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Abstract 1033

**BACKGROUND**

- Pre-exposure prophylaxis (PrEP) is an effective and safe intervention to prevent HIV transmission in men who have sex with men (MSM).
- Current CDC guidelines indicate use for sexually-active adult MSM at substantial HIV risk.1
- Adolescent sexual minority males (ASMM)—ie, males under 18 who identify as gay or bisexual, or are sexually active with others—also have significant HIV risk, as evidenced by studies of multiple types.2,4
- A recent demonstration project and safety study of PrEP in US ASMM aged 15–17 (ATN 113) shows strong promise, but lower adherence than among adult MSM.11
- There is currently little guidance on how best to prioritize or target PrEP among adolescent ASMM; models can inform this process.

**OBJECTIVE**

To estimate population impact and intervention efficiency of PrEP for adolescent sexual minority males (ASMM) in higher prevalence areas of the US, under various:
- implementation strategies
- coverage levels
- adherence levels
- levels of background HIV incidence

**METHODS**

- Model adapted from previously published adult model, with new age-specific parameters and features.
- Network-based mathematical modeling based in separable, temporal exponential random graph models (STERGMs).4
- Characteristics of sexual acts, HIV transmission, and HIV disease progression were simulated on top of dynamic sexual networks using EpModel (www.epmodel.org).
- Adolescents could enter population of interest via male-male anal sexual debut at any age 13-16; or via development of gay/bisexual identity at any age 13-18, with subsequent anal sexual debut.
- We included an additional constant hazard of infection from non-ASMM, which increased with age and varied with an individual’s overall relational propensity.
- Adolescent-specific sexual behavior parameters were drawn from the published literature,3,10 and from new analyses of the American Men’s Internet Survey (adolescent subsample),12 InvolveME Study,13 and HAN Project.14
- We calibrated our model to 7% observed HIV prevalence among 18-year-old ASMM in the InvolveMEnt cohort (Atlanta).13 This corresponded in our model to 2.90% prevalence across the 13-18 year-old age group.
- Retention and adherence to PrEP regimens were derived from ATN 113 (with adherence averaged across study visits).

- Table of scenarios, showing 9 sets of eligibility criteria, and sensitivity analyses on coverage, adherence, and background prevalence. (Optimistic and pessimistic adherence distributions were taken from the first and last ATN 113 study visit).

**RESULTS**

- We conducted 100 runs of each scenario, run for 10 years. Key outcomes included:
  - percent of infections averted (impact)
  - # needed to treat = # of person-years on PrEP per infection averted (efficiency)

- Our base scenario (16+16 mos.) prevented 35.1% of infections (95%-credible interval 29.9–41.1%), with NNT of 33, and demonstrated strong indirect effects (secondary infections averted among those not on PrEP).
- Expanding eligibility generated higher PIA but less efficient NNT.
- Focusing on highest risk ASMM improved NNT considerably, but would require more detailed behavioral data.

**REFERENCES**


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