Lancet ID Commentary

Neisseria gonorrhoeae infections in the oro-pharynx: should we be routinely testing women?

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Oropharyngeal infection with *Neisseria gonorrhoeae* is important: it is harder to treat than anogenital infection and the oro-pharynx provides a niche for the development of antimicrobial resistance (AMR).[1] Additionally, as it is usually asymptomatic it can easily remain undetected, providing a reservoir of infection facilitating onward transmission. Emerging evidence suggests that in addition to oral sex, oropharyngeal infection may be transmitted by kissing.[2]

The prevalence of oropharyngeal *N gonorrhoeae* in men who have sex with men (MSM) is estimated to be 5-10%,[3,4] but there is limited evidence on the burden of extra-genital infection in heterosexuals. Whilst it is generally agreed that MSM should be routinely screened for oropharyngeal infection, there is no consensus for screening women, even though they may be at risk.[5] Currently, national sexually transmitted infection (STI) testing guidelines in most countries do not recommend that women are routinely screened at the oropharyngeal site. Van Liere's study in the Lancet Infectious Diseases is therefore a welcome addition to a scarce evidence base for informing testing guidelines.

Van Liere and colleagues used ten years of Dutch STI surveillance data to explore optimal testing strategies for the detection of oropharyngeal *N gonorrhoeae* in women. They compared the prevalence of oropharyngeal *N gonorrhoeae* in clinics which routinely screened all women ('universal testing') with clinics who tested only based on behaviour or risk group ('selective testing') and found a test positivity of 1.4% in both groups. By extrapolating the positivity found in universal testing clinics to all selective testing clinics, weighted for case mix characteristics, they estimated that selective testing missed 70% of oropharyngeal infections, and importantly, half of oropharyngeal-only infections. The latter group is particularly concerning as they would not be incidentally treated as part of treatment for a concurrent genital infection.

Amongst those in the universally tested group, independent risk factors for oropharyngeal infection were found to be sex work, being notified as a contact of an STI, and concurrent anogenital *N gonorrhoeae* infection. A testing strategy targeting those notified for an STI and reporting sex work was estimated to identify just over half of oropharyngeal infections. Testing those reporting oral sex would require almost all women (93%) to be tested and would still miss 6% of infections.

This is a unique study which benefits from using a large national surveillance dataset. However, the findings of this study may not be generalisable to other clinical settings and countries. In the Netherlands, women attending STI clinics are likely at high-risk of *N gonorrhoeae* infection: over 10% were sex workers or swingers. Two thirds of *N gonorrhoeae* infection in the Netherlands is in fact diagnosed in primary care, which sees a considerably lower risk population. This is in contrast with the United Kingdom (UK), for example, where almost all gonorrhoea cases are diagnosed in STI clinics; thus, the risk profiles of women attending Dutch and UK STI clinics likely differ. Some caution may also be needed when using surveillance datasets for analysing less common events as coding errors can have a disproportionate influence on analysis outcomes in these circumstances.

Clearly, universal screening will identify all infections. The authors do, however, acknowledge that this approach may not be cost-effective given the low prevalence of oropharyngeal infection in women, which is significantly lower than that seen in MSM. They also highlight the increased risk of

false positive test results due to low positive predictive values when screening for a rare infection.[6,7] This is particularly true for pharyngeal samples where cross-reactivity with commensal Neisseria species may occur. Although all testing was performed by accredited laboratories, it is unclear whether confirmatory NAAT testing to minimise false positive results was performed.

Despite these caveats, this study contributes significantly towards answering a difficult public health question. It should encourage and inform further studies to determine optimal and cost-effective testing strategies for detecting oropharyngeal *N gonorrhoeae* infection in women to improve infection control and minimise the development of AMR.

References

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