

Medscape Conference Coverage, based on selected sessions at the:

18th International Society for Sexually Transmitted Diseases Research (ISSTD) Congress

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ISSTD 2009: Internet-Based Testing Improves Screening for Chlamydia Among Men

Becky McCall

July 2, 2009 (London, United Kingdom) — Home-based chlamydia testing kits, freely available online, have removed much of the embarrassment and stigma that prevent many men from visiting their clinician to find out whether they are infected with the sexually transmitted infection (STI).

Data from a pilot project, led by Charlotte A. Gaydos, PhD, professor of medicine at Johns Hopkins University in Baltimore, Maryland, were presented here at the 18th International Society for Sexually Transmitted Diseases Research Congress. The study showed that asking men via Internet recruitment to self-obtain penile swabs for detection of chlamydia, gonorrhea, and trichomonas was acceptable and that, to date, 40% of test kits had been returned with samples for analysis in 2009. This is up from a return rate of 15.3% in 2006, when the Web site started.

Iwantthekit.org is a Web site of the Region III Infertility Prevention Project, which is dedicated to helping prevent STIs that can cause infertility, including chlamydia. The site provides information on how to get tested discreetly via the Internet.

This phase of the study assessed response from men. "It's so difficult to get men to go to the doctor. STIs are notorious for being asymptomatic, so our initial impetus was to try to reach out to men and have them ask for a kit. Young people, in particular, often have issues of privacy and stigma and may not have the money to get tested. They don't want their parents finding out when an insurance bill turns up," explained Dr. Gaydos.

Analysis of 501 returned samples showed that 21.2% were positive for any STI. Of these, 12.8% showed *Chlamydia trachomatis*, 0.8% *Neisseria gonorrhoeae*, and 9.8% *Trichomonas vaginalis*. Analysis by age category revealed that chlamydia prevalence was 20% in young men aged 15 to 19 years, 27% in men aged 20 to 24 years, and 17% in those aged 25 to 29 years.

Participants are asked to collect urine and penile swabs. Urine collection has rarely been a problem, but conventionally, many men find it unacceptable to have a penile swab taken. The swab required for this test is very different to that used in the clinic for many years, noted Dr. Gaydos. "Out of the 501 men enrolled since January this year, all but 8 sent in both the swab and the urine. Ninety-five percent of participants reported that collection was acceptable and not painful."

Peter Greenhouse, FRCOG, consultant in sexual health from Bristol Royal Infirmary, United Kingdom, believes that the sensitivity of the most recent tests has made the whole procedure far less off-putting for men. "This study is especially interesting because it asks men to take their own swabs." The new tests, which require only touching the swab to the end of the penis, are so sensitive that there is less discomfort than is typically associated with the older tests, he said.

Tackling diseases such as chlamydia requires a combination of raising awareness and advanced technology, Mr. Greenhouse pointed out. "The Internet allows people to become aware of the test whilst at the same time, the actual

testing technology has advanced, too, so the 2 things together provide much better access to testing. People now need to understand that most STIs have no symptoms, and if they have run the risk, then they need a check-up," he added.

Another presentation, also by Dr. Gaydos, highlighted an application of DNA hybridization technology that enables chlamydia to be tested at the point of care. Most US laboratories use nucleic acid amplification tests to detect *Chlamydia*, but the result may take a few days to a few weeks to return, depending on which laboratory conducts the analysis.

"We felt we needed something at the point of care. This test provides a reading in less than 20 seconds. This is especially useful for prisons and emergency rooms where people leave and are then often lost to the system. Developing countries would also benefit from this type of test due to problems with patient recall," Dr. Gaydos told *Medscape Infectious Diseases*.

Chris Geddes, PhD, director of the Institute of Fluorescence at the University of Maryland Biotechnology Institute in Baltimore, developed the microwave-accelerated metal-enhanced, fluorescence-based 3-piece DNA hybridization assay used for this point-of-care test. It consists of a silver-coated microscope slide and a process by which the DNA of the investigative organism is picked up by a nucleic acid capture probe. Silver nanoparticles enhance the reaction, which is driven by pointing a small amount of microwave radiation, such as that found in a cell phone or laser pointer, at the reaction, accelerating completion within 20 seconds. A normal laboratory test takes 3 hours at room temperature and 1 hour at 37°C. "You can't get much faster than 20 seconds," Dr. Gaydos pointed out.

Depending on which DNA sequence is present on the probe, any organism with a corresponding nucleic acid sequence will be captured when placed on the slide. Immediately, another reporter probe is applied that hybridizes to the other end of the organism. "This effectively forms a sandwich of probe, organism, and reporter probe, which is then linked to a reporter molecule — in this case, a fluorescent probe. This complex assumes a fluorescent glow when the microwaves are directed at it, telling the investigator whether the organism — in this case, chlamydia — is present," explained Dr. Gaydos.

The microwave-accelerated metal-enhanced, fluorescence platform is still in the pilot testing stage at the moment, but the next step is to test real clinical samples, she reported. If successful, Dr. Gaydos intends to test other organisms such as gonorrhea and methicillin-resistant *Staphylococcus aureus*. "Of course, the proof of the pudding is to see how well it works in the human matrix; for example, a cervical or vaginal swab where there are lots of other human cells present. The assessment is ongoing," said Dr. Gaydos.

The home-based chlamydia testing study was partly funded by the Centers for Disease Control and Prevention. Dr. Gaydos receives support from Gen-Probe and Becton Dickenson. Mr. Greenhouse has received support from a wide range of pharmaceutical companies in the past but has disclosed no relevant financial relationships.

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