

# Hepatitis C Virus (HCV) in Non-Injection Drug Users in Medication-Assisted Treatment for OUD

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## Background

Hepatitis C virus (HCV) is among the most common bloodborne infections in the United States. Despite this, it remains commonly underdiagnosed and under-reported. Prior to sensitive screening for HCV in blood donors beginning in 1992, many people in the United States contracted HCV from contaminated blood products. Currently, the primary population that HCV infects is people who inject drugs (PWID), who contract the disease via sharing needles, drug cookers, or filtration cottons contaminated with infected blood. The prevalence of anti-HCV antibodies amongst a previously studied cohort of PWID in 1995 was almost 100%, though it has decreased in recent years to an estimated 55.5% in North American PWID, compared to 1.3% in the overall population. Non-injection drug users (NIDU), or those who use recreational drugs such as cocaine or heroin by means other than injection, are a population whose HCV infection burden has been less studied. Various studies have estimated the prevalence of HCV in NIDU to be between 12% and 20%, higher than in the general population but lower than in PWID. The high HCV prevalence persists after correcting for history of blood transfusion. HCV is thought to be acquired primarily through contact with infected blood, which should be uncommon in non-injection methods of drug use. Multiple alternate modes of HCV transmission have been proposed and examined to explain HCV acquisition in NIDU, including sexual activity and the sharing of tools to “sniff” or “snort” drugs.

## Methods

298 unique subjects recruited between July 2016 and the August 2018 from four medication-assisted treatment programs in New Jersey for opioid use disorder (OUD) provided written consent and completed a survey administered by a trained interviewer, answering detailed questions about drug use, HCV status, and sexual behavior. The protocol and survey were approved by the Rutgers Newark Health Sciences Institutional Review Board. If a subject admitted to any history of injection, they were considered a PWID. If they denied any history of ever injecting a drug, they were considered a NIDU. Medical records, including MAT program nursing notes and laboratory test records, were obtained for subjects to corroborate HCV status. In cases of discrepancy between medical records and questionnaire responses, the medical records findings

were used. The subjects’ dates of birth were used to categorize them as baby boomers if born between 1945 and 1965 (roughly corresponding to a study age of enrollment of about 53 to 73 years) or as non-baby boomers if born in any other year, including subjects born prior to 1945. Statistical analyses were performed in SAS software version 9.4. Significance was set at  $\alpha=0.05$  for all analyses.

## Results

There were 298 subjects who completed the questionnaire, of which 171 (57.4%) were PWID and 127 (42.6%) were NIDU. The mean age of all subjects was 49.6, with PWID having a mean age of 48.9 and NIDU 50.1. Males were more likely to inject drugs than females ( $p = 0.02$ ) and non-Hispanic Blacks (NHB) were less likely to inject drugs than non-Hispanic whites (NHW) or Hispanics ( $p < 0.01$ ).

87.2% of subjects had a known HCV status, with PWID (91.8%) significantly more likely than NIDU (81.1%) to have a known HCV status ( $p < 0.01$ ). The overall prevalence of previous HCV infection was 43.0%, with PWID (63.4%) being significantly more likely than NIDU (18.9%) to have been infected with HCV ( $p < 0.01$ ; RR = 9.1).

Prevalence rate of HCV positivity among NIDU was essentially the same across genders and racial/ethnic groups. There were 137 subjects who were baby boomers. Baby boomers with known HCV statuses were more likely to test positive (58.8%) than post-baby boomers (41.3%) ( $P < 0.01$ ; RR = 1.4). This was consistent amongst both PWID ( $p = 0.001$ , RR = 3.15) and NIDU baby boomers ( $p = 0.04$ , RR = 1.4).

There is a consistent trend that does not reach statistical significance in which the frequency of drug use by several separate measures is slightly higher in HCV unknown than in HCV negative subjects. However, snorting of cocaine did not explain the increased risk

HCV+ NIDU subjects did not have more sexual partners than HCV- NIDU subjects. Similarly, among PWID, there were no meaningful differences by HCV status in number of male or female sexual partners in either male or female subjects.

## Among NIDU: Frequencies of Drug Use by HCV Status Among Users of the Drug Only

Drug	Mean Weekly Frequency of Drug Use, By Drug Type				
	HCV- (N) (Reference)	HCV+ (N)	P	HCV Unknown (N)	P
Cocaine	17.4 (42)	33.0 (9)	ns	36.2 (14)	ns
Heroin	30.6 (69)	31.2 (22)	ns	48.0 (22)	0.08
Maximum of Either Drug	32.4 (72)	41.9 (22)	ns	44.4 (24)	ns
Sum of Both Drugs	39.5 (72)	44.7 (22)	ns	65.1 (24)	ns

## HCV Prevalence in Baby Boomers

Demographic Factor	N (%)	HCV Unknown (%)	HCV- (%)	HCV+ (%)	RR	P
<b>NIDU</b>						
Post-Baby Boomers	58 (48.7%)	11 (19.0%)	41 (70.7%)	6 (10.3%)	Ref.	Ref.
Baby Boomers	61 (51.3%)	11 (18.0%)	34 (55.7%)	16 (26.2%)	2.51	0.03
<b>PWID</b>						
Post-Baby Boomers	95 (55.6%)	7 (7.4%)	38 (40.0%)	50 (52.6%)	Ref.	Ref.
Baby Boomers	76 (44.4%)	7 (9.2%)	15 (19.7%)	54 (71.1%)	1.38	< 0.01

## Conclusions

**SUMMARY:** Neither cocaine use, heroin use, or sexual activity appear to be causal for HCV infection in non-injection drug users. NIDU baby boomers are at a greater risk for HCV infection than younger NIDU.

- The results support prior observations of a high prevalence of HCV infection in NIDU, highlighting the need for targeted testing and treatment in this group
- It remains unclear whether non-injection routes of drug use, such as snorting or oral inhalation, are methods of HCV acquisition
- Further research is required to identify modes of transmission for HCV other than contaminated blood transfusions and injection drug use
- Sexual transmission is unlikely to account for the high prevalence of HCV in NIDUs
- Baby boomers should be a particular focus for HCV testing and treatment

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