

The impact of near-to-patient testing of sexually transmitted infections on clinical practice and antimicrobial stewardship: the NEPTUNE study

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Background: Presumptive treatment in sexually transmitted infection (STI) syndromes and among sexual contacts of an STI leads to antibiotic overuse and misuse. We aimed to determine if near-to-patient-testing for *Neisseria gonorrhoeae*, *Chlamydia trachomatis* and *Mycoplasma genitalium* (plus macrolide-resistance-mutations) would improve appropriate prescribing and reduce antibiotic overuse in patients with non-gonococcal urethritis (NGU), suspected proctitis or pelvic inflammatory disease, patients attending as STI-contacts, and patients attending for *M.genitalium* test-of-cure (MG-TOC). Timely STI-specific partner notification was measured.

Methods: From March-December 2021, patients underwent testing for the STIs by transcription-mediated-amplification (Aptima, Hologic) and molecular near-to-patient-testing (SpeedX; GeneXpert System, Cepheid). We calculated the proportion with an STI detected among those who presented with an STI syndrome, as an STI-contact, or for MG-TOC, and estimated the benefit of near-to-patient-testing among those who would normally receive syndromic therapy. Patients received an SMS asking how many partners they had notified of the specific STI within 24h.

Results: Using near-to-patient-testing for 870 patients (representing 975 consults), an STI was detected in 63/252 (25.0%) with NGU (12.3% *C.trachomatis*;11.3% *M.genitalium* 2.8% *N.gonorrhoeae*), 18/51 (35.3%) with proctitis (21.6% *N.gonorrhoeae*;9.8% *C.trachomatis*; 11.8% *M.genitalium*) and 5/51 (9.8%) with pelvic pain (5.8% *M.genitalium*;2.0% *C.trachomatis*;2.0% *N.gonorrhoeae*). Of 527 STI-contacts, 34.7% had an STI by near-to-patient-testing. *M.genitalium* was detected in 35/161 (21.7%) MG-TOC presentations. Near-to-patient-testing resulted in a >75% reduction in presumptive therapy for STI syndromes & >95% for asymptomatic STI-contacts. 173/276 with an STI detected reported partner-

notification via reply-SMS; 95.4% notified all or some sexual partners and 85.9% of these notifications occurred <24h post-result.

Conclusion: The three bacterial STIs were detected in fewer than a third of patients with STI syndromes or attending as STI-contacts, highlighting how presumptive treatment leads to antibiotic overuse and the need for timely aetiologic treatment strategies. Near-to-patient-testing resulted in reduced presumptive therapy, and rapid and high rates of STI-specific partner-notification.

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