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EDITORIAL COMMENTARY

Patients May Accurately Self-collect Pharyngeal and Rectal Specimens for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* Infection: But Is There Benefit?

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(See the Major Article by Wilson et al on pages e3172–80.)

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The report by Wilson et al is a valuable study confirming that patients can accurately self-collect pharyngeal and rectal samples for the detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infections as well as trained clinicians [1]. The study was well-constructed with a large sample size. The investigators estimated for each specimen type, anatomic site, and infection the positive percent agreement (PPA), a term currently preferred by those who regulate diagnostics when evaluating tests in the absence of a true gold standard but calculated the same way as "sensitivity." PPA is measured by comparing test positivity with a composite reference standard defined by Wilson et al as a positive *N. gonorrhoeae* culture or at least 2 positive nucleic acid amplification tests with different molecular targets.

The PPA for clinician-collected rectal specimens for *N. gonorrhoeae* infection was 92.8% (95% confidence interval [CI]: 84.9 to 97.3), which was similar to the PPA for self-collected specimens of 97.6% (95% CI: 91.6 to 99.7). The PPA for clinician-collected pharyngeal specimens for *N. gonorrhoeae* infection was 93.1% (95% CI: 84.5 to 97.7) comparable to the PPA for self-collected pharyngeal specimens, 95.8% (95% CI: 88.3 to 99.1). The PPA for clinician-collected rectal specimens to detect *C. trachomatis* infection was 95.6% (95% CI: 92.2 to 97.8) similar to the PPA for self-collected rectal specimens, 97.2% (95% CI: 94.3 to 98.9). The PPA for clinician-collected pharyngeal specimens to detect *C. trachomatis* infection was 92.1% (95% CI: 82.4 to 97.4) similar to the PPA for self-collected pharyngeal specimens, 93.7% (95% CI: 84.5 to 98.2). Positive and equivocal results were re-tested with a second assay using different molecular targets, further strengthening the validity of true positive infections.

Wilson et al additionally report that clinicians collected swabs faster, 30 sec on average, than study participants [1]. They interpret that as cost saving, however that difference in time might be negligible in a health system and might overestimate value in a cost analysis.

Wilson et al conclude with recommendations to add pharyngeal and rectal testing for *N. gonorrhoeae* and *C. trachomatis* infections to sexually transmitted infection (STI) screening programs. Screening, however, has costs that must be carefully considered, both costs to the health system and costs to the patient. Those costs may include stigma, labeling, financial resources, laboratory staff time, adverse drug reactions, and potentially increased antimicrobial resistance associated with over-treatment [2]. Universal three-anatomic site testing must be considered in terms of the clinical data that demonstrate benefit to the individual of the early detection and treatment of those infections, and to public health showing that early detection and treatment reduces the community spread of infection.

Prior investigators have shown that substantial numbers of *C. trachomatis* and *N. gonorrhoeae* infections can be identified from rectal and oropharyngeal testing among women and men who have sex with men (MSM) [3]. Prior studies have also found that self-collection of oropharyngeal and rectal specimens for STIs, including *C. trachomatis* and *N. gonorrhoeae* infection, among MSM was feasible and acceptable [4, 5]. It has been shown that self-collected specimens are comparable in accuracy to provider-collected specimens [6, 7].

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While urogenital *C. trachomatis* and *N. gonorrhoeae* infections can cause serious clinical problems, including pelvic inflammatory disease, perihepatitis, and adverse pregnancy outcomes [8], the morbidities of asymptomatic oropharyngeal and rectal *C. trachomatis* and *N. gonorrhoeae* infections are less clear. For women and heterosexual men, the clinical significance of oropharyngeal *C. trachomatis* infection has not justified routine screening and is not included in Centers for Disease Prevention and Control and Prevention screening recommendations in the United States [8]. Pharyngeal and rectal *C. trachomatis* and *N. gonorrhoeae* infections may spontaneously clear in a range of 4 to 6 months [9, 10]. Furthermore, some have hypothesized that overtreatment of pharyngeal *N. gonorrhoeae* infections could drive *N. gonorrhoeae* antimicrobial resistance [2]. While asymptomatic rectal *C. trachomatis* and *N. gonorrhoeae* infections increase the risk of human immunodeficiency virus (HIV) acquisition among those engaging in receptive anal sex [8, 11, 12], and why multisite screening is recommended among MSM in the United States by the Centers for Disease Prevention and Control and Prevention, consistent use of pre-exposure prophylaxis may prevent acquisition of HIV infection, despite frequent *C. trachomatis* and *N. gonorrhoeae* infections [13]. Whereas the British Association for Sexual Health and HIV (BASHH) recommends that males performing fellatio and participating in peno-anal sex undergo pharyngeal and rectal *C. trachomatis* and *N. gonorrhoeae* infection testing, respectively, pharyngeal testing is not recommended among those performing cunnilingus [14]. Among women who perform fellatio and participate in peno-anal sex, BASHH recommends considering pharyngeal and rectal testing, respectively.

We agree that three-site testing will likely identify more cases of *N. gonorrhoeae* and *C. trachomatis* infection among the general population and more individuals with infection. However, with the lack of rigorous studies showing any meaningful clinical benefit of decreased morbidity or mortality with the treatment for asymptomatic rectal and pharyngeal *C. trachomatis* and *N. gonorrhoeae* infections on the individual level or on the societal level of decreased STI incidence, it seems too early to recommended universal screening beyond urogenital infection. Clinical trials are needed to test whether there is benefit for rectal and pharyngeal *C. trachomatis* and *N. gonorrhoeae* infection screening. Based on data from those clinical trials, cost-effectiveness analyses may be conducted to demonstrate the value to health systems of increased screening. Additional research on values and preferences of the target population is needed as well as assurances of equity and access to screening and treatment. While it is instinctual to find and treat infection, the various costs must be carefully considered to ensure the benefits outweigh the potential harms.

Notes

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