

IMPACT OF NEEDLE AND SYRINGE PROGRAMS (NSPS) ON HEPATITIS C VIRUS TRANSMISSION AMONG PEOPLE WHO INJECTING DRUG (PWID) IN PRISON SETTINGS: A MODELLING STUDY

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Background

More than half of Australian PWID have experienced incarceration, making prisons a high-risk environment for Hepatitis C Virus (HCV) transmission due to the frequent imprisonment of PWID and limited harm reduction services. This risk is evident, with 30% of prisoners reporting active injection while incarcerated, potentially driving HCV transmission. Despite being proven effective in reducing blood-borne disease transmission, NSPs remain absent in Australian prisons. This study models the epidemiological impact of feasible NSP implementation on HCV transmission among PWID in prison settings.

Methods

A population-level model was developed to represent different health states of incarcerated current and former PWID in Australia, tracking HCV progression, testing, and treatment. Four NSP implementation scenarios were modeled from 2024 to 2030, with 10% to 40% of PWID accessing sterile equipment. Projected outcomes include HCV-related epidemiological measures: incidence, new primary infections, reinfections, and viremic hepatitis C (HCV RNA+ prevalence), and prevalence of hepatitis C anti-HCV antibodies (HCV Ab+ prevalence) among incarcerated PWID.

Results

The model suggests that NSP implementation can reduce HCV incidence and prevalence compared to the status quo, assuming testing and treatment rates remain constant. Introducing NSPs at coverage levels of 40%, 30%, 20%, 10%, and no NSP in 2024 is projected to lower HCV incidence among incarcerated PWID by 24%, 20%, 16%, 11%, and 4%, respectively, relative to the 2023 baseline. A stratified analysis of primary infections and reinfections shows that higher NSP coverage yields a greater impact. Furthermore, both RNA+ and Ab+ prevalence decline as NSP coverage increases.

Conclusion

Our model is one of the first studies, both in Australia and internationally, to estimate the potential impact of prison NSPs on HCV transmission in prison settings using empirical data from Australian studies. The findings demonstrate that even modest NSP coverage in prisons can lead to a substantial reduction in HCV-related measures among incarcerated PWID.

Disclosure of Interest Statement: *See example below:*

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