Cost-Effectiveness of Implementing Long-Acting PrEP in Eswatini: A mathematical modelling study

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Background

- Pre-exposure prophylaxis (PrEP): long-acting injectable PrEP, oral PrEP, and ring PrEP offer substantial reductions in HIV transmission when adherence and retention are satisfactory.
- Eswatini, a low-middle-income country in the Southern African Region of nearly 1.2M people records an annual HIV incidence of 0.62% and adult prevalence of 24% (15-49 years), is striving to reach the EHE 2030 goal.
- Aim: Using local epidemiological, programmatic, and cost data, we determined the cost-effectiveness of alternative PrEP scale-up scenarios in Eswatini.

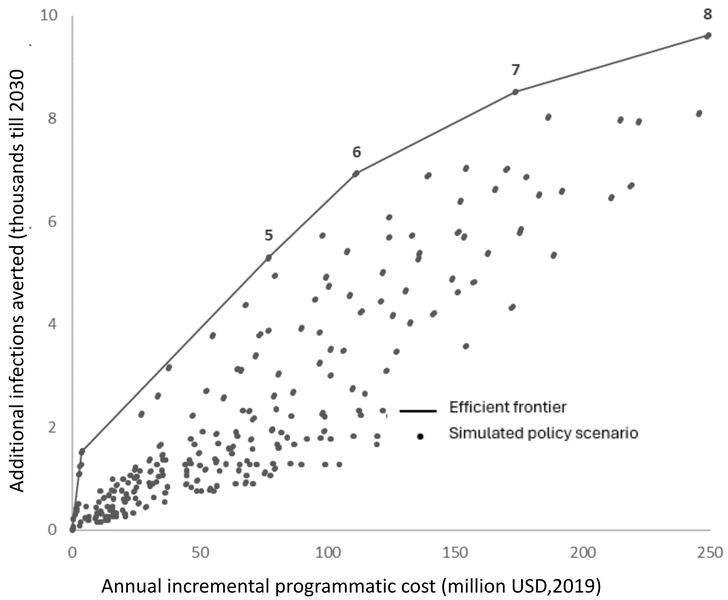
Methods

- We used an HIV compartmental transmission model to simulate scale-up scenarios for LA-PrEP, oral PrEP, and ring PrEP, and a choice-based PrEP option where individuals select their preferred modality.
- We targeted populations at increased risk of HIV acquisition.
  - Each modality was simulated at varying coverage (10%, 50%, and 70%)
  - Choice-based PrEP: 75% LA-PrEP; 25% other (men: oral PrEP; women: equally distributed between oral and ring)
- We conducted probabilistic sensitivity analyses to assess outcome robustness against different levels of willingness-to-pay for health benefits
- **Targeted populations at increased HIV risk:**
  - Adolescent girls and young women (AGYW) 15-24y
  - Adolescent boys and young men (ABYM) 15-24y
  - Female sex workers (FSW)
  - Men who have sex with men (MSM)
  - Men 25-34y
  - People with any condition of alcohol, substance and mood disorder (CASM)
- **Outcomes measured through 2030:**
  - Infections averted
  - Quality-adjusted-life-years (QALYs) gained
  - Cost per infection averted
  - Cost per QALY gained

Results

Targeting FSW with LA-PrEP and/or choice-based PrEP were the most cost-effective strategies for implementing PrEP in Eswatini

Efficient Frontier: Most efficient strategies per infection averted

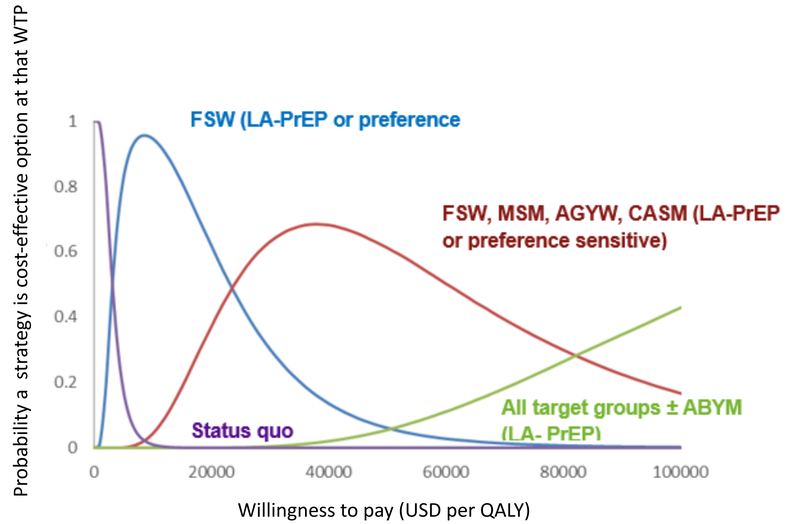


Strategy	Coverage	Targeted risk groups	ICER per infection averted
LA	10%	FSW	$2,293
LA	50%	FSW	$2,293
LA	70%	FSW	$2,293
LA	70%	FSW, MSM	$13,220
LA	70%	FSW, MSM, AGYW	$19,418
LA	70%	FSW, MSM, AGYW, CASM	$20,979
LA	70%	FSW, MSM, AGYW, CASM, 25-34M	$39,382
LA	70%	FSW, MSM, AGYW, CASM, 25-34M, ABYM	$69,041

Strategy	Coverage	Targeted risk groups	ICER per QALY gained
LA	10%	FSW	$3,275
LA	50%	FSW	$3,675
Choice preferred*	Choice preferred*	FSW	$4,917
LA	70%	FSW	$7,174
LA	70%	FSW, MSM	$23,815
LA	50%	FSW, MSM, AGYW, CASM	$29,966
Choice preferred*	Choice preferred*	FSW, MSM, AGYW, CASM	$34,419
LA	70%	FSW, MSM, AGYW, CASM	$50,221
LA	70%	FSW, MSM, AGYW, CASM, 25-34M	$63,909
LA	70%	FSW, MSM, AGYW, CASM, 25-34M, ABYM	$112,033

(---) Marks strategies most efficient for infections averted and QALYs gained that fall within Eswatini's opportunity cost–based cost-effectiveness thresholds

Sensitivity analysis: Cost-effective strategies at Eswatini WTP



Sensitivity Analysis:
Scaling up LA-PrEP or choice-based PrEP option for FSW remained a cost-effective strategy and is robust across plausible willingness to pay (WTP) ranges all the way up to US$20,000 per QALY gained

Conclusion

- LA-PrEP targeting FSW followed by choice-based PrEP were the most efficient strategies for scaling up PrEP in Eswatini.
  - For both infections averted and QALYs gained
  - Likely to be cost-effective across plausible ranges of WTP in Eswatini
- Expanding LA-PrEP to FSW, MSM, AGYW and CASM is unlikely to be cost-effective across plausible ranges of WTP in Eswatini.
- These timely results support LA-PrEP scale-up in Eswatini

Additional Key Information

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