



POLICY BRIEF

Health care beyond tuberculosis cure: awareness raising, development and integration of post-TB lung disease care to the health system

Key messages

- Globally, 155 million people have been diagnosed, treated, and declared cured of tuberculosis (TB) in 2020.
- TB survivors have three times increased mortality rate compared with controls and about half suffer from post-TB lung disease (PTLD) at the end of treatment.
- About one third of TB survivors have moderate to severe lung function impairment in spirometry at two years after TB diagnosis and treatment initiation.
- Majority of TB survivors in Africa are between 25 and 54 years old, representing the main working-age population.
- Tanzania is among the 30 high TB burden countries globally with 87,415 TB cases notified in the year 2020 only with majority being successfully treated (TB survivors).
- Tanzania lacks a continuation of care and support for TB survivors suffering from PTLD and associated health- and socio-economic consequences.
- Awareness raising, risk mitigation, development and integration of PTLD care package in the health system has a potential to reduce PTLD-associated morbidity and mortality as well as associated costs.
- PTLD should be considered in country TB burden estimates to increase awareness, mobilize research efforts, gain political attention, and ensure adequate allocation of funding.

Background

Globally, there were an estimated 155 million survivors of pulmonary TB in 2020 (1). Although many of them are considered (microbiologically) cured, mounting evidence shows that TB survivors have a three-times increase in mortality rate compared with the normal population or control groups (2) and more than half of them suffer from persistent health problems directly related to prior TB episode (3). This potentially leads to an enormous burden of TB-related morbidity and mortality. The advent of effective antibiotic regimens to treat TB in the 1950's shifted the global TB focus towards diagnostics and antimicrobial treatment outcomes, with the aim of improving disease survival and stopping TB transmission. Thus, clinical long-term TB consequences, including PTLTD have been overlooked despite likely contributing to the observed increase of chronic lung diseases for the last 30-50 years, globally as well as in

sub-Saharan Africa. The success of TB programs has, however, led to growing numbers of TB survivors with (chronic) respiratory symptoms seeking help from health care systems. The resulting increased evidence on PTLTD in the last decade led to a re-focus of research and clinical efforts to address lung injury after a TB episode.

Furthermore, results from a study conducted by the Impala Network among African countries, showed that overall, about 18% of patients presenting in respiratory clinics in Ethiopia, Kenya and Sudan are TB survivors with documented previous TB treatment (4). Results from the TB Sequel study conducted in 1600 TB patients from Tanzania, South Africa, Mozambique and the Gambia, showed that 30% of participants still presented with chronic and some productive cough after end of microbiologically successful TB treatment, 60% had at least moderate

lung pathologies e.g., on spirometry and 20% still had cavities on chest x-ray (5). Only 27% of TB survivors in the TB Sequel study had normal lung function at the end of TB treatment (5). A cross sectional survey conducted in Kilimanjaro among adults within 2 years of completion of TB treatment reported 45% to have chronic respiratory symptoms, 67% lung function abnormalities on spirometry and 86% chest x-ray abnormalities. A recent meta-analysis calculated that about 40% of TB survivors have chronic respiratory symptoms, including cough, about 60% have abnormalities on chest x-ray and 50% have abnormalities on spirometry (6).

Although longitudinal analyses are scarce, few studies provide insights on possible risk factors for the development of PTLD. Smoking and a low BMI (7) have been associated with poor lung outcome in several studies, including TB Sequel. Other TB disease-associated

risk factors for PTLD are resistance to antibiotics and advanced pathologies on chest x-ray (8). Two studies showed that delay in TB treatment initiation was associated with poorer lung outcomes (8,9). Indoor air pollution as a driver of PTLD development has also been suggested to contribute to PTLD. Finally, the capacity of health systems and TB programs to provide access to fast, accurate TB diagnosis, and drug resistance testing may also translate into lung damage at presentation or ongoing damage despite treatment in some settings (6).

Tanzania being among the 30 high TB burden countries globally, with 87,415 TB cases notified in 2021 and a high treatment success rate (10) is not exempt from PTLD. Nonetheless, guidance on PTLD screening and care within the health system in Tanzania is limited. We recommend the development of a comprehensive PTLD screening and care package and its integration in the

health system through the well-established TB programme. This will not only provide proper linkage and appropriate management of TB survivors leading to a reduction in their morbidity and mortality, but also potentially reduce costs and work burden incurred by the limited health system resources due to multiple unclear diagnostic workups and re-treatments among TB survivors.

Policy Gap

Limited to absent guidance on PTLD screening and care in Tanzania has a direct effect on the health care system whereby TB survivors are likely to have multiple hospital visits, multiple diagnostic work-up leading to an increased workload on the limited number of health personnel. But it also directly and indirectly impacts the economy through out-of-pocket costs and missed workdays incurred by the patients, a majority of whom are between 25 and 54 years

old, the main working group in the country.

Policy options

The proven burden of PTLD in the country calls for urgent country specific mitigation strategies, preferably integrated within the well-established TB programme, which would also enable early identification of TB patients at risk for PTLD as well as possibilities for early interventions (e.g., risk factors mitigation, and health interventions). The strategies should consider the available infrastructure as well as rapidly growing global knowledge on PTLD. The policy options below are based on studies conducted in Tanzania and the exchange of expert opinions during international workshops, congresses and symposia as consolidated global guidelines are currently unavailable.

1. Generate more country specific data on PTLD:
 - i. Support ongoing research on PTLD (TB Sequel II)

- ii. Adapt TB programme M&E tools to include PTLD, e.g., in the context of demonstration studies funded by Global Health (application submitted to GF already)
 - iii. Extend and improve routine data collection on PTLD and potential differential diagnoses (e.g., asthma and COPD):
 - o Data collection on screening, treatment
 - o and outcome of any chronic lung disease in Tanzania, will also advance PTLD care
 - iv. Assess feasibility,
 - v. acceptability and impact of PTLD screening approaches e.g., spirometry, chest x-ray (symptomatic, asymptomatic, time point for assessment) and provide guidance.
2. Raise awareness on PTLD among HCW, TB stakeholders, TB patients and survivors, community-based organizations, and the community at large:
- i. Inform that TB can result in long term complications such as PTLD after treatment completion (via posters, leaflets, and community meetings)
 - ii. Educate on risk factors to be avoided that are associated with PTLD such as: smoking cessation and avoiding indoor air pollution; nutritional support (among those with low BMI) and encourage healthy lifestyle (frequent exercise, avoid or limit alcohol intake)
3. Develop and add a section on PTLD screening and care within the current TB management guidelines in the country:
- i. Develop a PTLD training package and training methodology for health care workers (HCW), through a multidisciplinary technical working group.

- ii. Assess and build capacity and ensure availability of PTLD services starting at the National, Zonal and Regional Referral Hospitals e.g., diagnostic tools, pulmonary rehabilitation services etc.
- iii. Incorporate PTLD monitoring and evaluation (M&E) tools within the current TB programmes M&E tools.
- iv. Roll out PTLD services by establishing chronic lung disease clinics starting at the National, Zonal and Regional Referral Hospitals.

Rachow and Nyanda Elias
Ntinginya

Correspondence:

Lilian Tina Minja @2023

email: tminja@nimr-mmrc.org

Phone: +255 713 254563

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Authors

Lilian Tina Minja, Issa Sabi,
Julieth Lalashowi, Olena
Ivanova, Salome
Charalambous, Andrea

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