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Improving the diagnostic capacity of peripheral laboratories in resource limited settings through PEPFAR: Experiences from East Central Uganda

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Background

Well functioning laboratories for accurate diagnosis of diseases are indispensable in any healthcare delivery system for management and prevention of HIV&AIDS including TB and related clinical conditions. In this regard, inadequate availability and/or lack of laboratory diagnostic services subject patients to empirical therapies that often may lead to:

- Inappropriate treatments
- High out-of-pocket expenditures on health care in terms of high wastage of scarce public resources on ineffective therapies
- Loss of economic productivity of the population due to chronic illness and subsequent loss of life

A laboratory needs assessment conducted in East Central Uganda in April 2010 in 75 peripheral health facilities (PHFs) revealed that there was inadequate availability of and access to laboratory diagnostic services by the communities despite the high regional HIV prevalence of 6.5%:

- 21% (n=75) of the PHFs lacked capacity to provide HIV antibody screening
- Access to CD4 testing for antiretroviral therapy (ART) monitoring was limited
- 28% and 32% (n=75) of PHFs could not perform TB and malaria testing respectively
- 29% of the employed laboratory staff were unqualified
- Participation of PHFs in National External Quality Assessment Schemes (NEQAS) was low at ≤50%

Methods

John Snow Research & Training Institute Inc. (JSI) with funding from PEPFAR through USAID and in collaboration with the Ministry of Health, Uganda is implementing the Strengthening TB and HIV&AIDS Responses in East Central Uganda (STAR-EC) program in 9 districts in the country. To increase community access to comprehensive quality HIV and TB laboratory diagnostic services, STAR-EC:

- Provided laboratory equipment (microscopes, CD4 machines, colorimeters, etc)
- Supported implementation of external quality control (TB, HIV and Malaria testing)
- Provided laboratory reference materials
- Trained laboratory service providers (in-service and pre-service training
- Rehabilitated General Hospital laboratories
- Strengthened the specimen referral system from peripheral facilities
- Provided on-site mentorships to laboratory staff to enhance skills

Results

- Functional laboratories with capacity to perform basic laboratory tests increased from 88% (n=75) to 100% (n=87); Fig. 2
- Besides HIV and TB, a wide range of other tests were performed and several clinical conditions in the communities diagnosed (Table 1)
- Regional TB case detection rate for the first time increase from 32% to 43%
- Attained a high accuracy of up 97% in reporting & performance of TB testing during the National TB External Quality Assessment Schemes (Fig. 1)

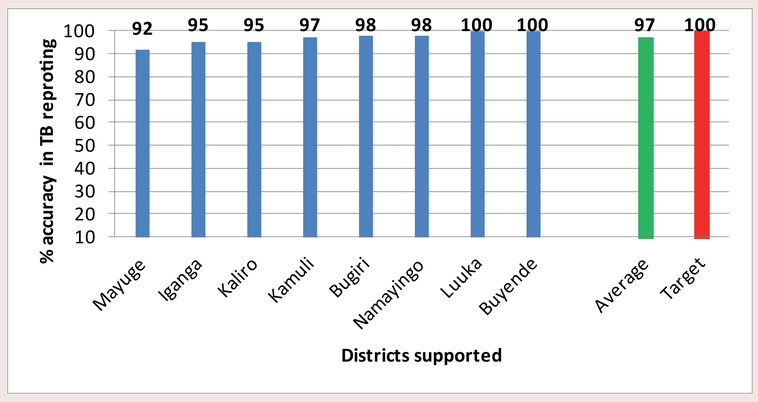

Figure 1: Performance of the supported health facility laboratories in TB National External Quality Assessment Scheme by end of March 2012

A Laboratory staff examining a specimen under a microscope

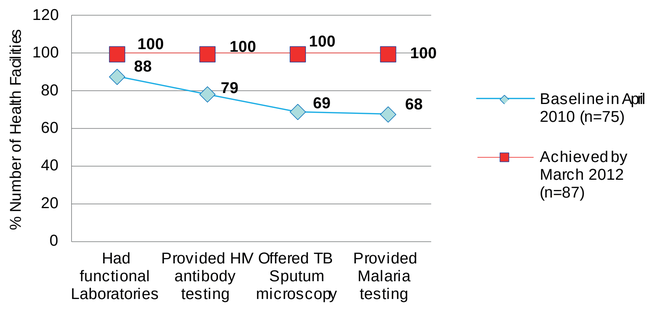

Figure 2: Community access to Laboratory Diagnostic Services

Type laboratory test	Total tested	Number positive (%)
HIV antibody screening	540,967	19,506 (3.6%)
Blood slide examination for malaria	522,791	213,413 (40.8%)
Syphilis antibody screening	60,134	3,380 (5.2%)
ZN sputum microscopy for TB diagnosis	39,147	3,464 (8.8%)
DNA PCR for Early Infant Diagnosis of HIV among infants born to HIV positive women	5,258	310 (5.9%)
HB estimation	46,348	
CD4 cells enumeration for ART monitoring	29,085	

Table 1: Number of tests performed by the supported peripheral laboratories (April 2010-Dec 2011)

Conclusion

Funding to improve HIV&AIDS delivery services in East Central Uganda contributed to overall improvement of diagnostic capacity of peripheral laboratories to diagnose other diseases for non HIV patients demonstrating health systems strengthening.

Recommendation

There is need to strengthen advocacy for stakeholder support and funding for laboratory services given the central role of this component in health care system

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