# HIV Nursing matters

A publication of the Southern African HIV Clinicians Society

TB in pregnancy within the context of HIV

Training for the fight against TB

Streamlining primary care for HIV/TB co-infected patients through service integration

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# inside

*HIV Nursing matters*
Focus on HIV and TB



## On the cover

- TB in pregnancy
- Training for the fight against TB
- Streamlining primary care for HIV/TB co-infected patients through service integration


THE MONUMENT TRUST

# guest editorial

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**Reach, treat, cure everyone**

World TB Day, 24 March, commemorates the day, 133 years ago, when Dr Robert Koch announced that he had isolated and identified the cause of tuberculosis (TB) – the tubercle bacillus. International Nurses Day, 12 May, celebrates Florence Nightingale's birth, while recognising the contributions that nurses make to society. *Nurses: A Force for Change: Care Effective, Cost Effective* is the theme for 2015.

In 2013 there were an estimated 9 million new cases of TB globally, yet only 2 in 3 individuals with the disease were diagnosed and initiated on treatment. If this curable, airborne disease is ever to be eliminated, considerable efforts must be made to overcome the gap in diagnosis, access to treatment, and accurate recording and reporting. Indeed nurses will be the force for change to eliminate TB in South Africa (SA) and beyond.

The most vulnerable populations are often missed: the very poor, children, miners, prisoners, migrants, and people living with HIV (PLHIV). Population-specific, targeted interventions are essential to find and treat those individuals who are most at risk. In this quarterly issue of *HIV Nursing Matters*, the focus is TB, with excellent articles that not only outline the challenges of TB control, but also provide best-practice examples for the most vulnerable populations. Chandiwana (p. 37) discusses the challenges of diagnosing TB in children, and Bekker (p. 25) covers TB in pregnancy within the context of HIV.

While there has been substantial progress related to TB/HIV integration, TB remains the leading cause of death among PLHIV and continues to pose diagnostic challenges, even in the era of molecular diagnostics. In their article 'Streamlining primary care for HIV-TB co-infected patients through service integration', Crowley & Woolgar (p. 28), state that the manner in which HIV/TB care is organised is critical; they provide a brief overview of the evidence that exists with regards to integration and conclude that the preferred model of providing care to HIV/TB co-infected patients is by having one health care provider in order to ensure comprehensive management of the patient and to improve treatment outcomes.

The situation regarding drug-resistant (DR) TB remains dire despite substantial progress: globally in 2013, only 1 in 4 people estimated to have multidrug-resistant (MDR) TB were diagnosed, and less than 1 in 5 were started on treatment. Snyman, Mohr & Hughes (p. 16) discuss DR-TB patient support in a decentralised model of care in Khayelitsha. They conclude that adherence support for DR-TB patients should not rest solely on the shoulders of lay counsellors, but leverage the skills of the entire multidisciplinary team, including nurses. The Southern African HIV Clinicians Society is a professional organisation for health care workers and the *HIV Nursing Matters* publication seeks to support 'frontline' health care workers, specifically nurses, to provide quality care to the majority of South Africans. Michelle Robinson speaks to Dr Thato Mosidi about being diagnosed with extensively drug-resistant (XDR) TB in the article 'Health care workers need to protect their own health too' (p. 41), reminding us that caring for the caregiver is of utmost importance.

Maserame (p. 34) reviews the TB burden in SA in the article 'HIV/TB and MDR-TB' through delineation of the results of the *Joint Review of HIV, TB and PMTCT Programmes in South Africa*. TB prevention recommendations in the newly released consolidated HIV guidelines is covered by Moorhouse (p. 12) in 'National consolidated guidelines for the prevention of mother-to-child transmission (PMTCT) and the management of HIV in children, adolescents and adults: What does the guideline say about IPT?'. The Quality Improvement (QI) series continues in this issue: Masike & de Kock (p. 42) discuss the importance of Root Cause Analysis in the QI process, using examples of TB case detection and follow-up to make their point. They encourage the reader to understand the complexity and influential nature of our processes; and to recognise that work is not a series of isolated events.


HIV has driven TB incidence upwards, particularly in SA where 1 person in 100 has a new episode of TB annually. Fortunately, antiretroviral therapy (ART) substantially reduces the risk of TB disease, and in an era where more and more individuals are accessing ART, the burden of TB will undoubtedly be affected. Mabitsi (p. 20) describes how Anova has contributed to the training of providers and scale-up of ART services by building the capacity of nurses to prescribe treatment. Tudor (p. 10) describes how nurses play a critical role in improving case detection, starting patients on appropriate treatment, providing ongoing support to patients and improving treatment outcomes. She provides a best-practice example for training in the article 'Training for the fight against TB'.

Nurses are critical in efforts to reach people living with TB and HIV, in order to provide appropriate prevention, treatment, care and support services. Your work and dedication is appreciated and essential: nurses like you are the agents of change for a healthier population. ®

HIV Nursing matters

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# Message from the president

Dr Francesca Conradie
*President: Southern African HIV Clinicians Society*

The risk of getting active TB is greatly increased in those who are HIV-infected. In addition, the manner in which TB presents is different in the HIV-infected person, and is often more difficult to diagnose. The rate at which TB progresses is different in those with HIV. HIV-infected patients who get TB usually have to be started on antiretrovirals sooner rather than later. Southern Africa has the misfortune of having two of the largest HIV and TB epidemics. So, if you are a health care worker in this region, you need to be familiar with the management of, and overlap between, these health priorities.

The take-home message is that we must think of the diagnosis of TB in every HIV-infected patient. We should screen with a simple questionnaire every time we see patients. The questions that should be asked are: Have you had a cough of any duration? Have you had a fever for more than 2 weeks, or drenching night sweats? Have you had unexplained weight loss (more than 1.5 kg in a month)? If your patient answers 'yes' to any of these questions, then they need to be investigated for TB. Please do not forget that if your patient is coughing, then they could be an infection risk for the rest of your patients. If you can, please separate the coughing patients, and take the samples necessary to make a diagnosis.

We are living in exciting times for TB. We have new diagnostics tools such as GeneXpert. We have new drugs for those with drug-resistant TB. But, we need to ensure that we are doing the basics: screening all patients for TB, and ensuring that they obtain treatment if they test positive. And, we need to ensure that they complete their treatment. ®


# South Africa sends nurses, doctor to assist in EBOLA OUTBREAK

By Ayanda Mkhwanazi on January 20, 2015 in *Health Management, Public Health & Health Systems*

Right to Care will be sending its first group of health professionals to Sierra Leone to assist with the Ebola outbreak (File photo)

By the end of this week, ten professional nurses and one doctor will leave Johannesburg for Sierra Leone and the front lines of the Ebola outbreak. According to the non-profit organisation Right to Care, this is the first of many teams slated to go.

Part of the team is nurse Ishmail Mbulawa, who said he felt it was his duty as a South African to help: "I am ready to make a difference".

According to Right to Care's Chief Medical Officer, Dr Pappie Majuba, members of the team have received training on treating the virus and how to stay safe while doing so.

"The most key for us is the infection control," he told Health-e News. "These are nurses, they will be doing what they know – the only emphasis is that they must remain safe at all times."

The team will be provided with a salary, flights and *per diems*. They will also be repatriated back to South Africa for care should they contract the virus, which has thus far killed more than 8 000 people worldwide.

Upon returning, team members will also stay home for three weeks to recover.

"They need to come back and recover and refresh their minds before going back in," Majuba said.

Soshanguve native nurse Neo Mokone, 28, says she is ready to go.

"My parents are behind me – the only negative elements are from outsiders who think I'm crazy," Mokone said. "I may be crazy but I won't be able to live with myself if I don't go."

"I like making a difference in peoples' lives," Mokone added.

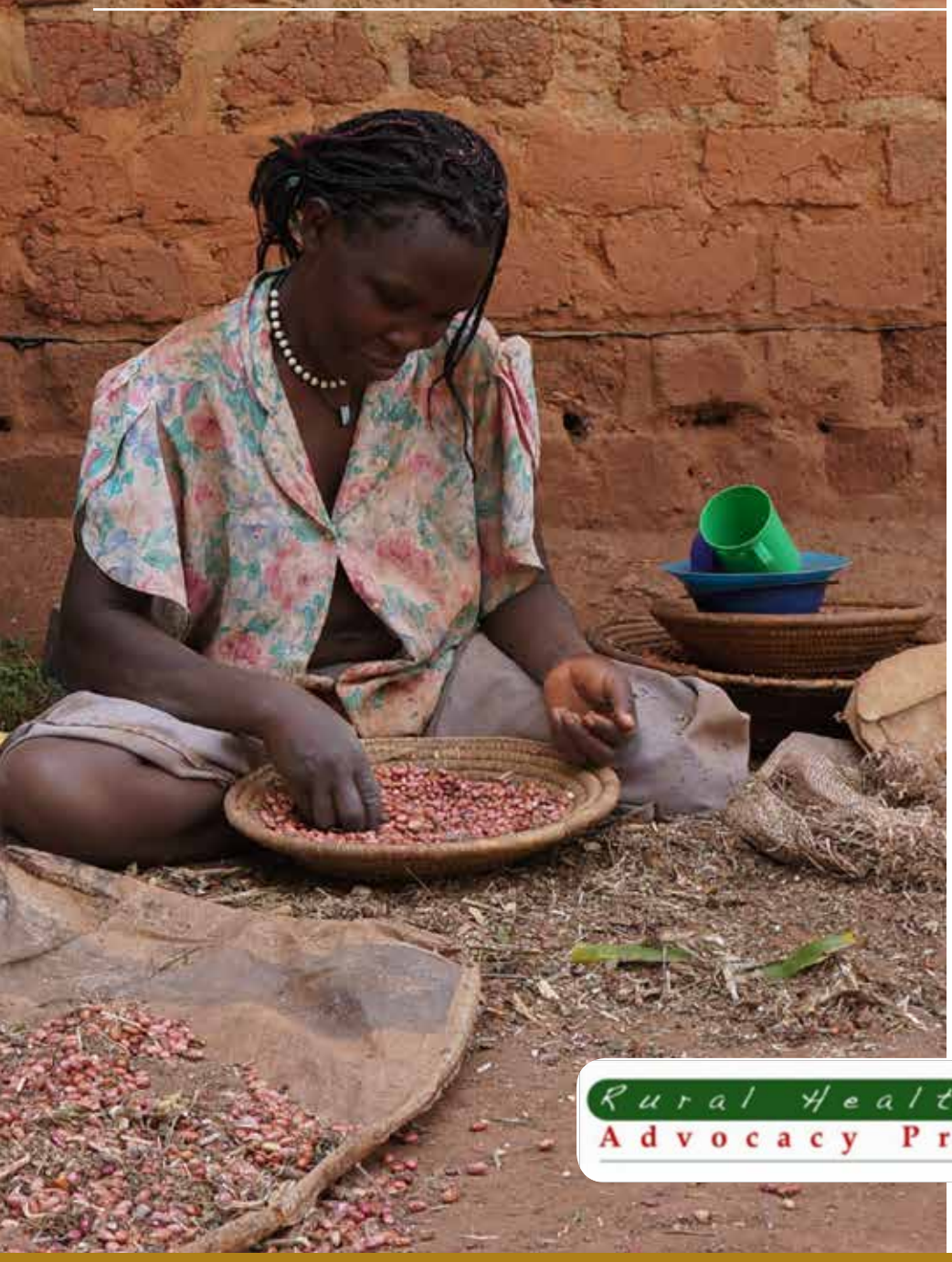
South Africa has yet to report any Ebola cases but the Department of Health has trained health care workers and increased surveillance at airports for those travelling from affected countries. – Health-e News.

Edited versions of this story first appeared in the 20 January editions of the *Cape Times* and *The Star* newspapers. ®

# GUIDELINES:
## Rural proofing for health

Drafted by the Rural Health Advocacy Project (RHAP), the guidelines are designed to provide policy makers at national and district levels with a tool to evaluate whether health policies meet the needs of rural populations

By Health-e News on February 2, 2015 in *Policy and Legislation, Public Health & Health Systems, Reports, Rural Health*



The 52-page guidelines are designed not only to evaluate the appropriateness of policies, but also to ensure that they are effective and sustainable, and move to improve equity in health care services.

Divided into eight chapters, the guidelines cover areas such as key background on rural health in South Africa, before moving to provide a framework for analysing the health system. Like the National Department of Health, RHAP uses the World Health Organization's (WHO's) Health Systems Framework to evaluate health care systems. The guidelines thus divide the system into six core components, which are then evaluated by inputs, resources and priorities, for instance.

RHAP will be running free training on the guidelines for government officials and civil society. Those interested in training should contact the RHAP Rural Proofing Project Manager, Daygan Eager (daygan@rhap.org.za). ®

Rural Health Advocacy Project

# 'Rural proofing' policy launched

By Sbongile Nkosi on January 30, 2015 in *Human Resources, National Health Insurance (NHI), Policy and Legislation, Rural Health*

**Rural health advocacy groups have developed guidelines aimed at ensuring that policy makers and government address the rural context when developing and implementing policies**

About 40% of South Africans live in rural areas, according to RHAP.

Speaking at the "Rural Proofing Guidelines" launch this week, Daygan Eager from the Rural Health Advocacy Project, said there are currently no methods for accommodating rural communities in policy in South Africa.

"Policy is sometimes inappropriate for rural context and in some cases entrenches inequities between urban and rural," he told Health-e News.

Vuyokazi Gonyela, a provincial organiser for the Treatment Action Campaign in the Eastern Cape, cited "distance and poor infrastructure" as barriers for rural people to accessing health care. "Patients have to pay R600 for car hires and in most cases will not get the treatment they need because the depot has not delivered the medication to the clinic," she said.

"Infrastructural problems, such as lack of electricity and telephone lines pose a threat in service delivery but are often not taken into context in policy implementation," she added.

The National Health Insurance scheme has introduced initiatives such as ward-based outreach teams, but Gonyela feels that those planning these teams never considered the limitations and barriers of rural settings.

"A community health worker in the Eastern Cape will have to put in more effort than one in Gauteng, as travelling to the patients will take most of her time," she said.

"This also decreases the time she spends with patients as it takes up the time."

Eager added that the guidelines will assist in identifying what needs to be done differently to achieve the same policy outcome as in the urban areas.

"The benefit of rural proofing is that it ensures rural is explicitly considered in policy and strategic planning."

Deputy Director General of the National Department of Health, Jeanette Hunter, said the guidelines are educational as they will assist government departments in considering the rural context when designing programmes. – Health-e News. ®

# JUDGEMENT:

## Constitutional Court sets certificate-of-need legislation aside

By Health-e News on January 29, 2015 in *Health Management, Human Resources, Policy and Legislation, Public Health & Health Systems, Reports, Rural Health*

A recent Constitutional Court judgement set aside a proclamation requiring health care providers to obtain controversial certificates of need, or ministerial approval, prior to practising

On 27 January 2015, the Constitutional Court handed down judgement in a direct application to declare invalid a proclamation of the President bringing certain sections of the National Health Act into operation.

On 21 March 2014 the President signed a proclamation which brought certain sections of the National Health Act into force as of 1 April 2014. These sections collectively criminalised the provision of health services without a properly issued "certificate of need". The Act authorises the Minister of Health to prescribe regulations regarding applications for, and the granting of, these certificates.

However, the required regulations are not yet in operation; therefore, no health service providers can obtain a certificate of need. The consequence created by this is that practising health service providers in South Africa are engaging in criminal conduct.

The President and other members of the Cabinet and Presidency maintained that the decision to bring the sections into operation was made in good faith, but in error, and was therefore irrational in law. They sought to have the proclamation set aside. The President is unable to withdraw the proclamation because the date for its commencement has long since passed and there is no mechanism contained in the Act itself to remedy the situation.

The Court found that the issuing of the proclamation had led to an untenable and unintended situation that could inhibit or discourage health care practitioners from providing essential services. The Court held that the decision to issue the proclamation before there was any mechanism in place to address applications for certificates of need was not rationally connected to this purpose (or any other governmental objective). The President's decision was irrational and therefore invalid. Accordingly, the proclamation was set aside.®

# Training for the FIGHT AGAINST TB

**Carrie Tudor**, PhD, MPH, RN
*TB Project Director, International Council of Nurses*

Not only do the nurses trained through the Training for Transformation (TFT) courses train other nurses, health care professionals and members of their communities, they also change their practice and improve the care and services provided to patients, as well as improve infection control in their work places to protect health care workers, patients and visitors

As we approach World TB Day there are many accomplishments to celebrate in the fight against tuberculosis (TB), yet we still face many challenges.

Since 1990 the global TB mortality rate has declined by nearly 50% and the World Health Organization (WHO) estimates that 37 million lives have been saved due to improved TB case detection and treatment over the last 13 years.[1]

While these are positive developments, we still face nine million new cases of TB each year, one million of whom are also living with HIV. Moreover, nearly half a million will be diagnosed with multidrug-resistant (MDR) TB, which is more difficult and more expensive to diagnose and treat. While mortality has decreased over the past 24 years, more than 1.5 million patients succumb to the disease each year. TB is the second-leading cause of death due to a communicable disease and remains the leading cause of mortality in South Africa. While TB can affect anyone, it remains a disease of poverty and more than 80% of TB cases are in 22 high-burden, mostly less-developed countries; nine of which are in Africa and are lacking resources to effectively fight the disease. All of these factors combined place a tremendous stress on already overburdened health systems that are struggling to meet demands.

Nurses play a critical role in improving case detection, getting patients on appropriate treatment, providing ongoing support to patients and improving treatment outcomes

While more than seven million nurses are registered in these 22 high-burden countries, there are only half a million in the nine high-burden countries in Africa, where they are often the only source of care.[2] These nurses are crucial in the prevention, detection and treatment of TB and MDR-TB, even though they frequently work in deficient systems, with poor access to adequate training, supplies and resources.

Nurses play a critical role in improving case detection, initiating patients on appropriate treatment, providing ongoing support to patients and improving treatment outcomes. But in order to do so, nurses – who carry the burden of meeting a huge number of demands from both employers and patients – need to be involved in local and national planning and decision-making for coherent and effective service delivery. Nurses – who live in the communities they serve, who know what is needed to improve care, and who put themselves at risk every day that they go to work – need to have access to training in the prevention, detection and treatment of TB and MDR-TB and to play a role in developing the protocols and guidelines that they will ultimately put into practice.

The International Council of Nurses-Lilly TB/MDR-TB Project is working to strengthen the global nursing capacity in the prevention, detection, care and treatment of TB and M/XDR-TB through a Training for Transformation (TFT) initiative. The initiative trains experienced nurses working mainly in the TB and HIV fields, who then cascade information to their colleagues

in local health care facilities as well as in the communities they serve. The TFT courses are run in countries with a high burden of TB and MDR-TB where the International Council of Nurses (ICN) has a strong working relationship with the national nurses association (NNA). Using this approach, ICN has prepared more than 1 900 nurses in 14 countries. These nurses have in turn rolled out the training to over 96 000 nurses and allied health workers. The ICN TB Project is currently running in four countries greatly affected by MDR-TB (Russian Federation, China, India and South Africa) as well as six other countries in sub-Saharan Africa (Ethiopia, Uganda, Malawi, Zambia, Swaziland and Lesotho).

Not only do the nurses trained through the TFT courses train other nurses, health care professionals and members of their communities, they also change their practice and improve the care and services provided to patients, as well as improve infection control in their work places to protect health care workers, patients and visitors.

The training provides much-needed knowledge on all aspects of TB/MDR-TB, but just as importantly, it empowers and gives the nurses the confidence to improve their practice, to negotiate with superiors and colleagues to make improvements such as changing infection control practices through the procurement of N95 respirators for staff or the construction of outdoor sputum booths. The nurses are encouraged to assess their current practices and environment against best practices in TB care and develop plans to address the identified gaps.

One participant from South Africa* commented: "I did not realise I was a TB nurse before I attended the training. Our outcomes were very poor. I saw it as a need to take part in the training so I could develop a strategy to address our problems. The training was so useful." Another nurse from South Africa said this about the training: "I got so capacitated that I became confident to run the TB programme in a smarter manner and more efficiently than what I did previously. I now also teach my colleagues the information I acquired from the course. Now I also challenge doctors prescribing treatment which is not based on the regimen which is on the national protocol. I also managed to change some of the staff members' attitudes towards TB ... All those patients who would have been left to die, are now being diagnosed, by increasing the number of people who are screened and by improving the quality of specimen collected. The positive patients are now called for commencement of treatment and they are followed up. The defaulter rate has gone down."

All too often we meet nurses working as TB focal nurses who have not received any training on TB, except a brief explanation from the nurse assigned to TB before them and furnishment of a copy of the guidelines which may or may not be out of date. This is unacceptable: nurses need the knowledge and tools to do the job they are tasked to do. Without this, we will not win the fight against TB. It is not too late. By supporting and strengthening the capacity of nurses – the key health care providers in the fight against TB – we can make significant progress in controlling TB and winning the fight.

ICN, working within the Lilly MDR-TB Partnership** is committed to mobilising and strengthening nursing as the key, practical, on-the-ground response to address the challenges, the suffering and the spread of TB.

* In South Africa, the ICN TB Project partners with DENOSA (Democratic Nursing Organisation of South Africa)

** The ICN TB Project is supported by a United Way Worldwide grant made possible by the Lilly Foundation on behalf of the Lilly MDR-TB Partnership. ®

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1. WHO. Global tuberculosis report 2014. 2014 [cited 2015 1 February]; Available from: http://www.who.int/tb/publications/global_report/en/
2. WHO. World Health Statistics 2011. 2011 [cited 2015 12 February]; Available from: http://www.who.int/whosis/whostat/2011/en/

# National consolidated guideline for PMTCT and the management of HIV in children, adolescents and adults: What does the guideline say about IPT?

**M A Moorhouse**, MBBCh (Wits), DA (SA)
*Senior Clinician, Wits RHI, University of the Witwatersrand, Johannesburg*

In the case of patients who default on IPT, it is important to have an open, frank, but non-confrontational discussion with them about the reason for defaulting, to see whether there is an issue that can easily be addressed, e.g. manageable side-effects

The South African (SA) National Department of Health (NDOH) launched a new set of guidelines for the prevention of mother-to-child transmission (PMTCT) and the management of HIV in children, adolescents and adults in January 2015. These guidelines differ from previous iterations in that instead of three separate guidelines, one consolidated guideline was produced. This follows the model of the World Health Organization (WHO) consolidated guideline, promoting harmonisation across guidelines, simplification, consistency of approach, integration of services and family-centric provision of care. Not only was there alignment with WHO guidelines in terms of approach, but also in terms of WHO recommendations with regard to specific antiretroviral therapy (ART) eligibility criteria, recommended treatment regimens and monitoring of patients. The current version of the consolidated guideline can be downloaded at http://www.health.gov.za/docs/Policies/2014/HIV_Guidelines_Jan2015-final_edits-YP.pdf

Traditionally, with March being tuberculosis (TB) month, the March edition of *HIV Nursing Matters* is themed TB, and on this account, the focus will be on TB in the context of the new consolidated guideline. With the increased risk of TB in HIV-positive patients, it is important that clear guidelines exist to ensure that patients are diagnosed and treated timeously, on account of the mortality associated with TB co-infection, as well as the public health considerations of TB transmission due to late diagnosis and management of TB.

## Screening for TB

To increase early TB diagnosis, all patients should be screened for TB at every encounter with a health care professional, irrespective of their HIV status. Screening for TB in HIV-positive adolescents and adults consists of asking four simple questions [see box in algorithm 1], and if the patient answers positively to one or more of the questions, then they should be investigated for TB appropriately, using GeneXpert and culture, as per the national TB guidelines. If the patient is diagnosed with TB, then they should start TB treatment as soon as possible. If the patient is not confirmed to have TB, then they should be reassessed for IPT eligibility in three months.

> IPT is one component of a range of interventions at the health care professional's disposal to reduce the incidence of TB in HIV-infected patients

## Role of TST

Patients who have a negative TB screen should then be assessed for isoniazid preventive therapy (IPT) eligibility, which includes a tuberculin skin test (TST). This differs from the previous guidelines, where the TST was used to determine only the duration of IPT, not eligibility. The current guideline stipulates that a TST should be done within one month of starting IPT for the purposes of confirming eligibility and duration of IPT. As the TST relies on a competent immune response, severely immunocompromised patients may have a negative TST, despite TB exposure. TST-negative patients should have a TST annually, until it becomes positive.

### Who should receive IPT?

For IPT eligibility criteria, refer to the eligibility lists in algorithms 1. It should be noted that in infants and children, IPT is only given post exposure to infectious TB. Where a child has been exposed to TB and requires IPT, it is important to trace contacts, so that other children in the same household can be screened for IPT eligibility. Pre-exposure IPT is not recommended for any child, irrespective of HIV status. This differs to adults, where pre-exposure IPT is recommended for all eligible HIV-infected individuals.

Once eligibility has been confirmed, and any contra-indications to IPT excluded, IPT can be commenced. Current recommendations suggest that IPT is commenced within one month of starting ART, provided that a repeat TB screen is also negative. All HIV-positive adolescents and adults with no symptoms or signs suggestive of active TB are eligible for IPT.

### When NOT to give IPT?

However, there are some patients who are not eligible for IPT. These include:

- patients with active TB
- patients who have a history of MDR-/XDR-TB
- patients with acute or chronic active liver disease
- those who use alcohol excessively (more than 28 units/week in males; more than 21 units/week in females)
- pre-ART TST-negative patients
- patients with peripheral neuropathy
- those with a history of a severe adverse reaction to isoniazid.

### IPT dosing and dispensing

For adolescents aged >15 years, adults and pregnant women, IPT is dosed at 5 mg/kg/day, to a maximum

dose of 300 mg/day. It should be co-administered with pyridoxine 25 mg daily, to prevent the side-effect of peripheral neuropathy, which can be extremely disabling. To aid adherence and to detect early side-effects, IPT should be issued monthly for the first 3 months, whereafter 3 months' supply can be issued at each visit. Ongoing counselling and patient education is a vital part of adherence support, especially for those patients who will receive IPT for 3 years. Patients must be informed about the potential side-effects of isoniazid so that they know when to seek help from a health care professional. Adherence monitoring and social support are required.

### Identifying and managing IPT side-effects

Apart from peripheral neuropathy, isoniazid can cause other significant side-effects, such as drug-induced hepatitis, gastrointestinal side-effects, flushing reactions and hypersensitivity. Early identification and management of side-effects is essential to support adherence and ensure patient safety. The side-effects and management are summarised in Table 1.

Patients who are on IPT must be asked about side-effects and screened for TB at every visit.

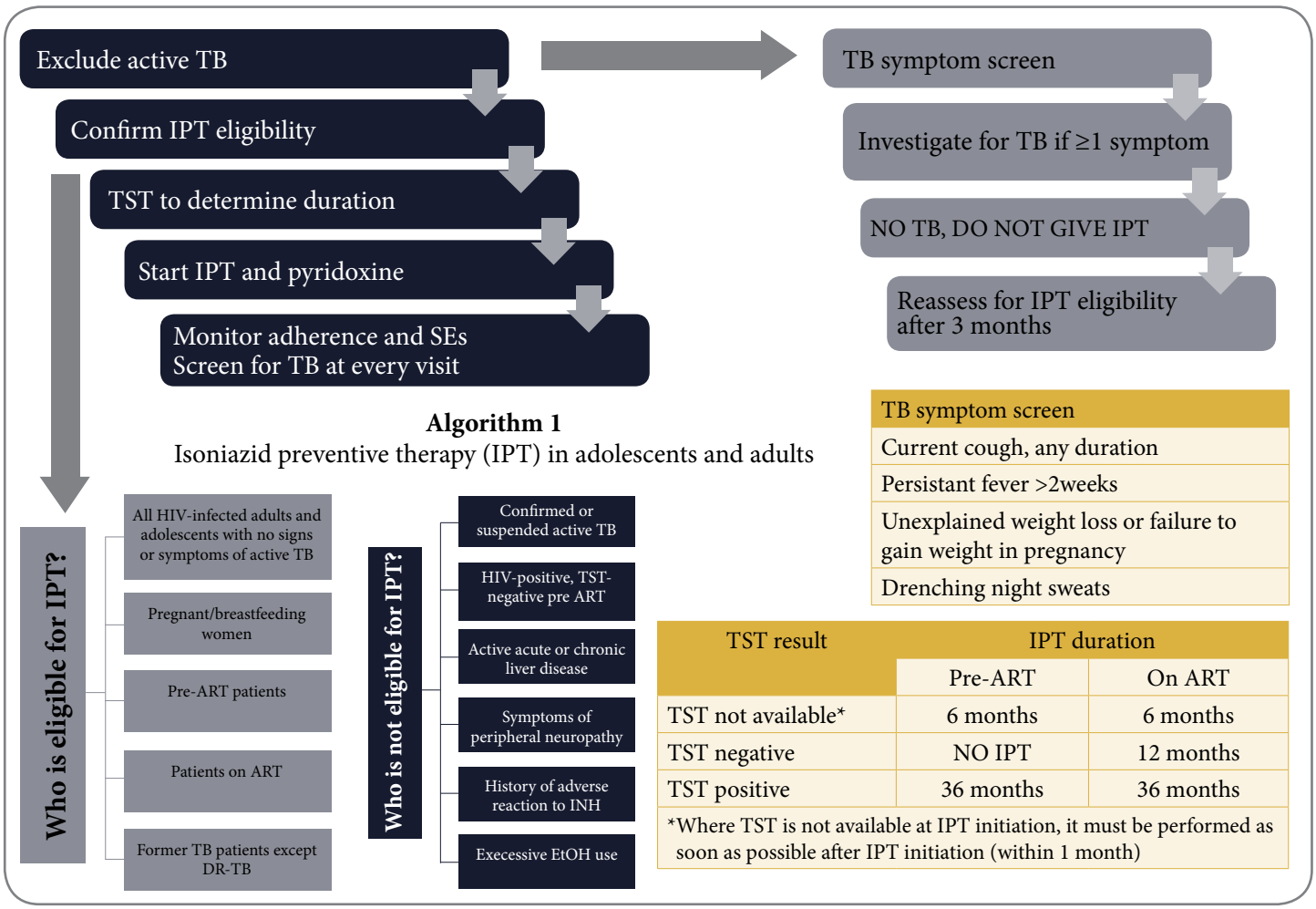
### Managing IPT interruptions

In the case of patients who default on IPT, it is important to have an open, frank, but non-confrontational discussion with them about the reason for defaulting, to see whether there is an issue that can easily be addressed, e.g. manageable side-effects. Once this has been discussed, those who have interrupted IPT for less than 3 consecutive months should be counselled on adherence, screened for TB, and if they screen negative and are generally asymptomatic, then they can be recommenced on IPT.

There are some circumstances in which

Table 1: Isoniazid side-effects and management

| Side-effect | Management |
|---|---|
| Peripheral neuropathy | Increase vitamin B6 (pyridoxine) to 100 mg daily; keep patient on that dose until the symptoms disappear<br>If peripheral neuropathy is severe, then discontinue INH immediately and refer<br>If patient needs to take d4T for medical indication, then discontinue INH |
| Hepatotoxicity | Stop INH immediately and refer patient to hospital |
| GI effects | Rule out other causes of nausea and vomiting; consider LFTs<br>Treat symptomatically (if no other cause is found) |
| Flushing reaction | Reassure patients and advise that they should avoid tyramine- and histamine-containing foods while on INH (such as aged, fermented, smoked or dried foods: cheeses, meats, yeast, marmite, dried fruit, alcohol, nuts and seeds, and chocolate)<br>Flushing is usually mild and resolves without therapy |
| Hypersensitivity | Discontinue until the reaction resolves<br>Re-challenge after resolution of reaction<br>• Begin with INH 50 mg on day 1<br>• If the original reaction was severe, then begin with INH 5 mg on day 1<br>• If a reaction does not occur after the day 1 dose, then increase to 300 mg on day 2<br>• If a reaction does not occur after the day 2 dose, then continue INH 300 mg daily<br>• If a reaction occurs during drug re-challenge, then stop INH<br>Treat with antihistamines and follow up |




**Algorithm 1**
Isoniazid preventive therapy (IPT) in adolescents and adults

| TB symptom screen |
|---|
| Current cough, any duration |
| Persistant fever >2weeks |
| Unexplained weight loss or failure to gain weight in pregnancy |
| Drenching night sweats |

| TST result | IPT duration | |
|---|---|---|
| | Pre-ART | On ART |
| TST not available* | 6 months | 6 months |
| TST negative | NO IPT | 12 months |
| TST positive | 36 months | 36 months |

*Where TST is not available at IPT initiation, it must be performed as soon as possible after IPT initiation (within 1 month)

IPT should be discontinued, which include active TB disease, severe side-effects to isoniazid, and if a patient interrupts IPT a second time.

## Conclusion

IPT is one component of a range of interventions at the health care professional's disposal to reduce the incidence of TB in HIV-infected patients. IPT implementation remains weak in some districts, despite inclusion in the NDOH ART guidelines and identification as a priority intervention by the NDOH. However, the current (and previous) iteration of the guidelines which recommends 36 months of IPT for all TST-positive patients, including those who are pre-ART, provides an important opportunity to improve retention in care of pre-ART patients.

Providing IPT for 3 years, associated with regular visits to collect IPT and review side-effects, may encourage pre-ART patients to remain engaged in care until they become eligible for ART initiation. The key to the success of this will be providing the incentive and support to ensure adherence to clinic visit schedules and IPT, yet without unduly burdening healthy patients with frequent clinic visits. After three monthly reviews, patients should be provided with repeat scripts to last 3 months at a time, reducing their clinic visits from twelve to four per year. ®

Drug-resistant tuberculosis patient support in a decentralised model of care:

# More than just a counselling session

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The XDR-TB counselling session addresses the changes in treatment and includes the very real possibility of treatment failure. Patients are also given practical advice on how to deal with possible challenges and emergencies associated with XDR-TB care.

## Background

The South African Drug Resistant Tuberculosis Management Guidelines (2011) recommend that patients with drug-resistant tuberculosis (DR-TB) receive counselling to encourage optimal adherence to the lengthy, toxic, multidrug treatment regimens.[1]

Diagnosis and treatment of DR-TB poses many challenges to patients, families, close community members and their health care providers. Many patients are unable to complete the 2-year course of daily treatment under directly observed therapy short courses (DOTs), with the massive pill burden and multiple adverse events (AEs) which may severely affect their activities of daily living. Patients are often unable to work while infectious and may be stigmatised within their communities.

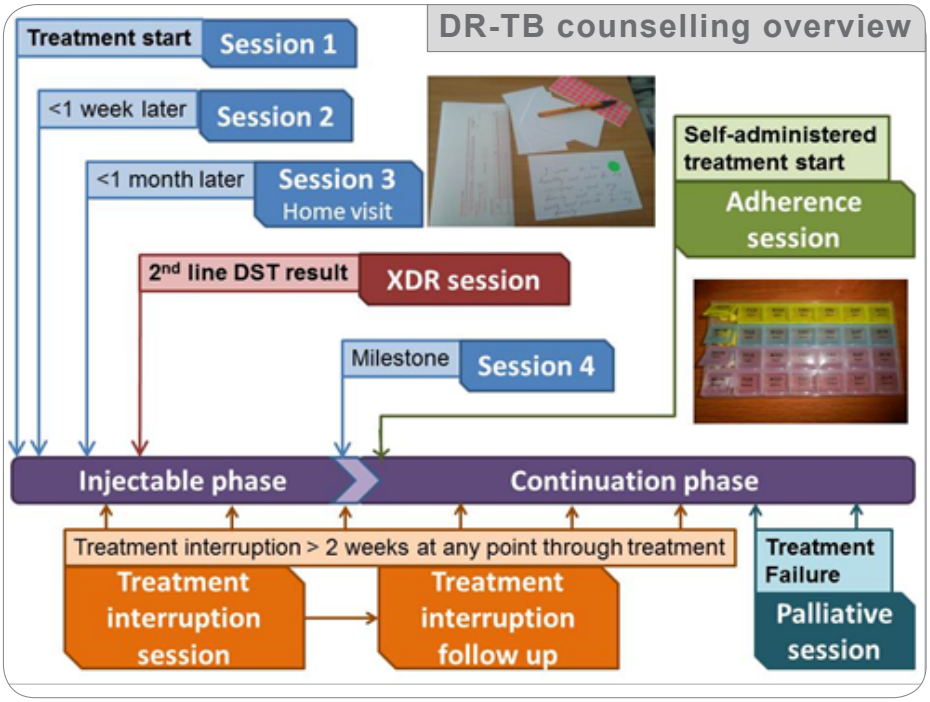
Given that DR-TB is an infectious, airborne disease which is transmitted by symptomatic patients not on effective treatment, families, close contacts, local community members and responsible health care workers are also at risk of being infected with DR-TB.

Therefore, comprehensive adherence counselling and psychosocial support is a crucial aspect of holistic DR-TB management to ensure patients complete treatment successfully.

The World Health Organization (WHO) 2014 Global Tuberculosis Report states a 48% global treatment success rate for patients started on multidrug-resistant (MDR) TB treatment in 2011. Treatment success rates for patients with MDR-TB and extensively-drug-resistant (XDR) TB in South Africa were 45% and 18%, respectively.[2]

Clinically stable patients with good adherence history and no other clinical problems are considered appropriate to receive a weekly or monthly supply of DR-TB treatment, with weekly home visits from the CCW assigned to them

Figure 1. Schematic representation of the Khayelitsha patient support model




Overview of patient support model

Studies reporting MDR-TB treatment outcomes often conclude with a call for a more comprehensive approach to MDR-TB treatment, particularly adherence support.[3-5]

## The intervention

Khayelitsha, a peri-urban township situated on the outskirts of Cape Town, South Africa, is home to at least 400 000 people.[6] Approximately 200 people are diagnosed with DR-TB each year, with an HIV co-infection rate of ~75%.[5] Khayelitsha's eleven primary health care facilities provide integrated TB and HIV care. In 2007, Médecins Sans Frontières (MSF), along with the local and provincial health authority, implemented a decentralised model of care for DR-TB which provides for DR-TB diagnosis, treatment initiation and continued care by primary health care clinicians at the primary care level. Comprehensive adherence counselling and psychosocial support is an essential component of this community-based, patient-centred model of care.

Anecdotally, due to clinic staff in Khayelitsha feeling overburdened with high patient loads, task-shifting has resulted in TB/HIV adherence support becoming the sole responsibility of lay adherence counsellors. In the face of poor MDR-TB treatment outcomes, lay counsellors, nurses and clinicians need to be equipped to support DR-TB patients to deal with a variety of adherence issues and to address other potential challenges that they may face throughout their treatment journey.

Research studies have listed economic instability, age, alcoholism, other substance abuse and unemployment as risk factors for patients being lost from treatment (LFT).[7, 8] Figure 1 presents a comprehensive approach to adherence support that spans across the entire DR-TB treatment journey in response to treatment challenges.

The patient support model consists of various counselling sessions implemented at different stages of the treatment journey. Counselling starts at the time of treatment initiation. The first two counselling sessions are carried out in the clinic. The third session takes place in the patient's home where close contacts are identified and screened, an infection control assessment of the home is conducted and the family is educated to protect themselves and support the patient to complete treatment. Session four is carried out towards the end of the intensive phase of treatment (during

which patients receive daily injections for the first 6 - 8 months). The counsellor acknowledges this important milestone (completion of the injectable) and the patient is encouraged to continue to the end of his or her treatment journey.

### *Diagnosis of XDR-TB*

Second-line drug sensitivity test results typically become available months after patients initiate standard MDR-TB treatment, and approximately 9% of patients are diagnosed with XDR-TB.[2] A diagnosis of XDR-TB poses additional challenges and some patients may require hospitalisation, although many are able to continue to receive treatment in primary care and therefore require ongoing support. The XDR-TB counselling session addresses the changes in treatment and includes the very real possibility of treatment failure. Patients are also given practical advice on how to deal with possible challenges and emergencies associated with XDR-TB care. The clinician is responsible for expanding on the clinical implications of the diagnosis, beyond the information provided within the counselling session.

### *Community-supported self-administration of treatment (SAT)*

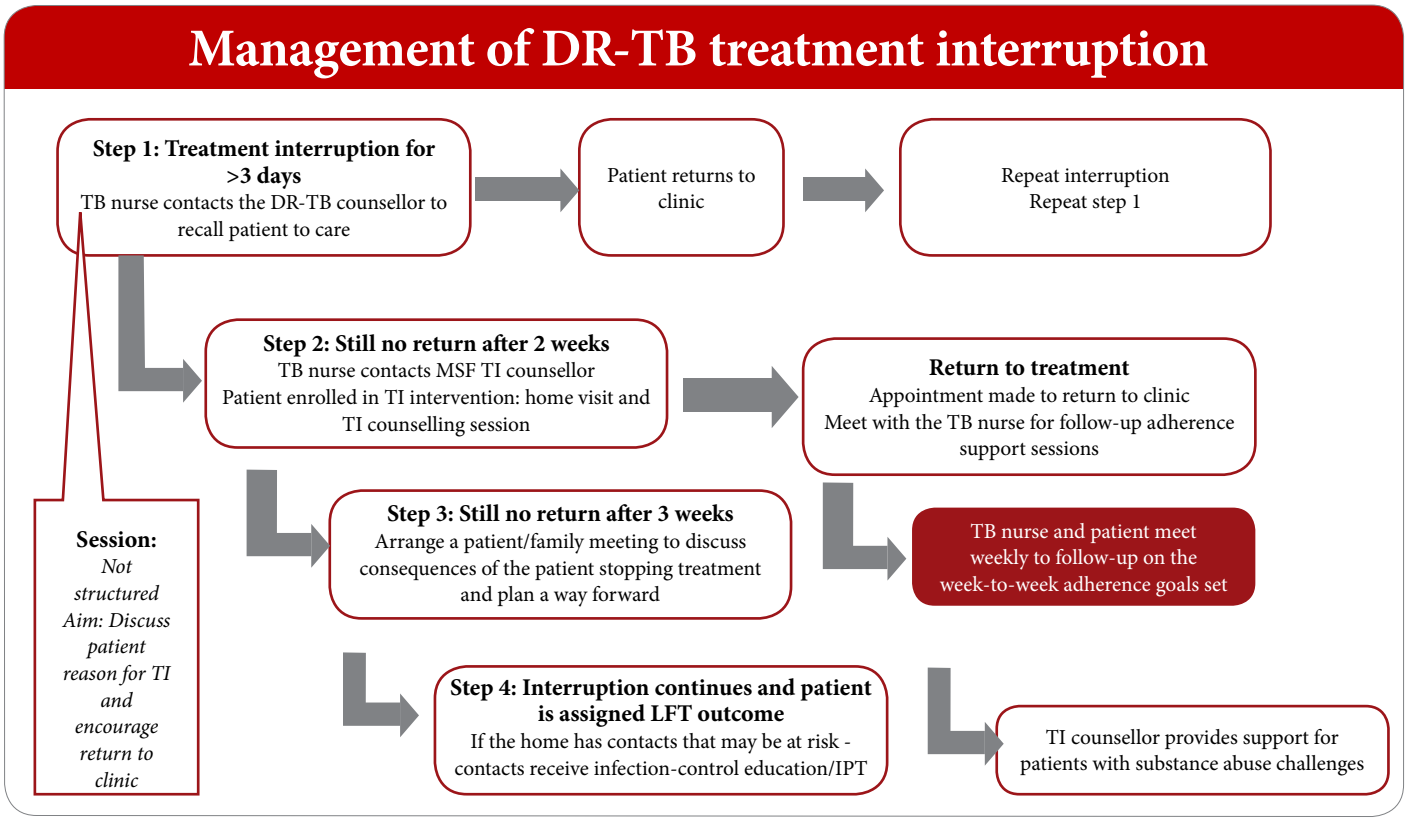
The South African National DR-TB Management Guideline (2011)[1] recommends DOTs for all DR-TB patients for the duration of the treatment, yet treatment outcomes remain poor, with a high rate of LFT. A Cochrane systematic review (2007) found that "directly observing people taking their tuberculosis drugs did not improve the cure rate compared with people without direct monitoring of treatment" and yet the guidelines have not been amended.[9] As patients progress through treatment, they often need to return to work and attend to other obligations; waiting for treatment under DOT every single day either in their local clinic or at home with an outreach team may present a barrier to adherence. Therefore, provision of a supply of medicines for stable, responsible patients to take themselves may be a step towards preventing LFT, especially in the latter half of the treatment course.

A pilot programme offering SAT to DR-TB patients throughout the continuation phase of treatment is being rolled out in Khayelitsha. Patients who have received the milestone counselling Session 4 receive a home visit by a community care worker (CCW) from their area to assess their social situation. Each case is presented and discussed in one of the weekly multidisciplinary team meetings in the clinic. Clinically stable patients with good adherence history and no other clinical problems are considered appropriate to receive a weekly or monthly supply of DR-TB treatment, with weekly home visits from the CCW assigned to them. Patients may need to return to clinic DOTs if adherence challenges arise or the patient's clinical condition changes. Results of this pilot will be disseminated within the MSF Khayelitsha DR-TB report in early 2015.

### *Treatment Interruption*

Treatment interruption (TI) is a common occurrence, and prolonged TI may lead to poorer treatment outcomes.[10] Figure 2 is a schematic representation of the intervention. Once TI is identified, the MSF counsellor traces the patient and enrols him/her in a support programme. A substance, alcohol and mental illness

Figure 2. Management of DR-TB treatment interruption




*Failure of treatment and death*

symptom screen (SAMISS) is also completed for each patient enrolled. Patients who screen positive for mental illness are referred back to the Medical Officer, while patients who screen positive for substance abuse (SA) are encouraged to join a 4-week support group that utilises motivation tools to enable patients to recognise their substance abuse as a possible barrier to achieving good health.

Patients receive a TI counselling session where reasons for TI are identified and short-term, easily achievable treatment goals are set. Follow-up for patients in the TI programme consist of weekly 5- to 10-minute sessions by the clinic nurse.

The key principles of these short sessions are to:

- determine if short-term goals have been achieved
- provide positive reinforcement and motivation
- identify further barriers to adherence and facilitate problem-solving
- improve the nurse-patient therapeutic relationship.

The data reflect an 18% treatment success rate for patients started on XDR-TB treatment in South Africa,[2] yet no formal palliative care plan exists for patients in whom XDR-TB treatment has failed.

The WHO defines palliative care as an approach that aims to support patients and their families as they deal with the challenges that arise from having a life-threatening disease.[11] The palliative care support approach incorporates an evidence-based model to ensure that patients understand their prognosis.[12] Clinicians, nurses, social workers and lay counsellors form a partnership with the patient and their family. Treatment and psychosocial support goals focus on improving quality of life for the patient and family members.

### *Training and Implementation*

A DR-TB patient support toolkit and training module, containing implementation guidelines, tools and exercises can be completed within a minimum of five days and adapted to suit various contexts. This toolkit and training module may be accessed at http://bit.ly/15OsiVd or by contacting MSF Khayelitsha at msfocb-khayelitsha-tbmanager@brussels.msf.org

## Conclusion

The DR-TB patient support model caters for appropriate counselling support across the entire spectrum of the treatment journey. While implementing comprehensive DR-TB patient support may seem daunting, the MSF DR-TB counselling toolkit and training module can provide the necessary tools to support implementation elsewhere.

Adherence support for DR-TB patients should not rest solely on the shoulders of lay counsellors, but leverage the skills of the entire multidisciplinary team. Comprehensive patient support requires a comprehensive approach undertaken by a comprehensive team and is as important as the pills patients have to take every day throughout their treatment journey.

**Acknowledgements:**
The City of Cape Town (CoCT) and Provincial Government of the Western Cape (PGWC) were instrumental partners in the decentralisation of the DR-TB treatment and support model. The Khayelitsha health care workers and the patients in Khayelitsha with MDR-and XDR-TB contributed immensely to the implementation of the various patient support activities.

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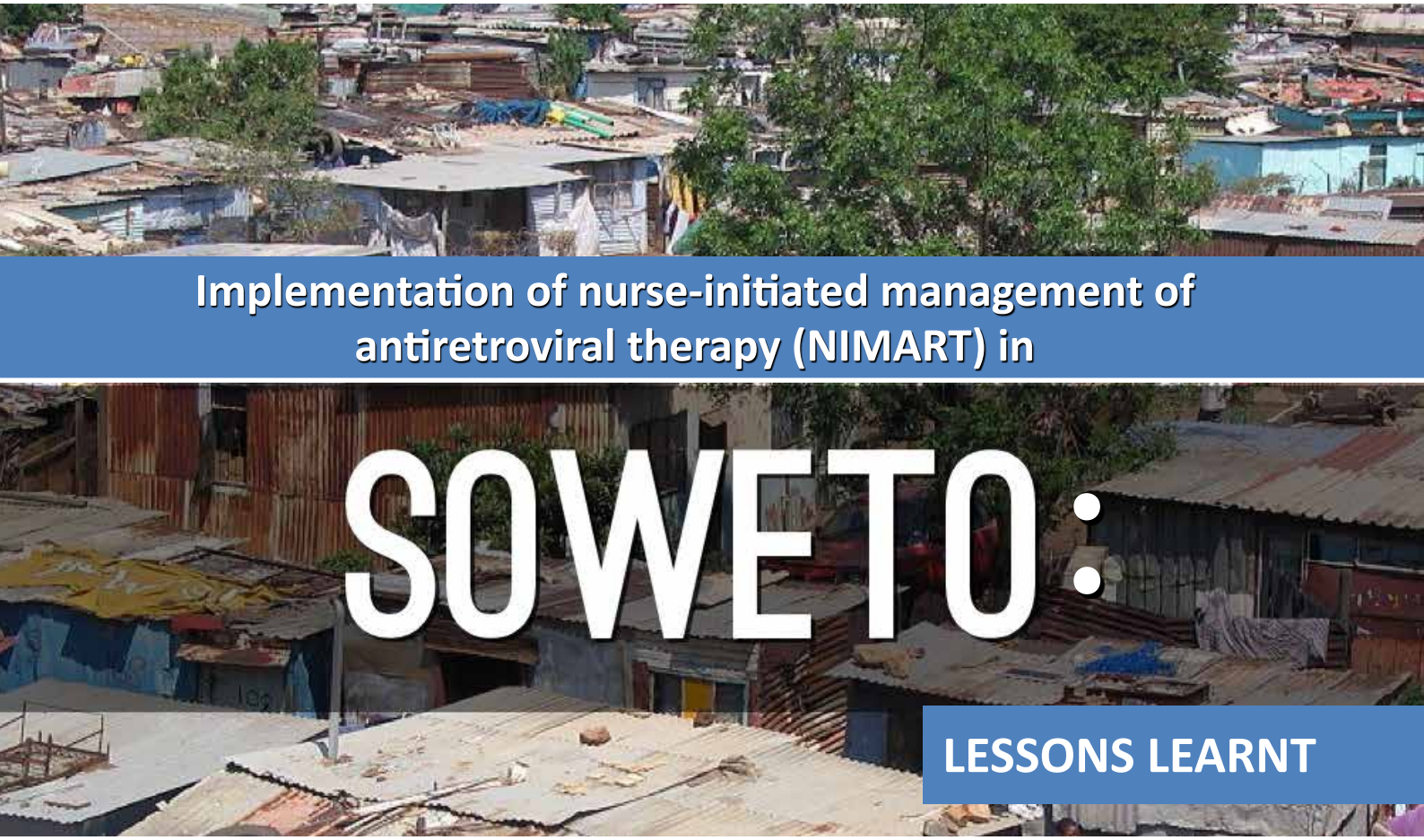

# Implementation of nurse-initiated management of antiretroviral therapy (NIMART) in SOWETO: LESSONS LEARNT

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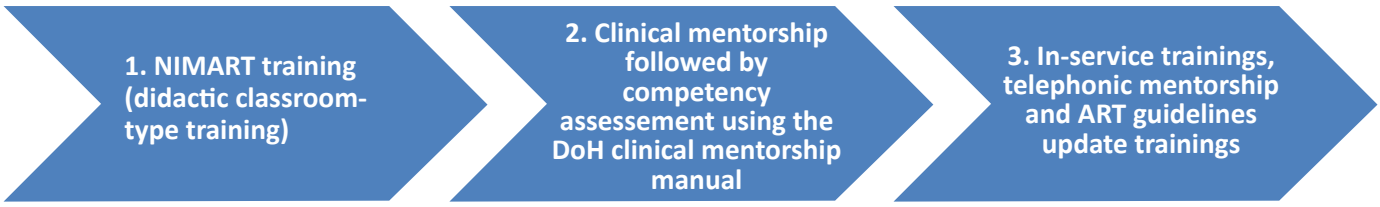
Implementation of NIMART has led to an increase in access to HIV treatment in Johannesburg since more PHC facilities are providing HIV treatment services. In our experiences, the biggest success in implementation was based on training followed by facility-based clinical mentorship, continuous medical education and co-ordination with the District team.

## Introduction

The South African Government's (SAG) antiretroviral therapy (ART) programme was implemented in 2004.[1] With implementation of the programme, provision of ART to HIV-infected individuals was doctor-driven and mainly provided at hospital level. HIV-infected individuals diagnosed at primary health care (PHC) level by nurses were referred to 'higher-level' care sites for initiation of ART. Over time, this strategy proved unable to meet the demand for HIV treatment services in a country where the majority of people access health services at PHC level. To breach this gap, in 2010 the SAG adopted a task-shifting model of HIV care that would provide approval for nurses to be trained, mentored and certified to manage HIV-infected individuals.[2] This was achieved through the Nurse-Initiated Management of Antiretroviral Therapy (NIMART) programme which includes initiation of ART and provision of an HIV package of care for the individuals.[2] The aim of NIMART is to increase accessibility to HIV care through provision of ART at PHC level, to promote earlier initiation of ART and retention into care, without compromising the quality of care. ART provision by nurses has been shown to be non-inferior to care provided by doctors.[3,4]

We aim to provide an overview of the progress and evolution of the NIMART programme over the years. This is done by reflecting on the experiences of the Anova Health Institute (Anova), a South African-based non-governmental organisation (NGO), and discussing the challenges encountered using a comprehensive model of implementation in the Johannesburg area. Through implementation of NIMART, all Anova-supported PHC facilities in the Johannesburg health

Figure 1: A three-step approach used for implementation of NIMART in Johannesburg.




district are providing HIV treatment services to pregnant women, and 76 (96%) are providing adult ART services – an increase from14 facilities in 2010 (Figure 3).

### NIMART implementation by Anova Health Institute

The Anova Health Institute has provided technical support to the implementation of the NIMART programme in PHC facilities in Soweto and Orange Farm from 2010 to date, and facilities in Alexandra and Roodepoort from January 2013 to date. A comprehensive approach is used whereby HIV expertise are provided to nurses through training on NIMART, followed by on-site clinical mentorship on HIV management and care. A three-step approach was used for implementation of the NIMART programme (Figure 1).

### 1. NIMART training

When the roll-out of NIMART training was endorsed in 2010, there was no clear specification in the task-shifting model with regard to the curriculum to be covered or the duration of the course. As such, the training duration was anywhere between 3 and 10 days, dependant on the NIMART curriculum put together by the training provider. At that time, Anova opted for a 5-day training course, with the curriculum, as outlined in Table 1a. The first NIMART training was provided in October 2010, with 20 participants, followed by 343 and 198 nurses trained in 2011 and 2012, respectively. In 2013, the Gauteng Regional Training Centre (RTC) and all of the province's NIMART training providers held a series of meetings where there was agreement on a standardised NIMART curriculum to be covered over 10 days (Table 1b). The Palsa Plus and Integrated Management of Childhood Illnesses (IMCI) methodologies were incorporated into the training, with participants managing clinical case scenarios using these two methodologies.[5,6]

### 2. Post-training mentorship

After the 5- or 10-day classroom-type training, participants were

Table 1. Summary of (a) original and (b) current NIMART curriculum in Johannesburg

| (a) 5-day NIMART curriculum | (b) 10-day NIMART curriculum (current curriculum) |
|---|---|
| • Basic HIV<br>• WHO staging<br>• OIs<br>• Management of HIV-infected adult (including ART initiation in adults)<br>• Management of HIV-infected child (including ART initiation in children)<br>• PMTCT<br>• TB management | • Basic HIV<br>• WHO staging<br>• OIs<br>• HCT<br>• Management of HIV-infected adult (including ART initiation in adults)<br>• Management of HIV-infected children (including ART initiation in children)<br>• HIV in obstetrics and gynaecology, including PMTCT and management of STIs<br>• Basic TB (including TB diagnosis and treatment)<br>• TB/HIV management (intensified case finding, infection control, IPT, ART initiation in TB/HIV co-infected clients)<br>• HIV in adolescents<br>• Nutrition and HIV<br>• Mental health in HIV |

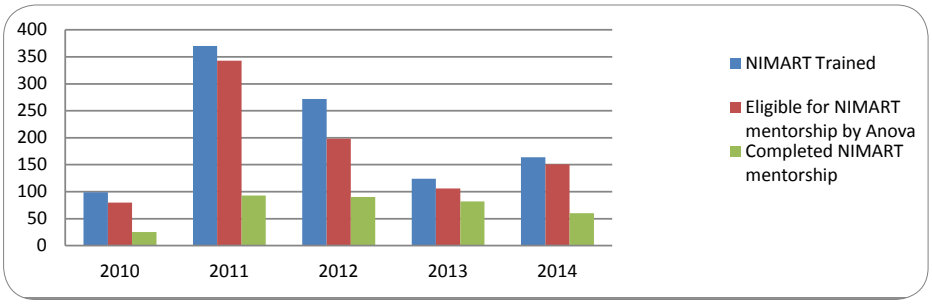
*Abbreviations. HIV: human immunodeficiency virus; WHO: World Health Organization; OIs: opportunistic infections; HCT: HIV counselling and testing; TB: tuberculosis; ART: antiretroviral therapy; PMTCT: prevention of mother-to-child transmission; STIs: sexually transmitted infections; IPT: isoniazid preventive therapy.*

provided with one-on-one clinical mentorship at their places of work. The clinical mentorship was provided by the Anova team of doctors and PHC-trained nurses with extensive experience in HIV management. Mentorship would last anything from 12 to 20 weekly sessions (each session taking 4 - 5 hours), dependant on the pace at which the mentee was able to understand concepts of HIV management. A NIMART mentorship session involved the mentor conducting clinical consultations with the mentee, teaching the mentee everything from history taking, clinical examination, diagnosis and treatment of opportunistic infections (OIs), interpretation of blood results to initiation of individuals on ART and prescription of antiretroviral drugs.

The mentorship programme was guided by the Department of Health (DoH) clinical mentorship manual.[7] All mentees were provided with this manual and the portfolio of evidence they were requested to complete as per DoH policy. On completion of the initial 12 sessions of mentorship, mentees were assessed using the assessment tool from the manual to establish their ability to work independently. Those assessed as competent were then certified accordingly, and their names and completed portfolios of evidence were submitted to the district office for NIMART competency certification by the District. Additional mentorship sessions (to a maximum of 20 sessions) were added for those assessed as not yet competent, followed by reassessment after additional mentorship.

The Anova Health Institute has provided technical support to implementation of the NIMART programme in PHC facilities in Soweto and Orange Farm from 2010 to date, and facilities in Alexandra and Roodepoort from January 2013 to date

Figure 2: Number of professional nurses NIMART-trained and mentored by Anova Health Institute in Johannesburg.




### 3. Post-NIMART competency assessment/certification

Those assessed as competent after mentorship were then allowed to work independently and provide HIV treatment and care to HIV-infected individuals. Continuous medical education is provided through facility-based in-service trainings, ART guidelines update trainings and telephonic mentorship by Anova's experienced doctors and nurse mentors.

## Results

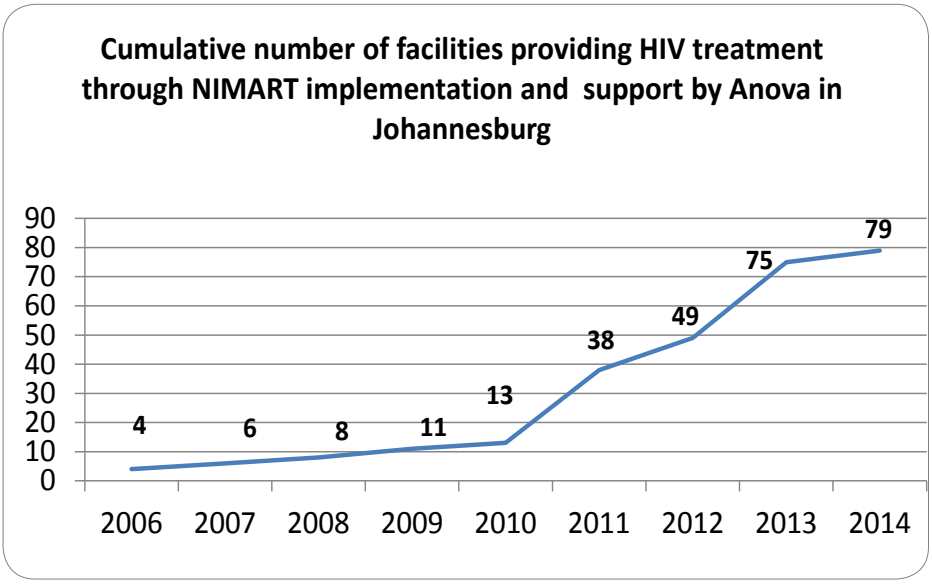
Between October 2010 and December 2014, Anova trained 1029 professional nurses on NIMART in Johannesburg, of which 11% are working in areas of Johannesburg outside of Anova-supported areas. As such, the latter group has not been provided with clinical mentorship by Anova's mentor (Figure 2). During the same period, approximately 350 professional nurses (34% of those eligible for mentorship by Anova) completed their NIMART mentorship programme and were assessed as NIMART-competent. The number trained each year is not equivalent to the number mentored that particular year, as mentorship is a longer process than training (12 weeks vs. 10 days), and mentorship is one-on-one while training is provided to a group of nurses at a time. Again, nurses mentored each year were not necessarily trained in the same year; there were overlaps.

## Discussion

Implementation of NIMART has led to an increase in access to HIV treatment in Johannesburg, since more PHC facilities are providing HIV treatment services. In our experience, the biggest challenge with implementation of NIMART was acceptance of the programme by nurses. It was perceived as extra work for the already over-worked nurse. There was criticism from nurses that doctors' work was being decreased at their expense, yet with no monetary reimbursement or incentives provided. There was also fear about clinical competency to initiate ART and to care for clients on ART. Most nurses were not confident that they would be able to provide care that was previously only provided by doctors or experts in HIV management. As the programme expanded, more nurses started viewing HIV as a chronic condition and as more nurses were being certified as NIMART-competent and had less fears regarding clinical management of HIV, demand for NIMART training and mentorship by professional nurses increased rapidly. Successful implementation of the NIMART programme was as a result of:

- training followed by regular (weekly) one-on-one mentorship
- involvement of the regional training centre with training co-ordination

Figure 3: Number of PHC facilities supported by Anova to implement NIMART and provide HIV treatment services in Johannesburg.




and the District HAST programme with introduction of the NIMART programme at facility level

- consistency of interaction through NIMART mentors also providing NIMART training; this meant that participants met the group of mentees during NIMART training and were trained on HIV management by the same group that would later provide mentorship to them (in that way, there was no disconnect between training and mentorship)
- use of tele-mentoring, which strengthened the relationship between mentor and mentee, and meant the mentee could rely on the mentor even if they were not at the same facility
- continuous regular in-service trainings at facility level and ART guidelines update trainings, where required.

The following operational challenges were encountered:

- Human resource challenges delayed the mentorship process for some nurses as they could not spend 4 - 5 hours weekly with the mentor.
- Infrastructural challenges led to some facilities only providing PMTCT services and others not providing paediatric HIV treatment services.

## Conclusion

Task shifting of HIV treatment from doctors to nurses has improved access to ART for HIV-infected individuals. The strength of our comprehensive model lies in the regular clinical mentorship provided at facility level post training, together with continuous in-service trainings. However, there is more need for mentorship than can currently be provided by donor-funded organisations such as Anova. Appointment of DoH-employed NIMART mentors would ensure further scale-up of NIMART mentorship in the Johannesburg region.

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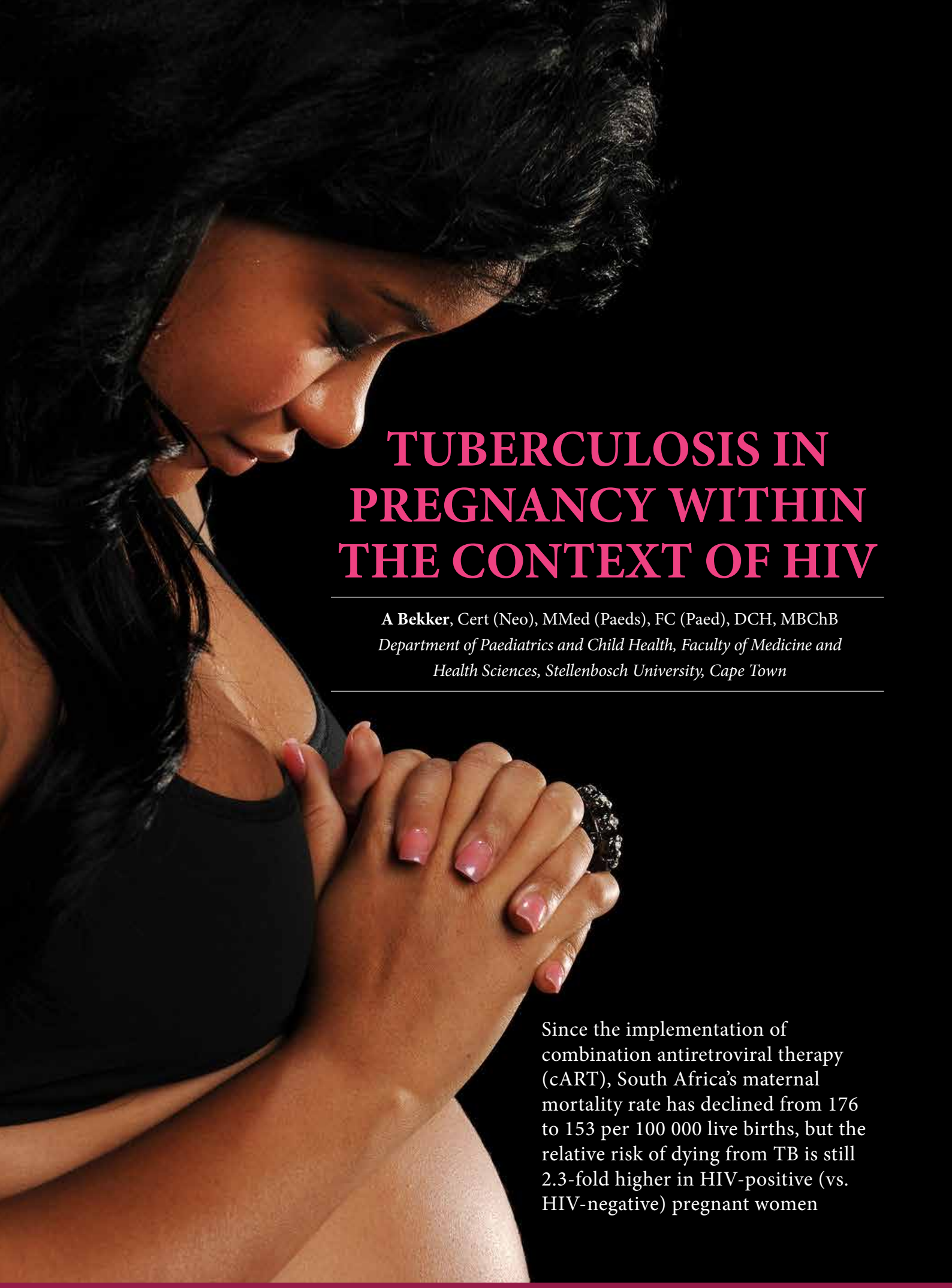

# TUBERCULOSIS IN PREGNANCY WITHIN THE CONTEXT OF HIV

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Since the implementation of combination antiretroviral therapy (cART), South Africa's maternal mortality rate has declined from 176 to 153 per 100 000 live births, but the relative risk of dying from TB is still 2.3-fold higher in HIV-positive (vs. HIV-negative) pregnant women

## Tuberculosis in women

In 2013, the World Health Organization (WHO) estimated that 3.3 million new cases of tuberculosis (TB) occurred in women worldwide, resulting in 510 000 deaths; 180 000 (35%) of these in women co-infected with HIV.[1] Although TB in pregnancy is relatively rare, a resurgence of TB has occurred with the HIV epidemic. Dual disease (TB/HIV co-infection) disproportionately affects young women of child-bearing age. Although the TB disease burden is uncertain, HIV-infected pregnant women have up to a 10-fold increased TB prevalence, between 1% and 11%, vs. the 0.5 % for HIV-uninfected pregnant women.[2] Notably two-thirds of all TB cases among women occur in South East Asia and Africa with African women accounting for 90% of all TB/HIV-associated deaths.[1] In South Africa, two-thirds of all TB cases are HIV co-infected, with TB manifesting twice as commonly in women than men.[1] Overall national TB incidence was 860 per 100 000 South Africans in 2013, suggesting that 1 in 100 people develop TB disease each year.[1]

## TB outcomes in pregnancy

Both TB and HIV are associated with high morbidity and mortality, with TB emerging as the third-leading cause of maternal mortality, after sepsis and hypertensive disorders of pregnancy.[3] Since the implementation of combination antiretroviral therapy (cART), South Africa's maternal mortality rate has declined from 176 to 153 per 100 000 live births, but the relative risk of dying from TB is still 2.3-fold higher in HIV-infected pregnant women, compared to HIV-uninfected pregnant women.[4] Babies born to TB-infected mothers are also more likely to die in the perinatal period, regardless of the mother's HIV status.[5,6] Women with TB and/or HIV in pregnancy are also twice as likely to deliver premature (less than 37 weeks' gestation) and low-birth-weight (LBW; i.e. <2 500 g) infants.[5]

## Prevention and early detection of TB in pregnancy

### *IPT in HIV-infected pregnant women*

HIV-infected pregnant women are at particularly high risk of developing TB disease during pregnancy. The 2011 WHO guidelines for isoniazid preventive therapy (IPT) for people living with HIV in resource-constrained settings now includes a recommendation for screening for TB in HIV-infected pregnant women. Once the possibility of TB has been ruled out, pregnant HIV-infected women should be started on IPT.[7]

Please refer to the table for the IPT eligibility criteria for South African pregnant/breastfeeding HIV-infected women.[8]

It is important to consider carefully the risk benefit for each HIV-infected pregnant woman, as underlying liver disease, a history of alcohol abuse and drug-drug interactions may predispose to liver injury. Liver function tests should be done if the woman develops fever, malaise, loss of appetite, nausea, vomiting or unexplained jaundice. Regular monitoring of transaminases (ALT and AST) may be indicated, and IPT and other potentially hepatotoxic drugs stopped, should the level exceed 3 - 5 times the upper limit of normal. Daily pyridoxine is recommended for the duration of IPT.

### *Heightened awareness of TB risk during pregnancy regardless of HIV status*

It is imperative that health care workers in high-burden TB/HIV settings maintain a high index of suspicion for TB during pregnancy. Early recognition and treatment of TB during pregnancy improves outcomes for maternal-infant TB pairs. Cognisance should be taken of the fact that TB may flare up during pregnancy, especially in the presence of underlying poor nutrition, immunodeficiency and/or co-existing disease.[9] A recent study from a large cohort within the United Kingdom reported women in the early postpartum period to be twice as likely to develop active TB than non-pregnant women, emphasising the high-risk period for TB presentation shortly after delivery.[10] Potential risk factors for developing TB disease in pregnancy include HIV-infection, previous close contact with an infectious TB case and/or a past history of TB. In high-burden TB settings like ours, health care workers should be encouraged to take a thorough TB history at the first antenatal consultation. All pregnant women in high-burden settings should be offered an HIV test, and all women diagnosed with TB and HIV should receive cART irrespective of their CD4 count, as recommended by the South African national TB guidelines.[11] The latest consolidated guidelines for the prevention of mother-to-child transmission of HIV (PMTCT) and the management of HIV in children, adolescents and adults recommends moving from option B to option B+.[8] Early and effective treatment of TB and HIV will lead to healthier pregnant women with fewer antenatal hospital admissions, reduced transmission of TB and HIV to their offspring, improved perinatal outcomes and the delivery of more term newborns that are of normal birth weight.

| Duration of IPT | Comments |
|---|---|
| TST positive: 36 months<br>TST negative: 12 months<br>TST not available: 12 months | IPT can be started anytime during pregnancy/breastfeeding<br>Women who fall pregnant on IPT should continue IPT |

*TB screening during pregnancy*

For early recognition of TB disease during pregnancy, a comprehensive TB history should be taken at the first presentation to an antenatal clinic, in combination with a thorough clinical examination. TB symptom screening is important in high-burden TB/HIV settings, and the national TB guidelines recommend universal TB screening in pregnancy using a TB symptom screening tool.[11] If any of the following symptoms are present: cough of any duration, fever, night sweats or weight loss/poor weight gain during pregnancy, then the pregnant woman should be investigated for TB. Once the diagnosis of TB disease has been made, TB treatment should not be delayed. The TB symptom screening tool has a poor sensitivity ranging from 28% to 54%, despite a high specificity of between 84% and 91%, as reported by two recent studies performing active TB screening in HIV-infected pregnant women.[12,13] Despite its poor detection of TB in pregnant women with TB disease, it is currently the only recommended screening tool available. It should ideally be used together with additional enquiry regarding TB history and a full clinical examination.

## Clinical presentation, risk of perinatal TB transmission and special investigations for TB during pregnancy

Diagnosing TB during pregnancy can be difficult as patients may be asymptomatic or may present atypically. The presentation varies widely from vague, non-specific TB symptoms to typical pulmonary TB (PTB) and extra-pulmonary TB (EPTB) syndromes. The majority of pregnant women with TB disease present with PTB and EPTB occurs in 5 - 10% of cases. The frequency of EPTB, including pleural effusions, miliary TB and TB meningitis has increased since the start of the HIV epidemic, as this type of TB presents more commonly in individuals with immunodeficiency. Adverse perinatal outcomes are more likely among women with advanced pulmonary lesions and among those with late or incomplete treatment.[14]

Trans-placental TB transmission from mother to baby occurs very rarely (0 - 3%).[15] However, in Durban, KwaZulu-Natal, before routine use of cART in HIV-infected pregnant women, up to 16% of babies were born with TB.[16] Treatment of TB during pregnancy decreases the risk of trans-placental TB transmission to the fetus. *In utero*- and at-birth transmission (congenital TB) are more likely in pregnant women with primary TB (e.g. with pleural effusion), disseminated TB (miliary TB or TB meningitis) or other forms of EPTB that have a bacillaemic phase (where TB bacilli are transiently present in the mother's bloodstream). Postnatal transmission (postnatal TB) is more likely to occur among women with typical cavitatory pulmonary TB.[17]

TB in HIV-infected pregnant women also increases the risk of HIV transmission to the fetus. A study from Pune, India, showed that maternal TB was associated with 2.51-fold (95% CI, 1.05 - 6.02; $p=0.04$) increased odds of HIV transmission.[18] It is therefore essential in all infants born to mothers with TB/HIV co-infection to have birth HIV PCR investigations performed to detect *in utero* HIV infection.

The approach and diagnostic tools for investigating TB in pregnant women are similar to those used in non-pregnant individuals. If TB disease is suspected, then targeted special investigations should be performed, including sputum for GeneXpert with or without culture, if indicated. GeneXpert, although expensive, offers rapid detection of TB (and resistance), and detects TB twice as effectively as smear microscopy.[19] If chest radiology is indicated, then the abdomen of the pregnant woman should be shielded to protect the fetus from radiation. If EPTB is suspected, then appropriate investigations should be conducted based on the site of disease.

## First-line TB treatment during pregnancy

The standard adult treatment regimen for drug-susceptible TB (recommended for use in pregnant women) is a 2-month intensive phase of isoniazid (INH), rifampicin (RMP), ethambutol (EMB) and pyrazinamide (PZA), followed by 4 months of INH and RMP.[11] These drugs are safe and widely used in pregnancy, with no reports of increased fetal malformations.[20] Streptomycin, which is rarely used, is contra-indicated in pregnancy because of the potential for fetal ototoxicity.[21] All of these first-line drugs cross the placenta and minimal amounts are excreted into breastmilk. Breastfeeding is recommended by the WHO, and should be encouraged in all mothers treated for TB.[22] RMP induces the cytochrome P450 hepatic enzyme that metabolises protease inhibitors (PIs) and non-nucleoside reverse transcriptase inhibitors (NNRTIs). This action may lead to a reduction in blood levels of PIs and NNRTIs. For this reason, women taking RMP in their TB treatment regimen should have the lopinavir/ritonavir dose of their cART doubled.[11] No dose adjustment is needed for women on the fixed-dose-combination drug of tenofovir, emtricitabine and efavirenz. For HIV-infected pregnant women with TB disease who are not yet on cART, TB treatment should be initiated immediately, followed by cART within 2 - 8 weeks to reduce the possibility of developing TB immune reconstitution inflammatory syndrome (TB-IRIS). For HIV-infected pregnant women with TB disease and already on cART, TB treatment should be initiated as soon as TB is confirmed, with adjustments to the cART regimen as described above.[11] Treatment for drug-resistant TB in pregnant women is difficult to manage because of high teratogenicity of second-line TB drugs, and should be should be referred for specialist management.

TB-exposed newborns should be evaluated at birth and urgently referred if TB is suspected. In cases of

TB in HIV-infected pregnant women also increases the risk of HIV transmission to the fetus

a well, TB-exposed newborn, with no suggestive TB symptoms and signs, BCG should be deferred and IPT given for a period of 6 months.

## Conclusion

Unrecognised and untreated TB during pregnancy, with or without HIV co-infection, has dire consequences for maternal-infant TB pairs. Heightened awareness of this risk should lead health care workers to recognise and treat TB early in pregnancy. Together with provision of cART for HIV-infected pregnant women, early recognition and treatment for TB will contribute to reducing morbidity and mortality in this vulnerable population.

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# Streamlining primary care for HIV/TB co-infected patients through service integration

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Currently the preferred model of providing care to HIV/TB co-infected patients is by one health care provider in order to ensure comprehensive management of the patient, reduce morbidity and mortality and improve treatment outcomes

## Introduction

An estimated 1.1 million (13%) of the 9.0 million people diagnosed with TB globally in 2013 were HIV-positive. Most of the HIV-positive incident TB cases (78%) were in the African region and the HIV/TB co-infection prevalence was also the highest in this region. In South Africa, 62% of TB patients tested for HIV had a positive HIV test.[1]

TB and HIV are both major health priorities in South Africa. Due to the high rate of HIV/TB co-infection, there has been an increased demand to provide integrated HIV and TB services at a primary health care (PHC) level. Although it is important to provide integrated services to patients, integration of services may be complex to implement and the way integrated care is translated into practice may differ depending on the setting.

## Integration of HIV/TB services

Integration of HIV/TB services is important in ensuring the successful management of co-infected patients.[2] HIV and TB treatment outcomes may improve when services are integrated, since this ensures better access, better resource utilisation, enhanced efficiency and cost-effectiveness.[3,4] However, the effect of treatment integration on patient outcomes is difficult to assess since other strategies such as community-based treatment or defaulter tracing may also influence patient outcomes when implemented concurrently.[5]

The provision of ART in the same facility as TB services in itself does not improve patient outcomes significantly[6] and the manner in which HIV/TB care is organised seems to be critical.[7]

HIV and TB treatment outcomes may improve when services are integrated, since this ensures better access, better resource utilisation, enhanced efficiency and cost-effectiveness

The 2014 Global Tuberculosis Report of the World Health Organization (WHO) advocates further scale-up of collaborative HIV/TB activities.[1] Preventing TB mortality in people living with HIV requires intensified approaches to TB prevention, early diagnosis and treatment, and fast-tracking of antiretroviral therapy (ART) initiation. The provision of appropriate care to HIV/TB co-infected patients through a comprehensive package of care (Table 1) may prolong the lives of people living with HIV and minimise the negative effects of TB on the course of HIV.[8] Van Rie *et al.* (2014) found that an integrated model utilising nurse initiation of ART in co-infected patients in the Democratic Republic of Congo increased ART uptake among patients and reduced TB mortality in patients with CD4 counts >100 cells/µl.[9]

## Models of HIV/TB care integration

There are different models of HIV/TB care integration (Figure 1). Patients enter the service when they are diagnosed with either TB or HIV. TB and HIV services may refer patients to another facility if the other service is not provided in the same facility or they may do some basic screening tests such as TB Xpert or an HIV test before referring for further treatment at the other facility. Some facilities have HIV and TB services under one roof, but the service is delivered by different health care providers. The most integrated form of HIV/TB care is when both services are delivered by a single provider (one-stop shop).[10]

Models that are based on referral only are commonly used where the co-infection prevalence is low. Such models require minimal changes to existing services, but depend on robust referral systems. The implementation of HIV testing in TB services and *vice versa* requires staff training and infrastructural changes such as additional consultation rooms.[10] Models where care is integrated within one facility are likely to require additional resources since most facilities are/were not designed to accommodate integration. When services are delivered under one roof, referral may still be necessary, but proximity may improve effective referral. Patients benefit from lower transport costs if services are delivered on the same day. However, measures to improve infection prevention and control are needed where HIV patients are exposed to patients who have TB.[10]

Studies comparing models of integration show variable outcomes. A study in Cape Town found that the provision of ART in the same facility as TB services (integrated) was not associated with lower death and default rates when compared to single-service facilities.[6] Other studies in Cape Town and the Congo found that a high percentage of patients experienced delayed ART despite either fully integrated or co-located treatment.[11-13]

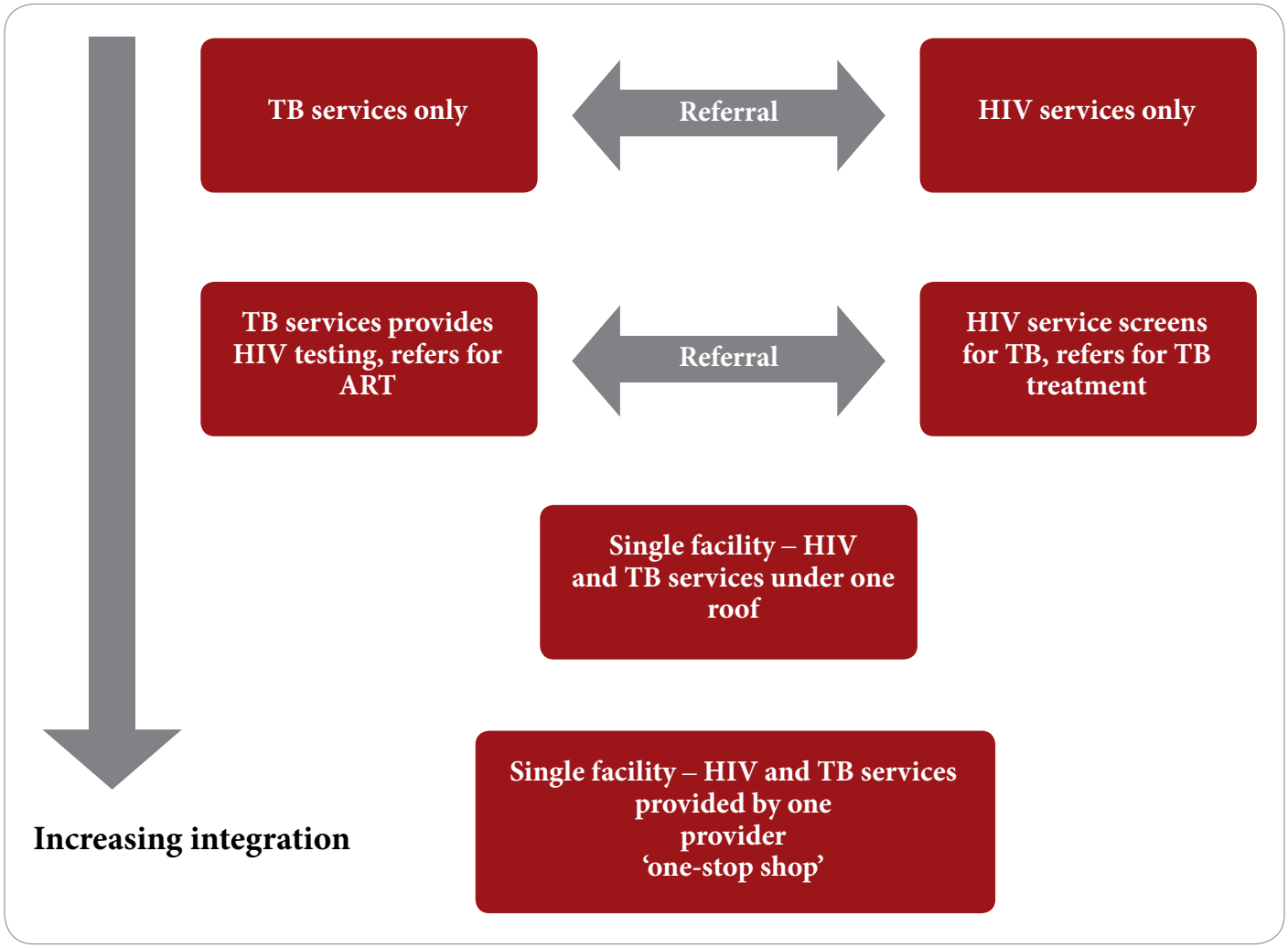
A study comparing different models of HIV/TB care in the Western Cape found that both patient outcomes and the quality of care were better when TB and HIV care was received from the same service provider at the same visit. The 'one-stop shop' model of care was superior to care delivered by separate HIV and TB service providers either in the same or in different facilities.[2] Another study in Cape Town found that integrated TB and ART service delivery

Table 1: Package of care for HIV/TB co-infected patients

| |
|---|
| Immunological staging with CD4 counts |
| An RPR test to screen for syphilis |
| PAP smears for all HIV-positive women |
| STI screening and syndrome management |
| Reproductive health care and the provision of effective (dual) contraception |
| Cotrimoxazole prophylaxis |
| Diagnosis and management of other opportunistic infections |
| Nutritional assessment and supplement provision |
| Social assessment |
| Ongoing counselling and support |
| Fast-tracking ART initiation |

*(DoH, National Tuberculosis Management Guidelines 2014)*

Figure 1: Models of integration (adapted from Legido-Quigle *et al.*, 2013).




and the delivery of HIV/TB care by one clinical team were associated with lowered odds of death. Although co-infected patients had similar TB outcomes irrespective of the level of integration, care by the same clinical team was associated with reduced loss to follow-up.[7] Similar findings were reported in Uganda where full integration of HIV/TB care contributed to improved TB outcomes and earlier ART initiation.[4]

It may be that the extent of the impact of service integration on patient outcomes is influenced by the strength of the health system prior to implementation and the parallel implementation of other interventions. The setting, for example rural vs. urban, may also influence the overall effect of integration on patient outcomes since the close proximity of clinics and access to higher skilled health care workers may lead to better outcomes in urban settings even if services are not fully integrated.

Currently, the preferred model of providing care to HIV/TB co-infected patients is by one health care provider in order to ensure comprehensive management of the patient, reduce morbidity and mortality, and improve treatment outcomes. Both HIV and TB services should be provided to the patient at the same clinical visit.[8]

## Benefits to integrated care provision

There may be several benefits to increasing HIV/TB care integration (Table 2).

## Challenges to integrated care provision

Several challenges to the provision of integrated HIV/TB services, such as service delivery, human resources and the supply of medicines, have been identified.[10]

### *Infrastructure and referral systems*

Facilities may lack infrastructure and space to facilitate infection control for TB where HIV and TB services are provided as a package of care. Patients with undiagnosed TB pose the greatest risk of nosocomial transmission to patients with HIV. There may not be enough rooms

Table 2: Key benefits of maximal HIV/TB care integration

| |
|---|
| Early diagnosis of TB |
| Early start of ART |
| Provides an opportunity to deliver a complete package of care |
| Promotes comprehensive, holistic and patient-centred care |
| Creates opportunities for disease prevention, e.g. provision of IPT, cotrimoxazole |
| Improves TB treatment completion rates |
| Improves retention of patients on ART after TB treatment completion |
| Improves quality of care and patient outcomes |
| Reduces the chance of patients 'falling through the cracks' through diffusion of responsibility |
| Convenient for patient, saves on travel costs, reduces patient work absenteeism |

(Schulz *et al.*, 2013; Hyle *et al.*, 2014)

in either the TB or HIV areas to accommodate additional services such as HIV counselling and testing. Stationery, data recording and monitoring systems are usually separate for HIV and TB and are not designed for co-ordinated care. Where HIV and TB services are delivered by separate providers, a lack of adequate referral systems may cause patients to miss opportunities or linkages to care.[10]

*Human resources and training*

PHC staff may not be trained to manage both HIV and TB. High staff turnover and staff rotating through different services may further require continuous training. Additional activities such as HIV testing or initiation of ART may not be accepted where staff are already overburdened with high patient loads.[10] The manner in which the ART programme has been introduced in South Africa may have created the perception that ART provision requires 'specialised' care, thereby preventing full integration.[2] Conversely, TB services have traditionally been delivered by non-professional nurses and some TB services may therefore not have professional nurses who can be trained and authorised to provide ART to patients.[14]

*Supply of medicines and products*

Unreliable supplies of HIV- and tuberculin skin tests and drug stock such as IPT and ART regimens in primary care may be a barrier to the delivery of integrated care.[10]

Table 3 contains some practical tips for nurses who want to facilitate HIV/TB integration in their facilities.

## Conclusion

The full integration of HIV/TB services in the form of a 'one-stop shop' service seems to be the most effective integration model when provided by well-trained and motivated staff. However, there is currently limited evidence to determine which model is the most effective and various other factors may influence the impact of service integration on the outcomes of patients who are co-infected with HIV and TB. Where full integration of services is not possible, good referral systems with co-ordinated care may deliver similar results.

It does, however, appear that the 'one-stop shop' model promotes a patient-/family-centred approach to care, which is advocated by the new South African national consolidated HIV guideline. This approach may also improve patient satisfaction with services. A recent study on patient satisfaction with HIV and TB treatment in KwaZulu-Natal reported that 52% of HIV and 40% of TB patients agreed that some staff lacked respect for patients.[15] User experiences and preferences should perhaps be explored in order to strengthen HIV/TB integration models further.

The full integration of HIV/TB services in a 'one-stop shop' model also has implications for task-shifting, requiring more professional- and staff-nurses to be trained in both HIV and TB management.

Table 3: Practical tips for successful HIV/TB care integration

| |
|---|
| Personnel should be trained in both HIV and TB management |
| Minimising the rotation of personnel who are trained in HIV/TB management to other PHC services |
| Buy-in from clinic staff |
| A point person responsible for HIV/TB integrated care |
| Clinical team approach to management accompanied by weekly team meetings |
| Integrated stationery (patient records) |
| Integrated reporting and monitoring systems |
| Infrastructure must address infection prevention and control issues, e.g. open-air clinic |
| Support from community-based services |
| Continuous quality-improvement measures |

(Schulz *et al.*, 2013; Hermanus *et al.*, 2012)

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# HIV/TB and MDR-TB

**Mojapele Virginia Maserame**, BNSC (Honours), MCur
*SAfAIDS*

'The Department of Health's report 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'

Global tuberculosis (TB) control is facing major challenges today. In general, much effort is still required to make quality care accessible without barriers of gender, age, type of disease, social setting and ability to pay. Co-infection with *Mycobacterium tuberculosis* and HIV, especially in Africa, and multidrug-resistant (MDR) and extensively drug-resistant (XDR) TB in all regions, make control activities more complex and demanding. An estimated 1.1 million (13%) of the 9 million people who developed TB in 2013 were HIV-positive. The number of people dying from HIV-associated TB has been falling for almost a decade. The African Region accounts for about four out of every five HIV-positive TB cases and TB deaths among people who were HIV- positive.[2]

With compromised immune systems, people living with HIV are >30 times more likely to develop active TB than those who are HIV-negative

According to the World Health Organization (WHO) 2013 annual Global TB Report,[3] about 20% of the 94 000 MDR-TB cases diagnosed in 2013 globally went untreated. Without treatment, MDR-TB patients face death and the likelihood of spreading MDR-TB within their communities. In South Africa, which diagnosed about 15 400 MDR-TB cases in 2012, MDR-TB treatment gaps are widening as access to testing increases. According to the WHO,[3] South Africa is the first high TB burden country to roll out the rapid TB and MDR-TB test, GeneXpert. However, the country experienced shortages of the testing cartridges in the first half of 2013. GeneXpert maker Cepheid has since planned to increase its production capacity and buffer stocks of cartridges to avoid future stock-outs. MDR-TB is resistant to both the most commonly used anti-TB drugs, rifampicin and isoniazid. Meanwhile, one of the few drugs available to treat MDR-TB in South Africa, linezolid, remains out of reach for many patients. Currently, the drug costs up to R20 000 per month of treatment due to patent protection. To prevent further TB deaths and meet international targets, the WHO says South Africa will have to improve the quality of treatment and continue to target at-risk populations such as miners and people living with HIV. The country will also need to continue to decentralise TB services.

While most people carry TB, only about 10% will ever develop active TB disease. With compromised immune systems, people living with HIV are more than 30 times more likely to develop active TB than those who are HIV-negative. TB remains a leading killer of HIV-positive people globally. Despite all theses challenges, South Africa has made strides in addressing HIV and TB co-infection. About 84% of all South African TB patients know their HIV status and more than half of all HIV/TB co-infected patients are receiving antiretrovirals (ARVs).[3]

The Department of Health's report[1] 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 ongoing programme development and contributed to a 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. 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%.

Despite impressive progress in delivery of HIV, TB and PMTCT services, the review recommended additional measures to maximise 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, among others, improving the quality of prevention, diagnosis, treatment and care services and targeting population groups who are underserved.[1] ℞


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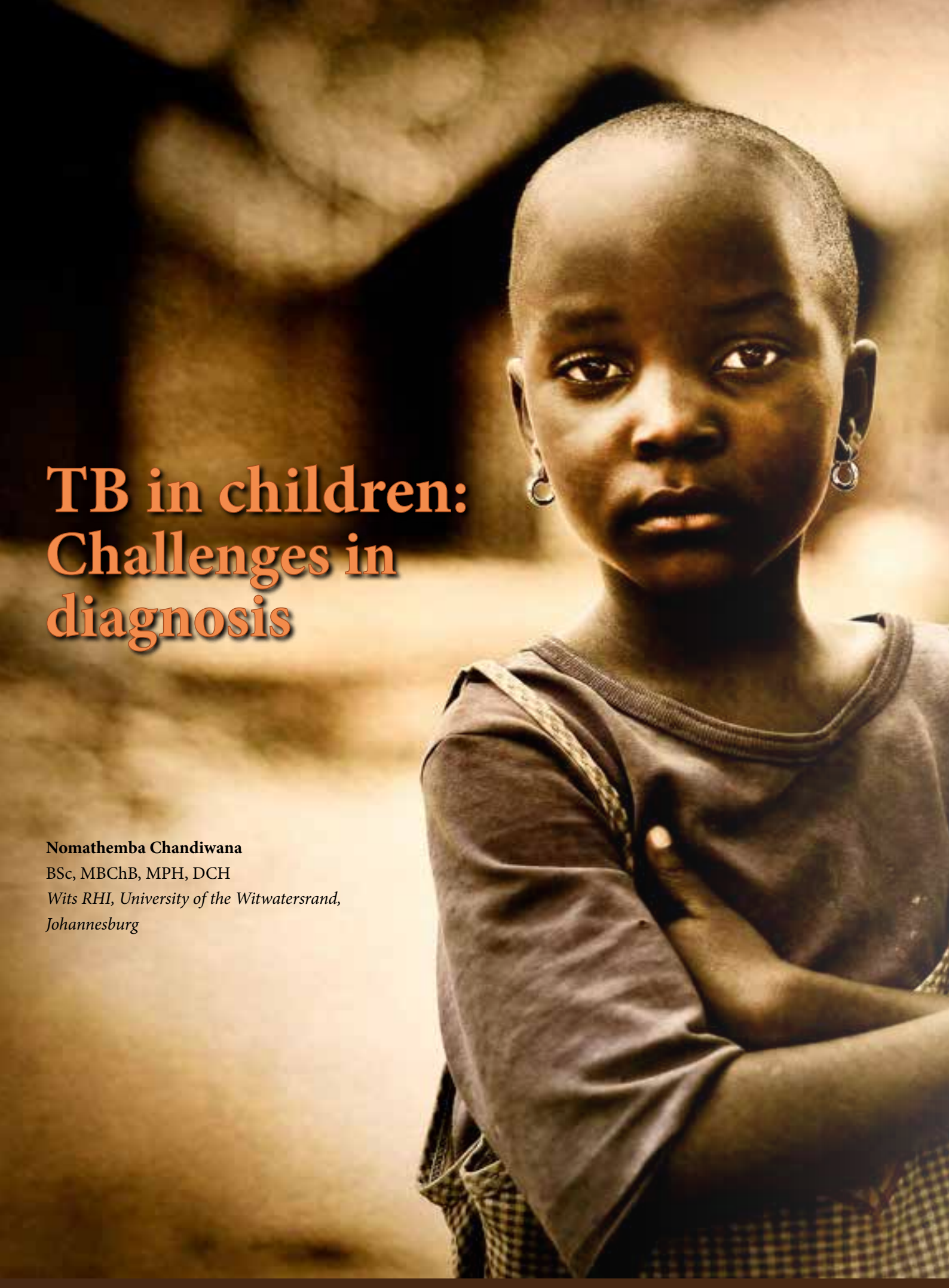
Below is an extract summary of South Africa HIV/TB burden profile:[3]

| Estimated TB burden 2013 | Number (thousands) | Rate (per 100 000 population) |
|---|---|---|
| Mortality (excludes HIV+TB) | 25 (15 - 38) | 48 (28 - 73) |
| Mortality (HIV+TB only) | 64 (47 - 83) | 121 (90 - 158) |
| Prevalence (includes HIV+TB) | 380 (210 - 590) | 715 (396 - 1 126) |
| Incidence (includes HIV+TB) | 450 (410 - 520) | 860 (776 - 980) |
| Incidence (HIV+TB only) | 270 (240 - 310) | 520 (464 - 594) |
| Case detection, all forms (%) | 69 (60 - 76) | |

| Estimated MDR-TB burden 2013 | New | Retreatment |
|---|---|---|
| % of TB cases with MDR-TB | 1.8 (1.4 - 2.3) | 6.7 (5.4 - 8.2) |
| MDR-TB cases among notified pulmonary | 4 600 (3 600 - 5 900) | 2 200 (1 800 - 2 700) |



# TB in children: Challenges in diagnosis

**Nomathemba Chandiwana**
BSc, MBChB, MPH, DCH
*Wits RHI, University of the Witwatersrand, Johannesburg*

**Accurate diagnosis of TB in the context of HIV is particularly challenging; yet confirmation of TB is important in children with HIV, in whom pill burden, complex drug interactions and adherence issues make concurrent treatment of HIV and TB difficult**

## Introduction

Tuberculosis (TB) continues to be a leading cause of death in children worldwide; yet children with TB are not given high priority in most national health programmes and have historically been neglected in this epidemic.[1] The World Health Organization (WHO) estimates that there were approximately 550 000 cases of TB in 2013 and that 84 000 HIV-negative children died from the disease in that same year.[2] Very young, malnourished and HIV-infected children are more likely to develop disseminated or severe forms of the disease, such as miliary TB and meningitis, which carry a higher mortality. In South Africa, children contribute 15 - 20% of TB cases annually and experience half the incidence of TB reported in adults.[3] Childhood TB has not been in the global spotlight until recently, with the WHO including statistics of the burden in children for the first time in the Global TB Report of 2012.[4] Even so, the true burden of TB in children is unknown. Many children remain undiagnosed and unreported due to problems in case identification and diagnosis.

South Africa is one of ten high TB burden countries, contributing to over 74% of cases of missed TB disease globally, and is unlikely to achieve TB-related targets set up by the Millennium Development Goal (MDG) framework.[5] In the countdown to the end of 2015, there is an urgent need to improve access to basic diagnostic services for children, especially in primary care settings where most children with suspected TB present.

Primary health care workers are responsible for the timely identification of children with symptoms of TB

## Challenges in microbiological diagnosis

A major challenge of childhood TB is establishing an accurate diagnosis. Smear microscopy, sputum culture and Xpert MTB/RIF accurately diagnose TB in adults; however, they have limited use when used in the diagnosis of younger children suspected of TB. This is partly because pulmonary TB (PTB) in young children is frequently paucibacillary. Reduced bacillary loads lead to many children with TB testing smear-negative. This is not true for older children and adolescents who have a similar clinical presentation to adults. In addition, the collection of adequate specimens may prove more challenging in young children. A number of specimens can be used for microbiological diagnosis of TB in children, including gastric lavage, induced sputum, nasopharyngeal aspirates, fine-needle aspiration of a lymph node, or an ear swab (in the presence of a chronically discharging ear). However, there are often inadequate facilities to routinely attempt specimen collection at primary care clinics.

Although challenging, diagnosis of TB is possible, even in infants when specimens are taken appropriately. A hospital-based study in Cape Town, South Africa, investigating the diagnosis of children with suspected PTB, showed a very high speci□city of Xpert (98.8%) and results were available on average after one day.[6] Furthermore, microbiological confirmation is increasingly important for the detection of multidrug-resistant (MDR) TB (defined as resistance to at least isoniazid

and rifampicin) to ensure provision of appropriate therapy. Continued failure to detect and treat childhood cases of TB and MDR-TB results in unnecessary deaths.

## Limitations of case definitions and scoring

Most children suspected of TB present with non-specific clinical signs and a wide variability of radiological features. The dual epidemic of TB and HIV further adds to the diagnostic complexity, as there is often an overlap of clinical presentation in both conditions. In the absence of microbiological confirmation, the diagnosis of TB in children is reliant on a combination of clinical case definitions, radiological signs and tuberculin skin test (TST) results. This approach will diagnose the majority of HIV-uninfected children suspected of TB disease with a fair amount of accuracy in low prevalence settings. However, where TB and HIV are common, case definitions lack specificity: there is a wide variability in chest x-ray interpretation and positive TST results document TB exposure but cannot confirm active disease. A critical review of 16 published diagnostic scoring systems for paediatric PTB found that few had been validated and adapted for use in HIV-infected or malnourished children.[7] Nevertheless, in resource-limited settings where there is a shortage of health workers, and facilities to induce sputum are limited, scoring systems retain an important place in the diagnostic work-up of a child with suspected TB. Going forward, greater efforts must be made to improve scoring systems, including the validity and reliability of scoring systems in this population.

## HIV and childhood TB

The HIV epidemic has been associated with an increase in new cases of TB disease among children. Accurate diagnosis of TB in the context of HIV is particularly challenging. Yet, confirmation of TB is important in children with HIV, in whom pill burden, complex drug interactions and adherence issues make concurrent treatment of HIV and TB difficult. As in HIV-uninfected children, microbiological diagnosis is problematic and is rarely achieved. Furthermore, clinical signs and radiological findings can mimic other respiratory conditions common in HIV-infected children, such as lymphocytic interstitial pneumonia (LIP) and bronchiectasis. The TST is frequently negative, even though the child may have latent TB or active TB disease.

## Limitations of screening problems with staff perceptions

Primary health care workers are responsible for the timely identification of children with symptoms of TB. However, many health care workers do not regularly screen children at high risk of TB infection and do not consider TB as a possible diagnosis when children present to a facility when ill. Primary care providers need to have a high index of suspicion for TB among children who live with someone who has confirmed PTB, children infected with HIV, children less than five years of age, and children with severe malnutrition.

Health care providers may assume childhood TB to be an uncommon disease and expect children with TB to present with obvious signs and symptoms together with known exposure to TB. This represents missed opportunities of case detection in the early stages of the disease. Training updates and feedback from referral sites could motivate staff to screen children more routinely in high TB prevalence settings. ®

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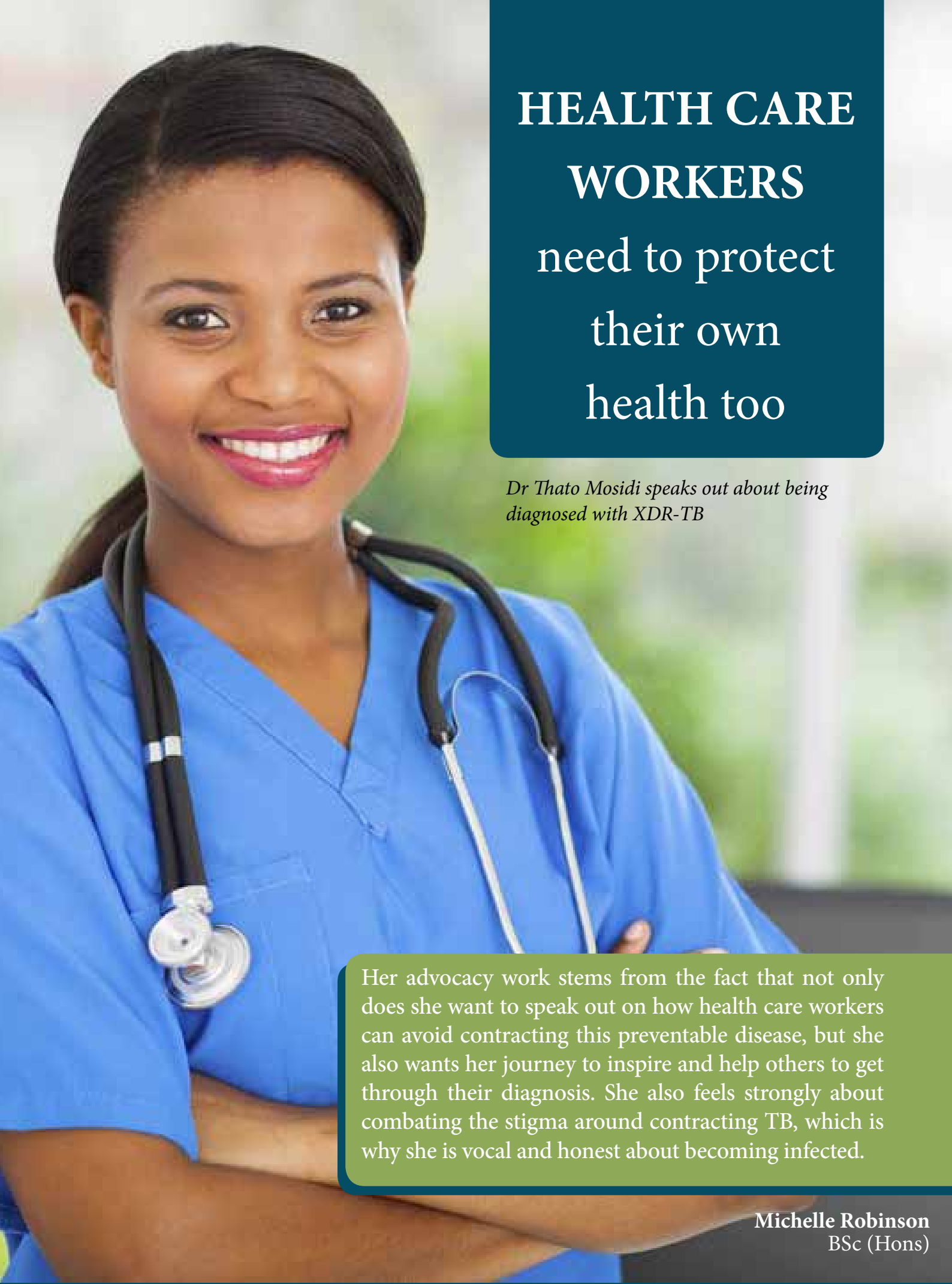
**Key points**

- Childhood TB is common, yet under-diagnosed and under-reported
- Microbiological confirmation of childhood TB is increasingly important, especially for the detection of drug resistance and provision of optimal therapy
- Scoring systems for diagnosis of childhood TB often lack sensitivity and specificity, particularly in areas with a high prevalence of HIV
- Xpert MTB/RIF can confirm pulmonary TB in children of all ages; however, collection of sputum is difficult in primary care settings
- Diagnosis of pulmonary TB in HIV-infected children is more difficult due to non-specific clinical and radiological signs, and poor performance of the tuberculin skin test
- There is an urgent need to invest in research on improved diagnostics for childhood TB



# HEALTH CARE WORKERS need to protect their own health too

*Dr Thato Mosidi speaks out about being diagnosed with XDR-TB*

Her advocacy work stems from the fact that not only does she want to speak out on how health care workers can avoid contracting this preventable disease, but she also wants her journey to inspire and help others to get through their diagnosis. She also feels strongly about combating the stigma around contracting TB, which is why she is vocal and honest about becoming infected.

**Michelle Robinson**
BSc (Hons)

There was a time when Dr Thato Mosidi's life was focused on numbers: 30 tablets a day; 3 months in Sizwe hospital; 3 diagnoses of TB, from TB to multidrug-resistant (MDR) TB, to extensively drug-resistant (XDR) TB. Ultimately, however, Thato's story is a positive one, as she has used her experiences to reach out to health care workers in order to help prevent occupational TB.

Other numbers Thato emphasises are 'four to six'. Health care workers are at four to six times greater risk of contracting TB than the average person. Thato's story began in 2013 when, while working at Leratong Hospital as a medical officer, she began coughing blood one morning. She suspected TB, although as she points out it was not the typical presentation. "I had no fever, no night sweats. I wasn't losing weight. I felt perfectly fine and healthy." A week after being admitted to hospital, her sputum results revealed that she had contracted TB, most likely from her medical work among the peri-mining community in sub-Saharan Africa – who have the highest rates of TB in the world. After being discharged with a prescription for TB medication, Thato was feeling positive. She had no other symptoms and felt fine.

Then, everything changed. She recalls standing in a shopping mall when she received a phone call notifying her that her TB was drug-resistant, and bursting into tears there and then. Her main concern was her 3-year-old daughter and ensuring that she was not exposed, which meant sending her to stay with her grandmother. She also had to put strict infection control measures into place in her home, to avoid infecting her husband. It meant a great deal of change and adjustment, but just as she was getting her new routine started, another shock came in the form of another diagnosis: XDR-TB.

XDR-TB is resistant to isoniazid and rifampicin, as well as any of the fluoroquinolones and at least one of the three injectable drugs. This severely reduces treatment options, takes far longer to treat than drug-susceptible TB and the drugs have an increased number of side-effects. However, Thato was determined to take control of her diagnosis and sought out the help of experts. She met with Dr Francesca Conradie and was enrolled in a trial at Sizwe Hospital, which works exclusively with the treatment of MDR- and XDR-TB. She spent 3 months at Sizwe, where she met and befriended many other patients, some of whom had been there for a year!

She admits that her time there was not easy. "I suffered many side-effects: nausea, insomnia, neuropathy so bad I could not stand up at times." She also says that she was depressed, especially from being away from her home and her family. However, she was determined to find a way to cope. Once being discharged, she threw her willpower and self-discipline not only into taking care of herself, practising strict infection control and adhering to her medication, but also into becoming an advocate for TB awareness, especially among health care workers.

She has attended conferences such as the 45th Union World Conference on Lung Health, and has spoken out extensively about her experiences, advocating for better occupational health policies and practices to prevent the spread of TB in health care workers. She feels strongly that health care facilities need better infection control, and access to services such as chest x-rays at work for a more rapid diagnosis of TB.

Her advocacy work stems from the fact that not only does she want to speak out on how health care workers can avoid contracting this preventable disease, but that she also wants her journey to inspire and help others to get through their diagnosis. She also feels strongly about combating the stigma around contracting TB, which is why she is vocal and honest about becoming infected.

Thato has encouraging words for anyone who has contracted TB. "You are not alone, and you did not do anything wrong. Don't hide. Rather seek the help that you need, as quickly as possible." She also encourages anyone infected with TB to be proactive, and take responsibility by getting as much information as possible, looking after themselves and above all, adhering to treatment.

She also reminds health care workers to be aware of their high-risk status. "Doctors, nurses, allied health care workers. None of us are immune and it can happen to anyone. TB is preventable – so be careful, practice good infection control and don't take chances with your health."

Thato works with TB Proof, which was founded in 2012 by South African health care workers and students after multiple personal experiences with occupational TB, particularly MDR-TB. For more information go to: ***http://www.tbproof.org/***

Anyone who suspects they may have contracted TB can get help at their local clinic. [www.unmaskstigma.org] ®

# The significance of Root Cause Analysis in Quality Improvement

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*Root Cause Analysis is said to be the fundamental breakdown or failure of a process which, when resolved, prevents a recurrence of the problem*

## Introduction

The purpose of this article is to provide insight into the importance of, and the role played by, the Root Cause Analysis (RCA) process in Quality Improvement (QI). We will provide a definition of RCA as a concept, an explanation of its importance, as well as provide examples of how it is applied in the QI process.

## Background

Dr Edward Deming (1900 - 1993), one of the founding fathers of QI, and who is often regarded as one of the most influential people in the field of QI, taught the notion that 'all work is a process' – meaning that HIV testing or TB screening, for example, **are not just isolated events in and of themselves**; these procedures, like all other 'work' performed in our clinics and hospitals, is **accomplished by completing a series of steps**.

**This series of steps is known as a process; hence, 'all work is a process'**. Below is an example of the process of TB screening as typically performed at a primary health care facility.

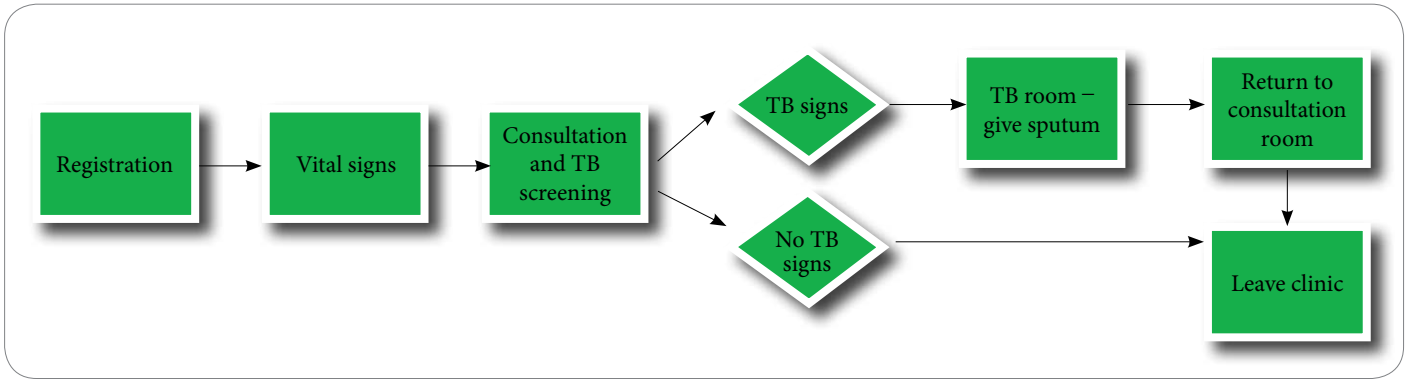
Viewing our daily activities/work/processes, as components of an interdependent system helps us to realise their influence and reliance on each other.

Edward Lorenz coined the phrase 'Butterfly Effect';[4] which states: "If a butterfly chances to flap its wings in Beijing in March, then, by August, hurricane patterns in the Atlantic will be completely different."[5] He therefore claimed that **very small changes in initial conditions created a significantly different outcome**. This 'butterfly effect' can also be experienced in our health care facilities. Seemingly small changes to a process, such as moving TB screening to the vital signs room instead of the consultation room, can have a significant impact on our health system in the short- and long term.

**Incorrectly seeing our work as isolated events, underestimates the complexity and influential nature of our processes**, which therefore can lead to overly **simplified solutions** to address the problems and gaps we experience.

## What is RCA?

RCA can be defined as a method of **problem solving** that tries to identify the root causes of a problem and seeks to answer the question '**Why?**'. A root cause is a cause that once removed from the problem fault sequence, **prevents the final undesirable event from recurring**.[3] RCA is



said to be the fundamental breakdown or failure of a process which, when resolved, prevents a recurrence of the problem. In QI, RCA is viewed as a critical and integral part of addressing an identified problem at a specific point in time. It is therefore a **systematic approach** to get to the true root causes of our process problems.[3]

RCA helps us identify where the **problem is stemming** from in order to ensure that the **intended solution rectifies or solves** that particular problem.

### Application of RCA in the QI context

**Before** embarking on any QI project, a proper and thorough RCA should be done by all of **those involved in the process**, as they will be in a better position to more easily and appropriately identify the true cause of a problem. Failure to do proper RCA can result in a number of implications such as:

- staff members losing faith in the QI methodology when the tested changes do not yield any positive results – this is not only detrimental to the current improvement project, but for future improvement efforts
- overwhelming the current system with unnecessary changes
- wasting time and resources since the main symptoms are not being addressed
- improvement being short-lived and not sustained as the problem reoccurs and/or persists.

Simply implementing changes when the root of a problem is not clearly understood, is like putting a plaster on your head hoping it will take away your headache, i.e. inappropriate intervention for a poorly diagnosed problem.

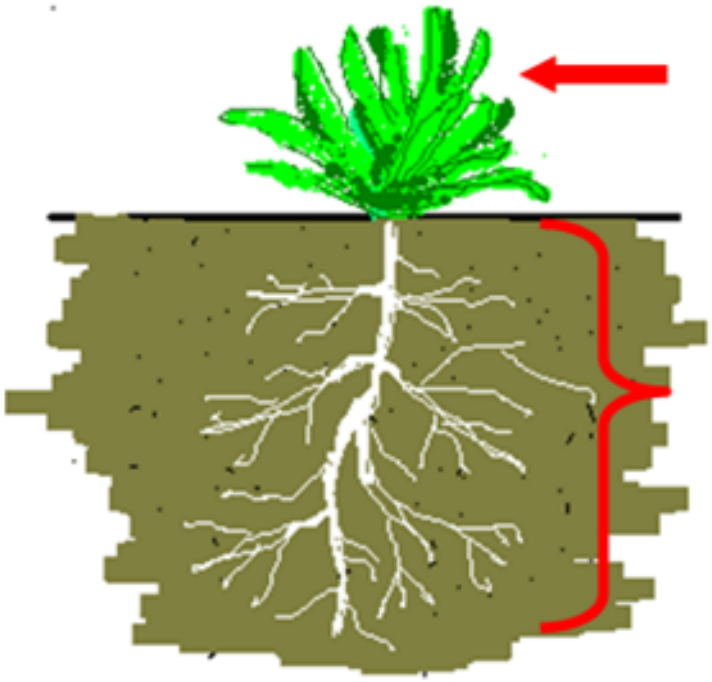
### Is there a magic bullet?

Absolutely not! Why not? As we are trying to address problems that occur within a process. **Most times there isn't just one thing that is going to make ALL the difference**. There could be a number of things within various processes causing our problem. A thorough and precise RCA will probably yield a number of different causes. How you then decide which one you are going to deal with first, or at all, is dependent on a number of factors, including:

- what you want to achieve
- your resources
- staff buy-in
- current level of knowledge and skill among staff
- management buy-in and endorsement
- current deadlines and targets.

At times, it can be difficult to determine the causes of a problem. The safest,

RCA basics




The word 'Root', in 'Root Cause Analysis', refers to the underlying causes, not the one cause

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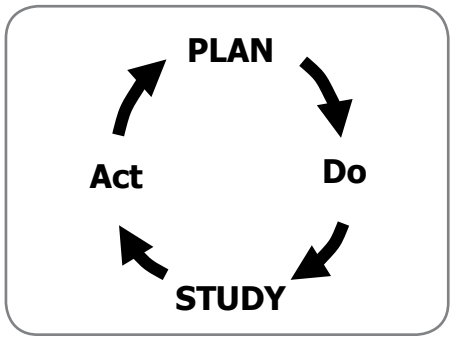
most effective and measurable way to determine whether your change is having the desired impact is by **testing!** Test an idea on a small scale first to determine its impact before wasting precious time, resources and energy.




## How to do RCA

There a number of tools which can be used to do RCA:

- **The cause-and-effect or fishbone diagram –** This tool can be used to encourage a more systematic and wide-ranging brainstorming. Careful selection of topics for the fishbone can facilitate the identification of the key root causes and some introspection.[2] Module 2 of the Aurum HOW TO Guide will provide additional information about this tool and how to use it effectively.
- **The Five Why's –** Repeatedly asking the question 'Why?' is a quick way of going deeper into a problem to try and find the underlying cause. It is sometimes used in conjunction with the fishbone to encourage further analysis.[2] Module 2 of the Aurum HOW TO Guide will provide additional information about this tool and how to use it effectively.
- **Process mapping and analysis –** used to understand the steps or processes that make up a system. The tool provides a visual representation of a process with its constituent steps. This is usually helpful in identification of 'problem areas'.[2] Module 3 of the Aurum HOW TO Guide will provide additional information about this tool and how to use it effectively.

## Examples of how RCA is effectively used to identify different change ideas for the same problem

In one of the health districts supported by The Aurum Institute, a challenge with the 2-month smear conversion rate was identified. The illustration on p. 45

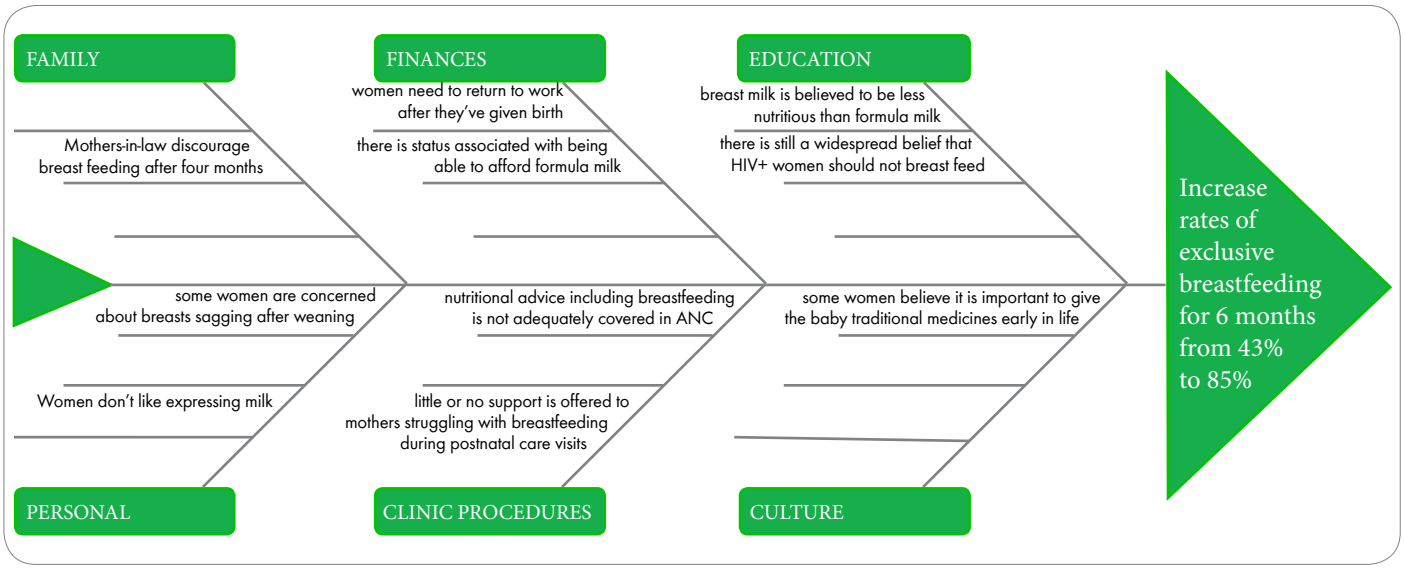
> RCA can be defined as a method of **problem solving** that tries to identify the root causes of a problem and seeks to answer the question **'Why?'**

depicts the RCA process undertaken by two primary health care facilities that were both experiencing the **same problem but for different reasons**. As their root cause was different, their intervention naturally had to be different.

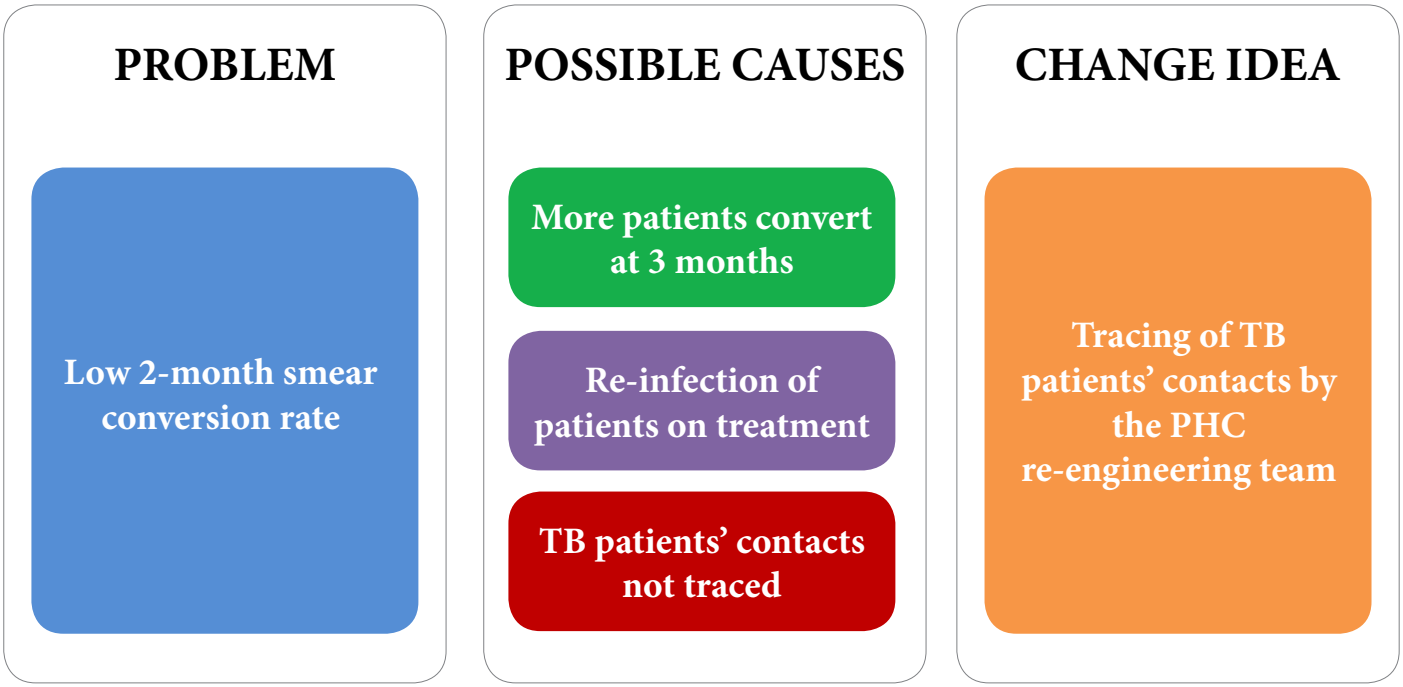
## Conclusion

'All work is a process' and a process is a sequence of events to accomplish work.[1] Identifying the steps involved in our work processes and determining their impact on each other and the system as a whole, is critical to the RCA process. Incorrectly seeing our work as isolated events, underestimates the complexity and influential nature of our processes, which therefore can lead to overly simplified solutions to address

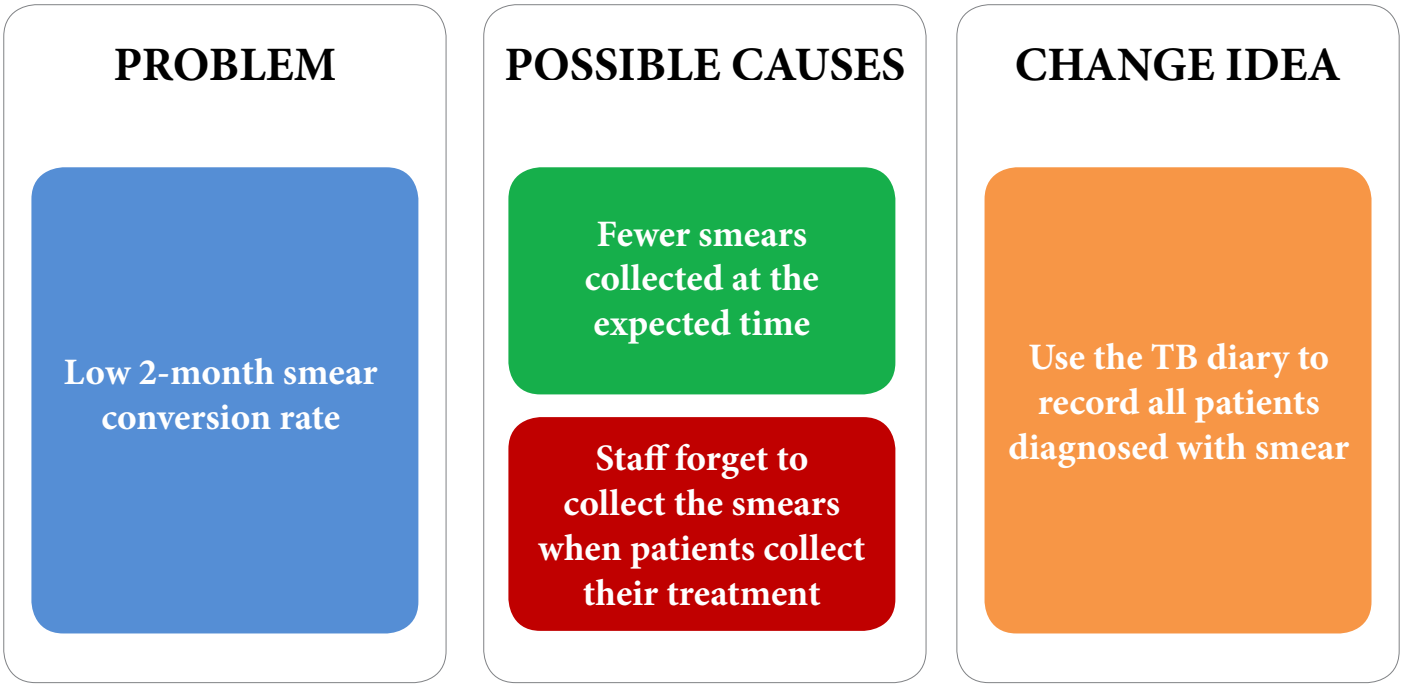
Example of a completed fishbone:
"Macassa clinic aims to increase exclusive breastfeeding for 6 months from 43% to 85%"



Clinic A




Clinic B




the problems and gaps we experience. If sustainable, effective improvement is your goal, then thorough and precise RCA must take place by those currently involved in the system and before any change is attempted. Your improvement intervention should be informed by your cause! ®

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- All advertising material to be in CMYK colour mode and the resolution 300 dpi
- If pictures are sent, save as high resolution (300 DPI)
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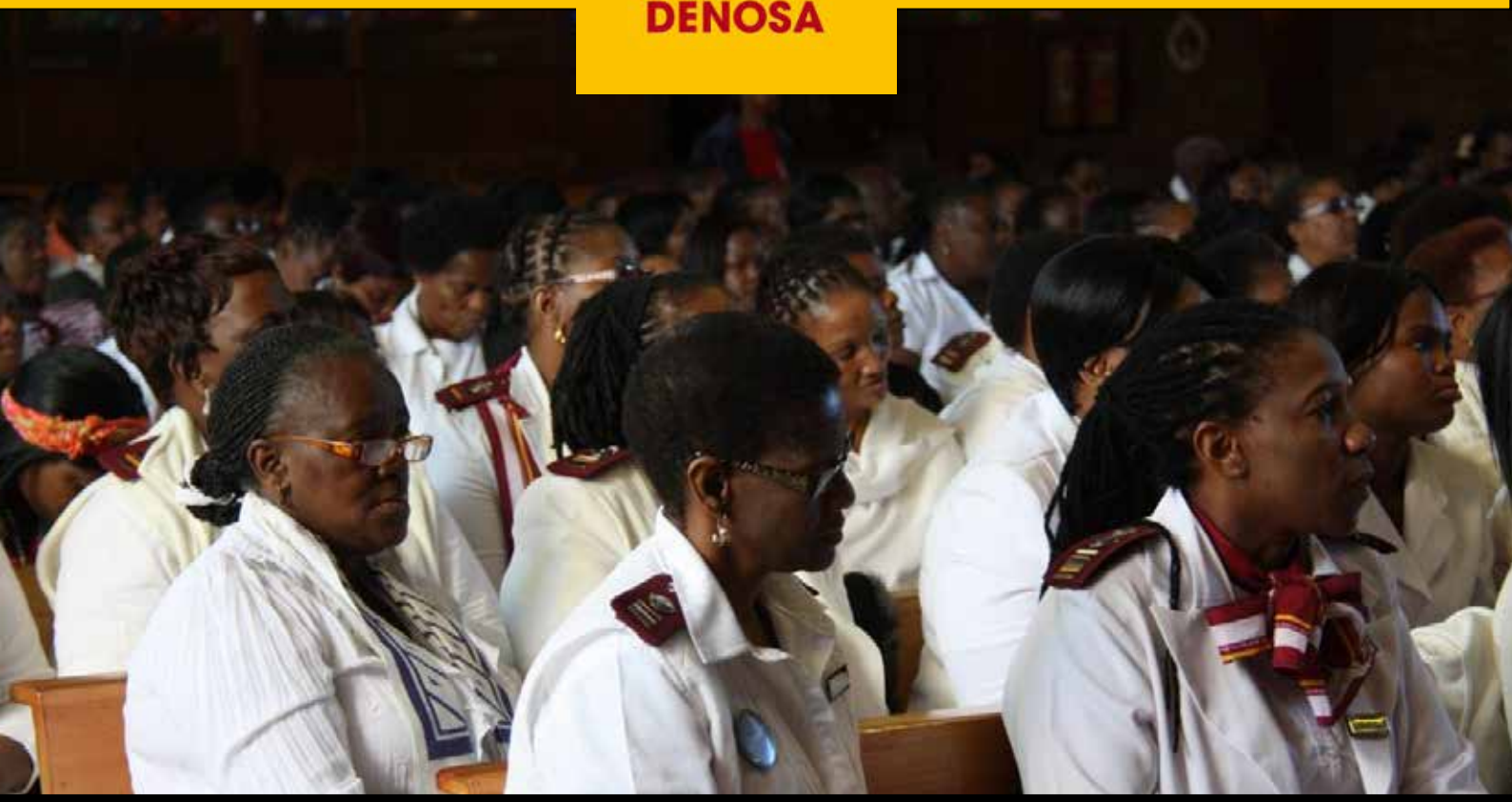

# Explaining the DENOSA Indemnity Cover for nurses

## What is DENOSA Indemnity Cover?

Indemnity insurance is the cover that all paid-up DENOSA members enjoy as a benefit. This comes in handy when there is litigation against one of our members in terms of an incident that occurred while the member was on duty for which the member is charged and held liable for that incident.

## How does it work?

When our member is found guilty at disciplinary processes or legal proceedings, the indemnity cover pays up to R5 million on behalf of the member. This is strictly limited to professional conduct, in other words, this cover is strictly confined to the incident that occurs while the member was performing her/his duty.

It does not apply in incidences where a member is not on duty. Furthermore, it is not extended to any colleague of family member. It is strictly for DENOSA members in situations concerning the workplace.

- Members are advised to report the incident within 24 - 48 hours of occurrence, and submit the incident report and supporting documents (contact details, ID number and statements) to the Provincial and National Offices for assessment by shop stewards.
- It is advisable to report incidents that may be regarded as minor, because they may turn out to be complex at a later stage.
- Report incidents to the provincial and national shop steward to process to the INSURER via the National Office.
- Always keep a copy for your own reference.
- All correspondence to be directed to the Provincial Office.

For more information, do not hesitate to contact Member-Service Division at DENOSA on 012 343 2315

# competition

## HIV/TB nursing

Working in the TB room as a nurse is a very challenging task because you are faced with more than TB. Most patients with TB are also co-infected with HIV/AIDS, so the TB nurse has to be extremely knowledgeable about both infections. A TB nurse has to work with a high volume of patients and she/he risks becoming infected with TB her-/himself.

We want to hear about your experiences working as an HIV/TB nurse. What strategies do you use to support patients through treatment for both diseases? How do you keep them motivated, ensure they come for their appointments, make sure people living in the household are investigated, etc.? We would love to publish your strategies for success in *HIV Nursing Matters*.

Submit your typed piece, not exceeding 1 000 words, by 1 May 2015 and stand a chance to win a free one-year membership to the Southern African HIV Clinicians Society (the Society); and have your piece published in *HIV Nursing Matters*!

One winner will be chosen by 15 May 2015. The winner agrees to the publication of their story in the June 2015 issue of *HIV Nursing Matters* and to submit a picture to accompany the article. The judges' decision is final and no correspondence will be entered into. Please note that only typed stories will be considered.

Please submit via email to nonhlanhla@sahivsoc.org

STOP STOCKOUTS

# What is the Stop Stock Outs Project?

The Stop Stock Outs Project (SSP) is an organisation that monitors availability of essential medicines in government clinics and hospitals across South Africa. The SSP aims to assist healthcare workers in resolving stock outs and shortages of essential medicines at their facilities, enabling them to provide patients with the treatment they need.

## How do you report a stock out to the SSP?

**Our hotline number is**
**084 855 7867**

- **Send us a Please Call Me**
- **Send us an SMS**
- **Phone us or missed call us**

We will then phone you back to get some more information.

**You can also email us at report@stockouts.co.za**

## What information do you need to report to the SSP?

**The name of the medicine that is out of stock**

**The name of the clinic or hospital where you work**

Reporting is an anonymous process and your name, if provided, will not be disclosed to anyone outside of the SSP.

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QUIZ

## QUESTIONS AND ANSWERS

# QUESTIONS

1. *Since the implementation of cART in South Africa, the maternal mortality rate has dropped; state by how many people it has dropped by?*

Answer.....

2. *If a pregnant HIV+ woman is eligible for IPT, with a positive TST, for how long must she take INH?*

Answer.....

3. *True or False: Is integration of TB and HIV services crucial?*

Answer.....

4. *True or False: Are human resources, service delivery and supply of medicine some of the challenges facing integrated care?*

Answer.....

5. *According to the WHO 2013 report, how many cases of MDR-TB were diagnosed in 2013 globally?*

Answer.....

6. *Of all the MDR-TB cases diagnosed in 2013, what percentage were untreated?*

Answer.....

7. *Explain why the new guideline is called 'consolidated'?*

Answer.....

8. *Is the guideline freely available online?*

Answer.....

9. *Name at least three types of patients who are not eligible for IPT?*

Answer.....

10. *What is the IPT dose for adolescents over 15 years of age, adults and pregnant women?*

Answer.....

*Answers can be sent by:*
*E-mail: nonhlanhla@sahivsoc.org*
*Fax: 011 728 1251*
*SMS/WhatsApp: 082 756 1510*

## ANSWERS

FROM 2014 THE DECEMBER ISSUE

1. *True*
2. *Process map*
3. *13%*
4. *True*
5. *False*
6. *Because their immune system recovers slowly compared to the younger people*
7. *Cardiovascular diseases, cancer, osteoporosis, hypertension, kidney failure and liver diseases*
8. *True*
9. *Obesity, cigarette smoking, uncontrolled diabetes, cholesterol and hypertension*
10. *True*

NATIONAL HEALTH LABORATORY SERVICE

# RESULTS HOTLINE

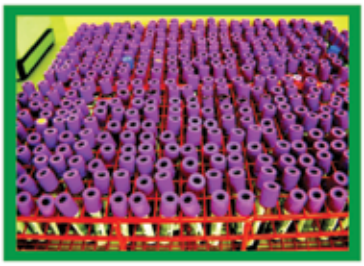
# 0860 RESULT 737858

*This line is dedicated to providing results nationally for HIV Viral Load, HIV DNA PCR and CD4 to Doctors and Medical Practitioners, improving efficiency in implementing ARV Treatment to HIV infected people. This service is currently available to members of Health Professionals Council of the South Africa and the South African Nursing Council. The hotline is available during office hours from 8am to 5pm Monday to Friday.*

**Register to use the RESULT HOTLINE**

Follow this simple Step-by-step registration process

Dial the HOTLINE number 0860 RESULT (737858)
Follow the voice prompts and select option 1 to register to use the hotline
A hotline registration form will be sent to you by fax or e-mail.
Complete the form and return it by fax or e-mail to the hotline to complete your registration process.
Once you are registered, you will be contacted with your unique number. This number is a security measure to ensure that the results are provided to an authorized user.



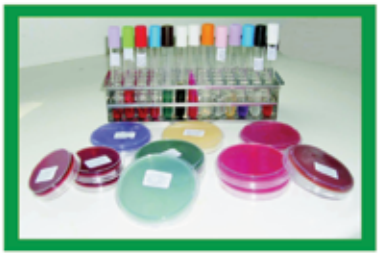
To use the hotline dial 0860 RESULT (737858)

Select option 2 to access laboratory results.

- You will be asked for your HPCSA or SANC number by the operator.
- You will be asked for your Unique Number.
- Please quote the CCMT ARV request form tracking number (bar coded) and confirm that the result requested is for the correct patient.

Should the results not be available when you call, you will be provided with a query reference number which must be used when you follow up at a later date to obtain the result.

Once you have a Reference number



Select option 3 to follow up on a reference number
Should the requested results not be available, a query reference number will be provided to you.
A hotline operator will call you within 48 hours of receiving the laboratory results.

*Registering for this service from the NHLS, will assit in improving efficiency, providing improved patient care and streamlining clinic processes. Call now and register to access results for HIV Viral Load, HIV DNA PCR and CD4.*

## NDOH/SANAC Nerve Centre Hotlines

- Any HCT concerns from facility and district managers should be reported to the NDOH/SANAC

**Nerve Centre Hotline and specific e-mails for each province:**

- **Western Cape:** 012-395 9081 sanacwesterncape@gmail.com
- **Northern Cape:** 012-395 9090 sanacnortherncape@gmail.com
- **Eastern Cape:** 012-395 9079 sanaceasterncape@gmail.com
- **KZN:** 012-395 9089 sanackzn@gmail.com
- **Free State:** 012-395 9079 sanacfreestate@gmail.com
- **Mpumalanga:** 012-395 9087 sanacmpumalanga@gmail.com
- **Gauteng:** 012-395 9078 sanacgauteng@gmail.com
- **Limpopo:** 012-395 9090 sanaclimpopo@gmail.com
- **North West:** 012-395 9088 sanacnorthwest@gmail.com

## AIDS Helpline 0800 012 322

The National Toll free AIDS Helpline was initiated in 1991 by the then National Department of Health's (NDoH) HIV/AIDS, STD's and TB Directorate. The objective of the Line is to provide a national, anonymous, confidential and accessible information, counselling and referral telephone service for those infected with and affected by HIV and AIDS, in South Africa.

In 1992, LifeLine was requested by NDOH, to take over the management of the Line by rotating it between the 32 existing community-based LifeLine Centres, and manning it with volunteer counsellors. In 2000, in response to an increasing call rate, a centralised Counselling Centre was established in Braamfontein, Johannesburg, to house the AIDS Helpline. The AIDS Helpline a national toll-free, operates on a 24/7 basis and is utilised by people from all walks of life in urban and rural areas, in all 11 languages at no cost from a landline telephone.

Annually, the Line provides anonymous, confidential and accessible telephonic information, counselling and referrals to over 300 000 callers.

The AIDS Helpline plays a central role in providing a deeper preventive and more supportive service to those infected with, and affected by the disease, but also serves as an entry point in terms of accessing services from government, private sector and other NGOs/CBOs.

Cases presented range from testing, treatment, transmission, TB, medical male circumcision, etc.

The AIDS Helpline incorporates the Treatment Line. The treatment support services were included to complement the services provided by lay counsellors on the line. The Treatment Line is manned by nurses who provide quality, accurate, and anonymous telephone information and/or education on antiretroviral, TB and STI treatment.


**If you have any HIV/TB clinical questions, please e-mail your questions to nonhlanhla@sahivsoc.org with the subject-line 'Ask the clinician' and you will get an answer in the next issue of *HIV Nursing Matters*. If your question is urgent, then please state so and the answer will be e-mailed back to you (and still be published).**

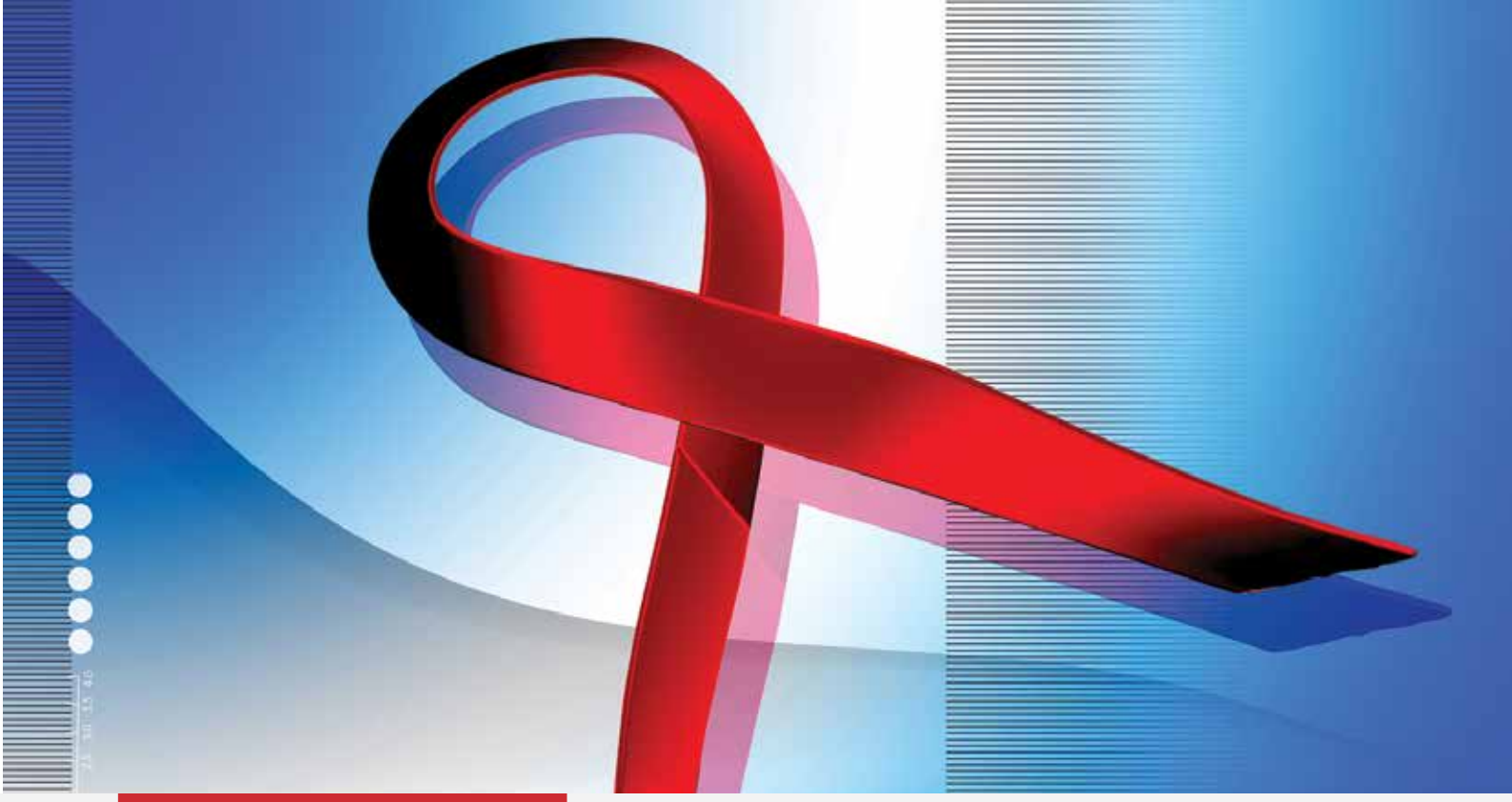
## Dear clinician,

If I want to change the regimen of one of my patients, who is a child, from d4T, what procedure do I follow?

---

## Dear nurse clinician

According to the guidelines, children who are still on a d4T regimen must be changed to abacavir (ABC), but first check whether the viral load is suppressed.



# SAVE THE DATE

## Southern African HIV Clinicians Society Conference

## 13 – 16 April 2016

## Sandton Convention Centre
## Johannesburg • South Africa

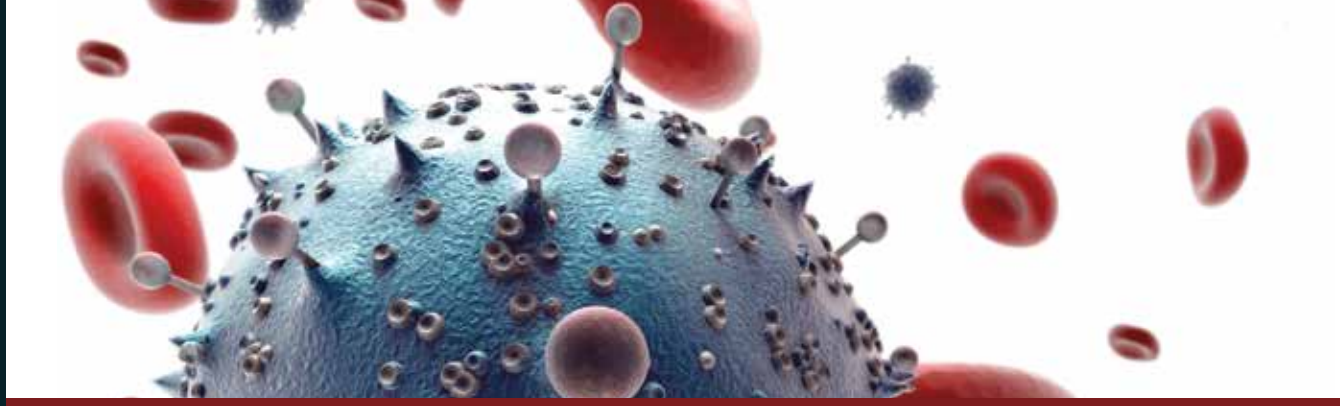
Whether you are an infectious diseases physician, a NIMART nurse, a general practitioner or an HIV specialist - or anything in between - the **2016 Southern African HIV Clinicians Society Conference** will have something for you.

- Top local and international speakers
- Dissemination of the latest research
- Lively debates
- Networking opportunities
- Practical and applied skills building sessions

**Conference website coming soon...**
**www.sahivsoc2016.co.za**

SOUTHERN AFRICAN HIV CLINICIANS SOCIETY
CONFERENCE
2016
13 - 16 APRIL AT SCC

For more information contact: Scatterlings Conference & Events
• Tel: +27 11 463 5085 • Email: fiona@soafrica.com



# UNITING NURSES IN HIV CLINICAL EXCELLENCE, BECOME A MEMBER.




## *Who are we?*

We are a member-based Society that promotes quality, comprehensive, evidence-based HIV health care, by:

1. **LEADING • PIONEERING**
   We are a powerful, independent voice within Southern Africa with key representation from the most experienced and respected professionals working in the fight against HIV.

2. **CONNECTING • CONVENING • ENGAGING**
   Through our network of HIV practitioners, we provide a platform for engagement and facilitate learning, camaraderie and clinical consensus.

3. **ADVOCATING • INFLUENCING • SHAPING**
   With our wealth and depth of clinical expertise, we can help health care workers take their practice to a new level. We are constantly improving and expanding our knowledge, and advocating for clinical and scientific best practice.

## *Member Benefits*

Join today and gain instant support from a credible organisation. The Society helps connect you with the best minds in HIV health care. Build your knowledge, advance your profession and make a difference by getting involved now!

- Free quarterly subscriptions to the *Southern African Journal of HIV Medicine*
- Free monthly subscription to the Society's e-newsletter, *Transcript*
- E-learning through CPD-accredited clinical case studies and on-line discussion group forums
- Free quarterly subscriptions to *HIV Nursing Matters*
- Weekly SMS clinical tips for nurse members
- Free CPD-accredited continuing education sessions
- Listing in the Society's online HIV provider referral network

## SOCIETY CONTACT DETAILS:

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**Email:** sahivsoc@sahivsoc.org

**Post:** Suite 233, Private Bag X2600, PostNet, Killarney, Houghton, 2041

**www.sahivsoc.org**