



Stable incidence of hepatitis C virus infection among PWID in an Australian prison setting, 2005-2014: the HITS-p study

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HCV in prison

- Injecting drug use is known to continue in prison and therefore onward transmission of HCV occurs in prison
 - Global prevalence (HCV Ab+): 26%
 - Global incidence (among ever PWID): 16.4 per 100py
- HCV prevention strategies such as needle syringe programs (NSP), and opioid substitution treatment (OST) are either not available or have low coverage in many global prison settings
 - In Australia OST is available and inmates are given access to bleach for cleansing injecting equipment

HCV in prison

- Given the high prevalence of HCV and the high risk for HCV acquisition in the prison setting, this represents a key setting in which to implement new treatment and prevention measures
 - Including NSP and treatment as prevention
- Understanding the incidence of HCV infection and the trends in incidence in recent years is needed to inform prevention strategies
- Previous studies have been limited by retrospective design, short follow-up periods, small sample sizes, and limited to single institutions

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Aims

- **HITS-p:** A prospective, multi-prison study of PWID between 2005 and 2014 the aims of this study were to:
 1. **Determine the temporal trends in HCV incidence**
 2. **Determine factors associated with time to HCV seroconversion**

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Study population and design

The Hepatitis C Incidence and Transmission study – prisons

- Adult male and female prison inmates were recruited in 23 correctional centres and followed across 30 of 35 centres

Inclusion criteria:

- Incarcerated in one of the NSW prisons where recruitment occurred
- Lifetime history of IDU
- 18 years or older
- HCV antibody and RNA negative at enrolment
- At least one follow-up visit after enrolment
 - Either continuously incarcerated or re-incarcerated after a period of release to community
- Provided informed written consent

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Study assessments

- At enrolment, participants were interviewed using a questionnaire to determine demographic characteristics and risk behaviour
- Every 6-12 months, participants completed a follow-up interview
- All interviews were done by study nurses outside of the custodial authority
- At each interview a blood sample was taken to test for HCV
- HCV results were given by the study nurse and participants were referred to clinical services and treatment if appropriate

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Statistical analyses

- **Study endpoint:** HCV seroconversion
 - An HCV antibody or HCV RNA positive test following a HCV negative status at previous visit
- Factors associated with time to HCV seroconversion:
 - Time updated Cox proportional hazards analyses
 - Follow-up time truncated at 5 years post enrolment

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Baseline characteristics

| Characteristic, n (%) | Overall, n (%) (n=320) |
|---|---------------------------|
| Age, median (25%, 75%) | 26 (22-32) |
| Female sex | 91 (28) |
| >10 years of schooling | 76 (24) |
| Injecting drug use ever | 320 (100) |
| Heroin | 206 (64) |
| Cocaine | 143 (45) |
| Methamphetamine | 248 (78) |
| Any sharing of injection equipment ever | 208 (65) |
| Injecting drug use since entering prison | 104 (33) |
| Sharing of needle and syringe since entering prison | 81 (78)* |
| Current opioid substitution treatment | 49 (15) |

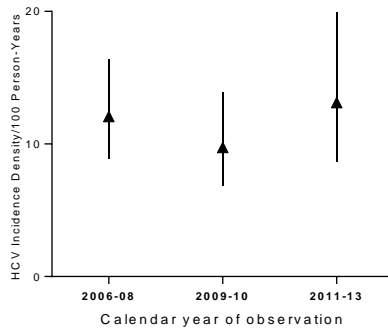
* Of those who injected since entering prison

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Trends in incidence

Overall population

- 11.4 /100 py (9.3-14.0)



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Factors associated with HCV seroconversion

Overall population

| Variable | HR | 95% CI | P |
|---|------|-----------|------------------|
| Age (10 year increments) | 0.62 | 0.43-0.88 | 0.008 |
| Female sex | 1.51 | 0.98-2.34 | 0.063 |
| ≤10 years of schooling | 1.39 | 0.80-2.41 | 0.247 |
| Methamphetamine injecting | 1.84 | 1.22-2.77 | 0.004 |
| Cocaine injecting | 1.99 | 1.19-3.34 | 0.009 |
| Heroin injecting | 3.50 | 2.33-5.27 | <0.001 |
| Buprenorphine/methadone injecting | 2.05 | 1.18-3.58 | 0.011 |
| Other opioid injecting | 1.79 | 0.98-3.24 | 0.056 |
| Frequency of injecting (vs. no injecting) | | | |
| < Weekly | 1.59 | 0.76-3.29 | 0.216 |
| ≥ Weekly | 4.95 | 2.93-8.37 | <0.001 |
| Syringe sharing | 2.27 | 1.48-3.46 | <0.001 |

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Factors associated with HCV seroconversion

Continuously imprisoned population

| Variable | HR | 95% CI | P |
|---|------|-----------|------------------|
| Age (10 year increments) | 0.73 | 0.43-1.26 | 0.256 |
| Female sex | 0.91 | 0.40-2.11 | 0.834 |
| ≤10 years of schooling | 1.12 | 0.48-2.60 | 0.789 |
| Methamphetamine injecting | 1.59 | 0.78-3.24 | 0.199 |
| Cocaine injecting | 1.15 | 0.35-3.77 | 0.822 |
| Heroin injecting | 2.67 | 1.30-5.48 | 0.007 |
| Buprenorphine/methadone injecting | 1.24 | 0.37-4.16 | 0.726 |
| Other opioid injecting | 1.20 | 0.36-4.00 | 0.767 |
| Frequency of injecting (vs. no injecting) | | | |
| < Weekly | 2.40 | 0.95-6.09 | 0.065 |
| ≥ Weekly | 3.34 | 1.48-7.57 | 0.004 |
| Syringe sharing | 3.60 | 1.79-7.26 | <0.001 |

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Implications

- Syringe sharing was associated with HCV infection among continually imprisoned participants, irrespective of frequency of injecting or the type of drug injected
- Each individual injecting event carries with it a higher chance of HCV infection due to the scarcity of clean injecting equipment
- Even people with a lower frequency of injecting drug use in the prison environment have a high risk of infection

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Conclusions

- Current prevention strategies have failed to reduce the incidence of HCV infection in the NSW prison setting between 2005 and 2014
- Prison remains a high risk environment for acquisition of HCV infection
- Due to the scarcity of clean injecting equipment in prison, each injection event carries with it a high risk of HCV infection
- Further studies are needed to fully understand the risk behaviours of PWID in the prison setting

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