ANTIBIOTIC CONSUMPTION PATTERNS IN HIV AND PREP COHORTS WITH RECURRENT STI

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BACKGROUND

Antimicrobial resistance (AMR) is a growing public health concern driven by excessive antibiotic use. People living with HIV (PLWH) and PrEP users experience high STI rates, potentially resulting in disproportionate antibiotic exposure, yet population-based comparisons with the general population are limited. We conducted a regional observational study linking antimicrobial dispensing and microbiology data to quantify and compare antibiotic exposure among PLWH and PrEP users—with and without recurrent STIs—and the general population, and to identify the main antibiotic classes contributing to excess use.

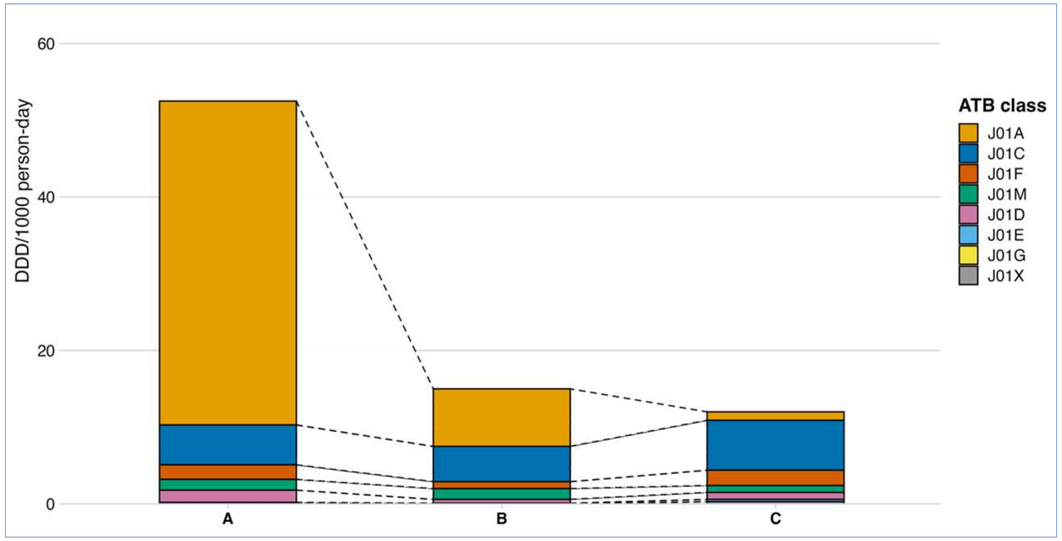
METHODS

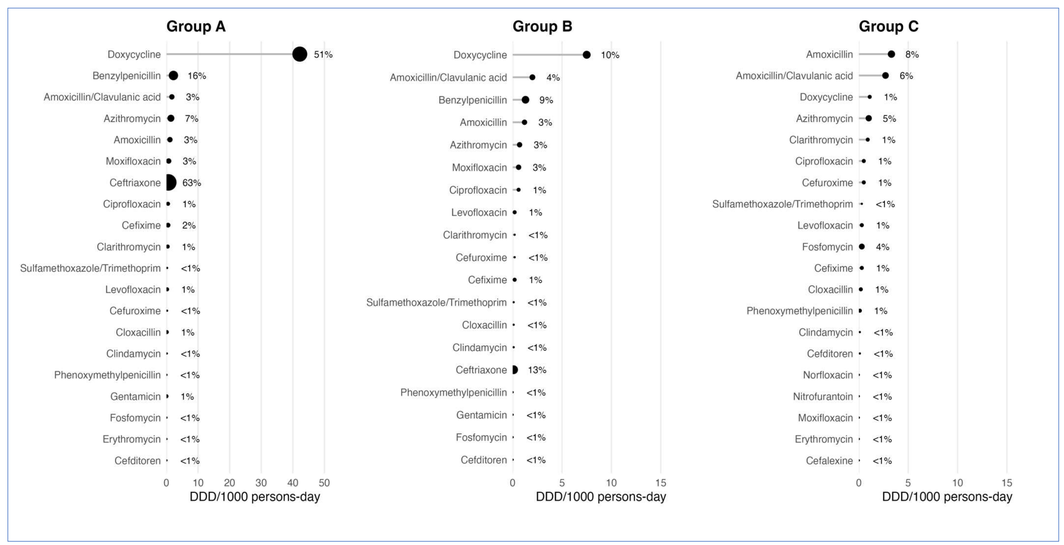
Population-based observational study using routinely collected healthcare data from Madrid (01/2024–01/2025). Outpatient antibiotic dispensing (Farm@drid) was individually linked to clinical and microbiological records. Adults (18–65 years) were classified into three groups: PLWH/PrEP with recurrent STIs, PLWH/PrEP without STIs, and general population controls. Antibiotic exposure was measured as WHO-defined daily doses (DDD), expressed as DDD per 1,000 persons-day, including class-specific analyses. Inverse-probability overlap weighting and weighted generalized linear models were used to adjust for confounding and compare groups.

RESULTS

The analysis included 562,325 individuals: 1,793 in **Group A (PLWH/PrEP with recurrent STIs**), 1,978 in **Group B (PLWH/PrEP without STIs),** and 558,586 controls. Groups differed markedly in age and sex, with younger, predominantly male populations in Groups A and B. Unadjusted analyses showed a clear exposure gradient, with DHD of 52.5 in Group A, 15.0 in Group B, and 12.9 in Group C. Tetracyclines predominated in Group A, reflecting frequent doxycycline use, whereas Group C was dominated by community β-lactams. Overlap-weighted analyses confirmed substantially higher exposure in Group A versus Group C (RR-DHD 4.67), largely driven by tetracyclines; Group B showed a modest but significant increase compared with controls.

PLWH and those receiving PrEP—particularly those with recurrent STIs—demonstrated substantially higher antibiotic consumption than matched general population controls, with a clear exposure gradient and marked predominance of tetracyclines (notably doxycycline). These findings highlight concentrated antimicrobial pressure in high-risk sexual health cohorts and underscore the need for targeted stewardship and resistance surveillance in HIV/PrEP care.





CONCLUSIONS

In this population-based study, individuals living with HIV and those receiving PrEP, particularly those with recurrent STIs, exhibited **substantially higher antibiotic consumption than the general population**. A clear gradient of exposure was observed, with the greatest use among those with recurrent STIs. **Tetracyclines, especially doxycycline, accounted for much of this excess**, reflecting their central role in STI treatment and prophylaxis. These findings underscore a concentrated pattern of antimicrobial exposure in high-risk sexual health cohorts, raising important concerns regarding antimicrobial resistance. Targeted stewardship strategies and enhanced resistance surveillance are warranted to balance effective STI prevention with long-term public health sustainability.

#Why these results are important

-They identify high-risk HIV/PrEP populations as concentrated antibiotic users.

-They inform antimicrobial stewardship and AMR risk assessment, particularly regarding doxycycline-based prevention.

#Consequences

-Implementation of targeted stewardship strategies in sexual health settings.

#Next steps

-Prospective studies on long-term resistance outcomes.

-Integration of prescribing and microbiological surveillance to optimize prevention strategies while mitigating AMR risk.

PLAIN LANGUAGE SUMMARY

People living with HIV and those taking PrEP—especially individuals who experience repeated sexually transmitted infections—use antibiotics much more often than the general population. This higher use, mainly driven by doxycycline, highlights the need to carefully balance effective STI prevention with efforts to prevent antibiotic resistance.