



Tuberculosis Key and Vulnerable Population Size Estimation in Zimbabwe

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Acronyms

ASMs	Artisanal and Small-Scale Miners
DS-TB	Drug-Susceptible Tuberculosis
DR-TB	Drug-Resistant Tuberculosis
HIV	Human Immunodeficiency Virus
HSUP	Harare Slum Upgrading Project
KVPs	Key and Vulnerable Populations
MDR-TB	Multidrug-Resistant Tuberculosis
MOHCC	Ministry of Health and Child Care
NTP	National TB Control Program
SSA	Sub-Saharan Africa
TB DIAH	Tuberculosis Data, Impact Assessment and Communications Hub
UN	United Nations
USAID	United States Agency for International Development
OHCs	Occupational Health Centers
PEPFAR	President's Emergency Plan for AIDS Relief
PLHIV	People living with HIV
TB	Tuberculosis
WBS	Workplace-Based Screening
ZIMSTAT	Zimbabwe National Statistics Agency

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We extend our gratitude to the team members and collaborators who have supported this desk review process. Their expertise and dedication have been invaluable in ensuring the accuracy and comprehensiveness of the information presented.

Executive Summary

Introduction

Tuberculosis (TB) remains a significant global public health concern, ranking among the top 10 causes of death worldwide and in 2023, TB was the leading cause of death from a single infectious agent. Zimbabwe, once among the top eight countries in Africa for TB/HIV and multidrug-resistant TB (MDR-TB), continues to struggle with a significant TB burden. The Zimbabwe National TB Programme (NTP) and Jointed Hands Welfare Organization commissioned a TB key and vulnerable population (KVP) size estimation exercise to understand the size, geographical distribution and risk dimensions different KVPs face in relation to TB.

Aim and objectives of the key and vulnerable population (KVP) size estimation

This exercise aimed to synthesize available TB KVPs data to inform and directly contribute to the size estimation. The specific objectives were to review, rank and prioritize TB KVPs in Zimbabwe to produce a comprehensive report structured around the risks and vulnerabilities of each TB KVP group, their size and geographic location to enhance optimal engagement of TB KVPs with TB prevention and care services in Zimbabwe.

Methodology

The methodology utilized the TB Key and Vulnerable Populations Size Estimation Tool to score and rank KVPs across six risk categories, prioritizing the top six most at-risk groups. The six steps included the following;

- **Preparation:** JHWO gathered existing data and resources and engaged stakeholders to ensure a comprehensive approach.
- **Mapping:** JHWO and stakeholders identified and mapped key and vulnerable populations (KVPs) affected by TB in Zimbabwe using data from TB registers.
- **Data Collection:** Consultant used existing records to collect data on the size and characteristics of KVPs.
- **Data Analysis:** Consultant analyzed the collected data to estimate the size of KVPs and understand their TB burden.
- **Validation:** The estimates were validated through consultations with experts and stakeholders to ensure accuracy and reliability.
- **Reporting and Use:** The findings were compiled into a report and the data will be used to inform TB control strategies and interventions

This was done by the Core Group¹ using the tool, and they listed the top six groups whose size estimations were required. Desk research was then conducted to review secondary data to estimate the key and vulnerable populations size, identify the source of data, determine their geographical concentration, assess their key TB risks and related drivers, identify challenges in TB diagnosis, prevention, treatment, and care, determine the TB services needed to increase access, evaluate the services available, and highlight gaps to be addressed.

Key findings

¹ Ministry of Health and Child Care's NTP, lead community-based organization (JHWO), World Health Organization (WHO), National AIDS Council (NAC), TB champion in the Country Coordinating Mechanism, academia (Midlands State University), Prisons ministry, Zimbabwe AIDS Network, Ministry of Justice and a Civil society representative (ZiChire)

1. **The report focuses on estimating the sizes of the following TB KVPs as ranked and prioritized by the Core group in Zimbabwe: people who live in congregate settings, miners and ex-miners, people who use and inject drugs, children under five, people living with HIV and people who are malnourished.** These populations were agreed upon by members of the Core group in a prioritization exercise because they face significant vulnerabilities such as marginalization, reduced access to quality services, and human rights violations. The other groups also mentioned, but not prioritized for the size estimation, were TB contacts, prisoners, excessive drinkers, those aged 60 and above, people with disabilities, people with diabetes, cross-border traders, healthcare workers, TB caregivers and traditional and faith leaders.
2. **People in Congregate Settings:** The study defines congregate settings as populations residing in places such as orphanages, slums, and refugee camps.
 - **Estimated population:** In 2018, 33.5% of Zimbabwe's urban population lived in slums, equating to about 1.25 million people. The Tongogara refugee camp in Chipinge houses approximately 12,000 refugees from various countries.
 - **Key Issues:** These environments are typically characterized by overcrowding, limited access to healthcare, and poor living conditions, making the people who live in these settings particularly vulnerable to the spread of infectious diseases like TB.
3. **Miners and Ex-Miners:** Miners, as a key TB population, include individuals engaged in industrial or artisanal mining and quarrying who often have limited access to health and social services.
 - **Estimated Population:** According to the 2022 Zimbabwe Census, 227,079 people (207,072 males; 20,007 females) were employed in mining and quarrying. Alternative estimates revealed that Zimbabwe also has over half a million artisanal and small-scale miners (ASMs) who provide economic support to an estimated 2 million people (Moyo et al., 2022).
 - **Key Issues:** Miners face high TB risks due to exposure to silica dust and poor ventilation. The highly mobile lifestyle of ASMs complicates the provision of comprehensive health services, making it difficult for them to adhere to TB treatment.
4. **People Who Use or Inject Drugs:** People who inject drugs refers to people who inject psychotropic (or psychoactive) substances for non-medical purposes (WHO, 2016).
 - **Estimated Population:** The exact number of people who use and inject drugs in Zimbabwe is challenging to determine due to the hidden nature of drug use and the stigma associated with it. However, various reports provide some insights:
 - i. **Drug Use:** A situational analysis conducted in five provinces of Zimbabwe revealed that drug use is a significant issue, particularly among the youth. The analysis found that 58.47% of males and 40.59% of females use drugs (Healthtimes, 2024).
 - ii. **Injecting Drug Use:** The same analysis indicated that there is a population of people who inject drugs (PWID) in Zimbabwe, although specific numbers are not provided.
 - iii. **Drug and Alcohol Use Disorders:** WHO estimated that approximately 3% of the Zimbabwean adult population (around 450,000 people) had either a drug or alcohol use disorder.
 - iv. **Youth Drug Use:** A 2019 study by the Zimbabwe National Drug Abuse Council reported that one in five young people between the ages of 15 and 24 had used drugs at least once
 - **Key Issues:** People who inject or use drugs are at an increased risk of TB due to compromised immune systems and co-existing conditions like HIV. Drug use, especially injection drug use, weakens the immune system, making it harder for the body to fight off infections like TB. Excessive drug use damages the lungs and impairs the body's ability to clear infections, making smokers more susceptible to TB. Additionally, alcohol can interfere with TB treatment, leading to poorer outcomes.

- Social factors such as poverty, incarceration, and homelessness further complicate access to TB diagnosis and treatment, highlighting the need for integrated care and harm reduction strategies.
- 5. Under Five Children:** Zimbabwe has an estimated 2.2 million under-five children under the age of five.
- **Estimated Population:** According to the Stop TB Partnership (2022), among the estimated 29,000 people who developed TB in Zimbabwe, approximately 3,500 were children, and around 2,588 children are among the missing people with TB. The proportion of children diagnosed with TB has been consistently around 6% for the past four years (WHO, 2024).
 - **Key Issues:** Children living in the same household as someone with TB are at a heightened risk of exposure due to close and prolonged contact. Diagnostic challenges and the difficulty of children producing sufficient sputum for microscopy hinder progress. The children are at a heightened risk of developing active TB due to their immature immune systems.
- 6. People Living with HIV:**
- **Estimated Population:** The 2023 spectrum estimates 1,3 million people were living with HIV in Zimbabwe, including 70,000 children aged 0–14 and 77,000 adolescents aged 10–19 (UNAIDS, 2024).
 - **Key Issues:** People living with HIV are at a higher risk of developing TB due to their weakened immune systems. This coinfection complicates diagnosis and treatment, as TB symptoms can mimic other infections and lead to atypical presentations. Drug-drug interactions between TB medications and ART must be carefully managed to avoid adverse effects. Adherence to treatment regimens is challenging due to the pill burden and side effects.
- 7. People Who Are Malnourished:**
- **Estimated Population:** The estimated population of malnourished people in Zimbabwe is a significant concern. According to the 2024 Zimbabwe Livelihoods Assessment Committee (ZimLAC), 7.6 million people, which is 50% of the total population, are facing food insecurity. This situation has contributed to an increase in child wasting, with the prevalence rising from 4.1% to 4.9% between 2023 and 2024 (UNICEF, 2024).
 - **Key Issues:** Malnutrition is a significant risk factor for TB. Malnourished individuals are at a significantly higher risk of contracting TB due to their compromised immune systems, which are less capable of containing latent infections. Moreover, TB is a catabolic disease that can cause or worsen malnutrition, creating a vicious cycle of deteriorating health. Malnourished TB patients have poorer treatment outcomes and are twice as likely to die from TB compared to their well-nourished counterparts.

Recommendations:

Overall recommendations

- Conduct a KVP size estimation based on primary data collection methods due to the absence of rich secondary data to inform all the key and vulnerable groups. The data available is only for limited KVPs, the real numbers can only be determined by primary KVP size estimation methods, especially for hidden populations. Convene stakeholders (for example, Ministry of Health, NGOs, and DHIS administrators) to agree on a standardized reporting template within DHIS that captures key metrics for vulnerable populations, aligning with national and global indicators.
- Increase funding for TB prevention, care innovations, and research, including the development of new TB vaccines to combat drug resistance and address the needs of key and vulnerable populations.

Among People Living in Congregate Settings:

- Advocate with the government to implement targeted slum upgrading programs to improve housing, ventilation, and sanitation, thereby reducing TB transmission.
- MoHCC and partners to strengthen integrated TB and HIV screening & treatment programs in congregate settings, ensuring combined services and increasing community health education about the links between TB and HIV.

For Miners and Ex-Miners:

- Community organizations to raise awareness about safer mining practices and collaborate with stakeholders to educate miners on preventive measures and enforce the provision of adequate protective clothing.
- MoHCC and partners to train healthcare workers in occupational health and improve occupational health across mining districts.
JHWO to scale up Onelmpact, which provides a real-time, community-driven data collection and tracking system uniquely suited to monitor their movements, settlements, and health-seeking behaviors to address the challenge of tracking the highly mobile miners and ex-miners.

Among People Who Use and Inject Drugs:

- Stakeholders should shift from criminalizing drug use to implementing evidence-based, health-centered policies, including decriminalizing drug possession for personal use and promoting rehabilitation referrals.
- Civil society actors to foster collaboration between health, social services, and law enforcement agencies for a coordinated approach to addressing the health needs of people who inject drugs.
- Government should improve and expand access to evidence-based drug rehabilitation services, ensuring they are easily accessible, affordable, and non-judgmental.

For Children Under Five:

- MoHCC to establish a national surveillance system focused on pediatric TB, including training healthcare workers on recognizing TB symptoms in children and improving diagnostic methods.
- MoHCC and partners to implement targeted outreach programs to ensure all eligible children under five, especially those in high-risk households, receive TB preventive therapy (TPT).
- MoHCC to develop and implement specialized training programs for healthcare workers focused on pediatric TB management, including hands-on training and creating child-friendly TB services.

For People Living with HIV (PLHIV):

- Civil society partners and relevant stakeholders to launch nationwide campaigns to raise awareness about HIV and TB, targeting stigma reduction and promoting empathy and support within communities.
- Advocate for the strengthening of the legal frameworks to protect the rights of PLHIV and those affected by TB and establish accessible legal support services to address discrimination. Involve key populations in the design and implementation of stigma reduction strategies to ensure interventions resonate with affected communities.

For Those Who Are Malnourished:

- Food security partners Invest in climate-resilient food systems to counter malnutrition, including promoting drought-resistant crops and supporting local farmers.
- Actors to establish contingency plans for food distribution during droughts, ensuring timely food assistance for all vulnerable groups, including TB patients and survivors.
- Partners to raise awareness about the interconnections between climate change, food security, and health outcomes, engaging communities to foster resilience and collective action.

Conclusion

The findings highlight the need for targeted health interventions to address the high TB burden among KVPs in Zimbabwe and the importance of improving TB case detection and treatment outcomes,

particularly among vulnerable populations. The findings also underscore the critical role of collaboration between various stakeholders, including government agencies, non-governmental organizations, and international partners, in addressing the TB epidemic in Zimbabwe. In conclusion, estimating the sizes of populations at the highest risk for TB is essential for informing decision-makers and programme managers about the extent to which key populations contribute to the TB epidemic and for determining how best to target interventions, plan services, and measure programme coverage tailored to these groups. The findings call for the use of more comprehensive primary data-based methods of population size estimation that will reflect a truer picture of the KVP size estimates.

Introduction

Estimating the sizes of populations at the highest risk for TB is essential for informing decision-makers and programme managers about the extent to which key populations contribute to the TB epidemic and for determining how best to target interventions, plan services, and measure programme coverage tailored to these groups (Chimoyi et al., 2020). In cases where sampling lists are available, population size estimation can simply involve counting all those on the lists. Key and vulnerable populations (KVPs) are defined as people with increased exposure to TB bacilli, limited access to health services, or heightened risk due to compromised immune function, are critical to reaching if countries are to end the TB epidemic in an equitable and human rights-conforming manner. These populations, including prisoners, people living with HIV, migrants, refugees, miners, those working in poorly ventilated conditions, and indigenous communities, face significant vulnerabilities such as marginalization, reduced access to quality health services, and human rights violations (Global Fund, 2020). Miners in Southern Africa, for example, are reported to have a greater incidence of TB than any other working population in the world (*Ibid*). TB incidence among migrant miners in this region is 10 times higher than in the communities from which they originate.

1.1 Background

Tuberculosis (TB) remains a major global public health concern (Churchyard et al., 2017; García-Basteiro, 2015). Globally, TB is ranked amongst the top 13 causes of death worldwide and second only to COVID-19 as the leading cause of death from a single infectious agent (Seid et al., 2022). TB is a common and often lethal infectious disease primarily affecting the lungs, caused by the bacterium *Mycobacterium tuberculosis* (Nemafhohoni, 2022). In 2022, approximately 1.3 million people died from TB globally, including 167,000 people living with HIV (WHO, 2023). Despite progress over the past two decades, the incidence of TB is not declining quickly enough to end the disease (WHO, 2021). The COVID-19 pandemic further reversed years of progress in reducing TB deaths, with mortality rates in 2020 returning to 2017 levels (*Ibid*). Instead of the targeted 35% reduction in TB deaths between 2015 and 2020, there was only a 9.2% decrease.

Sub-Saharan Africa (SSA) bears a disproportionate burden of TB, with 16 of the 30 high-TB-burden countries located in this region, where over 25% of TB deaths occur (Atake, 2023). TB imposes a huge burden on the already overstretched health services in sub-Saharan Africa (SSA) (Zumla, 2015). Case detection rates in sub-Saharan Africa are still estimated to be only 57%, meaning that nearly half of all cases in this area are not diagnosed (World Bank, 2022). TB prevention and control strategies are difficult to implement in prison, especially in sub-Saharan Africa, owing to overcrowding and poor ventilation (Sisay Asgedom et al., 2023).

Zimbabwe was once among the top eight countries in Africa on the list of the world's 30 highest-burden countries for TB/HIV and multidrug-resistant TB (MDR-TB) (Mando et al., 2023). In 2018, Zimbabwe achieved an 84% TB treatment success rate, falling short of the 90% national target (*Ibid*). In 2020, the estimated TB burden in Zimbabwe was 29,000 cases, with an incidence rate of 181.3 per 100,000 people. Of these, only 16,019 cases (55%) were diagnosed (MOHCC, 2022). The TB mortality rate (excluding HIV) increased from 7.9 per 100,000 in 2015 to 13 per 100,000 in 2021 (*Ibid*), while TB-related deaths among HIV-positive individuals fell slightly from 35 to 33 per 100,000 during the same period. Despite Zimbabwe's removal from the list of the top 30 high-TB-burden countries due to investments in the National TB Control Programme and a successful anti-retroviral programme, the country still struggles with around 14,000 missed TB cases annually, alongside a disproportionate burden of TB-HIV and drug-resistant TB (Mugarisi, 2023).

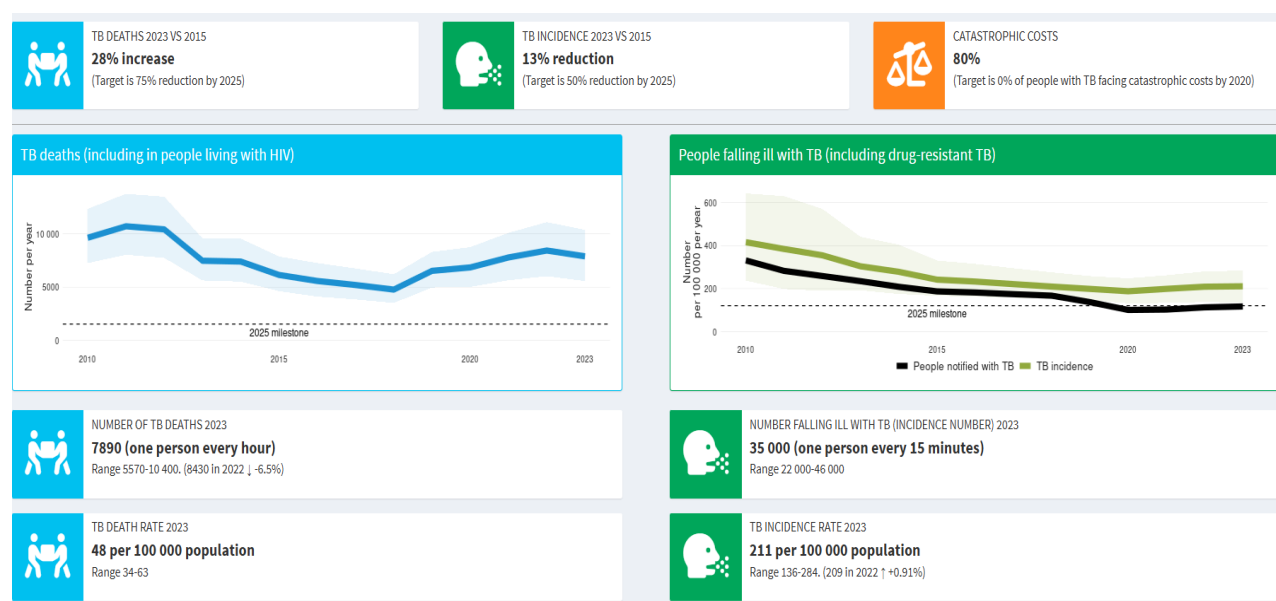
Community involvement has been a key component of Zimbabwe's TB response. In 2020, at least 12% of the notified TB cases were referred by the community for TB services. Support groups and awareness

campaigns have contributed to an increase in early referrals of presumed cases and provided psychosocial and treatment adherence support for patients in care. The decentralization of TB services has also played a significant role in improving access to diagnosis and treatment, particularly in hard-to-reach areas.

The major risk factors for TB in Zimbabwe include HIV infection, which significantly increases the risk of developing TB. Other risk factors include undernutrition, diabetes, alcohol use disorders, and smoking. Socioeconomic factors such as poverty, overcrowding, and limited access to health care also contribute to the spread of TB. Zimbabwe has introduced an all-oral treatment regimen for multi-drug-resistant tuberculosis (MDR-TB), which is recommended by the World Health Organization (WHO).

Regarding the TB case cascade in Zimbabwe, there is a significant gap between the number of people developing TB and those receiving notifications, indicating potential challenges in detecting or reporting TB cases (STOP TB Partnership, 2020). While the number of people on treatment remains consistent with notifications, the success rate reflects a notable decrease, underscoring the need for improved treatment outcomes. In addition, the proportion of children who were diagnosed with TB has been consistently low and has been 6% for the past 4 years (*Ibid*). Figure 1 summarizes the TB situation in Zimbabwe.

Figure 1: Summary of TB Situation in Zimbabwe



Source: WHO (2024)

1.2 Aim and Objective of the KVP Size Estimation

This exercise aimed to synthesize available data of TB KVPs to inform and directly contribute to the size estimation. The specific objectives were to identify and analyze key populations affected by tuberculosis (TB) and their respective size estimations and produce a comprehensive literature review structured around the risks and vulnerabilities of each TB KVP in order to enhance their optimal engagement with TB prevention and care services in Zimbabwe.

1.3 Methodology

The methodology of this report was informed by an exercise conducted by the core group using the TB Key and Vulnerable Populations (KVP) Size Estimation Tool (Annex 1), developed by the Stop TB Partnership (2022) which included the following six steps;

- **Preparation:** JHWO gathered existing data and resources and engaged stakeholders to ensure a comprehensive approach.
- **Mapping:** JHWO and stakeholders identified and mapped key and vulnerable populations (KVPs) affected by TB in Zimbabwe using data from TB registers.
- **Data Collection:** Consultant used existing records to collect data on the size and characteristics of KVPs.
- **Data Analysis:** Consultant analyzed the collected data to estimate the size of KVPs and understand their TB burden.
- **Validation:** The estimates were validated through consultations with experts and stakeholders to ensure accuracy and reliability.
- **Reporting and Use:** The findings were compiled into a report and the data will be used to inform TB control strategies and interventions

The core group convened and conducted the scoring and ranking process by assigning scores (on a scale of 0 to 10) to each key and vulnerable population across six risk categories: environmental, biological, behavioural, legal, social-cultural, and economic barriers. These scores were summed to calculate a total score for each group, with higher scores indicating greater vulnerability to TB. KVPs were then ranked based on their total scores, helping prioritize interventions for the most at-risk groups. For this report, the top six Key and Vulnerable Populations (KVPs) were selected. Desk research was conducted, involving a review of secondary data from various platforms, primarily focusing on estimates from the past seven years. The desk review utilized the “Template for Results from Desk Review of Existing Data and Information on TB KVP” (Annex 2). The review began by estimating the KVP size, identifying the source of data, determining their geographical concentration, assessing their key TB risks and related drivers, identifying challenges in TB diagnosis, prevention, treatment, and care, determining the TB services needed to increase access, evaluating the services available, and highlighting gaps to be addressed.

Findings

The section provides a comprehensive analysis of the KVPs affected by TB in Zimbabwe and delves into the estimated sizes, geographical distribution, and specific risks faced by these populations. The study identifies and prioritizes the top six KVPs, including people who live in congregate settings, miners and ex-miners, people who use and inject drugs, children under five, people living with HIV, and people who are malnourished¹. Each group's unique vulnerabilities and challenges are examined to inform targeted TB prevention and care strategies. The findings underscore the critical need for tailored interventions to address the high TB burden among these populations and improve overall health outcomes in Zimbabwe.

1 People who live in congregate settings

This study defines congregate settings as populations residing in places such as orphanages, slums, and refugee camps. These environments are typically characterized by overcrowding, limited access to healthcare, and poor living conditions, making them particularly vulnerable to the spread of infectious diseases like tuberculosis in Zimbabwe.

1.1 Estimated Population Size

In 2018, the proportion of the population living in slums (% of urban population) in Zimbabwe was 33.50. Its highest value over the past 28 years was 33.50 in 2018, while its lowest value was 3.30 in

2000. An estimated one in four of the country's urban population, or about 1.25 million people, live in slums, according to 2014 United Nations data (Moyo, 2020). In Zimbabwe, the Tongogara refugee camp in Chipinge has an estimated population of 12000 refugees from DRC, Rwanda, Burundi, Eritrea, Ethiopia, Somalia, Uganda, and Ivory Coast. Previously, efforts to curb TB at Tongogara Refugee camp were mainly through passive TB case finding, which, however, was ineffective (MOHCC, 2016). The proportion of Zimbabwe's urban population living in slum households remains significant, as reflected by various data sources over the years in Table 1. These living conditions, coupled with the high number of tuberculosis cases and incidence rates, highlight the increased health risks faced by slum populations.

Table 1: Estimation size of urban population living in slum households in Zimbabwe

UN-HABITAT WORLD CITIES REPORT (2022)		UN HABITAT (2018) (2 FEB. 2023)	WHO (2 FEB. 2023)	
Proportion of urban population living in slum (households)	Urban population living in slum households (2020) (thousands)	Urban population living in slums by country or area (1990-2018)	Total TB (all forms) patients notified in 2021	TB incidence rate per 100 000 population (2021)
21.6	1 229	1 579	16 541	190

Source: STOP TB Partnership (n.d)

1.2 Risk diagnosis and prevention challenges

Crowded living conditions and limited access to healthcare significantly contribute to the high burden of TB in urban slums. In Bulawayo, for instance, the city experiences the highest TB death rate at 16%, well above the national target of less than 5%, largely due to high TB/HIV co-infection rates, delayed health-seeking behaviors, and rampant overcrowding in settlements (Gwarisa, 2022).

Globally, poverty is a major driver of TB, leading to social deprivation with consequences such as inadequate housing, food insecurity, malnutrition, and exposure to indoor air pollution from biofuels. In Zimbabwe poverty remains high, estimated at 38.7% in 2023, and unemployment stood at 21% in the third quarter of 2023 (African Economic Outlook, 2024). These conditions, coupled with tobacco smoking, substance abuse, higher HIV risk through transactional sex, and poor healthcare access, collectively increase both TB exposure and the likelihood of progression from infection to active disease, a reality prevalent in slums, rural areas, and refugee camps.

According to the UN-Habitat, informal settlements typically endure unhealthy living conditions due to the absence of basic services, resulting in open sewers, uncontrolled waste dumping, and environmental pollution (TARSC et al., 2019). Additionally, in Zimbabwe, houses in these areas may be built on hazardous land, such as wetlands, floodplains, or near factories that emit toxic substances (Ezeh et al., 2017). Consequently, residents face a complex mix of occupational, public health, and environmental risks, including collapsing housing, polluted water sources, and exposure to diseases like typhoid, cholera, malaria, TB, and HIV/AIDS, which are exacerbated by overcrowding and social stress.

1.3 Treatment and care challenges

Treatment of TB patients in congregate settings is challenging because they are often identified as individuals without a permanent residence. Most informal settlements in Zimbabwe lack public health measures to address or eliminate disease vectors, and healthcare access is limited, forcing residents to travel to distant health centres (TARSC et al., 2019). For example, residents of Komboniyatsva ward in Epworth access to health care facilities was cited as a major challenge. In as much as residents in the squatter settlements indicated that they had access to local health care centres such as the Epworth Local Clinic and The Medicines Sans Frontiers Clinic, they were sometimes denied access and treatment when they were referred to the major referral hospitals in Harare (Parirenyatwa and Harare Hospital) as they were usually turned away as being of no fixed abode (Msindo et al., 2013).

1.4 Services Available

However, the slum upgrading program has provided a turning point for 480 poor households, now benefiting from either sectional (249) or individual (231) property titles, thus elevating their social status within families and society (Muchadenyika, 2015). This joint effort, spearheaded by Shelter for the Homeless in Zimbabwe Trust, Zimbabwe Homeless People's Federation, and the City of Harare, aims to promote city-wide slum upgrading. Dzivarasekwa was chosen as the first settlement for upgrading under the Harare Slum Upgrading Project (HSUP) due to pre-allocated land for the Federation (UN-Habitat, 2022).

Lessons from the Dzivarasekwa Extension Slum Upgrading Project will guide similar upgrades across the city. Since the project's start in 2011, 408 families (about 2,050 residents) have secured land tenure, with 336 homes built and 1,344 people housed. Sanitation has been greatly improved by replacing pit latrines with 29 eco-san toilets, and a solar-powered water system has been installed. Additionally, a community resource centre has been built, and roads have been tarred (UN-Habitat, 2022). Between 2012 and 2018, 71 other slums were mapped and profiled under the HSUP, with upgrading initiatives started in nine other settlements in Harare based on the Dzivarasekwa model (UN-Habitat, 2022). By improving living standards and reducing environmental hazards, the slum upgrading initiatives directly target the social and structural determinants of health that contribute to TB outbreaks.

2 Miners and ex-miners

Miners, as a key TB population, include individuals engaged in industrial or artisanal mining and quarrying who often have limited access to health and social services. They are exposed to silica dust or work in poorly ventilated environments, increasing their risk of TB (WHO, 2017). The Global TB Report 2023 estimates Zimbabwe's TB incidence at 33,000 cases, with a treatment success rate of 90% for drug-sensitive TB and 42% for multi-drug-resistant TB (MDR-TB) (Global Report, 2023). Among ASMs, the TB prevalence is alarmingly high at 7,400 per 100,000 people, more than 30 times higher than the general population (Moyo et al., 2024). In the project districts, the TB burden among ASMs is 7,400 per 100,000—39 times higher than the general population's rate of 190 per 100,000 (MOHCC, 2023).

2.1 Estimated Population Size

According to the 2022 Zimbabwe Census, 227,079 people (207,072 males; 20,007 females) were employed in mining and quarrying (Zimbabwe National Statistics Agency [ZIMSTAT], 2022). Zimbabwe also has over half a million artisanal and small-scale miners (ASMs) who provide economic support to an estimated 2 million people (Moyo et al., 2022). In artisanal mining, women make up 10% of Zimbabwe's 535,000 artisanal and small-scale miners (Women and Law in Southern Africa, 2024).

Research conducted in Zimbabwe has uncovered a triple burden of TB, HIV, and silicosis, with prevalence rates of 7%, 18%, and 19–21%, respectively, among ASMs (Moyo et al., 2022; Moyo et al., 2021). The silicosis burden is particularly high at 21% among ASMs screened at Occupational Health Centers (OHCs) and through Workplace-Based Screening (WBS) services. The estimated TB burden among mineworkers in Zimbabwe reveals a significantly higher prevalence in mining areas compared to the general population, highlighting the critical need for targeted health interventions (Table 2).

Table 2: Estimated TB burden among mineworkers in Zimbabwe.

Key Indicators	Size of mining population	TB prevalence general population (per 100,000)	TB prevalence in mining area (per 100,000)	HIV prevalence In mining areas (%)	Silicosis prevalence (%)	% of TB patients who are HIV infected

Size/Proportion	632,025	278	No data	16-20	0.1	68
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Source: *Epidemiological data on Tuberculosis, Multi-Drug-Resistant TB, Silicosis and HIV among Miners and Ex-miners in Southern Africa (2017)*.

2.2 Concentration of ASMs in Zimbabwe

Artisanal and small-scale miners are largely populated in Midlands province with a population of 19457 ASMS, followed by Mashonaland West 13267, Matabeleland South 12153, and Mashonaland central provinces (ZIMSTATS, 2012). They are mostly concentrated in the Great Dyke region, which is rich in minerals and has a high concentration of illegal and commercial mining activities. The prevalence of TB in ASMs was 6.8% in Zimbabwe (Moyo et al., 2022). What is particularly concerning is the high proportion of young people who are affected (PEPFAR, 2022).

2.3 TB risks and related drivers for ASMs

In Zimbabwe, artisanal and small-scale miners (ASMs) often face significant barriers to translating their positive intentions into effective health-seeking behaviors and practices. These barriers include structural issues, such as long distances to clinics, lack of funds for consultations, and shortages of medicines in health facilities (Moyo et al., 2023). ASMs typically operate in remote and hard-to-reach areas, making access to health facilities challenging. Additionally, factors contributing to delayed health-seeking behaviors, as observed in this study, include rigid clinic operating hours, long waiting times at health facilities, and the fear of leaving mining activities, which could result in lost income while they attend to their healthcare needs (Moyo et al., 2023).

The risk of TB among artisanal and small-scale miners is also linked to unregulated mining activities, which expose them to dust with minimal to no use of personal protective equipment, as well as harmful substances like cyanide and mercury. Moyo et al. (2021) explain that ASM communities exhibit high burdens of TB, HIV, and silicosis, alongside poor health-seeking behaviors that lead to delays in seeking care and contribute to suboptimal treatment outcomes. Given that Zimbabwe's TB epidemic is largely driven by HIV, unfavorable health outcomes may be associated with co-infection and lack of access to antiretroviral therapy (Matambo et al., 2020).

It is estimated that 89% of mineworkers have latent TB infection (Lwegaba et al., 2020). Key factors contributing to the higher risk of TB among mineworkers include exposure to silica dust, overcrowded living and working conditions with inadequate ventilation, a high incidence of silicosis, and HIV/TB co-infection, among others (*Ibid*). This combination of TB and silicosis poses a significant health challenge, especially for younger miners, as TB prevalence is high among Zimbabweans aged 25–34 years (WHO, 2020). The synergistic relationship between HIV and silicosis may further drive the TB epidemic, as both conditions increase TB susceptibility. ASMs who fall ill often return to their hometowns, where they may contribute to community TB transmission (Moyo et al., 2021).

2.4 TB diagnosis, prevention, treatment and care challenges

Artisanal and small-scale miners (ASMs) in Zimbabwe face numerous challenges concerning TB diagnosis, treatment, and follow-up. For instance, in Midlands Province, the USAID-funded KNTB project is screening ASMs for TB, HIV, and silicosis. The five project districts host 185 health facilities—22 in Chirumhanzu, 47 in Gweru, 51 in Kwekwe, 35 in Shurugwi, and 30 in Zvishavane (Moyo et al., 2023). However, aside from Gwanda District and Gweru District, none of these health facilities have dedicated occupational health clinics specifically for ASMs.

In the KNTB project districts, ASMs have reported significant barriers to accessing occupational health services, including long distances to health facilities, lack of financial resources for medical fees, and occasional shortages of medicines (Moyo et al., 2023). In terms of TB treatment outcomes, Matabeleland South Province exhibited the lowest treatment success rate at 77.3%, alongside a high death rate of 30.0%. Masvingo Province also reported a concerning death rate of 27.3% (Moyo et al., 2023). Furthermore, issues such as loss to follow-up before diagnosis, loss to follow-up during TB treatment

(Figure 2), and elevated death rates are prevalent in provinces with active artisanal and small-scale mining activities (*Ibid*).

2.5 Services needed to increase access

Regular screening can help detect silicosis, TB, and HIV early, ensuring that ASMs are promptly included in medical care. Given that ASMs are highly mobile and operate in remote areas with limited access to health services, interventions to improve access to screening services are essential (Moyo et al., 2023).

Additionally, there is a need to implement a comprehensive occupational health service package for ASMs in Zimbabwe, which should include regular TB and silicosis surveillance to monitor and manage the health risks associated with mining. Such a package would not only improve early detection and treatment of occupational diseases but also help reduce the long-term health impacts of prolonged exposure to silica dust and other hazardous mining conditions (Moyo et al., 2021).

2.6 Services Available

Patients diagnosed with TB are registered in the health facility's Directly Observed Treatment (DOT) register and initiated on anti-TB treatment following national and international guidelines (WHO, 2017). Tuberculosis Preventive Therapy (TPT) notifications refer to the official reporting or recording of TPT cases, which is a treatment provided to individuals at high risk of developing active TB, particularly those who are latently infected (i.e., carrying the bacteria without showing symptoms) or those exposed to someone with active TB. From 2018 to 2020, TPT notifications in Zimbabwe fluctuated, increasing from 1,968 in 2018 to 2,612 in 2019, followed by a decrease to 1,808 in 2020. Notifications rose again to 2,463 in 2021, indicating a recovery from the previous year. By 2022, TPT notifications surged dramatically to 7,500, reflecting a significant scale-up of TB preventive therapy efforts.

The Ministry of Health and Child Care (MoHCC) in Zimbabwe, in collaboration with private players through the KNTB² project, has been screening ASMs for TB, HIV, and silicosis since 2020. The KNTB project operates in several districts in Zimbabwe, including Gweru, Shurugwi, Zvishavane, Kwekwe, Chirumhanzu, Insiza, Mwenezi, and Gwanda. This collaboration is crucial for preventing TB among ASMs as it enables targeted screening for high-risk populations in several districts, thereby facilitating early detection and treatment. This proactive approach not only addresses the immediate health needs of ASMs but also contributes to reducing the overall transmission of TB in the community.

Additionally, support services provided by BOHS play a crucial role in project implementation. These services encompass Safety, Health, Environment, and Quality (SHEQ) technical support, monitoring and evaluation, and administration and finance. The SHEQ technical support ensures that BOHS adheres to good standards of health, safety, and environmental protection while implementing activities such as screening at Occupational Health Clinics (OHCs) and Wellbeing Services (WBS). It involves conducting hazard identification and risk assessments (HIRAs) and performing environmental impact assessments for WBS to ensure project activities are environmentally friendly. A monitoring and evaluation expert supports BOHS by tracking the project's performance against established indicators (Moyo et al., 2024).

Zimbabwe has undertaken several initiatives to address TB in the mining sector since the Declaration, including the TB in Mines Phase II project from 2019 to 2020, supported by the Global Fund. This initiative has been implemented in six districts: Bubi, Shurugwi, Mazowe, Sanyati, Hurungwe, and Kwekwe. Key activities include TB screening and active case finding, training community volunteers in TB screening and the Community Support Services (CSS) toolkit, contact tracing, initiatives to improve TB prevention, care, and treatment behavior among key populations, and raising awareness among ASMs and communities about the minimum package of occupational health (OH) services. This package includes prevention, medical screening, treatment, HIV prevention, and sexual and reproductive health,

² The KNTB is being implemented by Baines Occupational Health Services (BOHS)

as well as engaging care providers to generate demand for available occupational health services (OHSC and other facilities) (SADC, n.d.).

Furthermore, the KNTB grant operates in eight districts (Insiza, Gwanda, Shurugwi, Kwekwe, Gweru, Mwenezi, Zvishavane, and Chirumhanzu). Two OHSC clinics have been established in Gwanda and Gweru, providing occupational health services to artisanal and small-scale miners while also building the capacity of nurses and doctors to screen and diagnose conditions. This is important for delivering essential TB services to artisanal and small-scale miners, as it not only facilitates early diagnosis and treatment but also enhances the capacity of healthcare providers to effectively address occupational health challenges.

Another initiative supported by the Global Fund COVID-19 grant from 2022 to 2023 covers ten districts (Mazowe, Bindura, Shamva, Sanyati, Bubi, Matobo, Hwange, Umguza, Chimanimani, and Umzingwane), focusing mainly on building the capacity of healthcare workers (HCWs) in screening and diagnosing occupational lung diseases. TB in mines is addressed in the TB National Strategic Plan (NSP), and obligations for compensation are covered through court decisions for ex-Wenela miners. The current national minimum standards are outlined in the TB NSP 2021-2025, and research on TB and silicosis is being conducted through the KNTB project. Partner funding includes the Global Fund C19RM grant and the USAID KNTB grant, which supports capacity building of HCWs on TB, HIV, silicosis, and other occupational respiratory diseases. This funding also supports occupational health service centers in Gwanda, Gweru, and Kadoma, along with a KNTB project for the next five years. The government has demonstrated commitment and obligation for some domestic financing (SADC, n.d.).

In Zimbabwe, the Zimbabwe Miners Federation (ZMF) has made efforts to regularize artisanal and small-scale mining, with approximately 40,000 of at least 500,000 miners reported to have registered (Moyo et al., 2023). This is particularly important for increasing access to TB services, as registration enables more miners to benefit from targeted health interventions. By formalizing this sector, it becomes easier to track, screen, and treat miners for TB, improving overall health outcomes in mining communities.

2.7 Gaps to be addressed

There is a need to provide a comprehensive occupational health service package, including TB and silicosis surveillance, to ASMs in Zimbabwe. Interventions to reduce exposure to silica-containing dust by raising awareness on safer mining methods are essential. This requires enhanced collaboration between the Zimbabwe Miners Federation, the Ministry of Mines, the Ministry of Labour and Social Services, and the Ministry of Health and Child Care (Moyo et al., 2021). Research conducted by STOP TB (2020) identified the following gaps regarding TB among miners and ex-miners in Zimbabwe:

- Data on key populations are incomplete at the regional level.
- Although data on key populations exist in several countries, there is no standard approach to the recording and reporting of the information.
- Data on treatment completion of Preventive Therapy (PT) is not available.

Regular screening can help detect silicosis, TB, and HIV early, ensuring that ASMs are promptly included in medical care. Given that ASMs are highly mobile and operate in remote areas with limited access to health services, interventions to improve access to screening services are essential (Moyo et al., 2023).

Additionally, there is a need to implement a comprehensive occupational health service package for ASMs in Zimbabwe, which should include regular TB and silicosis surveillance to monitor and manage the health risks associated with mining. Such a package would not only improve early detection and treatment of occupational diseases but also help reduce the long-term health impacts of prolonged exposure to silica dust and other hazardous mining conditions (Moyo et al., 2021).

The lack of a specific IEC (Information, Education, and Communication) strategy in Zimbabwe to guide TB, HIV, or silicosis programs in mining settings creates a critical gap, as it limits targeted awareness,

prevention, and health-seeking behaviors among miners and ex-miners, a key and vulnerable group disproportionately affected by these diseases (TIMS TB in the Mining Sector in Southern Africa, 2017).

3 People who use and inject drugs.

People who inject drugs refers to people who inject psychotropic (or psychoactive) substances for non-medical purposes (WHO, 2016). These drugs include but are not limited to, opioids, amphetamine-type stimulants, cocaine, hypo-sedatives and hallucinogens. Injection may be through intravenous, intramuscular, subcutaneous or other injectable routes (*Ibid*).

3.1 Estimated Population Size.

The exact number of people who use and inject drugs in Zimbabwe is challenging to determine due to the hidden nature of drug use and the stigma associated with it. However, various reports provide some insights:

- **Drug Use:** A situational analysis conducted in five provinces of Zimbabwe revealed that drug use is a significant issue, particularly among the youth. The analysis found that 58.47% of males and 40.59% of females use drugs (Healthtimes, 2024).
- **Injecting Drug Use:** The same analysis indicated that there is a population of people who inject drugs (PWID) in Zimbabwe, although specific numbers are not provided.
- **Drug and Alcohol Use Disorders:** WHO estimated that approximately 3% of the Zimbabwean adult population (around 450,000 people) had either a drug or alcohol use disorder.
- **Youth Drug Use:** A 2019 study by the Zimbabwe National Drug Abuse Council reported that one in five young people between the ages of 15 and 24 had used drugs at least once.

The Zimbabwe Civil Liberties and Drug Network (2022) reports that alcohol, drugs, and other substances abuse in order of consumption is cannabis (67%); cough syrup (47%); crystal meth (36%); illegal alcohol (31%); pharmaceuticals (13%); crack (3%); cocaine powder (3%); and heroin (2%).

Regarding drug usage at the national level, Manicaland leads in cannabis use, with 93.44% of participants reporting its usage, along with the highest consumption of legal alcohol (77.05%) and stunk (70.49%) Zimbabwe Civil Liberties and Drug Network, 2022). Mashonaland Central follows, with 69.49% reporting cannabis use and ranking second in legal alcohol consumption (69.49%) while also showing high cough syrup usage (54.24%). Bulawayo ranks third, with 67.92% of participants using legal alcohol, along with notable cannabis use (62.26%) and significant stunk usage (56.60%), as in Table 3.

Table 3: Drug usage in the year 2022 per province.

Indicator	Bulawayo	Harare	Manicaland	Mashonaland Central	Mashonaland West	Total Sample
Number of Participants	53	61	61	59	59	293
Drugs used past years	%	%	%	%	%	%
Cannabis (mbanje, ganja)	62.3	49.2	93.4	69.5	64.4	67.9
Legal Alcohol	68.0	26.2	77.1	69.5	67.8	61.4
Cough syrup	32.7	44.3	64.0	54.2	39.0	48.1
Stunk	56.6	34.4	70.5	18.6	37.3	43.3
Crystal Meth (mutoriro, guka)	49.1	32.8	49.2	36.5	32.2	36.5

Illegal Alcohol (musombodhiya, kachasu, tumbwa)	49.1	6.6	34.4	37.2	32.2	31.4
Pharmaceuticals	7.6	26.2	11.5	20.3	25.4	18.4
Powder cocaine	11.3	3.3	4.9	1.7	10.2	6.1
Crack cocaine (rock)	7.6	0.0	8.2	8.5	1.7	5.1
Glue	5.7	1.6	3.2	11.7	0.0	4.4
Heroin	7.6	3.3	8.2	0.0	1.7	4.1
Sodium Polycrylate from diapers	0.0	1.6	1.6	0.0	3.4	1.4
Nyaope (whoonga)	5.7	1.6	0.0	0.0	0.0	1.4
Others	3.8	24.6	8.2	5.1	1.7	7.5

Zimbabwe Civil Liberties and Drug Network: December (2022)

3.2 TB risks and related drivers

People who inject drugs are often detained and denied access to health services while in prison, including HIV prevention, treatment, and drug overdose or withdrawal management services. It is estimated that between 56% and 90% of people who inject drugs will be incarcerated at some point, reflecting deep-seated stigma against key populations and their practices (UNDP and NAC, 2019).

People who engage in drug use or high-risk behaviors associated with drug use are at greater risk of contracting or transmitting viral infections, such as TB (Zimbabwe National AIDS Council, 2019). This risk is primarily associated with behaviors like needle-sharing or using contaminated drug equipment. Women who become infected with a virus may pass it to their babies during pregnancy, regardless of drug use, and can transmit HIV through breastfeeding. Drug use can also exacerbate symptoms of viral infections like HIV, making it easier for the virus to affect the brain and causing greater damage to nerve cells, which can impair thinking, learning, and memory (Zimbabwe National AIDS Council, 2019).

People who inject or use drugs face a heightened risk of Tuberculosis (TB) due to a combination of biological, social, and structural factors. The use of drugs can compromise the immune system, making individuals more susceptible to infections like TB. Additionally, co-existing conditions such as HIV, which is prevalent among drug users, further increase the risk of developing TB. The living conditions of many drug users, often characterized by overcrowding and poor ventilation, also facilitate the transmission of TB. Diagnosis of TB in this population is challenging due to delayed healthcare seeking, limited access to services, and the stigma associated with drug use, which can mask TB symptoms and lead to delays in diagnosis.

Treatment adherence is another significant challenge, as maintaining a regular TB treatment regimen can be difficult for drug users due to chaotic lifestyles and lack of social support. There are also potential interactions between TB medications and drugs used for substance use disorders, complicating treatment. The prevalence of multidrug-resistant TB (MDR-TB) is higher among drug users, requiring more complex and prolonged treatment. Social factors such as poverty, incarceration, and homelessness further impede access to TB diagnosis and treatment. Addressing TB in drug users requires integrated care that includes treatment for substance use disorders, mental health services, and social support, along with harm reduction strategies to reduce the risk of TB transmission. These issues underscore the need for tailored interventions and policies to improve TB outcomes in this vulnerable population.

3.3 TB services needed to increase access

To increase access to TB services in Zimbabwe, there is a need to replace criminalization and punishment of people who use drugs with evidence-based and rights-affirming interventions, including the promotion of referrals to rehabilitation programmes rather than the imposition of custodial services for persons convicted of possession for own use (UNDP and National AIDS Council, 2019).

3.4 Gaps to be addressed

In most AU countries, including Zimbabwe, approaches to drug use focus primarily on criminalization and harsh penalties rather than public health measures. Many countries implement compulsory detention in prisons or drug rehabilitation centers as treatment for people who use or inject drugs.

4 Under-five Children

Globally, 75% of reported childhood TB cases come from the 22 high-burden TB countries. The World Health Organization (WHO) estimated that in 2018, one million children developed TB, with 230,000 dying from the disease, 80% of whom were under five years old (Nzombe et al., 2020). Studies from high TB-burden countries indicate that childhood TB accounts for 10% (ranging from 5–15%) of all TB patients notified (WHO, 2013). These same countries also bear the burden of the top five child-killer diseases, some of which are known risk factors for TB.

4.1 Estimated Population Size

Zimbabwe has an estimated 2.2 million children under the age of five. Estimates from the UNAIDS (2024) showed that as of December 2023, there were around 2 575 000 across the ten provinces of Zimbabwe (Table 5). The estimated population of children with TB in Zimbabwe can be derived from various data points. According to the Stop TB Partnership (2022), among the estimated 29,000 people who developed TB in Zimbabwe, approximately 3,500 were children. Additionally, it's reported that around 2,588 children are among the missing people with TB. Further, an evaluation of the childhood tuberculosis program in Chegutu District indicated that about 10% of all TB cases in Zimbabwe are expected to occur in children below 15 years. Given the total number of TB cases, this percentage aligns with the figures provided by the Stop TB Partnership.

Data from WHO (2019) highlights the importance of initiating TB preventive treatment for vulnerable populations, especially children under five years old who are in contact with individuals living with HIV (Table 4). Despite 22,138 people living with HIV being newly enrolled in care, only 1,968 children under five years were started on TB preventive treatment, reflecting a coverage rate of 30%, which indicates gaps in treatment access and coverage (*Ibid*).

Table 4: TB preventive treatment for people living with HIV, under-five children in Zimbabwe, 2018.

People Living with HIV Newly Enrolled in Care	People Living with HIV Currently enrolled in Care	Estimated number of child contacts under 5 years of age eligible for TB preventive treatment ³		Children under 5 years of age started on TB preventive treatment	
Number of people started on TB preventive treatment	Best Estimate	Uncertainty Interval	Number	Coverage (%) ⁴	
				Best Estimate	Uncertainty Interval
22 138	6 630	6 040–7 220	1 968	30	27–33

Source: WHO (2019)

4.2 TB risks and related drivers

Children living in the same household as someone with TB are at a heightened risk of exposure to the bacteria due to close and prolonged contact, which significantly increases their chances of becoming

³ Estimates are shown to three significant figures.

⁴ Reasons for a higher-than-expected coverage might be that the numerator reported did not fully meet WHO's definition, e.g. it included non-household contacts, household contacts of clinically diagnosed TB cases or children five years or older.

infected. Moreover, because their immune systems are still developing, children are more susceptible to progressing from latent TB infection to severe, life-threatening forms of active TB, such as TB meningitis or miliary TB (STOP TB Partnership, 2020).

Children under five are particularly vulnerable to TB infection due to their developing immune systems, which may not effectively combat the bacteria that cause the disease. Additionally, children with TB often experience poor weight gain, weight loss, or malnutrition, making them more susceptible to infections and exacerbating their overall health status (MOHCC, n.d.). The prevalence of TB/HIV co-infection further complicates their health, as HIV weakens the immune response and increases the likelihood of developing active TB disease. This co-infection is common among children in Zimbabwe, emphasizing the urgent need for targeted interventions to protect this vulnerable population and improve their health outcomes (*Ibid*).

Children under five are at increased risk of being infected with TB due to their close contact with household members or other individuals who have pulmonary TB, particularly those who are smear-positive or culture-positive (MOHCC, n.d.). In such environments, the likelihood of transmission is high, as young children may not have the capacity to maintain physical distance or take precautions to avoid infection. Additionally, their developing immune systems are less equipped to fight off infections, making them more susceptible to contracting TB (*Ibid*).

To buttress the above point, HIV-infected children are at greater risk of developing TB disease due to immunosuppression and their increased likelihood of being in contact with active cases (MOHCC, n.d.). HIV-infected children are at greater risk of developing TB disease due to immunosuppression, which weakens their immune response and makes it more difficult for their bodies to fight off infections. Additionally, these children are often in close contact with adults or peers who have active TB, increasing their chances of exposure to the bacteria and the subsequent development of TB disease.

4.3 TB diagnosis, prevention, treatment and care challenges

The diagnostic approach for TB in children living with HIV is essentially the same as for those who are HIV-uninfected. However, according to MOHCC (n.d), several challenges can arise, including:

- Clinical features consistent with TB are common in children living with HIV but may be attributable to other diseases.
- The Tuberculin Skin Test (TST) is less sensitive in these children, with induration of greater than 5 mm considered positive.
- Children living with HIV have a high incidence of other acute and chronic lung diseases related to HIV.
- These children may have lung disease from multiple causes, which can obscure the response to therapy.
- There is often an overlap in Chest Radiograph (CXR) findings between TB and other HIV-related lung diseases.

In Zimbabwe, there are approximately 13,690 missing individuals with tuberculosis (TB), of whom 2,678 are children (STOP TB Partnership, 2022). This underreporting not only complicates the prevention and care efforts needed to control the spread of TB but also exacerbates the challenges in allocating resources effectively, leading to poorer health outcomes and increased morbidity and mortality among vulnerable populations, particularly children.

It should be noted that in response to the TB epidemic, there has been a concerted effort in Zimbabwe to enhance access to TB preventive treatment, such as Isoniazid Preventive Therapy (IPT), for people living with HIV. However, many adolescents are hesitant to initiate IPT due to concerns about side effects and the fatigue associated with taking multiple pills (Zvandiri, 2021).

Many health workers consider managing a child with suspected TB as a challenging task, particularly regarding diagnosis, as children are often perceived as requiring specialized care (Biriwasha, 2012). Therefore, TB case-finding efforts should specifically target children under five living in households with sputum-smear-positive adults. Those who are well should receive IPT to help prevent the development of active TB, while those who are unwell should undergo clinical examination and potentially receive TB treatment (Biriwasha, 2012).

According to Zinyuke (2023), childhood TB remains a challenging issue primarily due to the difficulties associated with diagnosis, as children may present with overlapping symptoms of other common childhood illnesses. A negative test result may not necessarily indicate the absence of TB but rather reflect the way the disease typically presents in a child with an underdeveloped immune system. To improve TB testing capabilities, Zimbabwe has adopted more sensitive rapid molecular TB diagnostic platforms, such as GeneXpert, which are now available in all districts to enhance TB case identification (Zinyuke, 2023).

4.4 TB services needed to increase access

To increase access to TB services, Biriwasha (2012) recommends establishing a dedicated child TB working group that includes staff from the National Tuberculosis Control Programme (NTP) and national child TB experts. This working group would set practical priorities and goals, develop guidelines, implement activities for managing child TB, support health workers in their management efforts, and promote awareness through advocacy and health education. Furthermore, addressing the needs of children with TB should be integrated into routine NTP activities, including training, drug procurement, strategic planning, and data recording and reporting.

The country is also promoting the use of digital chest radiographs (x-rays) as a diagnostic aid for TB in children and as a more sensitive screening tool for adults. The Tuberculin Skin Test (Mantoux) is used to determine TB exposure, and in children with suggestive symptoms, a positive result can aid diagnosis (Zinyuke, 2023).

In addition to addressing diagnostic challenges, USAID, through the Kunda-Nqob'ITB project, trains healthcare workers and establishes centres of excellence for children's TB prevention and care (Zinyuke, 2023). Child-friendly anti-TB medications have also been adopted and are now in use. Furthermore, Zimbabwe is working to ensure all TB cases are identified and treated, with recent WHO recommendations offering opportunities to adopt a shorter four-month treatment regimen for uncomplicated TB cases.

4.5 Services Available

A key service in Zimbabwe's fight against TB is advocacy. To bridge the gap, through funding from the Stop TB Partnership and Technical Support from the Ministry of Health and Child Care (MoHCC), the Jointed Hands Welfare Organisation in Zimbabwe (JHWO) is implementing the rollout of the "One Impact" mobile application (Gwarisa, 2024). One Impact is a Stop TB Partnership's digital tool that enables people with TB to connect with peers, access TB services and information, and report problems faced while on [TB treatment](#). It also enables national TB programs and other health frameworks to gain access to reliable data that helps them understand the needs and concerns of people affected by TB, which in turn informs service delivery and improves the national TB response (*Ibid*). The app is a valuable tool for advocacy work, and it is described by users as effective for both healthcare workers and patients. They explained that once registered on the app, users receive timely updates and feedback on any issues they may be facing. This has contributed to reducing the defaulter rate among TB patients by linking them to the nearest health facilities for care (Gwarisa, 2024).

Additionally, Zvandiri youth advocates also actively participated in global efforts to mobilize resources for TB funding⁵(Zvandiri, 2021). They conduct advocacy activities via radio, print, and social media to raise awareness of critical issues such as TB-related stigma, the pill burden faced by those on TB treatment and ART, mortality rates among children, adolescents, and young people living with HIV (CAYPLHIV), the importance of early TB diagnosis and treatment, and the use of TB Preventive Therapy (TPT) literacy toolkit.

A significant barrier to accessing TB diagnosis and care is the lack of free chest X-ray (CXR) services, with some available services being either dysfunctional or outdated. Survey results may inform the revision of screening algorithms to incorporate CXR for specific cases and support resource mobilization efforts.

4.6 Gaps to be addressed

Unfortunately, there is a significant lack of epidemiological data regarding the extent of TB among children in Zimbabwe, leading experts to believe that childhood TB is widely underreported and may account for as much as 40% of the TB caseload in high-burden areas. Children are particularly vulnerable to TB, often presenting with disseminated forms of the disease, making diagnosis challenging due to nonspecific symptoms and the lack of known contacts (Biriwasha, 2012).

TB screening among children accessing health services remains alarmingly low, with only 3.1% of children screened, despite national guidelines recommending that all children presenting to health facilities be screened for TB through symptom enquiry (Tachiwenyika et al., 2013). The identification and diagnosis of TB in children are further hindered by inadequate clinical expertise, high costs associated with in-service training, and invasive procedures required for specimen collection, such as nasopharyngeal and gastric aspirates (Dangiso et al., 2013).

5 People Living with HIV

HIV and AIDS continue to be a significant challenge in Zimbabwe, with a prevalence rate of 11.58% in 2021 (UNICEF, 2023). People living with HIV (PLHIV) are considered a key population for TB, as they are more susceptible to infection, whether they are on antiretroviral treatment (ART). Additionally, PLHIV are at higher risk of developing extra-pulmonary TB, which is harder to diagnose (WHO, 2017). People living with HIV are 20 to 30 times more likely to develop active TB disease compared to those without HIV (WHO, 2023).

5.1 Estimated Population Size

According to the 2022 spectrum estimates, 1,310,438 people were living with HIV in Zimbabwe, including approximately 72,100 children aged 0–14 and 77,300 adolescents aged 10–19 (UNAIDS, 2023). Women have a higher prevalence rate (14.7%) than men (8.7%). HIV incidence is highest in females ages 15–29 years (UNICEF, 2023). HIV incidence is highest in females ages 15–29 years (*Ibid*). Among the 15–19-year-olds, the incidence among females is six times higher than their male counterparts (UNICEF, 2023). Despite a falling national TB incidence, the country failed to meet the Millennium Development Goal (MDG) target of halving the TB incidence by 50% in 2017 (Moyo et al., 2023). At least 242 new cases of TB are being registered per 100,000 people in Zimbabwe, with HIV being the major driver of TB, with an estimated 70% co-infection (UNDP and NAC, 2019). In Zimbabwe, a significant number of people living with HIV includes both adults and children, with more women affected than men and a smaller but notable proportion of children under 14 also living with the virus (UNAIDS, 2023), as in Table 5.

Table 5: HIV and AIDS Estimates among different age groups in Zimbabwe as of 2023

⁵ This is being done through Global Fund Advocates Network

Adult and children living with HIV	1 300 000 [1 200 000 - 1 400 000]
Adults aged 15 and over living with HIV	1 200 000 [1 100 000 - 1 400 000]
Women aged 15 and over living with HIV	750 000 [690 000 - 840 000]
Men aged 15 and over living with HIV	480 000 [440 000 - 540 000]
Children aged 0 to 14 living with HIV	70 000 [56 000 - 82 000]

Source: UNAIDS 2023

Table 6 shows the estimates by different age groups.

Table 6: Estimates of PLHIV in Zimbabwe by age group as of December 2023.

Age Group	Estimates Number of PLHIV
0-4	14 000 (14 000 14 000)
5-9	20 000 (20 000 21 000)
10-14	35 000 (34 000 36 000)
15-19	47 000 (45 000 49 000)
20-24	61 000 (54 000 68 000)
25-29	93 000 (84 000 102 000)
30-34	144 000 (133 000 156 000)
35-39	193 000 (182 000 206 000)
40-44	211 000 (199 000 223 000)
45-49	182 000 (172 000 192 000)
50-54	121 000 (113 000 127 000)
55-59	83 000 (77 000 89 000)
60-64	48 000 (44 000 52 000)
65+	51 000 (46 000 57 000)

Source: UNAIDS (2024)

Matabeleland South Province, which has the highest HIV prevalence rate in the country, records the highest number of deaths from TB-related illnesses. In 2016 alone, the province registered no less than 309 TB-related cases, with 96% of patients testing HIV positive during the same year (UNDP and NAC, 2019).

5.2 TB risks and related drivers for PLHIV

The risk of developing active TB is highest in HIV-co-infected individuals who are not on ART, as well as those newly enrolled in HIV care (Mupanguri, 2022). While the risk decreases significantly as immune function recovers, it does not return to the level of HIV-negative individuals. Both ART and Isoniazid Preventive Therapy (IPT) are effective in preventing HIV-associated TB, with even greater protective effects when used together (*Ibid*). TB and HIV care programs must adopt robust strategies for the prevention, detection, and treatment of TB, particularly for newly diagnosed HIV-positive individuals with low CD4 counts. Early initiation of ART in HIV-infected TB patients is crucial to reducing early mortality from TB.

The high prevalence of HIV in Zimbabwe significantly elevates the risk of acquiring TB, compounding the overall public health challenge. Of the estimated 29,000 people who developed TB, around 16,000 were co-infected with HIV (USAID and TB DIAH, 2024). HIV is a major risk factor, increasing both

susceptibility to TB and the likelihood of latent TB progressing to active disease. It is the leading contributor to the TB burden in Zimbabwe, where approximately 80% of TB patients are co-infected with HIV (Takarinda, 2017). This co-infection is a key driver of the high mortality rate among TB patients. The relationship between HIV and TB is mutually reinforcing, with TB worsening outcomes in HIV patients while HIV exacerbates the TB epidemic (*Ibid*).

Treatment for TB in people living with HIV is complicated by potential drug-drug interactions between TB medications and antiretroviral therapy (ART). Managing these interactions requires careful consideration to avoid reduced efficacy or increased toxicity of the treatments. Adherence to the treatment regimens can also be challenging due to the pill burden and side effects. Furthermore, social determinants of health, such as poverty, stigma, and limited access to healthcare, can impede the ability of people living with HIV to complete TB treatment successfully. Addressing these issues requires an integrated approach that combines TB and HIV services, ensuring that patients receive comprehensive care that addresses both conditions simultaneously.

5.3 TB diagnosis, prevention, treatment and care challenges

Inadequate detection and reporting of both TB contribute to under-assessment and further complicate efforts to manage the problem (Takarinda et al., 2017). The high co-infection rate of HIV and TB in Zimbabwe creates significant challenges for diagnosis, treatment, prevention, and care. HIV weakens the immune system, making it harder to detect TB, as the disease may present atypically or with extra-pulmonary manifestations, complicating diagnosis (Duri et al., 2014). Treatment is also more complex due to the need to manage both infections simultaneously, often leading to drug interactions and increased pill burden (Chary et al., 2017).

In Zimbabwe, efforts have intensified to enhance access to TB Preventive Treatment, particularly Isoniazid Preventive Therapy (IPT), for people living with HIV (Zvandiri, 2021). Despite these initiatives, many adolescents remain hesitant to initiate IPT, primarily due to concerns about potential side effects and the burden of managing multiple medications. This reluctance can hinder the effectiveness of TB prevention strategies, as timely access to IPT is crucial for reducing the risk of developing active TB disease in this vulnerable population (*Ibid*).

5.4 Services Available

Zimbabwe's new Public Health Bill (H.B. 7, 2018) aims to address imbalances in the existing Public Health Act by enhancing HIV and TB awareness and ensuring that vulnerable groups, including young key populations, have the right to access quality healthcare services. However, the bill also includes provisions that may negatively impact people living with HIV or TB (UNDP and NAC, 2019).

Current WHO recommendations prioritize specific target populations for receiving Preventive Treatment (PT) based on TB burden and income levels. In countries with a high TB burden and low income, child contacts and people living with HIV (PLHIV) are expected to receive PT, regardless of their TB infection status (STOP TB Partnership, 2020).

In Zimbabwe, various stakeholders are working to improve TB screening efforts. As a high TB burden country, Zimbabwe provides integrated HIV/TB services that ensure PLHIV are screened for TB, presumptive cases are tested, and those with active TB receive treatment. Meanwhile, those who test negative for HIV are placed on TB Preventive Therapy (TPT) (MOHCC and NAC, 2020). However, IPT coverage was estimated at a low 1.9% in 2019 (*Ibid*). Conversely, TB patients are also tested for HIV, and those who test positive are placed on antiretroviral therapy (ART). To achieve the goal of ending TB by 2030, the Centers for Disease Control and Prevention (CDC) supports routine TB screening among all high-risk groups, optimizing TB diagnosis with molecular, WHO-recommended diagnostic tests, and initiating TPT among all eligible clients (CDC Zimbabwe, 2023).

The country has made significant efforts to scale up TB/HIV co-infection treatment by strengthening health and community systems (MOHCC and NAC, 2019). In the 32 high-burden TB districts, traditional and faith healers have been trained in TB screening and referral, while communities have been educated on HIV, TB, maternal and child health (MNCH), and nutrition integration (*Ibid*). Additionally, the HIV/TB treatment literacy manual has been revised and disseminated to civil society organizations and community support groups (MOHCC and NAC, 2020).

According to STOP TB Partnership (2018) one of the most significant challenges in effectively addressing the concurrent HIV and TB epidemics is the successful integration of their services. Collaboration between HIV and TB programs in Zimbabwe, both in the community and at facility levels, has been shown to enhance TB case detection among people living with HIV (PLHIV), reduce the TB burden in communities, and significantly lower TB-related mortality among PLHIV. There are three basic models for TB/HIV service integration:

1. **Standalone Services:** HIV and TB services are linked through a strong referral system.
2. **Partially Integrated Services:** While TB and HIV facilities may remain separate, they provide cross-disciplinary services (e.g., HIV testing at a TB clinic or TB screening for PLHIV at an HIV clinic).
3. **Fully Integrated Services:** A “one-stop shop” delivery point designed for individuals with TB and PLHIV who have TB.

To effectively address the concurrent HIV and TB epidemics in most settings, at least partial service integration, as seen in the second model above, should be pursued. However, active TB case finding in high HIV prevalence settings, supported by strong referrals to HIV services (as in the first model), can significantly reduce community TB rates (STOP TB Partnership, 2018)

5.5 Gaps to be addressed

In Zimbabwe there need to strengthen access to justice and law enforcement, including the strengthening of stigma and discrimination campaigns, law and human rights information on existing and new laws, education and training for all, including key populations and key service providers such as health workers, strengthening legal support services and mechanisms for enforcing HIV-related human rights complaints (UNDP and NAC, 2019).

It should be noted that PLHIV and TB in Zimbabwe, vulnerable and key populations, including young populations, are often stigmatized in society in a wide range of community contexts, including legal and structural, the family and immediate community, workplace, health services, religion and the media (UNDP and NAC, 2019). Stigma enhances discrimination, violating fundamental human rights to fair and equal treatment and risking the health and development rights of these populations (UNDP and NAC, 2019).

6 People who are malnourished

Globally, Zimbabwe, along with the Central African Republic and the Democratic People's Republic of Korea, ranks among the three countries with the highest Population Attributable Fraction (PAF) of undernourishment (Global TB Report, 2020). The nutrition situation in Zimbabwe is precarious. According to the 2022 Zimbabwe Vulnerability Assessment (ZimVAC), wasting (acute malnutrition) has been increasing since COVID-19. Approximately 15,000 children are now treated for severe wasting every year. Despite improvements in the last 10 years, nearly one out of four Zimbabwean children (23.5% or over half a million children) are stunted (chronically malnourished) and do not grow and develop to their full potential (UNICEF, 2023).

In Zimbabwe, the annual incidence of tuberculosis (TB) cases is reported at 29,000, coinciding with a prevalence of undernourishment affecting 51% of the population. This high rate of undernourishment contributes significantly to the TB burden, as indicated by a population attributable fraction of 52.9%, leading to an estimated 15,334 TB cases that can be directly linked to inadequate nutrition, as in Table 7.

Table 7: Population Attributable Fraction for Tuberculosis and attributable TB cases in Zimbabwe

Incident TB cases per year [#]	Prevalence of undernourishment (%) *	Population attributable fraction (%)	Attributable TB cases
29,000	51	52.9	15,334

Source: Global TB Report 2020 * Based on Food and Agriculture Organization (FAO) estimates of prevalence of undernourishment cited in Global TB Report 2020.

As of stunting in Zimbabwe is higher in rural areas (26.5%) than in urban areas (22.7%) and varies by Province, with Manicaland having the highest (31.2%) whilst Matabeleland South had the lowest (24.2%) (Zimbabwe Reconstruction Fund and Zimbabwe Economic Policy Analysis and Research Unit, 2021). Boys are more undernourished than girls, largely because boys are weaned at an earlier age; children in rural areas are significantly more malnourished than children in urban areas.

6.1 Prevalence of child malnutrition in Zimbabwe.

Regarding child malnutrition across the provinces, Matabeleland North had the highest stunting level at 29.7%, while Mashonaland West had the lowest at 19.2%. Matabeleland North also had the highest proportion of underweight children (16.7%) and the second highest proportion of wasted (9.4%), overweight (4.7%), and obese (6.1%) children. Harare province had the highest proportion of overweight (5%) and obese (7.7%) children as in Table 8.

Table 8: Prevalence of child malnutrition (stunting, underweight, wasting, overweight and obesity)

Province	Prevalence (%)				
	Stunting	Underweight	Wasting	Overweight	Obese
Bulawayo	24.6	9.6	7.0	3.5	5.3
Manicaland	21.8	8.8	8.7	3.9	5.3
Mashonaland Central	20.7	9.2	4.4	1.1	1.8
Mashonaland East	23.2	8.6	3.5	4.0	4.8
Mashonaland West	19.2	6.7	10.2	3.9	4.6
Matabeleland North	29.7	16.7	9.4	4.7	6.1
Matabeleland South	20.8	7.6	3.6	2.9	3.6
Midlands	21.2	7.1	3.5	2.7	3.8
Masvingo	20.5	6.8	2.2	2.4	3.7
Harare	26.2	11.1	6.0	5.0	7.7
National	23.2	9.1	5.6	3.7	5.2

Source: Kembo et al. (2024)

6.2 Prevalence of Nutrition status indicators of adults across the Provinces in Zimbabwe

As of 2023, the prevalence of normal nutrition status among adults aged 18-59 years is highest in Bulawayo (47.2%) and Harare (46.7%) (Kembo et al., 2024). Among older adults, Manicaland again leads at 40.3%, while Masvingo reports the lowest at 37.8%, as in Table 9.

Table 9: Prevalence of Nutrition status indicators of adults (18-59 years and 60 years and above).

Province	Adults (18-59 years)				Adults (60 years and above)			
	Normal	Thinness	Overweight	Obese	Normal	Thinness	Overweight	Obese
Bulawayo	47.2	7.1	25.2	20.5	33.0	5.2	33.0	28.9
Manicaland	41.0	3.5	33.1	22.4	25.2	3.4	40.3	31.1
Mashonaland Central	46.6	5.3	28.8	19.2	32.6	12.8	26.7	27.9
Mashonaland East	43.4	4.6	30.9	21.1	36.4	5.2	24.7	33.8
Mashonaland West	45.5	5.6	29.1	19.9	44.9	3.4	28.4	23.3
Matabeleland North	43.1	6.9	27.5	22.5	27.7	4.3	27.7	40.4
Matabeleland South	41.5	5.1	27.9	25.5	26.2	4.9	26.2	42.6
Midlands	44.4	5.2	25.2	25.3	32.4	2.3	31.3	34.0
Masvingo	41.3	3.9	27.3	27.6	25.2	0.9	37.8	36.0
Harare	46.7	4.3	29.4	19.5	37.3	5.9	27.9	29.0
National	44.8	5.2	27.9	22.1	33.7	4.7	30.9	30.6

Source: Kembo et al. (2024).

The estimated population of malnourished people in Zimbabwe is a significant concern. According to the 2024 Zimbabwe Livelihoods Assessment Committee (ZimLAC), 7.6 million people, which is 50% of the total population, are facing food insecurity. This situation has contributed to an increase in child wasting, with the prevalence rising from 4.1% to 4.9% between 2023 and 2024 (UNICEF, 2024).

Additionally, nearly one out of four Zimbabwean children (23.5% or over half a million) are stunted, indicating chronic malnutrition. The nutrition status in Zimbabwe is influenced by various factors, including the quality of children's diets, rates of exclusive breastfeeding, access to safe water and sanitation services, vaccination coverage, and the broader impacts of climate change. These factors pose a real threat to the progress made on stunting reduction and highlight the ongoing challenges in addressing malnutrition in the country.

6.3 TB risks and related drivers

Research evidence shows that there is an association between malnutrition and TB incidence. A typical example and comparison is when Zimbabwe experienced high HIV prevalence and widespread food insecurity during the crisis of 2008 and 2009 (Burke et al., 2014). Following this crisis, the TB incidence rate at the health facility level in 2010 and 2011 was 335 per 100,000, representing a 38% decline compared to the crisis years of 2008 and 2009, when the incidence rate was 542 per 100,000 ($p < 0.01$). The most significant decrease occurred between 2009 and 2010, with the incidence falling from 528 per 100,000 to 353 per 100,000 (*Ibid*). Monthly time-series analyses revealed that increasing economic inflation was associated with subsequent rises in TB incidence (Odendal and Carter, 2009).

Malnourished individuals face significant risks when it comes to TB. Malnutrition is a leading risk factor for TB infection, with the risk of acquiring TB increasing by 13.8% for each unit decrease in body mass index (BMI), according to WHO (2024). This relationship highlights the vulnerability of undernourished people, as their weakened immune systems make them more susceptible to the TB bacterium and less capable of containing latent infections. Additionally, malnutrition is a risk factor for the conversion of latent TB to active disease, further complicating the health outcomes for these individuals.

The interplay between TB and malnutrition is bidirectional: not only are malnourished individuals at greater risk of contracting TB, but TB itself is a catabolic disease that can cause or exacerbate malnutrition. Malnourished TB patients experience poorer treatment outcomes, which are particularly pronounced in those with rifampicin- and/or multidrug-resistant TB (RR/MDR-TB). They are also twice as likely to die from TB compared with non-malnourished patients. Therefore, addressing malnutrition through nutritional assessment and support is crucial in improving the prognosis and treatment response for TB patients.

6.4 TB diagnosis, prevention, treatment and care challenges

The recurrence of drought is making the prevention, treatment, and care of TB problematic. These droughts pose potential food shortages and food insecurity, leading to limited access to nutritious food options for TB patients, who often experience underlying malnutrition due to the disease itself. Research indicates that malnourished TB patients have delayed recovery, and a higher risk of mortality compared to their well-nourished counterparts (Gwarisa, 2024). It is reported that in situations where food security is a pressing concern, vulnerable TB patients may prioritize hunting for their next meal over adhering to their TB medication, significantly escalating the risk of treatment failure (*Ibid*).

Additionally, the effects of climate change in Zimbabwe associated with El Niño-induced shocks may force affected communities to migrate to look for food, disrupting the established treatment routines of TB patients and likely compromising their adherence to therapy. The psychological stress and anxiety associated with such movements can further hinder their ability to follow their treatment plans (Gwarisa, 2024).

6.5 TB services needed to increase access

As most TB patients are diagnosed with diminished nutrition, effective TB treatment should be coupled with a nutritious diet to help normalize their nutritional status. Raising the nutritional status of a population should be part of a comprehensive strategy, particularly in underdeveloped communities, to effectively reduce the burden of TB disease. Providing psychosocial support through counselling and stress management throughout their treatment journey, strengthening health systems, ensuring consistent availability of TB medicines, and engaging communities are crucial to addressing challenges associated with El Niño-induced drought and related treatment adherence concerns (Gwarisa, 2024).

6.6 Services Available

Meanwhile, with support from donor aid and private voluntary organizations,⁶ of Zimbabwe—is implementing various interventions to promote TB treatment adherence across eight priority districts in the country. These interventions include the development and distribution of information, education, and communication materials on TB patient care; health promotion and awareness campaigns through mass media; training healthcare providers on patient-centered care; community engagement to strengthen the oversight role of health center committees in TB control; and the provision of palliative care services.

⁶ The donor aid organisations and private voluntary organisation refers to United States Agency for International Development (USAID), the Union Zimbabwe Trust (UZT), in collaboration with three local partners—Baines Occupational Health Services, Jointed Hands Welfare Organization, and the Hospice Palliative Care Association

7 Challenges

Challenges encountered during the desk review of secondary data for KVP size estimation included;

- **Profiling of KVPs in Secondary Data:** The profiling of KVPs from various literature sources was not uniform, making it difficult to produce a standard KVPs estimation size.
- **Data Availability and Quality:** Limited secondary data for all key and vulnerable groups, requiring primary data collection for accurate size estimation.
- **Stigma and Discrimination:** Stigma associated with certain KVPs, like people who use and inject drugs, hinders data collection and accurate reporting.
- **Geographical and Mobility Issues:** The highly mobile lifestyles of some KVPs, such as miners and ex-miners, complicate data collection and service provision.

8 Lessons Learnt

In preparing this report through a desk review, the following lessons were learned:

- Understanding the size and characteristics of these populations allows for the design of tailored interventions that address their specific needs. By estimating the key and vulnerable populations for specific groups, gaps in knowledge about less-studied populations, such as children under five or people who inject drugs, can be identified and addressed.
- Desk review helps to consolidate fragmented information across multiple sources into a coherent framework.
- Using desk reviews helps to reveal what has worked elsewhere and provides evidence-based recommendations for scaling up certain TB services.

9 Conclusions and Recommendations

The recommendations from this study were provided to stimulate dialogue on TB services among key and vulnerable populations in Zimbabwe. These recommendations are categorized both overall and specifically for each key and vulnerable group.

Overall recommendations

- Conduct a KVP size estimation based on primary data collection methods due to the absence of rich secondary data to inform all the key and vulnerable groups. The data available is only for a limited KVPs, the real numbers can only be determined by primary KVP size estimation methods, especially for hidden populations. Convene stakeholders (for example, the Ministry of Health, NGOs, and DHIS administrators) to agree on a standardized reporting template within DHIS that captures key metrics for vulnerable populations, aligning with national and global indicators.

Increase funding for TB prevention, care innovations, and research, including the development of new TB vaccines to combat drug resistance and address the needs of key and vulnerable populations.

Among People Living in Congregate Settings:

- Advocate with the government to implement targeted slum upgrading programs to improve housing, ventilation, and sanitation, thereby reducing TB transmission.
- MoHCC and partners to strengthen integrated TB and HIV screening & treatment programs in congregate settings, ensuring combined services and increasing community health education about the links between TB and HIV.

For Miners and Ex-Miners:

- Community organizations to raise awareness about safer mining practices and collaborate with stakeholders to educate miners on preventive measures and enforce the provision of adequate protective clothing.
- MoHCC and partners to train healthcare workers in occupational health and improve occupational health across mining districts.
- JHWO to scale up Onelmpact, which provides a real-time, community-driven data collection and tracking system uniquely suited to monitor their movements, settlements, and health-seeking behaviors to address the challenge of tracking the highly mobile miners and ex-miners

Among People Who Use and Inject Drugs:

- Stakeholders should shift from criminalizing drug use to implementing evidence-based, health-centered policies, including decriminalizing drug possession for personal use and promoting rehabilitation referrals.
- Civil society actors to foster collaboration between health, social services, and law enforcement agencies for a coordinated approach to addressing the health needs of people who inject drugs.
- Government should improve and expand access to evidence-based drug rehabilitation services, ensuring they are easily accessible, affordable, and non-judgmental.

For Children Under Five:

- MoHCC to establish a national surveillance system focused on pediatric TB, including training healthcare workers on recognizing TB symptoms in children and improving diagnostic methods.
- MoHCC and partners to implement targeted outreach programs to ensure all eligible children under five, especially those in high-risk households, receive TB preventive therapy (TPT).
- MoHCC to develop and implement specialized training programs for healthcare workers focused on pediatric TB management, including hands-on training and creating child-friendly TB services.

For People Living with HIV (PLHIV):

- Civil society partners and relevant stakeholders to launch nationwide campaigns to raise awareness about HIV and TB, targeting stigma reduction and promoting empathy and support within communities.
- Advocate for the strengthening of the legal frameworks to protect the rights of PLHIV and those affected by TB and establish accessible legal support services to address discrimination. Involve key populations in the design and implementation of stigma reduction strategies to ensure interventions resonate with affected communities.

For Those Who Are Malnourished:

- Food security partners Invest in climate-resilient food systems to counter malnutrition, including promoting drought-resistant crops and supporting local farmers.
- Actors to establish contingency plans for food distribution during droughts, ensuring timely food assistance for all vulnerable groups including TB patients and survivors.
- Partners to raise awareness about the interconnections between climate change, food security, and health outcomes, engaging communities to foster resilience and collective action.

The study provides key estimates of TB prevalence among vulnerable populations in Zimbabwe. It highlights significant gaps in the data, particularly regarding the size and distribution of these and other populations which do not have data altogether, which may hinder effective TB diagnosis, prevention, treatment and care efforts. These gaps point to the need for further research using more robust methodologies to accurately assess the full extent of TB burden in vulnerable groups. Addressing these data gaps will be crucial for improving TB care and reducing transmission in high-risk populations across the country.

The comprehensive analysis of tuberculosis among key and vulnerable populations in Zimbabwe reveals significant epidemiological insights and underscores the critical need for targeted interventions. The study identifies high-risk groups, including prisoners, people living with HIV, migrants, refugees, miners, and those in poorly ventilated conditions, who face substantial vulnerabilities due to marginalization, limited access to quality healthcare, and human rights violations.

The report emphasizes the importance of improving TB case detection and treatment outcomes, particularly among KVPs such as miners, people living in slums, and those in congregate settings⁴. Collaboration between government agencies, non-governmental organizations, and international partners is crucial to addressing the TB epidemic in Zimbabwe. The findings highlight the need for enhanced health interventions, improved living conditions, and robust public health measures to mitigate the TB burden among these vulnerable populations.

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Annexures

Annex 1: TB Key and Vulnerable Populations Size Estimation Tool

		Score 1	Score 2	Score 3	Score 4	Score 5	Score 6	
1		Environmental Risks: overcrowding, poor ventilation, zoonotic diseases, dust industries (on a scale 0-10, 10 being the highest probability or risk)	Biological risks: reduced immunity, low levels of nutrition (on a scale 0-10; 10 being highest probability or risk)	Behavioural traits: actions including sharing smoking devices (on a scale 0-10; 10 being highest probability or risk)	Legal barriers: legal status, criminalization, discrimination (on a scale 0-10; 10 being	Social-cultural barriers: literacy, gender, religion, work, domestic responsibilities (on a scale 0-10; 10 being	Economic barriers: poverty (on a scale 0-10; 10 being highest probability or	
2	TB Key & Vulnerable Pop							TOTAL
3	People in congregate settings.	10	7	6	7	8	10	48
4	Miners and ex-miners.	10	10	8	7	6	6	47
5	People who use and inject dru	8	10	9	2	3	8	40
6	Children under the age of 5 ye	8	10	4	3	7	6	38
7	People living with HIV.	6	10	6	3	3	7	35
8	Those who are malnourished.	4	10	7	3	3	8	35
9	TB contacts,	9	6	3	3	6	8	35
10	People who drink alcohol exce	6	7	10	1	5	5	34
11	Inmates and correctional facilit	10	8	4	4	2	6	34
12	People above 60 years of age.	4	10	2	4	4	9	33
13	People with disabilities	6	6	2	2	7	9	32
14	People with diabetes mellitus	5	10	3	1	3	4	26
15	Health care workers.	10	4	2	1	4	5	26
16	Cross boarder traders	8	4	2	3	4	4	25
17	TB caregivers	6	4	1	1	5	5	22
18	Traditional and faith leaders	7	4	4	1	9	4	29

Annex 2: Template for Results from Desk Review of Existing Data and Information on TB KVP

Prioritized KVP	1	2	3	4	5	6
Estimated KP size (age & gender disaggregated) Note: If data is available incl the number of this population with TB disease.						
Source of data						
Where they are concentrated (geographically) Note: specify relevant subnational geographic areas.						
What are their key TB risks and related drivers?						
What are their TB diagnosis, prevention, treatment and care challenges?						
What TB services are needed to increase access?						
Services available						
Gaps to be addressed						