

## THE ROLE OF INCARCERATION IN HCV TRANSMISSION AMONGST PEOPLE WHO INJECT DRUGS: A MODELLING ANALYSIS

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**Background:** People who inject drugs (PWID) experience high incarceration rates, and previous/recent incarceration is frequently associated with elevated HCV transmission risk. We model the contribution of incarceration to HCV transmission amongst PWID in several scenarios, mimicking four global settings.

**Methods:** We developed a dynamic model of incarceration and HCV transmission amongst PWID. We first calibrated a Scotland-like scenario, with 3-fold elevated HCV acquisition risk amongst recently released PWID (<6 months), lower HCV incidence in prison than the community (attributed to high coverage of prison opiate substitution therapy, OST), moderate levels of incarceration (61% PWID ever incarcerated), and short sentence lengths (7 months).

Other scenarios were generated to be similar to Australia, Ukraine and Thailand through altering the Scotland-like scenario, with different (re)incarceration rates, sentence lengths or injecting durations, and higher HCV incidence in prison (double community incidence) attributed to lower prison OST coverage.

**Results:** In Scotland, despite low HCV incidence while incarcerated the model suggests incarceration elevates the overall endemic incidence among PWID by 25% due to elevated transmission risk following release. Conversely, in settings with similar incarceration dynamics but higher HCV incidence in prison (Australia), incarceration could be doubling HCV incidence, whereas in settings that also have more incarceration (80% ever incarcerated) and longer sentences (12 months; Thailand), incarceration could be increasing HCV incidence 4-fold. In a setting with less incarceration and longer injecting durations (52% ever incarcerated and 3.5x longer injecting; Ukraine) incarceration could be increasing HCV incidence by only 16%. Removing the elevated risk post-release and reducing transmission risk in prisons to that achieved in Scotland (through OST) could reduce incidence from 26% in a Ukraine-like setting up to 98% in a Thailand-like setting.

**Conclusion:** Incarceration may contribute substantially to HCV transmission among PWID. Reducing transmission risk in prison and following release may reduce this issue.

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