



MINISTRY OF HEALTH



CASE STUDY

Improving Utilisation of GeneXpert Testing at Five Lab Hubs in Northern Uganda

The GeneXpert test is a molecular test that detects Tuberculosis (TB) bacteria DNA as well as some genetic mutations associated with TB treatment resistance. The test uses samples like cerebrospinal fluid and pleural fluid and gives results in less than two hours. Since January 2016, the USAID Applying Science to Strengthen and Improve Systems project (ASSIST) has supported five district laboratory hubs in northern Uganda that have GeneXpert machines to increase the TB case notification rate by increasing the number of samples processed using the GeneXpert machine. In only one month, the facilities raised the number of GeneXpert samples processed from a total of 91 samples to 164 samples through testing changes including assigning a focal person to oversee GeneXpert utilization by placing sputum containers at the HIV clinic. The laboratory team greatly improved the quality of records management by improving the accuracy and completeness of all information in laboratory TB register. Weekly reporting to the national TB reference laboratory on the GeneXpert tests done at each facility also improved. This case study emphasizes the simple steps that facility quality improvement (QI) teams took to make these changes without additional resources and in a short time period.

Introduction

Tuberculosis (TB) continues to be a major public health problem, with 8 million cases and up to 1.5 million deaths each year (Global TB report, 2015).

To reduce the burden of TB disease, case detection and treatment gaps should be addressed to interrupt transmission chains and therefore reduce individual morbidity. Sputum smear microscopy, the most widely used test for diagnosing TB, has a sensitivity of only 50% of active cases. This contributes to a delay in diagnosis which results in continued transmission. Sputum smears with chest X-ray (CXR), where available, are the tests routinely applied for TB diagnosis, however their inaccessibility and cost make it prohibitive for rural settings like northern Uganda. Case notification for TB in the 16 districts in northern Uganda is at 134/100,000 (Annual Health Sector Report) compared to the national target of 161/100,000. It is crucial to implement improved diagnostics in this region in order to attain timely case detection and management of TB; and to reduce mortality, transmission, and prevalence of the disease.

Data tools for recording TB activities:

Lab TB register: contains the patient bio-data

Unit TB register: This register contains all information of patients on care provided to TB patients

Presumptive TB register: This book is used to record all the presumptive TB cases and those screened and found to be having signs and symptoms of TB.

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Background

ASSIST began working to improve GeneXpert services at 5 laboratory hubs in the Northern Uganda region in April 2016, (Kitgum Hospital, Anaka Hospital, Apac Hospital, Amolatar HC IV, and Madi-opei HC IV) with an aim of increasing the number of GeneXpert samples processed at each of the five health facilities. In April 2016, at the five hubs, the TB case notification rate was at 6.7% in comparison with the MOH expected notification rate of 32.2% from all hubs. This low percentage was a result of low utilization of the GeneXpert machines.

Methods for Improvement

Scaling-up the use of GeneXpert does not explicitly mean increasing the number of machines procured and installed in the region; optimization of the current resources is necessary. It is more important to first make sure the current machines are being used up to their optimal capacity. In March 2016, ASSIST together with MOH teams conducted a GeneXpert utilization assessment in the Northern region, this revealed the following gaps:

Changes tested by facility teams to improve GeneXpert utilisation and documentation

1. Adding sputum samples on a list of samples to be transported by hub riders.
2. Assigned a focal person to oversee GeneXpert utilisation.
3. Facility Mentorship was done to staff on GeneXpert utilisation
4. Timely ordering of cartridges for the gene x-pert machine to ensure continuity of GeneXpert testing services
5. Weekly phone check ins with the laboratory teams to monitor progress towards agreed action plans especially weekly reporting

1. All five GeneXpert machines can run up to 16 samples per day however weekly data showed that on average 25 samples were run per week (five samples per day), a total of only 91 samples had been processed using GeneXpert machines.
2. Facilities lacked systems to make it easy for patients to access the test; lab teams tasked patients to only provide early morning samples instead of spot samples.
3. Data about samples processed in the different registers was inconsistent which meant that the facility had no clear way of measuring samples processed by the GeneXpert data.
4. Interruption of operations due to electricity outages.
5. GeneXpert cartridge stock-outs in the region.
6. No standard systems in place to monitor stocks, distribution and consumption of GeneXpert cartridges at facility level.

In order to optimize the use of the machines, development of facility based plans were made against the national TB and MDR-TB case detection targets.

In April 2016, ASSIST regional laboratory coaches carried out a mentorship to discuss the findings of the assessment and to share the data with the facility teams. The facility QI teams then carried out a problem analysis to determine the root causes of low numbers of samples processed by the GeneXpert machine and poor data quality. The QI team proposed and tested the following changes to improve the two focus areas.



An ASSIST supported GeneXpert hands-on mentorship at Amolatar HC IV. Photo by Nturo Joseph, Laboratory technical officer, URC

The most effective change and how it was done

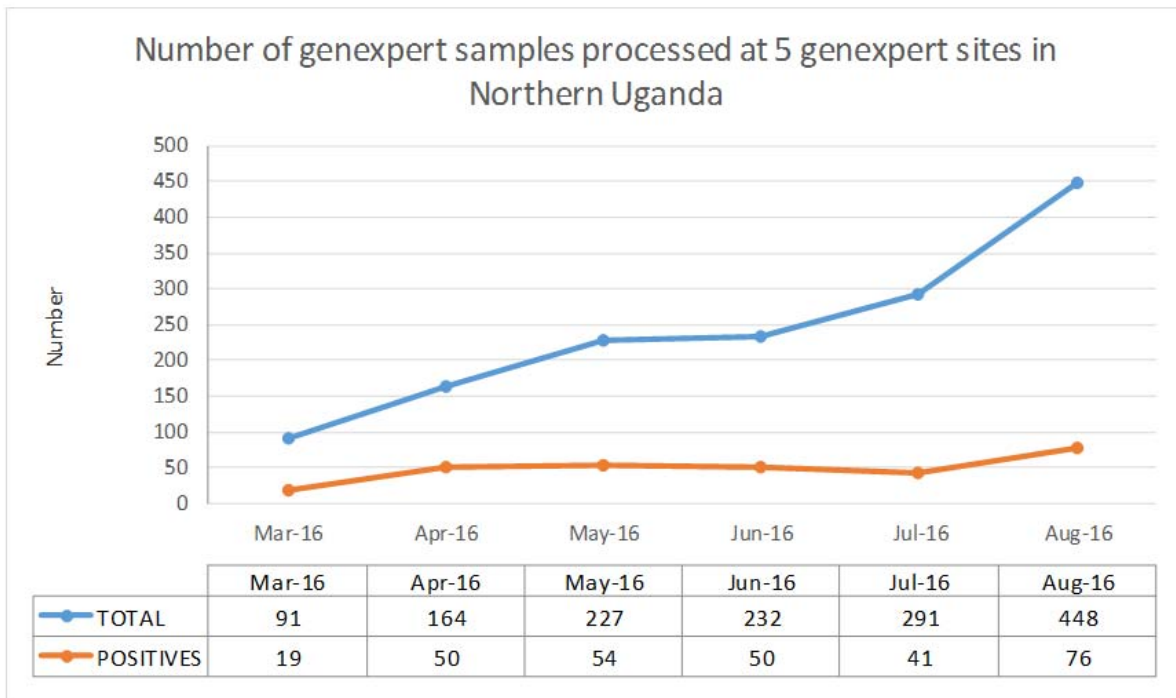
Of the changes tested, timely ordering of cartridges for the GeneXpert machine to ensure continuity of GeneXpert testing services was the most effective change at all five laboratory hubs and health facilities. They conducted it through the following steps: a focal person was assigned at each hub to do regular stock taking and physical counts of available cartridges; contact details were also provided to the staff on a focal person from the national TB and leprosy program for quick contact and action on cartridge stock outs; ASSIST conducted mentorship of the teams in logistics management; ordering and receiving GeneXpert supplies; and did weekly phone check ins with the health facility staff to monitor stocks until their ordering system stabilised.

Results

Following the implementation of these changes between April 1st and 30th July 2016, the teams managed to increase the number of samples processed from 164 to 291. The number of positives identified also increased from 19 to 50 in one month. From March 2016 to August 2016, the five sites increased the number of patients tested from 91 to 448. During the same time frame, the number of positives identified increased from 19 to 76 (**Figure 1**).

To improve on weekly GeneXpert data reporting, phone calls were made to focal persons to remind them on reporting GeneXpert data. Reporting subsequently increased at all 5 reporting sites. From 0% (March 2016) to 100% (May 2016). TB case notification within the hubs also improved from 6.7% in April 2016 to 10% in August 2016 (within 4 months).

Figure 1: Number of GeneXpert samples processed and number of TB-positive patients identified, five sites (March 2016-August 2016)



Lessons learned

- Increasing number of GeneXpert samples run increases the Case Notification Rate (CNR) (Positives).
- Contacting the GeneXpert focal person at National TB Reference Laboratory (NTRL) reduces stock out of cartridges.

- GeneXpert mentorship at Amolatar HC IV including sputum samples on the list of samples to be transported increased number of samples processed at the GeneXpert sites.

Next Steps

All laboratory hubs will be installing GeneXpert alerts to avoid data discrepancies and ease monitoring of GeneXpert utilisation. GeneXpert referral forms will be distributed to all supported health facilities in the region. To guide health workers in the region in identifying presumptive TB patients, collecting sputum samples, and referring them for GeneXpert testing, GeneXpert testing algorithms will be distributed.

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