

## Abstract

# Outcomes of Mobile Reporting to Enhance Disease Surveillance in 632 Districts of 29 States in Nigeria

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## Abstract

**Background:** Optimal disease surveillance provides opportunities for identifying outbreaks early and intervening to reduce their spread and impact. The availability of mobile phone technologies have improved communication across the world and now serves as an effective system for frontline healthcare workers to gather and disseminate data that can inform actions at country and program levels. In Nigeria, with an estimated population of over 200 million people spread across a wide land mass area of 923,763 km<sup>2</sup>, surveillance for diseases will require innovative strategies with penetrative abilities to the lowest levels of healthcare to achieve desired outcomes.

**Objective:** The objective was to describe the outcomes of reporting using mobile technology to enhance surveillance.

**Methods:** An SMS-based reporting tool was developed which conforms to the nationally approved weekly reporting format for IDSR 002 diseases. A total of nine diseases and public health events are reported weekly by 774 Disease Surveillance and Notification Officers (DSNOs) at the Districts. On reporting days (Tuesdays), the DSNOs receive a reminder via SMS to send in their reports, which is shortly followed by the reporting template. The DSNOs enter the weekly data for their respective data and send via SMS. The data is received nationally at the Nigeria Centre for Disease Control (NCDC) where staff provide oversight function on reports coming in by states. The team monitor reporting through visualization monitoring boards and respond to wrongly sent reports by calling up the DSNO. Collated reports by states are shared with the State Supervisory Teams on nationally approved Excel sheets which bypasses the cumbersome nature of direct data entry on the Excel sheets. Reports are validated by the state before the final version of the Excel sheets are shared with the NCDC. Completeness, timeliness of data, and alert threshold of reported cases were used to monitor the reporting process for 52 weeks in 2018.

**Results:** A total of 32,864 reports were expected in 2018 with 1 report sent weekly from each of the 632 districts of 29 states. The benchmark for timely reports is 80% and completeness of reports is 90% as indicated in the Integrated Disease Surveillance and Response (IDSR) Technical Guidelines. Average completeness was 90% with 97% noted in February and 57% in November. An average of 93% of reports were sent in a timely manner with timeliness of 89% observed in June and July and 96% observed in January, February, and December. All 29 states reported in a timely manner and 2 states sent in complete reports consistently for 52 weeks. This system provided real-time alerts for priority diseases that were above established thresholds highlighting the start of various outbreaks reported in the year.

**Conclusions:** During the year, there was a marked improvement in disease surveillance and notification despite periods of low completeness of reports observed. Instituting into mobile systems, processing for feedback, and improvement will further support the system among healthcare workers. Leveraging on the ease of how mobile phones have become part of everyday human life, disease surveillance methods can be enhanced and used on mobile phones

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