Hepatitis C virus (HCV) testing, liver disease assessment and direct-acting antiviral (DAA) treatment uptake and outcomes in a service for the homeless in Sydney: The LiveRLife study

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Disclosures

• None to declare
**Background**

- People who are homeless have increased HCV risk, and poorer access to primary healthcare services.

- Estimates of HCV prevalence among people who are homeless range from 4% to 36%.¹

- Innovative, integrated models of care are needed to reach highly marginalised populations such as those who are homeless.

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¹Beijer U et al., The Lancet Infectious Diseases, 2012

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**Aims**

To determine the prevalence of HCV infection, liver fibrosis burden, and DAA treatment uptake and outcomes among people who are homeless in Sydney.
Study design and participants

- Observational cohort study
- Evaluation of an intervention integrating a liver health promotion campaign and non-invasive liver fibrosis assessment on linkage to care and HCV treatment uptake among people who are homeless
- Recruitment at a service for homeless people over 8 liver health campaign days (Feb & Dec 2016)
- ≥18 years, written informed consent

Study site

- Ozanam Learning centre
  - Community centre providing onsite education, living skills, recreational activities
  - No restrictions to access based on gender
- Mathew Talbot Hostel
  - 98 bed – men only
  - Services: meals, clothing, case management, housing support
  - Nurse-led primary health services with GP DAA prescriber
  - Health services provided to ~ 100 men/day
LiveRLife Study intervention

Study outcomes

- Detectable HCV RNA prevalence
- Advanced liver disease
- Clinical follow-up
- Treatment uptake
- SVR12
Definition of housing stability

- **Stable housing:**
  - Owned house/flat
  - Rented house/flat

- **Unstable housing:**
  - Street/homeless
  - Shelter/refuge/boarding house
  - Staying temporarily with friends
  - Staying with parents

### Participant disposition

- Participants enrolled in LiverLife (n=226)
- Excluded or assessed as ineligible (n=3)

Invalid/missing HCV RNA test (n=3)

- Participants completed study assessments (n=222)

- Participants HCV RNA + (n=47)
- Participants HCV RNA - (n=175)

Lost-to-follow-ups (n=96)

- Attended follow-up visit (n=129)

- Treated (n=29)*
- SVR12 documented (n=53)

- 23%
- 62%

- Unexposed (n=6)

- 49%

- SVR12 uninformative (n=6)

*Five participants were commenced on treatment on enrolment

**Two participants were commenced on treatment on enrolment**
**Participant characteristics**

- **Enrolled**: n=202
- **Male**: 82%
- **Aboriginal/Torres Strait Islander identification**: 8%
- **Current OST**: 11%
- **High risk alcohol consumption**: 38%
- **Mean age**: 48
- **Unstable housing**: 58%
- **Ever been in prison**: 30%
- **Ever injected drugs**: 39%
- **Injected last month**: 63%

**HCV RNA prevalence**

- **23% HCV RNA+**

**Liver disease burden**

- **N=137**: F0/1
- **N=29**: F2
- **N=10**: F3
- **N=12**: F4

*12 invalid results and 2 missing*
Cascade of HCV care

HCV cascade of care among participants enrolled in the LiveRLife homelessness study

- Diagnosed with chronic HCV: 47
- Assessed for liver disease: 47
- Attended follow-up: 29
- Initiated treatment: 23
- Documented SVR12: 15

80% of participants dosed on-site achieved SVR12 (8/10)

Treatment uptake

Number initiating DAA treatment

- DAA listed on PBS
- Feb 16 Enrolment
- Now/Dec 16 Enrolment

4 Campaign days (Enrolment)
4 Campaign days (Enrolment)
Key HCV risk factors and prevalence

Among all participants (n=178)

<table>
<thead>
<tr>
<th>History of injecting</th>
<th>History of incarceration</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>73 (74%)</td>
<td>25 (26%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>27 (34%)</td>
<td>53 (66%)</td>
<td></td>
</tr>
</tbody>
</table>

Viraemic prevalence with either injecting or incarceration history:

37/105 = 35%

Among HCV RNA detectable participants (n=40)

<table>
<thead>
<tr>
<th>History of injecting</th>
<th>History of incarceration</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>3 (23%)</td>
<td>10 (77%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2 (7%)</td>
<td>25 (93%)</td>
<td></td>
</tr>
</tbody>
</table>

Viraemic prevalence with neither injecting or incarceration history:

3/73 = 4%

Injecting drug use among HCV RNA detectable

Among HCV RNA detectable (n=40):

- 85% History of injecting
- 70% History of recent injecting
### Predictors of treatment uptake

<table>
<thead>
<tr>
<th></th>
<th>Treatment uptake, n (%)</th>
<th>Unadjusted model</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 – 35 years</td>
<td>1 (17%)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>36 – 50 years</td>
<td>14 (61%)</td>
<td>7.78 (0.78, 77.93)</td>
<td>0.081</td>
</tr>
<tr>
<td>≥51 years</td>
<td>4 (26%)</td>
<td>2.85 (0.24, 33.90)</td>
<td>0.406</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>18 (47%)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1 (50%)</td>
<td>1.11 (0.06, 19.10)</td>
<td>0.942</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stable</td>
<td>6 (50%)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Unstable</td>
<td>13 (46%)</td>
<td>0.87 (0.22, 3.35)</td>
<td>0.836</td>
</tr>
<tr>
<td><strong>History of injecting drug use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No history of injecting</td>
<td>3 (60%)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Yes, but not in previous month</td>
<td>4 (57%)</td>
<td>0.89 (0.09, 9.16)</td>
<td>0.921</td>
</tr>
<tr>
<td>Injecting in previous month</td>
<td>12 (43%)</td>
<td>0.50 (0.07, 3.48)</td>
<td>0.484</td>
</tr>
<tr>
<td><strong>OST</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>9 (45%)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Yes, previously received</td>
<td>2 (25%)</td>
<td>0.41 (0.07, 2.53)</td>
<td>0.335</td>
</tr>
<tr>
<td>Yes, currently receiving</td>
<td>8 (66%)</td>
<td>2.44 (0.55, 10.83)</td>
<td>0.239</td>
</tr>
<tr>
<td><strong>FibroScan® Liver disease stage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No/mild fibrosis (F0/F1)</td>
<td>14 (61%)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Moderate/severe fibrosis (F2/F3)</td>
<td>4 (33%)</td>
<td>0.32 (0.07, 1.39)</td>
<td>0.129</td>
</tr>
<tr>
<td>Cirrhosis (F4)</td>
<td>1 (32%)</td>
<td>0.32 (0.03, 4.10)</td>
<td>0.382</td>
</tr>
</tbody>
</table>

*Row percentages; †Two participants excluded due to invalid/missing fibroScan results

### Discussion

- High HCV RNA prevalence among homelessness service population
- Key risk factors (history of injecting and incarceration) identified vast majority of HCV viraemic participants, suggesting good reporting of risk
- Encouraging study follow-up and DAA treatment uptake, but enhanced strategies required for further improvements
- Low treatment uptake among those with significant fibrosis of concern, as may indicate poor liver disease stage knowledge despite FibroScan
Study limitations

- Sample size
  - Limited power to evaluate predictors of DAA treatment uptake

- Selection bias
  - Sample may not be representative of the broader population of homeless

- Women under-represented
  - Matthew Talbot Hostel accommodation is male-only, although Ozanam not restrictive

- Uncontrolled study
  - Unable to evaluate specific impact of LiveRLife intervention on DAA treatment uptake

Conclusions/Implications

- Despite active screening and a committed clinical service with a GP DAA prescriber, linkage to care and treatment uptake was sub-optimal.

- A highly marginalised population requires innovative and holistic strategies to enhance linkage to care and treatment uptake.

- Risk-based HCV screening in homeless settings would provide a more targeted approach to HCV RNA testing and linkage to care

- An HCV ‘test and treat’ model of care, incorporating same-day DAA initiation should be evaluated
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