PROGRAM QUALITY AND EFFICIENCY CASE STUDY

USING QUALITY IMPROVEMENT APPROACHES TO INCREASE TB CASE DETECTION

TANZANIA

The Global Fund

I. INTRODUCTION

Tuberculosis (TB) is the leading killer among infectious diseases globally, with more than 1.6 million deaths in 2017. Tanzania is ranked among the thirty high burden countries (HBC) that contribute 80 percent of the world's TB burden. In 2012, the country completed its first national TB prevalence survey. The results revealed not only a much higher TB burden than previous estimates, but also that many people with TB are missed even after visiting health facilities.

As one of 13 countries where the Global Fund to Fight AIDS, TB, and Malaria (Global Fund) and partners is supporting and expanding successful approaches to find people with TB missed by the health system, Tanzania has mounted an impressive effort to improve the quality and efficiency of its national tuberculosis program. Since 2016, the country has made considerable progress in overcoming health systems challenges to deliver high quality services and improve TB case detection practices at the health facility and community level.

Through a comprehensive program that has been scaled-up in 16 regions by the National Tuberculosis and Leprosy Program (NTLP), quality improvements (QI) have been rolled-out nationally in collaboration with development partners. The reported impact of the program thus far has been significant—with an increase in TB case notification by 12.4 percent from 62,180 cases in 2015 to 69, 818 cases in 2017 after 18 months of implementation.

Drawing on an extensive program document review and interviews with key stakeholders, this case study describes the experience of the national scale-up of quality improvement strategies for TB case detection in Tanzania over the past two years—exploring both the barriers and challenges encountered and the key steps taken by the NTLP to address them. It not only highlights the positive results that have been achieved with QI in Tanzania, but also provides evidence of QI strategies, approaches, and lessons that can be applied and adapted by other countries with similar challenges in TB case detection.

II. CONTEXT

Tanzania—a country with an estimated population of 57 million people—is ranked 14th among the 30 WHO-identified high TB burden countries[1]. It is also listed among the ten countries with the largest gaps between notifications of new and relapse (incident) TB cases and the estimates of TB incidence. Due to limited information on the true burden of TB in the country, Tanzania completed its first national TB prevalence survey in 2012. The results of the national survey confirmed the country's high TB burden and low TB case detection rate—revealing that that over 100,000 cases of TB are missed every year. The results also demonstrated the clear need for renewed efforts to strengthen both the health delivery system and critical program interventions for TB control.

Against this backdrop, the country's NTLP leveraged the national survey results for strategic planning and program improvement, with a focus on identifying evidence-driven innovations to deliver high quality services and improve quality and efficiency in TB case detection. As part of this effort, and with Global Fund support, the **QI in TB Case Detection** initiative was introduced in Tanzania in 2016 with the aim of scaling-up universal provider-initiated TB screening at each entry point of the health facility.

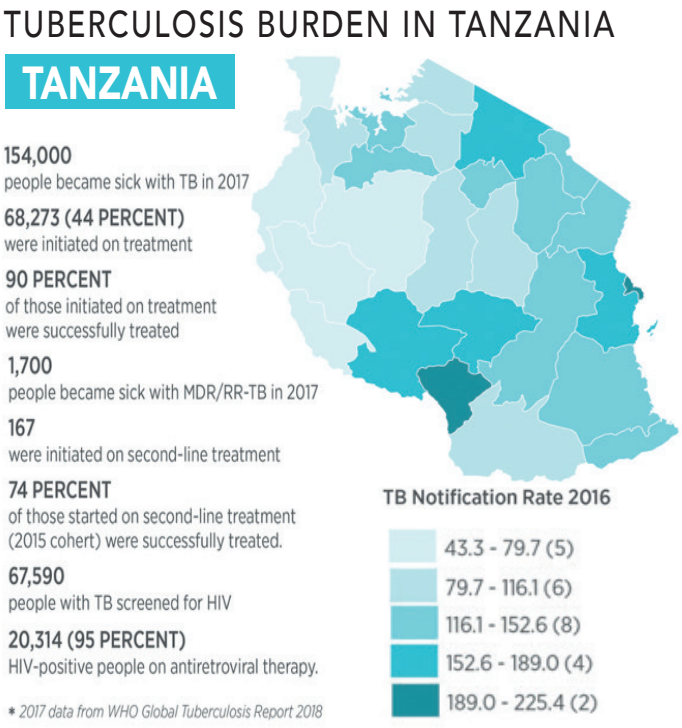

Figure 1

[1] WHO Global TB Report, 2018

III. PROCESS OF CHANGE

Led by the Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC), the QI in TB Case Detection Program in Tanzania was implemented in a three-phase process. The first stage involved a national assessment, the development of a QI toolkit and job aids for improving quality and efficiency of TB case detection practices at the health facility level, and the training of health workers. The second stage involved the roll-out of the toolkit—including the collection of baseline data at pilot health facilities. The third and final stage included the scale-up of improved TB case detection interventions within health facilities, coupled with intensified mentoring, supervision, and monitoring of activities.

At each step of the way, the Global Fund and other key partners have worked in close collaboration with the NTLP to strengthen TB management—with a continued focus on reinforcing national priorities, engaging local partners, and supporting solutions-oriented responses to challenges. Within a short period, the QI process has already promoted positive changes in the country's healthcare delivery system, raised the overall quality of TB care, and led to significant progress in finding missing TB cases.

Box 1: Key findings from the national assessment to identify barriers and best practices for TB case detection

What were the barriers to TB detection in health facilities?

- Poor leadership for active TB case finding within facilities
- Low TB suspicion index and commitment in TB case detection among health workers
- Low usage of diagnostic algorithms including paediatric algorithms/score chart for diagnosis of TB in children by HCWs
- Weak referral and linkages systems.
- Challenges in diagnosis TB in children
- A limited number and unequal distribution of TB laboratory diagnostic services (i.e. smear microscopy, rapid molecular tests); and limited x-ray services and lack of radiologists to interpret results.

What key approaches were identified to overcome barriers to TB detection in health facilities?

- Improve organization and management of TB case detection activities
- Increase access to TB screening services in health facilities
- Improve access to TB diagnosis in health facilities
- Strengthen health facilities' outreach activities to increase access to TB care (i.e., improve the facility – community network).

The key elements in this process of change are elaborated below.

Building a foundation for quality improvement

Evidence indicates that strong health systems and an integrated approach to health systems strengthening are critical in order to meet TB control targets, particularly in resource limited settings[2]. The vast majority of Tanzania's population is served by the public health system. In order to gain a better understanding of health systems challenges that limited increased TB detection at facility level and to learn more about what high-performing facilities were doing to report TB cases—including the identification of key barriers and priority actions—a **national assessment** was undertaken in April 2016. A total of 30 health facilities in six regions (Arusha, Mwanza, Zanzibar, Coast, Mbeya, and Dar es Salaam) were assessed, during which overall health systems functions were examined, along with health facility practices and capacity to implement TB case detection interventions. As a result of the national assessment, **four evidence-based prioritized approaches** (see page 5-7) were developed to scale-up TB case detection throughout the country.

Driving improvement through transformative systems-level interventions

Following the national assessment, and in order to ensure that quality improvement activities were planned, implemented, monitored, and supervised by existing structures and systems within the health facilities, the NTLP developed a **Toolkit for Quality Improvement (QI) in TB Case Detection**—along with a training package, data collection tools (e.g., presumptive TB register), and job aides (e.g., leaflets, brochures, and posters) for health facility managers, health care providers, and patients. The overall aim of the toolkit is to ensure that TB case detection activities carried out in health facilities across the country become part of the routine standard of care and, therefore, sustainable (figure 2).

Specifically, the toolkit provides health workers with technical and operational guidance to improve organizational processes and leadership in TB case detection according to national guidelines; ensures TB case detection approaches are harmonized and consistent across health facilities; and reinforces performance by providing a quick reference QI tool for evaluating improvements in health delivery. The development of the toolkit represented an important milestone in the national TB control effort by providing clear and simple guidance to health workers on how to improve TB case detection at different units and sections of health facilities using proven-effective strategies.

[2] WHO END TB Strategy, 2014

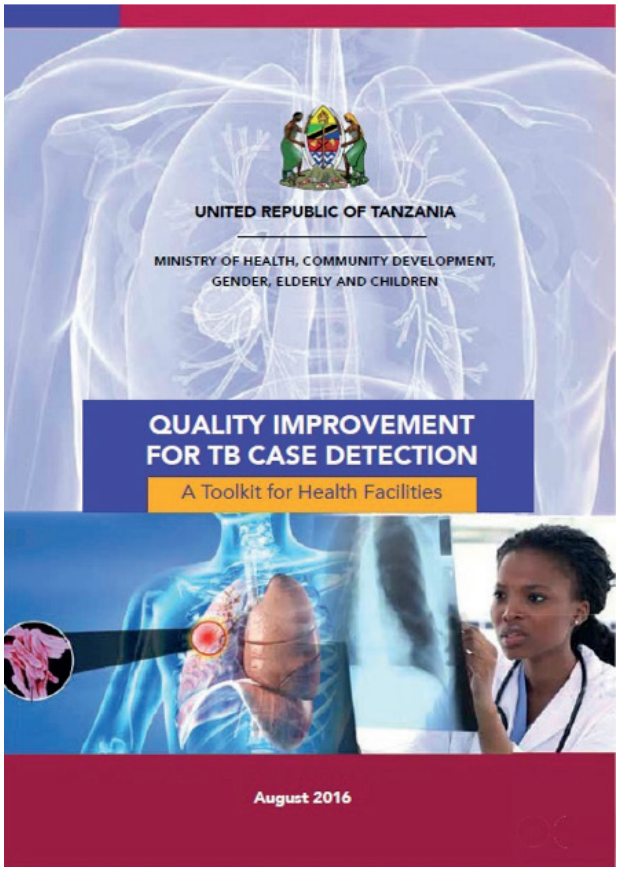

Figure 2

Enhancing the clinical skills of frontline healthcare workers

Improving workforce skills and training front-line health care workers in detection, diagnostic, and treatment services is a vital strategy for TB control as health workers' skills have a considerable effect on program quality. In order to address the national assessment findings which revealed a low TB suspicion index among health workers and low usage of diagnostic algorithms—along with poor coordination and organization of TB case detection in health facilities—the program sought to ensure that health care workers and staff were equipped with the necessary skills to deliver quality services and care.

A number of steps were taken to introduce changes to improve TB case detection and to ensure that these changes were adopted by health care workers at facility level. First, a **national training on Quality Improvement in TB case detection** was rolled-out through orientations for health facility units and the training of champions, districts mentors, and facility-level TB QI focal persons. A Training of Trainers (TOT) was held in June 2016 through which 62 participants were trained—including Regional TB and Leprosy Coordinators, District TB and Leprosy Coordinators, TB/HIV Officers, Program Managers, and NTLP Program Officers.
Through a subsequent series of Regional Trainings, an additional 1,280 health care workers from 187 health facilities across 48 districts in 16 regions were trained on QI methodologies—including the use of the QI toolkit, job aides, and data collection tools. Following the initial training and orientation, health facility in-charge/supervisors and representatives from the facility were tasked with leading their respective health facilities to follow implementation of the toolkit and QI measures.

Putting quality improvement measures to use: from pilot to practice

With the QI toolkit, data collection tools, job aides, and trained health staff in place, the program then worked to ensure that TB case detection activities were standardized and that health facility staff were conducting TB screening routinely and consistently among all patients who presented at the health facility. QI teams comprised of key staff (e.g., health facility in-charge, health facility TB/HIV team, matron/patron, Care and Treatment Clinic (CTC) in-charge, health facility TB focal person, and DOT nurse) were established in each facility and charged with the task of identifying specific barriers and opportunities at different points of care; developing a plan for implementation of the toolkit to increase TB case detection; setting targets and reviewing performance data; and monitoring TB case detection improvement efforts.

QI implementation within facilities began with a **one year pilot in the Dodoma and Mbeya regions from July 2016 to June 2017**. Baseline data over the previous three years was collected from selected intervention and control facilities. Based on the baseline results, a purposive sample of 20 intervention facilities and 20 control facilities (10 of each in each region) were selected, with intervention facilities selected for close follow up through mentorship and supervision.

Following the pilot, which provided evidence that the changes implemented in pilot facilities yielded good results, the **QI initiative was rolled-out to 16 regions, 48 districts, and 187 health facilities (i.e., 3 to 4 high TB volume health facilities per district council) from July to December 2017**. In order to maintain gains, the approach was institutionalized and embedded into TB programming—rolling out to 530 facilities by October 2018.

Interventions to strengthen TB case detection at service delivery level/health facilities in Tanzania were organized across four main strategies[3] identified in the needs assessment and included the following:

1. Increasing access to TB services in health facilities: Main activities included raising the index of TB suspicion among health care providers during

[3] While all of the facilities were trained to implement all of the approaches, implementation differed depending on the level of the facility (e.g., dispensary versus district hospital).

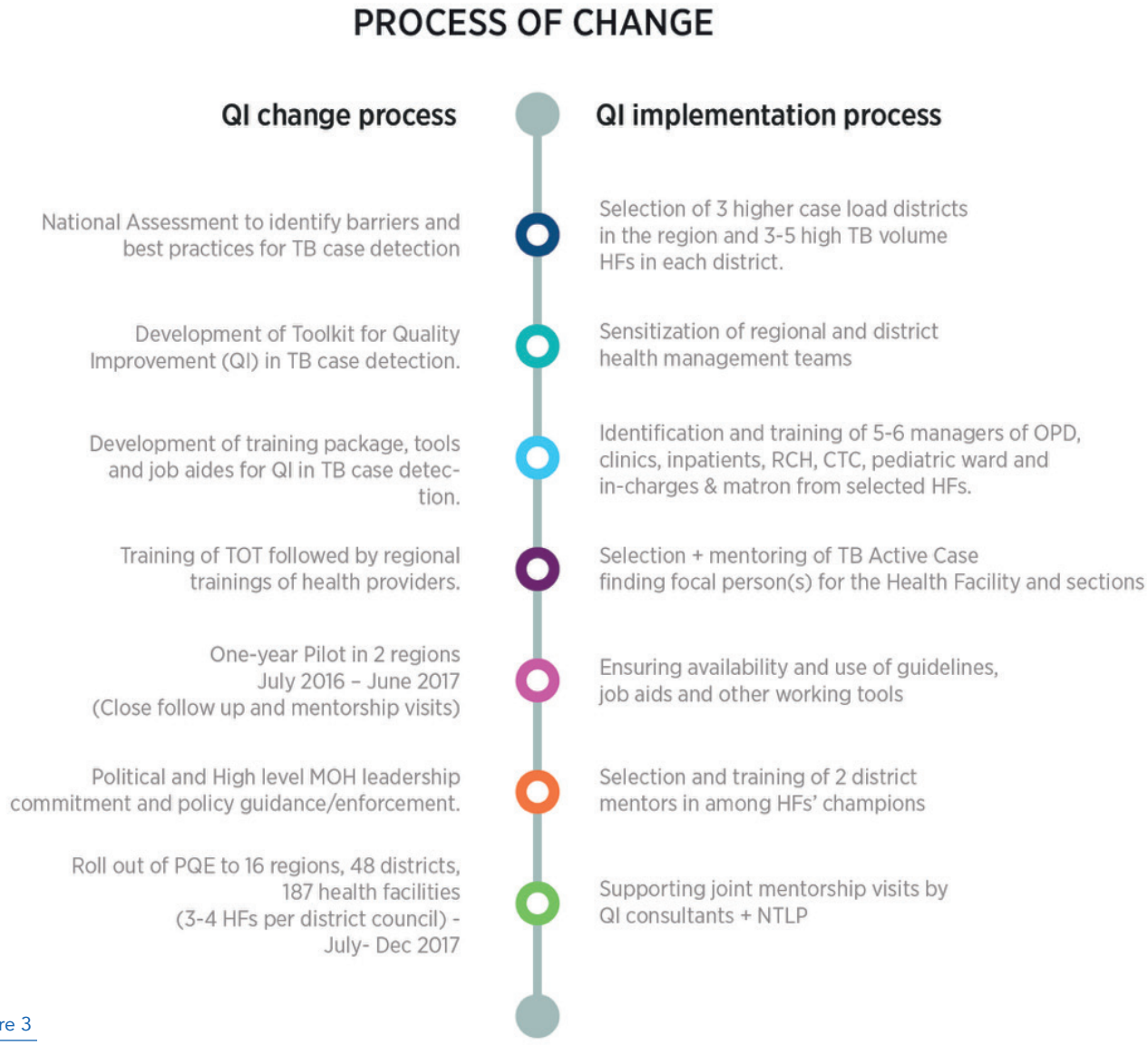

Figure 3

clinical meetings, continuing medical education (CME), and on-the-job mentorship and supportive supervision. Through training and subsequent orientation, health facility staff were sensitized on how to conduct systematic symptom screening for TB to all patients presenting in the health facility regardless of status and on how to use diagnostic algorithms—including pediatric algorithms/score chart for diagnosis of TB in children—to enhance detection. Other activities included the provision of health education for patients on TB symptoms and signs and information on free TB diagnostic and treatment services.

Given the importance of data collection, analysis, and use in TB control efforts, health care workers were supported to improve data quality through training and mentorship on the use of simple data collection tools (i.e., cough registers, TB screening suspect book) and data-driven planning and decision-making at district and facility levels. Health facilities were supported to set targets for both presumptive and TB cases to be detected in a specified time, usually in a quarter. At the same time, sites were supported to strengthen referrals and linkages between different units within health facilities and between diagnostic and non-diagnostic centers and public and private facilities, as well as improve routine contact tracing of all clients diagnosed with smear positive TB.

2. Improving organization and management of TB case detection activities: Leadership is essential for quality improvement activities to succeed and health facility leadership play a central role in creating a culture of quality improvement. To this end, the program sensitized health facility managers and secured their commitment to improving the quality of TB services within their facilities and districts. TB focal persons were also identified in each health facility, while quarterly meetings among interdisciplinary teams (e.g., TB/HIV teams, PMTCT, VCT, RCH, laboratory, OPD wards, diabetic clinic, paediatric OPD/clinic, etc.) facilitated the monitoring of quarterly TB work plans and regular discussion and strategic problem-solving around QI issues. Improved performance in active TB screening was also incentivized through certificates of recognition for health staff, refresher

trainings, and exposure to different health facilities to share experiences.

3. Improving access to TB diagnosis in health facilities: While inaccurate information and limited knowledge often cause delays in seeking TB services, lack of access to a health facility with diagnostic and treatment services is also a significant barrier. In order to improve access to TB diagnosis, the program improved sputum sample collection and handling, expanded TB laboratory diagnostic services, strengthened referrals of presumptive TB cases, and improved patient referral systems from clinics to laboratory and back to clinics within facilities. This was achieved by involving partners who were already working in the regions. For example, in Dodoma, Management and Development for (MDH) was already supporting the community TB component and they strengthened the sample referral from community to health facility, while the NTLP supported laboratory issues by providing new microscopes in facilities that had none. The QI effort was additionally supported by government systems in terms of increasing availability of qualified staff to perform lab diagnosis and availability of lab supplies such as reagents and other commodities.

4. Strengthening health facilities outreach services to increase access to TB care: While this initiative placed emphasis on case finding at health facility level, there was a recognized need to strengthen community screening. As such, health facilities were encouraged to perform community-based activities independently or through collaborations with community-based organizations to increase TB case detection—including following-up of TB clients who miss appointments, training and orientating local leaders and traditional healers, sensitizing communities on TB signs and symptoms, and disseminating TB Information Education and Communications (IEC) materials in the community. Facilities were also encouraged to trace all children in contact with adults smear positive TB cases and children who tested positive with Gene X-pert; initiate all eligible children on TB treatment; and ensure that PLHIV were screened for TB and those with positive symptoms were further investigated for TB and linked to TB care and treatment.

Continuously improving the design and delivery of quality improvement efforts through routine mentorship and support supervision

Following QI training (after both the pilot and roll-out phases), intensive mentoring and support supervision was conducted through a number of mechanisms—including monthly peer support supervision (SS) mentorship visits and coaching by a peer mentor group consisting of one champion and two mentors from each district[4]; close monitoring and technical assistance by TB consultants; and central-level support supervision and mentorship visits. Monitoring of QI TB activities was also incorporated into all routine support supervision visits at all levels and was included on the agenda of quarterly regional TB meetings.

Box 2: QI Activity package at facility level

- Introduction and use of presumptive TB register in all health facility units.
- Introduction and use of score chart for diagnosing TB in children.
- Screening of all attendees in all units of health facility
- Identification and recording of all presumptive TB cases.
- Integration of QI for TB in health facility Quality Improvement Team (QIT) activities, clinical meetings and Continuous Medical Education (CME) sessions and Health Facility exchange meetings.
- Intensified monitoring of health facility sections and presumptive TB register.
- Responding to barriers in TB diagnosis (e.g., equipment, supplies and human resource) that hinder TB diagnostics in health facilities.

During mentoring and Supportive Supervision visits carried out during the pilot phase from August 2016 to May 2017, presumptive TB registers and QI-related data tools were reviewed and mentorship sessions on QI in TB case detection were held with health workers from various sections and units of the health facilities. In addition to monitoring progress, monthly mentorship served as a critical mechanism for identifying and addressing any issues along the case detection pathway.

During the pilot, a number of gaps were identified during mentorship visits, including the need for:

- increased commitment and ownership for the TB/QI agenda from health facility leadership and staff;
- increased active TB screening in all units (i.e., most facilities were still conducting passive TB case detection);
- improved notification of smear negative and extra-pulmonary TB cases (i.e., most of the TB clients diagnosed through active screening were smear positive cases);
- improved target-setting for screening presumptive TB cases and TB cases;
- improved recording of TB cases (i.e., some facilities were not recording TB patients who started anti-TB treatment in their facilities and immediately transferred to other facilities);
- better understanding of how to interpret the score chart for TB case detection among children; and
- better understanding of patient flow and main entry points into TB screening.

[4] The team was comprised of facility staff, district and regional coordinators, QI consultants, and representatives from the NTLP

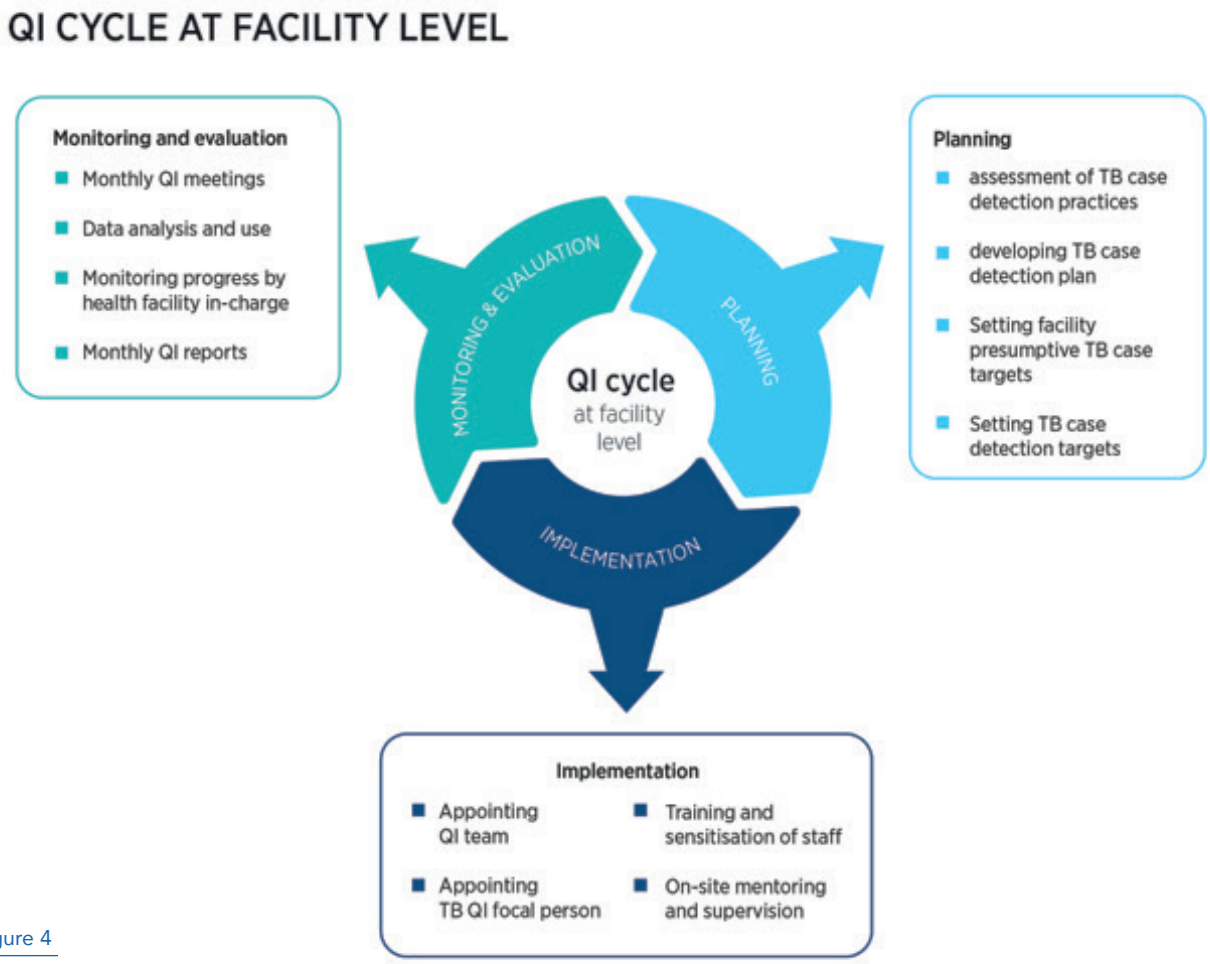

Figure 4

Gaps identified during the pilot phase were then addressed during mentorship visits and the recommendations were applied to the regional trainings during the roll-out phase.

IV. RESULTS

Despite the barriers and quality of care issues that were identified through the pilot, the findings after one year of implementation revealed considerable increases in TB case detection in intervention facilities in both regions. These positive results encouraged the NTLP to continue the work beyond the pilot phase to include all districts and provided an evidence base of interventions for QI improvements that could be applied during national scale-up.

The following results were achieved after one year:

- Among the 10 intervention sites in the Dodoma region, the pilot registered a 55 percent increase in TB case detection in Q1 of 2017 compared to Q1 2016, along with a 43 percent increase in Q2 of 2017 compared to Q2 of 2016 (see Figure 5).
- Control facilities did not show increasing trends in TB case notification in the Dodoma region during the same time period. Analysis of control facilities and districts showed a decrease in TB notification, while all districts that implemented QI showed an increase in TB notification (see Figure 6).

After 18 months of implementation (July 2016 to December 2017), additional gains were made:

- A 12.4 percent increase in national TB case notification was recorded—from 62,180 cases in 2015 to 69, 818 cases in 2017 (see Figure 7).
- Increased suspicion of TB among health workers, which has been observed in clinical meetings at health facility level.
- Incorporation of active TB case finding in facility, district, regional, and national forums.
- Increased notification of childhood TB cases, which is due in part to increased TB screening among children at all entry points—including the MCH platform—and the use of the score chart for TB diagnosis in children.

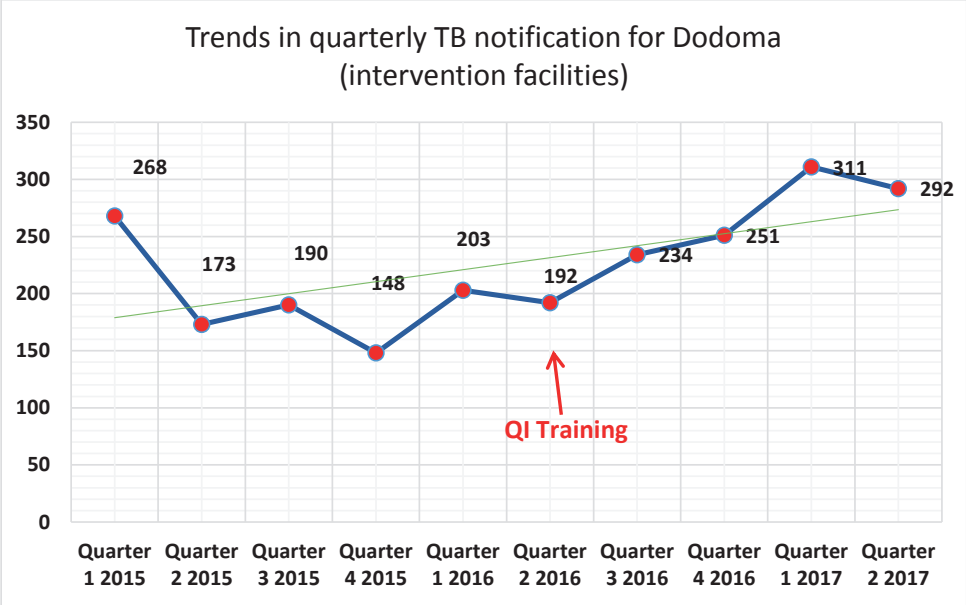

Figure 5

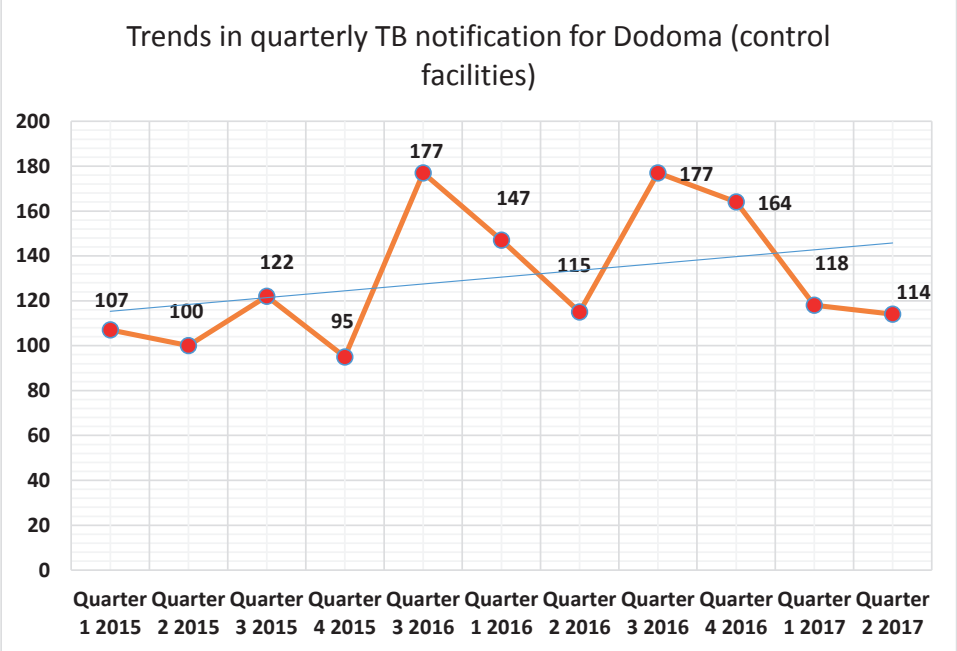

Figure 6

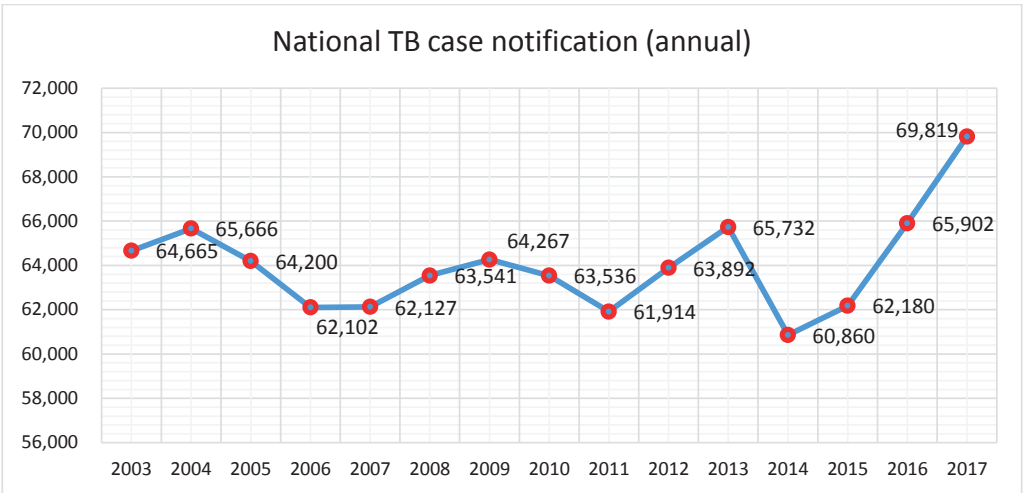

Figure 7

V. CHALLENGES

While the results demonstrate measurable improvements in TB case detection, the program has also encountered key challenges throughout its implementation. These include:

Human resources

A number of sites have indicated that their current staff number is inadequate to cover the high volume of clients they serve, while staff turnover and reshuffling of health care workers trained in TB case detection approaches have resulted in lost gains and a need for repeated skills building and mentorship. Similarly, there is a need across districts to increase the number of trained mentors from two to five in order to ensure that the continuous quality improvement approach is sustained. Finally, the lack of incentives for health care workers has, in some cases, de-motivated workers and reduced commitment.

Diagnostic tools

Some sites still lack fully functional diagnostic tools (this includes long downtimes for repairing equipment such as microscopy and Gene-Xpert) and have limited technical support. Adequate, readily available technical support and additional capacity building are needed in order to address bottlenecks and technical issues related to implementation. There is also a need to optimize the use of various diagnostic tools, equipment, and approaches.

Community linkages

Inadequate linkage between communities and health facilities, including poor coordination of service delivery planning and weak referrals, has been noted in several sites—with respondents indicating that linkages between QI efforts at some health facilities and community-led TB efforts have not been well established.

Consistent application

The new way of doing business that accompanied the QI initiative at facilities has required some adjustments to the way health workers think about TB. Slow uptake of the tools by already overburdened staff has been an issue, thus justifying the need for continued coaching and supervision along with support provided through health facility coordination meetings. The resources needed for optimal implementation of the QI package are considerable. This, along with low HR levels, has contributed to the low coverage of health facilities implementing QI.

VII. LESSONS LEARNED

Both the achievements and limitations of the QI implementation process in Tanzania have served to illuminate a number of lessons learned that can be used to improve TB case detection throughout the country and in other settings. Indeed, while respondents described continuing challenges with TB health service delivery, they were also overwhelmingly positive about the role this intervention has played in supporting a long-term comprehensive approach to addressing TB control and building quality into the foundations of the health care system.

These lessons learned are enumerated below:

1. **Leadership at multiple levels is essential for quality improvement activities to succeed.** Clear policies, procedures, and guidance are necessary for QI implementation but strong leadership is just as crucial. In high-performing facilities, health centre leadership—led by the TB focal person and supported by the NTLP, regional and district coordinators, and QI mentors and champions—played a key role in increased TB case detection. They did this by creating a culture of continuous quality improvement through regular monthly meetings; setting clear roles, responsibilities, and priorities for all stakeholders engaged; and ensuring implementation of tools, approaches, and high-impact interventions. Furthermore, the committed leadership and stewardship of high-level MoHCDGEC officials in policy guidance and enforcement was critical is supporting national-level, system-wide planning and implementation.

2. **Mainstreaming TB diagnosis and care within health facilities enables rapid detection.** Several respondents noted that prior to the QI initiative, only doctors or clinicians charged with TB care were involved in TB case detection, which led to late notification. All other staff were not actively involved in TB screening or diagnosis and, upon suspicion of TB, they would refer these presumptive cases to a doctor/clinician without using the required TB diagnosis algorithms. Shifting the task of TB case detection away from only doctors and clinicians to include nurses and other health care staff minimized missed opportunities, contributed to early detection, and was a critical catalyst for success. Furthermore, sensitizing all facility staff in the QI initiative—including nurse assistants, lab and pharmacy personnel, and even hospital attendants—at all entry points and service areas of the healthcare facility and patient pathways further enabled rapid detection.

3. **Setting performance measures improves the use of TB data for decision-making and planning and facilitates effective accountability.** The key aspect of this approach was to set targets at all levels (i.e., national, regional, district) and at health facilities. Targets were set both for the number of presumptive and TB cases expected usually by quarter. In some of the bigger health facilities, targets were also set for different departments/units such as OPD, wards, HIV clinics, RMCNH etc. Targets were based on the epidemiological situation of the area/clinic and the local knowledge of the epidemic. Health facilities were supported to regularly collect data, conduct simple analysis, and compare to the baseline, QI indicators, and targets. This information was then used to review progress and identify gaps. The information was also used for decision making and planning for improvement in the coming quarter/period.

4. **Coaching and mentorship of health facility staff—especially when integrated into service delivery—catalyses learning and creates a system of continuous quality improvement.** Recent evidence indicates that the provision of supportive supervision and coaching in the post-training period reinforces learning processes, improves health staff motivation, and strengthens clinical performance[5]. Continuous coaching and mentorship was particularly important throughout this intervention in order to address the low TB suspicion index of health workers, improve TB screening practices in health facilities, and improve staff capacity to diagnose and trace people with positive results. Furthermore, the identification of QI teams, mentors, and champions through existing MoHCDGEC health and accountability structures significantly enhanced program quality, effectiveness, and sustainability.

5. **Strong linkages must exist between health facilities and communities in order to truly optimize TB case identification and management.** As noted earlier, increased collaboration with traditional healers, community leaders, and community healthcare workers—leveraging their links to promote better awareness of TB within their networks and facilitate referrals of suspected cases—is a vital strategy for strengthening TB services. Further engagement with community-based health workers, community leaders and traditional healers in community-based management of TB could reduce delays in TB diagnosis and treatment through early referral of persons with presumptive TB to the health care system.

6. **Strategic program collaborations offer important opportunities to reinforce interventions and enhance service integration.** Once the roll-out phase was completed, other partners (KNCV, EGPAF, AGPAHI, MDH, etc.) working within respective regions have supported QI approaches and adopted them into their programming—providing training, mentorship visits, and close follow-up. The benefits of this have included improved joint planning, better sharing and coordination of resources, and enhanced delivery of integrated services.

VII. WAY FORWARD

In only 18 months of implementation, the QI for TB Case Detection program has demonstrated measurable successes—resulting in significant improvements in case finding indicators. The positive results generated during the pilot motivated efforts to roll-out the program nationally—proving that the model is scalable and could also be applicable in similar settings in other countries.

Although implementation challenges remain and lessons continue to be learned as this approach is embedded in the TB program within the 16 regions, the strategies and approaches applied have proven to be an effective model in accelerating TB case detection and improving quality of care in a number of inter-related ways (e.g. diagnosis, treatment). The success of the service delivery model/QI approach was also undoubtedly enhanced by its alignment with existing health system structures and national TB policies and priorities. Current plans include scaling-up efforts beyond the 530 facilities that have now participated in this effort in order to have more impactful results on a larger scale.

While the MoHCDGEC has demonstrated significant commitment, leadership, and political will throughout the process, in order to sustain gains and ensure further integration within national frameworks, the following priority actions for government stakeholders are recommended:

- Intensive, continuous mentorship and supportive supervision of health workers in QI for TB approaches;
- Increased funding and technical support to improve diagnostic capacity;
- Increased investments in the recruitment, training, and retention of healthcare workers at all levels—including CHWs;
- Improved quality management tools and systems;
- Strengthened implementation of operational

[5] A Manzi A, Hirschhorn LR, Sherr K, et al. Mentorship and coaching to support strengthening healthcare systems: lessons learned across the five Population Health Implementation and Training partnership projects in sub-Saharan Africa. BMC Health Services Research. 2017;17(Suppl 3):831. doi:10.1186/s12913-017-2656-7.

research to improve efficiency, cost effectiveness, and programme performance and to guide policy recommendations;
- Strengthened linkages to other interventions— especially community-based activities.
- Improved use of innovation and technology in diagnosis and treatment (such as GeneXpert and digital x-rays, etc.) and automatization of data systems at health facilities to improve efficiency and the effectiveness of the approach.

If you have any questions or would like additional information on the Quality Improvement approach for TB, please contact Eliud Wandwalo, Senior Disease Coordinator TB or Sarah Asiimwe, Public Health, Monitoring and Evaluation officer.

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