Novel syphilis self-tests could save costs and help detect more cases of syphilis among gay and bisexual men.

An extra 9% of cases, to be specific.

The Problem

Men who have sex with men (MSM) experience disproportionately high levels of syphilis infection.[1]
Testing is recommended every 3 months and needs to be performed at a healthcare clinic.[2]
30-40% of MSM either don't get tested or get tested less than once a year.[3]
Current rapid tests aren't effective because they can't distinguish between current and past treated infections.

The Aim

Under what conditions would the intervention scenario be cost-effective and lead to more current cases diagnosed?

The Model >

100 Hypothetical MSM living in urban Australia

Two scenarios simulated with a decision-tree model.
Primary outcomes: number of current syphilis cases diagnosed, and cost to the taxpayer of testing.

The Results

For the uptake scenario shown in the figure, and if the wholesale unit cost per self-test is $5:

9% More current cases diagnosed

$2190 Saved in testing costs per 100 MSM per year

For other uptake scenarios explored in sensitivity analysis:

Nearly all sensitivity analysis scenarios resulted in more cases diagnosed. More cases are diagnosed when the following equation holds, where:

β = self-test sensitivity
α = rate of loss to follow-up among adopters
δ = rate of clinic testing among switchers

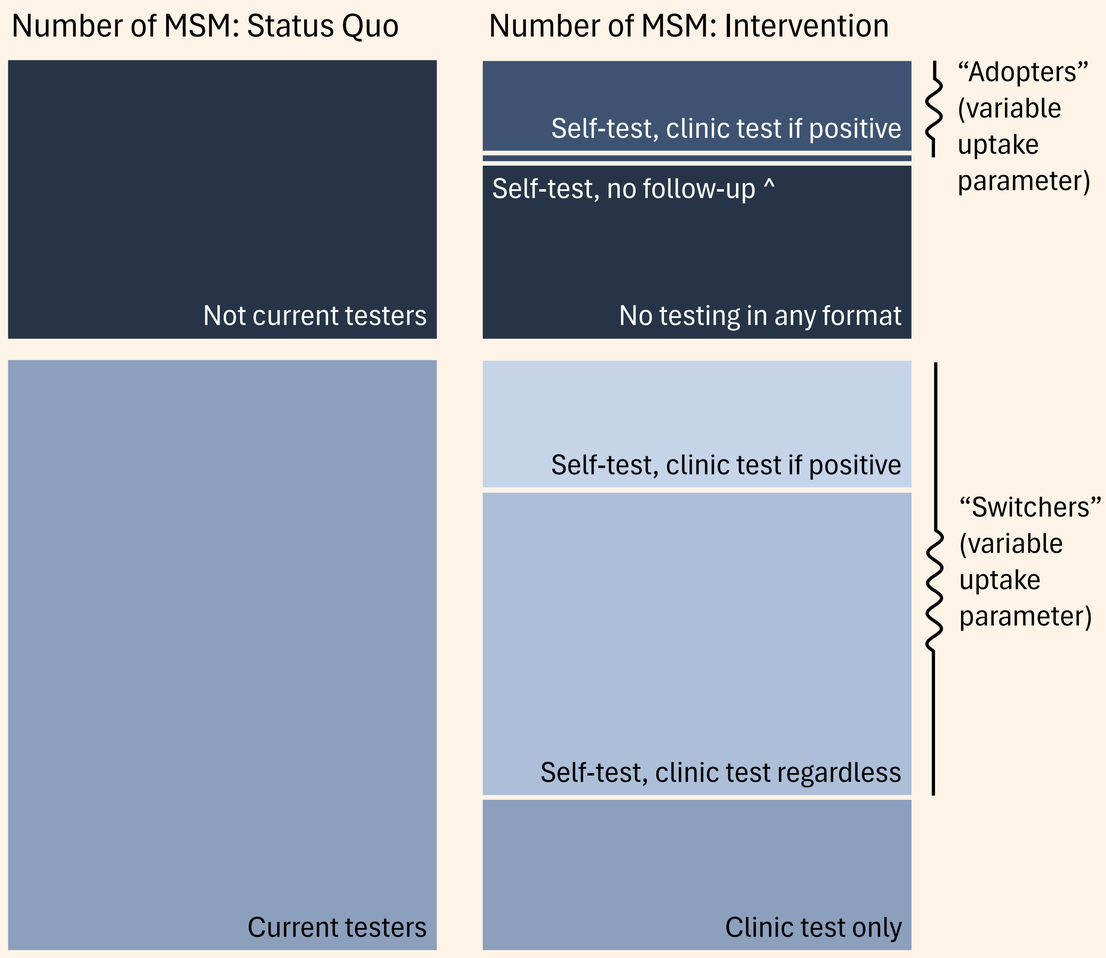
$$\frac{\beta\,(1-\alpha)}{(1-\beta)(1-\delta)} > \frac{number\ of\ switchers}{number\ of\ adopters}$$

$2-$79 Unit cost threshold for cost savings, depending on uptake parameters

Strongest predictors for low threshold: more switchers clinic testing regardless, low number of switchers

The Intervention

An at-home syphilis self-test currently in development that can differentiate between current and past-treated cases. It tells you if you're likely to have syphilis and need further clinic testing and treatment. Modelled as an accessible over-the-counter test.



Want more detail?

Scan the QR code for a **full list of model inputs with sources, and sensitivity analysis results**.

References

1. King J, McManus H, Kwon J, Gray R, McGregor S. HIV, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2023 [Internet]. UNSW Sydney; 2023 [cited 2024 Sep 18]. Available from: http://hdl.handle.net/1959.4/unsworks_84260
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