

HEPATITIS C TREATMENT STRATEGY FOR PRISONS: A COST-EFFECTIVENESS ANALYSIS

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Background: The recent advances in the treatment of hepatitis C (HCV) infection with direct-acting antiviral (DAA) has revolutionised the clinical management of viral hepatitis with over 95% cure rate. In Australian prisons, HCV is a substantial problem with one in five of the inmates chronically infected. We have utilised a mathematical model to assess the cost-effectiveness of DAA intervention in the prison settings in Australia.

Methods: A dynamic model of HCV transmission and disease progression was used to evaluate the cost-effectiveness of increasing DAA treatment uptake compared to the current treatment coverage in the New South Wales' prison setting. We simulated the outcome of each intervention strategy from 2016 to 2075 and assessed its effect on HCV incidence and prevalence within the prison settings. We chose a range of average length of stays of 6, 24, and 36 months. The cost-effectiveness was analysed for each length of stay, with the treatment scenarios of 10% (current coverage), 25%, 50%, and 90% DAA uptake among the infected population in prison. The intervention was modelled for 30 years in prison, with healthcare costs and quality of adjusted life years (QALYS) tracked for a further 30 years post prison to capture long-term cost-savings and health gains from high cure rates. Costs and outcomes were discounted at 3.5%.

Results: Compared to 10% DAA coverage, we estimated that treating 90% of HCV infected prisoners during 2016–2045 will reduce HCV incidence by 65–70%, leading to 1.56 -1.59 million QALYs gained. DAA therapy became increasingly cost-effective with increasing coverage at all length of stay, with incremental cost-effectiveness ratios compared to a 10% coverage of A\$-432- A\$-245, A\$88–A\$268, and A\$323–A\$477 per QALY gained for 25% DAA, 50% DAA, and 90% DAA, respectively.

Conclusion: The financial investment in DAA treatment during 2016–2045 in prison is estimated to be cost-saving.

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