-2016).

However, there are some areas still lagging behind. These include: low HIV and TB treatment coverage among children and adolescents; the numbers of males circumcised is falling short of national targets; key populations are not yet being adequately reached with HIV, TB services; and finally, condom use appears to be declining in some population groups.

Integration of services

The DOH has made integration of services an overarching policy both in the context of transformation of the health system and primary health care re-engineering. TB was integrated into the mandate of SANAC alongside HIV in 2009 and a joint HIV, TB and STI national strategic plan was developed. There is successful, functional integration of HIV, TB and PMTCT services, particularly at primary care level. Diagnosis and management of non-communicable diseases for people living with HIV is integrated in some HIV care/ART settings.

Mechanisms for closer integration of the programmes are less well defined at the level of the National and Provincial Departments of Health. Integration at these levels tends to depend on individuals rather than systems. This sometimes leads to fragmentation of guidelines and supervision at the level of service delivery. The DOH is developing a supportive working relationship with non-governmental organisations, and has varied arrangements with other public providers and little contact with the private sector. Much of the DOH's liaison with other sectors takes place within the framework of SANAC.

Quality and effectiveness of key interventions

The rapid increase in **HIV testing** is a major achievement of the programme. It has led to many more people in South Africa being aware of their HIV status.

Lay counsellors have made a major contribution to the expansion of HCT services. However, there is no structured programme for quality assurance of testing. In addition, there is no standardised supervision of lay counsellors. These gaps need to be addressed with the new HCT campaign.

South Africa now has close to 2.6 million people receiving **ART**, including an increasing number of TB patients and pregnant women on ART. Coverage of ART among children and adolescents is still very low. Preliminary analysis of available ART cohort data suggests declining retention rates with each year after initiation of treatment. This is a major concern.

PMTCT targets have mostly been achieved. The MTCT rate at six weeks has been significantly reduced to a national average of 2.7%. However, there are some weaknesses in the PMTCT cascade. The MTCT rate at 18 months is not known. Post-partum follow up of the mother-baby pair is sub-optimal and retention in care presents a challenge. Late booking for ANC services by pregnant women remains a major challenge.

MMC uptake of is increasing and has been integrated with other HIV prevention services including HCT. However, the current model for MMC is doctor-driven and this partly explains the limited coverage and reach. Some traditional circumcisions are counted as MMC and linkages between MMC and traditional practitioners are weak.

TB treatment guidelines, algorithms and standard operating procedures (SOPs) are widely available and appear to be followed in most facilities resulting in rapid treatment initiation for patients diagnosed with TB. However, defaulter tracing interventions are not widespread. There is no guidance for community caregivers on handling defaulters and no systems for reporting or managing side-effects. Seasonal workers in particular have higher defaulter rates, but there are few examples of service adaptations to support migrants.

Care for patients with **MDR-TB** has been decentralized and includes community-based care in some provinces. The number of sites initiating MDR-TB treatment has increased and a continuum of care has been established. However, treatment outcomes are poor and are unlikely to reach the 60% treatment success target by 2016. Due to diagnostic and therapeutic challenges, there are also concerns about the increasing number of patients with treatment failure for XDR-TB.

The rollout of **Gene-Xpert** nationally has been impressive. There is widespread availability of culture (including for PLHIV) and testing for susceptibility to first and second-line anti-TB drugs. Diagnostic algorithms are not always followed resulting in Gene-Xpert RIF positive patients remaining on treatment without confirmation using drug sensitivity testing.

TB screening in people living with HIV and in people who have been tested and counselled for HIV (HCT, pre-ART, ART, ANC) has been scaled up and is generally well implemented. Available data on the screening cascade show that many facilities still have low coverage while others have a rather high proportion of positive screening results of outpatient visits prompting subsequent diagnostic TB tests, up to about 5%.

There has been significant scale up of collaborative **TB/HIV** activities in South Africa facilitated by the expansion of HIV testing and the decentralisation of ART through Nurse Initiated Management of ART (NIMART) for adults.

However, NIMART training excludes staff nurses who mostly serve as primary TB focal points and this was often mentioned as a barrier to prompt initiation of ART among TB patients including children. A consistent gap was observed in integrating IPT for TB prevention and TB screening and diagnosis in pre-ART care.

Other areas of concern include inadequate programming for HIV and TB key populations (e.g. persons incarcerated or working in prisons, mining communities, contacts, persons with diabetes), declining condom use, and poor TB infection control in many health facilities.

Cross-cutting systems

HIV and TB **information systems** (ETR.Net, EDR.Web, TIER.Net) have been rolled out nationally. Substantial progress has been made towards reliable reporting of cohort data through TIER.Net. National coverage with DHIS aggregated based information system is well established. The PMTCT dashboard of indicators is institutionalised. Data sources with national coverage (e.g. vital registration and HIV surveys) are available. On the other hand, there is a lack of inter-operability of different TB, HIV and MDR TB electronic data systems. There is also a multiplicity of registers at health facilities and inadequate data capturing by nurses and lay counsellors. The lack of a common reporting system for non-public sector ART programmes means provinces do not have a complete picture of coverage of services. A number of facilities did not have age-disaggregated data on HIV and TB treatment.

A dedicated pharmaceutical procurement and supply system (PPSD) exists. An evidence-based approach to drug procurement is used which is triangulated using all available data sources including programmatic data. There appears to be effective **supply chain** management from depot to facilities. Most of the sites visited did not report significant drug stock-outs in the immediate time preceding the Review. Quantification of the market size for TB drugs and commodities is weak. Manufacturing limitations are hindering the rollout of fixed-dose combinations (FDCs) of ARV drugs. Programmatic pharmacovigilance is under-developed whereas regulatory pharmacovigilance appears to be well developed.

Overall, the country has well-functioning **laboratory services** with an efficient courier system and improved turnaround time for results across all three programme areas. Samples are picked up once a day, at minimum. Results are available the following day in the system and can be accessed online, by SMS printers, by mobile phones and on paper. Liaison between the National Health Laboratory Services (NHLS) and the DOH at national and provincial levels is weak. Some provinces have appointed dedicated laboratory services coordinators to liaise between the DOH and the NHLS. Facilities within provinces lack a quality assurance programme, especially for HIV rapid testing. Stewardship of laboratory services at both National and Provincial levels are sub-optimal.

Staffing norms seem to vary significantly and there did not appear to be any rationale to the workload allocation of staff by programme or facility as facilities with similar headcount numbers are staffed with different categories and numbers of staff. There were mixed perceptions of the

prevalence of **stigma** in health care settings. In some settings it was not considered a big problem, whereas some clinics reported treating many patients from outside the facility catchment area due to stigma.

Recommendations

Against the background of impressive progress in delivery of HIV, TB and PMTCT services, the Review recommends additional measures to maximize impact of the programmes, increase effectiveness of services and make the most use of existing national capacity and opportunities in the response to the epidemic of HIV and TB. These should focus on improving the quality of prevention, diagnosis, treatment and care services; targeting population groups that are underserved; strengthening and harmonizing programme management, implementation and supervision; and addressing critical problems around documenting, monitoring and evaluating programme activities. The 12 main recommendations are as follows:

1. Promote the routine use of cascade analysis at all levels to identify intervention points to reduce losses and enforce long term retention in care of both PLHIV and TB patients.
2. Further strengthen capacity for the delivery of integrated services at PHC and community level with particular focus on improving access to HIV and TB services for children, adolescents and key populations.
3. Introduce, strengthen and routinize systematic screening and diagnosis of TB including in maternal, neonatal and child health, community based outreach services and among health workers.
4. Optimise the full use of Gene-Xpert MTB/RIF for the diagnosis of drug susceptible and drug resistant TB.
5. Integrate programme management (supervision, training, planning and resource mobilisation) particularly at district and sub-district levels across TB, HIV and MCH programs using context specific mechanisms.
6. Urgently implement a quality assurance programme for HIV testing at all levels including for lay counsellors.
7. Strengthen supply chain performance and management at all levels (national, provincial and district, down to the “last kilometre” to facilities).
8. Assure rational and full staffing capacity in facilities consistent with workload particularly at PHC level.
9. Introduce a unique patient identifier that will assist the inter-operability and linkage of existing electronic systems.
10. Ensure correct recording of Gene-Xpert MTB/RIF results at PHC levels.
11. Establish and strengthen the standardised documentation and reporting of community-based activities in TB, HIV and MCH/PMTCT services.
12. Integrate existing patient records, registers and information systems with particular emphasis of the following key actions: introduce ETR.net to all facilities already implementing TIER.net; integrate IPT initiation, follow up and completion into pre-ART and ART registers; systematically link all pregnant women regardless of HIV status from ANC to end of postnatal care (“1000 days”).

1. Background

South Africa carries a heavy burden of HIV and TB. In the past two decades, South Africa has taken progressively determined measures to stem the tide of the epidemics and mitigate the impact of HIV and TB. These include strengthening the national HIV and TB programmes, restructuring SANAC, and updating national strategies for HIV and TB. Since the last HIV and TB Programme Reviews in 2009, there has been impressive scaling up of TB, HIV and PMTCT services through greater integration between TB and HIV services and improved efficiencies. South Africa now has the largest HIV treatment programme in the world and close to universal coverage of PMTCT. TB case detection rates and treatment success rates have increased steadily.

The National Department of Health commissioned a Joint Review of the HIV, TB and PMTCT Programmes to be undertaken in 2013. The main purpose was to assess performance of the programmes and provide options for improvement. It was an independent Review carried out by a multi-disciplinary team of reviewers from both inside and outside the country. The focus of the Review was on issues critical to effective delivery and impact of HIV and TB services, to assess progress made, identify challenges and highlight best practices. The Review was also to recommend strategic and operational approaches for further scale-up, improvement of quality and increasing value for money of key HIV, TB and PMTCT services.

1.1. Rationale for the Joint HIV, TB and PMTCT Programme Review

South Africa has one national strategic plan for HIV, TB and STIs for 2012-2016. In line with this overall policy direction a decision was made to conduct an integrated TB, HIV and PMTCT review. The benefits of combining HIV, TB and PMTCT programme reviews include facilitation of integrated service delivery and cutting down on the huge transaction costs and frequent disruptions in programme implementation incurred from separate programme reviews.

However, there are challenges to undertaking joint programme reviews. The first is that they are obviously more complex and their design and implementation are therefore much more challenging. Secondly, it is possible that some issues might not be addressed adequately due to the wider scope of issues for consideration in a joint review. There might also be the perception of differential attention paid to individual programmes in a joint review.

This is the first such effort that fully integrates HIV and TB programme reviews at national level. It therefore serves as a test case for drawing lessons to maximise the benefits and minimise the shortcomings of such an undertaking.

1.2. Objectives of the Joint Review

This was an independent review intended to advise the Department of Health on how well the programmes have performed and what best practices, challenges and opportunities exist. The Review was also meant to recommend further approaches for improving the performance and impact of the programmes.

The scope of the Review was health sector related HIV and TB programme activities at community, facility, district, provincial and national levels. It aimed to address policy, strategic and operational issues for improving programme performance and impact.

The Review was carried out to meet the following five specific objectives:

1. To review progress and capacity requirements towards reaching national health sector targets for HIV and TB as defined in the Strategic Plan of the National Department of Health for 2010/11-2012/13, the National Strategic Plan on HIV, STIs and TB (2012-2016), and the MTSF for 2009-2014.
2. To review the level of integration of management and services between HIV, TB and PMTCT programmes at all levels, the decentralisation of service delivery and synergies with other health programmes such as those for child, maternal, sexual and reproductive health.
3. To assess the quality and effectiveness of HIV and TB services and the extent to which previous reviews and emerging science are incorporated into the delivery of HIV and TB services.
4. To assess existing capacities and challenges to propose options for further strengthening of cross-cutting systems for service delivery such as supply chain, information systems, laboratory and health workforce.
5. To analyse current investments, value for money and investment priorities in the short and medium term for the TB and HIV programmes.

Overall guidance to and oversight of the Joint Review was provided by the National Department of Health through a Steering Committee chaired by the Deputy Director General for HIV, TB and MCWH who was assisted by the Chief Directors for TB and for HIV. Various national stakeholders and development partners were also represented on the Steering Committee. The World Health Organization (WHO) provided technical leadership for the Review, while University Research Company (URC) was responsible for managing the logistics and UNAIDS coordinated the development of the tools for facility assessments. Over 160 individuals from multiple institutions participated in the Review. The reviewers also represented a wide range of technical expertise in HIV, TB, PMTCT and cross-cutting systems.

1.3. Previous HIV, TB and PMTCT reviews

The Joint HIV, TB and PMTCT Review follows separate reviews of the three programmes undertaken in the preceding four years. It was informed by lessons learnt in conducting the past reviews and it also took note of issues raised in these reviews.

South Africa Health Sector HIV/AIDS Programme Review, 2009

This review had two main objectives. The first was to assess the platform for the delivery of HIV and AIDS services in the health sector, and advise on approaches for increasing quality of care and service coverage.

The second objective was to assess community needs and expectations in relation to the delivery of HIV and AIDS services in the health sector, and identify opportunities for greater community involvement in planning and implementation. The review applied a rapid appraisal approach, using a combination of data collection methods. It focused on issues relating to provision of HIV prevention, care and support services in the public sector.

The recommendations of the review highlighted the following:

- Decentralize HIV care and treatment;
- Capitalize on opportunities for HIV prevention in the health sector;
- Facilitate service integration as a standard of care;
- Continue to focus on quality improvement;
- Improve sustainability of services by rationalizing the cost of care;
- Capitalize on new leadership to strengthen existing governance mechanisms at all levels; and
- Maximize the potential of health sector partners.

Joint Review of the National TB Control Programme South Africa, 2009

The main purpose of the review was to assess progress in TB control in South Africa since 2005 and provide technical and strategic guidance on strengthening the TB programme and controlling MDR and XDR-TB. It was a comprehensive review which assessed all components of the Stop TB Strategy; laboratory network and quality assurance; drug procurement and in-country logistics; human resource capacity and development; monitoring, evaluation and reporting systems; infection control practices; community TB delivery model; drug resistant TB; and referral systems. Advocacy, communication and social mobilisation and the integration of TB/HIV programmes were also assessed.

Recommendations included the following:

- Strengthen support to provinces to scale up coverage of diagnosis and treatment of MDR-TB;
- Select appropriate models of MDR-TB and XDR-TB care;
- Intensify case finding in high risk groups and ensure HIV testing for TB patients; and
- Promote patient centred and community based care.

Evaluation of the Effectiveness of the National Prevention of Mother-to-Child Transmission (PMTCT) Programme Measured at Six Weeks Postpartum in South Africa, 2010

The purpose of this evaluation was to conduct a national facility-based survey to monitor the effectiveness of the South African National PMTCT programme. The primary objective was to measure rates of early MTCT of HIV at six weeks postpartum. The secondary objective was to periodically estimate coverage of key PMTCT interventions and services (e.g. HIV testing, CD4 cell count testing, infant ARV prophylaxis and infant feeding counselling). This was conducted as a cross-sectional, facility-based survey at immunisation service points at public primary health care/community health centres in all nine provinces.

Among the main conclusions of the evaluation were the following:

- Maternal HIV acquisition since the last HIV test was potentially high and therefore repeat HIV testing at 32 weeks pregnancy and couple testing was critical;
- Uptake of PMTCT services was high with more than 98% of women getting HIV tested during pregnancy and 91.7% of HIV-positive mothers receiving ARV treatment or prophylaxis. However, CD4 testing (78.3%) and early infant diagnosis (EID) uptake (35.1%) were lower and represented on-going missed opportunities in the PMTCT programme; and
- Virtual elimination of paediatric HIV infection was possible with intensified effort. However, postnatal transmission after six weeks also needed to be examined to assess the achievement of less than 5% MTCT at 18 months of age.

2. Methodology

Planning for the **Joint Review** began with a consultation among stakeholders coinciding with the National AIDS Conference in June 2013 in Durban. By the end of July, the terms of reference for the Review were drafted, the Steering Committee established and main working groups identified. Detailed planning for implementing the Review followed drafting of the terms of reference.

A diverse team of South African and international reviewers representing about 30 institutions carried out the Joint Review. They used a range of methods was used in conducting the Review, including reviews of existing documents, key informant interviews, site visits and focus group discussions. The reviewers paid particular attention to ensuring that key elements of HIV, TB and PMTCT programmes were incorporated in the data, processes and tools of the Review.

2.1. Methods

The following were the main components in the implementation of the Joint Review:

2.1.1. Desk review

The purpose of the desk review was to identify existing knowledge by extracting information relating to the scope and objectives of the review from published and unpublished documents. It also intended to identify priority issues to focus on during the rest of the Review. The desk review was consisted of three parts.

The first part was an **epidemiological and impact assessment**. It involved analysis of recent epidemiological and programme data to identify trends in HIV and TB prevalence, incidence, morbidity and mortality (including, where possible, by sex, age, affected population groups and geographic areas). It also included an assessment of whether trends in disease burden are plausibly related to programmatic efforts or other factors.

The second part of the desk review was concerned with identifying existing national **policies and strategies** on HIV, TB and PMTCT. This portion also covered issues on quality and effectiveness of key HIV, TB and PMTCT services, as well as challenges in cross-cutting systems such as supply chain and laboratory services in supporting HIV, TB and PMTCT service delivery.

The third part of the desk review related to issues around **financing** of HIV, TB and PMTCT programmes. It included assessments of costs for delivering key HIV, PMTCT and TB interventions. It also looked at resource allocations between different interventions and the extent to which they represent good value for money. The Review also assessed work done on financing requirements for the HIV and TB programmes in the short and medium term.

The desk review was undertaken from 1-24 September 2013. It included the collection and review of a range of documents such as:

- Official documents, including policies, strategies, plans, funding proposals, studies, business plans and expenditure and progress reports by the DOH and others;

- International documents, including data, studies, strategies, WHO and UNAIDS databases and reports from international agencies;
- Scientific information from journals and conferences;
- Other sources including the media.

2.1.2. Review tools

A set of review tools was developed to ensure a focus on the priority areas as well as standardisation in the collection of information. The basic tools comprised of a number of key questions on HIV, TB and PMTCT to be administered by reviewers at all levels of the health system. The main ones were as follows:

- National level tool
- Provincial level tool
- District and Sub-District level tool
- Facility level tool

A number of additional guides were developed for reviewers, team leaders, templates for provincial and thematic presentations, as well as outlines for provincial and thematic reports.

2.1.3. Selection of districts and facilities

Districts and facilities to be visited were selected on the basis of their performance of their HIV and TB programmes. Programmatic indicators included HIV prevention activities, levels of HIV counselling and testing and numbers of patients on ART. For TB, case detection numbers, smear conversion and successful treatment completion rates were used.

Judged against these criteria, two districts per province were selected to represent the optimal and poorest performance within the province. Within the two districts a minimum of four facilities were randomly selected for review. The facilities were selected from a list drawn from the District Health Information System. The facilities in all districts included a hospital (drawn from a district sample that included specialist TB hospitals, tertiary referral service hospitals or district hospitals), a Community Health Centre and two Primary Health Clinics (PHC).

Where possible each facility selected was located in a separate sub-district. Provincial Departments of Health received notification of the review districts one week in advance, while the designated facilities were identified at the provincial briefing.

Where laboratories or drug supply depots were situated in a review team district location, these were also added to the list of sites to be visited.

2.1.4. Reviewers and review teams

About 160 individuals from 29 different institutions participated in the Review as reviewers. The Reviewers also represented a broad range of Gene-Xpert and experience in HIV, TB, PMTCT and cross-cutting systems. The reviewers were each assigned to two types of teams – field and thematic - which functioned concurrently.

The field teams comprised of nine provincial teams and one national team.

There were nine thematic teams in the following areas:

- HIV prevention
- HIV Treatment
- M&E and information systems
- PMTCT
- TB case finding and community engagement
- TB treatment and paediatric care
- TB Diagnostics and MDR-TB
- TB/HIV integration
- Cross-cutting systems

2.1.5. Field visits

The reviewers visited all the nine provinces, 21 districts and about 98 health facilities. The teams also conducted interviews with relevant members of provincial health teams.

Thereafter the provincial teams split up into district teams which each visited one district. There were two district teams for each province, with the exception of Kwazulu-Natal and Gauteng, the two provinces with the highest HIV and TB burden, which had four and three district teams respectively. Each district team was expected to visit four health facilities, one medicines depot and one laboratory.

After the field visits, each of the provincial teams presented and discussed their preliminary findings with the provincial officials. In most provinces this was followed by a two-day workshop for all districts within the province to review their performance and plan for improvements. The workshops were designed along the lines of the PMTCT stocktaking exercise, but also included TB and other aspects of HIV.

The national team conducted a series of interviews with around 30 individuals representing a range of national level stakeholders. These included the National Department of Health, SANAC, health-related parastatal institutions, development partners, non-governmental organisations, the private sector and a network of people living with HIV and TB.

2.1.6. Other data sources

The Review collected some additional recent data beyond what was contained in the desk review. Various provincial and district teams collected new data on the respective provincial and district programmes.

The national team was able to gather additional mortality data from Statistics South Africa and the NHLS. In addition, it was also able to carry out some cohort analyses on the data available in HIV and TB electronic information systems.

2.1.7. Analysis of findings

Preliminary consolidation and analysis of the Review findings were done over a two-day period in Pretoria. This started off with presentations and discussions on the findings and recommendations from each province. Thereafter, the reviewers reconvened into thematic teams and analysed the provincial findings by the main thematic areas of the Review. The Thematic teams also proposed recommendations for each thematic area.

The reviewers then analysed the recommendations emerging from the thematic areas with the aim of identifying and consolidating these into the main recommendations for the Joint Review. The criteria for the main recommendations were: (a) must be directly related to the objectives of the Review, (b) apply widely in the country rather than only in a localised area; and (c) should lead to significant change in the programme.

2.2. Limitations

The major constraint of the Review was time. The Review was planned and executed in a very compressed space of time, especially for one of this level of complexity. There was not much time to identify key issues emerging from the desk review so as to inform priorities for the field review and development of review tools. The time for analysis of findings and identifying recommendations was also very limited.

The Review would have benefitted from more detailed analyses of data generated by TIER.net, ETR.net and EDR.web, the electronic information systems for ART, TB and MDR-TB respectively. It was also not possible to analyse information available from vital registration. The Review would also have greatly benefitted from the results of the HIV Household Survey conducted recently by the Human Sciences Research Council (HSRC), but these were not yet available.

Use of some of the Review tools, especially the facility level tool, presented some challenges due to the huge amount of information that was being requested. There were also some challenges in managing logistics for such a complex exercise and covering large distances.

The Review was not able to address issues adequately relating to financing and economic analysis (Objective 5) other than in the desk review. This was largely due to insufficient time and expertise during the field review. It is proposed that further work be considered in this area following the Review.

Nonetheless, the constraints and challenges experienced did not significantly affect the main findings and recommendations of the Review.

3. Overview of health sector HIV, TB and PMTCT policies and structures

3.1. Summary of current epidemic status and response

South Africa is experiencing serious generalised HIV and TB epidemics. It continues to be home to the world's largest number of people living with HIV, estimated to be 6.4 million in 2012 (Spectrum policy modelling system, Statistics South Africa 2013). The country also ranks third among countries with the highest burden of TB in the world after India and China (WHO 2012). Levels of HIV and TB co-infection are very high, with as many as 60% of patients having HIV-associated TB. There is also increasing incidence of multidrug-resistant (MDR) and extensively drug-resistant (XDR) TB.

The estimated national HIV prevalence among the general adult population (15 - 49 years old) has remained stable at around 17.3% since 2005. The evolution of HIV prevalence among women presenting for antenatal care has been routinely measured since 1990, and has stabilised at about 29% since 2004. Adults deaths decreased by 20% in 2011 since, deaths in children under 5 years decreased by 25% from 56/1000 live births in 2009 to 42/1000 live births in 2011, and infant mortality rates declined from 40 to 30 deaths per 1000 live births in the same period. The maternal mortality rate saw a 17% decline from 188.9/100 000 in 2009 to 156.5/100 000 in 2011.

There were more than 389 000 new tuberculosis cases reported in 2011. The 2012 Global WHO TB report indicates that, even though notified cases have been declining since 2009, South Africa still has one of the highest TB incidence rates in the world at 993 cases per 100 000 population. Case detection rates increased between 2007 and 2009 and currently stand at 69% relative to the 70% global target. However, there are still many missed opportunities to identify and treat existing cases to curb transmission at community level.

3.2. Overarching national policies and frameworks

The South African government has adopted the National Development Plan (NDP) 2030 as a vehicle for achieving the country's long-term goal to eliminate poverty and reduce inequity. Chapter 10 of the NDP is entitled "Health Care for All" and highlights the social determinants of health, health systems strengthening and the reduction of the burden of disease for improving health access and equity.

At a macro level, the 2009 – 2014 Medium Term Strategic Framework (MTSF) sets out the strategic mandate of government. The MTSF identifies 12 strategic priorities and outcomes on which government's implementation plans for the period 2009 to 2014 are based. In January 2010, the Government adopted an outcomes-based approach to accelerate attainment of the objectives outlined in the MTSF 2009-2014.

These outcomes have, in turn, been translated into negotiated service delivery agreements that reflect the commitment of key sectoral and inter-sectoral partners linked to each of the 12 key outcomes in the 2010-2014 programme of action (POA). Each outcome area is linked to a number of outputs and related activities. For the Health Sector, the priority is improving the health status of the

entire population and contributing to Government's vision of "A Long and Healthy Life for All South Africans" (Outcome 2). The health sector must produce four strategic outputs in its efforts to achieve this: (1) increase life expectancy, (2) decrease maternal and child mortality (3) combat HIV and AIDS and decrease the burden of diseases from Tuberculosis, and (4) Strengthen health system effectiveness.

3.3. HIV, TB and PMTCT Structures

At the national level HIV, TB and MCH services are clustered under the leadership of one DDG. The National Department of Health is responsible for policy formulation, coordination, and monitoring and evaluation of health services. This configuration has greatly facilitated the integration of policies in the three programme areas and adoption of lessons learned under each of the separate programmes.

Each province also has units for policy, coordination and facilitating implementation at a provincial level. Structures at provincial level differ, with some provinces having a single HIV, TB and STI unit (HAST) while others have separate HIV and TB units (NDOH, 2007). The PMTCT programme resides within the MCH unit in most provinces. Nonetheless, all provinces prioritise HIV, TB and MCH services and all implement Department of Health policies and align activities to achieve the priorities set out in the national plans. At a district level HAST and MCH coordinators manage, coordinate and supervise programme activities.

The National Health Insurance, PHC and HIV/TB/MCH programmes work very closely together at all levels of the health system to ensure that the health service delivery mechanisms are in tandem with the policies as the country works towards the establishment of the National Health Insurance in 2017 (NDOH 2011e). This is particularly so at district level in implementing the PHC reengineering strategy (NDOH 2010b).

A range of health and community workers provides a comprehensive package of services at PHC facility level and in the community. At health facility level SA has opted for an integrated 'one stop service' approach where TB and HIV services are provided at a single facility at the same time and location within both curative services and preventative maternal and child health services. This implies that patient centred care should be provided by a single service provider implementing the existing guidelines for TB case management, TB infection control, HIV/ART and PMTCT (2011c). Integrated care has been observed to support early detection and treatment of undiagnosed infectious tuberculosis, increase notification of smear-negative pulmonary and extra-pulmonary TB and improve treatment success rates in South Africa. This model also supports timely initiation of ART in TB patients living with HIV without needing to refer them (Brown 2011). In a setting with co-located TB and ART clinics, delays to starting ART were substantial, and one-fifth of eligible patients did not start ART during TB treatment (Ngalazi 2012).

4. Progress towards achieving national targets

The **National Strategic Plan for HIV, STIs and TB 2012-2016** (NSP) is the main strategic framework that encapsulates national priorities on HIV, PMTCT, STIs and TB. It is informed by lessons learnt from achievements and shortcomings in the implementation of previous strategies. The 20-year vision of the “Three Zeros” advocated by UNAIDS has been adapted into “Four Zeros” in the NSP: Zero new HIV and TB infections; Zero new infections because of vertical transmission; Zero preventable deaths associated with HIV and TB; and Zero discrimination associated with HIV and TB.

The broad goals of the NSP are as follows:

- Reducing new HIV infections by at least 50% using combination prevention approaches;
- Initiating at least 80% of eligible patients on antiretroviral treatment (ART), with 70% alive and on treatment five years after initiation;
- Reducing the number of new TB infections and deaths from TB by 50%;
- Ensuring an enabling and accessible legal framework that protects and promotes human rights in order to support implementation of the NSP;
- Reducing self-reported stigma related to HIV and TB by at least 50%.

The plan has four strategic objectives which form the basis of the HIV, STI and TB response. These are:

Addressing social and structural barriers to HIV, STI and TB prevention, care and impact;

- Preventing new HIV, STI and TB infections;
- Sustaining health and wellness;
- Increasing the protection of human rights and improving access to justice.

Being a signatory to the United Nations Millennium Declaration of 2000, South Africa is committed to attaining the Millennium Development Goals (MDG). The principles of the MDGs are reflected in the country’s development frameworks, including the MTSF for 2009-2014, the Strategic Plan of the National Department of Health for 2010/11-2012/13 and the NSP.

South Africa is also a signatory to the 2001 UNGASS Declaration of Commitment, the 2006 Political Declaration on Universal Access and the 2011 UN General Assembly Political Declaration on HIV/AIDS. The Political Declaration set the following 10 targets on HIV and TB to be reached by 2015:

1. Reduce sexual transmission of HIV by 50% by 2015;
2. Reduce transmission among people who inject drugs by 50% by 2015;
3. Eliminate MTCT of HIV by 2015 and substantially reduce AIDS-related maternal deaths;
4. Have 15million people living with HIV enrolled on ART by 2015;
5. Reduce Tuberculosis deaths in people living with HIV by 50% by 2015;
6. Reach a significant level of annual expenditure;
7. Eliminate gender inequalities and sexual violence and increase capacities of women and girls;

- 8. Eliminate stigma and discrimination;
- 9. Eliminate HIV-related travel restrictions; and
- 10. Eliminate parallel systems, for stronger integration.

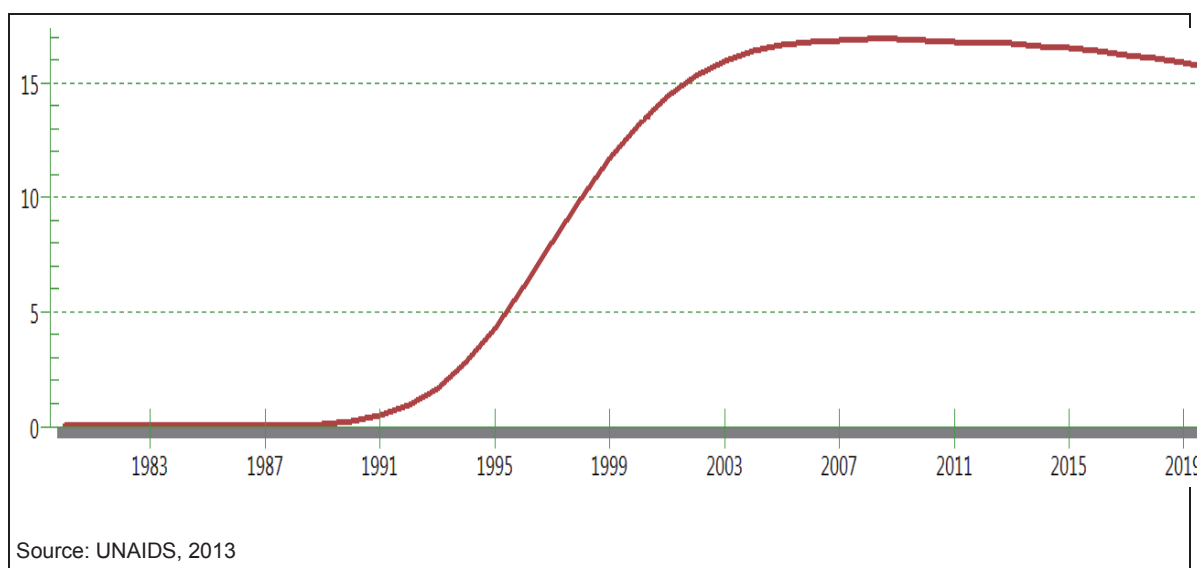
4.1. Prevalence, incidence and mortality

4.1.1. HIV prevalence

Results from the surveys conducted by the HSRC in 2002, 2005 and 2008 showed that the HIV prevalence of all people aged older than 2 years was stable from 2002–2008 at around 11% (Shisana et al., 2009). However, the latest data - although preliminary - show an increase to 12.3% in the 2012 survey. Spectrum estimates showed a continuous increase in the prevalence rate from 9.3% in 2008 to 10.0% in 2013 (Statistics South Africa, 2013).

Although the HIV prevalence rate showed a limited increase according to the above survey, the absolute number of people living with HIV increased over time, although the current actual number differs between different sources. Spectrum estimates indicated that in 2008 there were 4.6 million people living with HIV in the country and this increased to 5.3 million in 2013 (Statistics South Africa, 2013). The Global AIDS Response Progress Report 2013 indicates this to be 6.4 million in 2012. Figure 1 shows trends in HIV prevalence in South Africa between 1983 and 2019.

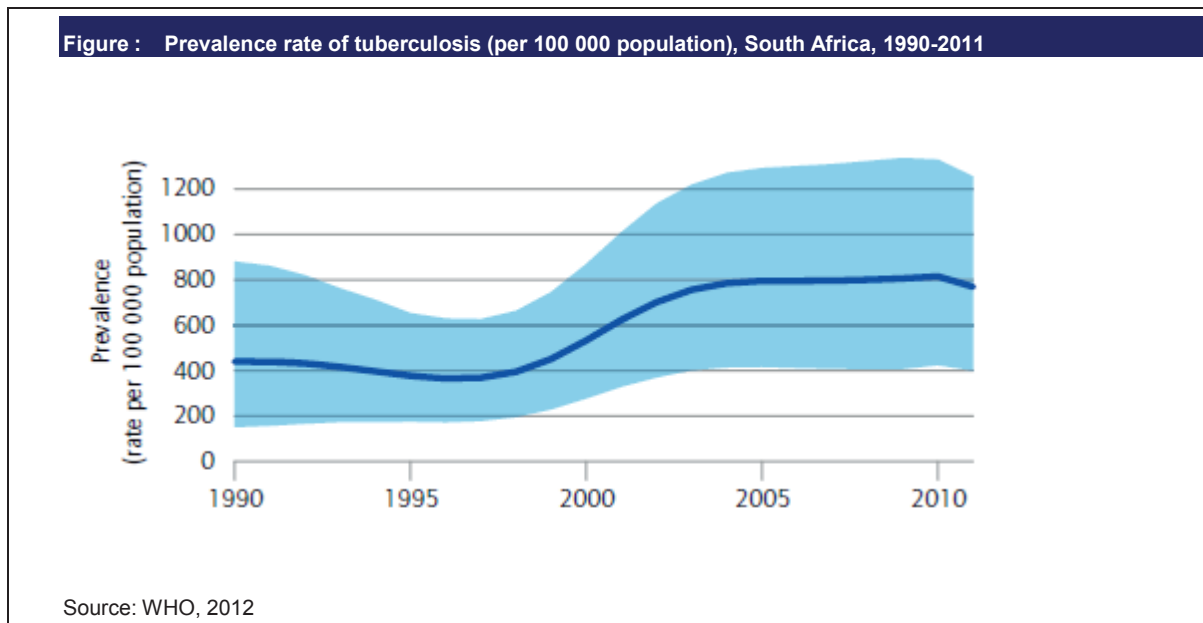
Figure: 1 Adult (15-49) HIV prevalence (%), South Africa



4.1.2. TB prevalence

The TB prevalence (including HIV positive TB patients) was 390 000 (200 000 - 630 000) cases or 768 (299 - 1250) per 100 000 population in 2011 (WHO, 2012). The latest data from the NDoH submitted for inclusion in the WHO Global TB Report 2013 show that there were 349 582 cases of TB in 2012 (NDoH, 2013). The prevalence rate increased considerably from about 1998 to 2004 after which it stabilised (Figure 2). There seems to be a small decrease from 2010 to 2011, and the 2012 data confirm a further decrease. South Africa is still in the process of implementing a national survey on the prevalence of TB (WHO, 2012).

Figure 2: Prevalence rate of tuberculosis (per 100 000 population), South Africa, 1990-2011



The TB notification rate (new and relapse cases, all forms) has seen an increasing trend since 1990 with some spikes, probably due to gaps in the reporting, although there might be a decrease in 2011 (Figure 2). The latest data confirm the decreasing trend (NDoH, 2013). The percentage of smear-positive cases went down from 2007 and seems to have stabilised at around 40%. For extra-pulmonary cases the percentage shows a very small decrease over the six year period. There has been a decrease in the proportion of retreatment cases until 2011, which appear to be increasing again in 2012.

Limited information is available on the sex- and age-distribution of TB. In both 2010 and 2011, 3% of the new smear-positive cases were in children under 15 years, and the male/female ratio was 1:2 (WHO, 2012; WHO 2011). In 2011, for extra-pulmonary cases, this was 5% and 1.0% respectively.

The decrease in TB notifications seen from 2010 to 2012 could explain the decrease in prevalence. This could be due to the increase of IPT among HIV positive patients following the introduction of new guidelines, or to a decline in HIV incidence and an increase of ART coverage or to a combination of factors. However, at the same time the case detection rate decreased considerably to a level below the target (61% in 2012 versus target of 70%) and is hence too low to curb transmission at community level. This is despite efforts to increase active case finding and an increase in the number of HIV patients screened for TB (e.g. due to the HCT campaign which included TB screening).

This might be due to incompleteness of data, but could also be that the decrease in the case detection rate reflects a true decrease in incidence through, for example, increased treatment among HIV patients of both ART and IPT.

There is an increase in the prevalence of MDR-TB. This might be due to increased detection rates following the introduction of guidelines in 2011 guidelines which focused on drug resistant TB

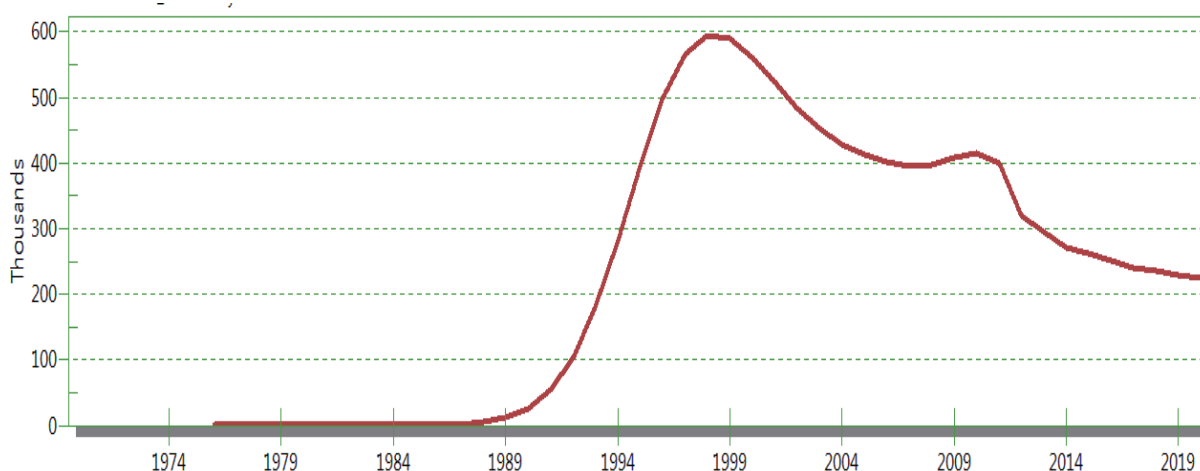
(including its diagnosis). The number starting treatment is low (42% in 2011), and far below the target of 100%, as is the success rate of 40% in 2010 versus target of $\geq 75\%$.

4.1.3. HIV incidence

Estimates of HIV incidence in South Africa for the periods 2002–2005 and 2005–2008 are made using cross-sectional HIV prevalence data from the national HIV household surveys of 2002, 2005 and 2008¹ (Rehle et al., 2010). In the period 2002–2005, the HIV incidence rate among men and women aged 15–49 years was estimated to be 2.0 new infections each year per 100 susceptible individuals (uncertainty range: 1.2–3.0/100pyar). A lower HIV incidence rate of 1.3/100pyar (0.6–2.1) was estimated for women and men aged 15–49 years in the period 2005–2008, but the decline of 35% was not statistically significant. The decline overall was mostly due to changes in incidence among young women aged 15–24, among whom there was a statically significant 60% reduction in incidence (from 5.5 to 2.2/100pyar).

Estimates of adult (15–49 years) HIV incidence using Spectrum software and presented in the ANC survey report show a higher value for 2008 (1.63%) (NDoH, 2012b). Since then incidence has been declining: 1.5% in 2009, 1.47% in 2010 and 1.43% in 2011 (NDoH, 2011b; NDoH, 2012b). The mid-year population estimates report also presents adult HIV incidence estimates using Spectrum software, but these are lower for the 2002–2005 period (1.26 in 2002, 1.25 in 2003, 1.28 in 2004), although more similar for the 2005–2008 period (1.32 in 2005, 1.29 in 2006, 1.21 in 2007 and 1.12 in 2008) period (Statistics South Africa, 2013). Estimates are given up to 2013 and show a further declining trend: 1.03 in 2009, 0.98 in 2010, 0.95 in 2011, 0.87 in 2012 and 0.85 in 2013.

Figure 3: South Africa adult HIV incidence (15 – 49 years), 2012



[Source: UNAIDS Spectrum, 2013]

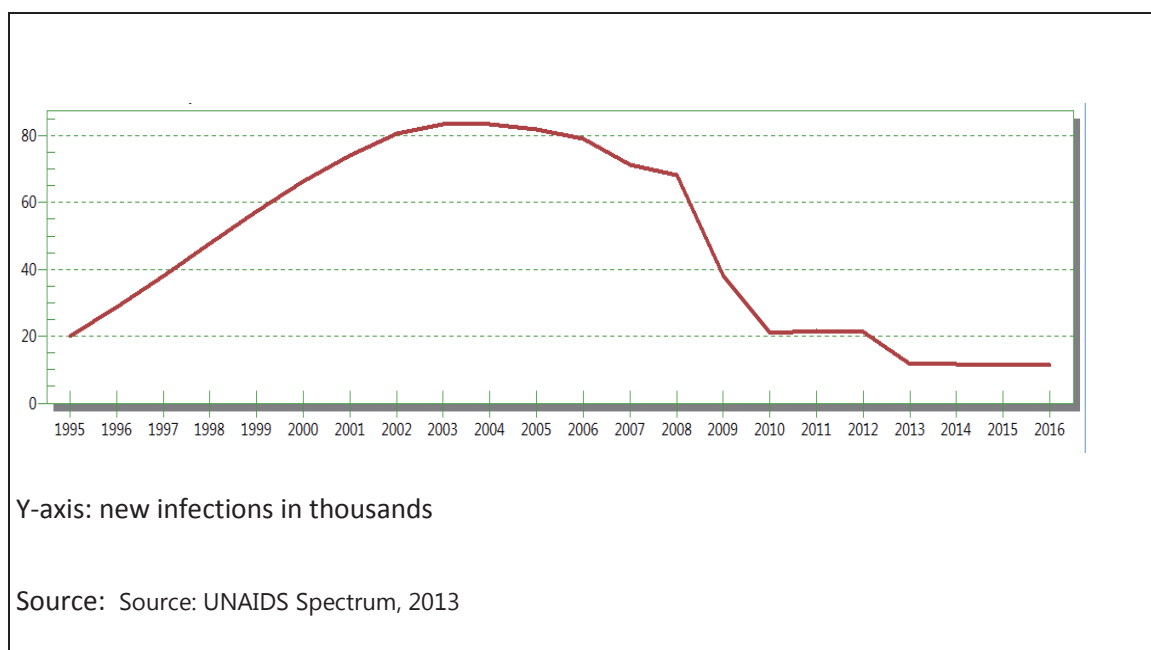
¹ Calculated using BED incidence measure methods.

HIV incidence is a key prevention impact indicator in the national HIV response. The main prevention goal of the HIV and AIDS NSP 2007–2011 was to reduce the rate of new HIV infections by 50% by 2011 (SANAC, 2007). This would mean that the HIV incidence should have fallen from 1.3% in 2007 to 0.65% in 2011 (SANAC, 2011b).

4.1.4. MTCT rates

The MTCT rate at 8 weeks has dramatically decreased to about 2.6/2.7% in 2011/12, which is below the target of 7.5%. This is largely due to PMTCT. Coverage of testing pregnant women has reached 100% and treatment of HIV positive women is around 90% (although still below target of 100%). EID has improved, but only 63.3% of children are tested and not all eligible children are put on treatment (only 54.4%). The success of the PMTCT programme can also be seen in the decrease in infant and under-5 mortality rate and the decrease of HIV prevalence among children aged 2-14 (3.1%). Figure 4 indicates the new infections among children (birth - 14 years) from the latest UNAIDS spectrum estimates (Republic of South Africa, 2013). The gains in preventing peri-partum transmission need to be supported by efforts to prevent transmission from breastfeeding. According to the 2010 PMTCT survey, only 20% of HIV-positive women were exclusively breastfeeding, 62% were formula feeding and 18% were practicing high-risk mixed feeding, suggesting a need for increased attention to infant feeding (Goga et al, 2012). Thus the MTCT rate at 18 months could be considerably higher than the rate at 8 weeks.

Figure 4: New infections among children (birth - 14 years), South Africa, 1995 - 2016



4.1.5. TB incidence

Regarding trends in incidence rates over time (2007 - 2011) by province, most provinces seem to follow a trend in line with the national trend and the most notable differences such as fluctuations in Gauteng and large increases in KwaZulu-Natal and Mpumalanga are probably due to data issues (NDoH, 2012). There were some known problems with the data, such as hardware failure and loss of most records for Mpumalanga in 2005-2007.

However, there were also unexplained missing data for some districts in KwaZulu-Natal between 2005 and 2008 and very low numbers in Gauteng in 2007 and 2010. If the decline in TB incidence rates is verified, it might relate to increased ART coverage and improved TB management.

The treatment success rate for new smear positive patients indeed increased, although it stayed the same in 2010 and 2011 (79%), and is below the target (90%). There even seems to be a decrease in the success rate for retreatment and smear negative patients. TB mortality for HIV negative patients decreased, although the percentage of total TB deaths out of all deaths increased slightly. According to vital statistics this might be flawed due to inaccuracies in documenting the cause of death on the death certificate or under diagnosis).

4.1.6. AIDS mortality

The increased treatment coverage (both ART and increased CPT use) also seems to be reflected in mortality figures. According to the Actuarial Society of South Africa model (ASSA, 2013), the annual number of AIDS-related deaths decreased from 257 000 in 2005 to 194 000 in 2010.

This decline is largely attributed to the expansion of the ART programme. Life expectancy at birth increased, and adult, under-five, and infant mortality decreased. A recent publication has shown that South African HIV-positive adults can have a near-normal life expectancy, provided that they start ART before their CD4 count drops below 200 (Johnson et al, 2013). According to Spectrum estimates, approximately 780 000 deaths have been averted between 2003 and 2012 and based on the current status, it is estimated that 2.2 million deaths will be averted by 2016 (Republic of South Africa, 2013).

Declines in mortality provide plausible evidence for the impact of PMTCT and ART interventions and initial declines in reported TB cases suggest the impact of interventions when the following empirical evidence is used to assess this:

- HIV/ART programme impact: decline in adult mortality
- PMTCT programme impact: decline in child mortality
- TB control programme impact: decline in TB cases

However, maternal mortality still seems to increase² and the majority of deaths are due to HIV and TB. The recent improvements in treatment of pregnant women might change this.

4.1.7. Tuberculosis mortality

TB mortality, excluding HIV positive TB patients, was 25 000 (11 000 - 44 000) deaths or 49 (21 - 87) per 100 000 population in 2011 (WHO, 2012). Both the mortality rate and prevalence increased considerably from about 1998 to 2004, but after that slowly decreased again. Limited data on TB mortality among HIV-positive people are available. A study conducted at a Johannesburg academic hospital included 39 HIV-positive adults who died as in-patients and found via post-mortem investigations that the large majority of deaths (64%) were caused by TB (Wong et al., 2012).

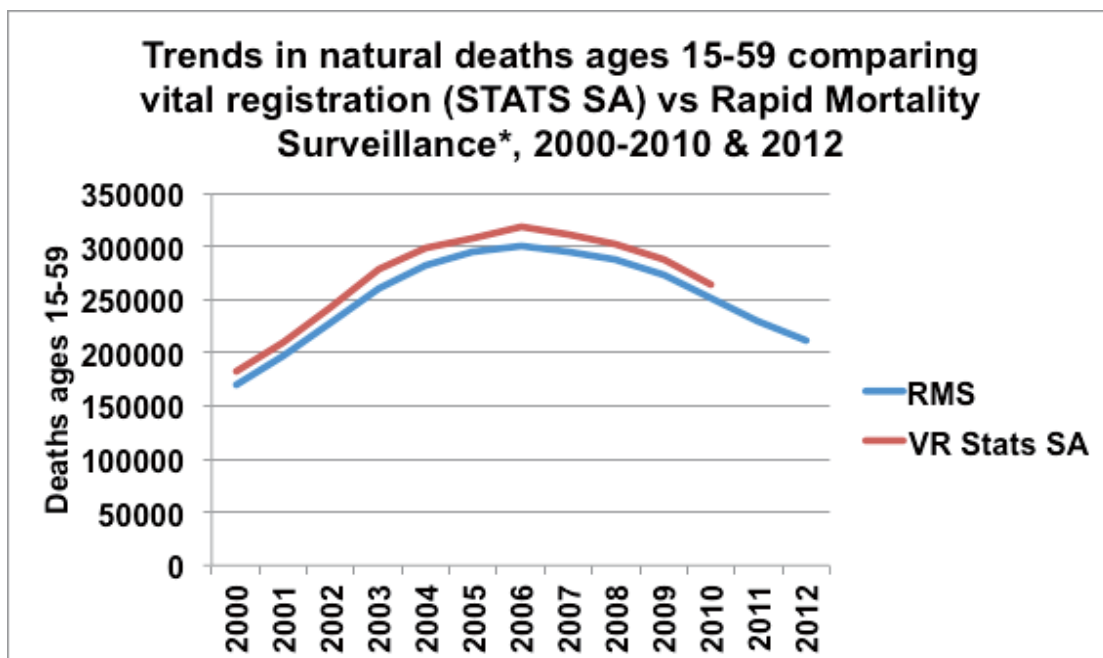
² Confidential Enquiry into Maternal Deaths

According to the mortality and causes of death report, TB is the leading cause of death in South Africa (Statistics South Africa, 2013b). There were 62 827 deaths in 2010 with TB as the underlying natural cause of death (11.6% of all deaths), increasing to 69 791 (12.0%) in 2009 and 75 281 (12.6%) in 2008 (Statistics South Africa, 2013b). Data from the National TB Programme showed that 33 300 of all TB cases died in 2012 (including HIV positive TB patients) (NDoH, 2013). The discrepancy might be due to HIV patients being registered as dying from TB, although they were never notified as TB cases.

4.1.8. Natural cause mortality

TB and HIV are still among the leading causes of mortality in South Africa. The report on mortality and causes of death in South Africa for 2010 indicated that TB and HIV were the first and seventh leading underlying natural causes of death in 2010 (Statistics SA, 2013). The trends in natural deaths from 2000-2012 taken from the vital registration system and the Rapid Mortality Surveillance (RMS) are illustrated in the figure below. The trends in declining natural cause deaths between 2006 and 2010 are similar to those of HIV and TB deaths.

Figure 5: Trends in natural deaths ages 15-59 between 2000-2012



4.2. Summary impact and outcome indicators

Table 1: Summary of impact indicators

Indicator	Current Achievements	NSP Targets (2016)
HIV prevalence among women and men aged 15–24	8.70%	4.35%
HIV prevalence in key populations	2012 survey	50% reduction
HIV incidence	0.87%	0.47%
TB incidence (Global TB Report 2013)	1003/100 000	491/100 000
TB mortality (Global TB Report 2013)	59/100 000	25/100 000
HIV mortality	43.6%	21.8%
MTCT rate (PCR 8 weeks?? 6 weeks)	2.60%	7.50%

Table 2: Summary of outcome and coverage indicators

Indicator	Current Achievements	NSP Targets (2016)
TB case detection rate (Global TB Report 2013)	61%	>85%
Treatment success rate new smear+ TB cases (Global TB Report 2013)	79%	>85%
Proportion MDR-TB cases put on treatment (Global TB Report 2013)	42%	100%
Treatment success rate MDR-TB cases (NTP)	40%	≥75%
HCT campaign	15 million	30 million
Eligible Adult and Children started on ART	82%	80%
Pregnant women tested for HIV	100%	100%
Pregnant women put on ARV to prevent MTCT	87.10%	100%

Indicator	Current Achievements	NSP Targets (2016)
Pregnant women started on HAART	75.40%	100%
MMC	347 947	1 600 000
TB patients tested for HIV	67%	90%
TB/HIV co-infected patients started ART	54%	60%
TB/HIV co-infected patients started CPT	76%	98%
HIV patients on IPT	36,1%	40%

4.3. Contributing factors

Political leadership and commitment

There has been strong and demonstrable political leadership and commitment in responding to HIV and TB in South Africa since 2009. President Jacob Zuma in December 2009 announced significant policy changes on prevention and treatment of HIV and TB.

In April 2010, the President launched the ambitious national counselling and testing campaign which aimed to reach 20 million people in South Africa with HIV and TB screening services. The Minister of Health has been an incessant campaigner of action on the two epidemics. He has advanced policies on decentralization and integration which have resulted in bringing services closer to the people. The Deputy President has provided steady and supportive leadership to the activities of SANAC. As a consequence, provincial leaders have also made the response to HIV and TB a high priority.

Clear targets defined

Key stakeholders, including those at provincial and district levels, developed the main targets and indicators in the NSP on HIV, STIs and TB (2012-2016) through a consultative process. These have been used as the primary reference point for setting targets at other levels of the health system. Some of the targets in the NSP would have to be revisited to make them more realistic given the current context.

Implementation capacity

South Africa has high implementation capacity compared to other countries in the region. There are over 8000 public health facilities distributed throughout the country. The infrastructure is generally good, laboratory services are accessible, and the supply chain is generally functional. A large number of health workers and lay personnel have been trained to deliver a wide range of HIV, TB and PMTCT

services and there are competent managers at various levels of the health system. All these assets have contributed to the rapid scale up of HIV, TB and PMTCT services. *Funding*

Government funding for HIV, TB and PMTCT programmes has steadily increased since 2009. This has been complemented by external funding mostly from the United States Government and the Global Fund to Fight AIDS, TB and Malaria. Although there have been reported instances of funding shortfalls in some provinces and districts, there were no indications of significant funding gaps observed at the time of the Review.

Some funding channels, such as the HIV and AIDS Conditional Grant, are allocated and disbursed against specific targets. This has contributed to the impetus towards meeting specific targets.

5. Integration of HIV, TB and PMTCT programme management and services

5.1. Policies and strategies

Since 1994, the Government of South Africa has strived to develop an integrated national health system that meets the expectations of all people in the country. The White Paper for the Transformation of the Health System in South Africa of 1997 recommended a restructuring of the national health system based on a Primary Health Care approach, which would include decentralisation of the management of health services and the establishment of the District Health System. This approach also aimed to strengthen disease prevention and health promotion in areas such as HIV, TB and maternal, child and women's health, in a more integrated manner.

SANAC endorsed integrated TB/HIV services in 2009 and the Department of Health has prioritised ART availability at PHC level and integration with TB services since April 2010. However, the programmatic approaches to HIV and TB at the time presented a challenge to improving access to integrated TB and HIV services: TB services (treatment and drugs) were relatively accessible at PHC facilities, whereas ART was mainly provided through hospital and secondary level health care facilities.

In 2009, the Minister of Health directed that there should be greater integration between HIV, TB and MCH programmes through a decentralised model of care. This approach was also consistent with recommendations from the TB and HIV programme reviews conducted that year. In 2009, the response to TB control was fully incorporated into the mandate of SANAC, alongside those of HIV and STIs. The Department of Health developed a set of guidelines on integration of HIV and TB services into PHC services (*A Practical Guide to HIV/TB Service Integration at PHC Level*). In 2012, South Africa launched the National Strategic Plan on HIV, STIs and TB (2012-2016).

5.2. Integration of programme management at the National Department of Health (NDOH)

The HIV, TB and PMTCT Programmes are located in the HIV/AIDS, TB and Maternal & Child Health Branch in the NDOH. The branch is headed by a Deputy Director General who reports directly to the Director General. There are five major programme clusters in the branch, namely: TB cluster; HIV & STI cluster; Maternal, Neonatal Health and Genetics cluster; Childhood & Adolescents cluster; and the Global Fund cluster. The PMTCT Programme is located in the Maternal, Neonatal & Genetics cluster. It is generally perceived that the branch and clusters have competent leadership and are well managed. There have been more leadership changes in the HIV cluster over the years compared to the other clusters.

Although there appears to be an increasing trend towards inter-cluster collaboration, there are no defined processes or mechanisms specifically designed to achieve this. The head of the branch has been instrumental in fostering inter-cluster collaboration.

The NDOH convenes regular joint quarterly review meetings on HIV and TB which is a forum for on-going review of performance of the HIV and TB programmes and for identifying priorities and plans. The quarterly meetings are attended by programme leads in the NDOH and the provinces, and they form part of the structures that report to the National Health Council.

5.3. Integration of programme management at provincial and district levels

Provinces also have units for policy, coordination and facilitating implementation. While some provinces have a single HIV, TB and STI unit (HAST), others separate their TB and HIV units (NDOH, 2007). Most provinces have the PMTCT programme within the MCH unit. Regardless of the differing structures, all provinces prioritise HIV, TB and MCH services, implement Department of Health policies and align activities to achieve the priorities set out in the national plans. Provinces prepare prioritised and costed HAST business plans linked to the Conditional Grant. The HAST provincial and district business plans are separate from the PHC plans and sometimes operate on different planning cycles.

At a district level HAST and MCH coordinators manage and supervise programme activities. However, most of the time supervisory activities are carried out separately by each of the programme coordinators. This practice is not consistent with the structure of programmes at the level of service delivery, which operates in a more integrated manner (the so-called 'supermarket approach'). This separate supervision for individual programmes leads to unnecessary duplication of efforts and increased transaction costs for facility managers.

5.4. Integration of service delivery at health facilities

There has been impressive decentralisation of HIV testing, ART, TB and PMTCT services into PHC facilities in all the provinces. Health cadres of nurses, staff nurses and community care givers provide TB and HIV services. . Functional delivery of integrated TB, HIV and PMTCT services (Supermarket model) is in place in most primary health care facilities visited.

However, there is a lack of regular supervision at provincial, district and sub-district level and a fragmented programme management approach at all levels. There is insufficient communication and mechanisms of collaboration between managers of TB, HIV and MCH at all levels. This resulted in a fragmented approach to supervision that is not responsive to the integrated delivery of services at facility level. Finally, the quality and regularity of supervision, including by clinical supervisors, is also questionable in the facilities visited.

5.5. Integration with other health service providers

The degree to which the Department of Health collaborates with other health service providers varies between the levels of the health system and by geographic area. In general, there appear to be less defined mechanisms for direct Department of Health collaboration with other partners at the national level, while there are various forms of functional cooperation and coordination of efforts taking place at the level of service delivery.

Other government departments

There is on-going liaison between Department of Health and other government providers such as the Department of Correctional Services, the Department of Education and the Department of Social Development. Currently there are discussions that might lead to the Department of Health taking a more active role in running health services in correctional facilities.

Civil society

Collaboration between the Department of Health and civil society is beginning to grow. Civil society organisations sometimes use public health facilities to deliver services such as counselling, prevention and adherence support. Civil society providers often try to ensure consistency between the HIV, TB and PMTCT services they provide and those of government. The Department of Health is the largest provider of condoms to civil society and is emerging as the leading funder of civil society programmes.

Private sector

There is much less interaction between the Department of Health and the private sector in providing health services, although there are some exceptions at service delivery level. There is need to forge greater collaboration between public and private services especially in the areas of standardising intervention packages and exchanging strategic information. This becomes more important as the public use the services interchangeably.

5.6. The role of SANAC

The South African National AIDS Council (SANAC) is the main vehicle for fostering multi-sectoral collaboration in the response to HIV, TB and STI in South Africa. All the key sectors responding to HIV and TB are represented in SANAC. The Department of Health is considered to be a prominent and essential member of SANAC, and principally interacts with other sectors through the structures of SANAC.

SANAC has recently been reorganised to allow better definition of roles and responsibilities and streamlined institutional arrangements. SANAC now has the Regular and Extended Plenary as forums for high-level political deliberations on issues relating to HIV, TB and STIs. The Plenary is supported by two main committees, the Programme Review Committee and the NSP Financing Committee, chaired by the Minister of Health. The main committees are in turn supported by a number of Technical Task Teams (TTT).

5.7. Strengths and weaknesses in integration

The strengths of the South African programmes with respect to integration of HIV, TB and PMTCT services are as follows:

- There is strong commitment at the highest national levels to promote and ensure integration at all levels.

- PHC reengineering is the national strategy for service delivery of integrated HIV, TB and PMTCT services at primary care level. This includes integration of diagnosis and management of non-communicable diseases among PLHIV in HIV care and ART settings. NIMART plays a large role in the decentralisation of services, although paediatric ART and treatment of MDR-TB is centralised in some provinces. The 'supermarket model' for delivering integrated TB, HIV and PMTCT services is in place in most PHC facilities visited.
- There are examples of successful private-public partnership for ART management: the DOH provides laboratory services and medicines, and a private mining company manages the patients.
- There is clearer definition of roles between Department of Health and SANAC and the two entities appear to be complementing each other well.

Some of the weaknesses observed in efforts towards greater integration of HIV, TB and PMTCT services are as follows:

- There is no clear definition of exactly what integration means and how it should be measured
- The effectiveness of integration at management level appears to depend more on individuals than systems. Attempts were made to develop guidelines for integration at all levels, but these have not been finalised. There is limited integration at programme management and hospital levels.
- Integration of child and adolescent programmes is limited by nurses' capacity and doctors' reluctance to initiate ART in children as nurses cannot do phlebotomy in young children.
- Links between the NDOH and the private sector are very weak. Limitations within correctional health services may require the Department of Health to assume greater responsibility and collaboration with DCS which has part-time doctors which presents challenges in mentoring and quality improvement.
- There is a lack of clear guidance for primary care providers and mechanisms for fast-tracking late presenters and persons who would benefit from referral.
- There is no combined approach to supportive supervision between HIV, TB and PMTCT. There is also a lack of a systematic approach to TB/HIV/PMTCT programme integration and to monitoring the quality of care provided.
- The structure in the NDOH is not conducive to true integration of national programmes across the entire value chain from policy to delivery. Change is occurring but being driven more by individuals rather than by the structure.
- TB service delivery is highly integrated into PHC and therefore dependent upon provincial allocations from equitable grants.
- Many programme areas have not achieved global TB targets but they are improving. However, there are low treatment success rates and very high death rates among those initiating treatment with a very high defaulter rate prior to and during treatment.

5.8. Suggestions for improvement

- Urgently establish a mechanism of regular and integrated supervision at all levels to particularly improve the quality of services provided, focusing particularly on improving the documentation and reporting of services provided. The NDOH and Provincial DOH might need to define their roles more clearly in this regard.
- Implement functional integration at district and sub-district levels: Foster joint planning, supportive supervision, resource mobilisation and health worker training across programmes, with comprehensive training and mentoring of primary healthcare providers.
- Ensure more integrated or coordinated supportive supervision from the districts to facilities by the concerned programmes.
- Strengthen paediatric and adolescent comprehensive HIV care/ART, TB, MDR TB in the training, mentoring and supportive supervision of nurses.
- Implement a QA/QI programme, and support the use of data at facility levels.
- Address fragmented management of TB, HIV and PMTCT/MCH services at district and sub-district levels by introducing organograms and structural adjustments and changes. For example, assign one person as a manager for TB, HIV and MCH at district and sub-district levels with placement or realignment of polyvalent supervisors skilled to address the three services together.
- The ‘supermarket approach to service delivery needs to be matched with regular and efficient “supermarket-approach” supervision.

6. Quality and effectiveness of HIV, TB and PMTCT key interventions

6.1. HIV counselling and testing

Prevention remains a cornerstone of the SA Government's response to HIV and AIDS. Testing provides access to the continuum of prevention, treatment, care and support. HCT campaigns are also used as an entry point for key TB control, treatment and management interventions, including active case finding and contact tracing. There is a strong focus on social mobilisation activities involving government and external stakeholders.

In March 2010, updated HCT guidelines were introduced including a revision of counselling protocols as well as a shift for HCT to be offered by health providers on any patient's visit to any health facility for any ailment (NDoH, 2010). Provider-initiated HIV counselling and testing (PICT) remains voluntary but healthcare workers are obliged to explain to patients the importance of knowing their HIV status and of testing habitually for HIV as part of normal health seeking behaviour. In April 2010, 3% of patients in facilities were offered HIV tests and by June 2011 this increased to 8% (Pillay et al., 2012). According to the 2011/12 audit, 95% of PHC facilities offer HCT (HST, 2012).

In April 2010, the national HCT campaign was launched with a target of testing 15 million people. This was the largest testing campaign ever undertaken. After 15 months, by the end of June 2011 13.4 million people were tested for HIV (89% of target) and the HIV positivity rate was 16% (Republic of South Africa, 2012). According to the SANAC only three million had tested in the pre-campaign year (SANAC, 2013). Private sector data indicates a further 291 230 individuals were tested for HIV and received their results in 2011 (Republic of South Africa, 2012).

The National HIV Communication Surveys have shown that the percentage of people ever tested increased from 55% in 2009 to 64% in 2012, for a total of 17.4-million people tested (JHHESA, 2012). Of those ever tested, the last survey found that 61% tested in the last 12 months. This represents a total of 10.6 million men and women aged 16-55 years. The survey furthermore reveals that there has been a shift in where people undergo HCT. More people are now testing at clinics, with 69% testing in 2012 versus 62% in 2009. Among those sexually active, 48% said that they had talked to others about HIV testing, had asked or have been asked by their partner to get tested and 32% reported having had an HIV test together with their partner in the last 12 months.

Strengths and achievements

- Based on observations at many health facilities, HCT is offered to most TB and ANC outpatients, and TB screening is offered to most HCT clients. Lay counsellors are the primary providers of HCT, and many are employed by the Department of Health or NGOs with a stipend from government. HCT services are the backbone of the HIV prevention response as knowledge of one's HIV and TB status is essential for triaging each client into the appropriate treatment and/or prevention programme.

- Today, HCT services are available in over 90% of public health facilities. PICT is being implemented at the facilities visited during the Review, though in most cases counsellors conduct the testing.
- There has been a rapid increase in HIV testing throughout the country. Nurses systematically conduct HIV testing and lay health counsellors include home based testing in some facilities visited.
- The HCT programme uses government-funded lay counsellors. Government recognition and payment increases the effectiveness of community care givers and lay counsellors. This has resulted in strong links between health facilities and members of the community particularly in non-metropolitan settings. The review team observed keen involvement of affected communities (e.g. PLHIV) and community members (e.g. as part of clinic committee) in the facilities visited.
- There is integration of TB/HIV screening and testing: TB patients are tested for HIV, and clinical TB screening is conducted on clients undergoing HIV testing.
- The national prevention strategy is nearing finalisation.

Challenges and constraints

- There is no quality assurance programme for HIV testing conducted by lay counsellors at most of the facilities visited. As a result the rate of misdiagnosis and the quality of prevention counselling is unknown.
- NDOH policy guidance for retesting following an HIV negative test is inconsistent with WHO recommendations. For instance, the NDOH states three months as the window period, whereas WHO recommends four weeks; and thereafter every year.
- Currently there is no supportive supervision for lay counsellors. There is also a lack of training in use of the HCT register.
- Linkages to health care services following HIV testing are unknown: do patients referred to various service delivery points actually access and receive the required services?
- There is inadequate testing of children aged 2 to 15 years. In addition, levels of community testing are low. This is aggravated by a lack of methods to capture HCT in the community.
- STI screening is not done in general (except for ART clients) and there is inadequate encouragement of partner testing.

Best practices

A good practice of *support and capacity building to local community organisations through NGOs* was observed in some of the facilities visited. A wide practice of referring contacts and family and other community members with presumptive TB or HIV was observed in the facilities visited, particularly those situated in rural areas.

***Integration of HCT and HIV services into the other services at Chiawelo CHC:* HCT and PICT is currently being offered in mental health services at Chiawelo CHC. Patients receiving mental health services have the opportunity to have an HIV test and if testing positive are initiated into ART services.**

6.2. Antiretroviral therapy

On 1 April 2010, revised Clinical Guidelines for the Management of HIV in Adults and Adolescents indicated that ART should be initiated for anyone with WHO's definition of stage 4 clinical condition regardless of their CD4 count (NDoH, 2010b). Furthermore, the Guidelines indicated earlier initiation of ART for PLHIV with TB and pregnant women. Both groups would now receive ART at a CD4 count of 350 cells/mm³ instead of at a CD4 count of 200. Patients with drug-resistant TB would receive ART irrespective of their CD4 count. The 2010 updated Guidelines for the Management of HIV in Children recommends that all HIV-infected children under the age of one should receive ART, irrespective of CD4 level (NDoH, 2010c). In March 2013, the treatment eligibility criteria were further adapted to enable all people with a CD4 count below 350 to start treatment as well as all TB patients and those with WHO stage 3 or 4 disease, both irrespective of CD4 count (NDoH, 2013d). The 2013 WHO guidelines recommend initiation of treatment in adults living with HIV when their CD4 cell count falls to 500 or less, with priority for those with CD4 count 350 or below.

The objectives in revising the guidelines were to:

- Ensure timely initiation of ARVs for treatment and prevention according to the Presidential mandates;
- Contribute to strengthening of the public and private health sectors' capacity to deliver high quality integrated health and wellness services;
- Implement cascade management and continuum of care;
- Minimise unnecessary drug toxicities;
- Improve clinical outcomes, promote adherence and improved retention of patients in care;
- Optimise the benefits of treatment as prevention by increasing coverage and annual HCT;
- Introduce Tenofovir-based FDC as a safer and more effective regimen that could improve adherence to treatment, care and support.

Other key changes and updates from the previous guidelines (2010) include:

- Roll out of FDC over one year using a phased approach. New patients (adults, adolescents and pregnant women eligible to start ART) are prioritised followed by all pregnant women needing triple therapy and breastfeeding mothers currently stable on an FDC compatible regimen.

- PLHIV to be initiated within seven days of HIV diagnosis includes children, pregnant and breastfeeding women, patients with CD4 <200/stage 4 and patients with co-morbidity.
- Integration into TB, Sexual and Reproductive Health (Family Planning (FP) and cervical screening) and nutrition programmes.

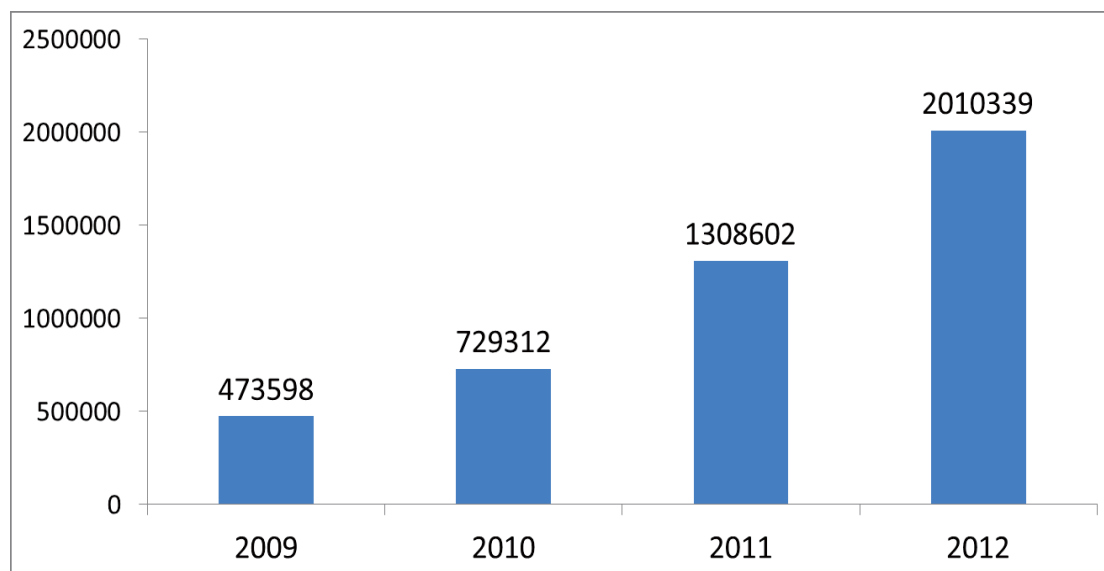
The rapid scale up of ART has been a signature achievement of the Department of Health in the last five years. Using data recently extracted from the TIER.net information system, Figure 6 shows that there has been four-fold increase in the number of people receiving ART in South Africa between 2009 and 2012. The 2012 Global AIDS Response Progress Report indicates a fairly similar coverage figure of 75.2% for 2011 (and 58.3% for 2010) (Republic of South Africa, 2012) and the UNAIDS Global Reports show coverage of 81% for adults and 63% for children for 2012 (UNAIDS, 2013).

During the HCT campaign, 429 530 people were initiated on ART (Pillay et al., 2012). According to the most recent data, 1.9 million people are currently on ART in May 2013 (NDoH, 2013c).

Transmitted drug resistance is found to be low (Gauteng) or low to moderate (KwaZulu-Natal) in surveys conducted annually from 2004 (Gauteng) and 2005 (KwaZulu-Natal) to 2010 (WHO, 2012b).

Coverage among children is low at 40%. ART use among HIV infected TB patients is still low (54%) and below the target (60%).

Figure 6: Number of PLHIV in SA receiving ART between 2009 and 2012



Source NDOH, 2013 (generated by 3 tier system)

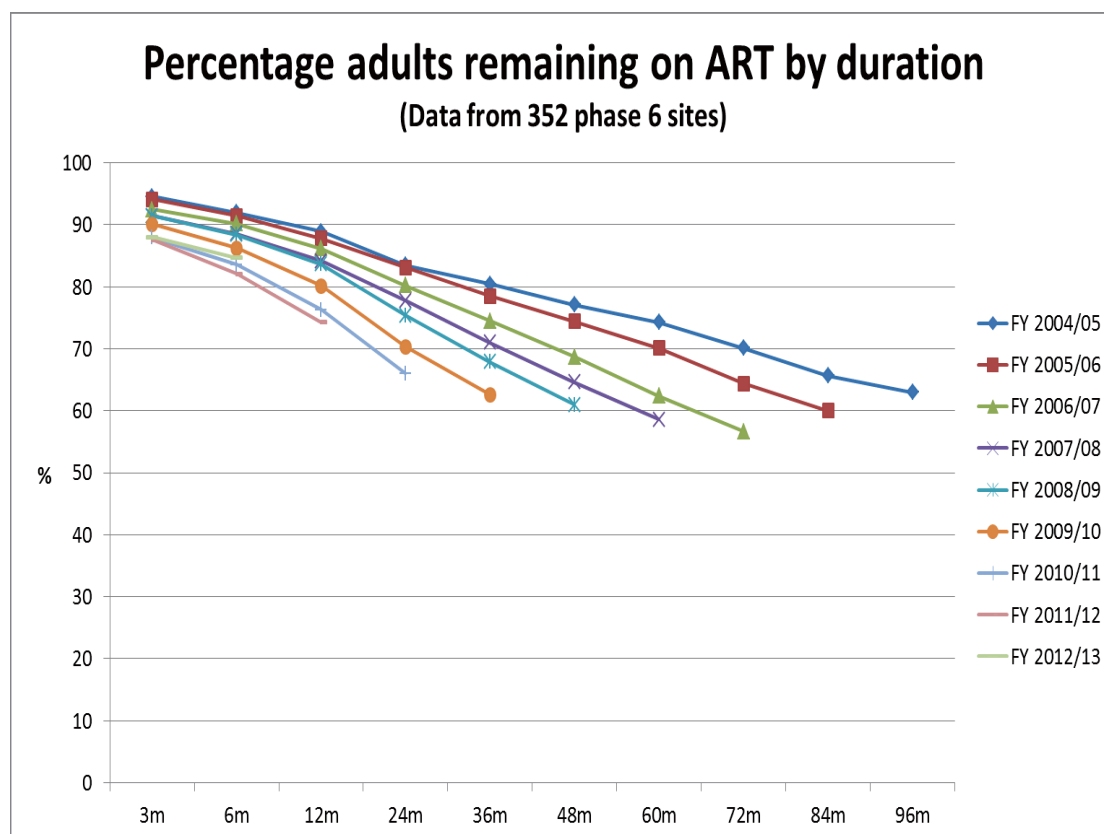
Strengths and achievements

- Rollout of the ART programme has been a major achievement for the country and seems to be contributing to a reduction in overall mortality.
- South Africa has achieved an extensive decentralisation and impressive scale up in ART coverage. The general perception is that the program is well managed.
- Stock outs of ART over the previous 12 months have been minimal.
- There is widespread coverage of nurses trained on NIMART and delivering ART, especially in adults.
- Some provinces have successfully implemented a system of clinical mentoring provided by roving specialist teams. This process is led mainly by development partners.
- In all provinces there has been rapid implementation of first-line FDC therapy for the prioritised groups.
- HIV care systems for those who are not yet eligible for ART (pre ART care) are in place in some districts.
- Functional integration of HIV, TB and PMTCT services is being successfully implemented, particularly at primary care level.
- All facilities use one programme monitoring system, the Tier.Net. Data capturers have been trained and most facilities are at level two of the system. Steps are in place to fast track ART initiation in patients with TB, in children and pregnant women.
- There is improved defaulter tracing, patient retention and care. Facilities have also developed systems to trace late follow-up visits and those patients lost to follow up. NGO partners and home-based carers who provide services, submit a monthly defaulter report. The implementation of TIER.Net and NIMART can potentially facilitate better quality of patient care and improved patient retention

Challenges and constraints

- There are high rates of patients defaulting from care. Long patient waiting times contribute to high defaulter rates and patient discomfort.

Figure 7: Adults remaining on ART



Source NDOH, 2013 (generated by 3 tier system)

- ART coverage among children and TB patients is still low. There is limited training and implementation of NIMART for paediatric ART. This might be linked to challenges with testing, initiation and follow-up of ART among children from 18 months onwards. Coverage of ART initiation in TB co-infected patients compared to non-TB patients is low.
- There is a need to improve tracking of people on ART who are lost to follow-up. Systems to provide patient outreach and trace patient who default on treatment are limited.
- Supportive supervision and mentoring systems for the NIMART programme are inadequate. Some provinces reported a lack of regular supervision by provincial, district and sub-district levels and a fragmented programme management approach at all levels. There are doubts as to the quality and regularity of supervision including by clinical supervisors in the facilities visited.
- Pharmacovigilance to monitor adverse events in patients on treatment is limited. There was lack of knowledge of how to report adverse drug reactions, incomplete and inadequate timely reporting of adverse events and no case reporting forms in some facilities.
- Provision of ART for adolescents presents a challenge, including issues around disclosure of HIV to adolescents. Nurses and health care workers are struggling in this area.

- There is limited service adaptation according to clinical need. Monthly ART supplies are dispensed for all patients with a consequent burden on services and as well as on patients.
- Viral load monitoring is inconsistent; when this is done, results are not always acted on.
- There is limited supply of IT equipment necessary to report and monitor the ART services.
- Access to TDF-based FDC remains limited to priority groups.
- There is inadequate utilisation of existing staff, including enrolled nurses.
- Retention of patients on treatment in both the TB and HIV programmes presents a challenge.
- Considerable numbers of males show reluctance to seek clinical services and are increasingly not retained in care.

6.3. Prevention of mother-to-child transmission

South Africa has developed an action framework entitled '*No child born with HIV by 2015 and improving the health and wellbeing of mothers, partners and babies in South Africa.*' The framework strives for integration at all levels to achieve coverage, access, quality and availability of services including PMTCT, MCH, integrated management of childhood illnesses (IMCI), expanded programme on immunisation (EPI), nutrition, HCT, ART, care and support, early childhood development, school health, youth services, child support and social services, HIV prevention and FP services. The framework was tailored to districts and aims to identify and deal with bottlenecks at operational management level to allow for continuous improvement. A small number of key MNCH indicators (15 indicator dashboard) are used to monitor integration and track progress on a quarterly basis through the data for action reports at national, provincial and district levels (NDOH 2011, Bhardwaj 2012).

On 1 April 2010, new clinical guidelines for PMTCT were implemented. These recommended that pregnant women should be initiated onto a PMTCT regimen from 14 weeks instead of 24 weeks, HAART be provided for all pregnant women with CD4 cell counts less than or equal to 350, and infant Nevirapine prophylaxis administered for six weeks (if the mother is on HAART or not breastfeeding) or throughout the breastfeeding period (NDoH, 2010d). These guidelines were updated in March 2013 and recommend a standardised triple-drug regimen to treat HIV-infected pregnant women (regardless of CD4 count) during pregnancy and breastfeeding, with continuation of ART after breastfeeding for women with CD4 counts less than 350 (NDoH, 2013f).

Since 2008, the country has rapidly scaled-up its PMTCT and EID programmes. By 2010, PMTCT was offered at 98% of health facilities (Republic of South Africa, 2012).

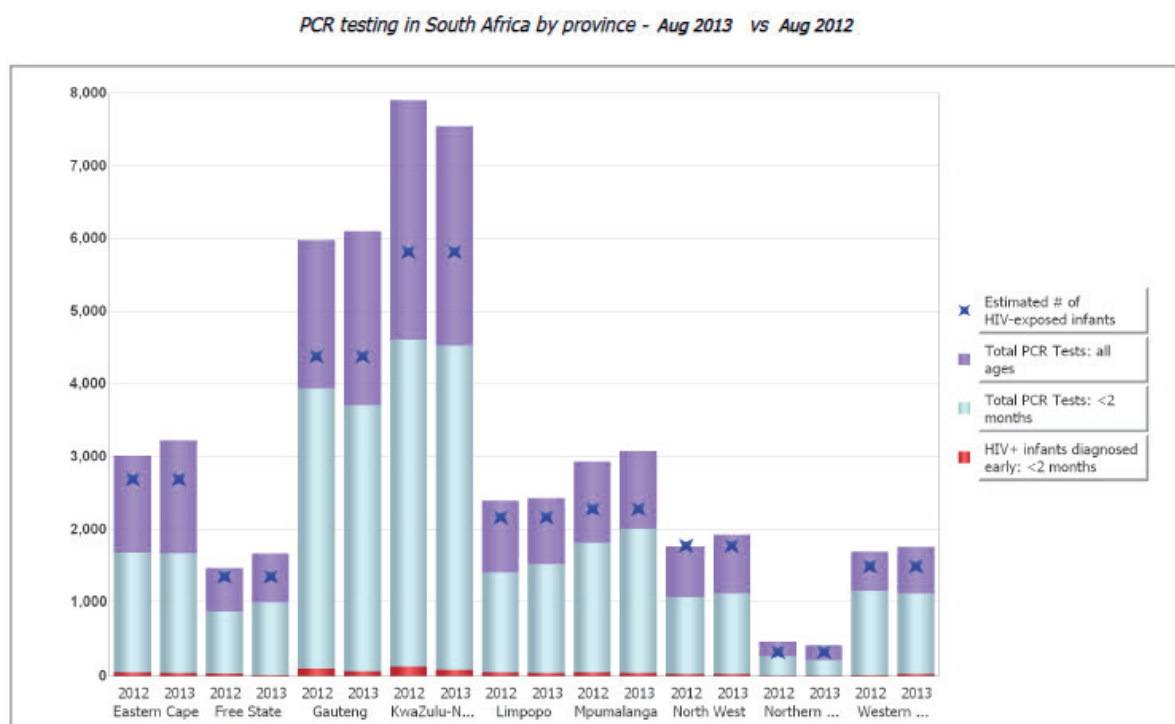
The percentage of HIV-positive pregnant women receiving ARVs to reduce the risk of MTCT was reported to be 83% in 2009, 87.3% in 2010 and 87.1% in 2011 (Republic of South Africa, 2012).

The PMTCT survey indicated that 91.7% of women in 2010 received ARV treatment or prophylaxis (Goga et al., 2012). The proportion of antenatal clients initiated on HAART is reported to be 64.1% in

2011/12 and 75.4% in 2011/12 according to manual calculations using the Health Data Advisory and Co-ordination Committee (HDACC) method (NDOH, 2012). A target of 100% was set for both ART and prophylaxis in the APP for 2011/12 (NDoH, 2011c).

The District Health Barometer 2011/12 indicates that HAART coverage for babies under 18 months was 54.4% nationally, reflecting a slight increase from 2010/11 (52.7%) versus a target of 100% (Massyn, 2013). Furthermore, a cross-sectional study of HIV-exposed infants aged 6–18 months attending a child immunisation clinic in KwaZulu-Natal found that one-third (33.0%) of HIV-exposed infants had not been initiated on co-trimoxazole preventative therapy (CPT) at all (Moodley, 2013). Figure 8 shows the breakdown by province of PCR testing, using recent data from TIER.net.

Figure 8: PCR testing in SA by province, August 2012 and 2013



The PMTCT programme aims to ensure:

- Primary prevention of HIV, especially among women of childbearing age.
- Integration of PMTCT interventions with basic antenatal care, sexual and reproductive health, Child and Adolescent Health, CCMT and TB services.
- Strengthening postnatal care for the mother-baby pair.
- Provision of an expanded package of PMTCT services, integrating PMTCT into the continuum of care and management of the woman and child from pregnancy through delivery, postnatal care and beyond. It details recommendations on feeding practices with the emphasis on exclusive breastfeeding.

Strengths and achievements

- PMTCT and HCT have performed well and there is a demonstrated reduction in MTCT and an increase in the number and proportion of people who know their HIV status. The mother to child transmission (MTCT) rate at six weeks has been significantly reduced to a national average of 2.7%. PMTCT targets have mostly been achieved.
- The roll out of the new 2013 guidelines has been successful. Increased coverage of ART for pregnant women has resulted in substantial reduction in PCR positivity of infants at six weeks. Some of the facilities visited reported no PCR positivity for more than one year.
- Integration with HIV/TB/MCH services is being implemented well. Pregnant women were systematically screened for TB and provided IPT in the facilities visited.
- Regarding monitoring and evaluation, a performance dashboard is utilized by some facilities for programme improvement and staffs are implementing the new national guidelines.

Challenges and constraints

- Data across the cascade are lacking, and the MTCT rate at 18 months is not known. Follow up post-partum of the mother-baby pair is sub-optimal and retention in care presents a challenge.
- Tools such as registers and tally sheets are not aligned with the new guidelines leading to difficulties in monitoring policy changes.
- There is a low couple year protection rate (CYPR) and a need for training and mentorship. All health care workers should be trained in FP which should be well integrated into the programme.
- There is a low baby ART initiation rate. NIMART-trained nurses often do not feel confident to initiate infants, highlighting a need for mentorship and strengthening of IMCI.
- Awareness and use of data for planning and quality improvement (QI) actions needs to be strengthened to meet targets at facility level.
- Although there is universal access to PCR, specimen rejection rates are unacceptably high in some facilities.
- There is a lack of focused programmes to reach adolescents and young people. Adolescent friendly services are limited because they are not well understood by health care workers.
- Late booking for antenatal care, and even presenting for the first time during labour, remains a problem. This is due to health care workers sending back women who present early, and cultural beliefs around not visiting facilities until 16 weeks.

Best practices

Innovative, locally oriented interventions were observed in some of the facilities visited. For example, a clinic rearranged the working time to allow a male professional nurse to work at the clinic after normal working hours, which dramatically increases the attendance of male clients. Similarly, involving mothers-in-law for addressing infant feeding and care also resulted in encouraging outcomes.

6.4. Medical male circumcision

The NSP 2012-2016 has a strong male circumcision component as part of the combination prevention package and MMC indicators are integrated into the M&E system for the HIV programme. MMC is provided as an integrated service at health facilities, at standalone high volume MMC sites and also at circumcision camps and using roving teams. Neonatal circumcision is not yet included in the programme. A communication and advocacy strategy has been developed and HCT campaigns and World AIDS Day commemoration events are used to drum up support for MMC. The communication strategy targets young people through schools and women through the mass media. A quality assurance plan is in place and adverse events are low (<3%).

The NSP cumulative target for voluntary MMC is 4.6 million by the end of 2016 but this is currently under review due to the UNAIDS recommendation that South Africa should be targeting 5 million people for MMC (SANAC, 2011; NDoH, 2013g). The latest UNAIDS report on the global AIDS epidemic (UNAIDS, 2013) indicates that South Africa had reached 20% of the 2015 target for MMC by the end of 2012.

Doctors, nurses and lay counsellors have been trained on MMC. The shortage of doctors has been identified as a challenge to expanding MMC. The Department of Health has a task shifting policy, but this has not yet been implemented for MMC services. The Department of Health has identified the following activities to increase the demand for, uptake and coverage of MMC services:

- Launch campaigns with other sectors to mobilize the target audience (the campaign with tertiary institutions was launched on 30 May 2013 in Tshwane);
- Launch of the 'summer magic campaign' to change the mind-set of winter season circumcisions;
- Establish more high volume sites;
- Mobilise more MMC service delivery partners to conduct circumcisions in underperforming provinces;
- Integrate medical male circumcision into traditional practice;
- Implement newer technologies such as the PrePex device to rapidly scale up implementation.

Strengths and achievements

- The uptake of MMC has increased: a cumulative number of 1 million boys and men have been circumcised since 2008.
- MMC has been integrated with other HIV prevention services including HCT.
- Demand creation strategies have been implemented with the target audience e.g. in schools and universities.
- Partner support has contributed to the success of the MMC programme.³
- Incorporation of a MSM programme and inclusion of life skills for adolescent boys in MMC services at some facilities has been extremely successful.

Challenges and constraints

- The current model for MMC is doctor-driven. The limited number of doctors available for the programme curtails the coverage and reach.
- Some traditional circumcisions are counted as MMC.
- The interface between the traditional and medical circumcision is a challenge. There was limited MMC in most of the facilities visited and its implementation is compounded by cultural and social taboos that deter young men from seeking care. However, encouraging efforts to open discussion and establish links with NGOs, traditional practitioners and the House of Traditional Leaders were observed in some facilities. Screening young men before traditional circumcision and training of traditional practitioners was observed in the facilities visited.

Best practices

There is collaboration with Traditional circumcisers in districts such as Ekurhuleni where a medical doctor who has been traditionally circumcised becomes part of the traditional circumcision team. Dark City and Ekurhuleni are integrating MMC and traditional leaders. MMC practitioners have developed strong relationships with the local traditional leaders whereby the MMC practitioners accompany the traditional leaders and initiates to the bush when circumcisions are being conducted. This ensures fewer casualties.

Some partnerships exist between the health and traditional sectors e.g. HCT and other screening for young men before they go for traditional MC.

³ Partners include: UN agencies; PEPFAR; Global Fund; Centre for HIV and AIDS Prevention Studies, Anova Health; Johns Hopkins Health and Education South Africa; Jhpiego; Maternal, Adolescent and Child Health; Right To Care; Southern African Clothing and Textile Workers' Union; Provincial Health and Research Unit; Centre for the AIDS Programme of Research in South Africa; Soul City; Aurum Institute; Foundation for Professional Development; Catholic Medical Mission Board; McCord Hospital; St Mary's Hospital; CHAPPS & MATCH.

Roving teams do community mobilisation, provide MMC and target school aged boys. At one PHC in uMzinyathi, the review team met with young high school-going teenage boys from a nearby high school mobilised for MMC who had come for HCT prior to MMC.

MMC, MSM and Men's Health are integrated at Chiawelo CHC, which houses an MSM clinic within the men's clinic. Men attending the clinic for MMC undergo HIV counselling and testing. Those identified as positive are initiated on treatment, enrolled in men's support groups and are able to continue returning to the men's clinic for follow-up and ART services rather than being referred to the ART clinic. Since 2011, 16 000 men have attended the clinic. On average in winter 200-250 MMCs are done a week, however in summer it is around 30. The clinic is supported by ANOVA and CHAPPS which contributes greatly to its success. Life skills for adolescent boys are also being incorporated into the programme and the NGO Brother's For Life has engaged with the programme. The men's clinic is serving all population groups, not just men from the surrounding community.

More than a million medical circumcisions have been conducted since the beginning of the scale-up for MMC. MMC is well integrated into other health services, including HCT and other health screening. There is a strategy for demand creation with implementation in schools and tertiary institutions. In some provinces/districts voluntary MMC roving teams have been set up to conduct community-based mobilisation and to perform the medical circumcision outside of the health facilities. There is some attempt to engage and work with the traditional sector in circumcision, e.g. medical doctors/nurses providing medical circumcision in the 'field' prior to traditional initiation rites.

6.5. Key populations

According to the NSP on HIV, STIs and TB 2012-2016 (SANAC, 2011) key populations that are most likely to be exposed to or to transmit HIV include young women between the ages of 15 and 24 years; people living close to national roads and in informal settlements; young people not attending school and girls who drop out of school before matriculating; people from low socio-economic groups; uncircumcised men; people with disabilities and mental disorders; sex workers and their clients; people who abuse alcohol and illegal substances; men who have sex with men and transgender individuals. Limited information is currently available on the HIV prevalence in these groups.

High transmission areas have been identified and a package of basic services including condom distribution and HCT is offered by the public health services. Evidence of discrimination towards individuals from key populations by health care workers (and language barriers) has been identified as a major barrier to the accessing of public health services. South African legal frameworks and policies support MSM and migrants, but legal reform on sex work is still needed and policy reform for interventions for PWID.

Guidelines exist for the recommended components of a package for PWIDs, prisoners, MSM, transgender people and for HIV prevention and sexually transmitted infections management among sex workers and populations in transition.

Integration of these into services and a comprehensive monitoring and evaluation framework that allows for the monitoring of interventions and progress is needed to ensure that the government takes ownership of interventions and the data pertaining to HIV responses (Tutu Foundation, 2011).

The NDOH has recently released guidelines for the control of HIV, TB and STIs in correctional institutions (NDOH 2013).

Certain populations are at higher risk of TB infection and re-infection, or progressing from TB infection to TB disease. The National Strategic Plan (NSP) on HIV, STIs and TB (2012-2016) (SANAC, 2011) considers the following groups as key populations for TB: household contacts of confirmed TB cases, including infants and young children; healthcare workers, mine workers, correctional services staff and inmates; children and adults living with HIV; diabetics and people who are malnourished; smokers, drug users and alcohol abusers; mobile, migrant and refugee populations; and people living and working in poorly ventilated and overcrowded environments, including those who live in informal settlements.

Strengths and achievements

- There is acknowledgment that sex workers, MSM and adolescent girls are key to the transmission of HIV.
- Operational guidelines on key populations and a sex worker strategy have been developed.
- A mapping exercise on sex workers has been conducted. Innovative programmes have started to address key populations, in particular sex workers.
- There is increasing openness and discussion on providing health services to MSM and commercial sex workers. Encouraging efforts of providing services for MSM and sex workers were observed in some of the facilities visited particularly in metropolitan areas.

Challenges and constraints

- Denial and stigma are barriers to access for health services. Interviewed community members mentioned that stigma and discrimination, particularly towards PLHIV, still prevail and suggested wider availability of home based HIV testing to mitigate this challenge.
- There are inadequate tailored clinical services to cater for the needs of key population groups. There are no targeted or specific interventions to reach these populations, and healthcare providers are not trained to respond to their specific needs.
- The persistently high HIV prevalence in the 15-24 age group, especially among girls, is a major worry and there appear to be no clear strategies to address this. Teenage pregnancy rates are high and there are no specific programmes for this high-risk population either in or out of school.
- Mobile and migrant populations are challenging to reach and retain in care.
- There are insufficient supplies such as condoms and lubricants for key populations.

Best practices

The NDOH has developed Operational Guidelines for the HIV, STIs and TB Programmes for Key Populations in South Africa which aim to assist health planners to develop and implement evidence informed programmes for MSM, sex workers, PWID and other drug users, transgender people, migrants and mobile populations and detained people. The guidelines are still to be approved and endorsed to better target prevention interventions to sex workers; a national sex workers population size estimation was recently concluded. This study helped to inform the development of a national sex workers programme which will be launched later in 2013.

Some small scale community outreach activities targeting key populations were observed which focused on peer education and distribution of condoms and lubricants.

6.6. Condom promotion and use

One of the most remarkable changes in HIV prevention behaviour in South Africa over the last 20 years has been the dramatic increase in condom use at first sex (JHHESA, 2012). From 1992 to 2012, condom use at first sex increased from 18% to 66%. The analysis of results of the communication survey also showed that self-reported HIV positive status is significantly and substantially lower among those who used a condom the first time they had sex (3.5% for males and 6.2% for females) compared to those that did not use a condom at first sex (13.6% for men and 18.5% for females).

The HSRC surveys also show statistically significant increases in condom use at last sex for both 15–24 and 25–49 years age groups from 2002 to 2008: males (aged 15-24 years) from 57.1% to 87.4%, females (aged 15-24 years) from 46.1% to 73.1%, males (aged 25-49 years) from 26.7% to 56.4% and females (aged 25-49 years) from 19.7% to 58.1% (Shisana et al., 2009).

Strengths and achievements

- No stock outs of male condoms were reported at the sites visited. However, it is not clear whether this is an achievement due to good planning and stock control or as a result of a lack of demand.
- Male condom distribution boxes were available in all the facilities. Female condoms were also available and prescribed, albeit on a smaller scale, in some of the visited facilities.

Challenges and constraints

- Declining condom use is also a source of concern, and targets for number of condoms distributed were not achieved.
- Lack of transportation for the distribution of condoms to secondary sites is a challenge.
- There is limited access to condoms for younger populations.
- Regarding stock control, condom control is poor as there are no stock cards to monitor the stocks and supplies of condoms. There is also lack of documentation on provision of condoms. The HCT Register is not used to document the distribution of condoms to HCT clients.

- There have been stock outs of female condoms in some provinces in the past 12 months. It is not clear whether this situation was due to high demand or lack of supplies.
- There is no comprehensive marketing strategy which includes branding and the use of different local languages.

Best Practice

The South African condom distribution programme has grown over the years. About 11 677 163 female condoms and 529 924 651 male condoms were distributed in 2012-13. On average, 22.2 male condoms were distributed per man 15 years and older in 2012-13. This has steadily increased from the average of 11.7 in 2007/08. However, it is still below the required amount to ensure consistent safer sexual acts. No stock outs of male condoms were reported. It is not known whether this is due to low demands or sufficient supplies/buffer stocks of male condoms. Stock-outs of female condoms were reported in some health facilities. It is also not known if it was due to high demand for female condoms or poor/insufficient supplies. A national condom distribution strategy has been developed but is still to be approved and endorsed. A national condom coordination forum made up of government, civil society and the private sector has been established.

6.7. TB treatment

In 2011 there were 4 203 facilities providing TB treatment in South Africa (WHO, 2012). According to the 2011/12 audit, 93% of PHC facilities offer TB treatment (HST, 2012). The treatment success rate in 2010 was reportedly 79% for new smear-positive (and/or culture positive), 37% for new smear-negative/extra-pulmonary and 35% for retreatment cases (WHO, 2012). According to the latest data, the treatment success rate in new smear-positive cases is 79% in 2011 (NDoH, 2013). The target in the NSP was $\geq 75\%$ by 2011 (NDoH, 2007), but the Global Plan to Stop TB gives a target of 90% by 2015 (WHO, 2012). Treatment success rates for new smear-positive cases increased (with spikes) since 1999; for retreatment cases it has slowly decreased since 2006 and for the new-smear negative cases since 2008. However, the sharp decrease in the treatment success rate of the latter two groups could be due to the fact that the data for 2010 were not complete. Most facilities provide community-based directly observed therapy (DOT) and patients are provided with monthly or weekly treatment supplies. National TB treatment guidelines were developed in 2009, algorithms and SOPs are utilised and patients are on the correct regimen. Patients return for care every 1-2 weeks in the intensive phase, and every 2-4 weeks in continuation phase.

Strengths and achievements

- Guidelines, algorithms and SOPs are widely available and followed in the majority of facilities visited. This results in rapid treatment initiation in patients who are diagnosed with TB.
- Treatment supervision is generally provided through community care givers who are either supported with a stipend by the Department of Health (DOH) or through non-governmental organisations (NGOs). Mobile clinics are used to access hard-to-reach communities such as in some farming areas.

- There are some efforts to enhance defaulter tracing through the use of community caregivers. Increasing cross-border communications and collaboration were also observed in some instances.
- Social protection and grants are provided to TB patients through social workers, facility boards and referrals by community health workers for housing, nutrition and grants.
- A migrant population tracer card has been developed in some facilities (e.g. Leratong Hospital) to improve the tracking of migrants.

Challenges and constraints

- There is no system to monitor CHWs or systematic supervision of community caregivers; most patients self-medicate; and funding for community DOT is not secure in the long-term.
- Defaulter tracing interventions are not widespread; there is no guidance for community caregivers on handling defaulters; no system for reporting or managing side-effects; seasonal workers are at higher risk of defaulting.
- The link and impact of the social grant schemes in improving treatment outcomes is unknown and there are some rumours of perverse incentives for the social grants for treatment outcome.
- The policy and process of assessing eligibility criteria for social support and grants are not standardised and patients reportedly face administrative barriers.
- Migration for job seeking to other districts and provinces hampers effective defaulter tracing

6.8. MDR-TB

MDR-TB treatment is initiated upon diagnosis at dedicated sites. There were a total of 2 500 MDR-TB beds in 45 MDR-TB units throughout the country during the Review period. National guidelines promoting the decentralisation of MDR-TB treatment were developed in 2011. In line with the policy, all patients who have negative smears but are TB culture positive may be started in ambulatory care if there is capacity for PHC-based or community-based care in the area. If not, MDR-TB patients are admitted for two to three months until they have two consecutive TB microscopy negative smears. Very sick MDR-TB and XDR-TB patients are admitted for up to six months until they TB culture convert.

Strengths and achievements

- Care for patients with MDR-TB has been decentralised throughout all levels. This includes community-based care in some districts.
- There is an increased number of sites initiating MDR-TB treatment, from 11 in 2009 to 45 in 2013.
- There is a well-established continuum of care for patients with MDR-TB, and health services are well organised to provide patient care from in-patient, OPD to community in several settings including palliative care.
- Mechanisms exist to ensure the availability of appropriate medication such as Bedaquiline for the treatment of pre-XDR-TB in all provinces.
- National guidelines and procedure are followed and standardised treatment regimens are provided for patients.
- Innovative interventions were observed in some of the provinces visited such as community based injection teams in KZN, EC, WC and nurse initiated MDR-TB treatment being piloted in KZN).

Challenges and constraints

- There are insufficient resources to ensure decentralisation of MDR-TB services country-wide, to treat pre/XDR cases (including limited drugs) and to ensure consistent nutritional support.
- Treatment outcomes are poor with high death rates and loss to follow up. A significant proportion of mortality occurs after discharge from hospital before the patient enters the PHC system. This will be a key challenge for achieving the 2016 target of treatment success rate of 60%.
- Management of XDR-TB treatment failures is poor due to diagnostic and therapeutic challenges.
- There is poor communication between facilities and the MDR-TB unit. Some facilities are not aware when the patients are discharged from the unit, and that they have to supervise oral treatment and record side effects. A disconnect exists between responsibility for contact tracing at local facilities and the impact of non-contact tracing at referral treatment centres.
- There is inadequate oversight of decentralised sites by the centre of excellence in line with the South African guidelines for decentralisation.

6.9. TB microscopy, culture and expansion of Gene-Xpert

Recent national policy dictates that all individuals with respiratory TB symptoms have a Gene-Xpert MTB/RIF test. Patients with positive Gene-Xpert tests are started on TB treatment and smear microscopy is done for monitoring purposes. Those who test positive for Rifampicin resistance are enrolled on MDR-TB investigation using special algorithms.

At present there are 248 microscopy sites, 16 TB culture laboratories, 10 first line drug (FLD) laboratories, 15 second line drug (SLD) laboratories, 8 line probe assay (LPA) labs, 9 Gx16, 20 Gx4 and 1Gx48 machines. By end of 2013, it is anticipated that all microscopy sites will be fully covered with Gene-Xpert-based diagnostic facilities.

The NHLS provides all public laboratory services such as roll out, training of laboratory personnel, quality control and supplies. The DoH is responsible for developing algorithms in coordination with NHLS, training of healthcare workers, recording and reporting,, as well as linkages with appropriate treatment.

Strengths and achievements

- There is impressive and effective deployment of Gene-Xpert nationally to replace microscopy as the first line of diagnosis of TB in the facilities visited.
- There is widespread availability of culture (including for HIV positives) and testing for susceptibility to first and second-line anti-TB drugs
- Test result turn-around times have improved in many of the facilities visited with an average of 48 hours.
- Diagnostic algorithms were developed on the use of Gene-Xpert and distributed.

Challenges and constraints

- Diagnostic algorithms are not always followed resulting in Gene-Xpert RIF positive patients remaining on treatment without confirmation using drug susceptibility testing.
- Not all forms or registers (paper and electronic) are yet designed or updated to capture the Gene-Xpert test results which generate confusion and incomplete registration.
- There was no systematic training provided for the roll out of the Gene-Xpert algorithm in many of the facilities visited which led to a widespread perception of complexity in implementing the algorithm. Misconceptions about it being 100% sensitive especially for PLHIV were also observed in some of the facilities visited including among physicians.
- LPA results may take longer time and the delivery of results can often be delayed due to lack of internet access.

6.10. TB screening and contact investigation

TB services are available in all primary health care clinics in South Africa, and ambulatory treatment is decentralized to the most peripheral facilities. The expansion of GeneXpert is gradually replacing sputum smear microscopy for diagnosis, further strengthening earlier case finding. A national contact investigation guideline has been developed. Diabetes prevalence is increasing in South Africa, and diabetes is a risk factor for TB.

TB in people with diabetes may constitute a significant proportion of the burden of TB, especially in the HIV-negative population. Moreover, diabetes can complicate the treatment of TB and is associated with higher TB death and relapse rates.

Strengths and achievements

- There are no consultation fees in the public sector and all diagnostic tests and treatment for TB are free of charge.
- TB screening in PLHIV and in people counselled and tested for HIV (HCT, pre-ART, ART, ANC) has been scaled up in most places and is generally well implemented.
- Some good practices of integrated TB screening within general outreach activities were reported to the Review Team, such as mobile teams to remote areas and community health workers and NGOs doing door-to-door health visits.

Challenges and constraints

- Long travelling distances in remote areas and long waiting times in PHC clinics are key barriers to access.
- The outreach TB detection services such as mobile health teams and door-to-door health visits by CHWs and NGOs are not applied systematically for those in need.
- TB screening practices and documentation in general OPDs and hospital wards are not standardised and systematic.
- Several different screening tools are used. Recording is inconsistent and data on the screening and diagnostic cascade are not sufficiently analysed and used to inform quality improvements and strategic planning.
- Where available locally, data on the screening cascade show that many facilities still have low coverage while others have a rather high proportion of OPD visits resulting in a TB test, up to about 5%. The national target range is 2-10% of OPD visits resulting in a test, but the scientific evidence behind this range is unclear. Moreover, there is no solid evidence-base for the 4-symptom screening algorithm in HIV-negative individuals.
- Early diagnosis of TB in people with diabetes is important and special attention should be paid to this risk group within the scope of intensified TB case detection in health facilities, focusing first on those already diagnosed and undergoing diabetes care.
- There is no clear policy and practice for TB screening in health care workers.
- Contact tracing is done only at PHC level and the extent of this varies between and within districts. Community or other active case finding is curtailed by human and financial resource constraints. Some districts have DOTS supporters, each of whom has a DOT supervisor supporter who ensures contact tracing in their area. Hospitals do not perform contact tracing.

- Contact investigation practices are sketchy and heterogeneous. The definition of an index case that should undergo contact investigation seems flexible. In some areas, only children under the age of five years are targeted for contact investigation.
- The IPT coverage and adherence in children under five is not consistently recorded and reported.
- The role and division of labour between health care workers in PHC facilities and community health workers for contact investigation is unclear. There is no standardised monitoring system to assess coverage and yield of contact investigation.

6.11. Paediatric TB

Nationally there is inadequate information about the burden of TB in children. Available evidence suggests that children contribute 15-20% of the total TB disease burden in South Africa, and experience approximately half the TB incidence documented in adults. A study from KwaZulu-Natal confirmed TB as a major cause of lung disease in children with community-acquired pneumonia not responding to first line antibiotics.

Strengths and achievements

- In some tertiary hospitals, health workers are trained and perform sputum induction and gastric aspirate for children younger than five years who cannot expectorate sputum.

Challenges and constraints

- The management of childhood TB is not fully integrated with HIV and other child health services such as the Expanded Programme on Immunisation (EPI) and Maternal and Child Health (MCH).
- TB screening and contact tracing activities are mostly focused on the under-fives leading to missed opportunities for identifying cases among older children in the household of index cases.
- The perception of TB diagnosis as a challenge and misplaced confidence on BCG vaccination is an additional barrier for investigation and early detection of TB among children.
- In many facilities visited, health workers expressed a lack of confidence in managing a child with HIV associated TB who is usually referred to specialists for further management, often with no mechanism of follow up.
- Similarly, few children are identified and managed, for example, three out of 156 at Nelson Mandela MDR facility which suggests missed opportunities to identify such cases in health facilities particularly at the lower level of the health system.
- There is a lack of availability of child friendly formulations (syrops) to treat MDR/XDR-TB.
- Diagnosis of paediatric TB and EP-TB is non-standardised and detailed data on the diagnostic process in children are lacking.

- There is no standardised reporting of IPT in children aged under-five, there is no standard reporting form and reporting using the electronic reporting register is variable.
- The true burden of the TB and HIV co-morbidity is not known. Understanding the true burden will contribute to more robust and targeted interventions.

6.12. TB infection control

Strengths and achievements

- Infection control including masks, ultraviolet lights and extractor vents and sections for non-converters and converters is adequate in special MDR clinics (), but there is limited infection control in general TB services.
- Infection control focal point persons have been appointed at facility level, but there are few infection committees or formal risk assessments done as per recommendations.
- Infection prevention and control focal points exist at most hospitals through a dedicated infection control officer. Functional infection control committees were observed in a few PHC facilities and administrative control is implemented at the hospital level.
- Infection, prevention and control (IPC) policies, SOPs, IPC plans and risk assessment tools generally exist and copies of the latest infection control guideline are available.
- Patient triage occurs and health workers have adequate knowledge on triage and fast-tracking patients with cough, although was not observed due to timing of facility visits.
- Collection of sputum samples is done in well-ventilated areas outside wards and consultation rooms.
- Surgical masks for patients and N95 masks for staff at MDR-TB sites are widely available.
- With a few exceptions, the review team found most wards and departments very clean.
- TB isolation wards exist.
- Pre-screening is performed for new employees, and at exit.
- Open door and open window policy is practiced widely.
- Structured safe biohazard disposal mechanisms are in place.
- Fan extractors in use where appropriate.
- Infection control is an integrated part of the QA programme and regular meetings of QA committee occurs with minutes available in one province.
- Most facilities visited have UVGI lights installed with a maintenance plan.

Challenges and constraints

- N95 masks are only available in some facilities. There is improper use of personal protection equipment despite availability, and no fit test was practiced for N95 personal respirators.
- The review team observed cases of facility waiting areas with poor infection control design.
- There were reported incidences of staff who have developed TB while working on hospital wards. Despite evidence of high infection among healthcare workers, there was largely no evidence of TB and HIV surveillance of them.
- Most settings had no facility infection control plan, and facility risk assessment is lacking.
- In some facilities infrastructure limitations were seen as a barrier to implementing effective infection control measures. Renovations to provide improved ventilation were difficult due to other departments being involved e.g. public works.
- The facility QA monitoring checklist used by some facilities for infection control does not adequately cover airborne infection control.
- Infection control practices are very heterogeneous across and within provinces. Effective triaging of potentially infectious TB cases, ventilation of waiting areas and consultation rooms, open window policies, and UV light use and maintenance varies considerably.
- In some instances there is over reliance on non-serviced/non-working UVG lights.
- Several cases of health care staff being diagnosed with TB were reported to the review team. However, there is no clear policy and practice for systematic TB screening in healthcare workers. Facilities apply different approaches, ranging from no regular screening to six-monthly screening, usually using the 4-symptom screening tool.

6.13. Community engagement in TB and HIV activities

Community caregivers have been trained to educate, screen and refer clients for TB investigation and treatment, and to encourage positive health seeking behaviours in their communities. They also assist with tracing of contacts and defaulters. Some of these community-based programmes report low defaulter rates among TB patients. NGOs are actively involved in supporting community caregivers and their activities.

Strengths and achievements

- Community caregivers and lay counsellors are recognised and paid by government in some provinces which increases their effectiveness and results in strong links between health facilities and members of the community particularly in non-metropolitan settings.
- Strong involvement of affected communities (e.g. PLHIV) and community members (e.g. as part of clinic committee) was observed in the visited facilities.
- The review team observed a good practice of support and capacity building to local community organisations through NGOs in some of the provinces and facilities visited.
- There is a widespread practice of referring contacts and family and other community members with presumptive TB or HIV in the non-metropolitan facilities visited.

- Traditional health practitioners were trained to use the 4-symptom screening tool and refer clients with presumptive TB to PHC facilities in some districts.

Challenges and constraints

- There is a lack of documentation and reporting of community based TB, HIV and PMTCT/MCH activities, including home based HIV testing to inform performance of programme, despite wide practice that was observed.
- Most of the outreach activities are not regular in the visited facilities and often follow seasonal events (e.g. World TB day, HIV/AIDS campaign).
- Many facilities have missed opportunities of integrating TB and HIV community based activities.

Engaging all health care providers

Strengths and achievements

- Public hospitals and some private hospitals are collaborating with and referring to PHC facilities for ambulatory TB treatment.
- Health facilities under various mining companies are engaged in national TB control efforts to a varied extent (these were excluded from this review). No other national public-private efforts were reported. A small-scale pilot of engaging private general practitioners is on-going in Port Elizabeth which is yet to be evaluated.

Challenges and constraints

- There is no follow up of the extent to which patients discharged from hospital reach the intended facility, and no tracing is done of those lost to follow up.
- There is no formal system to record, track and feedback after referral for continued treatment after discharge from hospitals or general practitioners.
- An unknown proportion of TB cases are screened, diagnosed and treated by private hospitals and private general practitioners.
- Private providers, as for all providers, are obliged to notify diagnosed TB cases. The review team observed such notification in some private hospitals. However, the completeness, management and follow up of this notification information is unclear.
- The notification data is sent to the epidemiology unit of the Department of Health and this data is not cross checked and integrated with the regular TB reporting system that captures data from the standard TB reporting and recording system.

Best practices

A facility in KwaZulu-Natal has a “War Room” where all sectors (including health) meet as a community to discuss all problems and challenges facing the community.

6.14. TB and HIV collaborative activities

Strengths and achievements

- There has been significant scale up of collaborative TB/HIV activities in South Africa facilitated by the expansion of HIV testing and the decentralisation of ART through NIMART. The National Strategic Plan on HIV, STIs and TB (2012-16) and the National Department of Health Strategic Plan (2010/11-2012/13) include specific TB/HIV activities that also contributed to this scale-up.
- National guidelines are revised and state that ART should be provided to all TB patients living with HIV regardless of CD4 cell count. TB patients living with HIV are also among the priority groups for prescription of first line fixed dose combinations of ART.
- Rapid scale up of Gene-Xpert MTB/RIF as the first line TB diagnosis for all individuals with presumptive TB regardless of HIV status with improved turnaround time in most facilities visited has contributed to the quality of diagnosis of TB among people living with HIV. Culture is used effectively in most settings, and LPA is also available with increased usage.
- HIV testing for TB patients is systematically offered and symptoms-based TB screening is conducted among PLHIV including pregnant women.
- IPT scale up has been encouraging in all the provinces with varied degrees of coverage and completion of treatment rates. IPT completion for six months was reported between 10-96% in the visited facilities where data were analysed by the Review Teams. Some facilities have a good practice of IPT initiation and completion including among pregnant women. For example, in one community health centre visited in Eastern Cape there were 175 ANC clients registered between January-June 2013 of which 46 were HIV positive (26%). All pregnant women living with HIV were screened for TB out of which six presented with suspected symptoms of TB and were investigated for TB. Two (4% of all HIV positive pregnant women) were diagnosed with TB. Thirty three of the remaining HIV positive pregnant women were provided IPT.
- ART was being initiated in most facilities immediately after the first two weeks of TB treatment. This was further facilitated by shortened patient preparation before ART.
- In general, basic TB infection control measures are implemented in many facilities visited, although there is still room for improvement.

Challenges and constraints

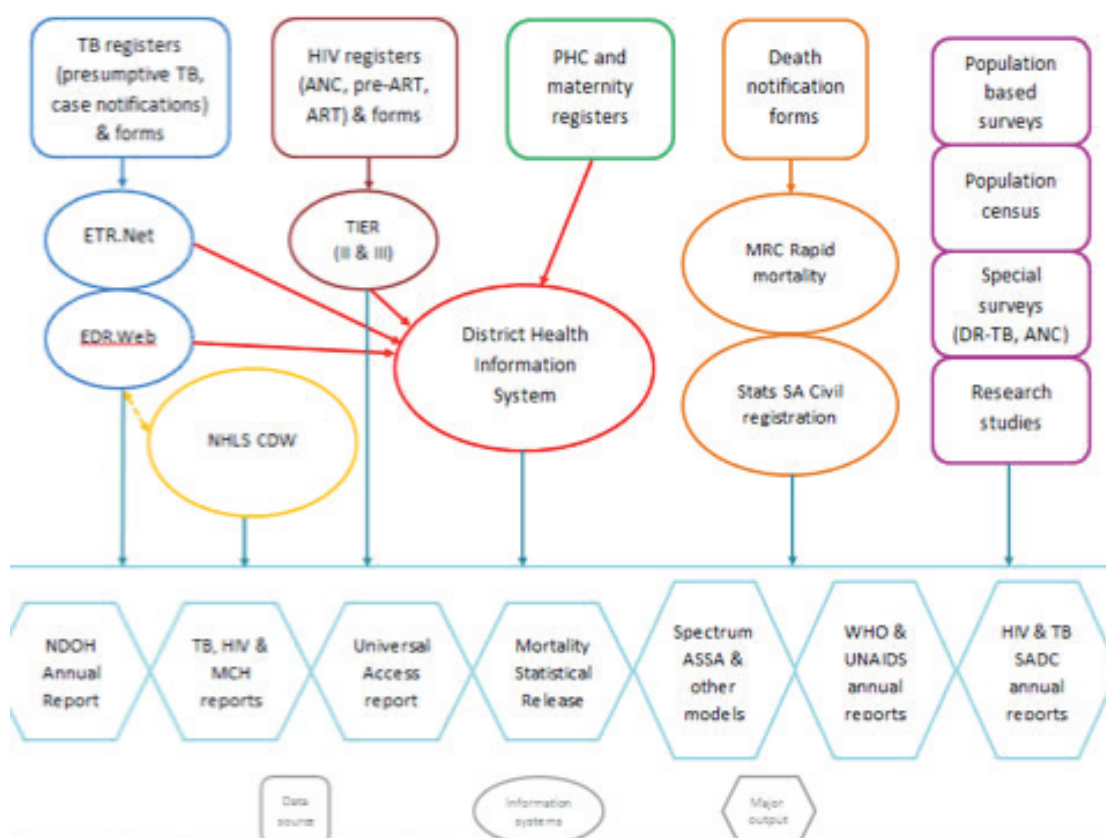
- Poor infection control measures in some of the facilities are of concern including closed or partially opened windows despite warm weather conditions, non-functioning UV lights, ineffective use of fans, and architectural and building limitations of the facilities.
- Regardless of the improved delivery of services at PHC level, challenges are still experienced by patients, particularly by those living in metropolitan areas, as TB and HIV treatment and care may be provided separately even in the same facility particularly in hospitals. In some instances, patients are retained at hospitals for ART but referred to PHC for TB services.
- Proper documentation of the IPT scale up is seriously hampered by the lack of standard registers in all provinces. The NDOH has not yet published any register that provides the opportunity of follow up of patients for six months of IPT. The existing IPT register used in some provinces was developed by University Research Corporation. IPT scale-up is also negatively influenced by some academics and opinion leaders particularly in Western Cape Province.
- A consistent gap was observed in integrating IPT TB prevention and TB screening and diagnosis in pre-ART care.
- Tier.net (for ART clients) and ETR.net (for registered TB clients) are both patient based, but are not harmonised and integrated. While Tier.net is implemented at facility level, ETR.net is implemented at sub-district level.
- Criteria for NIMART training excludes staff nurses who mostly serve as primary TB focal points and this was often mentioned as a key barrier for prompt initiation of ART among TB patients including children.

7. Cross-cutting support systems

7.1. Monitoring, reporting and information systems

The responsibility of M&E for TB lies with the Research Information Monitoring, Evaluation & Surveillance Directorate of the National TB Control & Management Cluster. The HIV Directorate is responsible for M&E of HIV. Key resource documents on M&E and the health information system (HIS) include: the Framework for M&E of the NSP, guidelines, training material, national plans and SOPs. Figure 9 shows the various data sources, information system and key information products relating to HIV, TB and PMTCT in South Africa.

Figure 9: HIV and TB data sources and information systems in South Africa



A validated registry exists in terms of accuracy of mortality capture and timeliness in reporting. Trends mirror those by MRC Global Burden of Disease Unit’s “Rapid mortality surveillance”.

Strengths and achievements

- There is high-level commitment by the Department of Health to capture and use data at all levels.
- Processes to link all relevant data warehouses with a unique identifier have been initiated.

- Government has begun to reconcile and streamline data monitoring tools.
- HIV and TB information systems (ETR.Net, EDR.Web, TIER.Net) have been rolled out nationally. Substantial progress has been made towards reliable reporting of cohort data through TIER.Net.
- National coverage with the DHIS aggregate based information system is well established. The PMTCT dashboard of indicators is institutionalised.
- Data sources with national coverage (e.g. vital registration and the HSRC HIV surveys) are available. These provide plausible evidence to support the reduction in mortality due to programmatic efforts.
- Standardised recording and reporting data forms are consistently used throughout the network of facilities.
- Increased numbers of data capturers have been employed.
- The Office of Core Standards has been established with SOPs as part of the National Core Standards for facility-based services.

Challenges and constraints

Data linkages are weak all along the critical path in the management of patients (screening, diagnosis, treatment).

- Without the systematic use of a unique identifier, systems cannot interact. Paper and electronic systems do not have common triangulation fixed points such as date of birth, name checker and identity number.
- There are parallel information systems that do not inter-operate.
- There are multiple registers.

Critical review and the use of programmatic data to evaluate and guide planning and patient management is not done systematically at all levels although some evidence of it was found in some provinces.

There are problems in quality of surveillance and programmatic data, such as incomplete or erroneously completed forms. Data capture is not done in real-time, mainly due to:

- Insufficient number of data capturers and information managers;
- Multiple registers;
- Incomplete data collection. For example TB screening is ticked in HCT registers but is incompletely recorded in clinical folders and/or pre-ART registers.

The responsibility for HCT and condom distribution usually lies with the professional nurse, but lay counsellors fill in the respective registers and supervision of completion of the registers is suboptimal. The level of completion of and accuracy in registers is variable. This is better in PHC facilities than in hospital wards.

An unknown number of HIV and TB patients are treated outside the established network of public health facilities, and are hence not reported to the NDOH, although some pilot work on public-private mix is currently on-going. Absence of a common reporting system for non-public sector ART programmes means provinces do not have a complete picture of ART coverage. Patient records, supervisory tools and QA and QI are not yet fully integrated

There is weak data management, IT infrastructure and support. Facilities may wait for a month before non-functioning computers and printers are fixed. Little anti-virus software is installed and updated at facility level.

There is a lack of knowledge on indicators and target setting at all levels. Facility based target setting and tracking was not observed in the facilities visited.

An operational research agenda is lacking at all levels.

There are no nationally representative population-based surveys for TB.

Collection of information for people screened for TB is not standardised.

The pre-ART component is not fully utilised in TIER.Net, which in most facilities does not include the management of pre-ART patients.

There is no coordinated surveillance and monitoring system to minimise the emergence of HIV drug resistance.

7.2. Procurement and supply of drugs, diagnostics and health products

The procurement and supply system is managed by the DoH, with technical input from relevant partners. In most of the provinces, there is an effective supply chain management system from depot to health facilities. Both push and pull systems are used in supplying different health commodities to health facilities.

The presence of a dedicated pharmaceutical procurement and supply system and government funding of procurement of drugs and commodities are important steps to ensure sustainability.

The procurement and supply management system faces human resource capacity challenges, and is mostly managed by pharmacist assistants and professional nurses because of the limited number of Pharmacists.

In addition, skills transfer from partners to the Department of Health is challenged by the limited number of technical staff available for training in Supply Chain management at different levels of the healthcare delivery systems.

Some provinces carry a disproportionate level of risk in contracting suppliers, and non-tender compliance penalties carry more risk for provincial depots than appropriate. The standard practice is that short stock delivery of pallet loads of drugs should be notified in 48 hours, but this is not routinely checked due to shortages of human resources. The system also does not have corresponding penalties for poor practice of suppliers, which may be a disincentive for suppliers to provide good services in the final few months of a tender if it is unlikely to be re-awarded. Tender Board may need to address these inequalities.

In some of the provinces, security of stock control is suboptimal. The review panel found stock open boxes and loose tablet bottles, and though this is being addressed, currently there is no routine check except ad hoc staff searches.

Supply chain management from depot to facilities is effective, but cost effectiveness measures could improve. Capacity for better management using electronic stock management systems is hampered by the lack of a full complement of staff.

Strengths and achievements

- A strong evidence-based approach to drug procurement exists, which is triangulated using all available data sources including programmatic data.
- The Medicines Control Council (MCC) has transformed into the South African Pharmaceutical and Health Products Regulatory Authority (SAPHRA) with clear prioritisation for HIV and TB drugs.
- A dedicated pharmaceutical procurement and supply system exists.
- There is sustainable government funding of drugs and commodities.
- No significant stock-outs of tracer drugs were reported during the last 12 months. In a few facilities in two provinces, there were reports of ARV shortages within the last 12 months. To rectify this, in two facilities in Limpopo province patients were scheduled to come more frequently to pick up ARV drugs in order to cope with temporary shortages.

Challenges and constraints

- Quantification of the market size for TB drugs and commodities is weak.
- Manufacturing limitations are hindering the rollout of FDCs. Monthly dispensing of ARVs takes up space in the pharmacy and/or stock room and increases health workers' workload at the facility level.

- Programmatic pharmacovigilance is under-developed.
- Engagement with and clear understanding of the role and size of the private sector is not optimal.

7.3. Laboratory services

Public laboratory services are managed by the National Health Laboratory Services (NHLS), a parastatal institution under the Department of Health. The NHLS provides laboratory services, conducts national disease surveillance, provides training and manages a large communicable disease database.

The laboratory services are fully integrated at the health facilities. These services are provided through a network of laboratories distributed across the country at provincial, district and sub-district hospitals as well as in teaching hospitals. Samples are collected from every facility once a day, at a minimum. In principle, results are available in the system the following day. Depending on the capacity of health facilities the results could be accessed online, by SMS printers, by mobile phones and they are also hand delivered on paper. The lab system is currently well capacitated and respondents do not see much role for point-of-care diagnostics at this stage.

The lab services could strengthen integration between clinical and lab data to minimise the unnecessary use of diagnostics, such as smears being done despite 100% availability of Gene-Xpert. The introduction of a unique identifier will be important in integrating the different data systems. This could be implemented in a phased manner.

Strengths and achievements

- Over the last few years, the provision of laboratory services in South Africa has seen tremendous advances both in terms of coverage and quality and this has been acknowledged by managers at provincial, district and facility levels.
- Overall, there are well-functioning laboratory support services with efficient couriers and improved turnaround time across all three programme areas.
- Where infrastructure allows, there is online access to laboratory test results related to TB, HIV and PMTCT.
- Some provinces have appointed dedicated laboratory services coordinators to liaise between Department of Health and NHLS.
- Monthly district and provincial lab reports on PCR testing coverage and the development of a PCR dashboard to track positive PCR tests for infants at facility level are major achievements for the PMTCT programme.

Challenges and constraints

- Most facilities visited lacked a routine quality assurance programme, especially for HIV rapid testing.
- There is limited clarity around the Gene-Xpert testing algorithm around routine sampling and testing.
- In terms of test cost accruals versus cost per test, payments to NHLS are still problematic at national level which may impact the efficiency of services eventually.
- The NHLS appears to have a policy of staff posts being frozen or lost if they leave the service.
- Laboratory services were generally good, but SMS printers were not always functional and turnaround time was problematic for some facilities.

7.4. Human Resources

Human resources for health are a challenge for the sustained scale up of HIV, TB and PMTCT services. Besides the absolute shortage facing the country, health workers tend to concentrate in urban areas. Despite these challenges, South Africa has implemented innovative strategies for the effective use of existing scarce health workers and to expand the pool of health workers providing essential services related to HIV and TB programmes.

Strengths and achievements

- Nurses are trained to initiate and manage ART, including in children.
- Lay counsellors and data capturers are used and funded by government.
- There are patient tracers and community based volunteers.
- Collaboration with developmental partners and using them to temporarily fill Department of Health programme integration gaps reflects a health systems strengthening (HSS) approach.

Challenges and constraints

- There is a shortage of healthcare providers and high patient volumes in several facilities. This in turn may compromise the quality of services and lead to high staff turnover and burnout. Some staff members expressed that NIMART is being forced on them. Significant staff absenteeism was observed in some of the facilities visited due to study and sick leave.
- Limited pharmacy staff increases patient waiting times. Patients often have to queue in three places to collect different drugs: TB (TB room), ART (NIMART room) and CPT from the pharmacy contributing to long patient waiting times at health facilities. The low numbers of pharmacists and pharmacist assistants aggravates the situation.

- Workload norms vary significantly and there did not appear to be any rationale to the allocation or distribution of tasks among health workers by programme or facility. Facilities with similar headcount numbers are staffed with different categories and numbers of staff. District and provincial managers monitor workload trends and staffing vacancies and facility managers move staff around to cover gaps and vacancies on an ad hoc basis.
- PHC re-engineering has impacted on existing work streams. The implementation of PHC outreach teams has revealed an unmet need for services within the community. These patients are then referred to facilities which create a demand on already overstretched facilities. Further consideration is required to manage the impact of integration of services through PHC reengineering.
- In some settings, new cadres of health workers such as “lay counsellors”, peer support groups and community based volunteers heavily rely on external assistance. Partner supported staff who are not yet absorbed by government were observed in some of the visited facilities. This is a risk in the event of declining external support.
- Staffing appointment delays create false economies/savings. Staffing appointment delays are likely to reach a critical point soon due to existing vacancies at all sites visited. There is a lack of responsive managerial measures to address staffing issues at all levels and an inability to fill vacant posts in a timely manner. Motivation and recruitment processes can take up to 9 – 12 months. PHC reengineering has drawn staff away and while this appears to be identifying unmet community needs, it has created expectations and pressures as health facilities are struggling to provide the services.

7.5. Stigma in healthcare settings

There is a general perception that HIV related stigma in healthcare settings is improving with the scale up of HIV testing and treatment services. South Africa is also in the process of developing operational guidance for reaching key populations and expanding services to these populations.

Strengths and achievements

- HCT campaigns and PICT contribute to increased awareness and de-stigmatisation of HIV & TB.
- Civil societies and communities play a major role in mitigating stigma.
- Community dialogues and community radio health talks/slots are used optimally.

Challenges and constraints

- There is a general perception among civil society and communities that stigma in among health workers towards PLHIV is still a challenge.

- Particularly in hospitals visited, HIV care and ART services tend to be delivered in physically separate settings such as park homes and focal points from other health services. Patients interviewed do not prefer such separate service delivery points. There is limited strategic focus and targeting to reach key populations. This is particularly accentuated in rural healthcare settings and programmes.
- Due to stigma, clinics treat many patients who do not come from the facility catchment area.

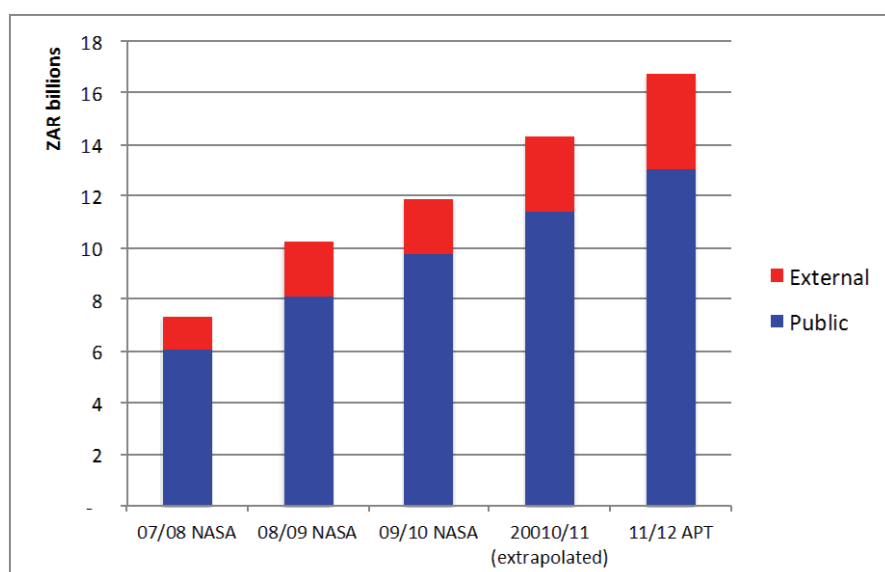
8. Financing

8.1. Overall financing for HIV, TB and PMTCT services

Domestic investment in HIV more than doubled from 2007/2008 to 2011/2012 from ZAR 3.5 billion to ZAR 7.9 billion, and the Government of South Africa now finances about 85% of the entire HIV response. There is very strong and visible political commitment and leadership towards an effective HIV response. PEPFAR has been an important source of investment in the HIV/AIDS programme. However, the U.S. Government it is now scaling down the level of support and shifting from supporting direct service delivery to capacity building including health systems strengthening and health service innovation.

The public expenditure on health (R129 billion) has stabilized around 11% of the total budget of South Africa. The total public expenditures on HIV/AIDS and TB were around R13 billion in 2011/2012. Public sources contributed around 75.3% of the total HIV/AIDS and TB funds, while external and private sources contributed 16.4% and 8.3% respectively. South Africa spent on average approximately R260 per person on HIV and TB in 2009/10.

Figure 10: External and public spending on HIV/AIDS and TB in South Africa (ZAR billions, 2007/08-2011/12)



Sources: NASA (2011), APT (2013). Note that the figure excludes the private contributions captured by the NASA, for comparability with the APT.

KwaZulu-Natal has the highest HIV and TB public spending of R1.5 billion. North West (NW), KwaZulu-Natal (KZN), Mpumalanga (MP) and Northern Cape (NC) were spending the largest shares of their health allocation on HIV and TB (9%, 8.4%, 6.9% and 6.9% respectively).

8.2. Allocations

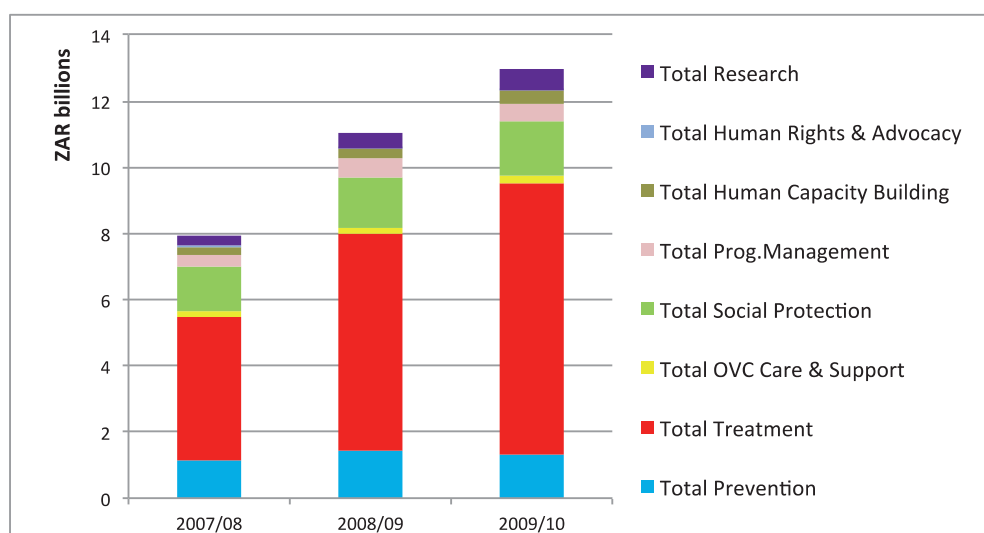
Table 3 below shows allocations of public and external resources to HIV, TB and STI programmes according to the four Strategic Objectives of the NSP (2012-2016).

Table 3: Spending on HIV/AIDS by funding source for the NSP thematic areas (ZAR millions, 2011/12)

NSP Category	Rand Million	
	Government	DP
SO 3: Health and Wellness	7037	1 449
SO 2: HIV/STI/TB prevention	3795	1 478
SO 5: Strategic enablers	1828	362
SO 1: Addressing SS barriers to HIV/STI/TB prevention	362	425
SO 4: Protection of human rights/justice.	0	0.8
Total	13 022	3 715

In 2011/2012, the largest share of public spending on HIV/AIDS was on the ART program (R5.4 billion), followed by Orphans and Vulnerable Children (OVC) (R3.6 billion), HCT (R418 million), PMTCT (R260 million), condoms (R237 million) and MMC (R153 million). Regarding future allocations, the South African budgetary documentation provides intended allocations for a three-year period; the planned allocations for HIV/AIDS will grow to R11.7 billion in 2013/2014 to R15.3 billion in 2015/2016.

Figure 11: HIV/AIDS and TB activities undertaken in South Africa – all sources (ZAR million, 2007/08 – 2009/10)



8.3. Costs

Comparing the unit costs of different implementers raises challenges of incomparable units of measurement and differing service delivery models, contexts, ingredients and methods of assessment.

The table below captures the unit costs for ART (adult and paediatric through various delivery models), MDR-TB and diagnostic tests. The National ART Cost Model and its outcomes are discussed below.

Table 4: ART and TB Unit costs generated through primary research by HE2RO

Item	Year	Sample size	Unit cost	per
Adult ART (<i>outpatient, op</i>)				
- Nurse managed ART	2011	712	\$492	pt yr
- Doctor managed ART	2011	2136	\$551	pt yr
- Second-line ART	2010	293	\$1037	pt yr
Adult ART (<i>inpatient, ip</i>)	2010	448	\$131	pt yr
Adult HIV (ip)	2013	3906	\$72 (pre-ART), \$117 (ART)	pt yr
Paediatric ART (op)	2012	288	\$678 - 830 (yr 1), \$717 - 782 (yr 2)	pt yr
Paediatric HIV (ip) (<i>first year of life only</i>)	2010	516	\$346 (early tx), \$1237 (deferred), \$2523 (routine)	pt yr
Adult - MDR-TB (ip)	2013	121	\$17,164	pt
Diagnostic tests				
- Xpert MTB/Rif	2012		\$18 (R166)	test
- CD4 POC (Pima)	2012		\$24	test

Source: Meer-Rath, G. (2013a). HE2RO, WITS Health Consortium. The 2012 NDOH ARV prices are included in Appendix IV.

The average cost for the first-line ART regimen per person per annum has dramatically decreased from R2,530 in 2008 to R956 in 2013 (for the drugs component alone), which has resulted in a total saving of almost 40% overall from the 2008 tender to the 2013 tender.

8.4. Value for money

In considering 'value for money' which relates to the optimal combination of financial inputs and the programmatic outputs and outcomes, the APT report found that while there were significant funding gaps in the ART, HCT and TB programmes, the impact of HCT generally saved around twice the number of lives for a given amount of money. The impact of TB testing and diagnosis on average saved even more lives. However, it must be acknowledged that a direct causal relationship between HCT and life-years saved can be tenuous at best, and while the impact of expanded access to treatment has been proven to have the most impact, it is also more expensive.

Based on benchmarking of spending in provinces, the APT report suggested reallocating money mainly to TB programmes and HCT in most provinces and to MMC in Eastern Cape, Limpopo and North-West Province.

It also proposed a general shift of resources towards provinces that are under-spending in certain programmatic areas, from provinces that appear to have a surplus of money. Unfortunately the literature does not seem to indicate the ideal mix of spending on the cost components in the delivery of ART services. It is therefore difficult to draw conclusions as to whether the provincial DOHs are spending the most efficiently on ART. The National ART Costing Model developed by Meyer-Rath might provide the proportional mix of actual spending data collected over several years at the public health facilities where HE2RO undertakes its research. The range in ART unit costs from R2 550 per patient per annum in Gauteng, to R5 000 in the Northern Cape implies some possible inefficiencies.

Analysis of previous year's expenditure against the business plans' intended priorities, targets and budgets would shed more light into increasing 'value for money' in spending on HIV/AIDS and TB in South Africa. A study from KZN comparing the cost-effectiveness of scaling up spending on various prevention and treatment interventions found that condom promotion and distribution was the most cost-effective in reducing infections. ART was also effective in this regard but was more costly per infection averted. Interestingly, the authors found minimal opportunities for cost savings within the KZN prevention activities because of the province's commitment to scaling up these activities to 80% or more. Thus they encouraged the continued scaling up of the effective prevention activities for enhanced longer-term management and cost-savings.

9. Recommendations

South Africa has documented major progress since the last TB and HIV programme reviews in 2009. The implementation of the key recommendations, particularly in decentralising HIV and MDR-TB treatment services, expanding HIV prevention and TB case finding as well as scaling up collaborative TB/HIV activities, have resulted in the impressive scale up and coverage of the interventions. It is important that these successes are sustained in the coming years. The Review recommends that additional measures be taken to maximise the impact of the programmes, increase effectiveness of services and optimise existing national capacity and opportunities in the response to the HIV and TB epidemics.

National efforts should focus on improving the quality of prevention, diagnosis, treatment and care services; targeting population groups that are underserved; strengthening and harmonising programme management, implementation and supervision; as well as addressing critical problems around documenting, monitoring and evaluating programme activities.

The following are the specific recommendations of the 2013 Joint TB, HIV and PMTCT Programmes Review that the South African Department of Health needs to implement as a matter of priority to address the key challenges and constraints identified and to deliver sustained, integrated and high quality HIV, TB and PMTCT services.

A. Address the quality of prevention, diagnosis, treatment and care services

1. Promote the routine use of cascade analysis at all levels to identify intervention points to reduce losses and enforce long-term retention in care of both PLHIV and TB patients.

- Enhance adherence through increasing patient education and expanding linkages with farms and mines, and focus on addressing perverse incentives for treatment outcome while communicating with patients.
- Strengthen defaulter tracing among TB patients and PLHIV through training, developing national SOPs and enhancing the capacity of the community care givers.
- Develop clear protocols for the management of chronic patients (i.e. stable on ART), including consideration of adherence clubs and other out-of-clinic models of ART delivery.
- Promote the local analysis of access barriers to services at district and sub-district level and develop appropriate enabler packages, such as further decentralisation of services; travel support; fast-tracking at clinic visits; nutritional support; assist
- ance to access with existing general social protection schemes.
- Strengthen existing information systems to provide longitudinal cascade analyses along the continuum of care to ensure long-term retention and viral load suppression and ensure appropriate interventions.
- Develop user-friendly job aids to implement effective monitoring of adverse events at primary care level by nurses.

- Provide focused supervision to improve ART initiation for patients including TB patients and reinforce the use of viral load algorithms for detection of treatment failure.
- Systematically link up all pregnant women regardless of HIV status, including through two way referral systems, from the ANC to the postnatal continuum of care through to the first 1000 days of life focusing on quality of care. This should include tools for monitoring, mentoring and the package for mother and baby (well mother and baby clinic).
- Improve the mother-infant longitudinal follow up system, particularly after the end of the six weeks postpartum check-up throughout the period of transmission risk and final infant HIV diagnosis, with linkage to lifelong care for the mother and fast-tracking ART initiation in HIV-infected children.
- Ensure that support, supervision and mentoring systems emphasise longitudinal tracking of identified HIV infected patients during pre-ART and ART.
- Reinforce government led support, supervision and clinical mentorship systems for HIV management, especially complicated cases, with support from partners.

2. Introduce, strengthen and routinize systematic screening and diagnosis of TB including in maternal, neonatal and child health, community based outreach services and among health workers.

- Promote systematic TB screening at the point of triage/vital sign registration in all general OPDs, and for in-patients in all hospital wards, with special attention to high-risk patients such as people with diabetes.
- Develop SOPs and tools that ensure the implementation of the TB contact investigation guidelines including standardised practices and clear division of roles among health workers.
- Develop a national policy and SOPs for systematic TB screening and surveillance in health care workers.
- Combine TB screening with health information on TB which emphasises the reason for screening and common TB symptoms and risk factors during relevant encounters (e.g. HCT, ANC, OPD, contact investigation).

3. Optimize the full use of Gene-Xpert MTB/RIF for the diagnosis of drug susceptible and drug resistant TB.

- Expedite the deployment of Gene-Xpert in facilities where it is still not in place and fully implement laboratory reflex testing of MDR-TB patients for second-line drug resistance.
- Change the algorithm of using Gene-Xpert to ensure the collection of two sputum specimens to shorten the time needed for a follow up of acid fast bacilli and culture for HIV positive patients and MDR suspects.

4. Urgently implement a quality assurance programme for HIV testing at all levels including for lay counsellors.

- Establish routine quality control testing to assess the HIV test kits at the point of use.
- Establish routine supportive supervision and proficiency testing to assess the actual test performance, particularly by counsellors.
- All counsellors should be provided with appropriate supplies including SOPs, job aids, timers, nametags and a uniform such as a vest to identify them as counsellors and improve their professional appearance.
- Designate facility management teams to supervise counsellors working in their sites.

B. Scale up services for specific priority population groups

5. Further strengthen capacity for delivery of integrated services at PHC and community level with particular focus on improving access to HIV and TB services for children, adolescents and key populations.

- Strengthen pre-ART care to ensure timely initiation of ART using pre-ART guidelines/ algorithms/job aids for adults, adolescents and children (especially from 18 months of age) with proper transition of adolescents to adult care.
- Expedite the implementation of *Operational Guidelines for HIV, STIs and TB Programmes for Key Populations in South Africa* in all provinces with particular and urgent focus on high transmission areas.
- Establish tailored clinical services for key populations provided in convenient locations and times with well-trained sensitised staff.
- Review the MMC policy with task shifting from doctors to nurses and on promoting neonatal MMC.
- Intensify HIV testing of children, couples and men through integrating and promoting community mobilisation activities.
- Reinforce the decentralisation and integration of ART and TB treatment in all facilities particularly in hospitals of metropolitan areas.
- Reinforce task shifting and decentralisation for children.
- Develop a strategy for managing XDR-TB treatment failures that protects public health and ensures high standards of end-of-life care.
- Ensure dissemination and implementation of updated guidelines for paediatric TB including data collection tools for age disaggregated reporting of TB in children.
- Improve the community level response to integrated PMTCT/MCH focusing on early booking, FP, access to care behaviours, postnatal follow up, exclusive breastfeeding and reviewing the roles/tasks of CHWs.
- Strengthen routine links with the Integrated School Health Programme and school health teams to improve information sharing on HIV prevention, HCT, FP and adolescent pregnancy.

- Strengthen and support adherence counselling, retention in care, and community tracing and follow up, including for migrant/cross-border populations.
- Create a targeted condom distribution and marketing strategy which includes re-branding and campaigns.

C. Strengthen and harmonise programme management, implementation and supervision

6. Integrate programme management (supervision, training, planning and resource mobilisation) particularly at district and sub-district levels across TB, HIV and MCH programmes using context specific mechanisms.

- Expand NIMART training to all nurses, including enrolled nurses, and ensure equitable distribution of NIMART trained nurses in all facilities.
- Roll out tailored and integrated in-service training schemes for nurses, community care givers and lay counsellors particularly to address locally identified gaps on the quality of integrated TB and HIV services including defaulter tracing and referral, linkages to pre-ART and ART care and documentation.
- Adapt pre-service curricula for nurses to include paediatric HIV and TB care in order to improve capacity in diagnosing and initiating treatment.
- Strengthen and explore innovative ways of social protection and support for all TB patients and PLHIV, including assessment and referral for alcohol and substance abuse treatment and provision of transport or nutritional support.
- Strengthen all types of infection control measures in all facilities including conducting fit testing for N95 masks as per existing policy.
- Systematically involve the Department of Public Works and hospital architects in the design of new or rehabilitated facilities to ensure infection control needs are addressed.
- Conduct infection control training, risk assessment and develop plans to optimise infection control measures in all facilities.
- Update the QA checklist to adequately cover airborne infection control.

7. Strengthen supply chain performance and management at all levels (national, province and district).

- Establish a system for regular and meticulous review of supply chain systems at all levels and develop and implement data-driven action plans.
- Ensure the availability of male and female condoms and lubricants, especially at high transmission areas.

8. Assure rational and full staffing capacity in facilities consistent with workload particularly at PHC level.

- Implement spaced appointments and multi-month dispensing for stable PLHIV.
- Establish a flexible mechanism of swapping and reassigning health workers within and across facilities based on demand and workload.

D. Strengthen monitoring, evaluation and documentation

9. Introduce unique patient identifiers that will assist the interoperability and linkage of the existing electronic systems.

- Urgently develop a national policy and plan (with earmarked funding) to expedite and roll out the introduction of unique identifiers.

10. Ensure correct recording of Gene-Xpert MTB/RIF results at PHC levels.

- Urgently revise paper-based TB registers to enable documentation of Gene-Xpert results and roll out nationwide.

11. Establish and strengthen the standardised documentation and reporting of community-based activities in TB, HIV and MCH/PMTCT services.

- Develop minimum standard indicators to measure community-based activities through a national consultation and promote phased implementation and documentation nationwide.

12. Integrate and improve existing patient records, registers and information systems with particular emphasis of the following key actions:

- Introduce ETR.net to all facilities already implementing TIER.net.
- Integrate IPT initiation, follow up and completion into pre-ART and ART registers.
- Systematically link all pregnant women regardless of HIV status from ANC to the end of postnatal care (“1000 days”).
- Include couple year protection rate as a ‘dashboard’ indicator.

10. Executive summary of district team findings: Stocktaking workshops 7-8 October 2013: TB, HIV and PMTCT programmes

This is a summary report of the two day session, *Stocktaking Review Workshop*, which took place in six of the nine provinces to discuss and share the current status of the HIV/ART, TB and EMTCT/MCH programmes on 7 – 8 October 2013. These workshops were linked to the national integrated review of HIV/TB/PMTCT programmes conducted in all provinces the week before.

The workshops kicked off with the feedback from the provincial review team on findings during their site visits. Following that, all districts were provided with performance information in the above programmatic areas. Then district level discussions took place to identify key priority issues in each programme, to identify the bottlenecks and provide action plans to address the gap in service delivery within the framework of the NSP, the MDG as well as PHC re-engineering and the National Health Insurance (NHI).

The district groups were provided with tools to identify and record their service provision challenges and best practices in the above programme areas and how to address them. The challenges and plans for actions with time frames and responsible person/s were defined and these were presented during the workshop.

Apart from district managers, supporting partners and programme managers, a management team from each province was also present at the workshop to give overarching inputs and feedback from the provincial perspective.

KEY ISSUES:

The cross cutting challenges of the thematic areas in all provinces can be summarised as follows:

- PMTCT:
 - Late booking of mothers for ANC
 - Poor testing of babies at 6 weeks and at 18 months
 - Low HAART initiation for HIV infected pregnant mothers
 - Lack of integration of health services, especially FP with the other programmes and services
- TB:
 - Recording and reporting not up to standard, the data is not reliable and registers are not filled in according to requirements
 - TB/HIV integration not optimal - poor IPT uptake and recording in registers, low ART initiation for co-infected patients
 - Case finding for TB must be increased with a focus on paediatric case finding
 - Non-adherence to treatment leading to a high defaulter rate in most provinces (>5%), the inconsistent support of patients on treatment (e.g. DOT, other support groups)
 - Limited capacity to manage DR and XDR-TB

- HIV:
 - Low HCT/PICT uptake; conversely, targets set by Province/National not realistic, thus targets cannot be met
 - Low ART initiation for children
 - Retention in care is a problem, often ascribed to ineffective tracking systems especially in mobile populations
 - Condom distribution sub-optimal

- Cross-cutting issues were:
 - A constant drug supply is still raised as being problematic (however this was not necessarily identified by the various provinces as an issue as it was felt that it was out of the scope of the workshops)
 - Guidelines (both new and revised) are not followed correctly resulting in low ART initiation in pregnant mothers and TB patients
 - Universal TB screening not done, including chronic patients
 - Data management and feedback should be prioritised to inform both current services and planning
 - Multiple registers (both electronic as well as paper-based) leads to unnecessary duplication of information
 - Infection control poorly implemented throughout

ACTION PLANS:

Action plans were identified for each priority area and allocated to a specific person for accountability and within an identified time frame. Action plans focused on:

- Improved integration of services including women's health (FP), TB/HIV and EPI/IMCI programmes
- Better utilisation of WBOTS as well as DOT supporters and implementation of chronic clubs to strengthen linkages and improve referrals up and down the treatment cascade for a comprehensive service delivery package
- The adherence to guidelines and training of all HCWs to ensure that all are applying updated guidelines correctly; this will address issues relating to poor HAART initiation both in adults and children
- Recording and reporting issues to be addressed first by a request for trained data capturers in all facilities, then regular feedback and analysis of data to inform policy decisions, the alignment and streamlining of registers to eliminate duplication of information
- Implement universal TB screening by ensuring that screening tools are available at all counselling and observation stations
- Infection control issues to be addressed by training and appointment of infection control champions for each facility, regular supervision of progress
- Supply chain issues to be addressed to ensure regular drug as well as other pharmaceutical supplies; up-scaling the training of pharmacy assistants to provide all clinics with at least one

Overall this was a positive experience for all participants as this was the first time that all managers in the three programme areas and provincial managers came together, identified issues, and discussed cross-cutting problems to find solutions.

Overall Workshop Priorities per Province

PMTCT Priority Issues	Action Plans	Gau	EC	Lim	NC	FS	Mp
Early ANC bookings (<20 weeks)	Utilise WBOTS, community dialogues and mobilisation, ensure daily access to ANC services and provide ANC services at all service points	✓	✓	✓	✓	✓	✓
Paediatric testing both at 6 weeks and 18 months	Strengthen linkages and referrals from delivery centres to peripheral clinics or service points by utilising WBOTS, ensure PICT integration with EPI and IMCI programmes, improve consent for paediatric testing by targeted workshops	✓	✓	✓	✓	✓	✓
ART initiation for pregnant women	Adherence to guidelines and training in guidelines and NIMART expansion	✓	✓	✓	✓	✓	✓
Family planning not integrated into women's health services	Ensure integration in women's health services at all service points	✓		✓	✓	✓	✓

TB Priority Issues	Action Plans	Gau	EC	Lim	NC	FS	Mp
Recording and reporting not up to standard, data unreliable and registers not filled in according to requirements	Training in recording and reporting, appointment of data capturers and training them to fill in data correctly, ensure data validation and verification process is in place	✓		✓	✓	✓	✓
TB/HIV integration not optimal – poor IPT uptake and recording, low ART initiation for co-infected patients, services are not integrated at all service points	Increase awareness and training on integration, train on guidelines and ART/NIMART/IPT	✓	✓	✓	✓	✓	✓
Case finding for TB, with a focus on paediatric case finding must be increased	Implement universal screening at all facilities in observation room and ensure that this data is fed back to the clinical services for follow-up and testing, ensure that IMCI programme is fully implemented	✓	✓	✓	✓	✓	✓
Improve adherence; defaulter rate is too high in most provinces (>5%)	Utilize WBOTS and treatment supporters, chronic clubs and DOT supporters to ensure better adherence to treatment and care	✓	✓			✓	✓
a) Gene-Xpert coverage must be improved (<i>Free State only</i>) and updated TB stationery needed in all b) Limited capacity to manage DR TB	In the pipeline – all TB stationery to be upgraded to incorporate Gene-Xpert as from 2014; workshops and training for decentralized DR TB	a)✓ b)✓	a)✓	a)✓	a)✓	a)✓	a)✓

HIV Priority Issues	Action Plans	Gau	EC	Lim	NC	FS	Mp
HCT targets not set by districts but by provinces, thus targets cannot be reached	Targets to be set by districts, policy and implementation of HCT must be revisited as there is a problem with remuneration of counselors of NGOs, and information from NGOs does not get incorporated into district stats	✓	✓	✓	✓	✓	✓
PAEDS initiation low	Utilize WBOTS and improve training and mentoring especially on PAEDS initiation guidelines	✓	✓	✓	✓	✓	✓
Retention in care is a problem	WBOTS to be utilized, chronic clubs, treatment supporters, IACT programme and other support systems to be better utilised and incorporated in care programmes	✓		✓		✓	
Condom distribution not optimal	Utilise private companies to assist e.g. Coca Cola delivery system				✓	✓	✓
Increase voluntary MMC	Community engagement and involvement, utilise WBOTS and other support groups to educate, use all opportunities in patients accessing health services for any reason		✓		✓	✓	✓

Cross-Cutting Priority Issues	Action Plans	Gau	EC	Lim	NC	FS	Mp
Drugs not always available	Improve supply chain management by decentralization, direct deliveries already in the pipeline, upscale training of pharmacy assistants, ensure supply of medical commodities, (identified in most provinces but not incorporated in report)			✓			
Guidelines not implemented correctly especially in PMTCT but also in TB etc.	Workshops and training on guidelines (especially the updated guidelines and algorithms) to increase ART initiation especially in children	✓	✓			✓	✓
Universal TB screening not done for all patients including chronic patients e.g. diabetics, hypertensive, etc.	Implement screening tool at all facilities to increase case finding	✓	✓			✓	✓
Data management and feedback to utilise data for feedback and to improve services	Appoint trained data capturers	✓		✓		✓	✓
Multiple registers	Reduce and streamline	✓				✓	✓
Infection control poorly implemented	Appoint infection control champions at clinics to ensure infection control practices are implemented	✓	✓	✓	✓	✓	✓

11. List of reviewers

NATIONAL	
Banda Mazuwa - WHO-HQ	Kumar Smita - USAID-SA
Dlamini S'celo - NDOH-TB	Lesole Lerato - CDC-SA
Igumbor Ehi - CDC-SA	Sismanidis Babis - WHO-HQ
Kimmerling Michael - The Gates Foundation	Stoneburner Rand - The Global Fund
Komatsu Ryuichi - The Global Fund	
EASTERN CAPE	
Farirai Thato - CDC	Kebede Senait - WHO
Getahun Haileyesus - WHO	Molapo Tshepo - NDOH
Rogers Roxana - USAID	Verschueren Eric - UNAIDS
Smit Molly - South2South	Ximiya Pumlan - NDOH
Claessens Lore - UKZN	Plus several members of the Provincial DOH, district, sub-district health offices
Deyde Varough - CDC	
FREE STATE	
Boleme Sam – FS DOH	Bloom Amy - USAID
Lephokwane Likeledi – Right to Care	Coetzee Marietjie – FS DOH
Maringa Hilda – CDC	Goldstone Cheryl - WHO
Molefe Garvon - NDOH	Makombe Robert - URC
Mothlake Seipati – FS DOH	Molefi Seithati – Right to Care
Vilakazi-Nhlapo Kgomotso - NDOH	Robinson Precious - NDOH
Warne Tom - CDC	van der Merwe Sonja – FS DOH
Bellis Kevin – Aurum Institute	
GAUTENG	
Babatunde Sanni - WHO	Odido Helen - UNAIDS
Boshielo Carol - Howard University	Pazvakavambwa Brian - WHO
Cheyip Mireille - CDC	Phokojo Mokgadi - NDOH
Kiwango Eva - UNAIDS	Schnippel Kate - HE2RO
Littlefield Joan - USAID	Stanley Robert - USAID
Maotoe Thapelo - USAID	Treger Latasha - UNICEF
Naicker Mani - WamTech / NDOH	
KWAZULU-NATAL	
Amedov Sevim - USAID	Malaza - KZN DoH
Chinemo Osiah - FH1360	Mkhize R. - KZN DoH
Martinson Neil - PHRU	Mlangeni N. - KZN DoH
Mukudu Hillary	Ngozo J.N - KZN DoH
Tevan Roger - HST	Ntilivamunda Augustin - WHO RSA
Zulu Nedson - CDC	Phungula P.P - KZN DoH
Gabela N. - KZN DoH	Sigwebela Ntombi - URC
MakapelaDavid - UNDOC	Singh Vindi - CDC
Dlamini Linda - HAST	Lyan Olga – UNAIDS
Gaboutloeloe Dabea - IOM	Nkhoma Wilfred - WHO AFRO

Gottlieb Amy - USAID	Ntsele Patricia - NDoH
Mamdoo Puni - South to South	Nzuza Mercury - KZN DoH
Somnath Nevilla - NDoH	van der Walt Martie - MRC
LIMPOPO	
Baloyi Gavaza - DOH, LP	Makwela Molatelo – DOH, NC
Bhardwaj Sanjana – INICEF, South Africa	Mnisi Lissie – USAID
Brown Jenni – HISP	Mpe Refiloe – DOH, NC
Hassan Mohamed – IOM, South Africa	Negussie Eyerusalem – WHO, Geneva
Kalombo David – WHO consultant	Ramoshai Mokibelo – DOH, South Africa
Mabunda Tiyani – DOH, NC	Senong Calvin – DOH, NC
Mahabane Matshediso- HST, South Africa	Thamaga Sam - USAID
MPUMALANGA	
Chawane Joyce - MP DOH	Mahlasela Lusanda - JHHESA
Dladla Cindy - URC	Mashego Johanna - MP DOH
Makhanya Sibusiso - MP DOH	Mashele Busi - MP DOH)
Masuku Mumsy - MP DOH	Matshusa Rachel - MP DOH
Mdluli Duduzile - DOH	Mbambo Duduzile - MP DOH
Ndlovu Nelisiwe - URC	Ndjeka Nobert - NDOH
Newman Owiredu Morkor - WHO	Ndwandwe Cebile - HST
Nkosi Elphas - MP DOH	Neluheni Tshiwela - WHO Consultant
Sedile Botlhale - MP DOH	Sekgabi Bella - MP DOH
Shingange Rebecca - MP DOH	Swart Kenau - CDC-SA
	Zwandor Alti - UNAIDS
NORTHERN CAPE	
Croskell Sarah - CDC	Katz Sheila – DOH, NC
Ford Nathan - WHO, Geneva	Leburu Itumeleng – PATH
Motlhaudi Masego - DOH, NC	Letebejane Queen – DOH, NC
Samson Kefas - WHO, IST	Magadla Bulelwa – HST
Techana Sibongile - CHAI, South Africa	Ngoma Kondwani – UNICEF, South Africa
Johannes van Schalkwyk – HST, South Africa	Nondanyana Thandiswa – DOH, NC
Zondo Phumzile – M2M, South Africa	Peterse Annatjie – CDC
	Richards Pamela – DOH, NC
NORTH WEST PROVINCE	
Dewa Ozius - USAID, South Africa	Charalambous Salome - Aurum, South Africa
Lonnroth Knut - WHO, Geneva	Ketlhapile Mpefe - WRHI, South Africa
Marum Elizabeth - CDC, Zambia	Oladoyinbo Samuel - CDC, South Africa
Mogashoa Mary - CDC, South Africa	Wells William - USAID, Washington
WESTERN CAPE	
Cavanaugh Clint – USAID	Jaramillo Renesto – WHO
Coggin Bill – PEPFAR OGAC	Madisha Lebo – NDOH
Gqwaru Nellie – USAID	Matsoso Limenako – URC
Gwarinda Shungu – Mothers2Mothers	Msimang Busisiwe – WHO SA
Jacobs Donna – URC	Mvusi Lindiwe – NDOH
Seshoka Letta - NDOH	

12. Districts and facilities visited

DISTRICT	FACILITY
EASTERN CAPE	
Chris Hani	Cofimvaba Hospital Nomzama CHC Asketon PHC Beestekraal PHC
Nelson Mandela Metro	Jose Pearson Hospital Dora Nginza Hospital Kwazakhele CHC Mabandla-Uitenhage PHC Max Madlingozi PHC
FREE STATE	
Lejweleputswa	Kgotsong Clinic Thabong Clinic Chief Albert Luthuli Clinic Bongani Hospital Kopano MDR-TB Unit NHLS
Mangaung	Bainsvlei Clinic Bloemspruit Clinic Heidedal CHC Pelonomi Hospital Universitas Hospital NHLS Medical Depot
GAUTENG	
West Rand	Mohlakeng CHC Carletonville Clinic Fochville Clinic West Rand Regional Depot Leratong Hospital Leratong Lab Leratong Pharmacy
Tshwane Health District	Tshwane District Hospital Depot Dark City CHC Kekanastad Clinic Adelaide Tambo Clinic
Johannesburg Health District	Sizwe Hospital Chiawelo CHC-Soweto Diepsloot South Clinic Mayibuye Clinic Chris Hani Baragwanath Lab
eThekweni	Kina KwaMashu B Clinic Isipingo Clinic – CHC

	Inanda Newtown CHC – Hospital Prince Mshiyeni Hospital
uMgungundlovu	Edendale Hospital Imbalenhle CHC Mbuthisweni PHC Bambanani PHC
uMkhanyakude	Mseleni District Hospital Manguzi District Hospital Manguzi/Maputa Gateway/MDR Ezwenelisha PHC
uMzinyathi	CJM Hospital Dundee Hospital CDC Mhlangana PHC Greytown M3 MDR-TB Hospital Outreach with COSH MDR-TB Injection Team
LIMPOPO	
Vhembe	District management Tshidzilini Hospital Bungeni CHC Tshisaulu Clinic Madombidzha Clinic
Waterberg	District management Warmbaths Hospital Thabaleshoba CHC Vaalwater Clinic Phagameng Clinic
MPUMALANGA	
Nkangala District	Witbank TB Specialised Hospital Hendrina Clinic Thubelihle CHC Mmametlhake CHC
Gert Sibande District	Sesifuba TB Ward (at Ermelo Hospital) Bethal Hospital Bethal Town Clinic Dundonald CHC
NORTHERN CAPE	
Z. F Magcau	Kakamas PHC Keimoes CHC Keimoes PHC ZF Mgcau District review Gordonia Hospital
JT Gaitswe	Tswaragano Hospital Campden CHC Kuruman Clinic Kathu Clinic
NORTH WEST	
Bojanala	JS Tabane Hospital

	Peglerae Hospital (private) Letlhabile CHC Bakubung Clinic Lesetlheng Clinic
Ngaka Modiri Molemo	Gelukspan Hospital Tswelelopele CHC Lichtenburg Clinic Itsoseng Clinic
WESTERN CAPE	
Cape Town Metro	Brooklyn Chest TB Hospital Green Point CHC Vanguard CHC Retreat CHC Central medicines depot ARV depot Chronic Dispensing Unit
Cape Winelands	Green Point NHLS Paarl NHLS Brewelskloof TB Hospital; Worcester CDC; TC Newman CDC; Klapmuts Clinic.

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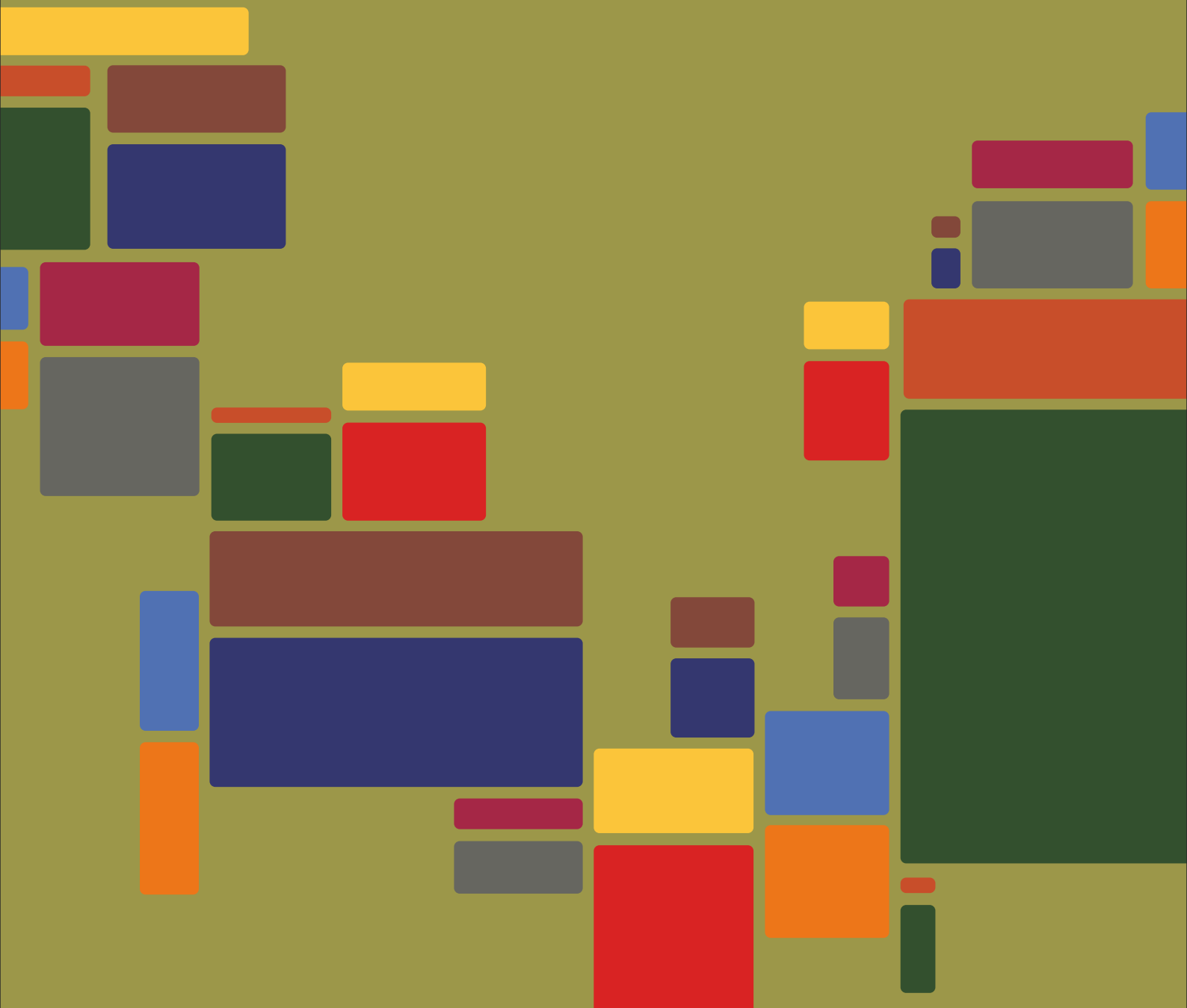
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