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HEALTH SYSTEMS 2020
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Quality TB Care: Using Smartphone Technology for Data-driven Improvements in Nigeria

Better Health Systems: Strategies that Work

Presentation series at the Global Health Council

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Abt Associates Inc.
In collaboration with:
| Aga Khan Foundation | Bitrán y Asociados
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| Tulane University's School of Public Health

Presentation Objectives

- Orient participants to the TB quality improvement activity in Nigeria
- Explain our approach to quality improvement (QI) and our decision to employ technology
- Present a before and after picture of supportive supervision (SS) system
- Share next steps
- Present lessons learned

Background

- Nigeria ranked 10th among the 22 high TB burden countries in the world
- Need for strengthening SS to improve performance and treatment outcomes where TB-DOTS and TB-HIV services are provided
- Nigeria open to exploring new and innovative ways of improving quality through SS
- Health Systems 20/20 in collaboration with the National TB program and the Zaria Institute proposed an activity to revise SS program at all levels of the health system
- Started with a pilot in 4 Local Government Areas (LGA) in 4 states and now scaling up to a total of 59 LGAs covering all of Lagos and Abia; approximately TB cases

TB Supervision in Nigeria: Before Intervention

- Before
  - Entirely paper-based
  - Results of paper-based data collection not available for immediate feedback and QI
  - Each state using different paper-based checklists
  - Checklists structured in a way that rapid review of results not possible
  - Data compiled quarterly at state-level meetings; data entry and analysis time consuming and prone to human error

Activity Goals

- Move away from long paper-based checklists that do not support timely QI at facility
- Move toward supervision that concentrates on performance of clinical tasks and resolution of problems experienced by the health worker, as well as increase feedback from supervisors
- Introduce Smartphones for data collection

Purpose of the shift is to improve supervision, assessment, and creation of action plans for QI in facilities where TB is diagnosed and treated

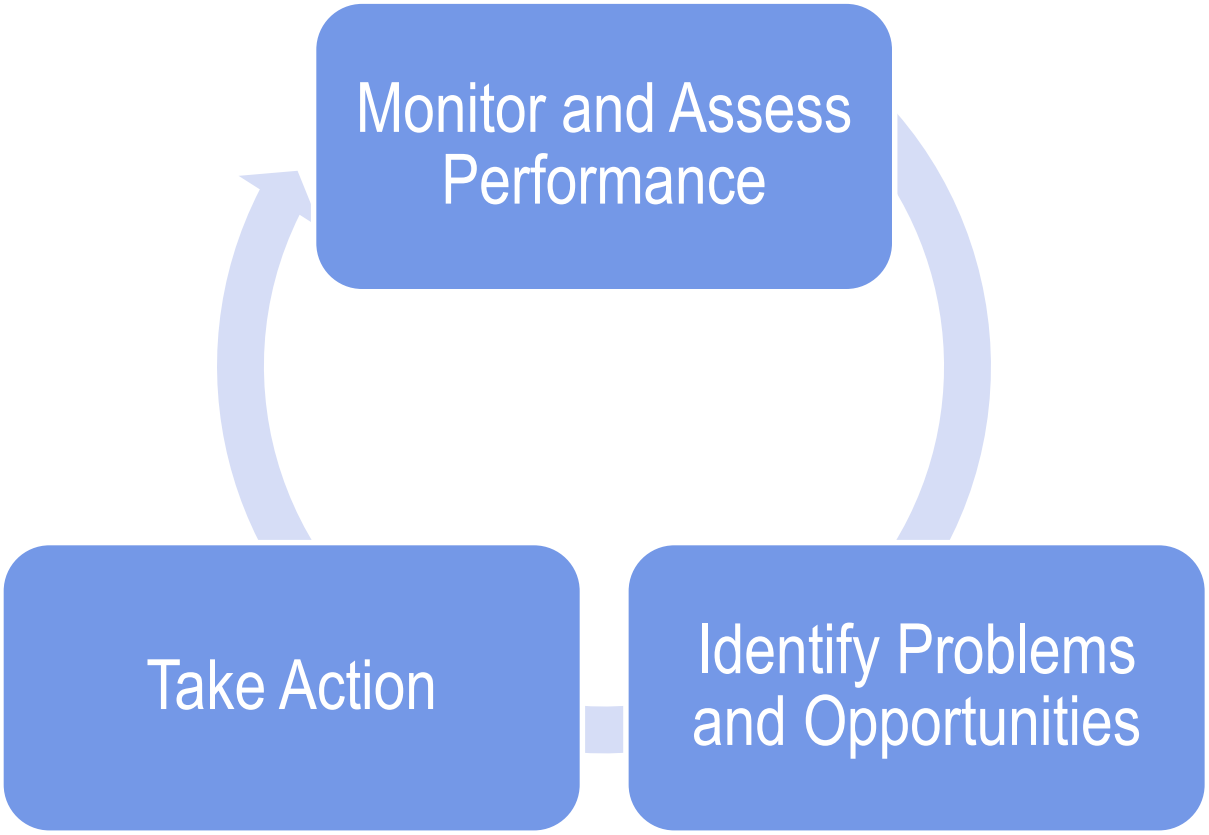
Implementation Approach

- Streamline and integrate the numerous checklists
- Create rapid results indicators
- Figure out best way to obtain, analyze, and USE data for quality improvement: SS Process
- Consider technology-based tools/aids
- Pilot, revise, and scale up

Example Rapid Results Table*

Indicator	Red	Yellow	White
Observations infrastructure	No ventilation in TB consultation room and no separate TB waiting room	No separate TB waiting room but TB consultation room is ventilated/ TB consultation room is ventilated but no separate TB waiting room	TB consultation room is ventilated, TB waiting room available and cross ventilated
Recording and reporting and DOTS	DOTS is not observed daily and recording is not complete and correct	DOTS is observed daily but recording is not complete/ DOTS not observed daily but recording is complete and correct	DOTS is provided daily and recording is complete and correct
TB/HIV collaboration	HCT is not offered to all TB patients or TB/HIV co-infected patients are not referred for care when tested positive	HCT is offered to all TB patients but not referred for HIV care/ HCT is not offered to all patients but they are referred for care if tested positive	HCT is offered to all TB clients and are all referred for HIV care when tested positive
Defaulter rate	Defaulter is =>15%	Defaulter is 6-14%	Defaulter rate is =<5%
Cure rate	Cure rate is <60%	Cure rate is between 60-70%	Cure rate is 70-85% according to the WHO recommendation
Death rate	Defaulter is= >15%	Defaulter is 6-14%	Defaulter rate is =<5%

SS Process


Monitor and Assess Performance
Identify Problems and Opportunities
Take Action

Technology-based Tools/Aids

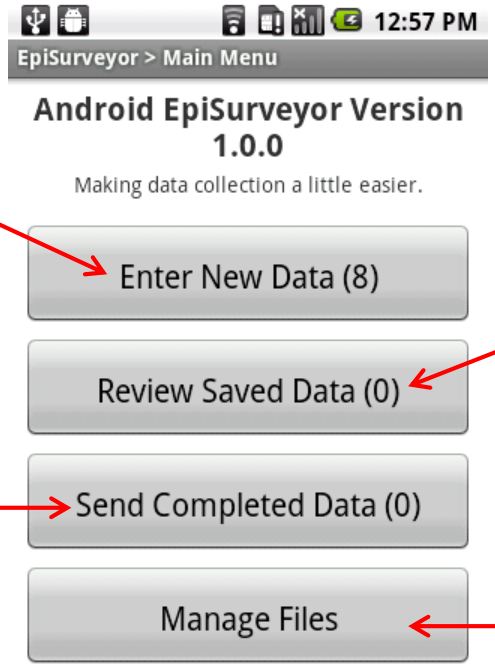
- PALM Z22 PDA

- LG P500 SmartPhones

Technology-based Tools/Aids, *cont*

- **Pendragon and EpiSurveyor**
  - Create forms
  - Connect the forms to the users
  - Distribute the forms
  - Upload to database

EpiSurveyor
Home Screen



Access SS forms

Upload completed forms

- Review completed forms
- Resume incomplete forms

- Download forms from EPISurveyor
- Delete forms on phone

EpiSurveyor

Resuming where you left off

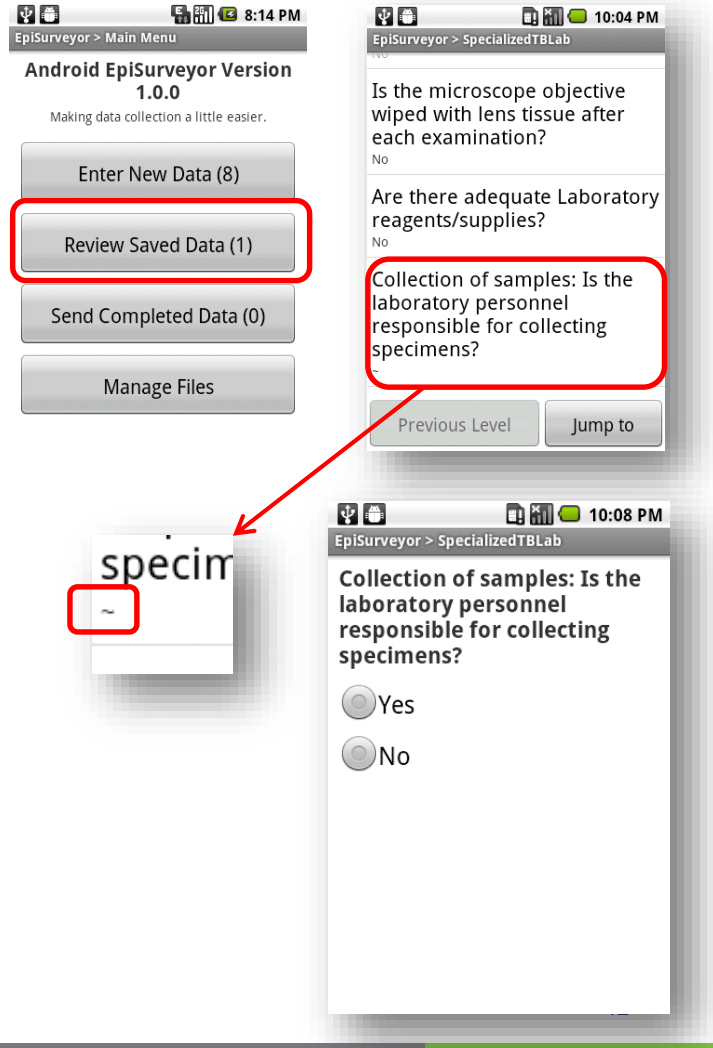
1. Once a form is saved, tap **Review Saved Data** to resume entering data

2. Select form you were working on

3. Scroll to first question you have not answered, and tap it to select. You can identify this question by the "~" symbol, which indicates that is has not yet been answered

4. Resume taking survey

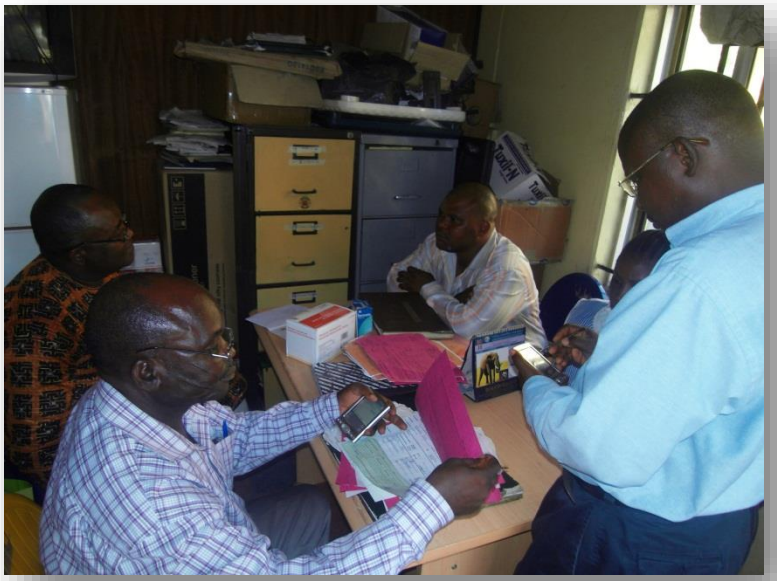
→ You may save one form, and begin working on another. You can always go back to the forms to finish them later as long as you saved



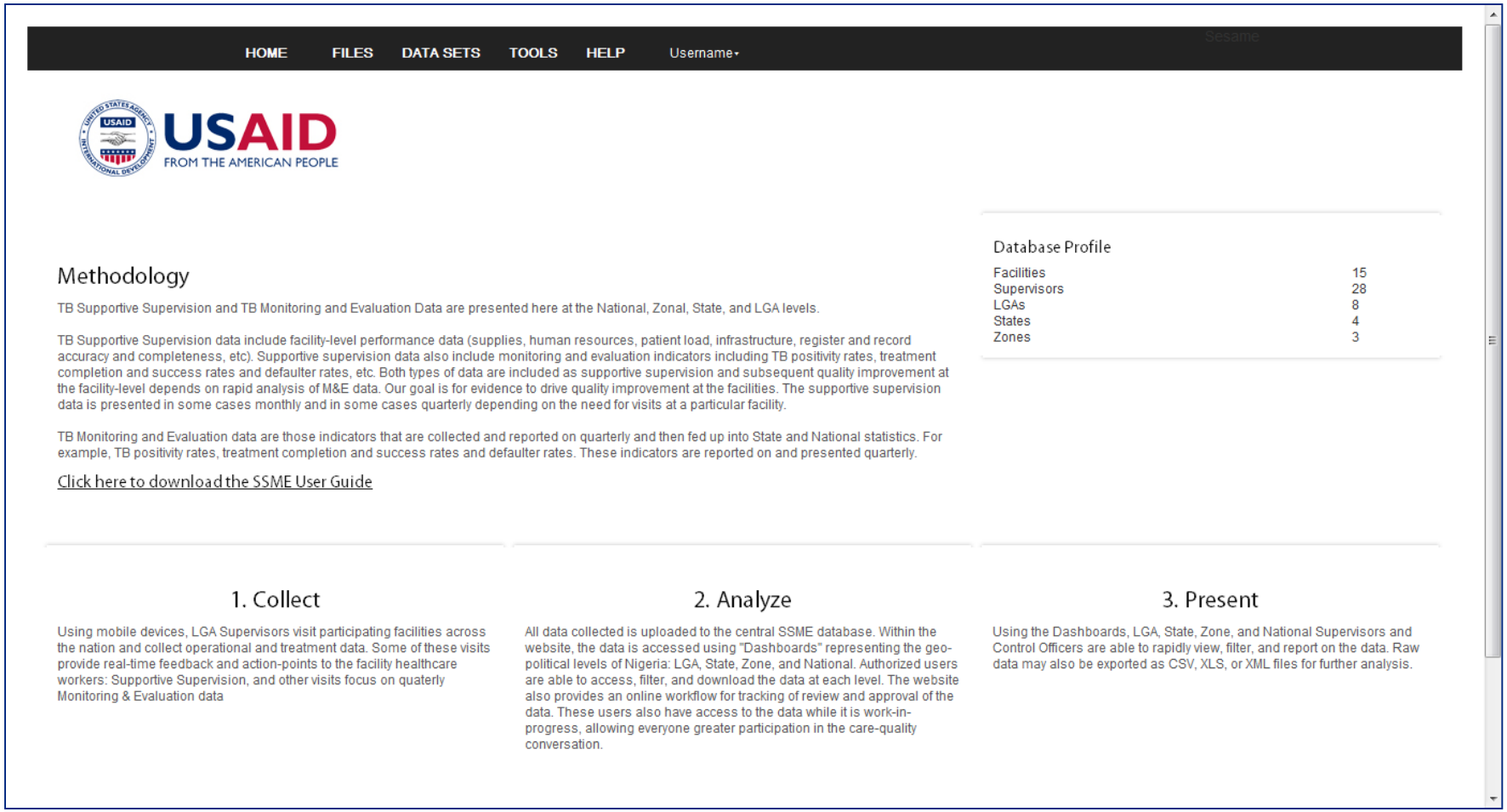
Technology-based Tools/Aids, *cont*

Built and deploying **database** that:

- Provides online data aggregation for analyzing and disseminating data
- Provides quality control system for data including online government approvals of data being published and used
- Enables interested parties to access the data along with operational and quality of care indicators
- Publishes key indicator dashboards (currently under development)



Home Page


HOME
FILES
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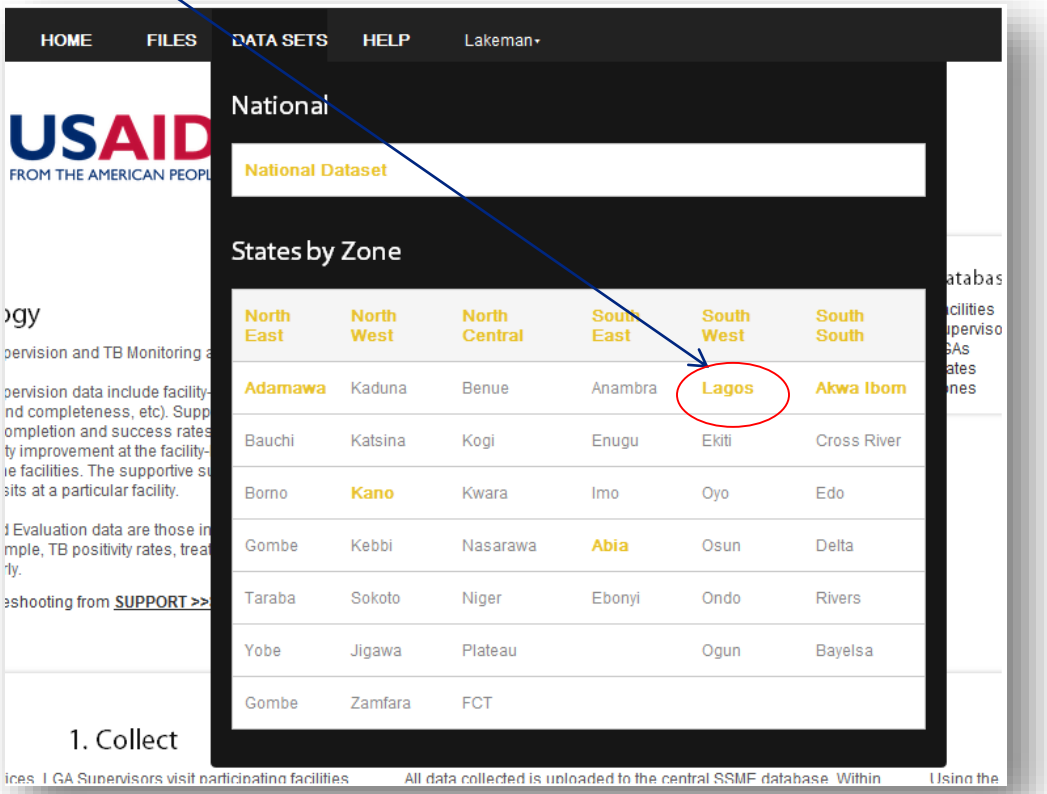
Methodology
TB Supportive Supervision and TB Monitoring and Evaluation Data are presented here at the National, Zonal, State, and LGA levels.
TB Supportive Supervision data include facility-level performance data (supplies, human resources, patient load, infrastructure, register and record accuracy and completeness, etc). Supportive supervision data also include monitoring and evaluation indicators including TB positivity rates, treatment completion and success rates and defaulter rates, etc. Both types of data are included as supportive supervision and subsequent quality improvement at the facility-level depends on rapid analysis of M&E data. Our goal is for evidence to drive quality improvement at the facilities. The supportive supervision data is presented in some cases monthly and in some cases quarterly depending on the need for visits at a particular facility.
TB Monitoring and Evaluation data are those indicators that are collected and reported on quarterly and then fed up into State and National statistics. For example, TB positivity rates, treatment completion and success rates and defaulter rates. These indicators are reported on and presented quarterly.
Click here to download the SSME User Guide
Database Profile
Facilities 15
Supervisors 28
LGAs 8
States 4
Zones 3
1. Collect
Using mobile devices, LGA Supervisors visit participating facilities across the nation and collect operational and treatment data. Some of these visits provide real-time feedback and action-points to the facility healthcare workers: Supportive Supervision, and other visits focus on quaterly Monitoring & Evaluation data
2. Analyze
All data collected is uploaded to the central SSME database. Within the website, the data is accessed using "Dashboards" representing the geo-political levels of Nigeria: LGA, State, Zone, and National. Authorized users are able to access, filter, and download the data at each level. The website also provides an online workflow for tracking of review and approval of the data. These users also have access to the data while it is work-in-progress, allowing everyone greater participation in the care-quality conversation.
3. Present
Using the Dashboards, LGA, State, Zone, and National Supervisors and Control Officers are able to rapidly view, filter, and report on the data. Raw data may also be exported as CSV, XLS, or XML files for further analysis.

Viewing Uploaded Datasets

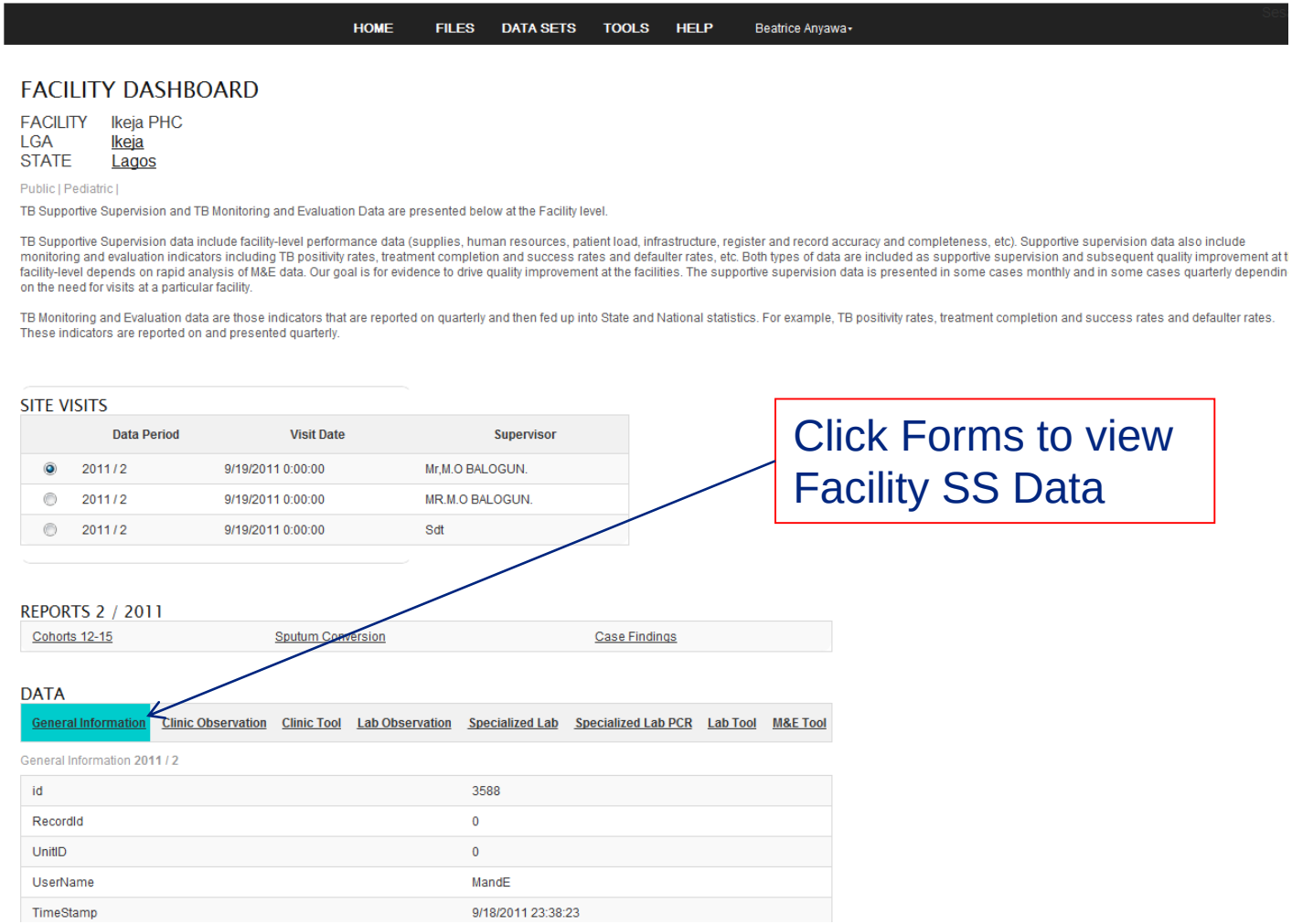
Click ➔ Datasets ➔ State ➔ LGA ➔ Facility

Click State to view State Dashboard



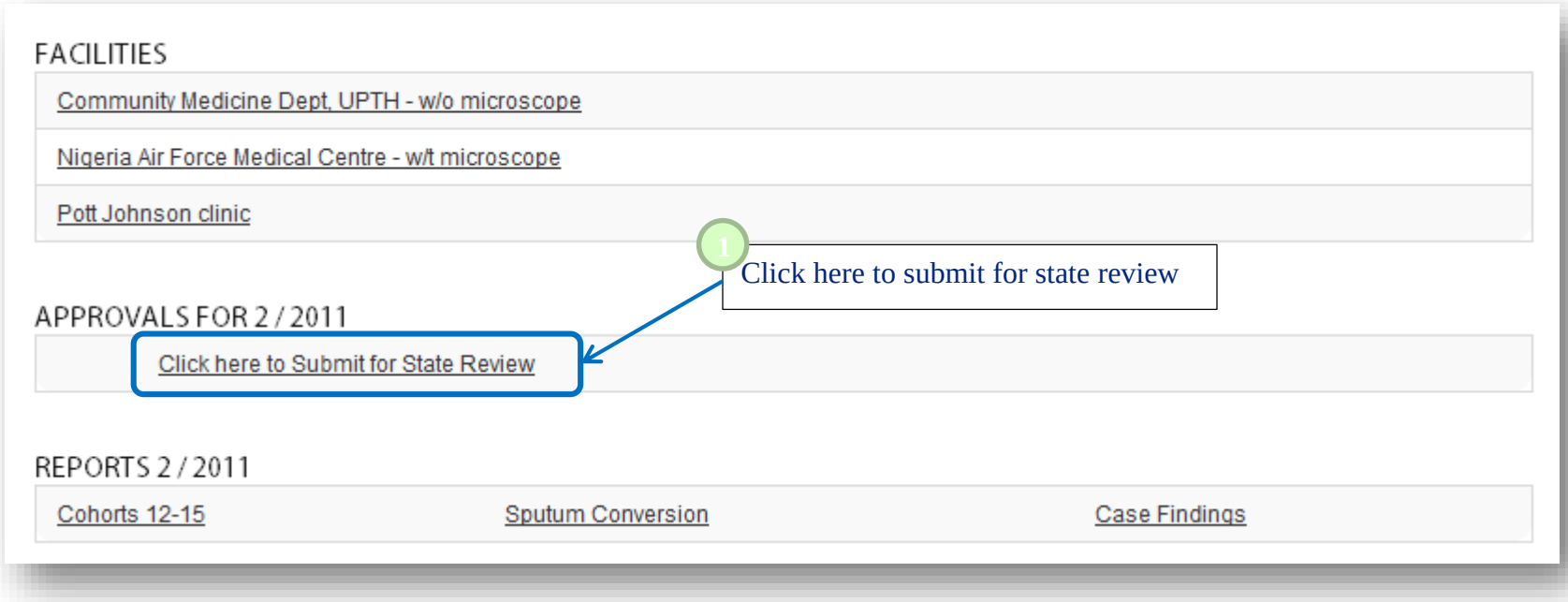
Facility SS Data

Click ➔ Datasets ➔ State ➔ LGA ➔ Facility ➔ Forms



Click Forms to view Facility SS Data

Supervisors – Submitting Data for Review



SS After Implementation

- Consolidated checklist developed, programmed, and loaded onto PDAs
- Supervisors trained on Smartphone use
- Data managers trained on programming and maintaining forms on PDAs
- 6 rounds of data collection and subsequent quarterly meetings with the Smartphones/PDAs

SS After Implementation, *cont*

- Forms programmed to do automatic calculations of critical indicators; reducing human error
- Rapid review of critical indicators allows for immediate feedback and corrective action at the facility
- Supervisors have noted both the ease of the tool for information collection purposes but also in highlighting corrective action

Results Highlights

- Community-based defaulter tracing
- Drug stock-outs decreased
- External quality control results obtained
- SIM cards independently purchased

Revisions

- Changes to forms
- Migration from Pendragon to Episurveyor
- Migration from PDA to Smartphone

Scale-up

- Total coverage in Lagos and Abia
- Training additional 50 supervisors
- Full integration of the databse
- Leveraging other funding options to expand further and pilot in private sector facilities

Next Steps

- Roll out training
- Institutionalize training of supervisors and approvers
- Transition database management
- Finalize reporting dashboards
- Finalize evaluation

Lessons Learned

- Strong in-country leadership to facilitate stakeholder buy-in
- Careful selection of technological inputs
- Don’t rush– new systems take time to get right, start small and then build once issues are resolved
- Incremental and planned scale-up
- Strong programmers and database managers necessary
- Open-minded and flexible supervisors and facility managers needed
- Technology is sustainable with the right inputs in human resources and careful selection of hard and software

Recap: Take Home Messages

- SS is most effective in improving quality when it focuses on data-driven corrective action
- Using carefully selected technology to support the supervision process can better identify areas of improvement and allow for time needed to address these areas
- Carefully employing SS with technology can improve systems and health outcomes over time

Thank you

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