Is Routine Testing Necessary When Empirically Treating Patients With Suspected Gonorrheal and Chlamydia Infections?

Opposing authors provide succinct, authoritative discussions of controversial issues in emergency medicine. Authors are provided the opportunity to review and comment on opposing presentations. Each topic is accompanied by an Editor's Note that summarizes important concepts. Participation as at authoritative discussant is by invitation only, but suggestions for topics and potential authors can be submitted to the section editors.

Editor's Note: *Routine testing can provide a definitive diagnosis, specific microbiological cause, and optimal treatment for patients with suspected gonorrheal or chlamydial infections, but the benefits of routine testing are unclear among patients who are treated empirically. In this Clinical Controversies series, our discussants present opposing viewpoints of the benefits and drawbacks of routine testing among patients who are treated empirically for suspected gonorrheal and chlamydial infections.*

SYMPTOMATIC EMERGENCY DEPARTMENT PATIENTS SHOULD UNDERGO EMPIRICAL THERAPY FOR GONORRHEA/CHLAMYDIA REGARDLESS OF TESTING

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Neisseria gonorrhoeae and *Chlamydia trachomatis* are the 2 most commonly diagnosed and reported sexually transmitted infections in the United States.[1] Among men, these infections cause urethritis and epididymitis. Among women, they cause cervicitis and urethritis, although most infected patients are asymptomatic.[2] Antibiotics readily cure urethritis, cervicitis, and pelvic inflammatory disease, and early treatment of these infections prevents transmission and complications. All emergency department (ED) patients with presentations consistent with *N gonorrhoeae* or *C trachomatis* should undergo empirical therapy rather than test-based treatment.

The Centers for Disease Control and Prevention and the Infectious Diseases Society of America recommend annual screening of several asymptomatic patient populations.[1,3] These include sexually active women younger than 25 years and older women and men at increased risk for infection (eg, unprotected sexual activity).[1] These recommendations for screening stem from recognition that a significant proportion of infected patients are asymptomatic.[1,3] Screening of asymptomatic personnel is not an appropriate allocation of effort and resources in an ED setting, and these guidelines do not inform ED diagnostic testing in symptomatic patients. Symptomatic patients presenting to the ED have a prevalence of *N gonorrhoeae* and *C trachomatis* as high as 17% compared with less than 1% in the general population.[4] Greater than one third of these patients with a positive test result for these diseases do not receive treatment during their initial ED visit.[5] In the setting of such high pretest probability and risk of failing to treat, we believe it is reasonable to proceed with treatment without confirmatory testing.

At central issue are the concepts of testing and treatment thresholds, which represent the probability of disease below which the risks of harm through testing (eg, false-positive results) outweigh the benefits.[6] The testing threshold represents the probability of disease above which the benefits of treatment outweigh the risks (eg, exposing patients without infection to antibiotic adverse effects). We approximate the treatment threshold for chlamydia specifically as 16% according to a 15% risk of adverse effects with azithromycin and a 78% probability of persistent infection without treatment.[7,8] As noted, patients presenting to the ED with signs and symptoms consistent with *N gonorrhoeae* or *C trachomatis* or clinical suspicion based on risk factors whom clinicians intend to treat represent a self-selected cohort at particularly high risk of infection, in whom the probability of disease (17%) exceeds the treatment threshold.

Current testing includes urine and endocervical swabs. Specificity is excellent for both diseases with these tests (approximately 97%). Sensitivity exceeds 80% for diagnosis of *C trachomatis* with urine and endocervical swabs, but is lower for *N gonorrhoeae* (55.6%), increasing the risk of false-negative test results.[9] For the latter, then, a negative test result yields a negative likelihood ratio of only 0.46, corresponding to a posttest probability of disease among symptomatic ED patients of nearly 8%. Although urine testing is less invasive than endocervical swabs, the sensitivity is unacceptably low, and a negative result should not be used to exclude infection. Urine cultures are not routinely used because of expense and need for technical expertise to perform.

The worst-case number needed to treat for empirical therapy to cure one infection according to the aforementioned statistics, given an 8% posttest probability in patients with a negative test result, is 13 (100/8%). We contend this warrants routine empirical therapy, given that the antibiotics used to treat *N gonorrhoeae* and *C trachomatis* have excellent safety profiles and demonstrate efficacy greater than 95% with use of dual therapy in the majority of patient populations. Antibiotic resistance is always a consideration for overtesting, although highly effective single-dose regimens mitigate this risk for empiric *N gonorrhoeae* and *C trachomatis* treatment. Azithromycin with gemifloxacin or gentamicin offers a safe alternative in areas with cephalosporin resistance, with cure rates greater than 98% and low risk of adverse effects.[8]

There are additional harms associated with testing. Undertreatment resulting from testing-based treatment carries a financial cost associated with patient tracking, notification, and return visits.[5] In the case of endocervical and urethral swabs, testing is likely to cause discomfort. Testing also potentially lengthens patient ED stays if results to drive treatment decisions are pending, even when rapid testing is used.[10]

Patients treated in the ED should nevertheless undergo follow-up with their primary provider or sexual health clinic. This follow-up serves important public health functions, including safe-sex counseling.[1] These interventions offer significant benefits to the population at large.

Empirical therapy of symptomatic ED patients is warranted regardless of testing. We reach this conclusion in accordance with testing and treatment thresholds, efficacy and safety of empirical antimicrobials, and complications of withheld therapy. We believe the benefits of this course of action outweigh the risks.

This review does not reflect the views or opinions of the US government, Department of Defense, US Army, US Air Force, or SAUSHEC EM Residency Program.

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DIAGNOSTICS FOR GONORRHEA AND CHLAMYDIA IN THE EMERGENCY DEPARTMENT: FIGHT SMARTER NOT HARDER

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In 2018 alone, 583,405 cases of *Neisseria gonorrhoeae* and 1,758,688 cases of *Chlamydia trachomatis* were reported to the Centers for Diseases Control and