

# Smartphones more accurate, faster, cheaper for disease surveillance

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Smartphones are showing promise in disease surveillance in the developing world. The Kenya Ministry of Health, along with researchers in Kenya for the Centers for Disease Control and Prevention, found that smartphone use was cheaper than traditional paper survey methods to gather disease information, after the initial set-up cost. Survey data collected with smartphones also in this study had fewer errors and were more quickly available for analyses than data collected on paper, according to a study presented today at the International Conference on Emerging Infectious Diseases in Atlanta.

Researchers compared survey data collection methods at four [influenza surveillance](#) sites in Kenya. At each site, surveillance officers identified patients with respiratory illness and administered a brief questionnaire that included demographic and clinical information. Some of the questionnaires were collected using traditional paper methods, and others were collected using HTC Touch Pro2 smartphones using a proprietary software program called the Field Adapted Survey Toolkit (FAST).

"Collecting data using smartphones has improved the quality of our data and given us a faster turnaround time to work with it," said Henry Njuguna, M.D., sentinel surveillance coordinator at CDC Kenya. "It also helped us save on the use of paper and other limited resources."

A total of 1,019 paper-based questionnaires were compared to 1,019 smartphone questionnaires collected at the same four sites. Only 3 percent of the surveys collected with smartphones were incomplete,

compared to 5 percent of the paper-based questionnaires. Of the questions that required mandatory responses in the smartphone questionnaire, 4 percent were left unanswered in paper-based questionnaires compared with none of the smartphone questionnaires. Seven paper-based questionnaires had duplicated patient identification numbers, while no duplication was seen in smartphone data. Smartphone data were uploaded into the database within 8 hours of collection, compared to an average of 24 days for paper-based data to be uploaded.

The cost of collecting data by smartphones was lower in the long run than paper-based methods. For two years, the cost of establishing and running a paper-based data collection system was approximately \$61,830 compared to approximately \$45,546 for a smartphone data collection system. The fixed costs incurred when the systems were first set up were \$12,990 for paper and \$16,480 for smartphone.

Provided by American Society for Microbiology

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