HIV and Syphilis Smartphone Assay Would Aid Testing in Remote Areas

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Researchers have developed a low-cost smartphone accessory that can conduct a 15-minute test for HIV and syphilis with only a finger prick, Medscape reports. Publishing their findings in Science Translational Medicine, researchers ran a pilot study of the accessory in which they trained health care workers in Rwanda in its use for 30 minutes and then tested it on 96 people enrolling in prevention-of-mother-to-child-transmission clinics or voluntary counseling or testing centers.

The test performs an enzyme-linked immunosorbent assay (ELISA) with the smartphone as its only power source, testing for HIV antibodies, treponemal-specific antibodies for syphilis (which indicate lifetime exposure to syphilis), and non-treponemal antibodies for active syphilis infection. The device, called a dongle, will have a manufacturing cost of only $34, and will run the tests on disposable plastic cassettes with pre-loaded reagents.

Ninety-seven percent of those tested with the dongle said they would recommend it because it provided fast results, offered a test for multiple diseases and was simple to use.

“Our dongle presents new capabilities for a broad range of users, from health care providers to consumers,” Samuel K. Sia, PhD, associate professor of biomedical engineering at Columbia Engineering and the research team lead, said in a press release. “By increasing detection of syphilis infections, we might be able to reduce deaths by 10-fold. And for large-scale screening where the dongle’s high sensitivity with few false negatives is critical, we might be able to scale up HIV testing at the community level with immediate antiretroviral therapy that could nearly stop HIV transmissions and approach elimination of this devastating disease.

“We are really excited about the next steps in bringing this product to the market in developing countries,” he said. “And we are equally excited about exploring how this technology can benefit patients and consumers back home.”

To read the press release, click here.

To read the study abstract, click here.

To read the Medscape story, click here. (Free registration is required.)