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CHANGE PACKAGE

Improving TB Treatment Response Monitoring at Nine TB Diagnostic Treatment Units: Tested Changes and Guidance from Uganda

JULY 2018

This change package for improving TB screening in Uganda was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID) and authored by Sylvia Nakibuuka, Herbert Kisamba, Esther Karamagi, and Mirwais Rahimzai of URC. It was developed as part of the Tuberculosis work in Uganda carried out under the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, which is made possible by the generous support of the American people through USAID.

Cover photo: A provider examines samples. Photo by Sylvia Nakibuuka, URC.

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Acronyms

ARI	Annual Risk of TB Infection
ASSIST	Applying Science to Strengthen and Improve Systems project
CME	Continuing medical education
DTLS	District TB Leprosy Supervisor
DTU	Diagnostic and treatment unit
HIV	Human Immunodeficiency Virus
IP	Implementing partner
KCCA	Kampala Capital City Authority
MDR-TB	Multi-drug Resistant TB
MOH	Ministry of Health
NTLP	National Tuberculosis and Leprosy Program
OPD	Outpatient department
PBC	Pulmonary bacteriologically confirmed
QI	Quality Improvement
RHITES	Regional Health Integration to enhance Services
SCHW	Sub-county Health Worker
STAR E	Strengthening TB and HIV Responses in the Eastern Region
STAR EC	Strengthening TB and HIV Responses in the East Central Region
TB	Tuberculosis
USAID	United States Agency for International Development
VHT	Village Health Team

I. Introduction

Uganda continues to notify thousands of tuberculosis (TB) cases (46,171 TB cases in the year 2014) but these are only half of the estimated TB cases (87,000) (The Uganda National Population Based Tuberculosis Prevalence Survey 2014-2016). These figures exemplify the progress made but also highlight the task ahead for Uganda as a country if it is to achieve the new ambitious global target of ending tuberculosis by the year 2035.

The annual risk of TB infection (ARI) for Uganda remains high at three percent. The Uganda National Population Based Tuberculosis Prevalence Survey 2014-2016 puts the incidence of TB at 234 per 100,000 population for all TB cases and prevalence of TB is 253 per 100,000 population. Based on the 2015 Global TB Report, the mortality rate from TB (excluding HIV-positive TB patients) in 2014 was estimated at 12 per 100,000 population. Multi-drug resistant TB (MDR-TB) is an emerging problem with more than 1,040 estimated cases every year, but the actual case finding is only around 200 cases per year. (Tuberculosis and Leprosy Manual 3rd Edition 2016). Amidst the high TB burden, the quality of TB services is low, with several TB diagnostic and treatment units (DTUs) in the hands of lower cadres of health workers.

According to the Ministry of Health's (MOH) National Tuberculosis and Leprosy Program (NTLP), all bacteriologically confirmed TB cases should have a sputum microscopy (or culture) performed at the end of the initial phase (two months), at the beginning of fifth month, and the beginning of the sixth month of treatment. This is done for both smear-positive and smear-negative pulmonary TB patients. The importance of sputum follow-up smears is to assess treatment response, assesses patients' adherence to medications, to find if bacillary load has reduced, and to identify treatment failures/MDR-TB.

USAID, through the Applying Science to Strengthen and Improve Systems (ASSIST) project in Uganda, is working in collaboration with the MOH and implementing partners (IPs) to build the capacity of health workers to be able to screen, diagnose, and manage TB to improve TB care services using the continuous quality improvement (QI) model as well as the collaborative approach. In January 2016 to September 2016, USAID ASSIST together with the MOH and regional IPs provided support to 15 selected health facilities in Eastern, East Central, Central Kampala Capital City Authority (KCCA), and South Western regions. They conducted eight monthly onsite coaching visits, two learning sessions, and one harvest meeting to ensure TB care services improved at all the TB supported facilities for a period of eight months. The experience gained while doing this work is the basis for this change package.

II. Intervention

Following a baseline assessment conducted in October 2015 at the participating health facilities it was found that sputum follow-up monitoring was at 55.8% at two months, 34.1% at five months, and 31.5% at 6/8 months of TB treatment. USAID ASSIST engaged the facility-based health workers to into regular review and analysis of performance on sputum follow-up monitoring and identify possible process changes to test and implement. In December 2015, ASSIST provided orientation on the basics of QI to the TB case providers through a training. This was followed with regular (at least monthly) support to the teams through onsite coaching to review performance and for teams to come up with service innovations (changes) which they tested to attain improved follow up at two and five months of TB treatment. Facility QI teams comprised of TB focal person, facility in-charge, sub-county health worker, departmental heads, lab personnel and linkages facilitators/VHT were formed.

A. Documentation Requirements and Tools

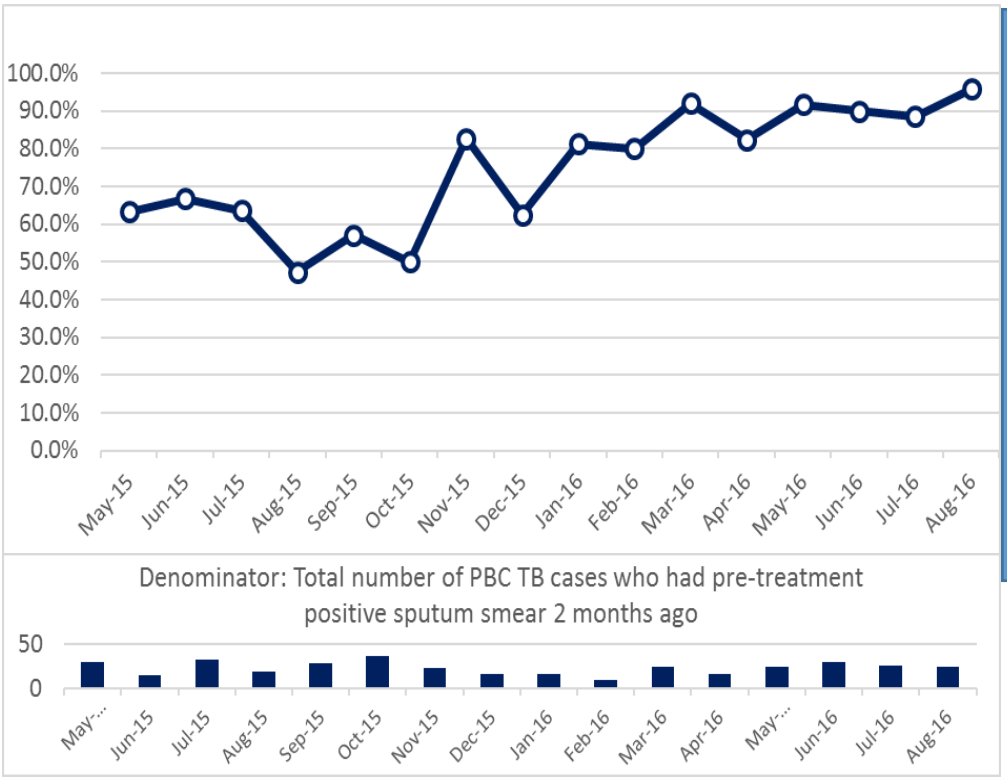
During the intervention, it was vital for health facility teams to document the process of the improvement journey they went through by using the QI documentation journal. Since appropriate scheduling and tracking of the clinic appointments was vital for sputum follow-up testing, a patient appointment register was established at the TB clinics. Since there were no MOH TB client appointment registers at the time, the HIV clinic clients' appointment register was used with minor

changes. This made it possible to track clinic appointment keeping and receipt of required services by clients at each clinic visit.

B. Results

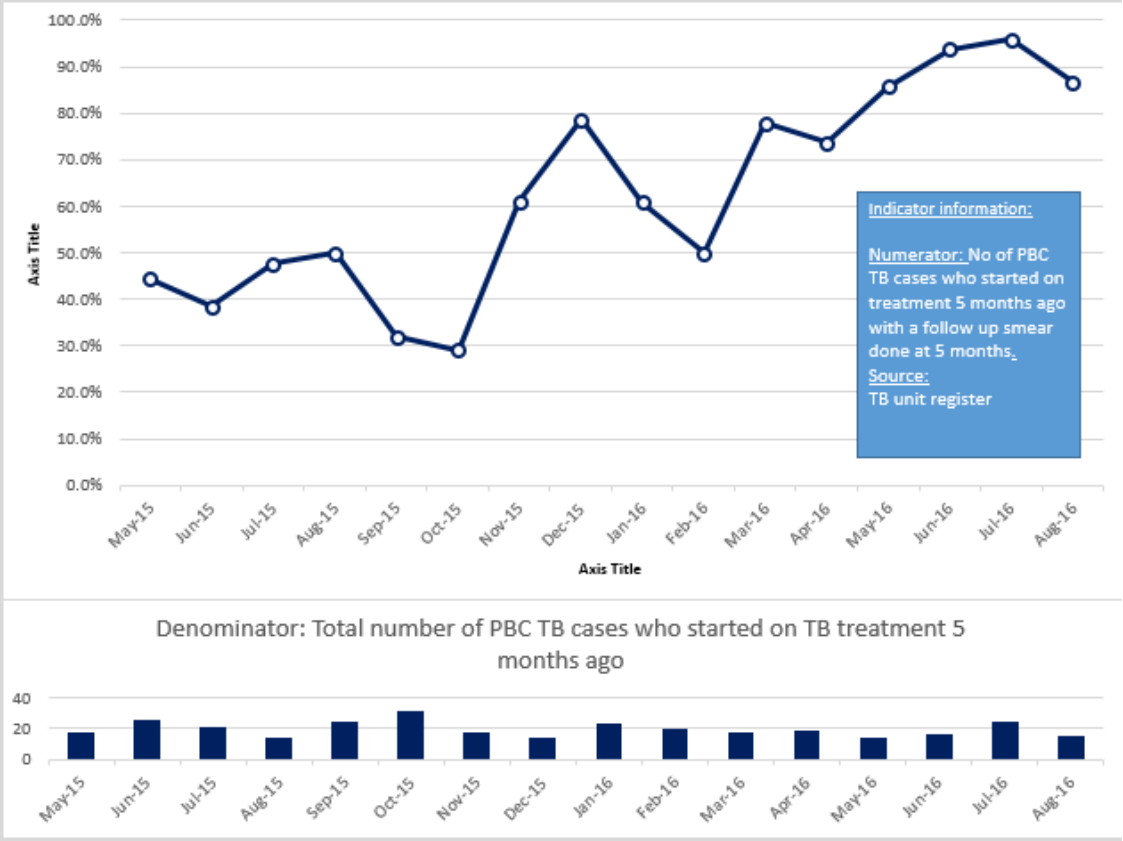
Between May 2015 to August 2016, the teams were able to increase the percentage of confirmed TB cases that had follow-up sputum testing at two months from around 60% to nearly 100% (**Figure 1**). Those with sputum follow-up at five months improved similarly, from 45% to nearly 90% (**Figure 2**). All the tests turned negative indicating good response to TB treatment.

Figure 1. Percentage of pulmonary bacteriologically confirmed (PBC) TB cases that had sputum follow up testing at 2 months of TB treatment in 9 facilities (May 2015 to Aug 2016)



Indicator information:
Numerator: No of PBC TB cases who had a pre-treatment positive sputum smear with a follow-up smear done at 2 months.
Source: TB unit register

Figure 2. Percentage of PBC TB cases who that started TB treatment 5 months ago, that have sputum follow up done at 5 months in 9 facilities (May 2015- Aug 2016)



C. Harvest Meeting

USAID ASSIST held a harvest meeting with the 9 participating health facilities, to compile effective changes that the facilities tested for improving sputum follow up at two and five months. The facility teams compiled the changes that they implemented in their facilities. They analyzed the change ideas and organized them into change concepts. Using a specific template, the participants described step by step how the changes were implemented at each facility. The changes that ranked highly were the ones recommended by the participants. This led to a detailed how to guide of the change package in **Table 1**.

III. Change Package

A. Intended Use

The change package was developed for frontline health workers, IPs, and others engaged in TB care particularly improving TB treatment response with the intention of improving sputum follow-up for all bacteriologically confirmed TB cases at two and five months of TB treatment.

B. How to use the change package

The document has all the changes that were implemented at 9 DTUs in **Table 1**. Those intending to use it can focus on changes that apply to their setting. This change package is intended to provide guidance among individuals and QI teams wishing to improve sputum follow up at two and five months for bacteriologically confirmed TB clients. It provides the general idea and acts as a guidance on concepts with examples of innovative changes that can be done when aiming at improving sputum follow-up. Teams are urged to adapt these changes to suit their clinic settings for improvement to occur.

Table 1. Detailed change package for improving sputum follow-up at two and five months for PBC TB clients at 9 facilities in Uganda

Change Idea	Reason for the change	How the change happened?
Change concept 1: Communicating the guidelines and importance of sputum follow-up		
Orienting health workers on when and which clients qualify for sputum follow-up.	Health care workers were not requesting for follow-up tests. They were only refilling anti-TB drugs, especially if clients were no longer coughing.	• The QI team members agree on the date when to have continuing medical education (CME). • Conduct CME. • After the CME, the team agree that the SCHW who was part of the CME generate a list of eligible clients and ensure that the samples are collected and taken to the lab on the due dates. • After the CME, the team identifies a focal person to be sending reminder SMS to eligible clients. • The team agree the SCHW update sputum results in the TB unit register weekly.
Demonstrate to fellow health workers how to identify who qualifies for sputum follow-up.	Health workers unclear on which client qualifies for a follow up smear and what instructions to give them.	• Identify staff not knowledgeable on follow-up smears. • Members with TB knowledge conduct one-on-one guidance for those with knowledge gaps on who qualifies and when they qualify for a follow-up smear and the specific instructions that need to be given to them.
Change concept 2: Assigning specific roles		
Assign a community health worker to follow-up clients who need follow-up.	No one to identify eligible clients to ensure that those due for follow-up smears are not missed on their clinic visit.	• Generate a list of clients due for sputum follow-up. • Cluster clients on the list by sub-county. • Assign each SCHW and in some cases village health team (VHT) specific patients from their respective sub-counties/villages to follow up when due.
Assign a staff to manage stock for TB test logistics/reagents.	Regular stock out of reagents.	• Identify specific staff familiar with TB reagents quantification. • Identify staff to manage stock of reagents. • Staff take stock weekly. • Make orders and forward to the District laboratory focal person monthly.
Assign one lab person to specifically oversee sputum examination immediately after collection.	Sputum samples were examined late by the lab team.	• Meet with the lab team to discuss importance of examining samples early to reduce patient waiting time. • Team agrees on a specific lab staff to oversee sputum examinations. • Assign lab staff to ensure samples are examined as they came in.
Change concept 3: Integrating activities		
Collecting sputum samples during community follow-up visit by SCHW.	Clients from far sub-counties never came back for follow-up smears. SCHW would only take drugs for	• Identify specific person especially those involved in offering TB care to carry out home visits. • Identify a county specific SCHW to find clients who are due for sputum follow-up but it was not done. • Home visit clients to collect sputum samples.

Change Idea	Reason for the change	How the change happened?
	patients with transport challenges.	
Change concepts 4: Appropriate scheduling		
Provide sputum mugs two weeks before completion of second month (6 weeks on TB treatment)	Clinicians would forget to request for follow-up smear. They would only refill patients' drugs. Patients, after receiving their drug refill, would just leave the facility without follow-up smear being done.	• Generate a list of clients due for sputum follow-up and their due dates. • Put sputum mugs in each clinician room to avoid clients getting lost and long waiting time at the lab. • Share a list of eligible clients with clinicians, out-patient department (OPD) staff, Lab and dispensary staff as reminder to identify clients who were due as they reviewed them. • Update the list of eligible clients bi-weekly and those whose sample was taken were highlighted. • Share names of clients who missed their appointment with SCHW to follow-up clients at community level and pick their follow-up samples.
Collect samples when clients come for drug refill.	Clients were given sputum mugs before due dates but were misusing the containers for other purposes.	• Identify eligible clients for follow-up tests as they come to pick drugs. • Provide sputum mugs and instruct patient on how to induce sputum. • VHT escort eligible clients to the lab to deliver the sputum sample.
Change concepts 5: Accessibility to sputum follow-up logistics and supplies		
Place sputum mugs at TB drugs dispensary station.	Clients when sent to lab to pick mugs would not go for them.	• Put some sputum mugs at the dispensary. • Give sputum mugs to eligible clients at dispensary station. • Escort patient to the lab after the sample is collected to ensure they take the sample to the right place.
Change concept 6: Improving documentation		
Set aside a day to update TB unit register.	Clients' follow-up results were not being updates in the TB unit register.	• Team agreed on a day which was less hectic in the week at Reach out Mbuya (Wednesdays). • Pick TB lab register from lab to identify clients who had sputum follow-ups done. • Retrieve clients' files from registry. • Update results in clients' care cards before client returns for next appointment.
Change concept 7: Minimize follow-up costs to patients		
Provide free sputum tests	At a private-for-profit facility some patients couldn't afford paying for follow-up tests.	• The facility team engaged the District TB Leprosy Supervisor (DTLS) on possibility of acquiring reagents from NTLP. • Team start ordering reagents through the NTLP.

IV. Recommendations

These changes are recommended because the nine health facilities that tested and implemented these changes reported significant improvement in PBC TB clients that had sputum follow-up done at two and five months. Persons involved in TB work need to focus on:

- **Communicating the guidelines and importance of sputum follow-ups:** All facility and community health workers should know the importance of sputum follow up tests while managing TB cases.
- **Assigning roles:** Health workers should be assigned specific roles in management of TB clients. Some key roles to be assigned include: stock management for TB lab supplies to avoid stocks outs, overseeing the testing of sputum samples, follow-up (in the community or by telephone) for TB clients unable to return to the health facility for sputum follow-up tests.
- **Integrating of activities:** SCHW should collect sputum samples during community follow-up visit as they deliver TB drugs to clients unable to come the health facility.
- **Appropriate scheduling and tracking of clinic appointments:** TB clients on treatment should have their clinic schedules made to favor sputum follow-up testing as much as possible. It is also necessary to track TB patients' clinic appointments, and this may require use of specific clinic appointment registers.
- **Accessibility to sputum follow-up logistics and supplies:** These should be easily accessed by both health workers and TB clients whenever required. For instance, by placing sputum mugs in clinicians' rooms and at TB drugs dispensary station reduces waiting time of TB clients lining up at the lab to pick sputum mugs.
- **Improving documentation and utilize TB data:** Follow-up test results should be routinely updated in the TB unit register and facility teams should routinely review their data to ensure all clients have their follow-up tests done and recorded.
- **Improvised a TB appointment register**: The facility team improvised an appointment register for TB clients on treatment. The register had parameters for like services the client is expected to receive on that day, for example, sputum follow-up and drug refill. This information helped the facility team identify with clients were due for treatment monitoring by follow-up smears.

V. Annex

Appendix I: Rank-ordered changes to improve sputum FU at 2months

Improvement indicator: % of PBC TB cases evaluated for treatment response at two months on TB treatment						
Tested change ideas	No of sites	Evidence from Pilot tests	Relative importance	Simplicity/ scalability	Affordability	Total rating
CMEs to clinicians on ways through which clients can be guided to be able to produce sputum	2	5	5	5	5	20
Conducted a CME to the health worker on when and why to do sputum follow ups	1	5	5	5	5	20
Gave sputum mugs to TB patients at week 6	1	5	5	5	5	20
Assign a lab focal person to participate in inventory management	1	4	5	5	5	19
Hanging reminder notes in dispensing and clinicians rooms about sputum follow-up at 2 months	1	5	5	4	5	19
Introduced a note book where patients are recorded with their follow-up appointment dates, next of kin and telephone contacts	1	5	5	4	5	19
A linkage facilitator was assigned to do sputum monitoring	1	5	5	4	4	18
Assign a lab person to supervise sputum examination immediately after collection	1	4	5	5	4	18
Demonstrating to health worker on how to fill TB register	1	4	4	5	5	18
Provide free sputum tests	1	5	5	5	3	18
Providing sputum mugs 2 weeks before completion of 2 months	1	4	4	5	5	18
Selected a new TB focal person. Identified TB service point with art clinic	1	5	5	3	5	18
Orientation of staff on different intervals of sputum exam for treatment monitoring	1	5	5	3	4	17
Assign a focal person to remind and counsel patients to bring sputum at two months	1	2	4	5	5	16
Assigning a specific section of TB register to a staff	1	3	3	5	5	16
Liaised with VHTs and sub-county health workers from those sub counties on phone reminding patients to come for follow-up	1	4	4	3	4	15
Set aside a day to update the TB register	1	3	2	5	5	15

Improvement indicator: % of PBC TB cases evaluated for treatment response at two months on TB treatment						
Tested change ideas	No of sites	Evidence from Pilot tests	Relative importance	Simplicity/ scalability	Affordability	Total rating
Conducting regular CMES	1	4	4	4	1	13
Borrowing sputum mugs from other facilities	1	1	4	3	3	11
Smear follow-up at 2 months conducted for health workers	1	1	3	2	3	9

Appendix 2: List of facilitators during the harvest meeting

Name	Title	Organization/ District
Dr.Kisamba Herbert	Senior Quality Improvement Advisor	USAID-ASSIST
Nakibuuka Sylvia	Quality Improvement Officer	USAID-ASSIST
Birungi Rosette Florence	Quality Improvement Officer	USAID-ASSIST
Kigonya Angella	Knowledge management Officer	USAID-ASSIST
Amayo stephen	Regional Coach	Wakiso district
Masette Elsie	Regional Coach	Bulabuli district
Tumushabe Belinda	Regional Coach	Wakiso district
Banturaki Expedito	Regional Coach	Rubirizi district

Appendix 3: Participating sites and their QI teams

Facility	QI team members
Busiu HC IV	Dr. Maumbe Benard, Mwiyikinma Emma, Nabulo Janet, Kakai Sylvia, Orena Stephen, Chelogoi Rashid, Wanyana Geofrey, Nambuya Betty.
Nakaloke HC III	Wanyenze Bridget, Abwin Christine, Namatome Falida, Wafenya Sam, Arikod Mary, Wakalanga Muhamad, Otunyi Levi, Nandere Margaret, Nagudi Doreen.
Busia HC IV	Oduya Betty, Lule Yusuf, Katuutu Christine, Edaku Joseph, Nekesa Getrude
Kityerera HC IV	Wabaire Lydia, Gidudu Mariam, Maganda Johson, Bazibu Bosco, Mbera, Sarah, Namuyaga Diana, Magumba Asuman, Kirumira Mutwalibi, Basalirwa Robert, Nabirye Topie.
Nankoma HC IV	Magoola Saadi, Bamwose Moses, Musitwa Cloves, Tumwebaze Simon, Kyota Robert
Mutumba HC III	Opio Humphrey, Namumbya Faith, Namusoke Mangadalena, Munyori Valeria, Baraka Robert, Othieno Williams, Naigaga Besi
Kanungu HC IV	Bagwiza Vincent, Martin Mpimbaza, Katto, Moses Besisira, Kamugisha Augustine, Tuwakire Emily, Tumuramye Justus, Kembabazi Winnie, Musimenta Barbra.
Reach out Kinawataka Clinic	Kalibbala Joseph, Edna Auma, Komakech Francisco, Ogaba Moses, Byamukama Charles

Kyadondo medical centre	Ssekyanzi Maurice, Nalubega Resty, Nakirijja Cissy M.
Nsambya Police clinic	Balaba Luke, Anderu Christine, Nabbona Jane, Sekayise Ronald, Nekesa Harriet

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