An International Perspective: Barriers, Opportunities, and Successes in Hepatitis Service Provision in Australian Prisons

Andrew Lloyd MD, PhD
Overview

• Background:
  – Epidemiology of HCV in Australia
  – Custodial and correctional health systems in Australia
  – Assessment and treatment of chronic HCV in Australian correctional centres

• Treatment:
  – Nurse-led model of care
  – Prisons Alliance for hepatitis C Treatment – the PACT study

• Prevention:
  – Effectiveness of current prevention programs – the Hepatitis C Incidence and Transmission Study in prisons (HITS-p)
  – Treatment as prevention: Surveillance & Treatment of Prisoners with hepatitis C (SToP-C)
HCV in Australia – people who inject drugs (PWID)

~ 250,000 Australians are chronically infected with HCV

- Former PWID 100K
- Current PWID 89K
- Prisoners 50K
- Others 61K
- OST 24K

**Fourth National Hepatitis C Strategy 2014-2017:**
- Priority populations: prisoners and PWID
Hepatitis C – testing and treatment

Correctional system in Australia

- “prison” = “gaol” = “correctional centre”
- ~100 full time, adult, custodial centres
- Australian Bureau of Statistics - Prisoners in Australia, 2015:
  - 36,134 prisoners – 92% male; 8% female
  - 72% sentenced; 27% remand
  - 27% Indigenous (vs 2% in community)
  - imprisonment rate - 196 per 100,000
- Largely state-based; single Federal prison
- Predominantly publically run; ~10% private contractors
Corrections health system in Australia

- Varied health service models:
  - local hospitals
  - correctional authority
  - separate health authority

- Prisoners selectively included in government funded pharmaceutical provision – e.g. HIV and HCV treatments

- NSW prisons (n=34):
  - single state-wide health authority – Justice Health
  - academic partnership
  - Human Research Ethics Committee (IRB)
Prisoners in NSW

- NSW inmate population: ~11,000; ~7% females
- 74% Australian born, 17% non-English background
- Aboriginal or Torres St Islander (Indigenous): 19%
- Education: 50% < Year 10
- Mental illness: 33% males, 59% females
- Short stays <6 mo. (incl. remand): 63% males, 76% females
- Recidivism (<2yrs): 70%
- Annual imprisonments ~20,000
- Annual movements ~146,000
Assessment & treatment of HCV in Australian prisons

Hepatitis C in Australian prisons: a national needs assessment

Michael Mokhli Mina, Lilie Herawati, Tony Butler and Andrew Lloyd

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Findings – Of more than 50,000 individuals put in in custody in Australian prisons in 2013, approximately 8,000 individuals were HCV antibody positive, yet only 313 prisoners received antiviral treatment. The barriers identified to assessment and treatment at the prisoner-level included: fear of side effects and the stigma of being identified to custodial authorities as HCV infected and a likely injecting drug user. Prisoners who came forward may be considered unsuitable for treatment because of prevalent mental health problems and ongoing injecting drug use. Provision of specialist hepatitis nurses and consultants were the most frequently recommended approaches to how prison hepatitis services could be improved.
Assessment & treatment of HCV in Australian prisons

How can HCV assessment and treatment services be improved
Background - conclusions

• Australian prisons:
  – house a significant proportion of the HCV-infected population
  – have widely varied health infrastructure for HCV assessment and treatment
  – have generally low HCV treatment rates and many individual- and organisation-level barriers to improved access to care

• Australia has:
  – universal health care – including for prisoners
  – a national hepatitis C strategy which prioritises assessment and treatment of prisoners
  – a national Pharmaceutical Benefits Scheme which provides free access to antiviral therapies, including for prisoners

• NSW has:
  – separate health and correctional authorities for prisoners
  – academic partnerships with Justice Health
Careers: Become a Prison Doctor.
Justice Health Hepatitis Service 1995-2006

- Specialist medical model
- Decentralised - 8 sites:
  - 6 specialist physicians - monthly clinics
  - Population Health nurses
  - Structured investigations
- Limited access to, and uptake of, anti-viral treatment
  - Transfers a major impediment
  - Slow timelines
  - ~1% of those potentially eligible treated

Nurse-led model of care (NLMC)

- **Goal:** To increase HCV treatment rates in NSW prisons via task transfer to skilled nurses and use of telemedicine

- **NLMC pilot:** (2009-2010)
  - Skills-based training of Clinical Nurse Consultants (CNCs)
  - Protocol driven nurse assessment and triage
  - Specialist reviews via telemedicine
  - Three centres - Lithgow, Goulburn, Long Bay
  - Qualitative and quantitative evaluation

- **Safe, efficient, well accepted**

  Lloyd A et al *Clin Infect Dis* 2013 Apr;56(8):1078-84
Nurse led model of care (NLMC) – roll out - 2012-13

Nurses: CNSs / CNCs

Post-test counseling: chronic HCV

Protocol-driven investigations incl. Fibroscan™

Focused history and examination / targeted mental health assessment

Category A: Case discussion without patient

Category B: Teleconference with patient

Category C: Face-to-face review

Prescription

Antiviral therapy incl. triple Rx

Post-treatment follow-up
Nurse-led model of care - training program

Education and skills-based training

Module 1
Hepatitis C nursing workshop

Module 2
Written assessment

Module 3
Clinical skills training workshop

Module 4
Clinical skills on-the-job training

Module 5
Clinical skills assessment

Possible exit point
Certificate of Attendance

Certificate of Attainment

Annual performance review

Accredited with University of Technology Sydney (UTS)
Nurse-led model of care - training program

Education and skills-based training

Competency standard 1: Provides comprehensive, evidence-based nursing care for people with chronic hepatitis C.
Engages in comprehensive clinical practice that recognises the needs of people with chronic hepatitis C throughout the health care continuum, including in diagnosis, as well as the work-up and management of antiviral treatment.

Performance criteria:- Ability to:
1. Conduct a comprehensive assessment of a patient with chronic hepatitis including taking the patient’s medical and psychiatric history, as well as the drug and alcohol history, and assessment of social supports.
2. Undertake a physical examination in order to detect key signs of chronic liver disease and liver failure.
3. Provide culturally appropriate assessment and care to patients with chronic HCV from culturally and linguistically diverse (CALD) communities, as well as Aboriginal and Torres Strait Islander communities.
4. Initiate and interpret laboratory investigations relevant to the assessment and management of patients with chronic HCV, including during antiviral therapy.
5. Care for patients with chronic HCV during antiviral therapy, including management of medical and psychiatric adverse events.
7. Provide appropriate care for patients with liver failure.

Specific capabilities:
1. Comprehensive, culturally appropriate assessment…. Ability to:
   1a. Elicit a history of past and current medical conditions of relevance to chronic HCV and its management;
   1b. Elicit a history of past and current psychiatric conditions of relevance to chronic HCV and its management;
   1c. Elicit a history of drug and alcohol use of relevance to chronic HCV and its management;
   1d. Elicit details of psychological and social support networks of relevance to antiviral therapy for chronic HCV.
## Nurse-led model of care - triage decision

<table>
<thead>
<tr>
<th>Category</th>
<th>Risk of medical or psychiatric complications on treatment</th>
<th>Motivation and psycho-social issues</th>
<th>Additional considerations</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Low risk, as there are no apparent medical or psychiatric conditions on history or current evaluation</td>
<td>Well-motivated and no psycho-social obstacles to successful completion of treatment and follow-up.</td>
<td>Stable circumstances in the correctional centre; good personal skills and social support structures.</td>
<td>Work up as per protocol and present to specialist via telephone consultation (without the patient included) for consideration for treatment.</td>
</tr>
<tr>
<td>B</td>
<td>Generally low risk of adverse events on treatment, but there are medical or psychiatric co-morbidities evident, such as a history of psychosis or possible auto-immune disease.</td>
<td>Well-motivated, but some issues requiring additional support and surveillance, such as ongoing injecting drug use or mental health concerns.</td>
<td>Generally stable circumstances in the correctional centre, but other concerns such as limited personal skills or social support structures.</td>
<td>Provide care plan addressing the individual’s issues of concern, and arrange telephone consultation with specialist and patient.</td>
</tr>
<tr>
<td>C</td>
<td>Significant risk of serious adverse events on treatment, as there are pre-existing medical and/or psychiatric co-morbidities which are likely to impact upon antiviral treatment, such as advanced liver disease, HIV-co-infection, or current major depression.</td>
<td>Motivated, but has psycho-social issues, which are likely to impact upon treatment, such as active injecting drug use or a risk of deliberate self-harm.</td>
<td>To consider treatment: stable circumstances in the correctional centre, reasonable personal skills and social support structures required.</td>
<td>Arrange face-to-face consult with specialist physician. Additional investigations (e.g. liver biopsy) and specialist consultations (e.g. psychiatrist) likely to be required.</td>
</tr>
</tbody>
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Prisons Alliance for hepatitis C Treatment: PACT

Aims

• To develop and evaluate a simplified nurse-led health service model for the assessment and care of patients with chronic HCV using all oral, DAA-based HCV therapies in NSW prisons

• To establish partnerships with relevant custodial health care providers to establish the nurse-led model of HCV assessment and care in custodial jurisdictions across Australia;

• To develop an implementation plan for the nurse-led model of care in each jurisdiction;

• To evaluate the safety and effectiveness of the nurse-led model in each jurisdiction

• To ensure sustainability of the model in each jurisdiction
Treatment - conclusions

• Prison-based treatment for hepatitis C is feasible
• A nurse-led model of care is safe, effective, and allows increased treatment uptake, featuring:
  – protocol-driven assessment and triage
  – portable fibro-elastography
  – specialist support largely indirect or via telemedicine
• DAA-based therapies will allow:
  – scale-up of antiviral therapy
  – overcome several key constraints of IFN-based treatments, including adverse effects and treatment duration
GET TESTED
STOP HEP C
QUICK - EASY - CONFIDENTIAL

“...I just wanted to be sure I was in the clear. I got tested, and now I know where I stand.”
Prevention of HCV in NSW prisons

Hepatitis C Incidence & Transmission Study in prisons (HITS-p)

• Prospective cohort of HCV-uninfected PWID prison inmates in NSW

Aim:
• To determine HCV incidence rate and associated risk factors in the prison setting
• Participants followed up at 6-12 monthly intervals
• Structured interviews and HCV testing at enrolment and each follow-up

Outcomes 2005-2014:
• n=590 subjects enrolled
• 1452 person years of follow-up for incident infection
• n=196 incident cases
• 286 person years of follow-up for reinfection / superinfection
• n=37 reinfection / superinfection cases
HCV prevention in NSW prisons – HITS-p

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>No. incident cases</th>
<th>Incidence per 100 person years</th>
<th>95% C.I.</th>
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</thead>
<tbody>
<tr>
<td>All individuals</td>
<td>38</td>
<td>13.2</td>
<td>9.56 – 18.1</td>
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<tr>
<td>Age &lt; 25 years</td>
<td>21</td>
<td>13.6</td>
<td>8.9 – 20.9</td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>20.1</td>
<td>11.7 – 34.6</td>
</tr>
<tr>
<td>ATSI (Indigenous)</td>
<td>16</td>
<td>23.9</td>
<td>14.7 – 39.0</td>
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<tr>
<td>Only in prison</td>
<td>14</td>
<td>9.7</td>
<td>5.7 – 16.4</td>
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<tr>
<td>Had a tattoo</td>
<td>7</td>
<td>11.8</td>
<td>5.6 – 24.8</td>
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<tr>
<td>Injected drugs</td>
<td>31</td>
<td>21.7</td>
<td>15.2 – 30.8</td>
</tr>
<tr>
<td>IDU daily or more</td>
<td>18</td>
<td>31.8</td>
<td>20.1 – 50.6</td>
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<tr>
<td>IDU increasing</td>
<td>14</td>
<td>36.6</td>
<td>21.7 – 61.8</td>
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<tr>
<td>Injected heroin</td>
<td>21</td>
<td>35.5</td>
<td>23.2 – 54.5</td>
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<tr>
<td>Injected methadone</td>
<td>9</td>
<td>25.2</td>
<td>13.1 – 48.3</td>
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<tr>
<td>Injected methamphetamine</td>
<td>17</td>
<td>22.1</td>
<td>13.7 – 35.5</td>
</tr>
<tr>
<td>Injected cocaine</td>
<td>7</td>
<td>25.9</td>
<td>12.4 – 54.4</td>
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<tr>
<td>Shared IDU equipment</td>
<td>17</td>
<td>21.3</td>
<td>13.2 – 34.3</td>
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<tr>
<td>Always bleach IDU equipment</td>
<td>10</td>
<td>21.2</td>
<td>11.4 – 39.4</td>
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<tr>
<td>Receiving MMT</td>
<td>10</td>
<td>21.1</td>
<td>11.4 – 39.3</td>
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### HCV prevention in NSW prisons – HITS-p

<table>
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<tr>
<th>Variable</th>
<th>Uni-variable</th>
<th>Multi-variable</th>
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<tr>
<td></td>
<td>Hazard Ratio</td>
<td>95% CIs</td>
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<tr>
<td>Age &gt; 25 years</td>
<td>1.11</td>
<td>0.57 – 2.16</td>
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<td>Male gender</td>
<td>0.47</td>
<td>0.24 – 0.93</td>
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<td>ATSI</td>
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<td>Only in prison</td>
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<td>Injected drugs</td>
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<td>IDU daily or more</td>
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<td>1.80 – 6.75</td>
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<tr>
<td>Injected heroin</td>
<td>4.75</td>
<td>2.47 – 9.14</td>
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<td>Injected cocaine</td>
<td>2.10</td>
<td>0.92 – 4.83</td>
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<td>Injected methamphetamine</td>
<td>2.29</td>
<td>1.19 – 4.39</td>
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<tr>
<td>Injected methadone</td>
<td>2.07</td>
<td>0.97 – 4.41</td>
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<tr>
<td>Shared IDU equipment</td>
<td>2.44</td>
<td>1.20 – 4.98</td>
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HCV prevention in NSW prisons

Surveillance and Treatment of Prisoners with hepatitis C (SToP-C)

**Aim:** To evaluate the feasibility and impact of rapid scale-up of IFN-free DAA treatment on the incidence of HCV infection in the prison setting

**Phase I**

- 2 maximum security prisons (each n=450)
- Partners: NSW Health, Justice Health, Corrective Services NSW, Hepatitis Australia
- Funding: NHMRC, Gilead Sciences
- Surveillance target: 80%
- Treatment target: 80%
- Regimen: sofosbuvir / velpatasvir
- Once daily, oral, 12 weeks, pan-genotypic

**Timelines**

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<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<td>Goulburn</td>
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<td><strong>Treatment scale-up</strong></td>
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<td>Lithgow</td>
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<td><strong>Treatment scale-up</strong></td>
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<td>Analysis</td>
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HCV prevention in NSW prisons – SToP-C

Phase II

- 2 medium security prison settings – Dilwynnia, OMMPC
- Rapid scale-up across network of prisons
- Qualitative evaluation of attitudes and barriers
- Mathematical modeling of the impact of prison-based treatment
- Cost-effectiveness evaluation
- Development of framework and toolkit for roll-out

Timelines

<table>
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<th>Roll-out prisons</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<td>Start-up</td>
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<td>Surveillance</td>
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<td>Modelling</td>
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<td>Treatment scale-up</td>
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<td>Cost-effectiveness - data collection</td>
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<td>- data analysis</td>
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<td>Framework and toolkit</td>
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HCV prevention in NSW prisons – SToP-C

Education and promotion

- Prison staff (custodial & health) information sessions
- Resources for prisoners and families
  - Video
  - Posters
  - Booklet
Prevention - conclusions

• Existing prevention programs in NSW prisons (bleach, OST) appear ineffective in reducing HCV transmissions
• Treatment-as-prevention may offer a key addition to a multi-faceted prevention approach
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**Key staff – SToP-C**
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- Luke McCredie
- SToP-C research nurses

**Partners**
- JH&FMHN, NSW
- Corrective Services, NSW
- NSW Health
- Hepatitis Australia
- NUAA

**Funding**
- NSW Health
- NHMRC Partnership Grants
- MSD
- Gilead Sciences