Evaluating the impact and cost-effectiveness of chlamydia management strategies in Hong Kong: a modelling study

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Background: Discussions for chlamydia control have shifted from population-based screening towards strengthening patient management. We aimed to illustrate the epidemiologic and cost-effectiveness impact of shifting from population-based screening towards a targeted management approach for genital chlamydia infection.

Methods: We constructed an individual-based, stochastic, dynamic network model for chlalmydia based on Hong Kong's sexually active population of reproductive age (age 18-49 years). We evaluated the change of chlamydia prevalence before and after implementing the different implementations of universal vs. targeted screening. We also explored the impact of [1] screening only, [2] screening plus expedited partner therapy, and [3] screening plus partner testing. The cost-effectiveness analysis reports total direct cost from a health provider perspective, the QALYs gained, and incremental cost-effectiveness ratios (ICER).

Results: In comparing the effects of universal screening only and targeted screening of the high-risk population, the mean prevalence during the tenth year of intervention was 2.75 ± 0.30% and 2.35 ± 0.21%, respectively (compared with 3.24 ± 0.30% and 3.35 ± 0.21% before the interventions, respectively). The addition of contact tracing to the latter targeted screening scenario reduces the mean prevalence during the tenth year of intervention to 1.48 ± 0.13% (compared with 3.31 ± 0.33% at baseline) in the best-case of testing before treatment and maximal contact-tracing effectiveness (40%). Overall, the most effective scenarios were those for which interventions focused on the high-risk population defined by the number of partners, with contact tracing included. The ICER for targeted screening with contact tracing at 20% and 40% efficiency was $4,634 and $7,219 per QALY gained, respectively (10-year time horizon). Expedited partner therapy did not significantly impact overall chlamydia prevalence and caused overtreatment.

Conclusion: Our study suggests that targeted screening with strengthened contact tracing efforts is the most cost-effective strategy to reduce the prevalence of chlamydia in Hong Kong.

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