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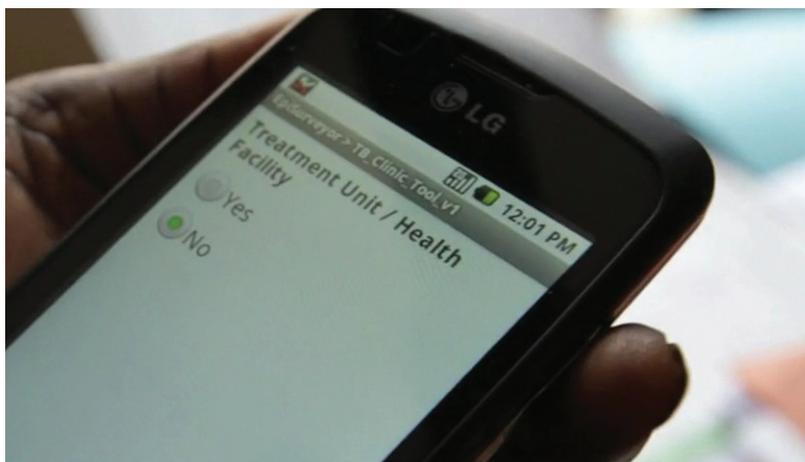
# Better Health Systems *Strategies that Work*

Exploring the impact of Health Systems 20/20 worldwide

## Smartphones Improve Supportive Supervision for Tuberculosis in Nigeria

Nigeria has made significant progress in its fight against tuberculosis (TB) in recent years. According to the World Health Organization (WHO), Nigeria now ranks 13 on the list of countries with a high TB burden, down from four in 2009. During that time period, the National TB and Leprosy Control Program (NTBLCP) and its affiliated training center improved the supportive supervision systems that oversee facilities where TB is diagnosed and treated. NTBLCP believed that more supportive supervision would improve the service delivery system, especially in areas with high defaulter rates, drug stock outs and TB/HIV services integration.

Supportive supervision grew out of the Directly Observed Treatment Short course (DOTS) for TB, and includes regular visits by Local Government Area (LGA) and state-level supervisors to monitor and support staff at facilities that diagnose and treat TB patients. In Nigeria, supervisors from the LGA and state-level travel to their assigned facilities, where they inspect and oversee TB-related services including: case detection through quality-assured bacteriology; standardization of treatment with supervision and patient support; effective drug supply and management; and monitoring and evaluation system and impact measurement (four of the five elements of DOTS).



### IMPROVING QUALITY THROUGH SUPPORTIVE SUPERVISION SYSTEMS

Beginning in 2010, Health Systems 20/20 collaborated with the National TB and Leprosy Training Center (NTBLTC) on a series of steps intended to lead to improved TB supportive supervision systems. The process began with a rapid two-day assessment of the current situation, followed immediately by a stakeholder meeting to discuss the findings and develop the next steps.

The NTBLTC, Health Systems 20/20, the WHO, and other donor-funded programs then developed a standard, integrated TB supervision checklist to assess and monitor diagnostic laboratories and DOTS services at the facility-level in the public and private sectors. This new harmonized checklist not only consolidated numerous checklists from the four pilot states (Abia, Cross River, Kano, and Lagos), which were repetitive and paper-based, but its national adoption also ensured that the way TB services

were assessed was uniform and comparable across the four pilot states and beyond. In addition, the new checklist moved supervision beyond basic monitoring, making it instead a three-step supervision process that improves quality.

The NTBLTC and Health Systems 20/20 then piloted the new checklist in four states (four LGAs each in Lagos, Abia, Cross River and Kano) in 2010-2011 using personal digital assistants, making the strategic decision not to use paper. Automating the checklist allowed supervision to make calculations and analyze data on the spot during their site visits. This rapid analysis became the platform for specific quality improvement plans that were made on the spot and could be monitored over time.

After the successful pilot, the project scaled up to over 200 facilities in 2011-2012 and upgraded the technology platform to smartphones. The smartphones allowed for easier data entry and analysis as well as more immediate ways of sharing the data from the LGA level to the state and national levels. As a result, the quality of TB services improved at the facility level and the data were used to inform policymaking and decisions about resource allocation at the state and national levels.

*“The tool has been very useful. It has made our work easier in the field. In the past, we used a paper-based checklist which can be cumbersome and you cannot really give immediate feedback. With the tool you can give and get responses on the spot.”*

**Mr. Kehinde Jimoh, Scientific Officer and Trainer, National Tuberculosis and Leprosy Program, Nigeria**

## FROM PAPER-BASED TO DIGITAL SUPERVISION

Supportive supervision visits are done monthly or quarterly at facilities to provide comprehensive monitoring of all clinical, commodity, and laboratory functions that support TB care. By using smartphones on these visits to collect data on tuberculosis, the supervisors have eliminated the need for printed forms, minimized human error in data entry, reduced the lag time for getting data to policymakers and managers, and helped pinpoint ways to improve quality of care.

Moving from a paper-based system to digital supervision entailed buying the smartphones, programming them, and developing a platform that allowed for data to be immediately analyzed. The transition also tapped into Nigerian expertise in technology and training, specifically national supervisors and trainers as well as IT experts at the NTBLTC. Health Systems 20/20 developed and conducted trainings and hands-on practice for all actors in the system: LGA and state-level supervisors; TB trainers; IT experts; and stakeholders at higher levels of the health system. To date, the National TB program has over 50 supervisors trained in how to use the new smartphones and checklist, and more than 10 trainers capable of training others how to use smartphones. The TB program also has three IT experts who can troubleshoot issues with both the smartphones and the database. Table 1 shows the impact of this improved supportive supervision process.

## BETTER SUPERVISION RESULTS IN MEASURABLE IMPACT

Between 2010 and 2012, the pilot project implemented four rounds of supportive supervision using the smartphones in the four pilot states. At the end of the pilot, Abia, Kano, and Lagos reported substantial improvements in major areas of TB care, including cure rates, TB/HIV co-infection treatment, and defaulter rates.

**TABLE 1: COMPARISON OF PAPER CHECKLIST AND 3-STEP SUPERVISION WITH SMARTPHONE**

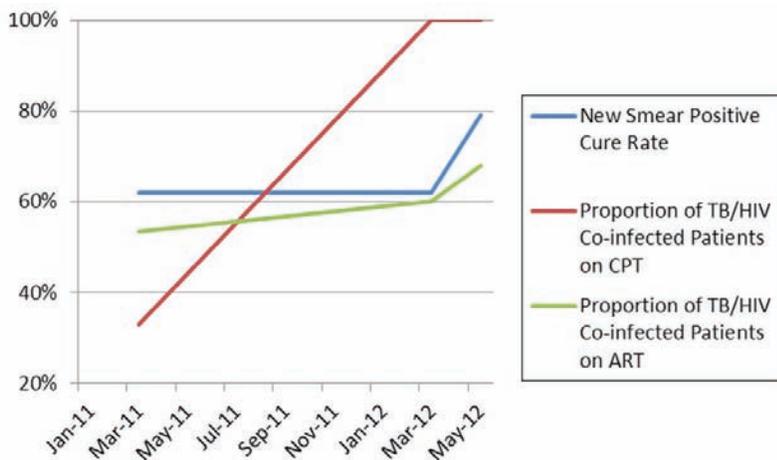
| Paper Checklist Alone  | Smartphone with 3-Step Supervision  |
|--|---|
| <ul style="list-style-type: none"> <li>Entirely paper-based with multiple versions of the checklist.</li> <li>Each state using different paper-based checklists.</li> <li>Results of paper-based data collection not available for immediate feedback and corrective action.</li> <li>Checklists structured in a way that rapid review of results is not possible.</li> <li>Data compiled quarterly at state-level meetings, data entry and time-consuming analysis and prone to human error.</li> </ul> | <ul style="list-style-type: none"> <li>Integrated and harmonized checklists for all 4 states (Abia, Cross River, Kano, and Lagos).</li> <li>Supervision that concentrates on the performance of clinical tasks and resolution of problems experienced by the health worker as well as to increase feedback from supervisors.</li> <li>Using smartphones for data collection to improve supervision, allow for rapid results assessment, and create action plans for quality improvement in facilities where TB is diagnosed and treated.</li> <li>Supervision results available immediately for quick analysis and constructive feedback.</li> <li>No more data entry. Data is collected automatically at the facility with smartphone.</li> <li>Online database developed to ease reporting burdens, to better track progress over time, and to share and disseminate information across all levels of the health system for better planning.</li> </ul> |

In **Lagos Mainland LGA**, the proportion of TB/HIV co-infected patients on cotrimoxazol preventive treatment (CPT) jumped to 100% in March 2012 from 33% in March 2011. It was still at 100% as of the most recent supervision visit in May 2012. At the same time, the proportion of TB/HIV co-infected patients on ART increased from 54% to 68% between March 2011 and May 2012. There was also an improvement in the new smear positive cure rate, increasing from 62% in March 2011 to 79% in May 2012. (See Figure 1.)

In **Ikeja LGA, Lagos**, the defaulter rate dropped from 20% in March 2011 to 5.2% in May 2012. The new smear positive cure rate increased from 67% in March 2011 to 86% in May 2012. Outside of Lagos in **Ohafia LGA, Abia** the defaulter rate decreased by 60% between March and May 2012. Finally, in **Fagge LGA, Kano** the treatment completion rate more than tripled in one year (from 16% in March 2011 to 51% in March 2012). In the same LGA, The proportions of TB/HIV co-infected patients on CPT and ART have increased, respectively, from 33% in March 2011 by 80% and 50% between March 2011 and March 2012.

In addition to these significant improvements, this pilot succeeded in institutionalizing Nigeria’s capacity to continue, maintain, and improve upon the new supportive supervision system. The NTBLCP and Health Systems 20/20 developed trainers, supervisors and IT specialists at the NTBLCP to continue the use of the smartphone along with the new three-step supervision system. In addition, the activities were scaled up so that more facilities could be covered than first anticipated. In a true sign of owning this new process, LGA and state-level supervisors have begun purchasing their own SIM cards so that they can transmit data from their smartphones to the central database without the need for an Internet connection. The SIM card uses 3G wireless to transmit the data so it can be done from anywhere anytime as long as there is a cellular network.

**FIGURE 1. IMPROVEMENTS IN TB OUTCOMES IN LAGOS MAINLAND 2011-2012**



Finally, an unplanned and positive outcome is how the new harmonized checklist adds value to Nigeria's TB monitoring and evaluation (M&E) system. According to the training coordinator of the National TB and Leprosy Training Center, Dr. Mustapha Gidado, there was initially confusion in having supervision and M&E tools together. Through the use of this new checklist, however, supervisors have realized that it makes sense to have supervision and M&E results support one another. The core of the new supervision process is that quality improvement actions and plans are driven by data. In its own right, the supervision process is in part an M&E exercise. Therefore, it was important to make sure these two functions are not artificially separated, but instead are seen as synergistic and even co-dependent.

## LESSONS LEARNED

Every new technology comes with challenges, but the lessons learned from the process of applying new technology to old human resources challenges can add value to the end results. Some of the main lessons learned from using the harmonized checklist on the smartphones were:

- Supportive supervision 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; and
- Carefully employing supportive supervision technology can improve systems and health outcomes over time.

This is the first time the National TB Program has used technology to improve supportive supervision and the quality of the data generated marks a major step toward improving public health standards in Nigeria. The success of this pilot activity has generated strong national interest, and hopefully other health programs will adopt a similar approach. Similarly, the National TB Program is considering using the software platform on the smartphones to link the TB supervision data into the District Health Information Systems currently being rolled out in Nigeria.

Worldwide, mobile technology is spreading rapidly and barriers to its utilization are quickly disappearing. The percentage of users accessing the Internet by using mobile phones in sub-Saharan Africa is notable; in Nigeria it is 41%, according to the World Bank's World Development Indicators from 2011. As reported in the same report, by end of 2012, over 300 million smartphones with a retail price of US\$100 or less will likely be in use worldwide. Today's smartphones are essentially mini-computers and, as seen in Nigeria, they can play an important role in improving the quality of health services.

### About the Better Health Systems: Strategies that Work Series

The Better Health Systems briefs explore Health Systems 20/20 strategies and tools, why they work, and how they contribute to better health systems. Collectively, the series will distill valuable lessons learned in an effort to share the project's wisdom with our partners and colleagues. For more information, please visit [www.healthsystems2020.org](http://www.healthsystems2020.org).

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### About Health Systems 20/20

Health Systems 20/20 is USAID's flagship project for strengthening health systems worldwide. By supporting countries to improve their health financing, governance, operations, and institutional capacities, Health Systems 20/20 helps eliminate barriers to the delivery and use of priority health care, such as HIV/AIDS services, tuberculosis treatment, reproductive health services, and maternal and child health care.

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[www.healthsystems2020.org](http://www.healthsystems2020.org)  
[info@healthsystems2020.org](mailto:info@healthsystems2020.org)

Abt Associates Inc.  
[www.abtassociates.com](http://www.abtassociates.com)  
4550 Montgomery Avenue,  
Suite 800 North,  
Bethesda, MD 20814