

## Reasons for poor uptake of TB preventive therapy in South Africa

D. P. Baloyi,<sup>1</sup> M. G. Anthony,<sup>1</sup> K. A. Meyerson,<sup>1</sup> S. Mazibuko,<sup>2</sup> D. Wademan,<sup>1</sup> L. Viljoen,<sup>1</sup> H. Myburgh,<sup>1</sup> K. du Preez,<sup>1</sup> M. Osman,<sup>1,3</sup> Y. Hirsch-Moverman,<sup>4</sup> S. Charalambous,<sup>5</sup> H. Hausler,<sup>6</sup> A. C. Hesselning,<sup>1</sup> G. Hoddinott,<sup>1</sup> on behalf of the Desmond Tutu TB Centre

<http://dx.doi.org/10.5588/pha.22.0030>

**BACKGROUND:** South Africa has one of the highest TB and HIV burdens globally. TB preventive therapy (TPT) reduces the risk of TB disease and TB-related mortality in adults and children living with HIV and is indicated for use in TB-exposed HIV-negative individuals and children. TPT implementation in South Africa remains suboptimal.

**METHODS:** We conducted a pragmatic review of TPT implementation using multiple data sources, including informant interviews ( $n = 134$ ), semi-structured observations ( $n = 93$ ) and TB patient folder reviews in 31 health facilities purposively selected across three high TB burden provinces. We used case descriptive analysis and thematic coding to identify barriers and facilitators to TPT implementation.

**RESULTS:** TPT programme implementation was suboptimal, with inadequate monitoring even in health districts with well-functioning TB services. Health workers reported scepticism about TPT effectiveness, deprioritised TPT in practice and expressed divergent opinions about the cadres of staff responsible for implementation. Service- and facility-level barriers included ineffective contact tracing, resource shortages, lack of standardised reporting mechanisms and insufficient patient education on TPT. Patient-level barriers included socio-economic factors.

**CONCLUSIONS:** Improving TPT implementation will require radically simplified and more feasible systems and training for all cadres of health workers. Partnership with communities to stimulate demand driven service uptake can potentially facilitate implementation.

**T**B remains a leading cause of death globally, with an estimated 10 million new TB cases and 1.5 million TB-related deaths annually.<sup>1</sup> South Africa has one of the highest TB burdens globally with an estimated annual incidence of 554 per 100,000 population in 2020.<sup>1</sup> In 2020, 71% of people diagnosed with TB in South Africa were also living with HIV<sup>2</sup> and there are an estimated 7.5 million people living with HIV (PLHIV) in South Africa.<sup>3</sup>

TB preventive therapy (TPT) reduces the risk of developing TB and TB mortality in adults and children living with HIV by up to 60%.<sup>4</sup> A recent systematic review found that TPT effectively prevents 63% of incident TB cases among child TB contacts.<sup>5</sup> In South Africa, TPT policy has historically only included isoniazid (INH) for  $\geq 6$  months regimens and prioritised vulnerable populations such as PLHIV and children  $< 5$  years old with recent close TB exposure.<sup>6,7</sup> Ad-

ditional regimens recommended by the WHO,<sup>1</sup> including 3 months of daily INH and rifampicin (3RH) or weekly INH and rifapentine (3HP) are expected to become part of South African policy soon. The shorter recommended regimen includes a 1-month daily regimen of rifapentine and INH; 4 months of daily rifampicin alone may also be offered as an alternative.<sup>7</sup>

Like many high TB burden countries, TPT implementation in South Africa is suboptimal.<sup>8</sup> In 2020, only half of child ( $< 5$  years old) household contacts were reported to start TPT;<sup>1</sup> ~53% of eligible PLHIV initiated TPT. Few people initiating TPT complete their regimen.<sup>9</sup> Health systems deficiencies and low acceptability among health workers and patients contribute to poor TPT initiation and completion rates.<sup>10,11</sup>

We reviewed TPT implementation in high TB burden provinces in South Africa to understand facilitators and barriers. This review is timely given the anticipated expanded options for TPT regimens and eligibility that would include all people with significant TB exposure ('contacts') expected in revised national guidelines.

### METHODS

#### Study design and setting

We conducted an implementation review between May 2019 and January 2020 using a range of data, including patient folders, routine monitoring and evaluation data, semi-structured observations and in-depth interviews (IDIs). We sampled 31 primary healthcare facilities across the three highest TB burden provinces in South Africa:<sup>12</sup> Western Cape ( $n = 10$ ), Eastern Cape ( $n = 10$ ) and KwaZulu-Natal ( $n = 11$ ). These provinces have distinctly different demographic, socio-economic and health services profiles. In all provinces, primary healthcare services are nurse-driven with varying doctor support. The Western Cape, Eastern Cape and KwaZulu-Natal reported TB incidence rates of respectively 692, 685 and 681 per 100,000 population in 2015, and HIV prevalence of respectively 9.1%, 15.8% and 18.7% in 2017;<sup>13</sup> in 2018, children accounted for 7% of newly recorded TB cases in South Africa.<sup>4</sup> TB-HIV co-infection in South Africa was estimated at 71% in 2020.<sup>2</sup> We purposively sampled facilities in each province to include high and low TB burden facilities and an urban/rural balance across district and sub-district health systems.

#### Data collection

At each facility, we conducted a rapid review of TB treatment and TPT patient folders, 3 days of

### AFFILIATIONS

- 1 Desmond Tutu TB Centre, Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Tygerberg,
- 2 Department of Psychology, University of KwaZulu-Natal, Durban, South Africa;
- 3 School of Human Sciences, University of Greenwich, London, UK;
- 4 ICAP at Columbia University, Mailman School of Public Health, New York, NY, USA;
- 5 The Aurum Institute, Parktown, Johannesburg,
- 6 TB HIV Care, Cape Town, South Africa

### CORRESPONDENCE

Correspondence to: Dzunisani Patience Baloyi, Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Francie Van Zijl Drive, Parow, Cape Town 7500, South Africa. email: [dbaloyi@sun.ac.za](mailto:dbaloyi@sun.ac.za); [dzunisani.dzu@gmail.com](mailto:dzunisani.dzu@gmail.com)

### KEY WORDS

primary healthcare; barriers; prevention; facilitators

Received 3 May 2022

Accepted 19 August 2022

PHA 2022;12(4):159–164  
e-ISSN 2220-8372

semi-structured observations and 3–5 IDIs with key informants in the TPT programme. We observed patient pathways into care at the TB, antiretroviral therapy (ART) and paediatric rooms. In the folder review, we captured the number of household contacts, children aged <5 years, PLHIV and household contacts aged ≥5 years. To reduce the research burden on facilities, we reviewed folders of in-care patients at the time of data collection as these were easily accessible in consultation rooms. For the IDIs, we included health workers involved in implementing TPT, purposively selecting participants for diversity based on health worker cadre, including TB and HIV nurses, counsellors, community-based health workers (CHWs), doctors, facility managers, pharmacists, as well as TB, ART and TPT patients. The interview guide included participatory activities such as a storyboard activity on the dynamics of TPT initiation to facilitate discussions with participants.

All participants were consented prior to being interviewed, including permission to record interviews. Each interview lasted approximately 45–60 mins and was conducted in participants' preferred language – English, Xhosa, Zulu or Afrikaans. At the end of each day, researchers transformed recorded data into case descriptions of each participant interview using pre-developed templates. We ensured the anonymity of facility and participant data with codified identifiers; audio recordings and notes were transferred to password-protected computers.

### Data analysis

We used a deductive thematic analysis<sup>14</sup> to identify barriers to and facilitators of TPT implementation, extracting information from case descriptions about TPT implementation barriers and facilitators onto an MS Excel spreadsheet (Microsoft, Redmond, WA, USA). A 1-day internal analytic workshop served to develop a list of barriers and facilitators in TPT programme delivery, using deductive thematic analysis. This list was reviewed by the project team and refined through several iterations. These preliminary findings were reviewed by the prevention working group of the South African TB Think Tank and further refined.

### Ethics

The study received ethics approval from the Health Research Ethics Committee at Stellenbosch University, Tygerberg, South Africa (N19/03/040). Approval for the research was also granted by the Western Cape, Eastern Cape and KwaZulu-Natal Provincial Departments of Health.

## RESULTS

A total of 112 health workers (across seven health worker cadres), and 22 patients were interviewed (Table 1); 93 days of semi-structured observations and patient folder reviews were completed across the sampled facilities. Participants' overall perceptions of TPT implementation, as well as barriers and facilitators to TPT implementation are presented below (see Table 2 for illustrative quotations).

### TPT eligibility, initiation and completion

We collected routine data relevant to the TB treatment programme from all 31 facilities for the preceding 12 months on 1) total facility head count (total: 1,342,250), 2) number of TB screenings completed (806,557), 3) number of screen-positive results (26,810), and 4) patients who initiated TB treatment (2,526). Fifteen facilities also provided headcounts for ≤5 year-olds, which suggested that ~25% of people attending these facilities were in this age category.

In theory, TPT-eligible contacts of TB patients, including children aged <5 years, were identified in the folders of TB patients as their 'index' patient. On average, there were 0.27 children aged ≤5 years and 1.91 people aged >5 years listed as 'contacts' per adult TB patient. There was no indication in the adult patient folders that any of these 'contacts' had been screened for TB or were offered TPT if eligible. Most of the 'contacts' listed were not people who might need TPT, but rather friends, family members or neighbours whom health workers could contact to reach TPT/TB patients who had missed treatment visits.

A total of 889 children aged ≤5 years, 4,447 ART patients and 107 HIV-positive adult contacts not already part of the ART programme were recorded as having initiated TPT across the 31 facilities in the preceding 12 months. The number of people (all categories) initiating TPT in the preceding 12 months by facility ranged from 1 to 869, averaging 315 in the Western Cape, 153 in the Eastern Cape and 69 in KwaZulu-Natal provinces.

Aggregate TPT completion outcomes were available for 16 health facilities – none from either one of the districts in KwaZulu-Natal or in the Eastern Cape. In the Western Cape province (where there was an electronic TPT register and complete data from all 10 facilities), only 15% of children aged ≤5 years and 25% of PLHIV aged >5 years who initiated TPT were recorded as either 'TPT complete' or 'on treatment', with the majority lost to follow-up. In KwaZulu-Natal (where there were facility-level paper registers in 6 of 11 facilities), 61% of those initiating TPT were similarly re-

### ACKNOWLEDGEMENTS

The authors would like to acknowledge all the study participants and facility staff across the Western Cape, KwaZulu-Natal and Eastern Cape Provinces. Data collection for this project was supported by the South African National TB Think Tank. KDP is supported by the Fogarty International Center of the National Institutes of Health (Bethesda, MD, USA) under award K43TW011006. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. Conflicts of interest: none declared.

**TABLE 1** Interview participant types and numbers by province

	Facility manager	Doctor	TB nurse	HIV nurse	Pharmacist	Counsellor	CHW	Patient	Total
Western Cape	2	5	10	5	4	5	4	8	43
Eastern Cape	2	5	15	5	5	7	2	8	49
KwaZulu-Natal	2	1	12	10	7	2	2	6	42
Total	6	11	37	20	16	14	8	22	134

CHW = community healthcare worker.

**TABLE 2** Participants' overall perceptions of TPT implementation, as well as barriers and facilitators to TPT implementation

Sub-themes:	Illustrative quotations:
Theme: Health workers' perceptions of TPT as not a priority	
Scepticism about TPT as a medical intervention	<p>I do not think that there is strong evidence for this [TPT]. (Doctor, Eastern Cape)</p> <p>A nurse maintained that "it [TPT] is not a good idea." (Nurse, Eastern Cape)</p> <p>Health workers shared concerns about the risk for developing drug resistance which revolved mainly around patients' adherence to TPT:</p> <p>I thought of [INH] as excessive and [as] possibly [leading] to patients developing a form of resistance due to INH exposure. (Doctor, Eastern Cape)</p> <p>I am sceptical about TPT as a result of defaulting patients that are at risk of resistance to INH and [who will] have to go onto a different regimen. (Pharmacist, Western Cape)</p>
Systematic deprioritisation of TPT in an under resourced health service	<p>A nurse described her experience of implementing TPT as "one of the biggest challenges". She explained,</p> <p>...as nurses [we] see many patients in a day and sometimes forget to initiate patients on IPT and especially if [we] have a shortage of staff". (Nurse, Western Cape)</p>
Divergent opinions about responsibility for TPT implementation	<p>Health workers had inconsistent expectations in terms of which health workers cadres were responsible to initiate TPT. A doctor explained this expectation:</p> <p>[TPT] is seen as the duty of PHC in which nurses should be initiating patients on IPT and not the doctors. We [as the doctors] assume that we are only required to attend to complicated cases such as complicated TB, severe ailments, and side effects of medication. (Doctor, KwaZulu-Natal)</p> <p>Health workers reported that they had not received TPT-specific training:</p> <p>I am aware of [TPT] guidelines but not necessarily trained to implement these guidelines. My manager might give different information regarding training. (Pharmacist, KwaZulu-Natal)</p> <p>I have never received training [on TPT] ever since I started working with the TB programme. (Nurse, Eastern Cape)</p> <p>Health workers shared that they experienced communication barriers with their colleagues about TPT implementation:</p> <p>We are not communicating effectively as health workers. Nobody is really checking on one another and communicating about patients that are on this [TPT] medications. (Pharmacist, KwaZulu-Natal)</p> <p>A paediatric nurse explained:</p> <p>I am uncertain about the process at the TB room. I would not know the procedure at the TB room. (Nurse, Eastern Cape)</p>
Theme: Service-, facility-, and patient-level challenges to TPT implementation	
Shortage of resources to implement TPT	<p>A facility manager described rationing the limited Mantoux tests available:</p> <p>...we have the Mantoux test at our facility, but [are] only using it for young children. (Facility manager, Western Cape)</p>
Insufficient patient education on TPT	<p>We found that both ART and TB patients across all three provinces were largely unaware of the availability and benefits of TPT. Only one of 22 patients was aware that TPT was available. She explained:</p> <p>I heard about [TPT] when I started bringing my four-year-old daughter to the clinic for this medication [TPT]. My husband started TB treatment and explained that the medication was to prevent my child from getting TB. (Caregiver, Western Cape)</p> <p>Others shared:</p> <p>I have never heard of TPT. This [interview] is my first-time hearing about it [TPT]. The clinic has never told me of TPT. (TB patient, Western Cape)</p> <p>I was not informed about bringing the rest of the family members for screening. There was no visit from the community health workers or nursing staff from the facility ever since I started TB treatment. (TB patient, Western Cape)</p> <p>I have never been told about TPT at this clinic. I was transferred from another clinic where I tested for TB and HIV. The current clinic is closer to home. (TB/ART patient, KwaZulu-Natal)</p> <p>One caregiver expressed her experience of TPT counselling in the following statement:</p> <p>As long as people are educated, they can bring their children to the clinic for IPT or tell other people about IPT and recommend other people in the community are made aware of IPT. (Caregiver, Western Cape)</p>
Patient-level socio-economic factors that indirectly affect TPT implementation	<p>A health worker explained:</p> <p>Patients fear coming to the clinic and getting caught in gang wars as it [the facility] is situated in specific gangs' territory. (Nurse in Western Cape)</p> <p>A facility manager hinted at the social issues people in the community face:</p> <p>People who are taking substances [make] it difficult for children and for themselves to take treatment or TPT medication. Parents are constantly drunk and do not take time to bring children into the clinic. (Facility manager, KwaZulu-Natal)</p>

TPT = TB preventive therapy; INH = isoniazid; PHC = primary healthcare; ART = antiretroviral therapy; IPT = INH preventive therapy.

corded as 'on treatment' or 'TPT complete'. However, qualitative data from these facilities in KwaZulu-Natal suggested that many TPT patients were only recorded on these paper registers once they were considered stable on TPT, which meant that people who were lost to follow-up early were missed.

### ***Implementers' perceptions of TPT as not a priority***

We found that health workers' perceptions of TPT in all three provinces included scepticism about the effectiveness of TPT as a medical intervention, its systematic deprioritisation in a health service that they experienced as under-resourced, and divergent opinions about who was responsible for implementing TPT. Most TB patient-participants in our study had not heard of TPT prior to being interviewed.

### ***Scepticism about TPT as a medical intervention***

Health worker participants were sceptical about TPT for two reasons: 1) a perceived lack of scientific evidence on TPT's efficacy; and 2) fear of patients developing resistance to INH. Health workers' concerns about the risk for developing drug resistance revolved mainly around patients' ability to maintain the desired adherence to TPT.

### ***Systematic deprioritisation of TPT in an under-resourced health service***

Health workers systematically deprioritised TPT initiation against what they perceived to be more critical priorities – care of patients with chronic ailments such as TB and HIV, favouring treatment over prevention. Long queues, waiting times and insufficient time to provide appropriate care and address patient concerns during consultations, further prompted health workers to deprioritise TPT. A key element of successful TPT implementation – documenting household contacts of patients without active TB – was time-consuming and perceived as an additional, rather than an essential, service for TB-HIV patient care.

### ***Divergent opinions on responsibility for TPT implementation***

Health workers from the same facilities reported divergent perceptions and experiences of TPT implementation in their facilities, including about TPT training, communication about TPT, and cadre(s) of health workers responsible for TPT initiation. Health workers in managerial positions were more likely to state that facility staff had received training on TPT implementation, while facility staff reported that they had not received TPT-specific training. Most of the health workers interviewed shared that they experienced communication barriers with their colleagues about TPT implementation, explaining that they were unfamiliar with what happens in the different consultation rooms. This was true regardless of the level of integration of ART and TB services.

Health workers had inconsistent expectations in terms of which health workers cadres were responsible to initiate TPT. The TPT programme for PLHIV was managed by staff who typically provided HIV services. The TPT programme for other (non-HIV) eligible patients ('TB contacts') was managed by staff who provided TB services. Young children eligible for TPT were most often identified when accompanying their primary caregivers who were TB patients while collecting their TB treatment.

Prior to TPT initiation, health workers, mainly nurses, emphasised that counsellors should inform patients on the purpose, duration of treatment and benefits of TPT, and that patients should be informed about TPT side-effects. In contrast, counsellors assumed that nurses would explain and advocate for TPT initiation and that they (the counsellors) were responsible for adherence

support. Patients who experienced complications and side effects were referred to doctors.

While some nurses took responsibility for initiating TPT, most did not consider contacts requiring TPT as their responsibility. Rather, facility-based staff assumed this was CHWs' responsibility, while CHWs were often unaware of any standardised practices for identifying patients eligible for TPT – a major implementation gap.

### ***Service-, facility- and patient-level challenges to TPT implementation***

The barriers to TPT implementation highlighted in our data included service-, facility- and patient-level barriers. Service- and facility-level barriers included resource shortages, the lack of standardised reporting practices for TPT and insufficient patient education on TPT. Barriers at the patient-level included socio-economic factors.

### ***Shortage of resources to implement TPT***

In the Eastern Cape and KwaZulu-Natal, health workers consistently reported shortages of INH. When these occurred, health workers were resourceful to implement TPT, for example, through prescribing adult TPT formulations as a stopgap for children on TPT. In the Western Cape, no INH shortages were reported, but most of the facilities reported shortages of Mantoux tests, which was used to justify under-delivery of TPT even though TPT guidelines require no test of infection.

### ***Lack of standardised reporting practices for TPT***

Health workers in the Eastern Cape and KwaZulu-Natal expressed concerns that monitoring TPT implementation and patients' adherence to INH was challenging in the absence of a standardised TPT register. In facilities with data capturers, we observed no consistent method of capturing TPT data. Most of these facilities utilised Microsoft Excel spreadsheets to capture the data, but with inconsistencies in the reported TB indicators. For example, some facilities would report INH adherence among children under five years, whereas other facilities would not report on this. Other inconsistencies were observed from patient folders. For instance, patient folders would indicate INH initiation but not completion. Furthermore, patient folders would indicate that a patient had collected INH for 1–3 months, with no further data captured. This indicates a discrepancy in data capturing and reporting, as it was uncertain if patients were completing the TPT regimen or were lost to follow-up. TPT initiation and completion rates in Cape Town (Western Cape) were reported through an electronic monitoring module linked to the Patient Record and Health Management Information System electronic TB treatment register.

### ***Insufficient patient education on TPT***

We found that ART and TB patients often heard about TPT for the first time during the study interview. Some health workers explained ART patients' limited knowledge of TPT, suggesting that they had initiated the patients on ART before TPT became available in the public sector. Health workers rarely traced these latter patients to inform or initiate TPT as they were believed to be stable patients and not at risk of developing TB disease. Across all three provinces, only one of the 22 patients interviewed was aware that TPT was available. In a few instances where facilities had health programmes aimed at educating patients about TPT, health workers and patients spoke of this favourably. Health education was most often provided by counsellors and CHWs and included presentations about general health and also pamphlets and flip charts about TPT. Health worker participants deemed that

educating patients about TPT was crucial for patients to understand the benefits and purpose of TPT.

A nurse in Western Cape noted how her “ask me about isoniazid” badge brought awareness of TPT among patients. According to health workers, caregivers who received comprehensive information and counselling on TPT were more willing to have their children initiated on TPT.

### ***Patient-level socio-economic factors that indirectly affect TPT implementation***

Health workers and patient-participants reported a range of socio-economic factors that affected the accessibility of health services and influenced the success of the TPT programme. Patients struggled with unemployment, low income, time constraints, substance abuse and fears/concerns over crime. Unemployed participants described how a lack of income limited their access to health facilities due to travel costs. This was especially true in settings where facilities were not centrally located, and therefore not easily accessible. We also found a few examples in the Western and Eastern Cape where patients and caregivers of children on TPT explained that their work schedules posed barriers to treatment completion as it placed limitations on their time to attend the facility. Other participant patients noted the difficulty of walking considerable distances from their home to the facility, particularly in rural parts of KwaZulu-Natal and the Eastern Cape. Health workers in the Eastern Cape and Western Cape recounted how crime affected patients' access to services. Some facilities were situated in high crime areas with high levels of gang-related crimes and low socio-economic status.

Health workers reported substance use as a common problem affecting patients' access to health services and TPT initiation. Health workers explained that patients who abused substances – both alcohol and drugs which both impact on liver functioning – were ineligible for TPT as the INH drug regimen was also dependent on adequate liver function.

## **DISCUSSION**

We reviewed TPT implementation in 31 healthcare facilities across three high TB burden provinces in South Africa. In the Western Cape, an electronic patient-level monitoring system for patients on TPT is available, while facility-level paper TPT patient registers were maintained (with varying degrees of diligence) in the other two provinces; aggregate reports were collated at the district level. No facilities recorded an effective denominator of potentially eligible TPT patients. The TPT registers in use recorded TPT patients only once they had initiated TPT. This grossly underestimated the number of eligible patients, overestimated TPT uptake and posed challenges for understanding actual TPT programme performance. Where available, monitoring data suggest significant gaps at both ends of the TPT care cascade: 1) far fewer people were offered TPT than were eligible based on TB patient burden; and 2) TPT completion among patients who initiated was very poor. In places where monitoring data were unavailable, observations suggest that these trends were even worse.

We found challenges to TPT implementation at service-, facility- and patient-level. Health workers (across all cadres) described TPT implementation as a non-priority. Some expressed scepticism about TPT's effectiveness, concerns about drug resistance, beliefs that treatment (rather than prevention) services should be prioritised and confusion about the cadres of staff responsible for different aspects of TPT implementation. There was limited or no

TPT-focused ‘contact’ identification and tracing, insufficient resources, a lack of standardised TPT monitoring and reporting systems (and therefore accountability for implementation) and a lack of patient awareness about TPT. Health workers shared concern that the socio-economic circumstances of TPT-eligible patients would negatively affect adherence.

Our study has several strengths. We worked in three high TB burden provinces and across a variety of facilities purposively sampled for diversity. This approach supports the transferability of findings to other settings in South Africa and similar contexts. We included data from multiple sources which allowed for triangulation and increased trustworthiness of our findings. We included perspectives on TPT for patients in the ART programme and for children aged  $\leq 5$  years, which operate discretely at health facility level. As work commissioned by the South African TB Think Tank alongside ongoing revisions of South Africa's TPT guidelines by the South African National Department of Health, the findings will inform implementation of revised guidelines. During data collection, we only reviewed folders of in-care patients at the time of data collection as these were easily accessible in consultation rooms. Limitations to extrapolation from these findings are cautioned in settings where policy and implementation contexts differ. Furthermore, this was a pragmatic review designed to inform pre-identified policy and practice gaps and was not informed by or interpreted through a conceptual or theoretical framework.

Our findings are consistent with previous studies that highlight health systems challenges and socio-economic factors that impede implementation of TPT.<sup>10,11,15–17</sup> For example, a study conducted in KwaZulu-Natal reported patient-level barriers to TPT adherence and completion, which included costs of healthcare access, ineffective patient-provider communication and inefficient healthcare delivery.<sup>10</sup> In another study, health workers perceived low patient awareness, time required to counsel patients on TPT, burden to record TPT delivery, and concerns regarding exclusion of active TB as barriers to implementation.<sup>16</sup> Although there has been an increase in the uptake of TPT since these studies were published, the current study shows that significant challenges to effective TPT implementation remain.

This project was commissioned by the South African TB Think Tank and the findings, a policy brief and technical report have been developed to inform translation into policy and practice. We recommend that improving TPT programme performance will require a process of change management with key stakeholders and implementers at provincial, district, sub-district and facility-levels. At minimum, this must include clear communication of evidence for TPT vs. its potential risks, discussion of the barriers and facilitators to TPT implementation in facilities, and clarification of roles and responsibilities of different health worker cadres to facilitate delivery of an integrated service. Linked to this is the adaptation and development of tools (e.g., TB information flipcharts to include contact tracing and TPT) and staff training (including CHWs). Training should include clarifying the distinction between TB contacts and people to contact if the TB patient cannot be reached. It is imperative to provide training on health education and counselling to patients, their families, and the community about latent TB infection and TPT therapy. Enumerating household members and other people with significant TB exposure for contact tracing is a priority. In parallel, and foundational to the success of the TPT programme, is implementation of a standardised, national TPT register (with local registers that support it) – ideally electronic and integrated with existing TB regis-

ter platforms. Further, monitoring indicators for TPT should be unified, especially to accurately document and capture the denominator of TPT-eligible clients and track each patient's TPT initiation, adherence and treatment completion rates.

We conclude that these policy and practice recommendations are only feasible in partnership with patient communities so that demand driven service uptake is stimulated; central leadership from the department of health is thus essential. Further research is urgently required to present both process and outcome evaluations of the TPT programme in South Africa and similar contexts. Such research can help ensure that significant gains in regimen development and WHO guideline inclusivity translate into meaningful benefits for families affected by TB.

## References

- 1 World Health Organization. Global tuberculosis report. Geneva, Switzerland: WHO, 2021.
- 2 World Health Organization. Global tuberculosis report, 2020. Geneva, Switzerland: WHO, 2020.
- 3 UNAIDS. AIDSinfo. Geneva, Switzerland: UNAIDS, 2020. <https://aidsinfo.unaids.org/>
- 4 World Health Organization. Global Tuberculosis Report, 2019. Geneva, Switzerland: WHO, 2019.
- 5 Martinez L, et al. The risk of tuberculosis in children after close exposure: a systematic review and individual-participant meta-analysis. *Lancet* 2020; 395(10228):973–984.
- 6 Department of Health. National Tuberculosis Management Guidelines, 2014. Pretoria, South Africa: Department of Health, 2014.
- 7 World Health Organization. WHO operational handbook on tuberculosis. Module 1 – Prevention): Tuberculosis preventive treatment. Geneva, Switzerland: WHO, 2020.
- 8 Szkwarko D, et al. Child contact management in high tuberculosis burden countries: A mixed-methods systematic review. *PLoS One* 2017;12(8):1–23.
- 9 World Health Organization. Latent TB infection: updated and consolidated guidelines for programmatic management. Geneva, Switzerland: WHO, 2018.
- 10 Jacobson KB, et al. "It's about my life": facilitators of and barriers to isoniazid preventive therapy completion among people living with HIV in rural South Africa. *AIDS Care* 2017;29(7):936–942.
- 11 Churchyard GJ, et al. Tuberculosis preventive therapy: An underutilized strategy to reduce individual risk of TB and contribute to TB control. *South African Med J* 2014;104(5):339–343.
- 12 Massyn N, et al. District Barometer 2018/19. Durban, South Africa: Health Systems Trusts, 2020: pp 49–52.
- 13 Ministry of Health, Republic of South Africa. South African national HIV prevalence, incidence, behaviour and communication survey, 2017: Pretoria, South Africa: MoH, 2018: pp 5–8.
- 14 Roberts K, Dowell A, Nie JB. Attempting rigour and replicability in thematic analysis of qualitative research data; A case study of codebook development. *BMC Med Res Methodol* 2019;19(1):1–8.
- 15 Boffa J. The effectiveness and acceptability of six-month isoniazid preventive therapy amongst people living with HIV in KwaZulu-Natal, South Africa. *Emerg Infect Dis* 2018;86(9):214–220.
- 16 Van Ginderdeuren E, et al. Health system barriers to implementation of TB preventive strategies in South African primary care facilities. *PLoS One* 2019;14(2):1–12.
- 17 Lester R, et al. Barriers to implementation of isoniazid preventive therapy in HIV clinics: a qualitative study. *AIDS* 2010;24(SUPPL 5):45–48.

**CONTEXTE :** L'Afrique du Sud a l'une des charges de TB et de VIH les plus élevées au monde. La thérapie préventive contre la TB (TPT) réduit le risque de TB maladie et de mortalité liée à la TB chez les adultes et les enfants vivant avec le VIH et est indiquée chez les personnes et les enfants séronégatifs exposés à la TB. La mise en œuvre du TPT en Afrique du Sud reste sous-optimale.

**MÉTHODES :** Nous avons procédé à un examen pragmatique de la mise en œuvre du TPT à l'aide de plusieurs sources de données, notamment des entretiens avec des informateurs ( $n = 134$ ), des observations semi-structurées ( $n = 93$ ) et des examens de dossiers de patients atteints de TB dans 31 établissements de santé sélectionnés à dessein dans trois provinces fortement touchées par la TB. Nous avons utilisé une analyse descriptive des cas et un codage thématique pour identifier les obstacles et les facilitateurs de la mise en œuvre du programme TPT.

**RÉSULTATS :** La mise en œuvre du programme TPT était sous-optimale, avec un suivi inadéquat, y compris dans les districts

sanitaires où les services de lutte contre la TB fonctionnaient correctement. Les agents de santé ont fait part de leur scepticisme quant à l'efficacité de la TPT, n'ont pas accordé la priorité à la TPT dans la pratique et ont exprimé des opinions divergentes sur les cadres du personnel responsables de la mise en œuvre. Les obstacles au niveau des services et des établissements comprennent l'inefficacité de la recherche des contacts, la pénurie de ressources, l'absence de mécanismes de déclaration standardisés et l'insuffisance de l'éducation des patients sur la TPT. Les obstacles au niveau des patients comprenaient des facteurs socio-économiques.

**CONCLUSIONS :** L'amélioration de la mise en œuvre des TPT nécessitera des systèmes radicalement simplifiés et plus réalisables ainsi qu'une formation pour tous les cadres du personnel de santé. Un partenariat avec les communautés pour stimuler l'adoption de services axés sur la demande peut potentiellement faciliter la mise en œuvre.