

CAPSULE COMMENTARIES

Capsule Commentary on Long and Stavert, Portfolios of Biomedical HIV Interventions in South Africa: A Cost-Effectiveness Analysis

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In this issue, Long and Stavert¹ present an insightful analysis of the cost-effectiveness of combinations of biomedical interventions for HIV in South Africa, a country hard-hit by HIV and in need of effective intervention strategies. Their examination of *portfolios* of interventions is timely and valuable, for two reasons. First, more biological interventions now have solid empirical data on effectiveness. Second, with increased focus on efforts to sharply curtail HIV, realistic combination strategies are desperately needed. Our analysis showed that the epidemic in South Africa could be minimized over time with aggressive scale-up of anti-retroviral therapy (ART) combined with enhanced prevention,² but without Long and Stavert's attention to specific intervention options.

This paper finds that biological interventions are not equally efficient. Figure 2 offers a summary of findings, with quality-adjusted life years (QALYs) on the vertical axis and costs (in international dollars) on the horizontal. Among individual interventions, circumcision saves money while providing health benefit (in cost-effectiveness lexicon, is "dominant"), moving *left* on the graph. All other strategies move right and up, with costs and QALYs rising. A steeper slope (more QALYs per dollar) is preferable. After circumcision, HIV screening alone and with ART provides a relatively attractive \$1,033 per QALY gained. Of note, any strategy that involves PrEP has a substantially less attractive cost-effectiveness, due to PrEP's \$9,000 per QALY gained. The "combination portfolio" that includes all five interventions costs about

\$3,000 per QALY gained compared with the status quo, and \$9,937 per QALY gained compared with screening and ART.

As noted by Padian³ for modeling portfolios of interventions, "reliability of the outputs cannot exceed the quality of the inputs ... particular care must be given to ... defining the combination of interventions to be evaluated ... [and] choosing valid counterfactuals." Long and Stavert succeeded admirably in examining uncertainty in inputs with probabilistic sensitivity analyses. We might have modeled longer than 10 years, to see delayed effects, and decision-makers might prefer different combinations of interventions. Despite these minor reservations, the article is a very instructive, informative, and valuable step to understanding HIV epidemic control options.

Conflict of Interest: The authors declare no conflicts of interest.

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