ACHIEVING THE EHE INCIDENCE REDUCTION GOALS AMONG AT-RISK POPULATIONS IN THE SOUTH

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BACKGROUND

- **Research question:** What level of antiretroviral therapy (ART) coverage and preexposure prophylaxis (PrEP) uptake is needed in order to reduce the number of new HIV infections in the South by 75% in 5 years and 90% in ten years?
- ART coverage remains sub-optimal in much of the United States, particularly the Southern region.
- Non-Hispanic Black or African American persons (NHB) continue to be disproportionately impacted by the HIV epidemic.
- The “Ending the HIV Epidemic in the U.S.” (EHE) initiative seeks to reduce HIV incidence nationally by focusing resources towards the most highly impacted localities and populations.
- This study evaluates the impact of hypothetical improvements in ART and PrEP coverage to estimate the levels of coverage needed to achieve EHE goals in the South.

METHODS

- Stochastic agent-based microsimulation
- Simulations were implemented in R with the EpiModel and statnet software packages
- Data and parameters to support the simulation come from the NSFG and ARTnet surveys and literature reviews.
- The simulated population approximated the demographic composition of the US South for those aged 15-65.
- Simulations included networks of sexual partnerships, behavior within sexual partnerships, demography, intrahost epidemiology, clinical epidemiology, and interhost epidemiology.
- Simulations were calibrated to current HIV prevalence, HIV incidence, diagnosis rates, linkage to care and ART coverage.
- 136 unique levels of ART and PrEP coverage were simulated

The number of new HIV infections declined by more than 75% with 90% ART coverage and 40% of those indicated on PrEP

The EHE incidence reduction goals for 2025 could be achieved if the National HIV/AIDS Strategy: 2022–2025 indicators are met.

RESULTS

- Increasing ART and PrEP coverage uniformly from 60% to 100% and 10% to 50%
  - Linear decline in incidence
  - Uniformly lower incidence equilibria (figure 1)
- 90% ART coverage and 40% PrEP use
  - Matches indicators set by the National HIV/AIDS strategy 2022-2025
  - >75% reduction in new infections
- 100% ART initiation, 94% full viral suppression and 50% PrEP coverage
  - Coverage exceeds current national targets
  - >90% reduction in new infections is achievable
- Increasing ART coverage among NHB MSM
  - Largest direct and indirect reductions in incidence by race group

Table1. HIV incidence reductions among MSM by race groups when 90% ART coverage is achieved within each race group

Pop. with 90% ART coverage	Reduction in HIV Incidence by Group		
	NHB MSM	Hispanic MSM	NH White/ Other MSM
NHB MSM	**42%**	29%	24%
Hispanic MSM	9%	**26%**	21%
White MSM	16%	20%	**30%**

Figure 1. Annual HIV incidence per 100,000 individuals over 8 years with simultaneously improved ART and PrEP coverage

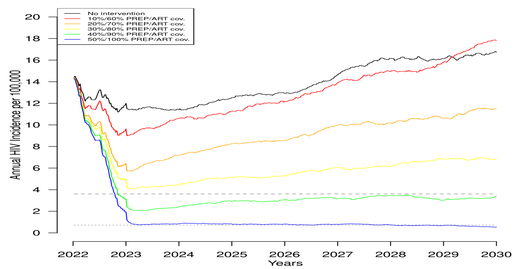
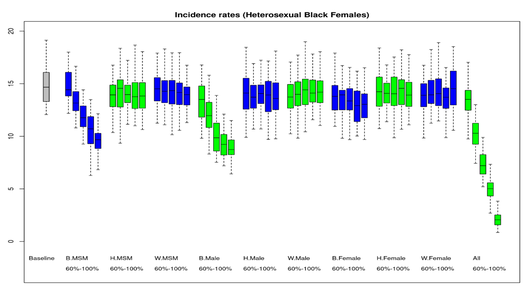


Figure 2. HIV incidence rates among NHB females with ART coverage from 60% to 100% within 9 demographic groups



CONCLUSIONS

- Our analysis indicates that it is possible to reach the 5 year EHE incidence reduction goals by reaching current National HIV/AIDS strategy indicators (90% ART coverage and 40% PrEP coverage).
- The largest reductions in HIV incidence can be achieved by increasing ART coverage among MSM
- All race groups benefit regardless of differences in ART initiation by race.
  - The benefit is not equally distributed.
- Improving ART coverage to > 90% should be prioritized with a particular emphasis on reaching NHB MSM.
  - Such a focus will reduce the largest number of incident cases, reduce racial HIV incidence disparities among both MSM and women, and reduce racial health disparities among persons with HIV.
- NHB women should also be prioritized for PrEP outreach.

ADDITIONAL KEY INFORMATION

Disclaimer: The findings and conclusions are solely the responsibility of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention or the Department of Health and Human Services.

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Conflicts of interest/Competing interests - The authors have no conflicts of interest to declare.

Data used in this study are available from their original sources https://www.cdc.gov/nchs/nsfg/index.htm and https://github.com/EpiModel/ARTnet
Code used for simulation are available at [https://github.com/dth2/Achieving-the-EHE-incidence-reduction-goals-in-the-US-South]