

MODELLING THE CONTRIBUTION OF INCARCERATION, HIV AND DRUG INJECTION TO TB TRANSMISSION AMONG PEOPLE WHO INJECT DRUGS IN UKRAINE

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Background:

People who inject drugs (PWID) experience high incarceration rates, with prior incarceration associated with HIV and TB infection. We evaluated the contribution of incarceration, HIV and injecting drug use (IDU) to TB transmission in Ukraine and the impact of antiretroviral therapy (ART) scale-up.

Methods:

A dynamic model of incarceration, HIV and TB transmission was developed for PWID and the general population. The model was parameterized and calibrated using national TB data and 7 bio-behavioural surveys among PWID or incarcerated persons from 2011-2018. It incorporates different HIV and TB transmission risks in prison than the community, increased injecting risk following prison release, increased TB activation and transmission among PWID, and greater TB activation with HIV infection which is reduced by ART. We projected the proportion of new TB infections averted over 10 years ('contribution') from 2000/2010/2020 if the forementioned effects of IDU, incarceration or HIV were removed. We also evaluated the impact of ART (59% coverage among PWID in 2023) scale-up over 2004-2023.

Results:

Model projections suggest TB incidence in 2022 was 15.1-times higher (95% credibility interval: 11.9-19.9) among PWID than the general population and 25.6-times higher (17.2-40.2) in prison than the community. Over 2020-2030, incarceration, HIV and IDU are projected to contribute 1.8% (0.3-3.5), 21.1% (12.2-40.2) and 12.9% (9.7-17.4) to all new TB infections and 12.3% (1.7-20.9), 48.6% (34.8-64.1) and 75.7% (70.7-78.8) among PWID. Due to recent large reductions in incarceration, its contribution to new TB infections was greater over 2000-2010; 16.2% (6.7-24.8) overall and 49.1% (23.9-59.9) among PWID. ART has averted 10.7% (4.8-16.7) of new TB infections among PWID over 2004-2023 and 31.0% (15.6-42.0) in 2022.

Conclusion:

HIV and IDU are substantial drivers of TB transmission in Ukraine; reductions in incarceration have reduced its contribution to TB transmission. ART scale-up has significantly reduced TB incidence among PWID.

Disclosure of Interest Statement:

The authors have no interests to disclose.