



# Characteristics and Sustained Virologic Response of Persons Reporting Illicit Substance Use in the Past 6 months: Results from the CANUHC Prospective Hepatitis C Patient Registry

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## Background and Aims

- In Canada, most incident cases of hepatitis C virus (HCV) occur in those engaged in high risk activities including injection drug use (IDU).
- Prior clinical trials have shown direct acting antiviral (DAA) treatment of chronic HCV infection to be highly efficacious in this group (1, 2).
- However, less data exists on the demographics and outcomes of persons seen in real-world settings (3).
- The Canadian Network Undertaking against Hepatitis C (CANUHC) prospective registry is a national database with patients from diverse academic and community health centres across Canada.
- The current study assessed baseline characteristics and treatment outcomes in those with a history illicit substance use in the CANUHC prospective registry.

## Methods

The CANUHC prospective registry is actively collecting demographic and outcome data on patients with chronic HCV who are assessed at various academic and community sites across Canada, as shown in Figure 1. All individuals who reported any illicit substance use including cocaine, opioids, heroin, and amphetamines via any route of administration prior to baseline were included in the current analysis. The current study compares rates of sustained virologic response (SVR) in persons with and without a recent history of substance use in the 6 months prior to baseline intake assessment.

Figure 1: Geographic distribution of sites in Canada.

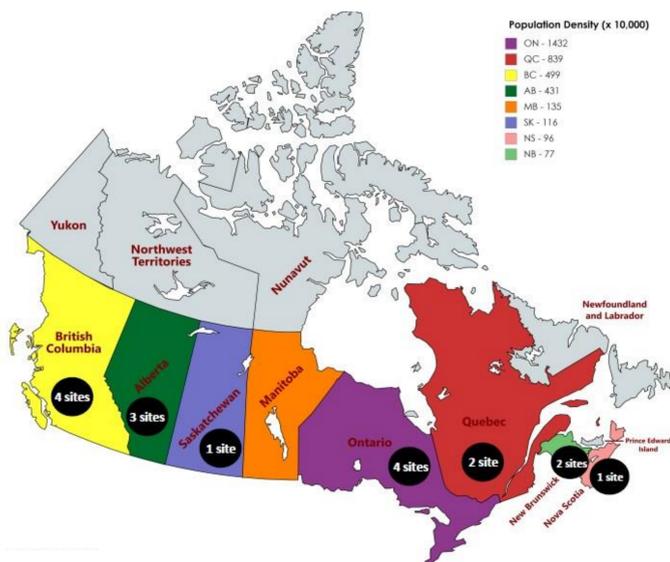
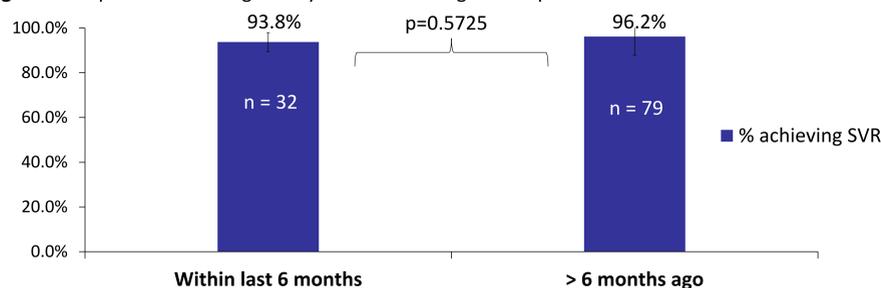


Figure 2. Proportion achieving SVR by time of last drug use for patients with SVR information available.



Characteristics	Within the last 6 months (n=97)		> 6 months ago (n=348)		p-value
	%	95% CI	%	95% CI	
<b>DEMOGRAPHIC</b>					
Mean age, in years	47.6	45.2-50.1	51.6	50.3-52.9	0.005
Female sex	27.8	18.9-36.8	30.7	25.9-35.6	0.580
Caucasian	80.8	72.0-89.5	87.5	83.8-91.2	0.124
Indigenous	8.2	2.8-13.7	5.5	3.1-7.9	0.309
Canadian-born	99.0	97.0-100.0	90.2	87.1-93.3	0.005
<b>MEDICAL</b>					
Cirrhosis	18.0	10-26.0	21.4	17.0-25.7	0.483
Psychiatric condition(s)	33.0	23.6-42.3	30.5	25.6-35.3	0.634
<b>SOCIAL</b>					
Married <sup>1</sup>	19.6	8.1-31.0	39.8	33.9-45.7	0.009
Have children	39.1	34.0-44.2	29.9	20.8-39.0	0.098
Employed <sup>2</sup>	10.8	3.7-17.9	38.0	32.4-43.7	<0.001
If unemployed, on government assistance (i.e. social assistance, disability) <sup>2</sup>	96.6	91.9-100.0	72.4	64.8-80.0	<0.001
<b>HCV RISK FACTORS</b>					
History of injection drug use	79.4	71.3-87.4	56.6	51.4-61.8	<0.001
Prior incarceration	36.1	26.5-45.6	26.4	21.8-31.1	0.063
High risk sexual activities	20.6	12.6-28.7	17.8	13.8-21.8	0.529

<sup>1</sup> Data missing on 30.3% of sample.  
<sup>2</sup> Data missing on 10-20% of sample.

Table 1. Baseline characteristics of patients with reported history of illicit substance use prior to baseline.

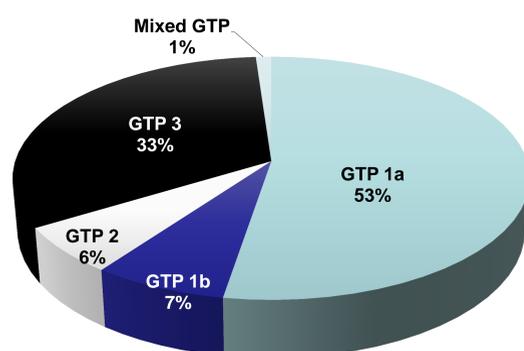


Figure 3: Genotype distribution among those with substance use in the past 6 months

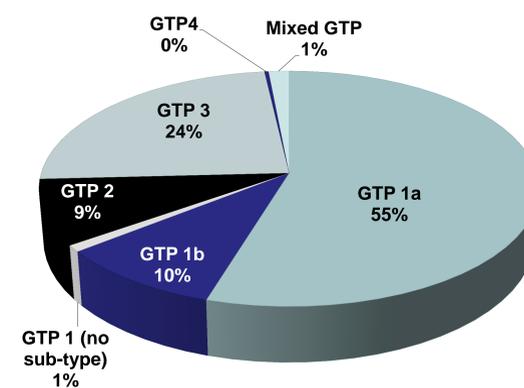


Figure 4: Genotype distribution among those without substance use in the past 6 months

## Results

- Between January 2016 and May 2018, 445 individuals who reported illicit substance use were enrolled in the registry.
- Of those, 97 (21.8%) reported use of one or more illicit substances in the prior 6 months.
- Those with recent use were significantly younger (47.6 vs. 51.6 years, p = 0.005). Individuals with recent use were less likely to be employed, more likely to be single and on government assistance. They also reported higher rates of past or current IDU.
- Genotype 3 was more common among individuals with recent drug use.
- SVR rates did not significantly differ between recent vs. remote IDU.

## Discussion

- Our study reveals no differences between SVR12 rates in HCV patients reporting recent drug use vs past drug use, aligning with results of similar real-world Canadian studies (4).
- Ongoing real-world studies among those with recent substance use are important as private and public payers remove the fibrosis-based restrictions and in some cases substance use restrictions on DAA treatment.
- It is expected that a demographic shift will occur in populations being treated, as more recently infected (and therefore less advanced disease) and actively using individuals are eligible for treatment. It is critical that strong harm reduction strategies be in place to prevent re-infection and support ongoing care.

## Conclusion

Rates of SVR were excellent in this study in persons with recent illicit substance use. This study adds to the limited body of literature of treatment outcomes in real-world settings among high risk populations in Canada and will serve as an important foundation for future studies to be done as treatment access expands further.

## References

1. Grebely, J., Dalgard, O., Conway, B., Cunningham, E. B., Bruggmann, P., Hajarizadeh, B., ... & Marks, P. (2018). Sofosbuvir and velpatasvir for hepatitis C virus infection in people with recent injection drug use (SIMPLIFY): an open-label, single-arm, phase 4, multicentre trial. *The Lancet Gastroenterology & Hepatology*, 3(3), 153-161.
2. Dore, G., Altice, F., Litwin, A. H., Dalgard, O., Gane, E. J., Shibolet, O., ... & Grebely, J. (2015). c-edge Co-star: Efficacy of Grazoprevir and Elbasvir in Persons who Inject Drugs (pwid) Receiving Opioid Agonist Therapy: 40. *Hepatology*, 62, 227A-228A.
3. Martinello, M., & Dore, G. J. (2016). Editorial commentary: interferon-free hepatitis C treatment efficacy from clinical trials will translate to "Real World" outcomes.
4. Aspinall, A. I., Shaheen, A. A., Kochaksaraei, G. S., Haslam, B., Lee, S. S., Macphail, G., ... & Borman, M. A. (2018). Real-world treatment of hepatitis C with second-generation direct-acting antivirals: initial results from a multicentre Canadian retrospective cohort of diverse patients. *CMAJ open*, 6(1), E12.

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