

AN EPIDEMIOLOGICAL MODEL FOR HIV SELF- TESTING IN CANADA

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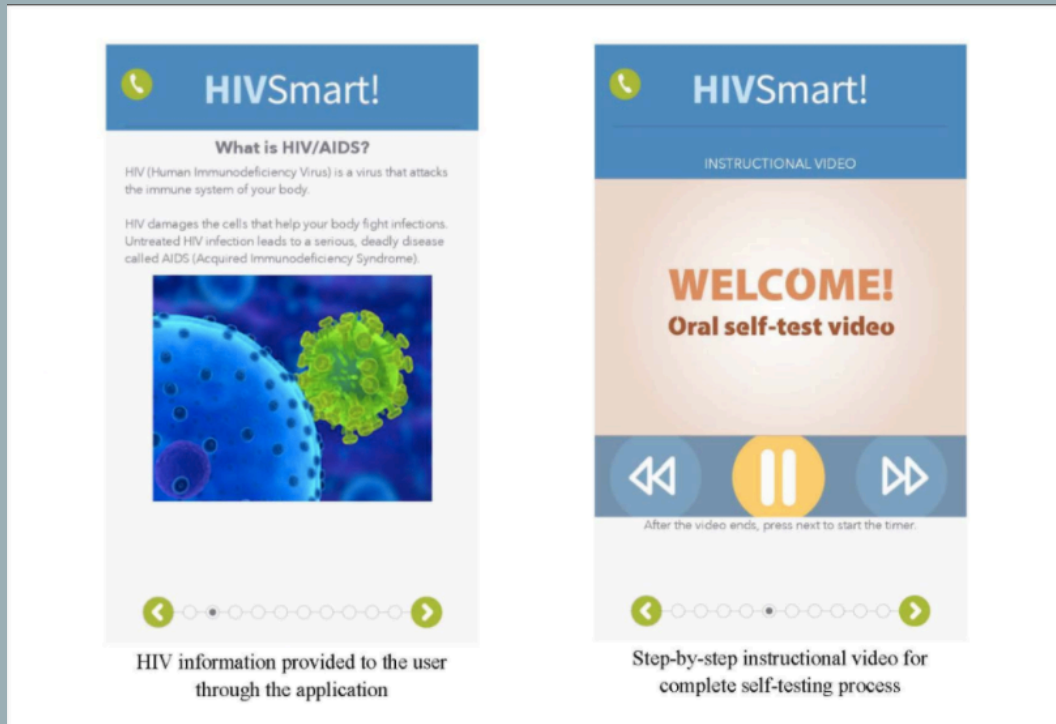


Figure 1. Screenshots of the HIVSmart! Application (copyright #1105598).
 Pant Pai N, Smallwood M, Desjardins L, Goyette A, Birkas KG, Vassal AF, Joseph L, Thomas R
 An Unsupervised Smart App—Optimized HIV Self-Testing Program in Montreal, Canada: Cross-
 Sectional Study

Background & Objectives:

- HIV self-testing (HIVST) is not available in Canada.
- This study aimed to develop an epidemiological model comparing HIVST offered alongside HIVSmart! to conventional HIV testing in Canada.
- The HIVSmart! app (copyright #1105598) helps patients navigate the self-testing process and provides linkage to care services following completion of a self-test.
- The model sought to understand the impact of HIVST with the HIVsmart! app on, I) the prevalence of undiagnosed HIV, II) linkage to care, and III) utilization of treatment.

Methods:

- Using TreeAge Pro 2018 software, we developed a Markov state-transition model comparing HIVST facilitated by the digital HIVSmart! application (© I105598) that facilitates access to linkage, alongside conventional HIV testing compared to conventional HIV testing alone.
- The model followed a hypothetical cohort through various stages of infection, diagnosis, and treatment. Each cycle of the model represented one year in real-time.
- Data from studies with HIVSmart! and relevant HIVST literature were used to parameterize the model.

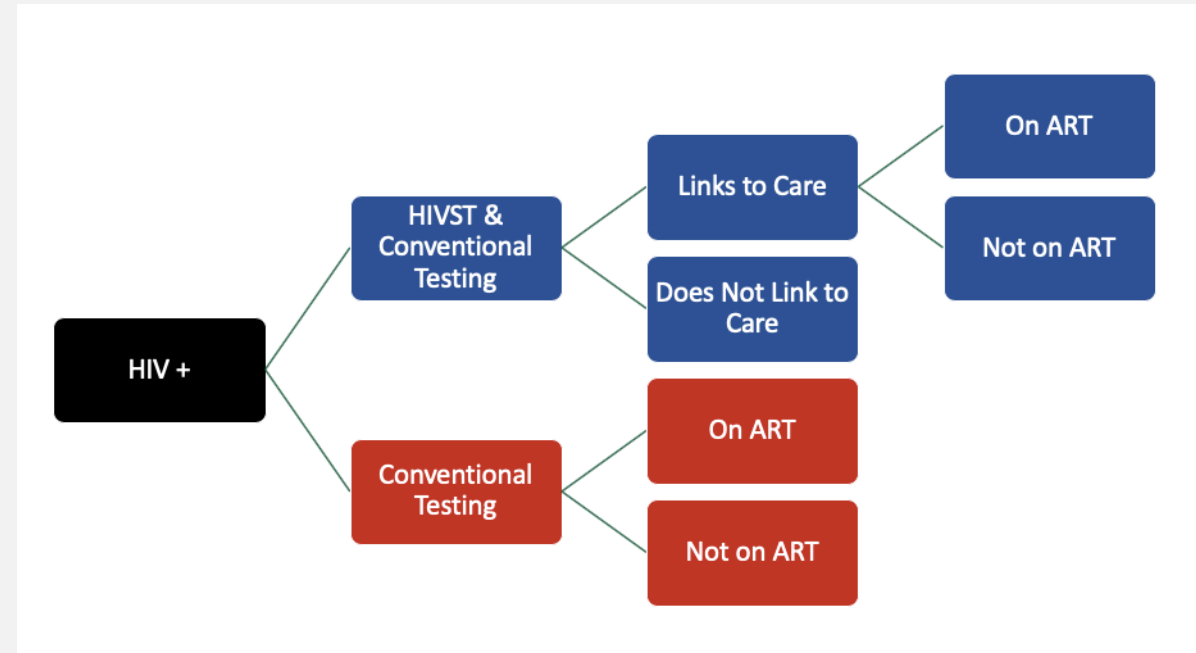


Figure 2. Simplification of Decision Analysis for HIV+ Undiagnosed Branch
Each branch of the model contains multiple decision nodes, as seen above. Movement through each node is determined by probabilities derived from the literature. The above branch represents a simplification of the HIV+ Undiagnosed state, showing movement through testing, linkage to care, and access to ART.

Key Findings:

- More people became diagnosed, linked to care, and accessed ART following HIVST than conventional testing alone only when HIVST increased uptake of testing relative to conventional testing.
- When HIVST did not increase uptake of testing, losses to follow-up after HIVST reduced the number of HIV+ individuals who were linked to care and initiated ART.

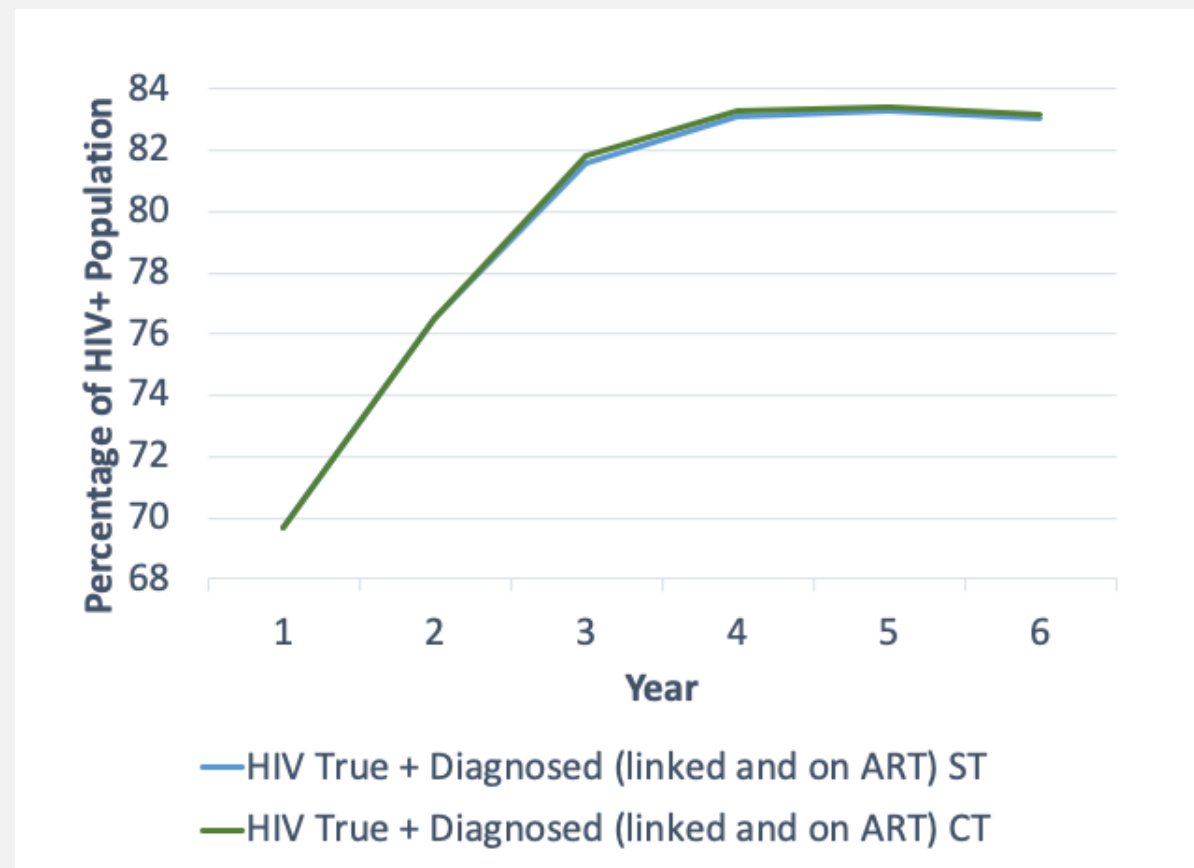
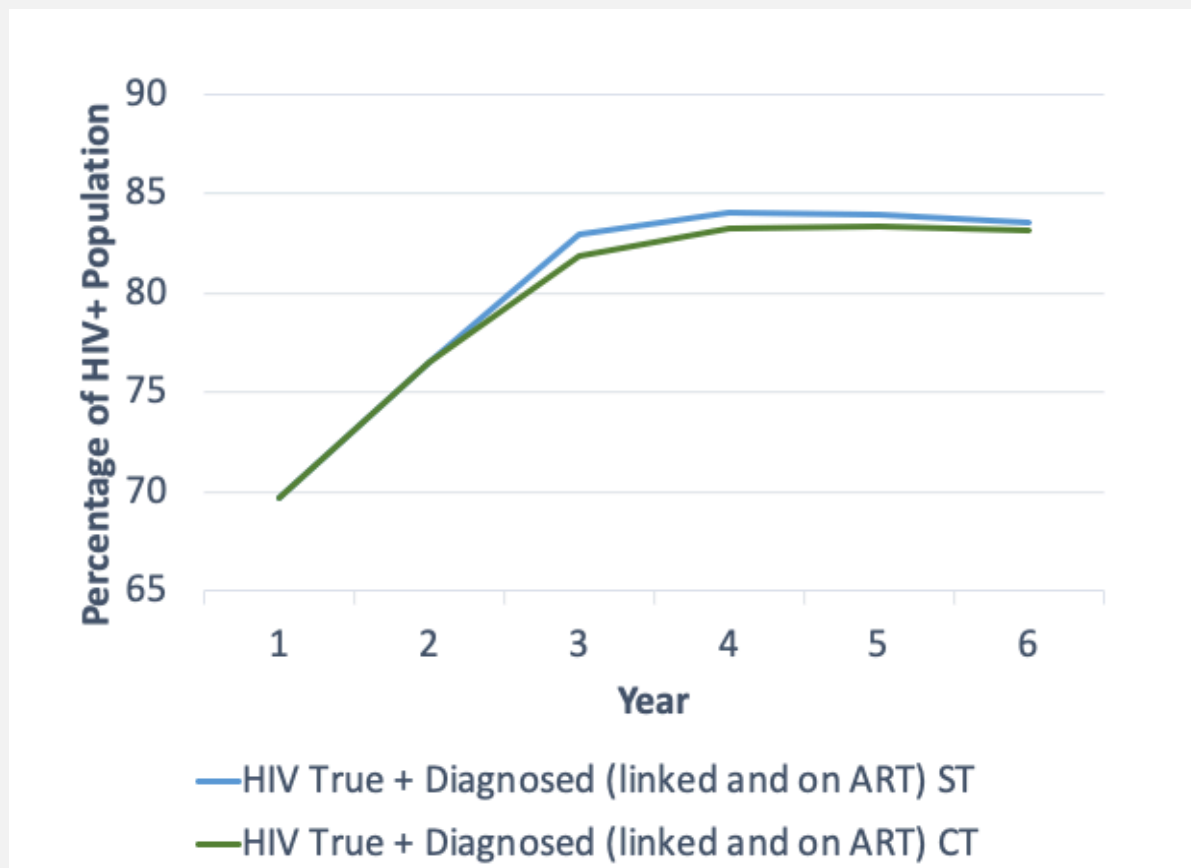


Figure 3A. Increased Uptake of HIVST with Potential Loss to Follow-Up After HIVST
The percentage of the HIV+ population who link to care and are on ART according to the type of testing approach used over the course of five years. ST and CT represent HIVST and conventional testing, respectively.

Figure 3B. Equal Uptake of HIVST with Potential Loss to Follow-Up After HIVST

DISCUSSION & CONCLUSION

- If HIVST increases uptake of testing, more people will become aware of their status, link to care, and access ART using HIVST
- If HIVST does not exhibit an increased uptake of testing, more people will become aware of their status, link to care, and access ART using conventional testing methods
- Loss to follow-up after HIVST reduces the number of HIV+ individuals who link to care and start ART, leading to an increased risk of developing AIDS and transmitting the infection to others

Conclusion:

- If HIVST is to be implemented in Canada, policies need to be in place to ensure that those utilizing HIVST have the resources available to link to care within an appropriate time frame following testing
- Smart apps like HIVSmart! (© I I05598) could help ensure linkage to care following HIVST and mitigate loss to follow-up