**EVALUATING THE COST-EFFECTIVENESS OF PRISON NEEDLE AND SYRINGE PROGRAMS IN PREVENTING HEPATITIS C INFECTION AMONG PEOPLE WHO INJECT DRUGS IN CANADIAN FEDERAL PRISONS**

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**Background:**
Prison needle and syringe programs (PNSPs) are evidence-based harm reduction strategies that reduce the transmission of bloodborne viruses, including hepatitis C virus (HCV), among incarcerated populations. Despite proven cost-effectiveness in community settings, evaluations in carceral settings are lacking. Since 2018, Canada has implemented PNSPs in nine of 43 federal prisons.

**Methods:**
A stochastic compartmental model was developed to estimate HCV and injecting-related infections (IRIs) prevented by PNSPs in Canadian federal prisons from 2018-2030. We projected three scenarios: the status-quo, reflecting current PSNP implementation with future coverage assumed to remain at 2022 levels, a counter-factual with no PNSP, and a scale-up from 2024 to reach 50% of people who inject drugs (PWID) in all federal prisons by 2030. Outcomes included new HCV cases and IRIs, with costs reported in 2023 Canadian dollars, discounted at 1.5% per annum, and benefit-cost ratio (BCR) calculated as total benefits divided by total costs.

**Results:**
In 2022, PNSP coverage across the nine federal prisons was estimated at 10% of PWID. Compared to no PNSP, this was projected to cost CAD $0.58 [95% confidence interval (CI): $0.44 – $0.96] million and avert 32 [95% CI: -11 – 67] HCV cases and 33 [95% CI: -92 – 145] IRIs over 2018-2030, with an estimated BCR of 2.8 [95% CI: 0.8 – 3.9]. Compared to maintaining current coverage, expanding PNSPs to reach 50% of PWID across all federal prisons was projected to cost an additional $3.4 [95% CI: $2.4 – $6.2] million, avert another 97 [95% CI: 73 – 104] HCV cases and 438 [95% CI: 388 – 459] IRIs, and save $9.4 [95% CI: $6.3 – $11.4] in treatment costs between 2018-2030. This scale-up scenario had an estimated BCR of 2.8 [95% CI: 1.3 – 4.0].

**Conclusion:**
Both the current PNSP roll-out and its scale-up are cost-effective, saving nearly three dollars in treatment costs for every dollar invested.

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