Cost-effectiveness of a syphilis self-test for at-home use among men who have sex with men in Australia

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Background: Men who have sex with men (MSM) experience disproportionately high rates of syphilis. Currently, syphilis testing necessitates visiting a healthcare clinic and testing rates among MSM are below recommendations. Syphilis self-tests (SSTs) for at-home use could make testing more accessible, but none are currently available in Australia that can distinguish past from current infection. This study estimates the potential cost-effectiveness of SSTs among MSM in Australia.

Methods: For a single screen of a cohort of 100 MSM in urban Australia (1.9% active syphilis prevalence), a decision tree model estimated the number of active syphilis cases correctly treated and total testing costs from a taxpayer perspective. Standard-of-care syphilis testing was compared to SST scenarios where a proportion of MSM not currently testing commenced using the SST ('adopters'), and a proportion of MSM currently testing through standard-of-care switched to using the SST ('switchers'); switchers either used the SST to replace or complement laboratory testing. The SST was modelled to have 95% sensitivity, 89%/100% specificity with/without past infection, and a $20 unit price. Multivariate sensitivity analyses tested all SST characteristics and uptake parameters.

Results: The cost-effectiveness of the SST scenario was sensitive to uptake parameters but was cost saving with health benefits for many plausible combinations. There were net health benefits as long as the proportion of switchers did not exceed twice the proportion of adopters (due to the lower SST sensitivity than laboratory testing). Even with greater total testing coverage, the SST scenario was cost saving overall at a $20 unit price provided at least 16% of switchers used the SST to replace rather than complement a laboratory test.

Conclusion: SSTs among urban Australian MSM could increase treatment of syphilis and reduce overall testing costs. Further work is required to identify likely uptake scenarios for SSTs among different sub-population groups.

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