Chlamydia screening 'easier and cheaper' with new DNA smartphone test

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Researchers have created a simple smartphone DNA test that they say can accurately detect chlamydia - the most commonly reported sexually transmitted infection in the US.

Researchers say their new smartphone chlamydia testing method could offer a simpler and cheaper alternative to current screening techniques, while being equally as accurate.

Jeff Tza-Huei Wang, PhD, from Johns Hopkins University in Baltimore, MD, and colleagues say the test - called mobiLab - could reduce the prevalence of chlamydia by making testing for the disease cheaper and easier.

The researchers recently presented study findings detailing the test's accuracy at the 2015 American Association for Clinical Chemistry (AACC) Annual Meeting & Clinical Lab Expo in Atlanta, GA.

Chlamydia is caused by infection with the bacterium Chlamydia trachomatis, transmitted through sexual contact with an infected partner.

It is estimated that around 2.86 million chlamydia infections take place in the US each year, but only 1.4 million were reported to the Centers for Disease Control and Prevention (CDC) in 2013. Many cases of chlamydia go unreported because the disease does not present symptoms in some people, meaning such individuals do not seek testing.

However, if left untreated, chlamydia can have serious health implications. In women, the disease can cause cervicitis - inflammation of the cervix. Infection can spread to the uterus and fallopian tubes, causing pelvic inflammatory disease (PID).
PID is estimated to affect up to 30% of women with chlamydia. The condition may lead to irreversible damage of a woman's reproductive organs, making them infertile. It can also lead to chronic pelvic pain and increase the risk of ectopic pregnancy.

Because of the asymptomatic nature of chlamydia, the CDC recommend annual screening among women aged 25 and younger and older women who have risk factors for the disease, such as multiple sexual partners or a sex partner with a sexually transmitted infection.

At present, the nucleic acid amplification test (NAAT) is the most accurate screening technique for chlamydia, involving the testing of a vaginal swab or urine sample.

While the NAAT has been hailed for increasing chlamydia screening in recent years, Wang and colleagues point out that the test is expensive to conduct and is too complex to perform in doctors' offices, sexual health clinics and other point-of-care settings.

They say the mobiLab, in contrast, offers a simpler, low-cost chlamydia screening technique that could diagnose chlamydia at the time of patient visits.

**New device as accurate as gold standard chlamydia screening method**

A battery-powered device, mobiLab works by analyzing genital swab samples, detecting the DNA of chlamydia bacteria via a microfluidics cartridge.

The unit that analyzes the DNA - which the researchers say is about the size of a coffee mug - is attached to a smartphone, and an app on the smartphone allows the user to download and assess the test data.

This new technique would cost $2 per test, according to the researchers, while the NAAT currently costs around $10 per test.

To test the accuracy of mobiLab, Wang and colleagues compared its performance against the Gen-Probe Aptima Combo 2 assay - an NAAT considered to be the gold standard for chlamydia testing.

The researchers used both tests to analyze 20 patient samples - 10 of which were positive and 10 that were negative for chlamydia.

**Both of the tests correctly identified the samples as being positive or negative for the disease, suggesting that mobiLab may be a simpler, cheaper and equally effective alternative to current screening techniques.**

The researchers hope the device will allow a greater number of health care settings to offer effective chlamydia testing for a wider population.

Study co-author Dong Jin Shin, also of Johns Hopkins University, adds:

"We now have these pretty accurate, sensitive, and specific molecular assays to detect very few numbers of organisms in biological samples. But a lot of these technologies are confined to being used in centralized lab settings.

If we're able to bring molecular diagnostic technology closer to the clinic and deliver accurate results to clinicians sooner, then we'll be able to improve our standard of care for patients with chlamydia while also saving costs."
Earlier this year, Medical News Today reported on the development of a smartphone microscope that has the ability to quickly and effectively detect parasitic worms in a single drop of blood.

Written by Honor Whiteman

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