



2022

**ANNUAL
TB
REPORT**



TABLE OF CONTENTS

LIST OF TABLES	III
TABLE OF FIGURES	IV
LIST OF ABBREVIATIONS	V
ACKNOWLEDGEMENTS	VI
EXECUTIVE SUMMARY	VII
SUMMARY PERFORMANCE	VIII
TB BURDEN.....	VIII
TB CASE NOTIFICATIONS.....	VIII
1 INTRODUCTION	1
1.1 BACKGROUND.....	1
1.2 SADC HEALTH CONTEXT	2
1.3 TUBERCULOSIS CONTROL IN THE SADC REGION.....	3
1.4 GLOBAL, CONTINENTAL AND REGIONAL COMMITMENTS FOR TB CONTROL.....	4
2 METHODOLOGY	6
3. PROGRESS MADE BY SADC MEMBER STATES TOWARDS ACHIEVING THE END-TB TARGETS	8
3.1 TB INCIDENCE AND CASE NOTIFICATION	8
3.1.1 TB CASE NOTIFICATION	9
3.2 TB MORTALITY	11
3.3 TREATMENT OUTCOMES	12
TREATMENT OF DRUG SUSCEPTIBLE TB AND DRUG RESISTANT TB.....	14



TUBERCULOSIS PREVENTIVE THERAPY 16

TUBERCULOSIS SERVICE DELIVERY20

TB AND HIV SERVICES.....20

USE OF WHO RECOMMENDED MOLECULAR TESTS FOR PRESUMPTIVE TB PATIENTS23

TUBERCULOSIS IN MINES (TIMS III)27

RESEARCH AND INNOVATION.....35

COVID-19 AND TUBERCULOSIS CARE AND TREATMENT36

DISCUSSION43

BEST PRACTICES44

LESSONS LEARNT44

CHALLENGES45

KEY RECOMMENDATIONS45

RECOMMENDATIONS FROM MS TO SADC.....45

RECOMMENDATIONS FROM ARISING FROM THE REPORT EVIDENCE46

REFERENCES47



LIST OF TABLES

Table 1: Completeness of Indicator reporting, SADC TB report 20227

Table 2: Annual Treatment Outcomes by country among People living with HIV (2016-2021)
.....13

Table 3: Treatment Success Rate (%) among MDR TB patients, SADC TB Report 2022.....15

Table 4: Coverage TB Preventive Therapy in the SADC Region17

Table 5. Percentage of TB Patients with Known HIV status and those positive enrolled on
ART.....21

Table 6. Percentage of TB Cases Tested with WHO Recommended Rapid Diagnostic Test at
the Time of Diagnosis23

Table 724

Table 8. TB in Mines Activities, SADC TB Report, 202228

Table 9. TB Funding gap in SADC MS, 2016-202139



TABLE OF FIGURES

Figure 1:Steps in the development of the SADC TB report, 20226

Figure 2: High TB Burden countries in the SADC region 2022.....8

Figure 3: TB Incidence Comparisons between 2016 and 2021 in 14 SADC countries.....8

Figure 4: Total TB case notification (all forms) compared to TB Estimates, SADC Report 2022.....9

Figure 7:Estimated TB deaths between 2016 and 2021in SADC countries12

Figure 8: Treatment outcomes among people living with HIV in SADC countries.....13

LIST OF ABBREVIATIONS

(S)NRL	Supra) National Reference Laboratory
ACSM	Advocacy, Communications and Social Mobilization
AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
CPT	Co-trimoxazole Preventive Therapy
DOT	Directly Observed Therapy
DOTS	Directly Observed Therapy, Short course
DR-TB	Drug Resistant Tuberculosis
DRC	Democratic Republic of Congo
DRS	Drug Resistance Surveillance or Survey
DST	Drug Susceptibility Testing
FLD	First Line Drugs
HIV	Human Immunodeficiency Virus
IPT	Isoniazid Preventive Therapy
M&E	Monitoring and Evaluation
MDR-TB	Multidrug Resistant Tuberculosis
MS	Member State(s)
NTP	National Tuberculosis Control Programme
RR	Rifampicin Resistant
SADC	Southern Africa Development Community
SBCC	Social and Behavioural Change Communication
SDG	Sustainable Development Goal
SLD	Second Line Drugs
TB	Tuberculosis
TIMS	TB in the Mining Sector in Southern Africa
TSR	Treatment Success Rate
UN	United Nations
URT	United Republic of Tanzania
WHO	World Health Organization
WRD	WHO-recommended rapid diagnostic
XDR-TB	Extensively Drug Resistant TB



ACKNOWLEDGEMENTS

SADC Secretariat expresses its profound gratitude to the National TB Program Managers for their contributions in the development of the 2022 SADC TB Report. Your expertise, knowledge, and experience were instrumental in ensuring that the report accurately reflects the current state of tuberculosis (TB) in the SADC region and provides valuable recommendations for future action. Your input strengthened the overall analysis and provided valuable insights into the challenges and opportunities in the fight against TB.

SADC Secretariat is also grateful for the support of the Global Fund in this endeavour. Through the TB in the mining sector in southern Africa grants, the Global fund supported the convening of the NTP managers for purpose of validating the draft report before its finalization and its printing. SADC Secretariat looks forward to continued collaboration and partnership with Global Fund in the fight against TB in the region.

The SADC Secretariat also acknowledges the contribution of a team consisting of Dr Willy Amisi and Dr Charles Sandy (SADC Secretariat), and Dr Walter D Odoch and Ms Nomsa Mulima (ECSA-HC) who coordinated the development and production of this report.

We are confident that the report will serve as a valuable tool for shaping the future direction of TB control efforts in the SADC region and we look forward to continued collaboration and partnership with all of you in this important endeavor.

Once again, thank you for your invaluable contributions and support.

EXECUTIVE SUMMARY

As the region continues to address the negative effects of the COVID-19 pandemic which has crippled livelihoods and weakened health systems, admittedly, gains and achievements of over a decade in the fight against Tuberculosis have been negatively impacted. This has been further complicated by the rich endowment in mineral resources, especially gold and other precious minerals in the region providing environment that increases the risk of infection to TB infection among miners. To be more optimistic, the COVID-19 pandemic has however been an eye-opener on the level on the regions' Epidemic readiness and response strategies and has helped forge pathways to indigenous solutions, health systems strengthening and the ever-increasing landscape of public health programs.

This SADC TB report aims to document the burden of TB disease in the region, key prevention and control measures being implemented and to available best practices.

TB Disease burden in the SADC region

The SADC region still has a high burden of TB with low drug resistant TB case finding. The presence of more than 85% new patients among all confirmed TB patients in the region is a sign of high-level of active TB transmission. There is urgent need to examine, through robust implementation research studies to fully understand the drivers of this high active TB transmission phenomenon in the region. Treatment regimens for drug resistant TB varied with more than different 8 treatment regimens being provided in countries within the region. Generally, most countries had treatment outcome for drug susceptible TB of above 80% and about 70% for drug resistant TB. Countries selected similar UNHLM priority areas and were yet to achieve the targets. The low domestic financing and over reliance on donor funding was affecting priority setting relevant to respond to epidemiological programming and research.

It is recommended that a regional TB transmission study be commissioned to understand the transmission patterns in the SADC region. In addition, there is need to develop a SADC TB research agenda as a minimum for all countries to ensure the conduct of relevant research activities. The increase in domestic financing will go a long way in ensuring sustainability and strengthening research, case finding with early diagnosis and treatment to interrupt transmission.

SUMMARY PERFORMANCE

TB burden

Eight (8) of the 16 countries (Angola, DRC, Lesotho, Mozambique, Namibia, South Africa and Zambia and Zimbabwe) remain by 13.3% between 2016 and 2021. Five (5) of the 14 countries reporting have reduced incidence by over 20%. These are Botswana, South Africa, Eswatini, Mozambique and Namibia, with incidence reduction of 32%, 31%, 30%, 27% and 22% respectively.

TB case notifications

A total of 570,398 TB cases were notified in 2021, showing 20% decrease compared with data from 2016 (717,132). What is more glaring is the sharp decline in notified TB cases between 2020 and 2021, showing a gap of 47% missing TB cases.

TB Deaths

Significant strides are noted in the SADC region, where Zambia, Tanzania, Eswatini and Mozambique reported declines in 2021 when comparing with data from 2016 of 55%, 53%, 47% and 38% respectively.

Families facing catastrophic costs due to TB

Pillar 1: Integrated patient-centred TB care and prevention

Pillar 2: Bold policies and supportive systems

Pillar 3: Intensified research and innovation

Pillar 4: Regional coordination of the TB response

1 INTRODUCTION

1.1 Background

Tuberculosis (TB) disease is preventable and curable, yet it remains in the top 10 list of causes of death globally. Ending TB by 2030 is among the health targets of the United Nations (UN) Sustainable Development Goals (SDGs). An estimated total of 1.5 million people died from TB in 2020 (including 214,000 people with HIV). Worldwide, TB is the 13th leading cause of death and second leading infectious killer after COVID-19 (above HIV/AIDS). In 2020 an estimated 10 million people fell ill with TB, of which 5.6 million were men, 3.3 million were women and 1.1 million were children.

In 2020 the 30 high burden countries accounted for 86% of new TB cases and the SADC region was home to 8 of these countries (Angola, Eswatini, DRC, Lesotho, Mozambique, Namibia, South Africa, United Republic of Tanzania and Zambia with Zimbabwe being the only country transitioning out of the list. The African continent has made progress by decreasing TB incidence and mortality by nearly 19% during 2020. SADC region is the most affected region in Africa, with Member States contributing 55% of TB notifications of the World Health Organization Africa Region (WHO/AFRO) total notifications, 77% of the RR/MDR-TB burden, 76% to the WHO/AFRO gap between diagnosis and treatment of RR/MDR-TB and 94% of all confirmed XDR-TB in AFRO. As the SADC region was estimated to contribute more than half the proportion of all TB cases notified in Africa versus a population contribution of 32%¹, it means this disease disproportionately affects SADC citizens more compared to the rest of the African region. The high prevalence of HIV and mining activities continue to contribute significantly to the high TB burden in the region².

Multidrug resistant TB (MDR-TB) remains a public health crisis and a health security threat. Only about one in three people with drug resistant TB accessed treatment in 2020. Of note, is the drop in TB incidence globally, at about 2% per year and between 2015-2022, the cumulative reduction was estimated at 11%, over half to the desirous target of reducing incidence by 20% in 2020.

Globally, half of TB affected households face costs higher than 20% of their household income, far from reaching the 0% catastrophic costs due to TB by 2020. By 2022, US\$13

¹ WHO TB factsheet, 2021. <https://www.who.int/news-room/fact-sheets/detail/tuberculosis>

billion is needed annually for TB prevention, diagnosis, treatment and care to achieve the global target agreed at the UN high level-meeting on TB in 2018.

The Southern Africa Development Community (SADC) was established in 1980 and consists of 16 Member States, with an estimated total population of 363,222,621 million² people, covering an estimated area of over 9,672,702 square kilometres. The combined Gross Domestic Product (GDP) is estimated at \$597.6 Billion.

SADC's vision is "a common future within a regional community that will ensure economic well-being, improvement of the standards of living and quality of life, freedom and social justice and security for the people of Southern Africa"³. Its mission is "to promote sustainable and equitable economic growth and socio-economic development through efficient productive systems, deeper cooperation and integration, good governance, and enduring peace and security, so that the region emerges as a competitive and effective player in the world economy". To fulfil this mission, SADC is guided by the principles of sovereign equality of all Member States; solidarity, peace and security; human rights, democracy and the rule of law; equity balance and mutual benefit; and peaceful settlements of disputes⁴. SADC's main function is to coordinate the implementation of regional programmes and activities to meet the regional integration and development agenda.

1.2 SADC Health context

Provision of health services in the SADC region is guided through three policy documents: The Regional Indicative Strategic Development Plan (RISDP)2020-2030 that integrates health within the Social and Human Capital Development pillar, the Health Policy Framework that promotes policies and strategies to control priority diseases prevalent in the region and lastly the Protocol on Health that promotes cooperation between Member States in areas of high priority in health. Coordination of social and health development is through the Directorate of Social and Human Development directorate in the SADC Secretariat.

Article 5 of the SADC Treaty stipulates the common agenda of the community, which is implemented through the (RISDP). The current RISDP (2-2020) realigns existing priorities

² World Bank estimates, 2021

³ Southern Africa Development Community. SADC overview [Internet]. Available from: <http://sadc.int/about-sadc/overview/>

⁴ Southern Africa Development Community. Declaration and Treaty. 1992.

and places greater emphasis on regional integration⁵. A key instrument that SADC uses to achieve results on common problems (such as the TB epidemic) is the SADC protocol. This is a “legally binding document committing Member States to the objectives and specific procedures stated within it”⁶.

1.3 Tuberculosis control in the SADC region

Tuberculosis response in the SADC region is guided by the World Health Organization’s (WHO) End TB Strategy, SADC Regional TB Strategic plan and country national strategic plans. The SADC Member States have committed themselves to address communicable diseases, including HIV and AIDS, TB and malaria. To be able to respond adequately, Member States have approved and endorsed regional and international declarations. Most relevant in the response to TB are the SADC Protocol on Health; the 2006 Maputo Declaration of the 55th Regional Committee of the WHO African Region, which declared TB an emergency in Africa; the 2013 Abuja Declaration named “Abuja Actions towards the elimination of HIV and AIDS, Tuberculosis and Malaria in Africa by 2030”; and the endorsement by the World Health Assembly in 2015 of the post 2015 ‘End TB Strategy’, which calls for ambitious action to end TB by 2035. The strategic plan outlines strategies to accelerate Member States efforts to achieving the regional and global commitments. The SADC strategic plan was also designed to address common challenges in TB control in the SADC region focusing on priority areas where progress is lagging, increasing accountability, providing knowledge and evidence, building capacities and harnessing synergies among Member States. The current SADC TB strategy was developed in 2019 to cover 2020-2024.

The COVID-19 pandemic has been a major set-back in all health systems, largely crippling the over a decade stride made in the fight against TB in the region. As COVID-19 has vastly affected progress in Ending TB, the national TB programs found an opportunity to leverage on resources availed through the COVID-19 responses to forge pathways to solutions for bouncing back to action. The leverage to some extent has contributed to health systems strengthening, resuscitating public health programs and strengthening capacity for diagnostics and treatment.

⁵ Southern Africa Development Community. SADC Themes Health. [Internet]. Available from: <http://www.sadc.int/themes/health/>

⁶ Southern Africa Development Community. SADC overview [Internet]. Available from: <http://sadc.int/about-sadc/overview/>



As a response to coordination and ensuring all Member States comply to their global and regional commitments, the SADC Secretariat convenes annual meetings as a platform for sharing of information on TB responses, and experiences and promising practices from countries. Lessons from these engagements are expected to improved TB programming in the countries and the region.

1.4 Global, Continental and Regional commitments for TB Control

The 16 SADC Member States have subscribed to various global, continental and regional commitments. Some of the key commitments are highlighted below:

1.4.1 Global Commitments

1. **The United Nations Sustainable Development Goal:** The TB specific target is “By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases”
2. **The WHO END TB Strategy 2015-2035:** The goal of this strategy is to “End the global TB epidemic”. The strategy has three pillars:
 1. Integrated, patient-centered TB care and prevention
 2. Bold policies and supportive systems
 3. Intensified research and innovation
3. The strategy sets three high-level indicators and related targets for 2030 – linked to the SDGs – and for 2035, and milestones to monitor progress for 2020 and 2025. The three high level indicators are:

Vision	A World free of TB (Zero deaths, diseases and suffering due to TB)			
Goal	END THE GLOBAL TB EPIDEMIC			
Indicators	Milestones		Targets	
	2020	2025	2030	2035
Percentage reduction in the number of TB deaths	35%	75%	90%	95%
Percentage reduction in the TB incidence rate	20%	50%	80%	95%
Percentage of TB-affected households facing catastrophic costs due to TB	0%	0%	0%	0%

3. Global Plan to End TB, 2018-2022: The Stop-TB Partnership developed a Global Plan to End TB, 2018–2022, which focuses on the actions and funding needed to reach the 2020 milestones of the End TB Strategy.

4. United Nations High-Level Meeting (UNHLM) on TB, themed: *“United to end tuberculosis: an urgent global response to a global epidemic”*. The first-ever UN General Assembly high-level meeting on tuberculosis on 26 September 2018 endorsed an ambitious and powerful political declaration to accelerate progress towards End TB targets. This declaration was subsequently adopted by the General Assembly on 10 October 2018 (Resolution document A/RES/73/3).

1.4.2. Continental Commitments

1. Resolution AFR/RC 55/RS, adopted by the WHO Regional Committee for Africa at its 55th session in Maputo, Mozambique in 2005, declared TB an emergency, and also called upon Member States to declare TB an emergency in their countries.
2. The Abuja Call for Accelerated Action Towards Universal Access to HIV and AIDS, Tuberculosis and Malaria Services of 2001, which called for the prevention of multidrug-resistant TB, and for universal access to prevention, treatment, care and support for TB. In 2013 the African Union Heads of States signed the Declaration called Abuja actions towards the elimination of HIV and AIDS, tuberculosis and malaria in Africa by 2030. This declaration calls for further scale up of activities to eliminate the three diseases.
3. The African Continental End TB Accountability Framework for Action and the End TB Scorecard initiative.

1.4.3. Regional Commitments

- I. SADC Minimum Standards for Child and Adolescent HIV, TB and Malaria Continuum of Care and Support (2013-2017)
- II. The Declaration on Tuberculosis in the Mining Sector

2 METHODOLOGY

Each year, the Southern African Development Community (SADC) develops a Tuberculosis (TB) Report to provide the Ministers of Health of the Community, the Secretariat and the partners with an overview of the state of the TB burden and its control activities in the region. This report describes achievements in 2021 towards regional, continental and global commitments by the SADC Member States (MS). The report also acts as a tool for monitoring progress towards achieving the SDG targets.

This report was developed based on the SADC Member States TB programme data from 2016-2021 submitted by the National TB Programmes (except Comoros and Mauritius). The data was consolidated and analyzed to show the state of TB in the SADC region, variations and the trends among countries based on the End TB top 10 indicators. Data on programme performance was also analyzed to assess progress made in the TB response among the SADC countries. In addition, each SADC Member State (except Comoros and Mauritius) provided a country specific qualitative report on the achievement, challenges and lessons learnt. Based on the analysis of these reports, this report makes recommendations on key issues to be addressed by the SADC member states to strengthen the TB response and accelerate progress towards achievement of the top 10 TB indicators.

National TB Managers and other programme officers reviewed and consolidated the TB data in a meeting held from 10th to the 14th of October 2022 in Johannesburg, South Africa. This was followed by the development of a draft annual SADC TB report which was reviewed and finalized by the SADC secretariat, with support from the ECSA-HC. The sequential timelines followed the steps in figure 1 below:

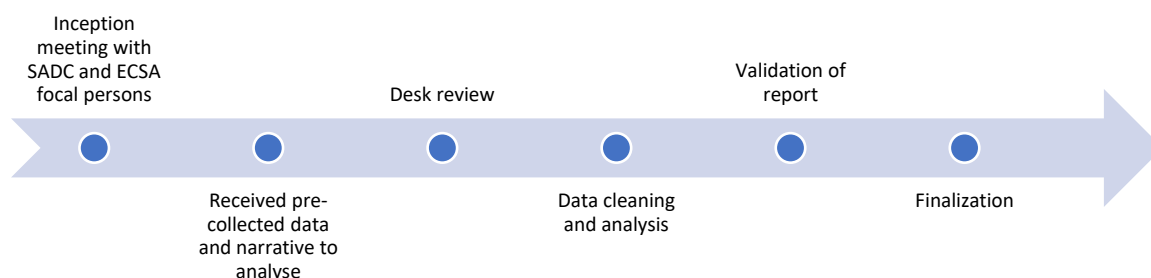


Figure 1: Steps in the development of the SADC TB report, 2022

Table 1: Completeness of Indicator reporting, SADC TB report 2022

Country	Baseline	DRTB	DSTB	Financing	TB in Mines	TP T	Treatment Outcome	Blank	Total
Angola	5	9	8	4	7	2	5		40
Botswana	5	9	8	4	7	2	5		40
DRC	5	9	8	4	7	2	5		40
eSwatini	6	10	8	4	7	2	4		41
Lesotho	5	19	8	4	7	2	5		50
Madagascar	5	8	8	4	7	2	5		39
Malawi	5	10	8	4	7	2	5		41
Mauritius								5	5
Mozambique	5	10	8	4	7	2	5		41
Namibia	5	10	8	4	7	2	5		41
Comoros								40	40
Seychelles	5	9	8	4	7	2	5		40
South Africa	5	9	8	4	7	2	5		40
UR Tanzania	5	10	8	4	7	2	5		41
Zambia	5	9	8	4	7	2	5		40
Zimbabwe	5	9	8	4	7	2	5		40

Key: DRTB-Drug Resistant TB, Drug Sensitive TB, TB Preventive Treatment



3. PROGRESS MADE BY SADC MEMBER STATES TOWARDS ACHIEVING THE END-TB TARGETS

This section highlights the state of the TB burden in the SADC region and progress made by countries towards achieving the End-TB strategy targets. This section also shows the overall performance of the SADC region and Member States in the TB response. The indicators and their targets for 2021 measured under the End-TB strategy are as follows:

- Reducing TB deaths by 35% in 2020
- Reducing TB incidence by 20% in 2020
- Ensuring that no households affected by TB face any catastrophic costs due to TB

Tuberculosis remains a public health challenge in the SADC region. However, progress is observable but 8 SADC countries remain on the list of 30 high TB burden countries globally.

Figure 2: High TB Burden countries in the SADC region 2022

3.1 TB incidence and Case Notification

Overall, TB incidence in the SADC region has reduced when comparing data from 2016 with estimates of incidence for 2021. The overall regional incidence reduction is 13.3%. Analyzing the period between 2016 and 2021, 5 of the 14 countries reporting have reduced incidence by over 20%. These are Botswana, South Africa, Eswatini, Mozambique and Namibia, with incidence reduction of 32%, 31%, 30%, 27% and 22% respectively. While there were increased TB incidences in DRC and Madagascar seen an increase in estimate in the same time period.

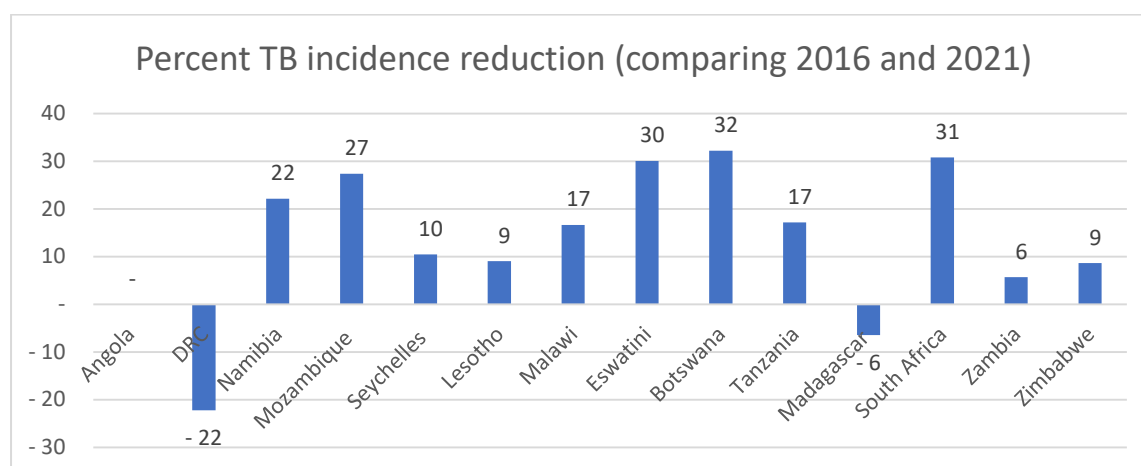


Figure 3: TB Incidence Comparisons between 2016 and 2021 in 14 SADC countries



3.1.1 TB Case notification

A total of 570,398 TB cases were notified in 2021, showing a twenty percent (20%) decrease when compared with data from 2016 (717,132). Between 2016 and 2019, there was a steady increase in TB case notifications from 668,031 in 2016 to 737,036 in 2019. The sharp decline in notified TB cases between 2020 and 2021, that shows gap of 47% missing TB cases is likely due to effects of the COVID-19 pandemic on health service delivery. Whereas the effect of social distancing and face masks may have contributed to reduced transmission of TB in some countries, the inadequate access to health care services due to lock downs and restricted movement in the SADC region likely had a direct impact on TB notification.

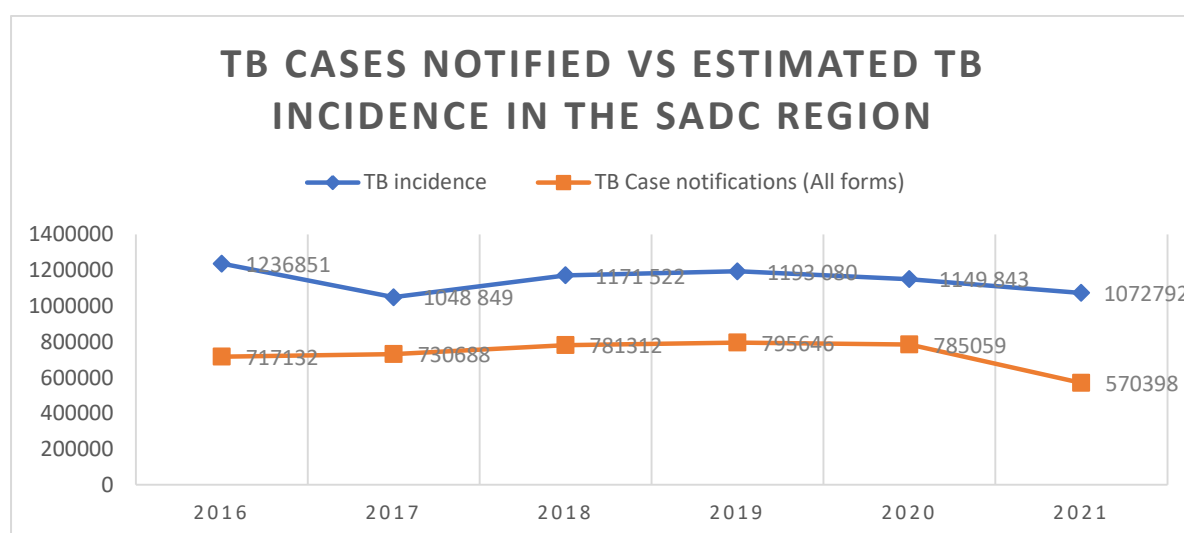


Figure 4: Total TB case notification (all forms) compared to TB Estimates, SADC Report 2022

Figure 5 below shows data comparisons between estimated TB incidence vs actual TB cases notified by country. Zimbabwe, South Africa and Tanzania had the largest number of missing cases at 46%, 40% and 34% respectively.

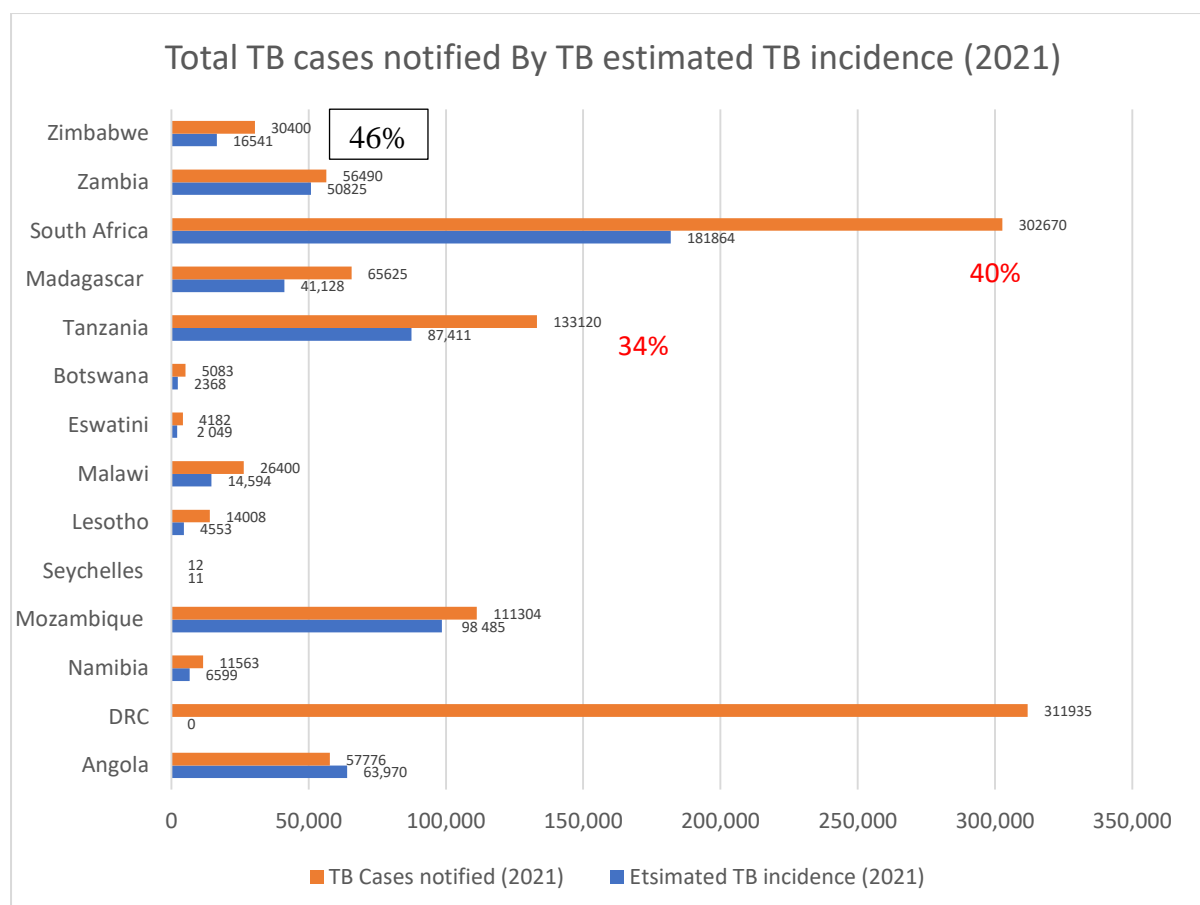


Figure 5: TB Cases Notified in 2021 vs Estimated incidence, SADC Report 2022

It is worth noting that countries such as Zambia, Mozambique, Madagascar and Tanzania did not experience a decrease in TB case notifications during COVID-19 associated years (2019-2021) Figure 6. Reasons may differ from country-to-country, for instance, there were no travel restrictions for COVID-19 within Tanzania, whilst Zambia and Mozambique implemented strategies to bounce back TB services immediately the decline in TB case notifications was realised. The figure below shows the different country trends in TB case notifications over the past 5 years.



Figure 6: Member States TB case notifications between 2016 and 2021

3.2 TB Mortality

Data presented in this section only covers 11 of the 16 SADC countries (Mozambique, Seychelles, Lesotho, South Africa, Malawi, Eswatini, Tanzania, Madagascar, Zimbabwe, Zambia and DRC). In terms of reducing TB deaths by 35%, four countries reduced death by over 35% when 2016 data are compared to 2021 data these include Zambia, Tanzania, Eswatini and Mozambique at 55%, 53%, 48% and 48% respectively. The other countries reporting with the exception of Zimbabwe that recorded an increase (of 86%) had reduction of between 2% and 30% in in TB death when 2021 data are compared with those of 2016.

Although these percentages demonstrate success in TB response, more effort is needed to reduce the number of TB death in the region. For example, in absolute figures, it is estimated that up to 40,218; 25,600; and 22,420 people died of TB in DRC, Tanzania and South Africa respectively in 2021. Seychelles also reported a TB death in 2021, a first in its recent history (see Fig 6 and Table7)

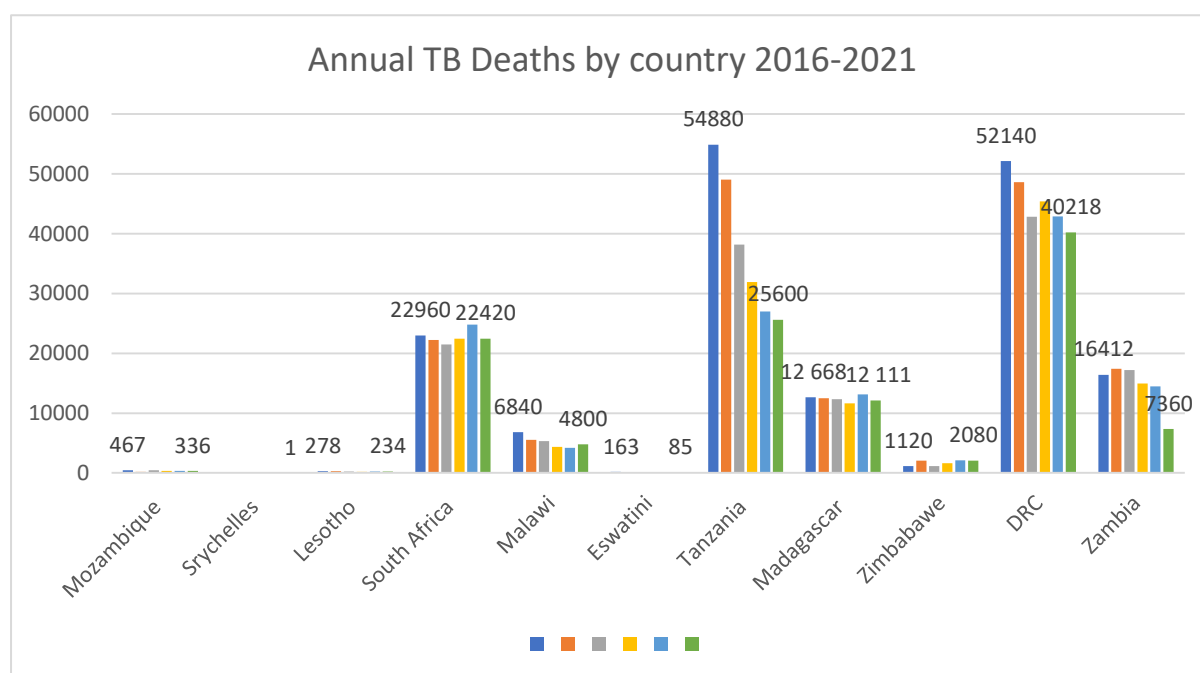


Figure 5: Estimated TB deaths between 2016 and 2021 in SADC countries

3.3 Treatment Outcomes

Treatment outcome data showed that most countries had sustained treatment success of above 80%, with Lesotho, Madagascar and the United Republic of Tanzania. Zimbabwe seemed to be improving with a treatment success rate of 83% in 2021, up from below 80% levels in the previous years. Botswana was showing a declining treatment outcome over the years. Madagascar and Seychelles had missing data points in treatment outcomes. Treatment success was high, an average of 80%, except for a few countries with treatment outcomes either not given or had zero reporting. Lesotho, Botswana and Madagascar had treatment success among people living with HIV of below 80% from 2019 to 2021.

Estimated TB mortality was higher among HIV positive patients compared to HIV negative patients. As a proportion of total cases, some countries had significantly higher TB mortality than others. Countries with higher TB mortality are encouraged to commission TB patient pathway studies to ascertain why they had high TB mortality and exclude data quality issues that may skew the results. Most importantly, mortality was declining over time, an indication that the quality of TB care in the region was improving. This positive trend must be maintained through improved patient support, sustained availability of high-quality medicines and harmonization of treatment regimens.

Treatment outcome for drug resistant TB varied across MS. In some countries, treatment success was high, above 80% and in other countries this was as low as below 50%. Majority of countries had DR-TB treatment success of around 70%, a major achievement given the common treatment adverse effects associated with DR-TB medicines.

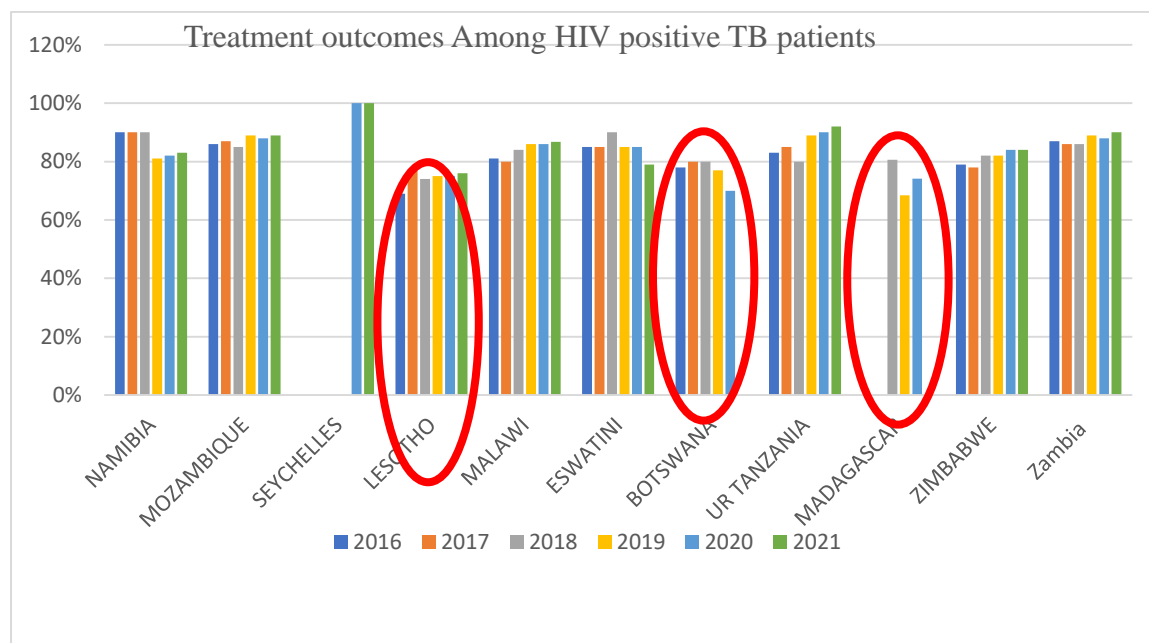


Figure 6: Treatment outcomes among people living with HIV in SADC countries

Table 2: Annual Treatment Outcomes by country among People living with HIV (2016-2021)

Country		Baseline	Target	2016	2017	2018	2019	2020	2021
Namibia	Treatment success rate (HIV positive TB cases)	80%	90%	90%	90%	90%	81%	82%	83%
Mozambique	Treatment success rate (HIV positive TB cases)			86%	87%	85%	89%	88%	89%
Seychelles	Treatment success rate (HIV positive TB cases)	0	100%	0	0	0	0	100%	100%
Lesotho	Treatment success rate (HIV positive TB cases)	66%		69%	77%	74%	75%	75%	76%
Malawi	Treatment success rate (HIV positive TB cases)	NA	90	81	80	84	86	86	87%
Eswatini	Treatment success rate (HIV positive TB cases)	83%	>90%	85%	85%	90%	85%	85%	79%
Botswana	Treatment success	71%	>90	78%	80%	80%	77%	70%	

	rate (HIV positive TB cases)		%						
UR Tanzania	Treatment success rate (HIV positive TB cases)	87%	90%	83%	85%	80%	89%	90%	92%
Madagascar	Treatment success rate (HIV positive TB cases)		90%			80.6%	68.4%	74.1%	
Zimbabwe	Treatment success rate (HIV positive TB cases)	65%	90%	79%	78%	82%	82%	84%	84%

Treatment of Drug Susceptible TB and Drug Resistant TB

Drug treatment of susceptible TB was largely standard across countries, four months of rifampicin, isoniazid, pyrazinamide and ethambutol (4RHZE) and two months of RH except for Botswana, Namibia and Lesotho that were using RHE in the continuation phase. Some countries were not using ethambutol in children with susceptible TB. One country introduced rifapentine in the management of susceptible TB in patients with HIV infection. Treatment of drug resistant TB varied significantly across MS. There were more than ten (10) different drug resistant (DR-TB) TB treatment regimens in the SADC region (Table 10). For a region with high TB transmission, high migration patterns and high drug resistant, it is recommended that MS share available TB and DR-TB phenotypic and genotypic resistance patterns and use this information to develop a harmonized treatment regimen.

Table 3: Treatment Success Rate (%) among MDR TB patients, SADC TB Report 2022

		2016	2017	2018	2019	2020	2021
Angola	Treatment success rate (MDR/RR TB cases)						
Angola	Treatment success rate (pre-XDR and XDRTB cases)						
Namibia	Treatment success rate (MDR/RR TB cases)	70	72	69	67	65	75
Namibia	Treatment success rate (pre-XDR and XDR-TB cases)	33	0	50	46	63	75
Mozambique	Treatment success rate (MDR/RR TB cases)	50	48	50	61	66	72
Mozambique	Treatment success rate (pre-XDR and XDR-TB cases)		38	32	55	46	82
Seychelles	Treatment success rate (MDR/RR TB cases)	0	0	0	0	0	0
Seychelles	Treatment success rate (pre-XDR and XDR-TB cases)	0	0	0	0	0	0
Lesotho	Treatment success rate (MDR/RR TB cases)	63	64	66	77	74	80
Lesotho	Treatment success rate (pre-XDR and XDR-TB cases)						50
Malawi	Treatment success rate (MDR/RR TB cases)	58	61	59	55	73	74
Malawi	Treatment success rate (pre-XDR and XDR-TB cases)	0	0			100	NA
Eswatini	Treatment success rate (MDR/RR TB cases)	71	70	72	73	76	71
Eswatini	Treatment success rate (pre-XDR and XDR-TB cases)	0	0	100	0	69	86
Botswana	Treatment success rate (MDR/RR TB cases)	78	69	75	77	70	

Botswana	Treatment success rate (pre-XDR and XDR-TB cases)	100	0	0	0	0	
UR Tanzania	Treatment success rate (MDR/RR TB cases)		76	80	83	79	73
UR Tanzania	Treatment success rate (pre-XDR and XDR-TB cases)		100	-	0		
Madagascar	Treatment success rate (MDR/RR TB cases)	60.2	67.4	85.3	72.7		
Madagascar	Treatment success rate (pre-XDR and XDR-TB cases)						
Zimbabwe	Treatment success rate (MDR/RR TB cases)	51	44	57	54	50	43
Zimbabwe	Treatment success rate (pre-XDR and XDR-TB cases)	0	80	0	0	100	0
South Africa	Treatment success rate (MDR/RR TB cases)	54	55	54	60	65	66
South Africa	Treatment success rate (pre-XDR and XDR-TB cases)	27	48	58	60	57	59
DRC	Treatment success rate (MDR/RR TB cases)	75	90	86	82	84	77
DRC	Treatment success rate (preXDR and XDR-TB cases)		10	39	72	73	79
Zambia	Treatment success rate (MDR/RR TB cases)	51	60	71	76	78	75
Zambia	Treatment success rate (pre-XDR and XDR-TB cases)	0	0	0	0	100	83

Tuberculosis Preventive Therapy

One of the main health care intervention available to reduce the risk of TB infection progressing to active TB disease is TB preventive treatment (TPT). This report focused on children under 5 who received preventive therapy and people living with HIV who also received TB preventive therapy. Angola, Botswana and Madagascar did not report on the number of people living with HIV who were initiated on TB preventive therapy (Table 4). The Seychelles had zero children under 5 years and people living with HIV receiving TB

preventive therapy (Table 4). Different countries were using different TB preventive therapy regimens, contrary to requirements of the SADC harmonized guidelines on TB prevention and treatment. The common regimens were the traditional isoniazid monotherapy, 3 months of isoniazid plus rifapentine, or isoniazid plus rifampicin. In children exposed to drug resistant TB, some countries were using levofloxacin alone and others were giving a short course of 6 months Bdq-Lfx-Lzd-Dlm-Cfz.

Table 4: Coverage TB Preventive Therapy in the SADC Region

Country	Indicator	2016	2016	2016	2016	2016	2021
Angola	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment						
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment						
Namibia	# of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment	1302	1488	1721	1491	1630	1398
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment	100%	100%	100%	81%	88%	80%
Mozambique	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment	100%	100%	100%	100%	100%	89%
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment	52%	49%	49%		84%	90%

Seychelles	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment	0	0	0	0	0	0
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment	0	0	0	0	0	0
Lesotho	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment				51%	73%	92%
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment				33%		
Malawi	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment			58	56	53	41%
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment	5			26		99
Eswatini	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment	No data	8%	12%	32%	32%	57%
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment	15%	15%	20%	65%	65%	80%

Botswana	Number of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment		535	527			
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment						
UR Tanzania	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment	31%	32%	22%	39%	62%	75%
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment	9%	-	-	-		
Madagascar	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment	13.5 7%	13.4 4%	22.0 4%	23.31 %	24.0 7%	31%
	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment						1%
Zimbabwe	Percentage of HIV positive people (Newly enrolled in care) initiated on preventive treatment	73%	11%	0%	89%	31%	73
	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment	63%	24%	30%	47%	42%	50%



Zambia	% of children (aged < 5 years) household contacts of bacteriologically confirmed TB cases initiated on preventive treatment	0	4%	0	13%	28%	35%
--------	---	---	----	---	-----	-----	-----

As shown in Table 4 TB preventive therapy coverage in most countries is lagging behind especially for household contacts. There is need to dramatically scale up activities to improve coverages.

Tuberculosis Service Delivery

Tuberculosis treatment and follow up services were free to patients at the point of care in all the SADC countries.

TB and HIV Services

Testing for HIV among TB patients was high with most SADC MS reporting more than 90% of all TB patients having been tested and received their results (Table 6). This is important to ensure patients are initiated on life saving antiretroviral treatment (ART) among those co-infected. Three countries had less than 90% of TB patients HIV co-infected and initiated on ART (Table 7).

Table 5. Percentage of TB Patients with Known HIV status and those positive enrolled on ART

		Target	2016	2017	2018	2019	2020	2021
Angola	Known HIV Status						31	35
Angola	Positive enrolled on ART		100	100	98	91	67	65
Namibia	Known HIV Status	90	98	98	98	99	99	99
Namibia	Positive enrolled on ART	98	90	96	97	99	99	99
Mozambique	Known HIV Status	96	94	96	98	98	100	99
Mozambique	Positive enrolled on ART	95	94	95	96	97	95	95
Seychelles	Known HIV Status		100	100	100	100	100	100
Seychelles	Positive enrolled on ART		100	0	100	100	100	100
Lesotho	Known HIV Status	100	96	91	94	97	96	97
Lesotho	Positive enrolled on ART	100	79	86	92	92	87	92
Malawi	Known HIV Status	99	95	99	99	99	99	99
Malawi	Positive enrolled on ART	99	95	99	99	99	99	99

	ART							
Eswatini	Known HIV Status	>98	94	94	98	98	98	98
Eswatini	Positive enrolled on ART	>98	94	94	98	98	98	98
Botswana	Known HIV Status							
Botswana	Positive enrolled on ART		81	91	90	93	90	91
UR Tanzania	Known HIV Status	100	97	98	99	99	100	99
UR Tanzania	Positive enrolled on ART	100	91	95	98	99	100	99
Madagascar	Known HIV Status	80	46	50	64	67	66	55
Madagascar	Positive enrolled on ART		98	45	43	73	41	68
Zimbabwe	Known HIV Status	100%	100%	100	94%	89	99%	98
Zimbabwe	Positive enrolled on ART	100	86	86	91	91	93	95
South Africa	Known HIV Status		96	94	90	85	66	89
South Africa	Positive enrolled on ART		88	89	87	85	89	89
DRC	Known HIV		54	64	60	67	77	78

	Status							
DRC	Positive enrolled on ART		75	82	92	96	88	82
Zambia	Known HIV Status	100	93		95	96	95	96
Zambia	Positive enrolled on ART	100	83		91	97	98	98

Use of WHO recommended molecular tests for presumptive TB patients

There is a worrying observation that there is a low number of TB patients who had been tested using WRD tests at the time of diagnosis was less than 50% in 4 of the 12 among MS countries where data is available for 2021 (Table). Some of the key barriers reported by countries include supply chain bottlenecks, lack of service and maintenance plans and geographical access to testing sites. Presumptive TB patients are screened for TB using World Health organization recommended (WRO) GeneXpert or Truenat molecular methods. Additionally, some MS were using digital chest x-ray to screen for TB disease. Truenat technology was only in Namibia and Zimbabwe and GeneXpert with 10 colour modules only available in UR Tanzania and Zimbabwe. Different technologies were found in different MS but all had GeneXpert and smear microscopy.

Table 6. Percentage of TB Cases Tested with WHO Recommended Rapid Diagnostic Test at the Time of Diagnosis

	2016	2017	2018	2019	2020	2021
Angola						
Namibia	100%	100%	100%	100%	100%	100%
Mozambique			41%	46%	58%	
Seychelles	100	100	100	100	100	100
Lesotho				67%	87%	85%
Malawi	27%	25%	44%	29%	30%	30%
eSwatini	82%	86%	75%	87%	85%	85%
Botswana						
U R Tanzania		15%	27%	38%	41%	41%

Madagascar	0	0	0	0	4.3%	24.75%
Zimbabwe	0	0	87%	93%	93%	99%
South Africa	69%	66%	71%	70%	61%	62%
DRC			7%	2%	4.8%	9%
Zambia			46%	45%	100%	100%

Table 7. Laboratory Capacity for TB Diagnosis

Indicator	Reunion	Mozambique	Angola	Namibia	Seychelles	Madagascar	UR Tanzania	Botswana	Eswatini	Malawi	Lesotho	Zimbabwe	Zambia
Number of Laboratories providing Smear Microscopy	7	470	148	35		242	1,752	52	32	418	36	220	418
Number of laboratories providing Gene Xpert Diagnosis	3	196	66	35		25	306	44	32	116	36	155	116
Number of	0	0	0	35		0	0	0	NA	NA	0	20	NA



laboratorie s provi ding Truen at Diagn osis													
Num ber of labor atorie s with Gene Xpert 10 Colou r Modu le	0	13	0	0		0	4	0	20	NA	0	3	NA
Num ber of Healt h Facili ties scree ning with Urina ry LAM	0	29	0	317		0	0	29	82	13 2	16	700	132



Number of Health Facilities Providing X-Ray Services	17	95	119	37		0	497	32	50	62	18		62
Number of Health Facilities providing TB Screening X-Ray <i>FREE</i> to Presumptive TB Clients	3	95	119	37		25	6	32	50	29	18		29



Number of X-Ray Facilities Using AI (e.g., CAD 4TB)	0	1	0	2		0	5		11	7	0	0	7
Number of Mobile X-Ray Equipped Mobile Units Available for Community TB Screening	3	4	0	2		0	5	6	1	7		9	7

Tuberculosis in Mines (TIMS III)

There are 6 indicators for monitoring TB treatment and care miners and ex-miners. Eight (8) countries reported at least one indicator for monitoring TB in the mines (Table 8). Only United Republic (UR) of Tanzania and Zimbabwe reported on all six. The UR Tanzania had

more data than any other country. Treatment outcome data was generated in UR Tanzania, and it showed similar treatment outcome rates as in other TB patients. In 2021, eSwatini recorded a low treatment outcome among mine workers and ex-mine workers of 44%.

Countries reporting low to no data on mine and ex-mine workers must be supported to obtain this data so that programming for mine and ex-mine workers is evidence based.

Miners and ex-mine workers were receiving varied services in the MS. Using the available health facilities and outreach programmes, mine workers were receiving TB screening, HIV testing and TB treatment services. Although the number of miners benefiting from TB services varied across MS, the numbers have continued to increase over time. Most countries had no estimated population of persons working in mine settings, a major gap that will affect programming for mine and ex-mine workers. Treatment outcome data on TB patients with a history of being a mine worker or ex-mine worker was not readily available to allow reasonable analysis.

Table 8. TB in Mines Activities, SADC TB Report, 2022

Country	Indicator	Target 2022	2016	2016	2016	2016	2016	2021
Namibia	Cases notified (new and relapse) TB cases who are Miners or Ex-Miners					20	6	39
Mozambique	Cases notified (new and relapse) TB cases who are Miners or Ex-Miners		162	590	569	746	549	795
Mozambique	Number of bacteriologically confirmed drug resistant TB (RR-TB and/or MDR-TB (Miners and Ex-Miners)		68	232	197	204	167	270

Lesotho	Cases notified (new and relapse) TB cases who are Miners or Ex-Miners	3000		942	1438	1460	1002	891
Lesotho	Treatment success rate- all forms: among (Miners or Ex-Miners)	75%			76%	80%	80%	75%
Lesotho	Proportion of Miner and Ex-Miner TB patients with known HIV status (%)			100%	92%	91%	96%	94%
Lesotho	Proportion of Miner and Ex-Miner TB patients with positive HIV status (%)			88%	46%	43%	41%	37%
Lesotho	Proportion of HIV-Positive TB patients given ART during TB treatment (%) (Miners and Ex-Miner)			100%	92%	93%	93%	93%
Malawi	Cases notified (new and relapse) TB cases who are Miners or Ex-Miners					121	85	48
Eswatini	Cases notified (new and relapse)			87	55	68	51	48

	TB cases who are Miners or Ex-Miners							
Eswatini	Number of bacteriologically confirmed drug resistant TB (RR-TB and/or MDR-TB (Miners and Ex-Miners)			0	0	15	1	0
Eswatini	Proportion of Miner and Ex-Miner TB patients with known HIV status (%)					100%	100%	100%
Eswatini	Proportion of Miner and Ex-Miner TB patients with positive HIV status (%)					19%	37%	15%
Eswatini	Proportion of HIV-Positive TB patients given ART during TB treatment (%) (Miners and Ex-Miner)					100%	100%	100%
Botswana	Cases notified (new and relapse) TB cases who are Miners or Ex-Miners	ND	ND	ND	ND	ND	213	117
Botswana	Treatment success	ND	ND	ND	ND	ND	76%	44%

	rate- all forms among cases registered (Miners or Ex-Miners)							
Botswana	Proportion of Miner and Ex-Miner TB patients with known HIV status (%)	ND	ND	ND	ND	ND	91%	88%
Botswana	Proportion of Miner and Ex-Miner TB patients with positive HIV status (%)	ND	ND	ND	ND	ND	34%	28%
Botswana	Proportion of HIV-Positive TB patients given ART during TB treatment (%) (Miners and Ex-Miner)	ND	ND	ND	ND	ND	90%	97%
UR Tanzania	Cases notified (new and relapse) TB cases who are Miners or Ex-Miners	-	-	764	1,019	1,608	1,790	2,080
UR Tanzania	Treatment success rate- all forms:) among (Miners or Ex-Miners)				93%	91%	95%	97%
UR Tanzania	Number of bacteriologically confirmed drug			7	8	36	23	26

	resistant TB (RR-TB and/or MDR-TB (Miners and Ex-Miners)							
UR Tanzania	Proportion of Miner and Ex-Miner TB patients with known HIV status (%)			98%	100%	100%	100%	99%
UR Tanzania	Proportion of Miner and Ex-Miner TB patients with positive HIV status (%)			30%	27%	22%	23%	16%
UR Tanzania	Proportion of HIV-Positive TB patients given ART during TB treatment (%) (Miners and Ex-Miner)			97%	100%	100%	100%	98%
Zimbabwe	Estimated Number of Miners and Ex-Miners	0	0	0	0	0	0	500,000
Zimbabwe	Cases notified (new and relapse) TB cases who are Miners or Ex-Miners	0	0	0	0	8	299	397
Zimbabwe	Treatment success rate- all forms: among (Miners or Ex-Miners)	0	0	0	0	0	0	0

Zimbabwe	Number of bacteriologically confirmed drug resistant TB (RR-TB and/or MDR-TB (Miners and Ex-Miners)	0	0	0	0	8	6	1
Zimbabwe	Proportion of Miner and Ex-Miner TB patients with known HIV status (%)	0	0	0	0	8	296	98
Zimbabwe	Proportion of Miner and Ex-Miner TB patients with positive HIV status (%)	0	0	0	0	8	133	36
Zimbabwe	Proportion of HIV-Positive TB patients given ART during TB treatment (%) (Miners and Ex-Miner)	0	0	0	0	1	99	78

Political Commitment

All SADC MS ratified the SADC Protocol on Health of and related policy guidelines that govern the implementation of health programmes in the region. The commitments of the SADC Heads of States and Governments at global, continental and regional levels, need to be translated into practical, actionable programmes that are quantified and costed by countries to move towards the End TB targets. There is also need for an accelerated resource mobilization campaign to raise the requisite financing for TB programming and research at national and international level.

SADC Member States are signatories to the High Level United Nations Meeting (UNHLM) for TB targets and commitments. These targets range from providing diagnosis and treatment of infected persons, prevention using TB preventive therapy and vaccines, mobilization of resources for research and development, ending stigma, promotion of multisectoral accountability framework and reporting on progress made. This report is part of the requirement by MS to report on progress.

Under-diagnosis and treatment, most member countries introduced innovative strategies to increase case finding and ensuring all diagnosed patients were enrolled on treatment. The MS reported varying levels of achieving the UNHLM targets, which were affected by COVID-19. Childhood TB was prioritized by almost all the MS to ensure that as many TB infected children as possible were identified and initiated on treatment. The introduction of diagnostic technologies like TB-LAM and use of stool to diagnose TB in children were achieved.

- Tuberculosis preventive therapy was also one of the commonly reported interventions by MS
- One MS reported having completed the development of the multisectoral accountability framework and had completed a patient cost survey

Public-Private Partnerships

The Harmonised Minimum Standards for the Prevention, Treatment and Management of Tuberculosis in the SADC Region recommends PPP as part of the models of care for TB in the region.⁷ Presence of public-private partnerships (PPP) to strengthen health systems and contribute to provision of TB services has been documented in South Africa, Lesotho, Zimbabwe and Zambia.⁸ Botswana had a functional PPP with large mining companies that were managing TB patients. The Harmonised Minimum Standards for the Prevention, Treatment and Management of Tuberculosis in the SADC Region recommends PPP as part of the models of care for TB in the region.⁹ Most PPP models were limited to human immunodeficiency virus (HIV) programme, financing, infrastructure development and provision of essential medicines. The key private players were international organizations,

⁷ SADC. Harmonised Minimum Standards for the Prevention, Treatment and Management of Tuberculosis in the SADC Region; 2010

⁸ Mugwagwa, Julius; and Banda, Geoffrey. The role of public private partnerships in Health systems: experiences from southern Africa © 2020, THE SCINNOVENT CENTER

⁹ SADC. Harmonised Minimum Standards for the Prevention, Treatment and Management of Tuberculosis in the SADC Region; 2010

like the Global Fund (GF) for TB care and treatment in mine settings, pharma companies for manufacture of vaccines and antiretroviral medicines. Zimbabwe had a policy on TB PPP but had not started implementing. South Africa, Zambia, and Lesotho had documented evidence of implementing TB care and treatment in the private sector.^{10,11} In most of the SADC countries, implementation of TB care and treatment services under PPP was not common with majority limited to presence of policy documents. The available template for data collection had no section to collect data on PPP from MS. This section will require further engagement with MS during the validation meeting. In some MS, private pharmacies actively participated in the screening, diagnosis and treatment of TB patients, for example, pharmacies were providing TB screening services.

Research and Innovation

The End TB Strategy recommends evidence-based implementation of TB prevention and control interventions as part of the third pillar of the End TB Strategy. Priority research areas remain development of affordable and accessible rapid point of care diagnostics, development of new medicines and vaccine development.¹² Research priorities for the SADC region were not documented, although some individual MS had TB research agendas. Given more than 10 DR-TB treatment regimens, unknown circulating TB strains and transmission patterns in the region, it would be important for SADC to develop a priority research agenda to answer relevant priority questions.

Although there was no database to track research and innovation in the SADC region, countries reported interesting innovative models to increase TB case finding and work towards achieving the UNHLM targets. One MS included TB in the rapid notification system and developed a TB situation room to monitor TB transmission in real time. Other innovative TB prevention and control measures adopted by MS were the use of GeneXpert on stool to increase paediatric TB case finding, community active TB case finding using chest x-ray mounted vans, introducing short all oral bedaquiline based regimens for the treatment of drug resistant TB and introducing chest x-rays with artificial intelligence for screening of TB. Case based surveillance of TB complemented by the introduction of a

¹⁰ E. Sinanovic, L. Kumaranayake. Quality of tuberculosis care provided in different models of public-private partnerships in South Africa. *INT J TUBERC LUNG DIS* 10(7):795–801; 2006

¹¹ Joudyian et al. Public-private partnerships in primary health care: a scoping review; *BMC Health Services Research* (2021) 21:4

¹² WHO. Global Tuberculosis Report, 2021, Chapter 7

dashboard were some of the innovations introduced by some MS. However, there has been substantial research on TB transmission, epidemiology and health systems strengthening.^{13,14,15} It is recommended for the SADC secretariat to set up a research and innovation unit to collate, coordinate and disseminate research findings coming from the SADC region.

COVID-19 and Tuberculosis Care and Treatment

The World Health Organization recommended the need to safeguard TB services in the presence of COVID-19.¹⁶ All SADC MS published research work on the impact of COVID-19 on TB care and treatment, health system weakening, increased TB catastrophic costs due to impact of COVID-19 and increased mortality primarily from reduced access to TB services.^{17,18,19} The most immediate impact was the reduced case finding, increased vulnerability from inadequate access to care and later on deaths. There were common findings from all MS but presented in different formats. The reduced case finding and increased mortality from TB are the result of reduced case load observed from some of the SADC MS. Multi-country studies from Kenya, Malawi, Mozambique, Zimbabwe showed a severe decline in TB treatment success rate.^{20,21} Whilst in some countries there was a general increase in treatment success despite the reduction in TB case notification. This may also

¹³ Florian M. Marx et al. High burden of prevalent tuberculosis among previously treated people in Southern Africa suggests potential for targeted control interventions. *Eur Respir J* 2016; 48: 1224–1227.

¹⁴ IOM (Institute of Medicine). 2011. *The Emerging Threat of Drug-Resistant Tuberculosis in Southern Africa: Global and Local Challenges and Solutions: Summary of a Joint Workshop*. Washington, DC: The National Academies Press.

¹⁴ African Union Development Agency (AUDA-NEPAD). Southern Africa TB and Health Systems Support Project Desk Review Report 2020

¹⁶ Marc Lipman et al. The impact of COVID-19 on global tuberculosis control; *Indian J Med Res* 153, April 2021, pp 404-408

¹⁷ Manhiça I, Augusto O, Sherr K, et al. COVID-19- related healthcare impacts: an uncontrolled, segmented time-series analysis of tuberculosis diagnosis services in Mozambique, 2017–2020. *BMJ Global Health* 2022;7

¹⁸ Eike, D.; Hoglebe, M.; Kifle, D.; Tregilgas, M.; Uppal, A.; Calmy, A. How the COVID-19 Pandemic Alters the Landscapes of the HIV and Tuberculosis Epidemics in South Africa: A Case Study and Future Directions. *Epidemiologia* 2022, 3, 297–313.

¹⁹ Vanleeuw L, Zembe-Mkabile W, Atkins S (2022) Falling through the cracks: Increased vulnerability and limited social assistance for TB patients and their households during COVID-19 in Cape Town, South Africa. *PLOS Glob Public Health* 2(7):

²⁰ Thekkur,P.;Takarinda, K.C.; Timire, C.; Sandy, C.; Apollo, T.; Kumar, A.M.V.; Satyanarayana, S.; Shewade, H.D.; Khogali, M.; Zachariah, R.; et al. Operational Research to Assess the Real-Time Impact of COVID-19 on TB and HIV Services: The Experience and Response from Health Facilities in Harare, Zimbabwe. *Trop. Med. Infect. Dis.* 2021,6,94.

²¹ Martin-Hughes R, Vu L, Cheikh N, Kelly SL, Fraser-Hurt N, Shubber Z, et al. (2022) Impacts of COVID-19-related service disruptions on TB incidence and deaths in Indonesia, Kyrgyzstan, Malawi, Mozambique, and Peru: Implications for national TB responses. *PLOS Glob Public Health* 2(3)

have been an artefact related to a small denominator due to reduced access to TB services at facilities.

There were positive effects of the COVID-19 pandemic. The first is the improved diagnostic infrastructure that came with COVID-19. The GeneXpert technology can be used for both TB and SARS Cov-2 diagnosis. During the COVID-19 pandemic, there was a sustained improvement in procurement and distribution of GeneXpert technology. Significant local research capacity was developed during the COVID-19 era. In addition, the skills in real time surveillance technologies developed to prevent COVID-19 will be useful in the prevention of other communicable diseases like TB.²² The global civil society survey on the impact of COVID-19 on the TB epidemic recommended the need to involve everyone including local communities to effectively address the TB epidemic.²³ Almost all SADC MS reported negative effects of COVID-19 on the TB programme as a result of restrictions to movement of patients, unavailability of commodities due to diversion of finances to COVID-19 response and late presentation of patients resulting in deaths. There were some positive effects of COVID-19 like the involvement of private sector in health-related interventions, health system strengthening resulting from multisectoral teams actively engaged in health matters and equipment donated to manage COVID-19 that could be used for TB as well.

²² Teri Roberts et al. Turning threats into opportunities: how to implement and advance quality TB services for people with HIV during the COVID-19 pandemic and beyond. *Journal of the International AIDS Society* 2021, 24:e25696

²³ Results of a global civil society and tb affected community led survey. The impact of covid-19 on the tb epidemic: a community perspective. 2020

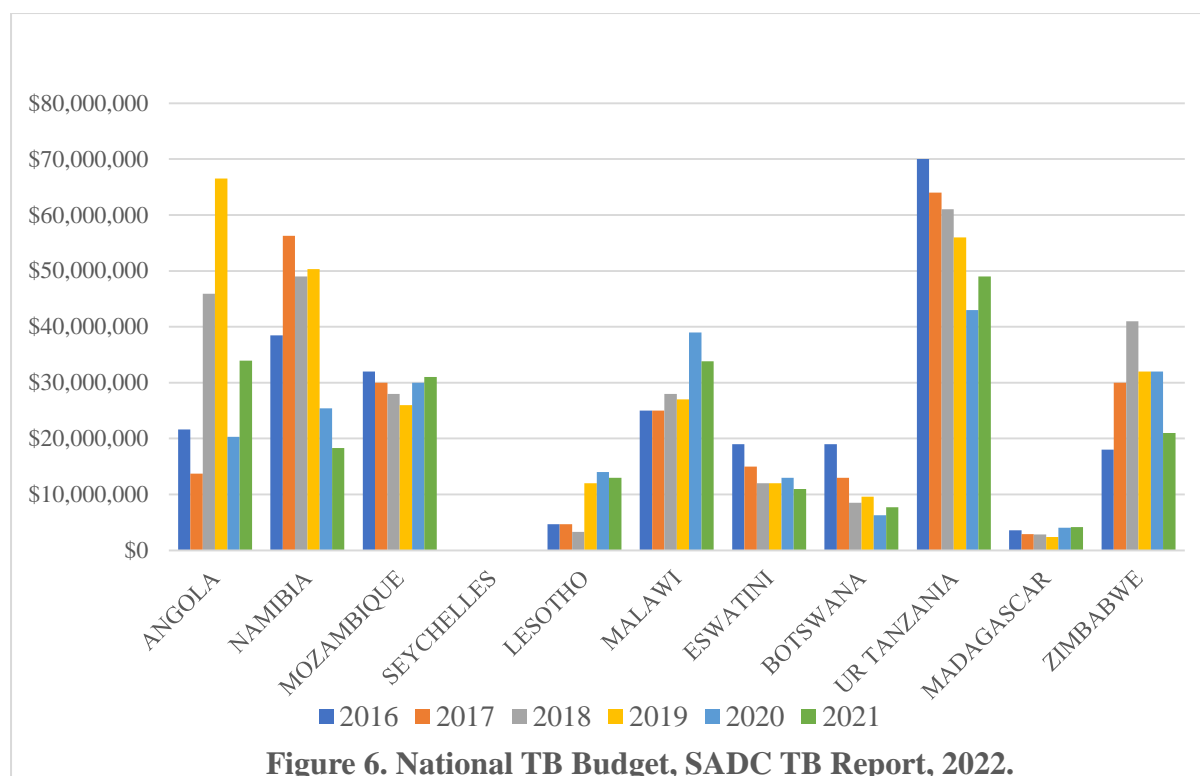


Figure 6. National TB Budget, SADC TB Report, 2022.



Table 9. TB Funding gap in SADC MS, 2016-2021

Country	Budget	2016	2017	2018	2019	2020	2021
Angola	National TB Budget	21,612,800	13,749,000	45,881,526	66,503,196	20,307,027	33,946,496
	International Contribution		2,595,490	5,662,416	6,416,285	2,634,835	4213441
	Unfunded	13,192,800	7,207,510	36,925,963	46,394,433	-	18,901,125
Botswana	National TB Budget	19,000,000	13,000,000	8,500,000	9,600,000	6,300,000	7,700,000
	International Contribution	-	-	-	3,000,000	2,000,000	1,200,000
	Unfunded	27%	34%	28%	17%	15%	15%
Democratic Republic of Congo	National TB Budget	68,258,494.00	56,946,521.00	74,327,427.55	44,485,630.42	41,278,712.29	79,399,648.00
	International Contribution	32,764,077.12	27,334,330.08	40,880,085.15	26,246,521.95	24,767,227.37	39,699,824.00
	Unfunded	33,446,662.06	27,903,795.29	30,474,245.30	17,349,395.86	16,098,697.79	37,317,834.56
eSwatini	National TB Budget	\$19 234 521,00	\$14 268 951,00	15 052 217	\$12 267,201,00	\$12 994,835,00	\$12 801,837,00
	International Contribution	\$8 336 299,00	\$3 302 926,00	\$1 738 295,00	\$4 591,623,00	\$1 326 665,00	\$538 719,00
	Unfunded	\$10 898 222,00	\$10 966 025,00	\$13 313 922,00	\$7 675 578,00	\$8 134 799,00	\$12 263,118,00
Lesotho	National TB Budget	4,700,000	4,700,000			14,000,000	13,000,000



				3,300,000	12,000,000		
	International Contribution	16%	67%	55%	33%	46%	33%
	Unfunded	67%	16%	15%	58%	25%	25%
Madagascar	National TB Budget	3,605,188	2,896,564	2864460	2410949	4044049	4132663
	International Contribution	3592966	2864296	2864460	2410949	4044049	4132663
	Unfunded	0	0	0	0	0	0
Malawi	National TB Budget	25 000000	25,000,000	28,000,000	27,000,000	39,000,000	33,800,000
	International Contribution		43%	33	52%	50%	55%
	Unfunded		48%	62	42%	49%	43%
Mozambique	National TB Budget	32,000,000	30,000,000	28,000,000	26,000,000	30,000,000	31,000,000
	International Contribution	307,200.00	28,500,000.00	22,400,000.00	22,880,000.00	26,400,000.00	27,280,000.00
	Unfunded	0.00	0.00	2,553810,48	0.00	0.00	0.00
Namibia	National TB Budget	38,468,061	56,245,815	49,009,625	50,337,515	25,396,357	18,328,600
	International Contribution	10,112,560	10,255,000	1,424,385	4,488,625	2,629,903	3,572,500
	Unfunded	8,854,446	28,982,018	19,644,696	15,108,377	10,409,079	12,603,300



Seychelles	National TB Budget	10,000	10,000	10,000	10,000	10,000	10,000
	International Contribution	0	0	0	0	0	0
	Unfunded	0	0	0	0	0	0
South Africa	National TB Budget	244 million	271 million	240 million	197 million	225 million	202 million
	International Contribution	10%	8%	13%	23%	28%	32%
	Unfunded	0	0	0	0	0	0
U R Tanzania	National TB Budget	70,000,000	64,000,000	61,000,000	56,000,000	43,000,000	49,000,000
	Domestic Contribution	2,100,000	1,920,000	2,440,000	8,960,000	9,460,000	4,410,000
	International Contribution	27,300,000	29,440,000	15,250,000	21,280,000	17,200,000	27,930,000
	Unfunded	40,600,000	33,280,000	43,920,000	25,760,000	16,340,000	17,150,000
Zambia	National TB Budget	13,635,969	37,757,572	31,038,850	49,040,750	37,755,340	42,978,955
	International Contribution	1,173,704	10,612,996	9,000,000	10,583,901	11,750,000	15,551,080
	Domestic contribution	7,023,307	19,656,672	13,381,207	10,362,456	19,584,448	21,654,482
	Unfunded	5,438,958	7,487,904	8,657,643	6,931,855	6,420,892	5,773,393



Zimbabwe	National TB Budget	18000000	30000000	41000000	32000000	32000000	21000000
	International Contribution	100%	57%	31%	98%	44%	61%
	Unfunded	0%	0%	69%	0.75%	50%	34%

Discussion

The burden of TB in the SADC region remains high with increasing case load, negative treatment outcomes and inadequate capacity to identify cases by some MS. This burden was worsened by the advent of the COVID-19 pandemic which reduced access to care, re-directed resources away from TB and increased TB mortality from reduced access to care. MS are encouraged to take advantage of the positive health system strengthening gains that resulted from the COVID-19 pandemic to catch up on TB case finding. The high proportion of new TB cases or more than 85% was an indication active ongoing transmission and inability to interrupt transmission. The inability to interrupt transmission maybe due to delayed diagnosis and early initiation of treatment and reduced access to care and treatment. It is strongly recommended that the SADC region should commission a TB transmission study to understand the causes of sustained transmission. This study should include assessment of the efficacy of available treatment regimens for both drug susceptible and drug resistant TB.

Treatment of drug sensitive TB used similar regimens across the MS, except for few countries that had high levels of primary isoniazid resistance that were using RHE during the continuation phase. Drug resistant TB treatment regimens were more than ten (10) across the MS. This was a good example implementing policies decisions based on no local evidence. Either circulating strains in the region had varied drug sensitivity patterns or the influence of low research capacity to ascertain both phenotypic and genotypic drug resistance. It is strongly recommended that a SADC wide research to profile the phenotypic and genotypic resistant for drug resistant TB cases be commissioned.

Treatment outcomes for MS were varied with some showing high mortality among HIV infected TB patients and others showing treatment success of more than 80%. Coupled with the transmission study recommended under case finding, understanding the causes of high mortality in the presence of both ARVs and quality assured anti-TB drugs is an important research question for the SADC region.

Although achievements towards the UNHLM targets were stalled by the COVID-19 pandemic and inadequate resources MS managed to innovate around the challenges and are still on track to achieve the targets. Common interventions targeted by MS were paediatric TB diagnosis, rolling out TB preventive therapy, introducing the newly recommended all oral bedaquiline based drug resistant TB treatment regimen and strengthening community active case finding. MS countries are encouraged to revise their UNHLM targets in line with the challenges brought about by COVID-19 and constrained resources.

There were only three countries that showed significant domestic financing of the TB programme. One of the UNHLM targets is to mobilize resources and increase funding to the TB programme. The continued reliance of the SADC region on international financing of the TB programmes is a risk to sustainability. Using the lessons from COVID-19, where most of the funding models were home grown, the SADC MS is strongly encouraged to mobilize and increase domestic financing for the TB programme.

Research, innovation and development were inadequate in the SADC MS, with most research being low priority and depending on international organizations for funding. It was therefore difficult to identify research and innovation activities that had been initiated and implemented by MS. This is despite the presence of several research questions to answer questions like persistent low treatment outcomes, continued TB transmission despite presence of quality assured medicines and strong national programmes. It is recommended that MS mobilizes and fund locally relevant TB research to ensure sustainable response to TB.

Best practices

To reduce the impact of COVID-19 and in response to the End TB Strategy of patient centered care, some countries introduced models for the community involvement in TB care. Communities assisted with raising public awareness, transporting samples to the community diagnostic centers and transported medicines to patients not able to visit the health facilities. This had an impact of improving access to care and treatment. A direct result of this intervention was the improved case finding and treatment success. Most SADC MS countries were implementing TB preventive therapy and adopted new treatment options such as isoniazid and rifapentine.

Some MS had introduced case-based TB surveillance with others further putting TB on the rapid disease surveillance system. Together with active community TB case finding strategies, this will further improve TB pick up rate.

Lessons Learnt

Reported significant reduction in TB mortality in both HIV positive and negative TB patients, reduced TB incidence by 20% point and improved use of WHO recommended rapid diagnostic tools were important achievements by majority of MS. As reported under the COVID-19 section, these observations may have been due to the reduced access to care associated with restrictions to movement at the peak of COVID-19 epidemic.²⁴ Studies to determine if the observed changes in the TB indicators are true and valid may be required.

²⁴ Quarraisha Abdool Karim et al. COVID-19: Impact on the HIV and Tuberculosis Response, Service Delivery, and Research in South Africa. *Current HIV/AIDS Reports* (2022) 19:46–53

The GeneXpert machines procured for COVID-19 testing, have benefited the TB programme and will further increase access to TB diagnosis in MS. Other countries have started introducing innovative models to improve case finding in children, for example, the use of stool for the diagnosis of TB in children.

Although few countries reported on TB activities towards reducing the burden of TB in mine settings, a significant number of countries had started implementing TB in mine activities. In the process, this had improved private and public partnerships.

Submission of quality reports by SADC MS seemed to have been problematic. Most MS requested for an improved tool for abstraction of data and minimise errors and timeliness of reporting. This was an ongoing activity by the SADC secretariat which require to be expedited. The secretariat is strongly recommended to outsource this activity and expedite the development of an electronic TB data collection tool. .

Challenges

Cross border TB activities, including TB case management still remain inadequate. The absence of uniform treatment regimen within MS and the inability to adhere to the SADC guidelines for the management of TB was still a challenge. Persistently wider gap between the TB incidence and actual notification in some countries and the declining paediatric cases maybe an indication of reduced access to good quality paediatric TB diagnosis. There was sub-optimal RR/MDR-TB case finding and case holding which will require improved investments from MS in RR/MDR-TB case finding.

Locally relevant research was being affected by inadequate local funding and over reliance on donor partners. Questions on why some countries still had high treatment failure rates, loss to follow up, deaths and loss to follow up are key and will need domestic financing. Results from these studies will assist in evidence-based programming.

Key Recommendations

Recommendations from MS to SADC

1. Advocate for smooth processing of pay out of compensation to ex-miners with TB.
2. Establish Pooled procurement for TB Drugs to decrease shortage of drugs either by expirations or delayed procurements across member states
3. Mobilise resources to support national TB programmes and reduce attrition of key personnel.
4. Introduce an electronic platform for data submission to minimize errors and enhance analysis at all levels

5. Develop a SADC specific reporting template and provide mentoring for completing the tool
6. Strengthen cross border collaboration and improve cross border referral of patients
7. Provide platform for member countries to share learning experience
8. Provide a platform to standardise the TB treatment and package of care in the region.
- 9.
10. Ensure linkage with other data collection systems by other UN Bodies, such as UNAIDS and WHO

Recommendations from Arising from the Report Evidence

- Outsource the development of the SADC TB data abstraction tool
- Advocate for the improved domestic financing of the TB programmes by SADC MS
- MS are encouraged to take advantage of the health system strengthening associated with COVID-19 to improve on TB diagnosis and treatment
- Harmonise TB treatment regimens and COVID 19 regulations within the region to avoid inconvenience to cross border transfer clients.
- SADC is encouraged to develop a SADC wide TB research agenda to respond to relevant questions promoting continued TB transmission in the region.
- SADC is strongly encouraged to commission a TB transmission study
- Increase domestic financing to the TB programmes in line with regional and international declarations
- Build MS research capacity and prioritise the conduct of relevant research projects

REFERENCES

- Southern African Development Community (SADC) *Regional Tuberculosis (TB) Strategic Plan 2020-2024*
- World Health Organization, Geneva. *World Tuberculosis report, 2021*
- David Sucker et al. *Mining and Risk of Tuberculosis in Sub-Saharan Africa*. American Journal of Public Health; March 2011, Vol 101, No. 3
- Sudipta Dhar Chowdhury and Anu Mary Oommen. *Epidemiology of COVID-19*. Journal of Digestive Endoscopy. 2020 Mar; 11(1): 3–7
- Mugwagwa, Julius; and Banda, Geoffrey. *The role of public private partnerships in Health systems: experiences from southern Africa* © 2020, The Scinnovent Center
- SADC. *Harmonised Minimum Standards for the Prevention, Treatment and Management of Tuberculosis in the SADC Region*; 2010
- E. Sinanovic, L. Kumaranayake. *Quality of tuberculosis care provided in different models of public-private partnerships in South Africa*. INT J TUBERC LUNG DIS 10(7):795–801; 2006
- Joudyian et al. *Public-private partnerships in primary health care: a scoping review*; BMC Health Services Research (2021) 21:4
- WHO. *Global Tuberculosis Report, 2021*, Chapter 7
- Florian M. Marx et al. *High burden of prevalent tuberculosis among previously treated people in Southern Africa suggests potential for targeted control interventions*. Eur Respir J 2016; 48: 1224–1227.
- IOM (Institute of Medicine). 2011. *The Emerging Threat of Drug-Resistant Tuberculosis in Southern Africa: Global and Local Challenges and Solutions: Summary of a Joint Workshop*. Washington, DC: The National Academies Press.
- African Union Development Agency (AUDA-NEPAD). *Southern Africa TB and Health Systems Support Project Desk Review Report 2020*

- Marc Lipman et al. *The impact of COVID-19 on global tuberculosis control*; Indian J Med Res 153, April 2021, pp 404-408
- Manhiça I, Augusto O, Sherr K, et al. *COVID-19- related healthcare impacts: an uncontrolled, segmented time-series analysis of tuberculosis diagnosis services in Mozambique, 2017–2020*. BMJ Global Health 2022;7
- Eike, D.; Hogrebe, M.; Kifle, D.; Tregilgas, M.; Uppal, A.; Calmy, A. *How the COVID-19 Pandemic Alters the Landscapes of the HIV and Tuberculosis Epidemics in South Africa: A Case Study and Future Directions*. *Epidemiologia* **2022**, 3, 297–313.
- Vanleeuw L, Zembe-Mkabile W, Atkins S (2022) *Falling through the cracks: Increased vulnerability and limited social assistance for TB patients and their households during COVID-19 in Cape Town, South Africa*. PLOS Glob Public Health 2(7):
- Thekkur,P.;Takarinda, K.C.; Timire, C.; Sandy, C.; Apollo, T.; Kumar, A.M.V.; Satyanarayana, S.; Shewade, H.D.; Khogali, M.; Zachariah, R.; et al. *Operational Research to Assess the Real-Time Impact of COVID-19 on TB and HIV Services: The Experience and Response from Health Facilities in Harare, Zimbabwe*. Trop. Med. Infect. Dis.2021,6,94.
- Martin-Hughes R, Vu L, Cheikh N, Kelly SL, Fraser-Hurt N, Shubber Z, et al. (2022) *Impacts of COVID-19-related service disruptions on TB incidence and deaths in Indonesia,*
- Kyrgyzstan, Malawi, Mozambique, and Peru: *Implications for national TB responses*. PLOS Glob Public Health 2(3)
- Teri Roberts et al. *Turning threats into opportunities: how to implement and advance quality TB services for people with HIV during the COVID-19 pandemic and beyond*. Journal of the International AIDS Society 2021, 24:e25696
- Results of a global civil society and TB affected community led survey. *The impact of covid-19 on the TB epidemic: a community perspective*. 2020



Quarraisha Abdool Karim et al. COVID-19: *Impact on the HIV and Tuberculosis Response, Service Delivery, and Research in South Africa*. *Current HIV/AIDS Reports* (2022) 19:46–53

**SADC HOUSE
PLOT NO. 54385
CENTRAL BUSINESS
DISTRICT
PRIVATE BAG 0095
GABORONE,
BOTSWANA**

