

Re-infection rates of Hepatitis C in individuals who achieved sustained virologic response after treatment with direct acting antiviral therapy

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Background

- It is currently estimated that there are 58 million people with chronic infection of hepatitis C virus (HCV).¹
- The introduction of the direct-acting antiviral therapy (DAA) marked a new treatment era for HCV – achieving sustained virologic response (SVR) in >95% of cases.^{1,3}
- Despite the success of this new treatment a concern is that reinfection rates are higher in people who inject drugs (PWID).^{4,5}
- Previous studies have found that recent injection drug use (IDU) was associated with higher rates of reinfection, whereas older age and follow-up were associated with a lower risk.^{5,6}

Methodology

- Data were extracted from the Hepatitis C Positive and At-Risk (HEAR) research database on all individuals who: 1) Underwent direct acting antiviral (DAA) therapy to treat HCV from December 2014 to November 2020, 2) Had a history of substance use, and 3) Had at least one HCV viral load collected > 12-weeks post-treatment.
- Follow-up time was calculated from the last day of treatment to the date the last HCV viral load was collected.
- A re-infection was defined as either: 1) those with a documented SVR12 whose viral load was detectable at follow-up and based on assessment of the clinician and patient history most likely represented a re-infection, or 2) no documented SVR12 due to loss to follow-up with subsequent detectable VL on screening which the clinician assessment classified as a likely re-infection rather than treatment failure.

The rate of reinfection was 10.3 per 100 patient years. Younger age, lack of a primary care provider and IVDU within 6 months of beginning DAA treatment were predictors of reinfection.

Table 1: Characteristics of study population overall, re-infected, and of those remaining cured.

Data Point	Overall	Re-infected (n=17)	Remains Cured (n=126)
Mean age, treatment start	45.2 years (43.4-47.1)	38.8 years (34.2-43.3)	46.1 years (44.1-48.1)
% Female	27.3% (20.2-35.3%)	27.8% (20.0-35.6%)	23.5% (3.4-43.7%)
% Caucasian	97.1% (92.7-99.2%)	93.7% (81.9-100.0%)	97.5% (94.8-100.0%)
% with a primary care provider	78.9% (71.2-85.3%)	50.0% (25.5-74.5%)	82.5% (75.9-89.2%)
% without housing at treatment initiation	4.4% (1.6-9.3%)	20.0% (0.0-40.2%)	2.5% (0.0-5.2%)
IVDU within 6 months of treatment initiation	23.8% (17.1-31.6%)	70.6% (48.9-92.2%)	17.5% (10.8-24.1%)

* Note: Number in brackets are the 95% confidence interval

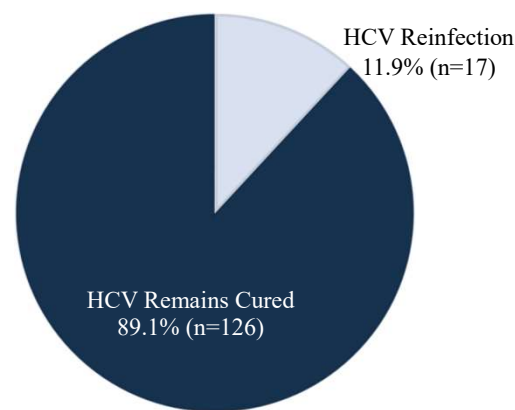


Figure 1: Proportion of reinfected people

Results

- Overall, 143 patients were included with a mean age of 45.2 years (95%CI 43.3-47.1) and total follow-up time of 164.6 years.
- The earliest date of enrolment into the HEAR database was May 2014 and the latest October 2020 with DAA treatment beginning between December 2014 to November 2020.
- At the time of treatment start, snorting and/or IDU was reported by 49.0% (n=70) in the past 2 years.
- A total of 17 reinfections were identified, with 126 people achieving SVR. (Figure 1). This provided a rate of 10.3 (95% CI 6.4-16.6) reinfections per 100 patient years.
- Reinfection rates were higher in younger patients, those who reinfected were less likely to have a primary care provider when first joining the HEAR database. (Table 1)
- Reinfection was more commonly seen in those who indicated being homeless at the start of treatment and among those who reported IDU in six months prior to treatment initiation. Though the difference was not statistically significant. (Table 1)

Discussion

- Despite the success of DAA to treat individuals with HCV, the results of this study further underline the disproportionate reinfection rates in those engaging in high-risk behaviours.
- Reinfection rates of 10.3/100 patient years were higher than the 5.9/100 patients (CI 95% 4.1-8.5) which was reported in a recent meta-analysis.⁶
- We identified factors such as younger age, lack of primary care and unstable housing to be risk factors to become reinfected. These results are in agreement with the literature.⁴⁻⁶
- Groups were too small to compare between male and female reinfection rates, but we do not suspect a significant difference between the two groups.
- Of note is that reinfection rates appear to be lower in PWID when compared to primary infection rates of PWID.^{6,7}

References

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