

Hepatitis C Cascade of Care among People Who Inject Drugs in Vancouver, Canada

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Conflicts of Interest

- None to declare

Background

- Hepatitis C Virus (HCV) is a leading cause of liver-related death¹
- People who inject drugs (PWID) account for the majority of new and existing HCV infection in developed countries²
- 60-80% PWID are infected with HCV³

¹Bruggmann P, Grebely J. 2015.

²Hajarizadeh B, Grebely J, Dore GJ. 2013.

³Nelson PK, Mathers BM, Cowie B, et al. 2011.

Background

- Direct-acting antiviral (DAA) HCV treatment became available in BC in 2014
 - Cure rates up to 95%⁴
 - Fewer side effects⁴
 - Publicly-funded for advanced liver disease (fibrosis ≥ 2 , METAVIR or equivalent)
- Newest guidelines recommend consideration of HCV treatment among PWID even if ongoing substance use⁵⁻⁷

⁴Pockros PJ. 2014.

⁵AASLD-IDSA. 2017.

⁶Myers RP, Shah H, Burak KW, Cooper C, Feld JJ. 2015

⁷European Association for the Study of the Liver. 2014.

Research Objectives

1. Characterize the HCV cascade of care among PWID in Vancouver
2. Identify factors associated with undergoing disease staging investigations for HCV treatment

Methods

- Data derived from 3 prospective cohort studies:

VIDUS

- HIV negative
- PWID
- age >18

ACCESS

- HIV positive
- substance use
- age \geq 18

ARYS

- street-involved
- substance use
- age 14-26

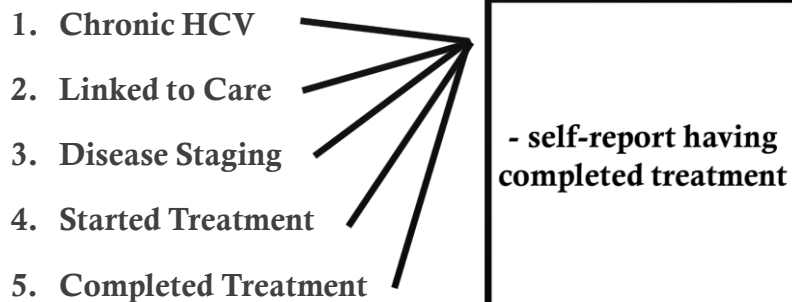
- Baseline and semi-annually:
 - interview data collection
 - HIV and HCV antibody blood tests

Inclusion criteria

- Completed baseline interview and at least 1 follow-up between Dec 2005 – May 2015
- Anti-HCV positive at baseline or became anti-HCV positive in followup
- Aware of HCV status
- IVDU
- Did not die during study period

Cascade of Care

steps defined



* All data obtained from self-report questionnaire administered at follow-up visit except anti-HCV blood test

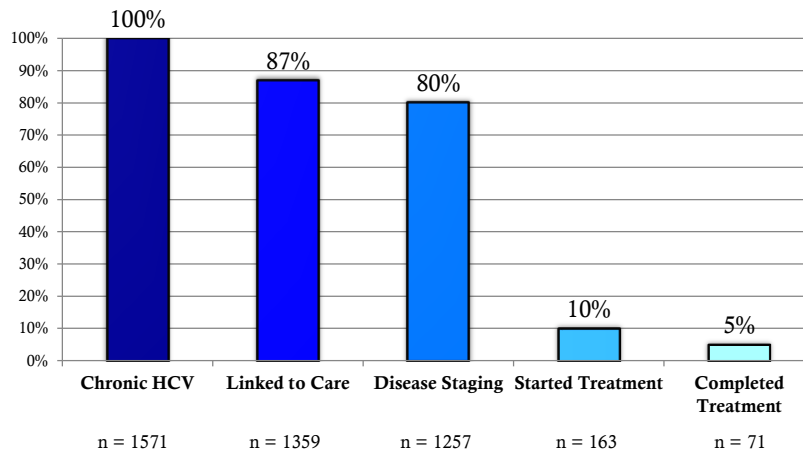
Factors associated with undergoing disease staging

- Multivariable extended Cox regression
- Outcome: time to undergoing disease staging
- Explanatory variables:
 - Sociodemographic characteristics
 - Health status (e.g. HIV)
 - Substance use patterns
 - HCV risk behaviour
 - Engagement in healthcare
 - Social and structural exposures (e.g., incarceration)

Results

- Total of 3191 eligible individuals enrolled in the 3 cohort studies
- 1629 participants met inclusion criteria
 - 58 reported having cleared their HCV
- **1571** participants with chronic HCV
- Followed for median duration of 81.9 months (IQR, 30.7 – 102.5)

Cascade of Care



Bivariable and Multivariable Cox Regression Analyses of Factors Associated with Undergoing Disease Staging

| Characteristic | Unadjusted | | Adjusted | |
|---|--------------------|---------|--------------------|---------|
| | HR (95% CI) | p-value | HR (95% CI) | p-value |
| Age (per 10 years older) | 1.14 (1.06 - 1.22) | <0.001 | 1.00 | 0.11 |
| Gender | 1.02 (0.89 - 1.17) | 0.82 | | |
| White | 1.13 (0.99 - 1.30) | 0.07 | 1.07 (0.93 - 1.24) | 0.35 |
| HIV positive | 1.96 (1.70 - 2.27) | <0.001 | 1.75 (1.50 - 2.05) | <0.001 |
| Homeless ^a | 0.75 (0.65 - 0.88) | <0.001 | 0.88 (0.75 - 1.03) | 0.10 |
| Heavy alcohol use ^a | 1.12 (0.91 - 1.37) | 0.29 | | |
| Daily IV heroin use ^a | 0.58 (0.49 - 0.69) | <0.001 | 0.72 (0.60 - 0.86) | <0.001 |
| Daily IV cocaine use ^a | 1.09 (0.86 - 1.38) | 0.46 | | |
| Daily IV methamphetamine use ^a | 0.84 (0.58 - 1.20) | 0.34 | | |
| Daily crack use ^a | 0.84 (0.73 - 0.97) | 0.02 | 0.89 (0.77 - 1.04) | 0.15 |
| Benzodiazepine use ^a | 0.99 (0.57 - 1.73) | 0.99 | | |
| Syringe lending ^a | 0.93 (0.57 - 1.54) | 0.79 | | |
| MMT ^a | 1.50 (1.31 - 1.72) | <0.001 | 1.42 (1.23 - 1.64) | <0.001 |
| Hospitalization ^a | 1.59 (1.33 - 1.90) | <0.001 | 1.50 (1.25 - 1.81) | <0.001 |
| Employed ^a | 0.97 (0.82 - 1.15) | 0.74 | | |
| Unprotected sex ^{a,b} | 0.88 (0.76 - 1.02) | 0.10 | 1.04 (0.88 - 1.21) | 0.15 |
| Sex trade work ^a | 0.93 (0.76 - 1.14) | 0.48 | | |
| Incarceration ^a | 0.92 (0.76 - 1.11) | 0.38 | | |
| Mental illness | 1.24 (1.08 - 1.42) | 0.002 | 1.11 (0.95 - 1.27) | 0.15 |

MMT: Methadone Maintenance Therapy
^aIndicates behaviour during the six-month period prior to interviews
^bUnprotected sex was defined as vaginal or anal sex without a condom at least once.

Reasons for Declining Treatment when Offered

- 989 participants completed newer version of questionnaire given June 2014 – end of study period
- 460 (47.5%) reported ever having been offered treatment
- Of those offered, 136 (29.6%) took treatment while 324 (70.4%) declined to take it

Reasons for Declining Treatment when Offered

| Reason | N (%) |
|---|------------|
| Concern over side effects | 112 (34.6) |
| Symptoms are not severe enough to start treatment | 74 (22.8) |
| HCV is not a priority | 35 (10.8) |
| Need more information before deciding | 31 (9.6) |
| Don't think I could comply with or finish treatment | 28 (8.6) |
| Started or continued using drugs | 24 (7.4) |
| Waiting for new drugs to become available | 24 (7.4) |
| Other health issues/interference with other health treatments | 23 (7.1) |
| Just offered/waiting to start | 18 (5.6) |
| Need better housing/no housing | 17 (5.3) |
| Pill burden | 13 (4.0) |
| Want to focus on HIV treatment/do not want to change HIV treatment due to HCV | 13 (4.0) |
| Don't think I can reduce my drinking | 10 (3.1) |
| Cost | 4 (1.2) |
| Other | 82 (25.4) |

Limitations

- Non-random sample
- Self-reported data, no confirmatory RNA testing
 - Likely over-estimated number with chronic HCV
- Data not obtained on degree of liver fibrosis (cascade assumes everyone is eligible for publicly-funded treatment)
- Predominantly during the pre-DAA era (side effects, duration of treatment...)

Conclusions

- Many PWID with chronic HCV are linked to care and have been evaluated for treatment
- Few have received or completed treatment
- Highlights need for improved education on HCV treatment for both prescribers and PWID infected with HCV

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Questions?



3191 individuals enrolled in the VIDUS, ACCESS and ARYS cohorts between December 1, 2005 and May 31, 2015

1562 individuals were excluded

1259 individuals were not anti-HCV positive at baseline or during follow-up, did not attend at least one follow-up after becoming anti-HCV positive, and/or did not inject drugs in the prior 6 months
 246 individuals died during follow-up
 29 individuals had missing data
 28 individuals self-reported as anti-HCV negative but were anti-HCV positive

1629 anti-HCV individuals included in the study

58 individuals reported having cleared their HCV

1571 individuals with chronic HCV