

IMPACT OF LONG-ACTING INJECTABLE ANTIRETROVIRAL THERAPY AMONG PEOPLE WHO INJECT DRUGS IN INDIA: A DYNAMIC TRANSMISSION MODEL

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Background:

Despite advances in antiretroviral therapy, viral suppression among people who inject drugs (PWID) remains suboptimal. PWID face barriers to daily treatment adherence that long-acting injectable antiretroviral therapy (LAI-ART) can address. Yet, implementation of LAI-ART has been limited to individuals without prior adherence challenges. We aimed to evaluate the potential impact of scaling up LAI-ART among PWID in India.

Methods:

We developed a dynamic, deterministic HIV transmission model among PWID that incorporates HIV transmission due to injection drug use, and is stratified by disease stage, treatment status, and adherence. Based on 2022-24 data collected among PWID in India, we calibrated the model to an HIV prevalence of 42%, ART uptake of 32%, and baseline adherence of 40%. We simulated three scenarios: 1) status quo (no shift to LAI-ART), 2) an immediate shift to LAI-ART (5%/year drug resistance mutation (DRM) acquisition rate to long-acting cabotegravir-rilpivirine) and improved adherence (40% to 70%), and 3) shift to LAI-ART with improved adherence (40% to 70%) and doubled ART coverage (to 64%). Primary model outputs are HIV incidence, HIV-related mortality, and DRM prevalence over five years.

Results:

Compared to status quo, switching current ART recipients to LAI-ART with improved adherence resulted in modest reductions in new HIV infections (2%) and HIV-related deaths (4%) over five years. Combined LAI-ART implementation with improved adherence and doubled ART coverage yielded substantial reductions: 28% fewer new infections and 42% fewer HIV-related deaths. Prevalence of DRMs at five years in the scenario of improved adherence is 3.3% vs. 7.2% with improved adherence and doubled ART coverage.

Conclusions:

LAI-ART implementation among PWID in India could confer substantial population-level benefits on HIV incidence and mortality if improved adherence and ART uptake are combined. These findings underscore that LAI-ART must be integrated with interventions to improve treatment access and retention to meaningfully impact HIV transmission and mortality.

Disclosure of Interest Statement:

Dr. Natasha Martin received research funding from Gilead. No pharmaceutical grants were received in the development of this study.