HCV exposure, infection and associated risk behaviours in two maximum-security prisons in NSW, Australia

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Background

- HCV prevalence in the prison setting is high.
  - Global (HCV Ab+): 26%
  - Australia (HCV Ab+): 31%

- HCV transmission in the prison setting is also high due to lack or sub-optimal coverage of HCV prevention strategies, including needle syringe programs (NSP), and opioid substitution treatment (OST).
  - HCV incidence, global: 16/100 py
  - HCV incidence, Australia: 6/100 py

- People who inject drugs (PWID) have high rates of imprisonment.
  - 45% of Australian prisoners report ever injecting drug use
Background

- In NSW prisons, OST and bleach-cleansing of injecting equipment is available, but not NSP.

- OST and bleach-cleansing of injecting equipment in NSW prisons had no significant impact on reducing HCV incidence.
The Surveillance and Treatment of Prisoners with hepatitis C

• A partnership project to investigate the feasibility of HCV treatment as prevention in the prison setting

• Overall aims:
  o To evaluate the impact of rapid scale-up of DAA treatment on HCV incidence and prevalence in the prison setting
  o To develop a translational framework for subsequent establishment of treatment-as-prevention programs in the prison sector

<table>
<thead>
<tr>
<th>Maximum-security prisons</th>
<th>Medium-security prisons</th>
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<tbody>
<tr>
<td>Goulburn Correctional Centre, Goulburn</td>
<td>Outer Metropolitan Multipurpose Correctional Centre (OMMPCC), Sydney</td>
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<tr>
<td>Lithgow Correctional Centre, Lithgow</td>
<td>Dillwynia Correctional Centre (Women), Sydney</td>
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# SToP-C: Study Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<th>2019</th>
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<tbody>
<tr>
<td>Max. Security Correctional Centre 1 (Goulburn)</td>
<td>Start-up</td>
<td>HCV incidence and prevalence surveillance</td>
<td>Modelling</td>
<td>Treatment scale-up</td>
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<tr>
<td>Max. Security Correctional Centre 2 (Lithgow)</td>
<td>HCV incidence and prevalence surveillance</td>
<td>Modelling</td>
<td>Treatment scale-up</td>
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<tr>
<td>Med. Security Correctional Centres</td>
<td>HCV incidence and prevalence surveillance</td>
<td>Modelling</td>
<td>Treatment scale-up</td>
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<tr>
<td>Translational Studies</td>
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<td>Qualitative studies</td>
<td>Mathematical modelling</td>
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<td>Framework and toolkit</td>
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</table>
Methodology

• Data for this analysis includes prisoners enrolled from two maximum-security prisons between October 2014 and August 2016.

• At enrolment, participants received testing for HCV Ab and RNA, and completed a detailed interview, including injecting behaviours.

• Objectives:
  o To evaluate HCV exposure and infection
  o To assess the behavioural factors by HCV status
## Results: Background characteristics

<table>
<thead>
<tr>
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<th>Total (n=609)</th>
<th>Goulburn (n=426)</th>
<th>Lithgow (n=183)</th>
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</thead>
<tbody>
<tr>
<td><strong>Age, median (IQR), year</strong></td>
<td>33 (26, 43)</td>
<td>33 (26, 43)</td>
<td>32 (26, 41)</td>
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<tr>
<td><strong>Born in Australia</strong></td>
<td>510 (84%)</td>
<td>360 (84%)</td>
<td>150 (82%)</td>
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<td><strong>Education level lower than high school</strong></td>
<td>218 (36%)</td>
<td>148 (35%)</td>
<td>70 (38%)</td>
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<td><strong>Length of sentence, median (IQR), years</strong></td>
<td>7.8 (3.0, 17.0)</td>
<td>7.0 (2.2, 16.0)</td>
<td>9.2 (3.7, 20.0)</td>
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<tr>
<td><strong>Duration incarcerated, median (IQR), years</strong></td>
<td>1.8 (0.6, 4.2)</td>
<td>1.6 (0.5, 4.1)</td>
<td>2.2 (1.1, 4.4)</td>
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<tr>
<td><strong>Previously imprisoned</strong></td>
<td>435 (71%)</td>
<td>312 (73%)</td>
<td>123 (67%)</td>
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</table>
**Results:** HCV status

- **Total**
  - n=609

- **HCV Ab -**
  - n=331 (54%)

- **HCV Ab+**
  - n=278 (46%)

- **HCV RNA-**
  - n=105 (38%)

- **HCV RNA+**
  - n=173 (62%)
Results: HCV status

- HCV Ab- (not exposed)
- HCV Ab+, RNA– (exposed, not infected)
- HCV RNA+ (infected)

- n=331 (54%)
- n=173 (29%)
- n=105 (17%)

HIV Ab positive: n=1 (<1%)
HBs Ag positive: n=9 (1%)
Results: Genotype and liver fibrosis

HCV genotype

- G1: 50%
- G3: 33%
- G2/G4/G6: 2%
- Not available: 3%

HCV genotype (n = 173)

Liver fibrosis stage

- F0-F1: 24%
- F2: 71%
- F3: 2%
- F4: 3%

Liver fibrosis stage (transient elastography) (n = 85)
Results: Self-reported history of HCV treatment

HCV Ab+, HCV RNA- exposed not infected  
\( n = 105 \)

- Hx of treatment
- No treatment

n=31  
30%

HCV RNA+ infected  
\( n = 173 \)

n=18  
10%
Results: IDU risk behaviors by HCV status

- Ever IDU: 94% (HCV Ab-), 94% (HCV Ab+, RNA-), 26% (HCV RNA+)
- IDU in custody: 74% (HCV Ab-), 80% (HCV Ab+, RNA-), 13% (HCV RNA+)
- IDU current imprisonment: 67% (HCV Ab-), 76% (HCV Ab+, RNA-), 11% (HCV RNA+)
- IDU last 6 m in prison: 48% (HCV Ab-), 61% (HCV Ab+, RNA-), 7% (HCV RNA+)
- IDU last 1 m in prison: 35% (HCV Ab-), 47% (HCV Ab+, RNA-), 7% (HCV RNA+)
Results: IDU risk behaviors among active PWID

Those injecting in the last month in prison (n = 140)

- Injecting daily or more: 32%
- Used a shared needle/syringe: 95%
- Used other shared injecting equipment: 89%
- No current OST: 40%

HCV Ab- n=22
- HCV Ab+, RNA- n=37
- HCV RNA+ n=47
Conclusion

- A high proportion of participants with HCV infection from maximum-security prisons reported injecting risk behaviours, potentially contributing to HCV transmission in the prison.

- Among total participants at risk of HCV, those with previous HCV exposure and clearance were more likely to report active injecting in the prison than those with no previous exposure, suggesting ongoing risk of re-infection.

- Among participants with active IDU, high risk injecting was reported by all participants. It can translate to:
  - High risk of transmitting HCV by those with HCV infection
  - High risk of both HCV primary and re-infection among susceptible individuals

- Increased HCV prevention strategies are needed.

- Surveillance of HCV incidence should focus on detection of both HCV primary infection and re-infection.
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Study partners:

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- Terry Murrell - Corrective Services NSW
- Nicky Bath - NSW Health
- Alison Churchill - Community Restorative Centre
- Kate Pinnock - Community Restorative Centre
- Mary Ellen Harrod - NSW Users and AIDS Association
- Natasha Martin - University of California San Diego
- Peter Vickerman - University of Bristol

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