Researchers warn of problems using mobile technologies in public health

4 January 2019, by Colin Poitras

Credit: CC0 Public Domain

Many health care providers in remote locations around the world are actively using newer mobile technologies like text messaging and fingerprint identification to deliver important services and timely information to their patients.

While the efforts are well-intended, two new studies led by the Yale School of Public Health find that such approaches need to be closely monitored to make sure they are meeting targeted goals.

The two recently published studies identified multiple problems integrating mobile technologies into public health care.

One study looked at whether text messaging effectively informed patients in Kampala, Uganda, of the results of a tuberculosis test and whether they needed a follow-up appointment. The study found that only about a third of those to whom a text message was sent actually received it and were able to remember what it said.

"Text messaging has the potential to enhance communication between at-risk individuals and health care workers and thereby improve evaluation and treatment for tuberculosis," said Lucian "Luke" Davis, M.D., the study's senior author and an associate professor at the Yale School of Public Health. "But our analysis found that such interventions are far from infallible. Multiple barriers exist to using text messaging in a way that ensures participants receive and comprehend vital messages about their health."

The use of mobile phones and text messaging is widespread in sub-Saharan Africa, which is why health care providers are interested in using the platform. But just because providers send out text messages, and patients show a willingness to receive them, doesn't mean those messages will be received, read or retained, the study said.

Malfunctioning computer servers, phone network outages and phone sharing among household members were some of the obstacles undermining text messaging fidelity, according to the study. While participants were encouraged to confirm receipt of a single text message with a simple reply, many did not.

In the second study, Davis and other researchers looked at the feasibility of using mobile digital fingerprinting to identify and track patients being investigated for tuberculosis in Kampala. The study found that using digital fingerprinting was feasible, but hardware and software problems in the field resulted in a high failure rate. That inconsistency led many health care workers to question its value.

Biometric technologies like digital fingerprinting are appealing solutions for patient identification in remote areas where the lack of a national identification system, inconsistent spelling of names, missing birth records or other factors make such processes difficult.

In the study, health workers attempted to obtain digital fingerprints from about 700 individuals in

Kampala. About a quarter of the attempts failed, raising concerns about the program's reliability. Health care workers concerned about the technology's performance often didn't use it on follow-up visits, further undermining the intent of the program, the study said.

"Although the technology worked as intended in the majority of interactions, workarounds and a lack of a tangible benefit of fingerprinting ultimately limited its job relevance and perceived usefulness among community health workers," Davis and his colleagues said.

While digital innovations offer a promising new tool in the delivery of public health care, the researchers said the technology must be closely managed and monitored to be sure it is applied reliably and successfully.The text messaging study appears in JMIR mHealth and uHealth and the analysis of digital fingerprinting appears in the *Journal of Medical Internet Research*.

More information: Elizabeth B White et al. Feasibility, Acceptability, and Adoption of Digital Fingerprinting During Contact Investigation for Tuberculosis in Kampala, Uganda: A Parallel-Convergent Mixed-Methods Analysis, *Journal of Medical Internet Research* (2018). DOI: 10.2196/11541