

# Modeled Effectiveness of CAB-LA Prioritization Strategies Based on Data From HPTN 083



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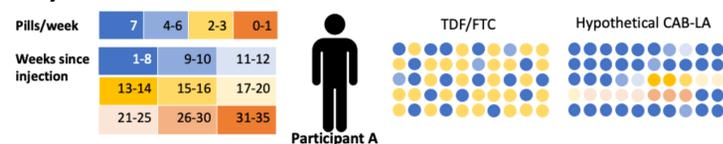
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## BACKGROUND

- Long-acting injectable cabotegravir (CAB-LA) as HIV Pre-exposure Prophylaxis (PrEP) demonstrated superiority over daily oral tenofovir disoproxil fumarate–emtricitabine (TDF/FTC) in the HPTN 083 trial
- We used data from the HPTN 083 TDF/FTC adherence cohort to estimate the population-level impact of different CAB-LA prioritization strategies on HIV incidence
- We included a low TDF/FTC adherence scenario intended to ensure access to CAB-LA to those who most urgently need it

## METHODS

- The HPTN 083 adherence cohort (n=390, n=281 with SexPro scores and 3+ placebo injection visits included in analysis) were offered active TDF/FTC and placebo CAB-LA with dried blood spots collected as a biomarker for TDF/FTC adherence evaluation
- SexPro score** evaluated risk of HIV acquisition based on sexual and drug-use behavior, race, and ethnicity; score = 0 is the highest probability of acquisition
- Projected time-varying CAB-LA efficacy was modeled based on the time since the last placebo injection
- Stochastic agent-based model to simulate HIV incidence in this cohort
- For each cohort participant, we estimated the probability of HIV acquisition over their follow up period based on:
  - Individual daily probability of HIV acquisition based on SexPro score components
  - Individual adherence to TDF/FTC and to CAB-LA placebo injections



- We calibrated the model to match 1.24/100 PYs incidence observed in the TDF/FTC arm of HPTN 083 when all agents were assigned TDF/FTC, then modeled HIV incidence with eight scenarios (Table 1)

Table 1: Descriptions of modeled scenarios

Scenario	Definition
Counterfactual placebo	No agents on PrEP
All on TDF/FTC	All agents on TDF/FTC, calibrated
All on CAB-LA	All agents on CAB-LA
SexPro score scenarios	CAB-LA prioritized by SexPro score ≤5, 10, 15
CAB-LA for SexPro ≤ 16	Participants with SexPro score ≤16 received CAB-LA, remaining participants received TDF/FTC
CAB-LA for suboptimal TDF/FTC adherence	Participants with 0-3 pills/week received CAB-LA, participants with 4+ pills/week received TDF/FTC
CAB-LA for poor TDF/FTC adherence	Participants with 0-1 pills/week received CAB-LA, participants with 2+ pills/week received TDF/FTC

# Prioritizing CAB-LA based on SexPro score or TDF/FTC adherence could reduce HIV incidence comparably to providing CAB-LA to all participants

Figure 1: HIV incidence (per 100 PYs) with all participants not on PrEP, on TDF/FTC, or on CAB-LA

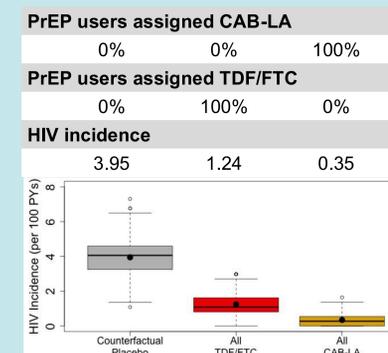


Figure 2: HIV incidence (per 100 PYs) with CAB-LA prioritized by SexPro score and remaining participants on TDF/FTC

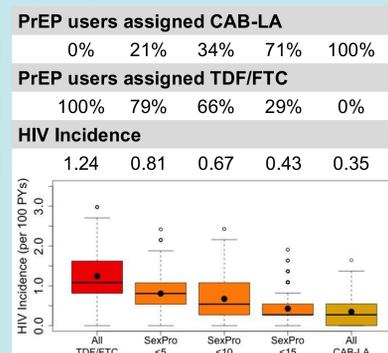
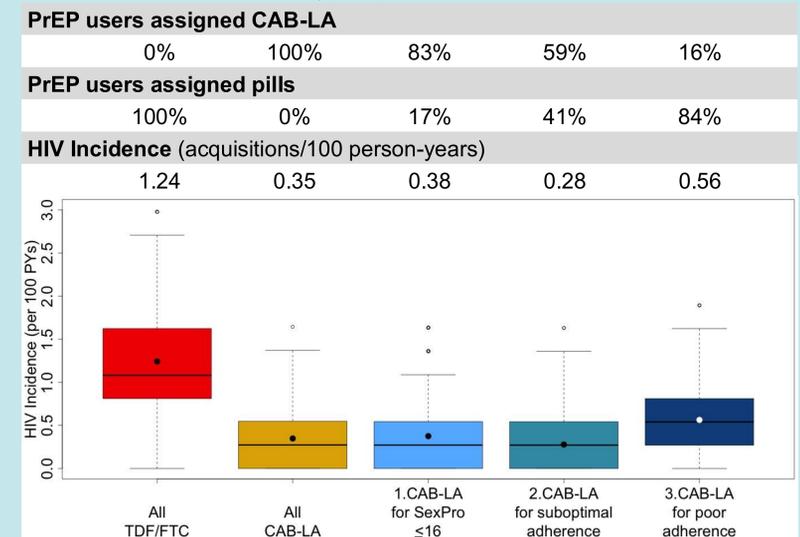


Figure 3: HIV incidence (per 100 PYs) with CAB-LA prioritized by SexPro score or TDF/FTC adherence and remaining participants on TDF/FTC



## RESULTS

- We estimated 93% mean CAB-LA effectiveness and 72% mean TDF/FTC effectiveness in the TDF/FTC adherence cohort.
- If CAB-LA was prioritized by SexPro score, incidence decreased as the prioritized SexPro score rose and more people were assigned to CAB-LA (Figure 2)
- If CAB-LA was prioritized to:
  - 83% of participants with SexPro score <16, effectiveness was predicted to be 90%
  - 59% with suboptimal TDF/FTC adherence, effectiveness was predicted to be 93%
  - 16% with poor TDF/FTC adherence, effectiveness was predicted to be 86% (Fig 3)

## CONCLUSIONS

- Prioritizing CAB-LA based on SexPro score or TDF/FTC adherence could achieve a reduction in HIV incidence comparable to providing CAB-LA to all participants
- If cost and supply severely limit availability of CAB-LA, prioritizing to those with poor TDF/FTC adherence still substantially lowered HIV incidence
- Ideally CAB-LA would be provided based on user preference, but while cost and supply limit its use, this analysis may inform optimal prioritization strategies in settings with resource constraints

## PLAIN LANGUAGE SUMMARY

**What we did:** Made a computer model of participants in HPTN 083 and their chance of acquiring HIV during the trial based on their sexual behavior and PrEP adherence  
**What we found:** When we prioritized CAB-LA to ~60% of people based on their PrEP pill adherence or ~80% of people based on their SexPro score and everyone else received PrEP pills, new HIV acquisitions were as low as when everyone received CAB-LA  
**Why it matters:** Cost and program access may limit CAB-LA use, so our analysis may help prioritize CAB-LA within programs

