

WIDESPREAD PREP COVERAGE MAY INCREASE THE PREVALENCE OF HEPATITIS C WITHIN MEN WHO HAVE SEX WITH MEN

Authors: Macgregor L¹, Martin N K^{2,1}, Hickson F², Weatherburn P², Hickman M¹ and Vickerman P¹.

Affiliations: ¹School of Social and Community Medicine, University of Bristol
²London School of Hygiene and Tropical Medicine ³Division of Global Public Health, University of California San Diego.

Background:

Pre-exposure prophylaxis (PrEP) could significantly reduce HIV transmission amongst men who have sex with men (MSM). However concerns exist around risk compensations partially mitigating PrEP's benefits and impacting other epidemics, including hepatitis C (HCV).

Methods:

We developed a deterministic model parameterised with UK data, incorporating biological (heightened HCV infectivity and reduced spontaneous clearance among HIV-positive MSM) and behavioural heterogeneities (preferential mixing by HIV-status with reduced condom use amongst HIV-concordant partnerships), capturing UK prevalences of HIV (5.0%), HCV within HIV-positive MSM (10.0%) and HIV-negative MSM (0.55%). For two PrEP efficacy scenarios (43% and 86%), we explored the impact on HIV/HCV transmission over 10 years assuming 11.6% PrEP coverage (based upon Scottish eligibility criteria). We analysed two risk compensation scenarios, solely and in combination: either (i) PrEP users reduce their condom use to the same level as HIV-diagnosed MSM when knowingly having sex with HIV-positive MSM (2.7 fold lower); or (ii) PrEP users no longer preferentially form sexual partnerships with other HIV-negative MSM, but have equal preference for all MSM.

Results:

Assuming an 86% efficacy of PrEP, HIV prevalence decreased from 5.0% to 4.2% if sexual behaviours were unchanged. HCV prevalence increased amongst HIV-positive MSM from 10.0% to 11.4%, and increased amongst HIV-negative MSM from 0.55% to 0.58%. When PrEP users used fewer condoms or did not mix preferentially with other HIV-negative MSM, PrEP's impact on HIV prevalence was reduced by 17.7% and 13.3%, respectively, while HCV prevalence amongst HIV-negative MSM increased by 12.4% and 9.1%. Under the combined scenario including both these risk compensations, PrEP's impact on HIV prevalence was reduced by 19.0% and HCV prevalence amongst HIV-negative MSM increased from 0.55% to 0.63%, reaching 1.4% amongst PrEP users.

Conclusion:

Widespread PrEP coverage may heighten HCV prevalence. Risk compensations partially mitigate the benefits of PrEP and further increase HCV prevalence.

Declaration of interests: Martin N K, has received research grants from Gilead, and honoraria from Merck, AbbVie, and Gilead. Other authors have nothing to report.