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List of Acronym

ACF	Active case finding
AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral therapy
BCG	Bacillus Calmette–Guérin Vaccine
CDC	Centers for Disease Prevention and Control
CHAM	Christian Health Association of Malawi
CHSU	Community Health Sciences Unit
CPT	Co-trimoxazole Preventive Therapy
CRL	Central Reference Laboratory
DOTS	Directly Observed Treatment Short Course Strategy
DR	Drug Resistant
DRS	Drug Resistance Survey
DST	Drug Susceptibility Testing
EGPAF	Elizabeth Glazer Pediatric Aids Foundation
EHP	Essential Health Package
EPTB	Extra Pulmonary Tuberculosis
EQA	Eternal Quality Assurance
EU	European Union
GLC	Green Light Committee
HIV	Human immunodeficiency virus
HMIS	Health Management Information System
HSA	Health Surveillance Assistant
IC	Infection Control
ICP	Infection Control and Prevention
iLED	Light Emitting Diode (Microscopy)
IPT	Isoniazid Preventive Therapy
LJ	Lowenstein Jensen
LMIS	Logistic Management Information System
LTF	Lost to follow-up
M&E	Monitoring and Evaluation
MDR-TB	Multi-Drug Resistant TB
MNCH	Maternal, Neonatal and Child Health
MoH	Ministry of Health
MSF	Médecins Sans Frontières
NAC	National AIDS Commission
NGO	Non-Governmental Organization
NICD	National Institute for Communicable Disease
NSP	National Strategic Plan
NTP	National TB Programme
NTRL	National Tuberculosis Reference Laboratory
OPD	Outpatient Department
PLHIV	People Living with HIV
PMTCT	Prevention of Mother to Child Transmission
PPM	Public-Private Mix
QA	Quality Assurance
RR-TB	Rifampicin-Resistant TB
SLDs	Second-line drugs
SSN	Sputum Smear Negative
SSP	Sputum Smear Positive

TB	Tuberculosis
TBCARE II	US – funded TB consortium led by URC
TSR	Treatment Success Rate
URC	University Research Corporation
USAID	United States Agency for International Development
TB IC	Tuberculosis Infection Control
WHO	World Health Organization
Xpert	Xpert MTB/RIF rapid molecular test
ZN	Ziehl-Neelsen

Executive Summary

Program and epidemiological review was undertaken: The national TB control program (NTP) with support from partners has conducted Program review to inform the new strategic plan. The program review was done by local and international consultants.

National prevalence survey completed: The National TB prevalence survey completed in 2014 with preliminary results released indicating higher TB burden than previously estimated. The prevalence rate was estimated to be 451/100,000 (95% CI 308-594).

National strategic plan developed: The National Strategic Plan was developed in 2014 and covers the period from 2015/6 to 2019/20. The NSP has gone through extensive process of situation analysis and review process.

DOTs coverage: TB service was provided in 251 registration sites with 276 TB microscopic centers. Forty two Xpert machines were functional in 40 facilities.

Declining TB case finding: TB Case finding has declined to 17, 723 from 19,539 in 2013. All districts reported declined TB case findings.

Improved treatment success rate: Treatment success rate has increased to 84 % from 83 % (all notified cases). Treatment success rate (SS+) is at 86% for those who were evaluated at the end of treatment.

Increased MDR/ RR case finding and enrollment to treatment: In 2014, a total 106 RR/MDR cases were reported. Of these, 19 were confirmed cases and 17 were put on second line treatment. There were 87 Rifampicin mono-resistant cases, of which 47 started receiving 2nd line treatment.

Treatment success rate for 2012 cohorts of MDR TB patients was 63%. Negligible number of patients were labelled as 'cured' showing existing challenges of following patients using culture.

Integrated TB/HIV supportive supervision: The NTP is working in collaboration with HIV department to improve supervision, data management and quality of TB service.

Background: National Tuberculosis Program

The Malawi National Tuberculosis Control Program (NTP) was established in 1964 under the Ministry of Health to coordinate the national response in the fight against TB in the country. Currently, the NTP structurally falls under the Directorate of Preventive Health Services in the Ministry of Health. The day to day management of the program is the responsibility of a Program Manager who is supported by a Deputy Program Manager and various programme officers at national, zonal, district and facility levels. Tuberculosis control activities are fully integrated within the decentralized general public health system of the country, and private health facilities also provide tuberculosis control services under a central government brokered Public Private Partnership (PPM) framework.

In general, TB services are provided free of direct cost to clients at point of care and TB is among the priority Essential Health Package (EHP) conditions. By the end of the 2013 fiscal year, just over 19,000 new tuberculosis patients were notified nationally. Decentralization of TB diagnostic and treatment services to facilities lower than the district hospitals is an ongoing process.

Microscopy (both light and florescent) remains the mainstay for TB diagnosis in Malawi with radiology as an adjunctive technology where it is available.

The national TB Reference Laboratory (NTRL) provides high level diagnostic services including solid and liquid culture to confirm TB before performing drug sensitivity testing on selected specimens from across the country. The NTRL is also responsible for quality assurance services to peripheral laboratories.

The Ministry of Health is the only source of all anti-tuberculosis medications and commodities to ensure quality assured treatment and rational drug use in all public and private health facilities in the country. The tight drug regulation and management has helped the country to register one of the lowest prevalence rates of drug resistant TB in the region (0.4% among new and 4.8% among previously treated patient populations).

Methods/materials

Routine TB reporting system: The routine reporting system uses the structure of the decentralized health system where by data flows from health facility, district, zone to national control program. Facility level data is available at national level. The routine reporting system captures the following data elements

1. Notification data (disaggregated by age, sex and diseases category /classification)
2. Treatment outcome for new and retreatment cases with the following disease categories;
 - a. Smear positive
 - b. Smear negative
 - c. EPTB
 - d. Relapse cases
 - e. Treatment after failure, treatment after lost to follow up and others
3. TB HIV
 - a. Documentation of HIV test result among TB patients registered during reporting period
 - b. Number of HIV positive TB patients
 - c. ART and CPT coverage for newly registered TB / HIV coinfectd patients during the reporting period

MDR TB/ RR cases: Case detection data relies on the national reference lab data. Reported confirmed MDR TB cases during the reporting period are included in the report.

GeneXpert site: Data on GeneXpert was received from Project Hope and URC. While compiling Rifampicin Resistant cases, double counting was avoided through making comparison with a list of confirmed cases with the national reference laboratory.

RR/MDR TB treatment: MDR TB treatment register is used to report enrollment for treatment and follow up. A master register is kept at national level with the MDR TB focal person. Second line treatment initiation is reported by zonal TB officers.

Reported RR-TB cases may not reflect all illegible patients from second line treatment. All RR cases except for some other clinical condition required to go through second Xpert test to make decision on illegibility for second line treatment.

Supervision report: The NTP piloted a new supervision tool in March 2015. The data was used to report on the performance of selected indicators for Oct- Dec 2014. The supervision was done in 108 health facilities.

Result

Patient centered care and treatment

TB notification

The number of notified TB cases peaked in 2003 and 2005 at 25,841 and 25,491 respectively. Since 2009 a declining trend was observed for six consecutive years.

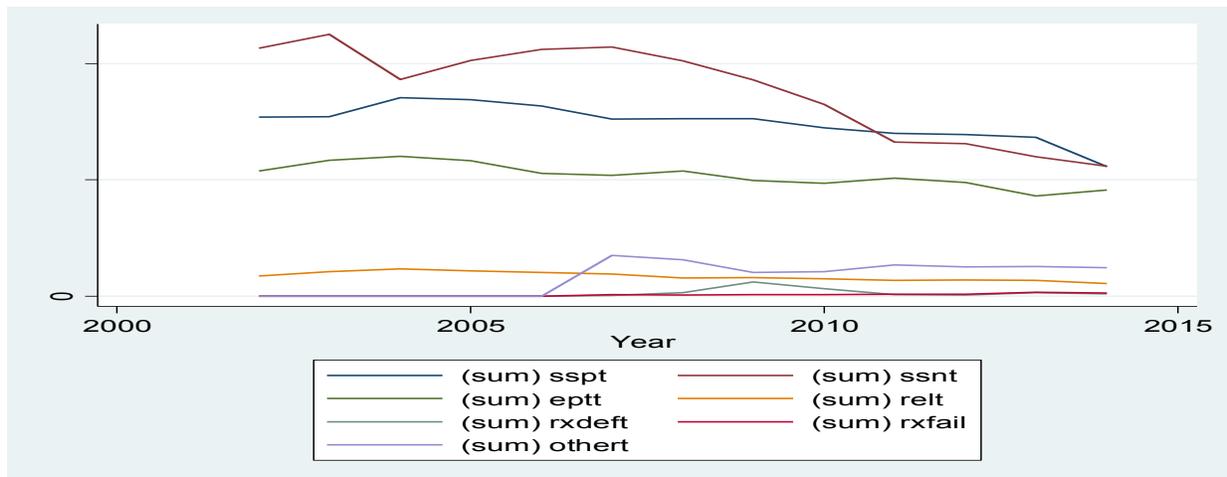


Figure 1 Trend notification of all forms of TB cases 2002—2014, Malawi.

The notification rate(all forms) was 106/100,000 for 2014. Notification rate has declined in all districts; however the rate of decline varied across districts. The highest rate of notification was in districts located in South Western zone. Routinely collected data shows that TB case notification rates are heterogeneous. Although the trend in notification rate declined over the past years, those districts with relatively high rates of TB notification tend to continue with relative high rates when compared with others (See figure 3). Those with low notification tend to maintain their low ranking despite an increased coverage of DOTs service.

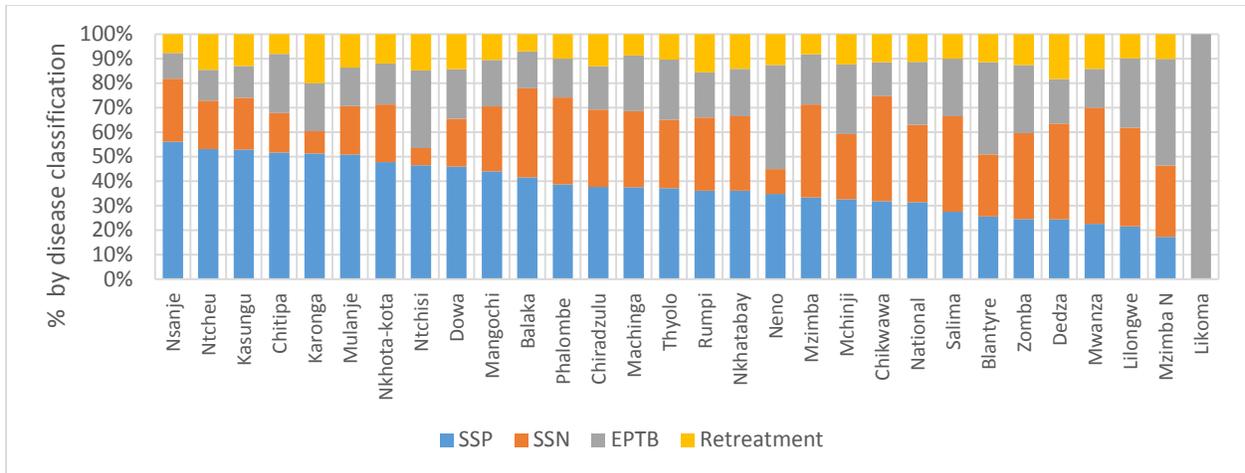


Figure 2 Distribution of by disease classification and category by district , 2014, Malawi.

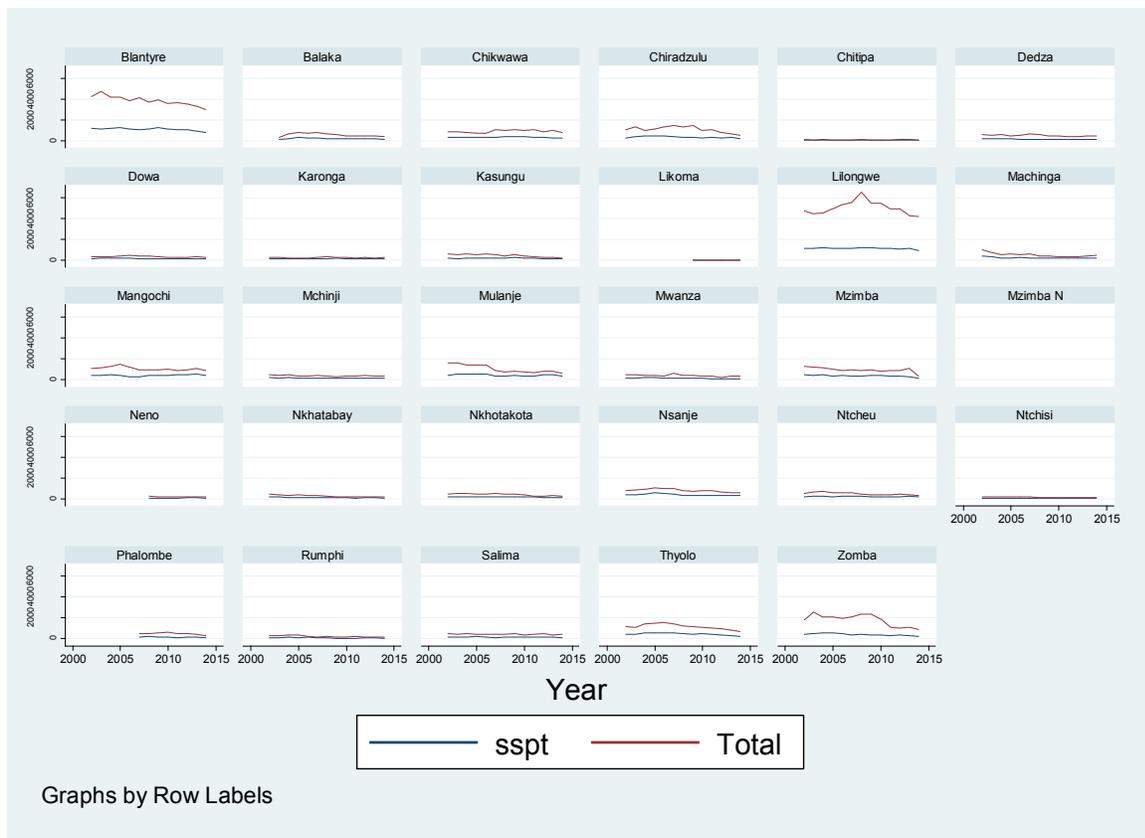


Figure 3 Trend notified smear positive and all forms of TB case by districts, 2002-2014, Malawi.

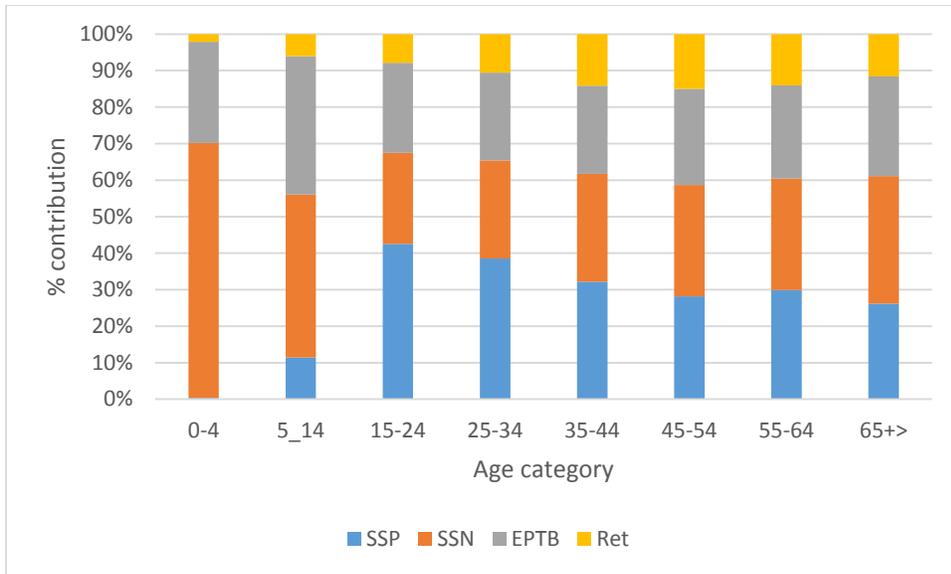


Figure 4 Distribution of categories of TB by age, 2014, Malawi.

Figure 4 shows that the proportion of bacteriologically confirmed TB was lowest in children under five years. Figure 4 also shows that the proportion of EPTB cases was highest among children 5-14 years (37.9%). On the other hand, the proportion of retreatment cases tend to increase with age. Improving access to more feasible, applicable and valid diagnostics methodology is of paramount importance for TB in children.

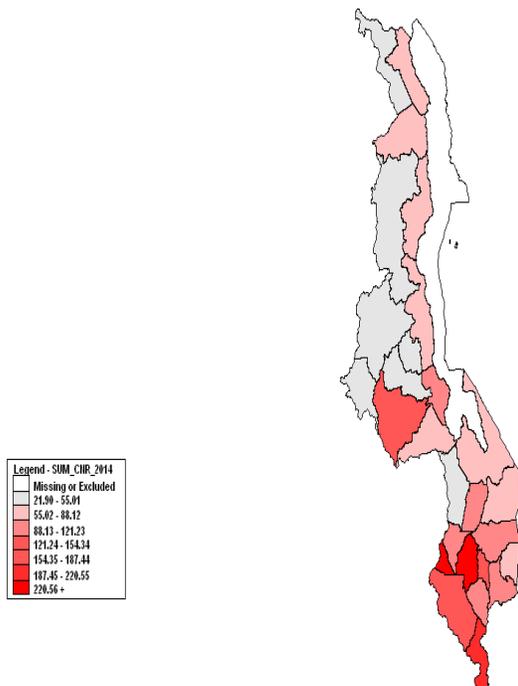


Figure 5 Distribution of TB notification rate across districts, 2014, Malawi.

Contribution of smear positive TB cases to all notified TB cases varies across districts. Nearly 31% of all notified TB cases in Malawi in 2014 were new smear positive TB cases. Nsanje has the highest percentage (56%), followed by Ncheu and Kasungu.

Lilongwe, Blantyre and Zomba continue to be the largest contributing districts of notified TB cases. (See figure 6)

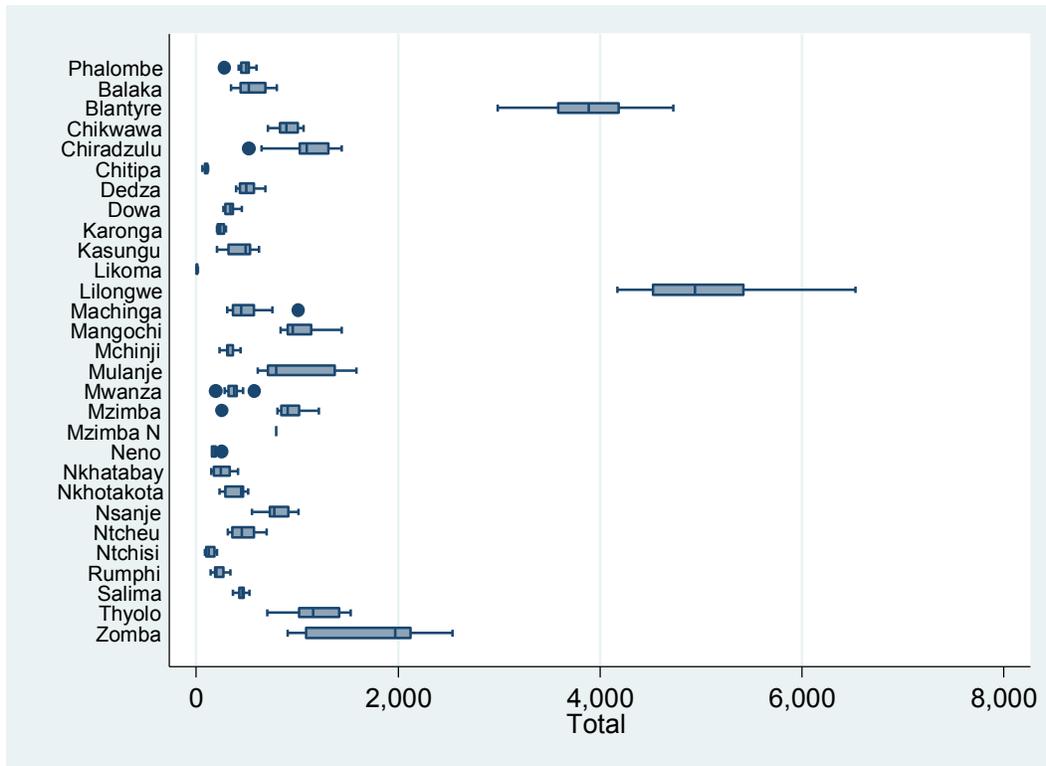


Figure 6 Box plot showing distribution TB notification by district 2002-2014, Malawi.

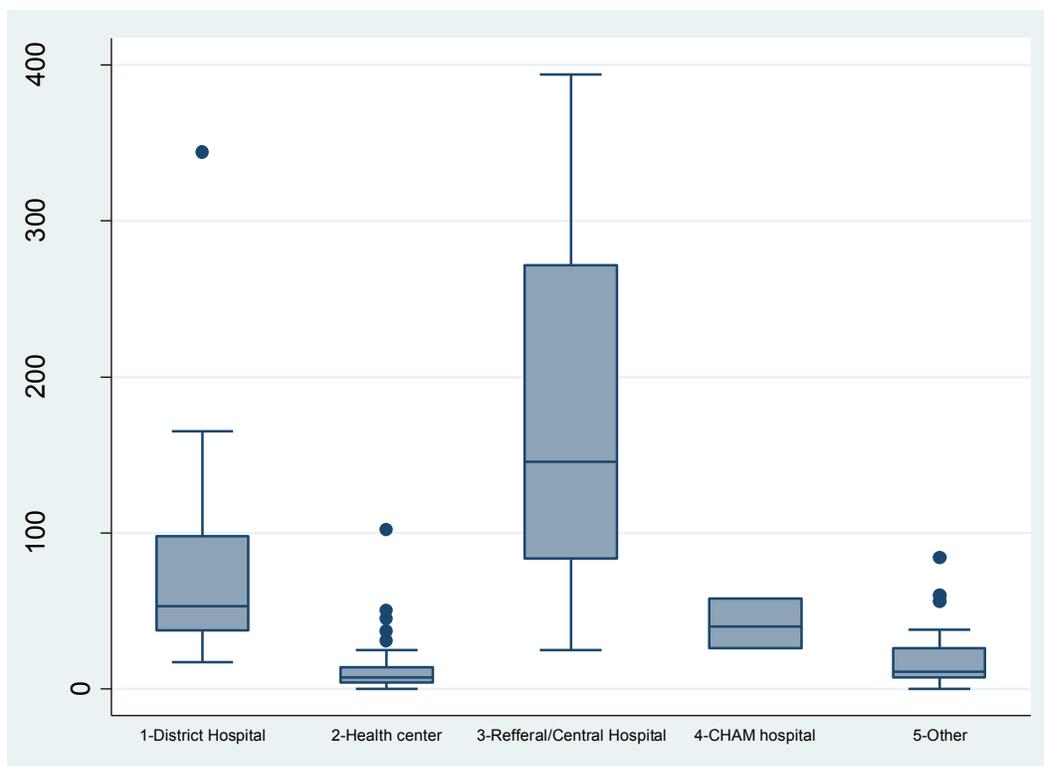


Figure 7 Distribution notified TB cases by level of health facility, 2014, Malawi.

The figure above shows that the country's central hospitals having high volume of TB patients followed by district hospitals. Possible explanations for this skewed variance include high population density and poor living conditions in cities as opposed to districts as well as patient-perceived quality of care in hospitals vs health centers.

Challenges

- ✓ High rate of decline in TB notification in the past 3 years.
- ✓ Difficulty of monitoring case detection effort (# presumptive TB cases) as data on the number of presumptive TB cases and presumptive TB cases examined in the lab is not available.
- ✓ High level of variation in TB notification among different districts.
- ✓ High patient volume in hospitals even after the expansion of DOTs service to more health centers

Action plan / action taken

- ✓ Improve implementation of systematic TB screening in health facilities.
- ✓ Accelerate the process of decentralization, offloading the high volume of registered TB cases to health centers.

Case detection effort

In 2014, NTP drafted a standard operating procedures (SOP) for systematic TB screening in health care settings. The SOP includes instructions what should be done by district, health facility management and TB and HIV clinics. The targets for the systematic screening are part of the SOP. The following key activities are included;

1. Establish and strengthen a multidisciplinary team (TB/HIV committee)
2. Improve the capacity of OPD clinicians, and nurses to do proper TB screening with provision of job aids and algorithm, onsite training and supervision.
3. Ensure adequate quality laboratory service at health facility level.
4. Ensure the establishment of intra-facility referral mechanism.

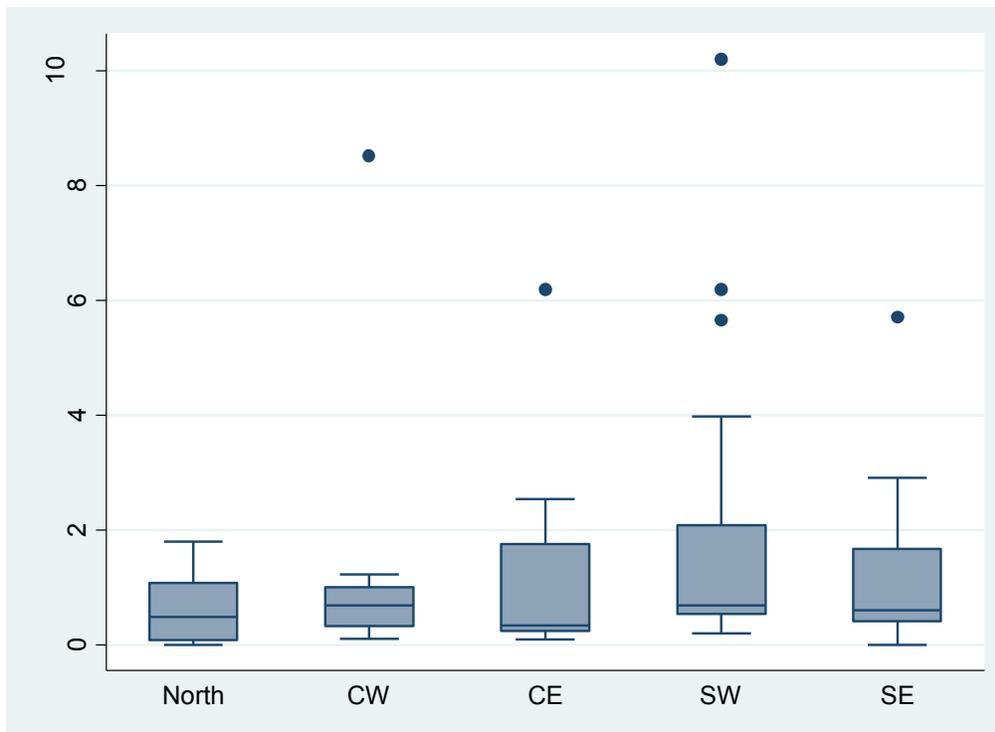


Figure 14. Median proportion (%) presumptive TB cases among OPD visitors, Malawi, Oct-Dec 2014

Table 1 Estimated case detection effort in OPD, Malawi, *Oct-Dec 2014*

Zone	# OPD clients	Total microscopic examinations	% Presumptive TB cases
North	185,684	1,116	0.60
Central West	366,243	2,564	0.70
Central East	133,054	660	0.50
South West	231,954	2,551	1.10
South East	303,072	1,969	0.65
Total	1,220,007	8,860	0.73

Based on the data available from the quarterly supervision, the proportion of presumptive OPD clients among OPD clients was found to be less than 1%. According to the national tuberculosis prevalence survey more than 5 % of the study participants were found to presumptive TB cases using symptomatic TB screening. In addition to this, the participants of the prevalence survey are apparently healthy as compared to sick patients visiting OPDs of health facilities. There seems to be high level of missed opportunity for TB case finding is health facilities. This is a one of key interventions of the case finding strategy.

Challenges

- ✓ Low case detection effort in health care settings / facility

Action plan/ action taken

- ✓ Ensure that case detection SOP implementation is taking place in all health facilities
- ✓ Ensure all OPD clients are properly screened for TB.

Treatment outcome

Of all patients that were notified in 2013 (19,359), 17528 cases were evaluated in 2014.

Treatment outcome for retreatment was not complete. Treatment success rate was 86% for 2013 cohorts of smear positive TB patients and evaluated during 2014.¹

Patients with EPTB had the highest rate (12.9%) followed by smear negative pulmonary TB cases (11.7%) and sputum smear positive TB cases (6.9%).

More than 98% of smear positive and smear negative TB cases were evaluated while less than 50 % of the retreatment cases were evaluated at the time writing this report.

¹ Based on data compiled by June 2015

Table 2 Treatment outcome by category disease classification cohorts of 2013, Malawi.

Variable	Number Evaluated	Number Notified	TSR	TSR eval	Death	LTF	%Evaluated
EPTB	3847	4308	74.5	83.4	12.9	1.0	89.3
SSN	5878	5985	83.3	84.9	11.7	1.1	98.2
SSP	6665	6817	83.9	85.8	6.9	3.0	97.8
Total	17528	19359	76.9	84.9	10.1	1.8	90.5

Note: Death and LTF rate were calculated for patented who have been evaluated at the end their treatment completion

Table 3 Treatment outcome Retreatment 2013 cohort (Oct-Dec 2013 cohorts), Malawi.

Variable	Rx after failure	Other	Relapse	Rx after Lost to follow up
Total in cohort	30.0	233.0	106.0	19
TSR	83.3	79.4	80.2	78.9
Cure rate	73.3		78.3	52.6
Death rate	3.3	13.7	5.7	0.0

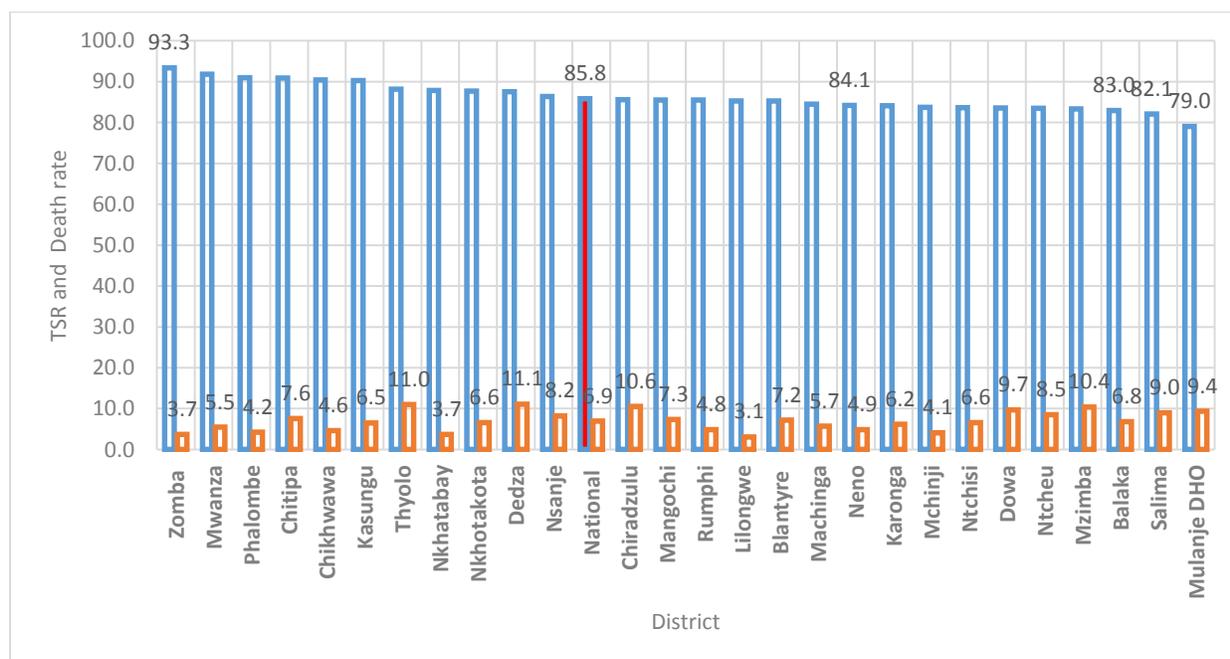


Figure 8 TSR of new smear positive pulmonary TB cases registered in 2013 by district, Malawi.

District level performance

Zomba, Mwanza and Chitipa had the highest level of treatment success rate while Mulanje, Salima and Balaka had the least level of performance (Mulanje performing <80%).

The national death rate for new sputum smear positive TB cases was **6.9%**. Yet again district variation was observed. The death rate was highest in Dedza (**11 %**) followed by Thyolo and Chiradzulu. On the other hand, Lilongwe, Nkatabay and Zomba (<3%) had the lowest death rate.

The national average for lost to follow up (LTF) was **3%** which is consistent with the global expectation. High LTF was observed in Balaka (**7.4%**), Mulanje (**6.5%**), and Machinga (**6.3%**). Districts sharing international border tend to have high LTF rate. Patient follow up system including defaulter tracing need to be strengthened in these areas.

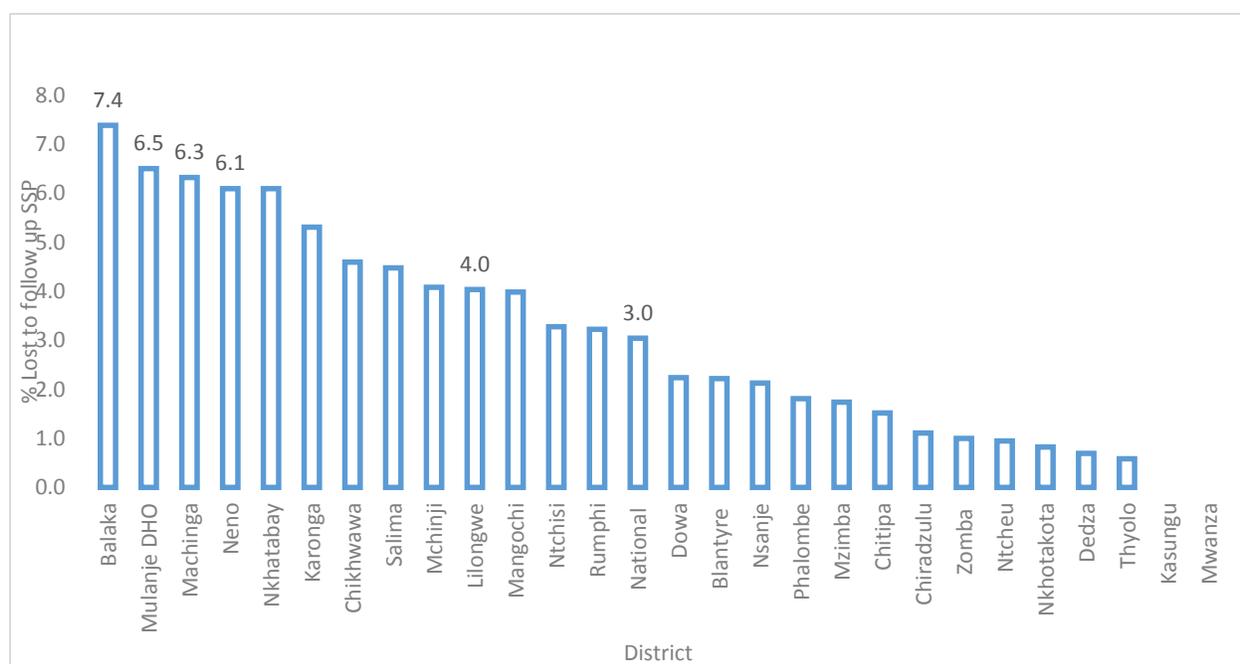


Figure 9 Level of lost to follow up among smear positive TB patients, 2013 cohorts, Malawi

There was no complete data for retreatment cases. We opted to use the supervision data undertaken by the MOH taking into account all of its potential limitations. Treatment success and death rates for Relapse cases were 80% and 5.7% respectively (See Table 3 below). More patients were evaluated among patients in 'Others' with Treatment Success Rate of 79.4%

Table 4 Treatment outcome Retreatment 2013 cohort (Oct-Dec 2013 cohorts), Malawi.

Variables	Rx after failure	Other	Relapse	Rx after Lost to follow up
Total in cohort	30.0	233.0	106.0	19
TSR	83.3	79.4	80.2	78.9
Cure rate	73.3		78.3	52.6
Death rate	3.3	13.7	5.7	0.0

TB /HIV treatment outcome

Based on routine HMIS data, the proportion of newly registered TB patients with HIV test result was 92 %. During the review period, a total of 1,765 TB/HIV patients were evaluated. Of these, 79.71 % had successfully completed TB treatment. There is a slight non-significant difference with HIV negative /Unknown groups (80.0%).

TB patients with HIV infection have increased risk of death (11.8% vs 7.4%) /P value <0.001/. The significant high death rate among PLHIV can be attributed to their comorbid condition.

Patients who are HIV positive have lower rate of lost to follow up as compared to HIV negative patients (5.7 vs 8.1%) /P value<0.001/. An improvement in ART coverage among TB patient might have contributed to this achievement. Higher risk of lost to follow up was noted among HIV negative patients. Patients with HIV might have better adherence to treatment as a result of their long term relationship with health care providers.

In general, prevention of lost to follow up and tracing mechanisms of lost to follow /interrupters need to strengthened

Table 5 Comparison of treatment outcome of TB/HIV vs HIV negative TB patients, Malawi.

Item	All notified cases	TB/HIV coinfectd patients	HIV negative including patients with UK status
Total number in a cohort	3748	1765	1983
Treatment success rate	79.9%	79.70%	80%
Dead	9.5	11.9	7.4
LTF	7	5.7	8.1
Not Evaluated	2.9	2.3	3.4

*UK = unknown status

Challenges

- ✓ TSR for new SSP, SSN and EPTB is comparable.
- ✓ Proportion of patients ‘not evaluated’ was high in retreatment groups ‘

- ✓ High death rate among smear negative, EPTB, retreatment and HIV positive individuals.
- ✓ Unacceptable variation in treatment success rates among districts.
- ✓ Treatment cards are not easily accessible for verification in some facilities.

Action plan /actions taken

- ✓ Improve recording and reporting of treatment outcome (TB unit register, TB treatment card)
- ✓ Explore factors contributing to high death rate in the smear negative and EPTB cases.
- ✓ Closely work with districts that have high death rate and lost to follow up cases.

Tuberculosis Laboratory service

Microscopy

Malawi has 276 TB microscopy centers with 88 of these centers using Fluorescent technique (iLED). The coverage of microscopic center to population was 1 center per 61,594 population. This is above the recommended 1 per 100,000 population indicating good coverage of microscopy services. .

Volume of patient per microscopic center varies according to the type of facility/zone. Central West Zone has the highest median number of microscopic examination per facility.

The overall median number of tests performed was low as compared to WHO standard. Health centers had the lowest median number of tests performed. Whilst referral hospitals had the highest median number of tests per facility.

The weekly slide volume was low in health centers (3.2/per week) which is below WHO recommendation². The number of these tests are affected by the referrals of presumptive TB cases from different units in health facilities. With the implementation of ACF /systematic TB screening, the number of tests are expected to increase helping to optimize utilization of existing microscopes.

Table 6 Volume of microscopic examinations by type of health facility projection Oct –Dec 2014,.

Type of health facility	Median Test per quarter	Median # patient / day	Median # per week
Referral hospital	388	6.5	32.3
District Hospital	155	2.6	12.9
Health center	38	0.6	3.2
CHAM hospital	53	0.9	4.4

² WHO . Policy Framework for implementing new Tuberculosis diagnostics. March 2010

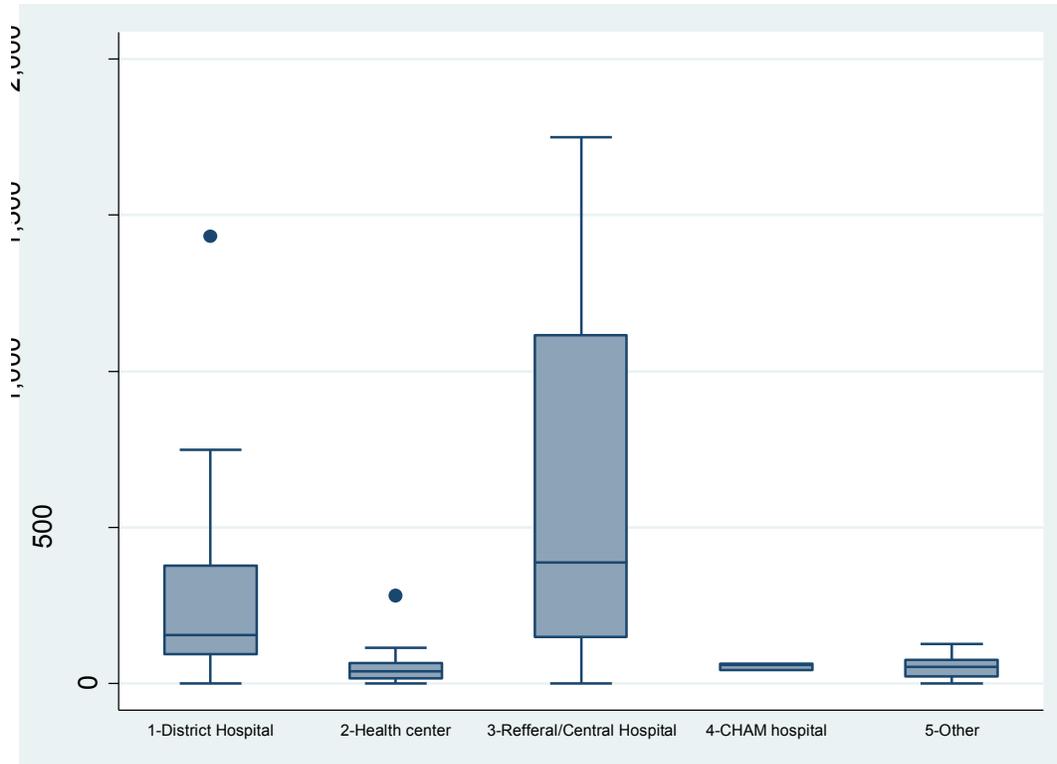


Figure 10 median number of microscopic examination per quarter by type of health facility , , Malawi , Oct –Dec 2014.

Table 7 TB microscopy performance in 108 TB microscopic sites, Malawi, October Dec, 2014.

zone1	Total presumptive TB cases ZN	positive ZN	Slide pick up rate ZN	N presumptive tests LED	Pos LED	SPR (LED)
North	395	31	7.8	875	60	6.9
CW	1786	62	3.5	2013	294	14.6
CE	352	44	12.5	591	76	12.9
SW	1250	193	15.4	1983	191	9.6
SE	157	19	12.1	3703	274	7.4
Total	3940	349	8.9	9165	895	9.8

The overall average slide pick rate was 9.5 % (based on Quarter I data from 108 facilities). The pickup rate was higher for LED microscopy (9.8 %) vs ZN (8.9%). The overall pick up rate is consistent with the expectation for LED microscopy.

Zones had different slide pick rate. Disease burden, screening criteria and actual case detection efforts have effects on the pick rate which may explain the differences.

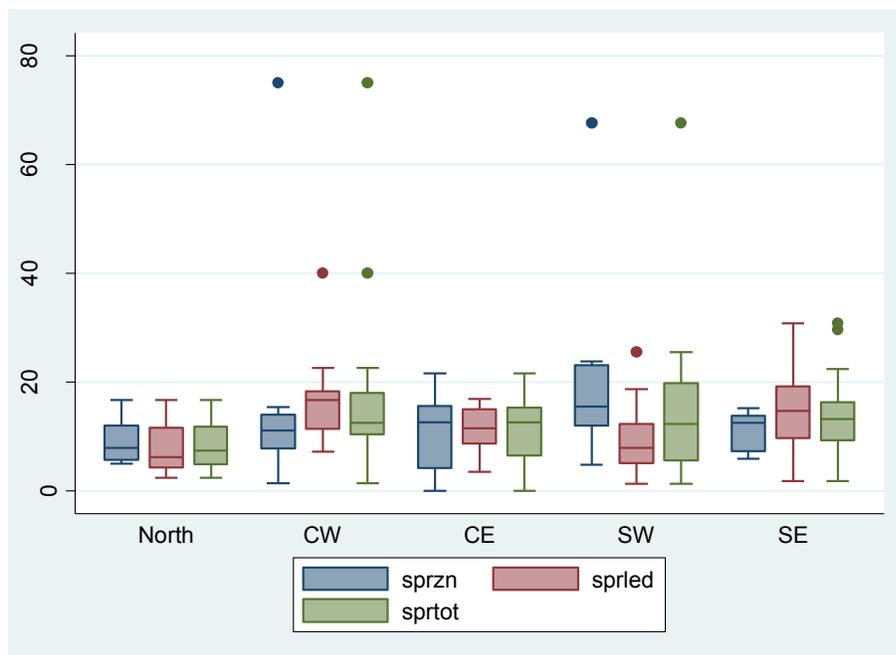


Figure 11 SPR by type test and zones, Malawi , Oct –Dec 2014.

Training

A total of 59 microscopist were trained in 2014. Of these, 22 microscopist were from the Northern region, 17 from Salima (central region) and 20 from Zomba.

Supervision

In 2014, there was no laboratory supervision organized at national level due to funding challenges. Partners had supported supervision in their respective implementation areas. It is expected that funding will be secured for the subsequent quarters.

GeneXpert

There are 46 gene Xpert machine in 42 facilities with Bwaila, Zomba, Chiradzulu and QECH(Queen Elizabeth Central Hospital) having two machines. Four of these machines have two module platforms and the rest are four module platforms.

Table 8 project hope and URC GeneXpert uptake, utilization and yield in project hope and URC implementation sites, , Malawi. Jan- December 2014

Zone	# cartridge use	Presumptive TB cases	MTB +	Rif resistance cases	% yield	error / wastage	% error /invalid
URC	8809	8058	1026	45	12.73	751	8.52
Project hope	6001	5414	616	28	11.38	587	9.78
Total	14810	13472	1642	73	12.19	1338	9.03

A single GeneXpert machine has a potential to run 2,000 tests under a conducive environment. A Quarterly data(Oct-Dec 2014) from 33 Xpert sites revealed that on average 60 test are run per a machine (238/per year). Zonal variation was noted with Xpert utilization. There seems to be limited uptake of Xpert machines in Central East zone. As the registration for lab allows patient level information, it is difficult to account for the number of errors and wastage and potentially it may underestimate the error / invalid test contributions.

Table 9 table summarizing GeneXpert use and yield in 33 Xpert facilities Malawi,b October -December 2014,.

Zone	Presumptive TB cases	MTB +	MT B+ RIF +	Indeterminate	% error	%MTB+ cases	Number Xpert facilities	# test per machine /Quarter	Projected annual utilization
North	141	25	7	4	8.51	17.7	6.	23.5	94.0
CW	726	146	6	6	3.03	20.1	9	80.7	322.7
SW	761	117	4	1	1.0512	15.4	10	76.1	304.4
SE	341	38	5	1	0.2933	11.1	5	68.2	272.8
Total	1970	327	22	12	2.1827	16.6	33	59.7	238.8

Training Xpert

A total of three training sessions were conducted. Fifteen super users were trained (training to run the tests). In addition, 55 health workers received the normal training targeting clinicians and nurses.

Culture and DST

Malawi has 3 public culture and Drug Susceptibility Testing (DST) facilities. These are;

- Partners In Hope – MGIT 960,
- Mzuzu TB regional laboratory – MGIT 960
- National TB Reference Laboratory (NTRL) that do both solid – LJ and liquid – MGIT 960.

There are also four private TB culture laboratories namely Karonga Preventive Study (KPS), UNC, Welcome Trust and College of Medicine.

Table 10: Profile of samples processed in national reference laboratory, Malawi 2014

	Number cases	Percent	% resistance from 65 with any resistance
Total number samples	707		
Smear positive	412	58.3	
Culture positive	390	55.2	
Resistance to any anti TB drugs (INH, RIF and strept)	65	9.2	
Resistance to streptomycin	27	3.8	41.5
Resistance to INH	31	4.4	47.7
Resistance to Rifampicin	41	5.8	63.1
Resistance to both RIF AND INH	19	2.7	29.2

The analysis showed proportion of resistance to Rif is growing among presumptive MDR TB cases in the last 3 years. Proportion exceeded resistance to INH. The change could be attributed to shift in regimen from Ethambutol/INH to Rifampicin and INH. Proportion of samples with resistance to streptomycin has also declined

Samples from 707 presumptive TB cases were processed in the national reference laboratory in 2014. Forty one were new TB patients and 640 were previously treated patients. Of these, 410 (58.3%) individuals were smear positive and 390 (55.2%) individuals were culture positive. Sixty five individuals (9.2%) had at least one resistance to one of the anti-TB drugs. Higher level of resistance was shown for Rifampicin followed by INH. This is contrary to the national drug resistance survey (DRS) where INH resistance had a higher proportion than Rifampicin resistance.³

Quality assurance

Currently, the country is not doing panel testing to all of its 276 microscopy centers. Only the NTRL and Microbiology laboratory at CHSU receive panels from NICD South Africa.

The supervision in March 2015 revealed of the 108 facilities supervised, 46 reported that they had EQA. Of these support, 36 participated in blinded rechecking, 8 facilities received a feedback from the supervision and only 4 facilities had onsite supervision in the previous quarter. Thirty five of GeneXpert facilities had received an EQA with support from CDC.

³ Michael Abouyannis, a Russell Dacombe, a Isaias Dambe, b James Mpunga, b Brian Faragher, a Francis Gausi, b Henry Ndhlovu, c Chifundo Kachiza, d Pedro Suarez, e Catherine Mundy, e Hastings T Banda, c Ishmael Nyasuluf & S Bertel Squirea...; Drug resistance of *Mycobacterium tuberculosis* in Malawi: a cross-sectional survey. *Bull World Health Organ* 2014;92:798–806 | doi: <http://dx.doi.org/10.2471/BLT.13.126532>

Challenges

- ✓ Unavailability of funding for regular supervision
- ✓ Suboptimal utilization of microscopic centers
- ✓ Weak EQA system in general
- ✓ Suboptimal utilization of GeneXpert machines
- ✓ Low awareness of the health care providers in GeneXpert utilization
- ✓ Weak sample transportation mechanism
- ✓ Absence of laboratory information system

Action plan TB microscopy service

- Ensure that the facilities receive regular supervision and quality assurance (internal and external quality assurance)
- Strengthen IEC at community level in order to create awareness and demand for TB services
- Strengthen specimen transportation system from facilities to district hospitals

Action plan GeneXpert

- Improve sample transportation system
- Create awareness among clinicians, nurses and other allied staff to improve utilization of GeneXpert
- Ensure sustainable implementation of Xpert technology

High risk and vulnerable population

TB in prison

The National Tuberculosis program is working towards improving TB situation in prison. A technical working group has been established to guide its implementation. Partners are also taking part and supporting the intervention in different prisons in the country.

In March 2015 as part of commemorating the World TB Day, TB screening was done in Mzimba prison. A total of 669 prisoners were screened for TB. Of these 62 TB cases were identified translating to 9,297 per 100,000 population (95% CI (7241,1165) . The prevalence of smear positive TB alone was also 1,793/100,000 (95% CI (975, 3030) which is nearly 9 times higher than the general public. This intervention is also implemented in other prison facilities.

Table 11 Result of TB screening in Mzimba prison, March Malawi. 2015

Variable	Male	Female	Total
Total number of prisoners screened at Mzimba	627	13	640
Number of prison staff examined	20	9	29
Number of chest X-rays taken	624	13	637
Smear Positive diagnosed	12	0	12
MTB+ (Xpert) and Smear positive TB cases	62	0	62
Confirmed Rifampicin Resistant positive	5	0	5

Challenges / issues

- ✓ Different screening criteria were used which may affect interpretation of the intervention findings.
- ✓ Different data capturing tools used by partners.
- ✓ Shortage of mobile chest x-rays in some prison facilities.

Action plan/ taken

- ✓ Strengthen the implementation through strengthening partnership with stakeholders.
- ✓ Establish a standardized monitoring mechanism that will be used by all implementing partners.
- ✓ Ensure compliance to screening algorithms.

TB in mines

Tuberculosis in mines is a priority of the national Tuberculosis program. A regional TB in mines proposal has been submitted to Global Fund. Ministry of health, labor and mines are working on TB in mines project that will be implemented over five years.

Childhood TB

Childhood TB contributes to 10% of all notified TB cases (6% in children <5 years and 4% in children 5-14 years) . The contribution greatly varied among districts. Lilongwe and Zomba had the highest rate whilst Chiradzulu and Rumpi had the least childhood TB cases. The difference can be attributed to disease burden and access to service.

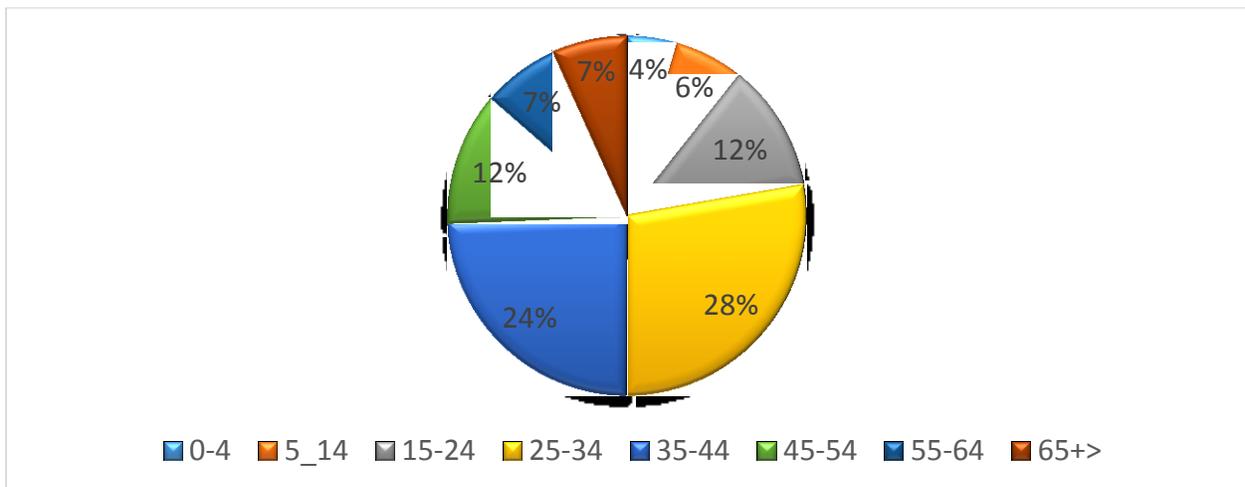


Figure 12 Distribution of notified TB cases by age group, , Malawi.2014

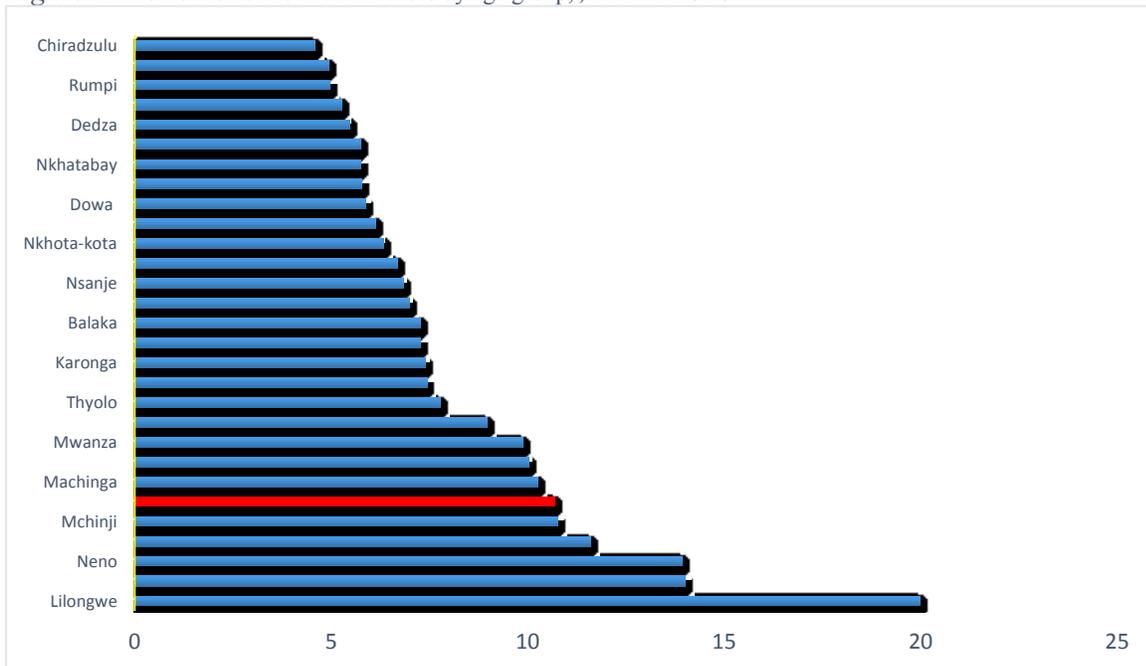


Figure 13 Proportion of children among all notified TB cases, Malawi. 2014,

Table 12 Comparison of treatment outcome of children and all age groups of patients enrolled October – December 2013, Malawi.

Item	Children (0-4 yrs)	Children (5-14 yrs)	All age groups
Total number in a cohort (#)	133	214	3,718
Treatment Success Rate (%)	81.95	86	79.88
Death rate (%)	10.52	3.72	9.52
Lost to follow up (%)	6.79	3.25	6.96
Not evaluated (%)	6.76	6.5	2.88

Treatment outcome for children with TB

During the period (October –December 2013, a total of 347 children were in a cohort for their treatment outcome. Of these, 133 were children aged between 0-4 years old.

More than 80% of children with tuberculosis have successfully completed treatment. The treatment success rate was higher among children aged 5-14 (86%) than children <5 (82%).

The unfavorable treatment outcome among 0-4 years were death (10.5%) and lost to follow up (6.79%). Younger children have increased risk of having unfavorable outcome. The risk of death was 3 times higher than older children. They also had increased risk of being lost to follow up than older children. Specific cause of death among young children need to be explored.

IPT and contact investigation (see prevention section)

IPT is given to exposed children 5 years and below who have contacts with pulmonary TB patients and only when an active TB has been ruled out. As children below 5 years usually get infected by adults, guardians or members of the household with TB, contact investigation has been emphasized by the program. For details on IPT and contact investigation see the Section on Prevention below.

Challenges

- ✓ Yield of contact investigation for case finding has been low
- ✓ Limited capacity to diagnose TB among children / rule out TB among children in health facilities.
- ✓ No systematic integration of TB into MNCH service outlets
- ✓ Reliance on passive approach to contact investigation

Way forward

- ✓ Strengthen the implementation of contact investigation
- ✓ Improve the capacity of health workers to diagnose and manage childhood TB
- ✓ Collaborate with MNCH departments to facilitate the screening of TB among children
- ✓ improve on screening for TB among children with symptoms

MDR-TB

Cases with multidrug resistant tuberculosis (MDR-TB) were diagnosed in Malawi since 1996. The NTP developed guidelines for programmatic management of MDR-TB in 2007 adopting the WHO guidelines. This was followed by training of district health teams that were responsible to manage MDR TB patients in their districts.

The NTP started treating patients with multi-drug resistant tuberculosis in September 2007. Malawi adopted community based management of MDR-TB cases during the same period.

Case finding/detection

GeneXpert is used as primary test for Presumptive MDR-TB cases. In 2014 there were 65 Rifampicin resistant cases reported by project Hope and URC after taking into account confirmed MDR TB cases⁴. Of those reported, 47 RR-TB cases were started on SLDs. The largest number of RR-TB cases were reported from South Western zone.

The total number RR/MDR TB cases reported in 2014 was 106. Of the reported Rifampicin resistance cases, the NTRL reported 19 confirmed MDR TB cases. And 65 RR-TB cases were reported through Xpert. Additional 22 isolated Rifampicin resistant cases were reported by NTRL.

The reporting of RR-TB cases has not be well established and the source of data for this report was compiled from partners.

In year 2014, out of a total of 707 patients whose samples were sent for DST, 19 were confirmed cases from 13 districts in the country

Table 13 Case distribution by district for 2014, Malawi.

District	No. of cases
Northern region	6
Karonga	3
Chitipa	1
Mzimba	2
Central region	5
Salima	1
Lilongwe	2
Dedza	1
Ntcheu	1
Machinga	1
Southern region	8
Blantyre	3
Nsanje	1
Mulanje	1
Mwanza	1
Chikwawa	1
Total	19

⁴ WHO. GLC MONITORING REPORT CONCERNING MALAWI. March 2015

Treatment initiation

One hundred eighty eight (188) confirmed MDR-TB cases were reported since 2007. Of these, 139 (73.9%) were started on treatment. And 49(26 %) died before treatment was started.

The number MDR TB cases reported in 2010 showed a peak due to an overlap with the DRS. The survey helped to identify 5 (among new) and 23 (among previously treated TB) MDR TB cases in addition to routine detection efforts.

The rate of death among confirmed cases before initiation of treatment has also declined. In 2014, 47 RR-TB cases were put on treatment. The NTP revised the treatment initiation algorithm based on the WHO GeneXpert treatment guideline^{5, 6, 7}. The total number patient started on treatment has also increased to 64 in 2014.

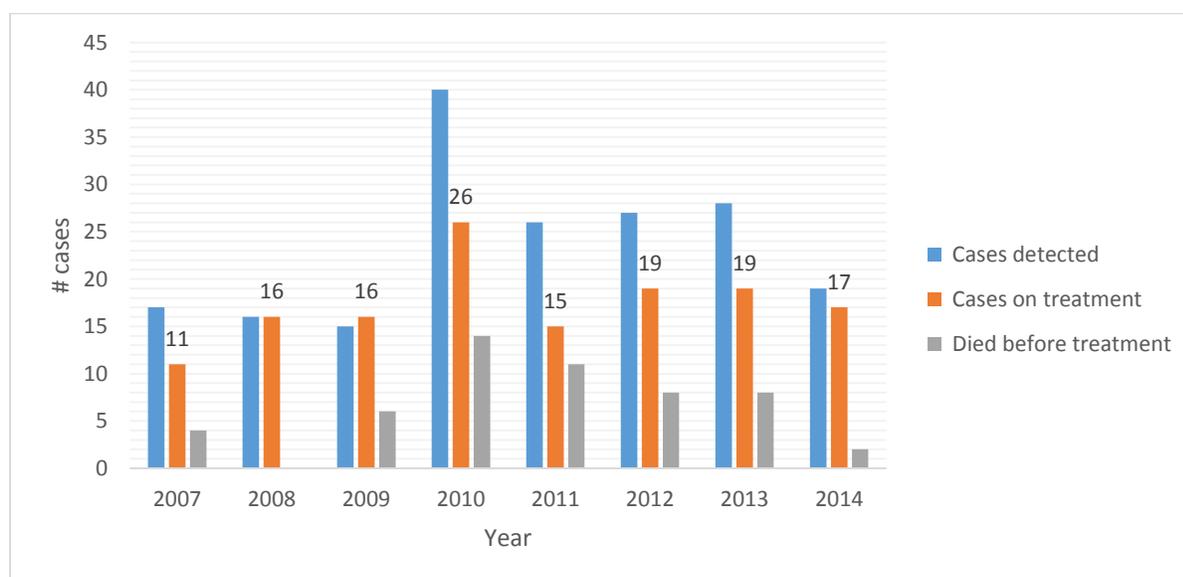


Figure 1514 Confirmed MDR TB cases reported and Treatment status of detected patient Malawi, 2007-2014,.

⁵ WHO. Rapid implementation of the Xpert MTB/RIF diagnostic test: technical and operational „How-to“; practical considerations. 2011

⁶ Anete Trajman^{1,2}, Betina Durovni^{1,3}, Valeria Saraceni^{3,4}, Marcelo Cordeiro-Santos^{4,5}, Frank Cobelens^{6,7} and Susan van den Hof⁶. High positive predictive value of Xpert in a low rifampicin resistance prevalence setting. *Eur Respir J* 2014; 44: 1711–1713 | DOI: 10.1183/09031936.00115514 |

⁷ WHO. Xpert MTB/RIF implementation manual Technical and operational ‘how-to’: practical considerations. 2014

MDR-TB case management:

District teams (comprising of clinician, nurse, district TB Officer, Laboratory technician and pharmacy technician) were formed which are responsible for the coordination on management of community based management of MDR-TB patients. Confirmed MDR-TB patients are treated at home under close observation by treatment supporter (DOT supporter).

Training:

A total of 104 DOT supporters were trained by central unit with funding from TB CARE II.

Treatment supervision:

Patients on SLDs are supervised by health surveillance assistant (HSA) who work in the area where the patient is residing. In addition there are volunteers who assist monitoring the patient. These volunteers are also responsible to facilitate sputum submission for patient follow up. The district TB officer (DTO) makes monthly visits to ensure record keeping is done. Clinical progress is assessed by the team at nearest health center which reports to the team at district if there is need.

GLC Supervision:

Every year Green Light Committee (GLC) come to assess how implementation of programmatic management of drug resistant TB is done and advises how improvements can be done.

Recording and reporting

Records for each confirmed case are available at the nearest health facility. Clinical information is recorded in patient's case note. A copy of patient's record is also available at the district TB office. Registration of patients is done at the district. The national TB register is kept at central unit.

Treatment follow up MDR TB

Patients are put on treatment for 24 months. During this period sputum checkup is done monthly in intensive phase of treatment and every 2 months during continuation phase. Follow up continues for another year after completion of treatment. Currently treatment success rate is at 63% and death rate is at 30%.

Challenges

- Low linkage between health centers and hospitals.
- No standardized patient support package.
- Low uptake rate treatment initiation among detected DR/ RR-TB cases.
- Interim outcome of DR/ MDR TB cases are not regularly monitored and reported.
- Limited engagement of clinicians in MDR TB follow up.

Action plan / action taken

- Improve the case detection for MDR TB through improving the index of suspicion for MDR TB cases.
- Ensure all patients receive clinical and bacteriological monitoring during the specified schedule in the national guideline (MDR TB treatment day at district hospital)
- Improve program management capacity at different levels.
- Prepare a standardized patient support package.

Integration of TB and HIV service

HIV testing among TB cases

HIV testing among TB patients is one of TB/HIV collaborative activities. In 2014 of the **17,723** registered TB patients, **16,445 (94.1%)** of the patients were tested/ have test result for HIV.

South Eastern zone has the lowest performance for this indicator (86%) as opposed to the Central west and Northern zones (**98%**).

Machinga, Mangochi, Mulanji Zomba and Phalombe. Mchinji, Mzimba and Lilongwe had better performance for this indicator (See figure 16).

Table 14 Summary TB/HIV performance, , Malawi.2014

Zone	% tested /with test result	% HIV positive	ART
Central Eastern Zone	96.6	36.3	95.4
Central Western zone	98.6	47.0	89.9
North zone	98.1	50.4	90.8
South Eastern zone	86.4	57.8	90.4
South Western Zone	92.9	60.6	95.7
National	94.1	53.0	92.6

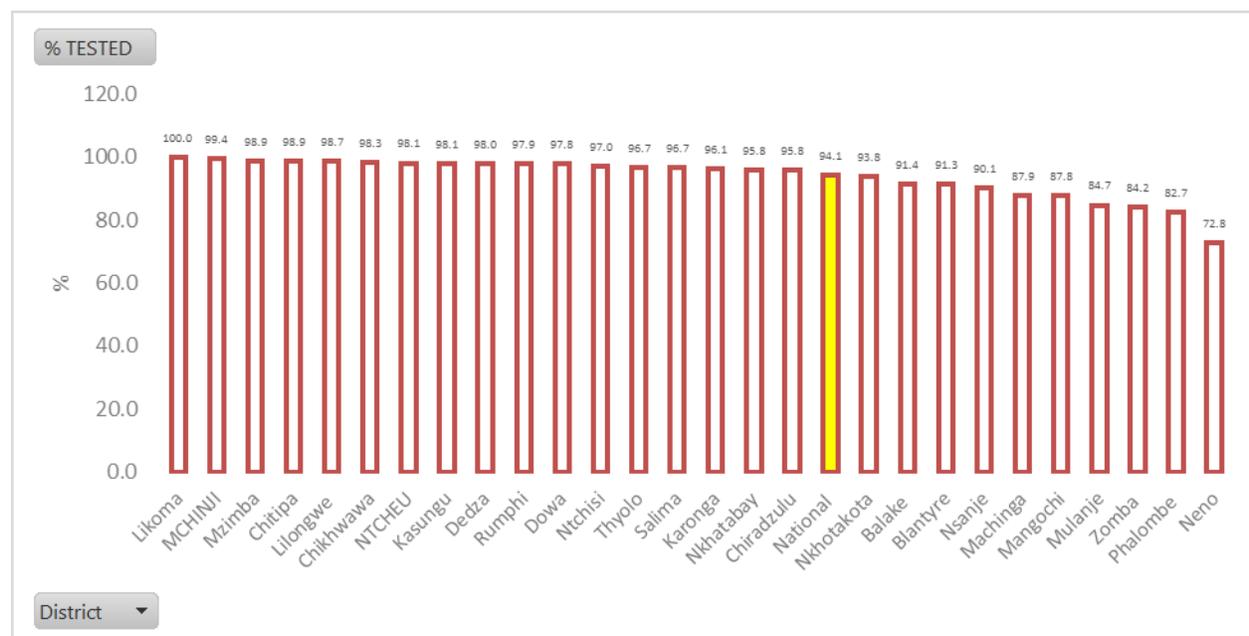


Figure 16 Percentage tested among newly registered TB cases by districts, , Malawi.2014

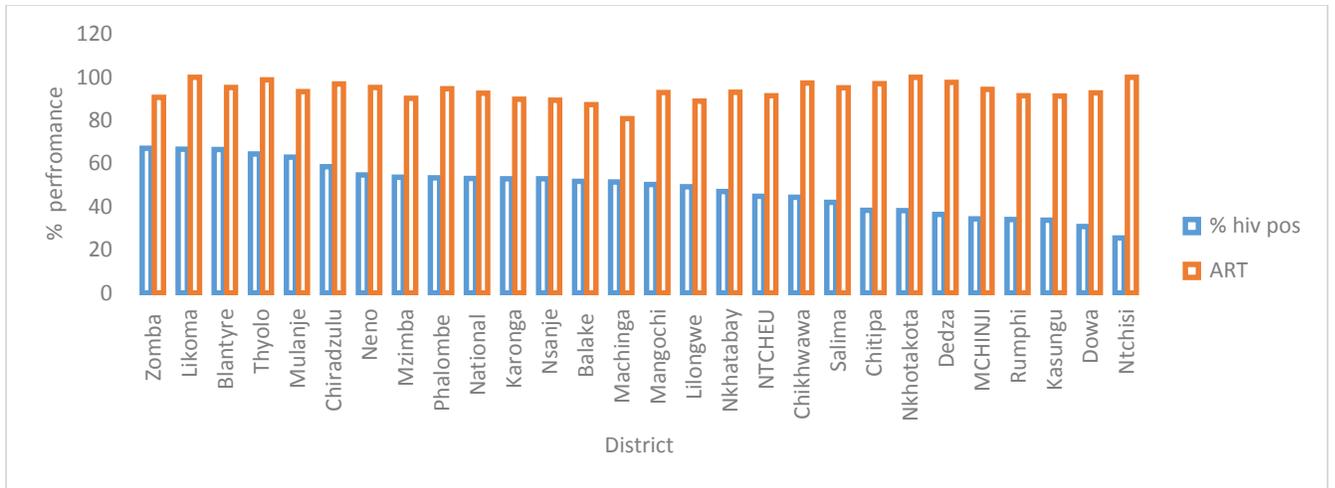


Figure 17 Rate of HIV infection and ART Uptake by district , Malawi. 2014,

Coverage of ART

Rate of coinfection has declined to 53 % from 56 % in 2013. The highest rate of HIV infection was observed in Zomba (**67.1%**) followed by Blantyre and Thylo. On the other hand, Ntchisi (25.5%), Dowa and Kasungu have low rate of coinfection. Coinfection rate has declined in most districts in Malawi in 2014.

ART uptake increased to **92.6 %** from (**87%**) in 2013. Central East and South East zones had the highest ART coverage (**95%**). CPT coverage increased to **91 %** from **90%** in 2013.

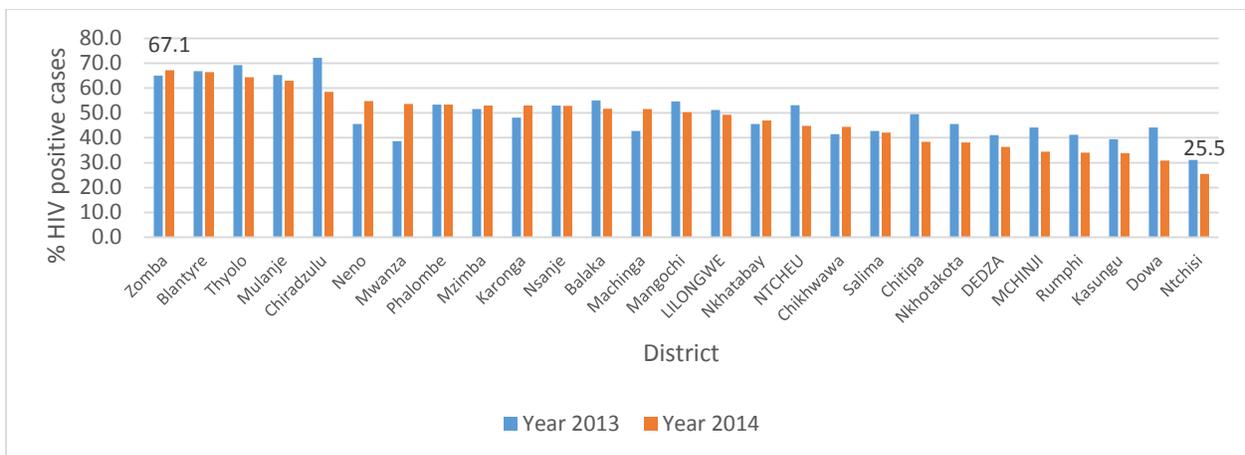


Figure 18 Comparisons HIV infection at district level , Malawi.2014

TB /HIV intervention in HIV clinic

A total of **523,186 (98%)** of all patients retained on ART were screened for TB at their last visit before end of December 2014. As of that visit, **2,855 (<1%)** patients were new presumptive TB cases and had presumably been referred for examination by a clinician and for TB investigations. **1,314 (<1%)** patients had confirmed TB (clinical or laboratory based). Out of these, **1,094 (83%)** were confirmed to be on TB treatment and **220 (17%)** had not yet started or had interrupted TB treatment. ⁸(*ART /PMTCT report _Q4_2014*)

The percentage of presumptive TB cases have been consistently low over the last years. The yield may be related to quality of screening in ART clinics.

Challenges

- ✓ Low yield of in TB screening among patients with HIV in chronic care
- ✓ Low level of achievement in some districts

Action plan/ Actions taken

- ✓ Improve TB screening among PLHIV in all facilities
- ✓ Undertake operational research to identify barriers to proper screening and yield.

Prevention

Isoniazid Preventive Therapy (IPT)

IPT is given to exposed children 5 years and below who have contacts with pulmonary TB patients and only when active TB has been ruled out. In its quest to increase the uptake of IPT among children, the NTP in 2011 embarked on a number of activities including the provision of monitoring tools, uninterrupted drug supply, orientation of health workers and supportive supervision.

In 2014, of **13,890** pulmonary TB cases, of these index cases **3,187** under five children were evaluated for TB. Twenty were found to have active TB. Of **3,167** children eligible for IPT **2,770 (87%)** were put on IPT. The following figure also shows trend in IPT uptake has improved over the last 3 years against the backdrop of declining pulmonary TB cases.

⁸ MOH,HIV department. *ART /PMTCT report _Q4_2014*

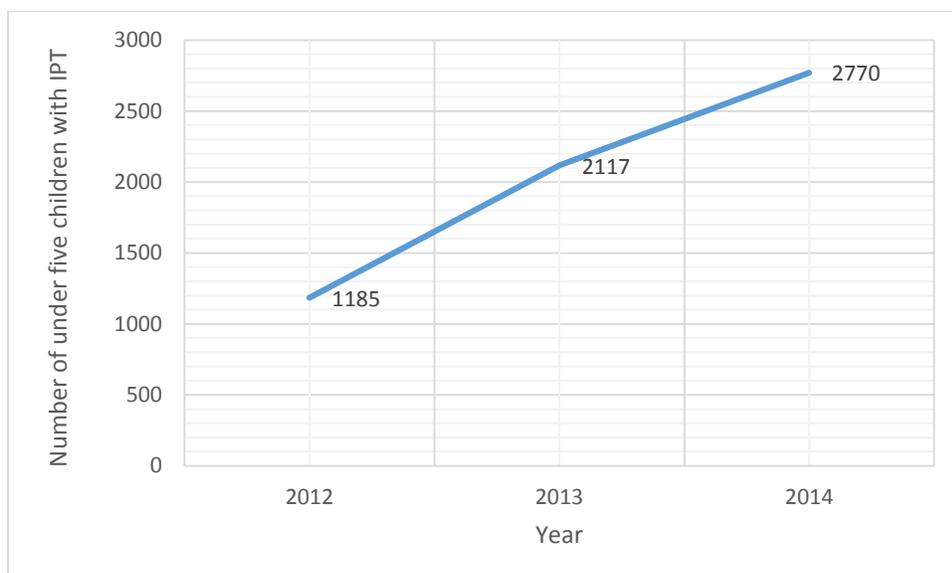


Figure 1519 Trend in IPT uptake), Malawi. (2012-2013)

Of **1,707** cohorts of children on IPT in 2013, **1452 (85%)** successfully completed the prophylaxis. **One hundred seven children (6.2%)** were lost to follow up. The success rate has declined from **93%** of 2012 cohorts.

Supervision

In 2014, the programme with funding from the Global fund and ORT funding, conducted similar activities however only few facilities were supervised due to lack of adequate funds.

IPT for PLHIV

Of **40,436** retained in pre-ART, **38,178 (94%)** patients were on IPT by the end of December 2014.⁹

Contact investigation

The programme has also provided guidance to conduct contact investigation to people that have contact with pulmonary TB patients. Some of the activities conducted were; orientation of health workers on contact investigation and provision of registers to health facilities. This programme has faced a lot of challenges as only few contacts were being registered and the TB patients yielded from contact investigation is very negligible. As compared to estimated yield of 3% in the meta-analysis¹⁰.

Some of the contributing factors to this low yield were lack of emphasis on contact tracing, lack of review meetings and lack of proper SOP. As a way forward, the programme has put its plans to intensify contact tracing by conducting orientation, holding regular review meetings with health care providers, printing and distributing the revised 'Contact Tracing Register' in 2015/2016.

⁹ Government of Malawi. Integrated HIV Program Report October -December 2014

¹⁰ Fox G J, Barry S E, Britton W J, Marks G B. Contact investigation for tuberculosis: a systematic review and metaanalysis. Eur Respir J 2013; 41: 140–156.

TB Infection Control (TB IC)

Transmission of tuberculosis in health care facilities, household, community and other congregate settings is a major challenge to TB control and public health in Malawi. The high rate of health care worker infection coupled with the convergence of the TB/HIV epidemics is a cause for concern, prompting immediate scale up of infection control measures including monitoring and evaluation and assessments of Infection Control in our health care settings. In 2014, the programme worked with a number of Implementing Partners to conduct TB IC activities.

Health workers were trained in TB IC and prevention in congregated setting

With government and Partners financial support, the NTP has managed to orient health workers, provide 'Fit test kits' and conduct supportive supervision.

The programme stepped up the training of health care workers on TB Infection control and prevention in its facilities and congregate settings. To this effect, 406 health care workers were trained on TB IC and also with support from Elizabeth Glazer Pediatric Aids Foundation (EGPAF), 380 health workers were oriented in TB Infection Control from the 7 impact (EGPAF) supported districts in the country.

Respirator Fit test kits were provided

During the period under review, with support from TB Care II, the NTP provided 15 Respirator Fit test kits to central and district hospitals and also oriented 300 health workers on how to conduct Fit tests across the country.

Status of implementation administrative measured

Table 15 Status of implementation of TB IC implementation in health facilities Malawi., 2014,

	National	North	Central West	Central East	South West	South East
TB/HIV committee	22.8%					
Functional TB IC committee	27.1%	42	23	16.6	29.6	25.9
TB Infection control plan	23.5%	38	25	11.7	21.43	25
Triage	83.2%	85	77	88	72	92
Personal protectives (N95)	58.4%	71	41	64	55	61

The implementation of administrative and managerial TB IC practice has been reviewed in 108 facilities in March 2015. Based on the review, TB IC committee were functional in 27% of the health facilities, and only 23.47% of the facilities had TB infection control plan. Personal protectives were available in 58.41% of the health facilities visited.

Some of the main challenges faced during the period under review were; irregular TB IC supervision, lack of knowledge on TB IC by many health workers. Records show that less than 35% of health workers are trained in TB Infection control in the country by 2014. Lack of IEC materials on TB IC was also one of the challenges.

Provision of BCG vaccination to all new born babies; as well as effective ART and TB treatment of those with TB/HIV dual infection is also a priority. By the end of 2014, BCG coverage in the country was over >90%.

Program Management

TB Advocacy, Communication and Social Mobilization

The National TB Control Program continues to commemorate the World TB Day as a way to reach out to the community and conduct public awareness on TB. In the reporting period, the annual event took place in Mzimba Boma on the 24th March of 2015. It was presided on by the Minister of Health and other dignitaries from Ministry of Health, the District Council and key partners such as the WHO, UNODC, USAID, TB Care II, Project Hope, Reach Trust and Paradiso TB Patients trust.

USAIDS's TB Care, Reach Trust and Paradiso TB Patients Trust provided part of funding for the event as well

Monitoring and evaluation

National TB Prevalence Survey Preliminary Results

Malawi was among countries recommended by WHO to carry out a TB prevalence survey by 2015 to better estimate the burden of TB. The first nationwide TB prevalence survey was conducted in 2013/14. . The overall goal was to determine the prevalence of pulmonary tuberculosis (PTB) among persons aged 15 years and older. A team from the NTP attended the TB Prevalence data analysis workshop in 2014 as part of preparation for the completion of the survey's statistical analysis.

The preliminary TB prevalence was also presented at the 2014 International Union Against TB and Lung Diseases (IUATLD).

A final workshop on data analysis took place in Malawi in December 2014 from which the preliminary prevalence was calculated. A workshop on updating estimates of TB burden for countries that have just completed national surveys was conducted in May 2015.

Preliminary Results:

- Of the 60,944 individuals enumerated in the census, 39,020 were eligible to participate in the survey from which 31,579 (80.9%) participants were drawn.
- Chest x-ray was performed among 31,561 participants.
- A total of 3,432 (10.9%) participants were eligible for sputum examination. The provisional TB prevalence of bacteriologically-confirmed TB in those 15 years and above is estimated to be 451/100 000 (95%CI 308-594).
- The provisional adjusted prevalence for all age groups is 363/100, 000 which is 2 time higher than WHO estimate in 2014.
- Prevalence increased with age, was higher in men at 543/100 000 (95%CI 327-759) than in women at 374/100 000 (95% CI 245-504). The results indicate that TB prevalence is high among urban residents (1006/100,000) and in adults aged >55 compared to prevalence in the general adult population (451/100,000).

Program and epidemiological review was undertaken: The NTP with support from partners has conducted Program Review to inform a new strategic plan. Led by WHO, the Program Review was done by local and international consultants.

Integrated TB HIV supportive supervision

The National TB control Program is working in collaboration with HIV department to improve supervision, data management and quality of TB service. As part of the preparation for the first integrated supervision, the NTP organized a workshop to discuss the supervision tool. The supervision tool was piloted and first cycle of the supervision was carried out. The NTP will maintain the routine reporting system with the integrated supportive supervision serving as a complimentary system. The role of supervision is to improve quality of service. More data elements representing different program interventions are incorporated for review in the supervision tool. The NTP is working on building mentorship teams that will be going out to mentor health workers based on the supervision findings. Thus the integrated supervisions will complement with mentorship visits.

Routine Health Information System

Data quality

WHO recommends that the accuracy level should be within $\pm 15\%$. While analyzing supervision data from 108 health facilities 26/108 (25%) didn't have report to make comparison. Figure 20 shows that , of those facilities with reports , nearly 85% of the facilities had 100% concordance rate for all parameters, Concordance was relatively low in reporting sputum smear negative TB cases. Cases reported through *Xpert* and *smear not done* might have contributed to systematic error. Arithmetic error also does contribute to some of the non-concordant results.

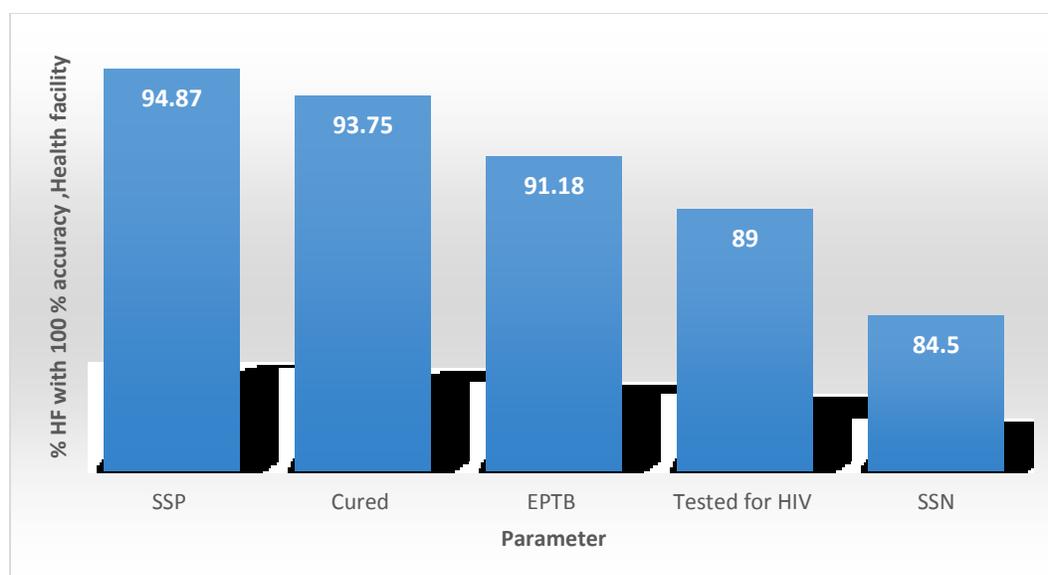


Figure 16 Percent of health facilities with data accuracy of 100% of selected parameters (83 health facilities), Malawi, 2014

Table 16 Aggregated recounted / reported data by zones for selected parameter, , Malawi. Oct-Dec 2014

Zone	SSP recount(A)	SSP reported(B)	A-B	% error	SSN Recount ©	SSN report(D)	C-D	% error	EPTB Recount(E)	EPTB Report(G)	E-G	% Error
North	92	92	0	0.0	95	96	-1.0	-1.1	145	143	2	1.4
CW	119	148	-29	-24.	313	363	-50.0	-16.	191	205	-14	-7.3
CE	92	92	0	0.0	85	85	0.0	0.0	50.	49	1	2.0
SW	281	275	6	2.1	359	347	12.0	3.3	314.	311	3	1.0
SE	157	158	-1	-0.6	77	77	0.0	0.0	66	67	-1.	-1.5
Total	741	765	-24	-3.2	929	968	-39	-4	766.	775	-9.	-1.2

The above table summarizes the aggregated data recounted (by supervisors) against reported by health personnel / TB focal persons working in the facility. The difference between the recounted and reported numbers estimates the level of over / underreporting. The pooling effect during aggregation may mask under/ over reporting within each unit of analysis.

A negative difference (error rate) gives an estimate about the level of over reporting, while a positive difference indicates level of underreporting.

There seems to be an over reporting of about 3 % for smear positive TB cases, 4% smear negative TB cases and 1.2 % for EPTB cases.

Figure 21 shows the proportion of evaluated cohorts of the total registered smear positive TB patients during 2013 in Malawi. Nearly 97% of patients reportedly evaluated for their final treatment outcome.

Thyolo, Chiradzulu and Dedza reportedly evaluated more patients than they reported during previous year. Mchinji, Lilongwe and Rumphi evaluated less than 90% of their patients. Hence the national average may not truly reflect if all patients had been evaluated at treatment completion/ expected date of treatment completion as there are situations where more patients are reported as evaluated.

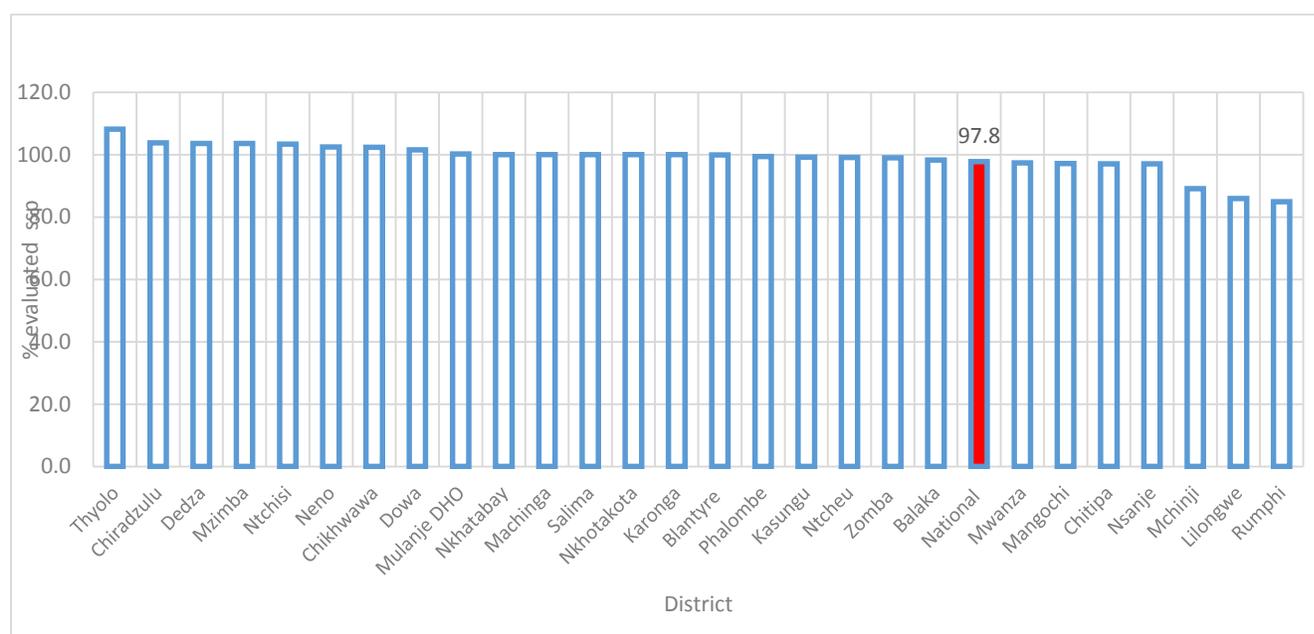


Figure 1721 Proportion evaluated SSP TB cases enrolled in 2013 by districts, Malawi.

Table 17 Publications abstracts and Technical updates, Malawi, 2014

	Title	Type of Presentation	Place of Presentation	Remarks
1	Community-based management of MDR-TB patients: Experience from Malawi	Poster	Cape town	International union conference
2	Tuberculosis control among prison population: what is the best approach?	Poster	Cape town	International union conference
3	Spatial and Temporal TB notification rate among districts in Malawi, how should we interpret this?	Poster	Cape town	International union conference
4	Epidemiology of Childhood Tuberculosis in Malawi: What should be done more?	Poster	Cape town	International union conference
5	Treatment outcome among children with Tuberculosis in Malawi	Poster	Cape town	International union conference
6	Trend in Pattern of resistance to first line Anti TB drugs, Malawi	Poster	Cape town	International union conference

Challenges / issues

- ✓ **Reporting and submission of routine data is not done timely:** Though most districts provide different reasons for delayed reporting and submission; lack of funding has been cited most often. **Retrospective data for laboratory activities:** This data has not been collected for the last 2-3 years. It has been one of the limitation to monitor case detection effort.
- ✓ **Data capturing system at national level:** It has not be conducive and friendly for data management. This has continued to be the data capturing system with new data capturing system in place. Limitations in funding resources have contributed to the delay in rolling out the new data system.
- ✓ **Inadequate team to handle monitoring and evaluation activities at national and zonal level:**
- ✓ Limited data use at zonal and district level:
- ✓ **Absence / irregular review meeting at different level due to financial challenges:**
- ✓ **Data quality issues:** These are related to keeping reports in facilities, where nearly 25% of the facilities didn't have latest report. The level of accuracy in the remaining facilities has been relatively satisfactory. However, there are specific families, districts and zones that have poor performance in ensuring data quality as compared to others.
- ✓ **M&E system for MDR TB:** This is a major challenge area for NTP program.

Action plan/ action taken

- ✓ Improve timeliness of reporting through provision of adequate resource to facilitate supervision. All supervision should focus on facilities that are known to experience frequent problems.
- ✓ Collect and compile the retrospective lab data for the last 2 years.
- ✓ The NTP has incorporated all relevant data elements to monitor implementation of TB interventions. The TB/HIV integrated supportive supervision is also intended to improve data quality.
- ✓ Zones / districts and health facilities having issues on data quality will be provided feedback to improve data quality in their respective areas.
- ✓ Routine data quality assurance assessment will implemented at all levels.

Drug supply and management

The NTP in collaboration with partners has carried out different supportive supervision in the reporting period. The following table summarizes the finding from supportive supervision. Various challenges were encountered in the areas of logistic management including lack of trained pharmacy attendants and delayed LMIS reporting.

Table 18 Assessment of Storage Area at Health Facilities ¹¹

CHECK STORAGE AREA	Main Drug Store	TB Treatment Room
a. % of facilities with storage area clean and tidy.	79%	76%
b. % of facilities with commodities stored in a dry, well-lit, well-ventilated storeroom out of direct sunlight.	90%	87%
c. % of facilities with storeroom secure from water penetration.	90%	86%
d. % of facilities with fire safety equipment or a bucket of sand available.	84%	22%
e. % of facilities with health personnel trained to use the fire safety equipment.	48%	25%
f. % of facilities with cartons stacked off the floor and away from the wall.	77%	62%
g. % of facilities with commodities stored away from insecticides, chemicals, old files, office supplies and other materials.	89%	70%
h. % of facilities with cartons arranged so that arrows point up and identification labels, expiry dates and manufacturing dates clearly visible.	83%	73%
i. % of facilities with commodities stored in a manner accessible for FEFO, physical counting and general management.	85%	68%
j. % of facilities with commodities separated from damaged or expired products.	91%	83%
k. % of facilities with entrance to the drug store protected by at least 3 locks.	96%	77%
l. % of facilities with keys to access the drug store divided between 3 or more staff members who have to be present when opening the drug store.	35%	5%
m. % of facilities with an H.S.A. or pharmacy attendant (CHAM) trained in logistics and drug store management working in the drug store.	69%	41%

¹¹ NTP / Deliver Project: TB supportive drug supply management supervision. April 2015

Performance monitoring matrix

Indicator	2014	Remarks
# notified TB cases	17723	
Estimated Case detection rate	40	Incidence=261 /100, 000 population)
TSR (SSP)	86.%	
Case detection effort		
Number Presumptive TB cases	NA	
Proportion presumptive TB cases among TB OPD clients	1%	
Slide positivity rate		
Laboratory service		
Number TB microscopic centers	276	
Number ZN TB microscopic centers	198	
Number LED microscopic center	88	
Number microscopic facilities participated EQA	NA	
Number health facilities with onsite supervision	NA	
Number Xpert platforms	46(in 42 facilities)	
Utilization rate per Xpert facility (Projected)	258 / year	
Number presumptive MDR TB cases with Culture and DST at CRL	707	
Number Rifampicin resistant cases	66	
Number Confirmed Rif/INH resistance	19	
TB /HIV		
% Registered TB patients with documented HIV status	94%	
% HIV positive among TB patients	53%	
ART coverage	92.6%	
% Screened for TB	98%	
MDR TB		
Confirmed MDR TB cases	19	
Number RR cases (Xpert)	65	After accounting for double counting
# Rifampicin resistant (reference Lab)	22	
Total RR/ Confirmed MDR cases	106	
# Started on SLD (Second line treatment	64	
Treatment success rate (MDR TB)	63 %	