ANNUAL TB PROGRAM REPORT 2014

NATIONAL TB CONTROL PROGRAM (NTCP)
TB REPORT RESULTS AT A GLANCE

1. TB Screening

<table>
<thead>
<tr>
<th>Year</th>
<th>Number Screened</th>
<th>Presumptive cases</th>
<th>Number Diagnosed</th>
<th>Number enrolled on treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>175,787</td>
<td>13,879</td>
<td>1,017</td>
<td>907</td>
</tr>
<tr>
<td>2012</td>
<td>294,611</td>
<td>16,240</td>
<td>1,671</td>
<td>1,428</td>
</tr>
<tr>
<td>2013</td>
<td>294,590</td>
<td>12,001</td>
<td>1,281</td>
<td>1,239</td>
</tr>
<tr>
<td>2014</td>
<td>286,073</td>
<td>9,744</td>
<td>838</td>
<td>715</td>
</tr>
</tbody>
</table>

2. Smear Conversion Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Hhohho</th>
<th>Lubombo</th>
<th>Manzini</th>
<th>Shiselweni</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>42%</td>
<td>60%</td>
<td>74%</td>
<td>78%</td>
</tr>
<tr>
<td>2012</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
<td>4%</td>
</tr>
<tr>
<td>2013</td>
<td>6%</td>
<td>9%</td>
<td>6%</td>
<td>2%</td>
</tr>
<tr>
<td>2014</td>
<td>6%</td>
<td>10%</td>
<td>6%</td>
<td>1%</td>
</tr>
</tbody>
</table>

3. Treatment outcomes

Treatment outcomes of all forms TB cases [2014]
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<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>ACSM</td>
<td>Advocacy Communication and Social Mobilization</td>
</tr>
<tr>
<td>ART</td>
<td>Antiretroviral Therapy</td>
</tr>
<tr>
<td>ARVs</td>
<td>Antiretroviral [drugs]</td>
</tr>
<tr>
<td>BCC</td>
<td>Behaviour Change Communication</td>
</tr>
<tr>
<td>BMU</td>
<td>Basic Management Units</td>
</tr>
<tr>
<td>CBO</td>
<td>Community-based Organization</td>
</tr>
<tr>
<td>CDC</td>
<td>Centres for Disease Control and Prevention</td>
</tr>
<tr>
<td>CIDA</td>
<td>Canadian International Development Agency</td>
</tr>
<tr>
<td>CMS</td>
<td>Central Medical Stores</td>
</tr>
<tr>
<td>CTA</td>
<td>Central Transport Administration</td>
</tr>
<tr>
<td>DOTS</td>
<td>Directly Observed Treatment Short Course</td>
</tr>
<tr>
<td>DR</td>
<td>Drug Resistant</td>
</tr>
<tr>
<td>DST</td>
<td>Drug Sensitivity Testing</td>
</tr>
<tr>
<td>EQA</td>
<td>External Quality Assurance</td>
</tr>
<tr>
<td>ETB</td>
<td>Extra Pulmonary Tuberculosis</td>
</tr>
<tr>
<td>FIND</td>
<td>Foundation for Innovative New Diagnostics</td>
</tr>
<tr>
<td>GFATM</td>
<td>Global Fund to Fight AIDS, Tuberculosis and Malaria</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>HMIS</td>
<td>Health Management Information System</td>
</tr>
<tr>
<td>INH</td>
<td>Isoniazid</td>
</tr>
<tr>
<td>IUTLD</td>
<td>International Union Against Tuberculosis and Lung Diseases</td>
</tr>
<tr>
<td>LED</td>
<td>Light Emitting Diode</td>
</tr>
<tr>
<td>LPA</td>
<td>Line Probe Assay</td>
</tr>
<tr>
<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
</tr>
<tr>
<td>MDR</td>
<td>Multi-drug Resistant</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MSF</td>
<td>Médecins Sans Frontières</td>
</tr>
<tr>
<td>NSP</td>
<td>New Sputum Positive</td>
</tr>
<tr>
<td>NRL</td>
<td>National Reference Laboratory</td>
</tr>
<tr>
<td>NTCP</td>
<td>National Tuberculosis Control Program</td>
</tr>
<tr>
<td>PHU</td>
<td>Public Health Unit</td>
</tr>
<tr>
<td>PLHIV</td>
<td>People Living with HIV</td>
</tr>
<tr>
<td>PMDT</td>
<td>Programmatic Management of Drug Resistant Tuberculosis</td>
</tr>
<tr>
<td>QA</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>QRM</td>
<td>Quarterly Review Meetings</td>
</tr>
<tr>
<td>SND</td>
<td>Smear Not Done</td>
</tr>
<tr>
<td>SWABCHA</td>
<td>Swaziland Business Coalition Against HIV and AIDS</td>
</tr>
<tr>
<td>SWAMIWA</td>
<td>Swaziland Mine Workers Association</td>
</tr>
<tr>
<td>PSHACC</td>
<td>Public Sector HIV/AIDS Coordinating Committee</td>
</tr>
<tr>
<td>SOPs</td>
<td>Standard Operating Procedures</td>
</tr>
<tr>
<td>SS-</td>
<td>Sputum Smear Negative</td>
</tr>
<tr>
<td>SS+</td>
<td>Sputum Smear Positive</td>
</tr>
<tr>
<td>SSF</td>
<td>Single Stream Funding</td>
</tr>
<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>URC</td>
<td>University Research Council</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>XDR</td>
<td>Extensively Drug Resistant</td>
</tr>
</tbody>
</table>
Acknowledgements

The primary aim of this report is to share information on progress made to tuberculosis control in Swaziland in 2014. The successful completion of the NTCP 2014 Annual Report has been made possible by joint efforts of a number of dedicated individuals at facility, regional and national level. The successes of the program are a result of a close collaboration between the National TB program and its partners and our appreciation goes to the management unit at the national level for their dedication to the accuracy of the reported data. We also thank the health workers at the regional and health facility levels who recorded and timely reported all data, which has been aggregated in this report. They are urged to continue with the same dedication in the subsequent years. IHM for both technical and financial assistance during the analysis and report writing period.

This report would not have been a success without the following individuals:

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- Dr. Lucia Gonzalez    ICAP
- Wendy Wandile Dlamini NERCHA-GMU
- Phetsile Ndzabandzaba MoH-SID

Many others who also have contributed to this document in one way provided substantial reviews to this document or another but have not been mentioned here. To everyone, we say a big thank you.
Executive Summary

The National TB Control Program (NTCP), based on the internationally recommended Directly Observed Treatment Short-course (DOTS) strategy, was launched in 1997 and it expanded across the country in a phased manner with support from the World Bank and other development partners.

The objectives of the program are:

- To achieve and maintain TB case detection of at least 70% of the estimated NSP cases in the community.
- To achieve and maintain TB treatment success rate of at least 85% among New Sputum Positive (NSP) patients.
- To significantly improve the successful outcomes of treatment of Drug Resistant TB.
- To achieve decreased morbidity and mortality of HIV associated TB.

Current focus of the program is on ensuring “universal access” to good quality early diagnosis and treatment for all TB patients from all TB services’ providers. TB services are currently available in 97 health facilities out of 287 facilities (SAM 2013) in the country.

Multi Drug resistant TB (MDR TB)

MDR-TB services have been introduced in eight health facilities in the country. All eight sites have introduced PMDT services with variable access and scaling up. In 2014, the program enrolled 376 patients on MDR-TB treatment and the treatment success rate for the 2011 cohort stood at 56%.

Advocacy, communication & social mobilization (ACSM)

The Stop TB Strategy ACSM plays a major role in maintaining TB and RNTCP as high priority amongst policy makers, opinion leaders and community. An effective advocacy, communication & social mobilization (ACSM) strategy is currently in place (2014-2019) which will ensure the successful implementation of ACSM activities and enhance the achievement of the programs goals.

TB/HIV Integration

The “national policy guidelines Joint TB/HIV Collaborative activities” was launched in 2007, which establishes uniform activities at ART centres and other health care units for intensified TB case finding and reporting, and set the ground for better monitoring and evaluation. Intensified TB-HIV package has been introduced in the country in 2009. These guidelines were updated and reviewed in 2014. During the course of the year the TB/HIV National Coordinating Committee (NCC), meet on quarterly basis to discuss progress updates on TB/HIV collaborative activities. TB cases that were diagnosed with various types of TB in 2014 was 5,582, of which 97% of all patients diagnosed with TB were tested for HIV. Amongst these, 73% were HIV positive. About 98% of those patients were started on CPT while 79% were enrolled on ART.

Public Private Mix (PPM)

NTCP has involved over 10 NGOs and 10 Private clinics. Over five private hospitals are providing TB services. The program also has a successful partnership with a number of consortiums such as SWAB-CHA, SWAMIWA and PSHACC.
### Table 1: Summary of key indicators

<table>
<thead>
<tr>
<th>Thematic Area</th>
<th>Indicator</th>
<th>Baseline 2011</th>
<th>2014 Achievement</th>
<th>Target 2014</th>
<th>Progress Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TB Screening</strong></td>
<td>Number of people screened for TB</td>
<td>175,787</td>
<td>286,073</td>
<td>Not available</td>
<td><img src="#" alt="Progress Status" /></td>
</tr>
<tr>
<td><strong>Case detection</strong></td>
<td>Case detection rate</td>
<td></td>
<td>38%</td>
<td>70%</td>
<td><img src="#" alt="Progress Status" /></td>
</tr>
<tr>
<td></td>
<td>Case notification rate</td>
<td>867/100,000</td>
<td>610/100,000</td>
<td>Not available</td>
<td><img src="#" alt="Progress Status" /></td>
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<tr>
<td><strong>Treatment</strong></td>
<td>% of TB patients initiated on ART</td>
<td>35% (2,752/7,788)</td>
<td>79% (3123/3,972)</td>
<td>90%</td>
<td><img src="#" alt="Progress Status" /></td>
</tr>
<tr>
<td></td>
<td>Treatment success rate (All forms)</td>
<td>73%</td>
<td>79%</td>
<td>85%</td>
<td><img src="#" alt="Progress Status" /></td>
</tr>
<tr>
<td></td>
<td>Treatment success rate (HIV-positive TB patients)</td>
<td>72%</td>
<td>80%</td>
<td>85%</td>
<td><img src="#" alt="Progress Status" /></td>
</tr>
<tr>
<td><strong>MDR-TB</strong></td>
<td>Final treatment outcomes</td>
<td>18% (2008 cohort)</td>
<td>56% (2011 cohort)</td>
<td>70%</td>
<td><img src="#" alt="Progress Status" /></td>
</tr>
</tbody>
</table>

**Legend**
- **Target off-track, requires action**
- **Target on-track, likely to be achieved**
- **Target achieved.**
Chapter 1: Background and Introduction

Swaziland is a landlocked country in southern Africa with a land surface area of about 17,364 square kilometres. It is divided into four administrative regions namely Hhohho, Shiselweni, Manzini and Lubombo. It is further subdivided into 55 Tinkhundla (constituencies) and 360 chiefdoms and towns. The estimated population of the country is 1,018,449 people, with 52 percent under the age of 20 years, while 52.7% are females. The country is classified as a Low-Middle Income Country with an income per capita of $3,475 in 2012. However, the last twenty years have seen economic growth decline drastically from averages of 8% per annum to averages of 2% and an estimated 81% of the population lives on less than US$2 per day.

Globally Tuberculosis (TB) remains a major global health problem, responsible for ill health among millions of people each year. TB ranks as the second leading cause of death from an infectious disease worldwide, after the human immunodeficiency virus (HIV). The latest estimates included in this report are that there were 9.0 million new TB cases in 2013 and 1.5 million TB deaths (1.1 million among HIV-negative people and 0.4 million among HIV-positive people). TB mortality is unacceptably high given that most deaths are preventable if people can access health care for a diagnosis and the correct treatment is provided. Short-course regimens of first-line drugs that can cure around 90% of cases have been available for decades.

In Swaziland TB, efforts are channelled through the MoH and the National TB Control Program. Every year NTCP releases a report that provides an overview of the progress made towards the control of TB in the country. This document therefore serves as the 2014 progress report, intended to share the main national achievements of the TB program in a timely and concise manner. The report also attempts to look beyond NTCP indicators and other activities, including TB/HIV collaborating activities and TB research that supports the NTCP strategic Framework. The data is presented using national level statistics, disaggregated in population subgroups such as those defined by age, sex, and regions of the country. The level of analysis in the report is primarily descriptive and is particularly useful in tracking progress of the program activities. This report will be useful to policy makers, development partners and the office of the TB Program manager for planning and decision-making.

WHO 2014 Global TB Report estimates that the TB incidence in Swaziland is at 1,382/100,000, which is by far among the highest TB burden in the world. This makes TB a major Public Health concern in the country, especially with the overlapping of the HIV epidemic, creating a double burden of the diseases. According to routine TB program data, the overall TB/HIV co-infection rate has decreased from 80% in 2012 to 73% in 2014 (adults 76% and 48% children <15 years). Over the years, success has been noted in ART provision, which has positively influenced TB control measures. On another note, Swaziland continues to experience an increase in drug resistant TB cases and in 2014 more resources channelled towards controlling the DR-TB epidemic.
In an effort to address these emerging challenges the national TB control program in its strategic plan 2010-2014 continues to align with the WHO DOTS strategy set out to expand and enhance high quality or TB diagnosis, ensure uninterrupted supply of anti-TB drugs, full implementation of Direct Observation of Treatment (Dots.) for patients by community treatment supporter and a functional M&E system, all this facilitated by a strong political commitment. Furthermore, the strategy dictates that the fight to control TB should engage all health providers in public and private settings to promote universal access to treatment and care and this is done through active support supervision, coordination and decentralization of TB services to facilities closer to patients regardless of facility ownership. Remarkable improvements include routine TB screening, increased from 29,634 in 2010 to close to 300,000 in 2014 at facility level. TB treatment success rate increased from 68% in 2010 to 75% in 2014 (79% for bacteriological confirmed cases), and ART enrolment rate for co-infected patients has improved from 51% in 2011 to 79% in 2014 for both adults and children.

Despite these programmatic achievements, there are still a number of challenges to be addressed such as increasing TB case detection, achieving the 85% treatment success target recommended by WHO reaching and achieving an ART uptake of 100% amongst TB/HIV co-infections, strengthening support for diagnosis and treatment of DR-TB cases, intensified case finding and roll out of IPT.
Chapter 2: Program Description

The NTCP is the Public Health Program under the MoH directorate with the responsibility of planning, coordinating and monitoring and evaluation of TB control activities in Swaziland. The program work in partnership with global and national actors such as GFATM, World Bank, URC, URSA, MSF, ICAP, CHAI, Baylor. Based on the programmatic cornerstones recommended by WHO, The Swaziland NTCP has prioritized the DOTS that remain at the heart of the Stop TB Strategy. The WHO DOTS strategy is comprised of the following elements:

- Political commitment with increased and sustained financing (Legislation, planning, human resources, management, training)
- Case detection through quality-assured bacteriology (Strengthening TB laboratories, drug resistance surveillance)
- Standardized treatment with supervision and patient support (TB treatment and program management guidelines, International Standards of TB Care (ISTC), community-patient involvement)
- An effective drug supply and management system (Availability of TB drugs, TB drug management, Global Drug Facility (GDF))
- Monitoring and evaluation system and impact measurement (TB recording and reporting systems, Global TB Control Report, data and country profiles, TB planning and budgeting tool, WHO epidemiology and surveillance online training)

Currently, all the four regions of the country are implementing the DOTS strategy. Access to high quality DOTs has improved and currently 97 out of the 287 (38%) all health facilities in the country are providing TB treatment initiation and/or continuation phase.

2. 1. Political commitment and leadership

During 2014, a number of strategic documents were developed, such as the NSP 2015-2019, M&E plan 2015-2019, IPC guidelines, TB/HIV Concept Note to Global Fund and TB/HIV management guidelines. The program officers were also able to participate and present in several international, regional and national conferences. Technical working groups were also coordinated and provided technical guidance for TB and DR-TB management and routine data review meetings took place as planned.

Besides, during the year, the TB program was able to engage all the relevant care providers, which included private sector, NGOs, CBOs and public sector providers such as general and specialized hospitals in a bid to improve case detection, reduce delays diagnosis, leading to favourable treatment outcomes. This involved stakeholder meetings, joint planning, trainings and the development of program strategic documents. TB/HIV trainings we conducted targeting doctors, nurses, adherence officer and cough monitors.

2. 2. TB diagnostics and laboratory strengthening

During 2014, the Swaziland Health Laboratory Services (SHLS) had strong emphasis driven towards increasing case detection. TB diagnosis algorithms were implemented according to guidelines, maximizing the tool in the country. In order to strengthen the decentralization of Xpert MTB/Rif implementation process at country level, the program coordinated the placement of GeneXpert instruments at 10 additional instruments, based on demand, availability of infrastructure and personnel. This increased the number of instruments in the country from 17 to 27, deployed in 25 TB diagnostic sites.
The National laboratory External Quality assessment (EQA) program for AFB microscopy was expanded to all the 22 sites conducting AFB microscopy and 17 of the 22 AFB microscopy sites achieved above 80% on all parameters. Additionally, the number of site participating in the Xpert MTB/Rif EQA scheme increased from 20 to 22, with 80% (20) of the participating sites consistently achieving acceptable performance on EQA enrolment under CDC scheme.

The National TB reference Laboratory (NTRL) worked towards and maintained its WHO-AFRO SLIPTA accreditation status (3 star grading) awarded during an external audit to evaluate the level of implementation of quality management systems towards accreditation. The external audited in June 2014 by the African Society of Laboratory Medicine (ASLM) in collaboration with SHLS and CDC/URC. The NTRL was recommended for accreditation preparedness and is currently working towards ISO 15189 International accreditation under the South African National Accreditation Systems. The NTRL underwent a process for establishments of second Line DST in the country, this included onsite training for two laboratory technologists as well as initiation of a method verification in preparation for testing.

2. 3. Standardized TB treatment and patient support
Timely and effective TB treatment guarantees cure of active TB, render the patient non-infectious within the shortest possible time to prevent transmission to others in the communities, and minimizes development of drug resistance. NTCP aims to deliver treatment using flexible patient-friendly approaches to ensure adherence to therapy.

Anti-TB drugs are provided at no cost to the patient in the country. TB pharmacist, Pharmacy Technicians and nurses at TB clinics dispense these. Due to improved supply chain mechanisms in 2014, CMS never experienced anti-TB drugs stock outs. This had a positive impact on patient management and improved treatment outcomes. However, the use of standardized TB treatment and adequate patient support has been affected by inadequate number of full-time health care workers at TB clinics, weak DOTs, inadequate cross-border collaboration, insufficient supervision of community-based treatment adherence support and weak defaulter tracing. Furthermore, patient’s lack of money for transportation and food constitute barriers to access to treatment and treatment adherence.

In Swaziland, TB patients have a treatment supporter identified when beginning treatment. Over years, a network of trained treatment supporters has been deployed across Swaziland, starting in those areas where health services have strong community links. These include a cadre of trained treatment supporters or family based treatment supporters receiving training with the patient. Training for community treatment supporters is centralized or cascaded via a network of trainers in CBOs and TB clinics. Nutrition is an approved key intervention to improve adherence and outcomes of the TB treatment. In Swaziland, MoH, World Food Program (WFP) and MSF are providing nutritional supplements for moderate and severe malnourished TB patients at the hospitals and Health centres. There is a need to strengthen and decentralize this component to further support the intervention to improve long-term outcomes.

There has been continued progress in the implementation of collaborative TB/HIV activities but intensified efforts are needed, especially to ensure universal access to antiretroviral therapy for co-infected clients and the roll out of IPT for asymptomatic HIV clients and under 5 year old contacts. Coverage of IPT sat at approximately. Twenty percent of the projected needs for HIV clients with 76% of TB patients known to be HIV-positive started ART, while currently there is no National data for under-five contacts. Preliminary data from the TB Reach program in seven facilities, estimates less than 10% the coverage of the under-five.
2. 4 M&E, Data management and TB research

2.4.1 Quarterly Review Meetings.
The Quarterly Review Meetings (QRMs) have proven to be successful forum for sharing best practices and lessons learnt in the implementation of TB services at facility level. The NTCP has institutionalized the QRM not only as a knowledge management mechanism for health care workers working in TB facilities in Swaziland but also a vehicle through which data quality assurance mechanisms can be implemented to generate quality information for TB. It continue to serve its purpose and meet the expectations through which health facility staff are able to validate data and critically reflect on experiences and data to create new insights and agree on actions and also gave opportunities to understand not only what is happening but also why it is happening.

2.4.2 Preparations for second Drug Resistance Survey
The country is planning to conduct a second Drug Resistance Survey in 2015. The DRS was conducted in 2009, therefore it is vital to commission a second DRS to ascertain the level and magnitude of Drug Resistance in the country. The NTCP have started a process to develop the DRS protocol. The protocol is in draft form and has been shared with the Swaziland National Reference Laboratory (SNRL) and WHO-AFRO for technical review and input. The programme plans to finalized the DRS protocol together with a detailed budget will be finalized in January and shared with TB technical working group by end of February 2015.

2.4.3 Research Capacity Strengthening
The program also engaged in a process of strengthening the research capacity within the program and its partners. The NTCP in collaboration with WHO/TDR (Special Programme for Training and Research in Tropical Diseases) conducted the first of a series of workshops on Implementation Research training of NTCP staff and partners and another round of training is planned for 2015.

2.4.4 Revision of TB data recording and reporting tools
Collection of tuberculosis (TB) data forms part of the general health information system, which aims to: ensure high-quality patient care, a continuum of care, information sharing with patients and transfer of information between health facilities;

- Support health facility staff in providing adequate services to individual patients;
- Allow managers at different levels in the National TB Control Program (NTCP) to monitor delivery of TB services and performance standardized and internationally comparable way;
- Provide the basis for programmatic and policy development.

The recording and reporting forms for paper-based systems needed revision to bring them into line with the revised case and treatment outcome definitions, as well as to address the following:

- Outcome reporting for drug-sensitive and drug-resistant TB (DR-TB).
- Childhood TB reporting using paper-based systems was incomplete because age disaggregation previously limited to sputum smear-positive TB, which is uncommon in children.

The NTCP undertook a process to review and update the paper based forms, registers and reports. The revised changed are earmarked to be rolled out in the second quarter of 2015.
2.4.5. TB Program Review

The TB Control program in collaboration with the World Health Organization conducted TB Program review which sought to assess the implementation of the TB-NSP (2010-2014) and to assess its impacts on the TB situation in the country. The aim of the review was to identify successes, best practices, opportunities, gaps and challenges from the outgoing TB NSP in order to inform the development of the new strategic plan.

The review was conducted in all the four administrative regions and a total of 65 health facilities were purposively and randomly selected to participate in the study. This included both private and public health facilities high volume clinics to be included in the study sample.

Some key recommendation from the program review included:

- The country should conduct a TB prevalence survey in order to improve the estimation of TB burden
- The country was encourage to conduct a second Drug Resistant Survey (last one was conducted in 2009)
- The country must consider establish a routine DR-TB surveillance
- The program was urged to review TB case definitions and update the reporting framework to be in line with new WHO recommended reporting framework.

2.5 Key Populations

2.5.1 Paedriatic TB

The global scale of tuberculosis (TB) among children is not fully known, but in 2013 the World Health Organisation (WHO) estimated that there are approximately half a million new paediatric TB cases annually, resulting in 80,000 TB-caused childhood deaths per year. In Swaziland, where annual incidence of TB is estimated to be 1,382 per 100,000 in the general population, exact childhood TB incidence is unknown. However, the WHO estimates that approximately 10-20% of all TB cases are paediatric in countries with high TB burdens. Diagnosis of childhood TB remains challenging, as children have pauci-bacillary disease, limiting the bacteriologically confirmation, clinical symptoms are not specific and radiology is reader-dependant. The WHO 2013 Roadmap for Childhood TB, acknowledging these issues, states that “there is urgent need for improved diagnostic and treatment options for children with TB. The research community needs to come forward and take action to address these challenges”.

The NTCP through support from partners has managed to accomplish the following:

- A situational analysis on paediatric TB; final write up of report on the analysis partnered with URC
- Algorithms for the diagnosis of all forms of TB children are near finalization and are due for release in January 2015
- Engagements have begun with the Central Medical Stores on consideration of child formulations.
- Provision of compounding of MDR-TB treatment has been finalized and is ready to commence partnered with MSF and MSH.
- Strengthening the capacity of diagnosis with gastric aspirate and sputum induction. Developing a manual for diagnostic procedures.
- Health facilities have been trained in paediatric specimen collection
- The programme has developed of a standard manual for diagnostic procedures is in its finalization stage while the training of facilities on specimen collection is on-going, partnered with Baylor and URC
- Adaptation of the WHO training manual on paediatric TB
2.5.2 Miners and ex-miners
Mineworkers have a risk of contracting TB that is almost three times greater than that of the general population, and an incidence rate that is ten times higher than the level of a TB health emergency, as designated by the World Health Organization (WHO). In addition to their high risk of infection, many mineworkers in Southern Africa are made more vulnerable by difficulties they face in accessing health and social services, largely because of frequent migratory movements across provincial and national borders, and informal employment arrangements that may not cover health care. Formal recognition of mineworkers in Southern Africa as a group of particular vulnerability and disease risk came a little over three years ago when the Ministers of Health of Lesotho, South Africa and Swaziland issued a joint call for action on TB in the mines.

The URSA Swaziland has been leading activities aimed at addressing the mine issues in support of National TB Control Programme (NTCP). The country has no data on the burden of TB amongst mineworkers making efforts to motivate for targeted interventions challenging. Together with the NTCP, URSA Swaziland embarked on a rapid assessment to establish a baseline on the proportion of current TB patients who are ex-miners. The national TB program through the URSA support have revised the national data collection tools to include mining exposure, but it will be a while before these tools are rolled out and in use. The NTCP has identified the urgent need to generate this information to serve as a basis for advocacy and targeted active case finding strategies to reach ex-miners and their families.

2.5.3. Health Workers
Swaziland, with the highest incident rate of TB in the world, is facing a health emergency with significant potential impact on its population, economy, and infrastructure. The crisis of TB is felt strongly among Swaziland’s strained health workforce, which is called on to cope with the rising numbers of TB and HIV patients while facing concerns over their own safety and compounded by misapprehensions and confusions around the disease and its treatment. Worldwide, studies have shown that healthcare workers are at a higher risk of getting TB, which can result in loss of time and productivity from this much-needed workforce, and can contribute, to poor quality of care by health providers who fear for their safety.

The NTCP continues to engage with health facility management to support facility awareness campaigns and to inform and motivate health workers to screen for TB. Facility Wellness campaigns conducted by the program and its partners included health education sessions to health care workers, developing departmental schedules, and scheduling dates and cadres to be screened. The Wellness focal persons and staff visited the different departments according to the schedule and health care workers were allowed time to attend the TB screening. This allowed easy access of the service to the health care workers with minimal disruptions to their normal duties. Clinical mentoring to the different facilities wellness staff was provided by the wellness mother facility and program staff that also provided outreach TB screening services, distribution of IEC materials to health care workers in the facilities was done.

2.5.4 Prison Populations
According to studies, TB in correctional settings (e.g., jails, prisons, detention centres) remains a growing problem. There are approximately 10 million individuals who are detained worldwide.

1 World Health Organization, Childhood Tuberculosis. 2015
2 World Health Organization, Swaziland Tuberculosis Profile. 2014
Inmates are at greater risk of developing TB than people in the general population due to their close, prolonged indoor confinement and other associated conditions common among inmates. TB incidence is 5 to 70 times greater in prisons than in communities. Prisons are often high-risk environments for TB transmission because of severe overcrowding, poor nutrition, poor ventilation and limited access to often insufficient health care.

The NTCP has responded to the challenge posed by TB in prisons by ensuring that TB diagnosis and treatment is available to all prison inmates and correctional services staff. In the year under review the program has manage to decentralize TB services to five of the 10 correctional service facilities in the country. The NTCP has introduced processes that have established critical referral and linkage services for prisoners who are discharged from correctional facilities with active TB and in need of treatment continuation.
Chapter 3: Program Results

3.1. COVERAGE OF TB SERVICES

There are 287 health facilities in the country, of these 97 facilities (34%) are Basic Management Units (BMUs, that is, they either provide TB case finding and/or treatment. Generally, TB services are evenly distributed across all the four regions, and most of the facilities that provide curative services provide some form of TB care. The Shiselweni region has the highest number of health facilities offering TB treatment compared to all the others regions, whereas the Lubombo region has the least.

Table 2: Facilities that are providing TB Services 2014

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Health facilities</th>
<th>Total number of BMUs</th>
<th>Xpert and microscopy sites</th>
<th>Culture Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hhohho</td>
<td>82</td>
<td>24</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Manzini</td>
<td>121</td>
<td>23</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Lubombo</td>
<td>48</td>
<td>25</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Shiselweni</td>
<td>36</td>
<td>25</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>287</td>
<td>97</td>
<td>25</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 2 above, presents the number of facilities that are offering TB services by region. In 2014, the number of BMUs increased from 73 in 2012, 82 in 2013 to 97 in 2014. This means that 34% (97/287) of all health facilities in the country initiate TB treatment.

3.2. TB diagnosis

3.2.1 Systematic screening for active tuberculosis

WHO has developed guidelines on systematic screening for active tuberculosis (TB) based on a thorough review of available evidence. Early detection of TB is essential to further improve health outcomes for people with TB, and to reduce TB transmission more effectively. Systematic screening in high risk groups is a possible complement to efforts to improve the patient-initiated pathway to TB diagnosis (that is, diagnosing TB among people who actively seek care with TB symptoms, also called "passive case-finding").

The Swaziland TB program utilizes a standard TB screening tool that have identified symptoms used to investigate patients for TB. The tool asks questions on major symptoms including cough of any duration, fever, night sweats and weight loss and if a patient answers yes on any of these, they should be suspected for TB and investigated. TB diagnosis is bacteriological confirmed through GeneXpert, culture and other tests however; there are other none-bacteriological methods acceptable for TB diagnosis including clinical symptoms staging by the medical officer, X-ray diagnosis for cases where sputum cannot be obtained from patients though collection of sputum for any patient starting TB treatment is recommended.
Table 3: Number of TB Screenings for period 2010 to 2014

<table>
<thead>
<tr>
<th>Year</th>
<th>Number Screened</th>
<th>Presumptive cases</th>
<th>Number Diagnosed</th>
<th>Number enrolled on treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>175,787</td>
<td>13,879</td>
<td>1,017</td>
<td>907</td>
</tr>
<tr>
<td>2012</td>
<td>294,611</td>
<td>16,140</td>
<td>1,671</td>
<td>1,428</td>
</tr>
<tr>
<td>2013</td>
<td>294,590</td>
<td>12,001</td>
<td>1,281</td>
<td>1,239</td>
</tr>
<tr>
<td>2014</td>
<td>286,073</td>
<td>9,744</td>
<td>838</td>
<td>715</td>
</tr>
</tbody>
</table>

Table 3 above, shows data on the number of TB screening performed disaggregated by year. The source of the data reported on the above table is the Presumptive TB Register; hence, the number of cases put on treatment may not tally with the overall case notification. Also note that this table presents the number of screenings performed not the actual number of people screened for TB. The screening tool is by design expected to be highly sensitive to positively identify TB suspects and this has been the trend since the last three years however, the benchmark for specificity has remained at 10% of all cases screened positive for TB throughout the years.

3.2.2 Case Detection
Case detection is based on identification of TB suspects attending health facilities and subjecting them to sputum examination. The following criteria were being used for the diagnosis of sputum smear positive Pulmonary TB Cases. Any patient presenting with cough for more than 2 weeks is a presumptive pulmonary TB. The NTCP has adopted standardized diagnostic algorithms for diagnosing smear positive; smear negative pulmonary and extra pulmonary TB in adult and paediatric patients. Drug resistant TB cases are diagnosed using solid culture/liquid culture DSTs/LPA. Comparative accuracy Of GeneXpert/ Cartridge Based Nucleic Acid Amplification test (CBNAAT) is used for diagnosing TB and DR-TB in eight sites.

Case notification rates of all forms of TB had been steadily increasing since 2000, but over the last 5 years, a significant progressive decrease has been observed (Figure 1). The notification rate in 2013 still far below the estimated TB incidence that represents the ideal in terms of universal access. In 2013 by WHO and currently estimated case, detection rate of all TB cases in Swaziland is 46%.
Figure 1: Estimated Prevalence, Incidence and Notification Rate (Actual), Swaziland 2008-2013

2008 2009 2010 2011 2012 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Prevalence</th>
<th>Incidence</th>
<th>Notification rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>749</td>
<td>1,227</td>
<td>948</td>
</tr>
<tr>
<td>2009</td>
<td>757</td>
<td>1,257</td>
<td>1,069</td>
</tr>
<tr>
<td>2010</td>
<td>751</td>
<td>1,287</td>
<td>1,058</td>
</tr>
<tr>
<td>2011</td>
<td>870</td>
<td>1,317</td>
<td>867</td>
</tr>
<tr>
<td>2012</td>
<td>907</td>
<td>1,349</td>
<td>720</td>
</tr>
<tr>
<td>2013</td>
<td>945</td>
<td>1,382</td>
<td>610</td>
</tr>
</tbody>
</table>

a) Case Notification of TB: All Forms

Every quarter, the National TB program receives aggregate case-finding, program management, sputum conversion, and treatment outcome information for patients registered under the program from over 80 tuberculosis units in the country. The NTCP follows the global method of cohort analysis for describing case finding and treatment outcomes. Timely data collection and dissemination remain the hallmarks of the NTCP surveillance and data management system. The data from the quarterly reports are analysed and disseminated in the public domain as quarterly performance reports before the end of the subsequent quarter and as an annual report.

Figure 2: Number of Notified TB cases by types, 2010-2014

Figure 2 above, summarizes the number of cases that were diagnosed with various types of TB diagnostic procedures and notified to NTCP. It presents new cases of TB as well as recurrent TB episodes after previously being treated for TB. By comparing case detection with previous years a downward trend is
observed, raising hopes that the TB burden might have reached its peak and it has begun declining. Ideally as a country, we would want New Smear negative cases (SS-) to increase whilst New Smear positive (SS+) cases decrease.

New SS+ cases have nonetheless been increasing from 2011 to 2013 and only slightly reduced in 2014 (2540). Even so, 2014 new SS+ cases are still high compared to 2011 and 2012. All the other various types of TB have reduced during the period. New SS- cases have reduced by over 50% from 2011 to 2014. There has been an improvement in the number of clients with Smears Not Done (SND). In translation the number of clients with smears not done has reduced significantly, 2396 clients had Smears not done in 2011, whilst 720 clients had smears not done in 2014. Out of all the various forms of TB previously treated SS+ cases had the lowest reduction from 2011 to 2014 (388 and 321 respectively).

b) Trends for TB notification rates
For describing the notification in this section, the data from the reports of the 4 quarters in a calendar year have been combined and is presented in the form of annual data. The data presented below extend from the year 2011 up to 2014. The rates presented in this section are all per 100,000 populations and the assumption made was that all TB units has been operating for the duration of the year. In addition, the population used for the regions and the country are estimates based on 2007 census.

Figure 3 above, present compares the TB notification trends for all forms with news cases from 2010 to 2013. Estimated TB incidence stood at 1 287/100 000 population when last measured in 2010 by the World Bank and is estimated to have increase 1 349/100 000 population by 2012. In contrast, the actual notification rates for Swaziland have been gradually declining from 1 048/100 000 in 2010 to 610/100 000 population at the end of 2013. These inconsistencies might reflect the acknowledged deficiencies of the WHO estimates and the growing demand for country specific TB surveys to determine the TB burden based on population level data or active cases notification in the country might be low.
Figure 4 above, presents TB notification trends for New Smear Positive cases from 2011 to 2014. In 2013, the program reported the highest smear positive cases (253/100 000 population), whilst 2011 had the lowest (225/100 000 population). It is important to note that the figures have been increasing from 2011 to 2013 and only decreased in 2014. Nonetheless, the 2014 figures are still higher than 2011 and 2012 respectively. There is a need for interventions to reduce the TB positivity.

c) TB/HIV collaborative activities

In 2014, it was estimated that there were over 200 000 people living with HIV in Swaziland, constituting nearly 10% of people living with HIV globally. There were an estimated 13 000 new HIV infections and 6,000 AIDS-related deaths in the country in 2014 in 2012; this level has remained stable since for the past 5 years. Women (aged 15 years and above) account for nearly 37% of the total number of people living with HIV in the country. A significant proportion of people living with HIV are also infected with TB and are thus at a high risk of developing TB. In 2014, the estimated incidence of HIV-positive TB cases was 1038 per 100 000 population in the Swaziland.

TB and HIV act in a deadly collaboration. HIV infection increases the risk of TB infection on exposure, progression from latent infection to active TB, risk of death if not timely treated for both TB and HIV and risk of recurrence even if successfully treated.

Correspondingly, TB is the most common opportunistic infection and cause of mortality among people living with HIV (PLHIV), difficult to diagnose and treat owing to challenges related to co-morbidity, pill burden, co-toxicity and drug interactions.
Figure 5, above presents HIV testing results and uptake of ART by TB patients. HTC uptake by TB patients has been increasing over the period 92% in 2011 to 97% (5430/5582) in 2014. This can be attributed to HTC interventions giving the population proper HIV testing information, counselling, the reduction of HIV stigma and the success of ART programs. Nonetheless, TB/HIV co-infection remains high, in 2014 TB/HIV co-infection stood at 73% (3972/5430). The gap in CPT and ART initiation is closing in (becoming narrow). ART initiation among TB/HIV co-infected patients stood at 80% (3123/3904) in 2014 showing a significant increase in 59% (3285/6194) reported in 2011. However much as the gap between ART initiation and CPT initiation is decreasing, there is still a significant gap that needs to be closed/ addressed by the program.

3.3. TB treatment

INH (H), Rifampicin (R), Pyrazinamide (Z) and Ethambutol (E) are used in the treatment of TB patients. A new case of TB patient will receive 6 months of treatment with 2 months of IP (HRZE) and 4 months of CP (HR). Re-treatment TB case will receive 8 months of treatment with 3 months of IP (HRZE) and 5 months of CP (HRE). Follow up sputum smear examinations are done at the end of the intensive phase (IP), 2 months into the continuation phase (CP) and at the end of treatment. If the smear is positive at the end of the intensive phase, the same drugs are given for one more month and then the CP is started. The treatment outcome is determined according to the results of the follow-up smear examinations done during treatment. For paediatric TB patients; asymptomatic children under 5 years who are household contacts of smear positive pulmonary TB patients; chemoprophylaxis with isoniazid (10 mg/kg body weight) is administered daily for a period of 6 months.

<table>
<thead>
<tr>
<th>Year</th>
<th>HHOHOHO</th>
<th>MANZINI</th>
<th>LUBOMBO</th>
<th>SHISELWENI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2,537</td>
<td>3,581</td>
<td>1,339</td>
<td>1,723</td>
<td>9,180</td>
</tr>
<tr>
<td>2012</td>
<td>1,986</td>
<td>3,151</td>
<td>1,344</td>
<td>1,250</td>
<td>7,731</td>
</tr>
<tr>
<td>2013</td>
<td>1,783</td>
<td>2,771</td>
<td>1,236</td>
<td>874</td>
<td>6,664</td>
</tr>
<tr>
<td>2014</td>
<td>1,458</td>
<td>2,323</td>
<td>961</td>
<td>840</td>
<td>5,582</td>
</tr>
</tbody>
</table>
Table 4 above shows the number of TB cases between 2011 and 2014. A declining trend has been noted in the number of people starting TB treatment over the years. In 2014, a total number of 5,582 people started TB treatment in 2014, showing 39% decline from the 9,180 in 2010.

3.3.1 Sputum Smear Conversion
The national guidelines for TB treatment stipulates that follow-up of patients already on treatment should be done at least at month two, three, five and end of treatment through sputum microscopy. In accordance with these guidelines, the TB program monitors progress of TB patients once started on treatment and documents this for future programmatic interventions and corrective actions when needed.

The proportion of smear-positive patients with sputum smear conversion at the end of the intensive phase is also an indicator of TB program performance. This is because sputum smear and culture conversion are important indicators for the effectiveness of treatment and the infectivity of the patient. WHO recommends its use as a useful indicator for TB control programs in monitoring the TB program performance, and as a trigger for rigorous assessment in patients who are still have a positive smear. Patients are considered no longer infectious, once the sputum smear has become negative. Those failing to achieve sputum conversion after 2 months are more likely to have poor treatment outcomes. A positive sputum smear at the end of the intensive phase, as defined by WHO, may indicate any of the following:
- the initial phase of therapy was poorly supervised and patient adherence was poor;
- poor quality of anti-TB drugs;
- doses of anti-TB drugs are below the recommended range;
- there are co-morbid conditions that interfere either with adherence or with response;
- The patient may have DR-TB that is not responding to first-line treatment.

Sputum conversion among new and retreatment cases in 2014

![Sputum conversion chart]

*Figure 6: Sputum conversion among new and retreatment cases in 2014*
Figure 6 above, presents sputum smear conversion rates among new and retreatment cases in all four regions of the country. The conversion proportions are relatively acceptable, recorded as 73% and 64% at national level for new and retreatment cases, respectively.

Among new cases across the four regions, conversion demonstrates no significant differences: it stands at 74% for Shiselweni, Manzini, Hhohho regions, and 65% in the Lubombo region. Among new cases, 6% and 4% failed to convert and died, respectively.

On the other hand, conversion among retreatment cases show some disparities among the regions: 71% in Manzini, 61% in Hhohho, 59% in Shiselweni and finally, 53% in the Lubombo region. Smear not done among retreatment cases is 22%.

In TB control, a smear not done is reason enough for an alarm as these could lead to undetected DR-TB, delayed diagnosis and subsequently, loss of life. Among retreatment cases, 8% and 5% failed to convert and died respectively. The Lubombo region with 13% registering quite high numbers of deaths among retreatment cases, relative to 5% in Hhohho, 3% in both Manzini and Shiselweni regions.

3.3.2. Treatment Outcomes

The aim of the TB program is to achieve 100% favourable outcomes for all patients diagnosed with TB and started on treatment. Whenever possible the aspirations of the national TB strategy are to cure patients of TB while ensuring that all patients finish their course of treatment. Accordingly, the goal is to achieve the long awaited 85 percent treatment success rate for TB and more as per WHOs recommendation. The TB treatment success rate among new sputum smear positive cases has continued to show a steadily increase over the years. In 2014, the TB treatment success rate stood at 79% showing a significant increase from the 69% reported in 2010.

Figure 7: Treatment outcomes of all New Sputum Smear Positive TB cases [2011-2014]
The overall TB treatment success rate for all forms of TB cases (new and re-treatment cases) increased from 66% in 2010 to 75% in 2014 however, this is still below the 85% national target as set out in the NTCP strategic plan. In summary, the treatment success rate has shown to be higher among smear positive cases (79%) when compared to re-treatment cases and failure cases (68%).

Treatment outcomes of all forms TB cases [2014]

Figure 8: Treatment outcomes of all forms TB cases [2014]

Figure 9 below, present treatment outcomes for HIV positive TB patient cohorts for the period 2011 to 2014. Among new smear positives, treatment success rate has shown an increase over the years from 71% in 2011 to 79% in 2014. Retreatment co-infected patients the same trend has been observed with 59% in 2011 to about 68% in 2014. However among smear negative and extra pulmonary HIV co-infected cases the treatment success rate has been fluctuating over the years with higher rates recorded in 2012(76%) and 2014 (79%) respectively.

Treatment outcomes of the HIV positive TB patient cohorts, Swaziland, 2011-2014

Figure 9: Treatment outcomes of the HIV positive TB patient cohorts, Swaziland, 2011-2014
3.4. Burden of paediatric TB in the country

The actual burden of childhood TB (14 years old and under) is not known, though for high burden countries, it has been assumed that 15-20% of total TB load is found in children. Globally, about 1 million cases of paediatric TB are estimated to occur every year accounting for 10-15% of all TB; with more than 100,000 estimated deaths every year, it is one of the top 10 causes of childhood mortality. Though MDR-TB and XDRTB is documented among paediatric age group, there are no estimates of overall burden, chiefly because of diagnostic difficulties and exclusion of children in most drug resistance surveys.

Table 5: Childhood TB Burden and HIV testing 2010-2014

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td># of cases</td>
<td>1,144</td>
<td>829</td>
<td>671</td>
<td>502</td>
</tr>
<tr>
<td>tested for HIV</td>
<td>975</td>
<td>735</td>
<td>607</td>
<td>465</td>
</tr>
<tr>
<td>HIV+</td>
<td>546</td>
<td>421</td>
<td>277</td>
<td>222</td>
</tr>
<tr>
<td>Initiated on CPT</td>
<td>529</td>
<td>402</td>
<td>268</td>
<td>218</td>
</tr>
<tr>
<td>Initiated on ART</td>
<td>277</td>
<td>262</td>
<td>195</td>
<td>176</td>
</tr>
<tr>
<td>% on ART</td>
<td>51%</td>
<td>62%</td>
<td>70%</td>
<td>79%</td>
</tr>
</tbody>
</table>

In the last 5 years, paediatric TB has been within the range of 9%-12% cases detected in the country. Training of health workers on clinically diagnosis, the integration of childhood TB in routine child health services (Expanded Program and Immunization (EPI), Integrated Management for Childhood Illnesses) and increase access to GeneXpert technology, has improved paediatric TB diagnosis. An improvement in paedriatic TB care has been noted in TB-HIV collaborative activities, shown by the gradual increase in the uptake of ART. In 2014, ART uptake stood at 79% when compared to 51% reported in 2011.

Cascade of Paediatric TB/HIV Services in Swaziland 2014

*Figure 10: Cascade of Paediatric TB/HIV Services in Swaziland 2014*

In 2014, of 502 childhood TB cases, 93% had HIV screening, and 48% of these, were HIV positive. In the same year, 98% and 79% HIV positive TB children were on CPT and ART, respectively. The increasing trend in the percent of people on ART: from 51% in 2011, 79% in the current reporting period 2014, is a reflection of strengthened collaborative activities in the integration of TB/HIV over the years in improving TB and HIV management.
Figure 11: Paedriatic Sputum Examination 2011-2014

Figure 11 above, is a graphical presentation of sputum examination among children from 2011 to 2014. Sputum examination remains a major challenge for diagnosis of paediatric TB, as children are paucibacillary and smaller children cannot produce sputum. There is an observed increasing trend in paedriatic specimen collection over the years, e.g. from 18% reported in 2011 to 47% in 2014. This will allow better access of children to DR-TB services.

In 2014, the NTCT and ICAP engaged with the World Foundation for paediatric imaging (WFPI) to bring a team of radiology professionals to support three facilities in the country, MGH, Good Shepherd Hospital and Pigg’s Peak Hospital, with the objective of building capacity to diagnose TB in children using imaging. This activity involved Radiology Department staff and Medical Doctors and proved a great opportunity that may be carried over in the future. There is no National data on IPT uptake for paediatric under five contacts, though preliminary data from Baylor shows less than 10% of children of under 5 contacts are accessing prophylaxis.

3.5. Drug Resistant TB

The rise in Mycobacteria, which are resistant to drugs used to treat TB, has developed a significant public health concern world over creating an obstacle to effective TB control. As per WHO’s “Global Tuberculosis Report, 2012”, Swaziland is one of the high burden countries for tuberculosis as well as drug-resistant tuberculosis. According to the MSF population resistance survey of 2009, 7.7% of all newly initiated cases and 33.9% of the previously treated cases are MDR TB forms.

The NTCP has developed a multi-faceted response plan to combat the challenge of drug resistant TB. The key focus of NTCP is to prevent the emergence of drug resistance by providing quality DOTS diagnostic and treatment services and promoting adherence to International Standards of TB care by all healthcare providers. The NTCP has kept a close monitoring of laboratory confirmed drug resistant TB cases including multi-drug resistant TB (MDR-TB) cases and extra-drug resistant (XDR-TB) cases. To obtain a more precise estimate of Multi-Drug Resistant TB (MDR-TB) burden in the country, the NTCP need to commission drug resistance surveillance (DRS) surveys in accordance with global guidelines.
The new DR-TB guidelines requires immediate initiation on category IV regimen for all cases detected through GeneXpert and found to be Rifampicin resistant.

3.5.1. Enrolment
Figure 13, below presents DR TB cases enrolled on treatment in Swaziland disaggregated by age. DR-TB cases are highest in adults (>15 years), thirty 35 adult MDR-TB cases were enrolled in 2014. In 2014, there were 35 MDR-TB new cases. Rifampicin Resistant TB reported the highest DR cases in 2014 with 210 cases, whereas XDR-TB reported the lowest cases. Childhood MDRBT remains underdiagnosed among children, as they are rarely sputum positive, currently only 6% of all MDR-TB cases are paediatric cases. There was only one case for females in the age group above 15 years. They are more DR cases for males compared to females. In total 195 cases were reported for males whereas there were 191 cases for females (data not shown).

3.5.2 Multi-Drug Resistant TB Interim Outcomes
Recording and reporting activities assist in the management of individual patients and enable managers to evaluate and improve the treatment outcomes of the program as a whole. Below is an analysis of the 2014 MDR-TB six month’s interim outcomes. Parallel to culture positive, culture negative conversions at 6 months for MDR-TB, Mono/PDR, RR TB, Presumptive TB and XDR-TB cases record relatively fair proportions at 63%, 62%, 56%, 33% and 25% respectively. This is an indication of a possibly successful outcome. However, there is an observed high frequency of patient deaths for Presumptive (27%) and RR (15%) TB cases. Lost to follow up cases for all cases remain comparatively low, at less than 10%.
3.5.3 MDR-TB Final Treatment Outcomes

Figure 14 below, presents DR-TB outcomes for 2011 cohort. DR treatment takes 2 or 3 year final outcomes are evaluated after 36 months to ensure that at least all cases are evaluated. In that case, for 2014, the program reports treatment outcomes for the 2011 TB cohort. A majority of the clients was successfully treated (56%) and only 2% failed treatment. In addition, 17% died and 26% were lost to follow up, making it impossible to track their outcomes. The program needs to improve systems for tracking down patients and/or retaining them back to care to reduce the high proportion of lost to follow ups.

Treatment outcomes of RR-/MDR-TB patients, [2008-2011 Cohorts]
Figure 15, below, presents a segregation of DR-TB outcomes by type of Resistance for 2011 cohort. In this table, we will be looking at 4 different categories; MDR, RR, XDR TB and other TB resistance cases. When looking at MDR-TB cases 54% were successfully treated. Treatment success is comprised of TB cured (27%) and Treatment completed (27%). We will look at MDR cases for all the 4 categories. MDR had the highest (28%) percentage for LFTU and the highest (3%) percentage for failed cases. Since MDR reported the highest for treatment failure and LFTU, it needs intervention. RR cases had the highest (40%) for TB cure, 17% for treatment complete, 0% TB failure, 21% of patients died and 21% were LFTU.

DR-TB Final Outcomes by Type of Resistance 2014, [2011 Cohort]

XDR had the lowest (16%) cured cases, and the highest (34%) cases for treatment completion, on the other hand it had the highest report (31%) for patients who died. Intervention is needed to reduce the number of patients dying from XDR and to increases, the number of patients cured from XDR. Other resistant forms of TB had 1% for treatment failure, 26% LFTU, 10% of the patients died, 25% completed treatment and 38% were cured.

In essence, to reduce LFTU cases interventions need to be done on MDR TB and other forms of Resistant TB. Interventions to reduce the number of DR deaths should be geared towards XDR and RR TB. To reduce treatment failure concentration should be on MDR and other forms of TB. To increase treatment completed, interventions need to be geared towards RR TB. Since XDR, cases cured are low, programs and interventions need to be done.
Chapter 4: Program Achievements and Challenges

The overall aim of the NTCP is to decrease mortality and morbidity due to TB and cut transmission of infection until TB ceases to be a major public health problem in Swaziland. Even in 2014, the program realized improvements in the key indicators monitored. The program managed to achieve its set goals and implement planned activities even in 2014. Of course, it would not be a worthwhile journey without challenges along this road.

4.1. Achievements

4.1.1. Advocacy, Communication and Social Mobilization (ACSM)

The year 2014, has seen the program being involved in several ACSM activities across the four regions of the country; most of which occur in an annual basis. These included; sensitization dialogues at Buhleni and Hlane Royal Residences on TB, TB/HIV and MDR-TB, during the Marula season; providing progress update to key government officials; commemorate World TB Day; and participation in International Trade Fair.

4.1.2. DOTS

Strengthened Monitoring, Evaluation, and Supervision of DOTS implementation: the TB program has engaged officers to be responsible for DOTS at regional level. These officers work collaboratively with regional TB coordinators. Moreover, there was an introduction of an improved, comprehensive reporting form for community treatment supporters, which will further improve monitoring of treatment supporters.

4.1.3. Paediatric TB

In partnership with URC and Baylor, the paediatric program managed to accomplish the following activities in 2014: adapted the WHO training manual for use in paediatric Paedriatic trainings; development of IEC child friendly material; conducted a situational analysis on paediatric Paedriatic and performed a study to analyse the clinical utility and validity of different sample collection and diagnostic methods among children.

TB awareness and health education session on the basic facts on TB, importance of contact tracing, TB infection, prevention and control at home and school were conducted in a number of schools. TB IEC material was distributed and TB screening was also done on causal and close contacts of TB index patient (student), classmates and as well as teachers.

4.1.4. Prison Population

TB Awareness campaign was conducted at Big Bend Correctional facility where by inmates and correctional staff members participated. TB screening was also offered to both inmates and staff members and these is an ongoing service offered in the facility. The facility was also accredited to be a BMU and all health workers were trained on TB/HIV management.

4.1.5. Miners and Ex-Miners

The program in collaboration with URSA conducted TB/HIV an on-site awareness campaign at Maloma Colliery mine. TB screening and HTC services were provided to all workers. The Maloma mine clinic was also accredited to be a Basic Management Unit and all nurses were trained on TB/HIV Management. TB IEC material were distributed in the site.
4.1.6 Health Care Workers
On site trainings for health care workers were conducted in 17 health care facilities on TB, TB IPC and importance of TBV surveillance. Health care workers from 60 facilities were screened on TB and 6 staff members were screened and initiated on IPT. Regional Health Management Teams were also trained on TB/HIV Management

4.1.7 TB/HIV integration:
- Well integrated TB/HIV services among TB, PMTCT, ART, OPD units- including one stop centres
- ICF for TB among PLHIV at all entry points, (including at the national Psychiatric Hospital)
- Over 95% of TB patients tested for HIV, 99% of TB/HIV co-infected patients on CPT, 70% TB/HIV co-infected patients enrolled on ART
- On-going roll-out of IPT, Nurses capacitated to initiate both ART and TB treatment
- TB technical guidelines: Review and update of technical Guidelines - TB manuals, MDR, 3Is, Infection control, HIV care for Adults and Paediatrics, HIV linkages, HTC)
- The measuring of adherence amongst TB and DR TB patients continued using the adherence monitoring tool administered by the TB Adherence officers and Treatment supporters at the facility and community levels.
- Emphasis to facilities to have patients started on treatment with family treatment supporters and community treatment supporters to provide continuous support throughout treatment.
- Patients that interrupt treatment are noted early; lost to follow up are traced and managed according to the national guidelines.

4.2. Challenges
During implementation of TB control activity a number of shortfalls exist in program intervention across the several units that form the NTCP:
- Uncoordinated activities in the regions as well as at communities on paedriatic TB including DOTS
- Termination of contracts for community treatment supporters
- Lack of full-time medical officers and supervision of community-based treatment adherence support, weak DOT and defaulter tracing, inadequate cross-border collaboration, and non-evaluation at the end of treatment have been recognized as the main contributory factors for poor treatment outcomes.
- Infection Prevention and control Risk assessments not done at most facilities
- No designated areas for sputum collection in some health facilities
- Contact tracing at household level not routinely & systematically done
- Poor documentation of TB screening at the different entry points at health facilities among PLHIV
- 70% TB/HIV co-infected patients are enrolled on ART – against a target of 100% % of treatment success against a target of 85%
- Global Fund funding is still not available to the program, thus making it impossible to conduct refresher trainings for treatment supporters.
- Reports from the treatment supporters still delay to reach the TB program due to the distances between the facilities and the TB program. A continuous discussion with the facility nurses and TB regional coordinators has been on going so that the reports be submitted with the facility reports to the regional offices then forwarded to the TB program.
- Drug resistant TB patients default due to the duration of the treatment and this happens despite having treatment supporters. The country is in a process through partners to pilot the use of the
drug that takes shorter duration.

- Community treatment supporters continue to find jobs that are well paying and thus end up resigning from supporting TB patients since the stipend they get is so minima.
- Poor access to IPT for under 5 year’s old TB contact, with lack of reporting at National level.
- No data concerning paediatric outcomes, making difficult to assess the management of paediatric TB.

4.3 Outlook for 2015

- Decentralization of TB and DR-TB services: 83 TB BMU and to 6 satellite sites MDR-TB services and the program has ensured uninterrupted supply of core second line anti-TB medicines.
- Improved documentation and communication systems; GIS mapping of patients; electronic database; WAN linkage with the NRL for electronic transmission of results; electronic lab information (LIS) system and NTCP website development.
- Improved treatment outcomes: Improving TB treatment enrolment and outcome statistics.
- Audiometry services are available on site at TB hospital.
- Diagnosis: TB Screening at the OPD, ART and PMTCT clinics...use of standardized screening tools and TB screening officer’s Patient screening and triage widely practiced at OPDs.
- Specimen transport and referral system in place supporting 118 clinics country; GeneXpert rolled out as initial diagnostic test in 18 sites with 24 machines; Adequate laboratory supplies including cartridges; Xpert MTB/Rif testing as first line of MDR-TB screening as per latest WHO recommendations (2011); adequate capacity for full Culture & DST; Variety of tests available for diagnosis and or follow up: microscopy, GeneXpert and culture.
- Capacity /training: TB focal nurses have been trained on TB management; TB patients managed according to national guidelines # 2013 results.
- Community: Community DOT and family support systems; Treatment supporter / adherence officer system in place for patient tracing 2013 results.
- Infection Prevention and Control: Availability of National Infection Control Plan/Guidelines and Hiring of # TB/HIV IPC coordinators to strengthen implementation of IPC interventions; Health care workers use N95 respirators on TB wards.
Chapter 5: Conclusions and Action Points

5.1 Conclusions
The National TB control Programme in 2014 continued to implement and coordinate TB prevention and control activities in all the 4 region of the Country. The programme witnessed a decline in TB case notification with no tested cause, this calls for a prevalence survey and further improvement in the routine reporting system to accurately report all TB cases. To the benefit to the program GeneXpert machines were also rolled out to additional TB diagnostic sites to measure TB program performance over the last 5 years the program in collaboration with WHO and partners was able to conduct a TB program review.

5.2 Action Points
- Conduct prevalence study to investigate the decline case notification
- Promote and support operational research on diagnostic and care aspects of TB and DR-TB management
- Integrate TB into community outreach programs
- Provision for psycho social support for TB patients
- Enforce adequate screening and monitoring for TB among all HIV patients (Pre-ART and ART)
- Strengthen TB screening in OPD & NCDs
- Revise HIV, ANC registers to track sputum smear results
- Improve IPC infrastructure in peripheral TB laboratories
Chapter 6: References

6. World Health Organization, Childhood Tuberculosis. 2015
7. World Health Organization, Swaziland Tuberculosis Profile. 2014