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Hepatitis C Continuum of Care and Utilization of Healthcare and Harm Reduction Services among Persons who Inject Drugs in Seattle

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Abstract

Background: To describe the "continuum of care" for hepatitis C virus (HCV) and related health service utilization among persons who inject drugs (PWID) in the Seattle metropolitan area.

Methods: The study analyzed data from the 2015 National HIV Behavioral Surveillance system focused on PWID, which included local questions on HCV treatment and testing. We calculated respondent driven sampling (RDS)-adjusted percentages of participants who had completed each step of the care continuum and compared healthcare harm reduction services among participants who were HCV+ vs. HCV- using bivariate analyses.

Results: 513 PWID were screened for HCV antibodies (Ab). Of those, 59.7% were HCV Ab+. Among those HCV Ab+, 86.4% had been tested for HCV at least once; 69.9% reported a previous diagnosis. Of those diagnosed, 55.9% had received a confirmatory test, 17.2% had ever received any medications for HCV, and 7.2% had completed treatment. The majority of HCV Ab+ participants had seen a health care provider in the past 12 months (85.6%).

Conclusions: There is a large gap between HCV screening and treatment among Seattle area PWID.

Keywords

continuum of care; hepatitis C; persons who inject drugs

1. Introduction

Opioid use disorder (OUD) and its related health problems have emerged as a national health crisis. In 2014, an estimated 1.9 million American adults had a pharmaceutical opioid use disorder (OUD), and 586,000 had a heroin-involved OUD (Center for Behavioral Health Statistics and Quality: Substance Abuse and Mental Health Services Administration, 2015).

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The increase in opioid abuse and injection drug use has led to outbreaks of HIV and hepatitis C virus infection (HCV) (Peters et al., 2016; Zibbell et al., 2018). Injection drug use is the primary mode of transmission for HCV infection in the U.S. (Edlin and Carden, 2006; Klevens et al., 2012; Williams et al., 2011). After more than a decade of decline, the incidence of HCV is again on the rise, particularly among young adults (2011; Suryaprasad et al., 2014), and is now affecting rural areas (Zibbell et al., 2015).

With the advent of effective direct-acting antiviral (DAA) medications that can cure nearly all persons with HCV, there has been a paradigm shift in HCV treatment, and guidelines now call for treating all persons with chronic HCV who have reasonable life expectancy that would allow them to benefit (AASLD-IDSA). As a result, there is an unprecedented opportunity to eliminate HCV, a disease that affects the majority of persons who inject drugs (PWID) and causes substantial morbidity and mortality (Ly et al., 2016). Expanding HCV treatment can reduce incidence (Martin et al., 2013b) (“treatment as prevention”) particularly when treatment is coupled with harm reduction efforts (Martin et al., 2013a), including the use of medications to treat opioid use disorders (MOUD) (Tsui et al., 2014). The National Academies of Sciences, Engineering, and Medicine, with the support of the U.S. Centers for Disease Control (CDC), and the World Health Organization (WHO) have published viral hepatitis elimination goals for 2030 (World Health Organization, 2016) which promote HCV treatment among PWID as a “priority population”. Yet, treating HCV in this vulnerable population poses challenges.

Historically, there has been a large translational gap in the delivery of treatment to the target population of PWID with HCV: prior studies from the pre-DAA era in the U.S. demonstrate that <10% of PWID have been treated (Carey et al., 2016; Mehta et al., 2008). Data on HCV care continuum among PWID in the DAA-era are emerging from around the globe (Boucher et al., 2018; Iversen et al., 2017; Mohamed et al., 2018; Patel et al., 2018; Young et al., 2018); however, to date U.S. based studies are lacking. The “care continuum” framework, which has been used for overlapping diseases such as HIV (Gardner et al., 2011; Mugavero et al., 2013) and opioid use disorders (Socias et al., 2018), outlines the steps in the care so as to identify where such barriers exist. Such a framework is useful to appreciate where gaps are most profound and/or persistent in order to prioritize intervention to improve clinical outcomes (Linas et al., 2014). Numerous U.S. studies have examined the HCV care cascade in the pre-DAA era (Yehia et al., 2014). However, this study is unique in its focus on PWID in the post-DAA era. Although DAAs are available in the U.S. and insurance restrictions on medication coverage are being removed in many states, PWID may still face unique barriers to care. PWID may have difficulty accessing specialty care, and studies demonstrate that specialists frequently will not treat active substance users (Asher et al., 2016; Myles et al., 2011). Models of HCV care integrated in addiction treatment and primary care have been successful in expanding access to HCV treatment (Litwin et al., 2009; Litwin et al., 2015); however, PWID with HCV may not utilize care in those settings. Community-based models, such as care integrated in syringe service programs, hold promise for expanding access to HCV treatment for PWID who are not engaged in care for addictions (Eckhardt et al., 2018), yet may not reach all active PWID who procure syringes through other means.

This study was undertaken to describe the "continuum of care" for HCV in the DAA era, from testing to treatment, as well as patterns of healthcare, harm reduction, and treatment service utilization among PWID in the Seattle metropolitan area. Understanding current limitations to access of HCV care, and potential sites for future delivery of treatment, is essential for working toward HCV elimination goals. The study used Seattle area data from the 2015 National HIV Behavioral Surveillance (NHBS) system, including specific questions on HCV-related care that were part of the local questionnaire only and not included in the national survey.

2. Methods

2.1 Study Sample/Data Source

The study analyzed data from the 2015 National HIV Behavioral Surveillance (NHBS) system in the Seattle area. NHBS is conducted by the U.S. Department of Health and Human Services' Centers for Disease Control and Prevention (CDC) to help state and local health departments monitor HIV risk behaviors and assess the use of prevention services in three groups: men who have sex with men (MSM), persons engaged in injection drug use (IDU), and persons at high risk for heterosexually acquired HIV. This study used data collected from the fourth NHBS cycle to focus on PWID (NHBS-IDU4). Persons aged ≥18 years who injected drugs in the past year, who resided in King or Snohomish County, and who were able to complete the survey in English were recruited using respondent-driven sampling (RDS). RDS is a form of snowball sampling where participants are paid a small incentive to recruit a limited number of their network members to the study. The analytic sample was restricted to persons who had been screened for HCV through the study (see below for description of testing procedures); analyses of HCV-related care were conducted on a sub-sample of participants who: a) screened positive for HCV through the study; b) self-reported being told they had HCV by a healthcare provider (i.e. were diagnosed); and c) answered the local questions on HCV-related care (Figure 1). Such an approach was taken to utilize complete data on the HCV care continuum for participants who should have been eligible.

2.2 Data Collection

All data collection activities were conducted at community sites in Seattle and South King County from June to November 2015. Complete details of study procedures have previously been described (Burt et al., 2017). Potential participants were screened for eligibility, which included visual inspection of injection sites and detailed questions about drug preparation and injection in order to confirm self-report of injection drug use. Those who were eligible and provided informed consent were given an interviewer-administered survey. The survey included information about sociodemographic characteristics, sexual and drug-use practices, and health history, including the specific questions on HCV treatment that were part of the local questionnaire and not included in the national survey. All participants, including those who reported previously testing positive, were offered rapid HIV and HCV antibody (HCV Ab) testing (OraSure Technologies). Participants provided separate consent for the survey and HIV and HCV testing. They received a monetary incentive ($50 for completing survey and testing, $10 for each enrollment referral); condoms; and information about local HIV

prevention, health, and social services. No personal identifiers were collected. The study was approved by the Washington State Institutional Review Board.

2.3 Measures

The outcomes of interest were information on health care and harm reduction service utilization and the steps along the HCV care continuum. Steps of the HCV care continuum included past HCV testing, and among those with a positive HCV Ab status at the time of the survey, past diagnosis of HCV infection by a medical professional, confirmatory testing and receipt of treatment. The HCV treatment questions were split between the core and local surveys, thus we only analyzed responses from participants who self-reported having HCV and answered questions in both surveys. Thirteen participants were mistakenly coded as not having HCV at the start of the local survey and were not asked the HCV treatment questions included within the survey. We also collected data on participants' current health insurance status, location of usual health care provider, and duration since last health care appointment, as well as past 12 month use of syringe service programs, addiction treatment services, and involvement with the criminal justice system. Other covariates examined included age, sex, race/ethnicity, housing status, health insurance status, duration of injection drug use, prior history of overdose, prior receipt of HCV/HIV testing (self-report), and screening positive for HCV/HIV via study testing.

2.4 Statistical Analysis

We tabulated both crude estimates and proportions adjusted for the sampling method (RDS). RDS weights accounted for differences in the size of each participant's network of PWID and were derived in RDS Analyst using the Gile Successive Sampling Estimator (Handcock, 2016) using an estimated PWID population size of 25,000 (Glick and Klein, 2017). These sampling weights were appended to survey data using survey procedures in Stata SE 15 (Stata Corp, College Station TX). These RDS weights adjust for the probability of being included in the survey by accounting for the size of each participant's network of acquaintances who also use injection drugs (e.g., people who report small networks are assigned higher weights).

We calculated the numbers, RDS-weighted percentages, and corresponding 95% confidence intervals to estimate the proportion of participants who had completed each step of the care continuum. We compared factors related to demographics, health care utilization, and harm reduction service usage among persons with and without HCV, using Pearson chi-square tests accounting for sampling weights. Unless otherwise indicated, we present RDS-weighted estimates throughout the paper.

3. Results

3.1 Sample and Characteristics

A total of 535 PWID completed the survey, 16 of whom were RDS "seeds." The sample used for this analysis was comprised of 513 PWID who were screened for HCV in the study, of which 338 (crude, 66%; RDS-weighted, 59.7%) had a positive HCV Ab test (Figure 1). Of those participants who screened positive for HCV through the study, 247 reported they

were previously told they had HCV; of those, 234 completed the HCV treatment questions in the local questionnaire and comprise the sample with data on receipt of HCV care (confirmatory viral testing and treatment) and barriers to care.

The demographic characteristics of the participants surveyed are presented in Table 1, stratified by HCV Ab status. Of the HCV Ab+ participants, most (69.3%) were male, and the mean age was 44.3 years. Twenty-five percent of HCV Ab+ participants reported Black race and 8.7% reported Hispanic/Latino ethnicity. Nearly half (48.0%) were homeless at the time of the survey, and the majority (61.8%) had an annual household income of less than $10,000. Compared to HCV Ab- participants, HCV Ab+ participants were significantly older, more likely to report opioid use in the past 12 months when compared to HCV Ab- PWID (95.9% v. 73.7%, p<0.001) and indicate heroin as their most commonly injected drug (77.7% v. 51.1%, p<0.001).

3.2 HCV Care Continuum Data and Barriers to Treatment

Among the 338 participants who tested positive for HCV antibodies, a substantial majority (86.4% [95% CI: 73.1, 93.7]) had been tested for HCV at least once in the past and 69.9% (95% CI: 59.3, 78.7) self-reported having been diagnosed with HCV in the past by a medical professional, defined as a positive response to the question “Has a doctor, nurse, or other health care provider ever told you that you had hepatitis C?” (Figure 2). Of the 234 participants who had previously been diagnosed with HCV and answered the local HCV treatment questions, 55.9% (95% CI: 46.2, 65.1) reported receiving a confirmatory HCV RNA test, and an additional 19% reported that they didn’t know. When participants were asked why they did not get a confirmatory HCV test, the primary reasons cited by participants were that they were not offered a confirmatory test (35.8%) and did not know that a confirmatory test was needed (27.1%) (Table 2). Only 17.2% (95% CI: 11.2, 25.6) of those previously diagnosed had ever been treated with any medications for HCV, and 7.2% (95% CI: 3.4, 14.6) had completed their treatment (Figure 2).

The majority of those who self-reported an HCV diagnosis (71.0%) had heard of the new DAA treatments that “consist of taking pills for a few months and no interferon shots,” and most indicated an interest in receiving these new treatments (Table 2).

3.3 Health Care Access and Harm Reduction Utilization Data

Data on health care access and harm reduction utilization are presented in Table 3. The vast majority (93.1%) of HCV Ab+ participants had health insurance and had seen a healthcare provider in the past 12 months (85.6%). Although healthcare coverage did not differ significantly by HCV Ab status, location of usual health care was significantly different (p=0.023). The emergency department was reported as the location of usual care for 33.9% of HCV Ab+, and it was the second most common site after the clinic (50.0%). A somewhat higher proportion of HCV Ab+ vs. HCV Ab- individuals had used a syringe service program in the past 12 months although differences were not significant (76.3% vs. 65.7%, p = 0.109). Less than half (43.6%) of HCV Ab+ individuals reported addiction treatment in the past 12 months, which was significantly higher than what was observed for HCV Ab- (28.3%) (p=0.026). There were no significant differences in the receipt of buprenorphine

which was low in both the HCV Ab+ and HCV Ab- groups (5.7% v. 3.8% respectively; p=0.46) nor treatment with methadone (32.1% v. 19.5%, p=0.058),. Rates of incarceration were similarly high in both groups: 31.7% of HCV Ab+ and 40.7% of HCV Ab- participants reported they had been incarcerated in the past 12 months (p=0.194).

4. Discussion

In this study of Seattle area PWID, we found gaps in the HCV care continuum to be most pronounced for treatment. The results suggest that while testing for HCV and knowledge of new DAA treatment may be rapidly diffusing among PWID, treatment is still lagging behind. Our analyses of healthcare utilization speak to the necessity of expanding HCV care beyond specialty clinics into unconventional settings such as primary care clinics, syringe service programs, addiction treatment programs and correctional settings.

Our results provide timely information that is relevant to national HCV elimination goals (Committee on a National Strategy for the Elimination of Hepatitis et al., 2016). A 2008 study by Mehta et al. found that 70% of HCV+ PWID had heard of treatment but only 6% had been treated (Mehta et al., 2008). A prior study of unmet healthcare needs among PWID that used 2008 NHBS data from Seattle reported that 14% had taken medication to treat HCV (Al-Tayyib et al., 2015). Our study was based on data collected in 2015, after DAAs became available (sofosbuvir was FDA approved October 2013), yet prevalence of treatment reported was only slightly higher (17%). On a positive note, our results suggest that efforts to screen and diagnose HCV among Seattle PWID have largely been successful, as more than 85% of HCV Ab+ participants reported being tested. In an earlier study using data from the National Health and Nutritional Examination Surveys from 2001 to 2008, it was observed that only 49.7% of people who screened positive for HCV were previously aware of their infection (Denniston et al., 2012). Our results reflect greater awareness of HCV as only 30.1% of these HCV Ab+ participants reported never being tested or not told by a provider that they had hepatitis C. One caveat, however, is that the wording of the survey question (“Has a doctor, nurse, or other health care provider ever told you that you had hepatitis C?”) does not specify whether diagnosis of “having” HCV is based on screening Ab or confirmatory HCV RNA testing. Approximately 25% of PWID exposed to HCV will clear their infections spontaneously without treatment (Micallef et al., 2006; Smith et al., 2016) and will not have chronic infection.

In our analysis of health care and harm reduction utilization, we found high rates of insurance coverage and no differences among persons who did and did not screen positive for HCV. These results are encouraging, as, in theory, nearly all these insured HCV Ab+ patients who were chronically infected could be eligible for treatment given current Medicaid criteria in WA State which do not exclude patients with active substance use or less than moderate fibrosis (Washington State Health Care Authority, 2018). However, it should be noted that Medicaid coverage for HCV medications differ by state (Barua et al., 2015; Canary et al., 2015), and therefore similar patients would not necessarily be eligible for treatment in all states. The majority of these PWID had seen a health care provider within the past 12 months, although a substantial proportion (33.9%) reported that their usual site of care was in the emergency department, supporting prior studies showing high

rates of emergency department use in this population (Kerr et al., 2005; Kushel et al., 2002). This supports initiatives to screen patients in the emergency department and link them to care (Anderson et al., 2017; Galbraith et al., 2015; White et al., 2016a; White et al., 2016b). However, given that nearly half the participants were homeless, establishing efficient linkages to treatment from such a setting would likely require flexible care models and supportive services such as case management (Soril et al., 2015). Other findings highlighted the importance of considering non-traditional venues for HCV care and treatment. Individuals with HCV were more likely to have received addiction treatment, and had somewhat higher utilization of syringe service and methadone programs, in the past year than those without HCV, supporting prior efforts to develop and test integrated care models in those settings (Bruce et al., 2012; Eckhardt et al., 2018; Harris et al., 2010; Islam et al., 2012). Almost a third of HCV Ab+ persons reported that they had been incarcerated in the past year. This finding suggests both a need to offer HCV treatment in the correctional setting (Larney et al., 2014) and to establish pathways so that PWID who are on treatment and subsequently incarcerated do not have their treatment interrupted. Overall, the findings suggest the continued need to develop and test interventions to improve the HCV care continuum for PWID (Meyer et al., 2015; Zhou et al., 2016).

There were limitations to this study. Our categorization of individuals based on HCV status relied on antibody testing rather than viral load testing. The information on confirmatory testing and treatment was based on patient self-report and not substantiated by medical records, and we did not have information on some additional steps of the care cascade such as linkage to treating providers and fibrosis staging. Our questions on receipt of DAA treatment had not been previously utilized or validated, and we did not explicitly ask about HCV sustained virologic response/cure. Studies of DAA treatment among PWID suggest high cure rates (>90%) similar to non-PWID (Dore et al., 2016; Grebely et al., 2018a; Grebely et al., 2018b; Norton et al., 2017), however, our response category of “completed treatment” did not specify whether treatment was with DAAs versus older interferon-based therapy, therefore we cannot speculate what percentage of those patients who reported completing treatment were actually cured. Our study was conducted in 2015, and it was not until 2016 after a class act lawsuit that Medicaid expanded coverage to all fibrosis stages and relaxed abstinence requirements in Washington State (Aleccia, 2016). Thus participants who were not eligible for medication coverage through insurance may have perceived that their providers were withholding treatment for reasons other than insurance. Because our data come from a single geographic area, the results may not be generalizable to other parts of the United States.

This study of Seattle metropolitan area PWID conducted in 2015, within the DAA era, demonstrates inadequate scale-up of HCV treatment delivery to the most affected population. The results also affirm efforts to expand access to HCV treatment to PWID by making treatment available at primary care and methadone clinics, syringe service programs, and prisons/jails, as these are common sites of care for PWID, and insofar as treatment initiation is not feasible during ED visits or short jail stays, ensuring systematic, supported linkage to HCV care. Future research is needed to identify strategies for effectively expanding and delivering HCV care to PWID and see if these efforts bring us closer to the national goal of HCV elimination.

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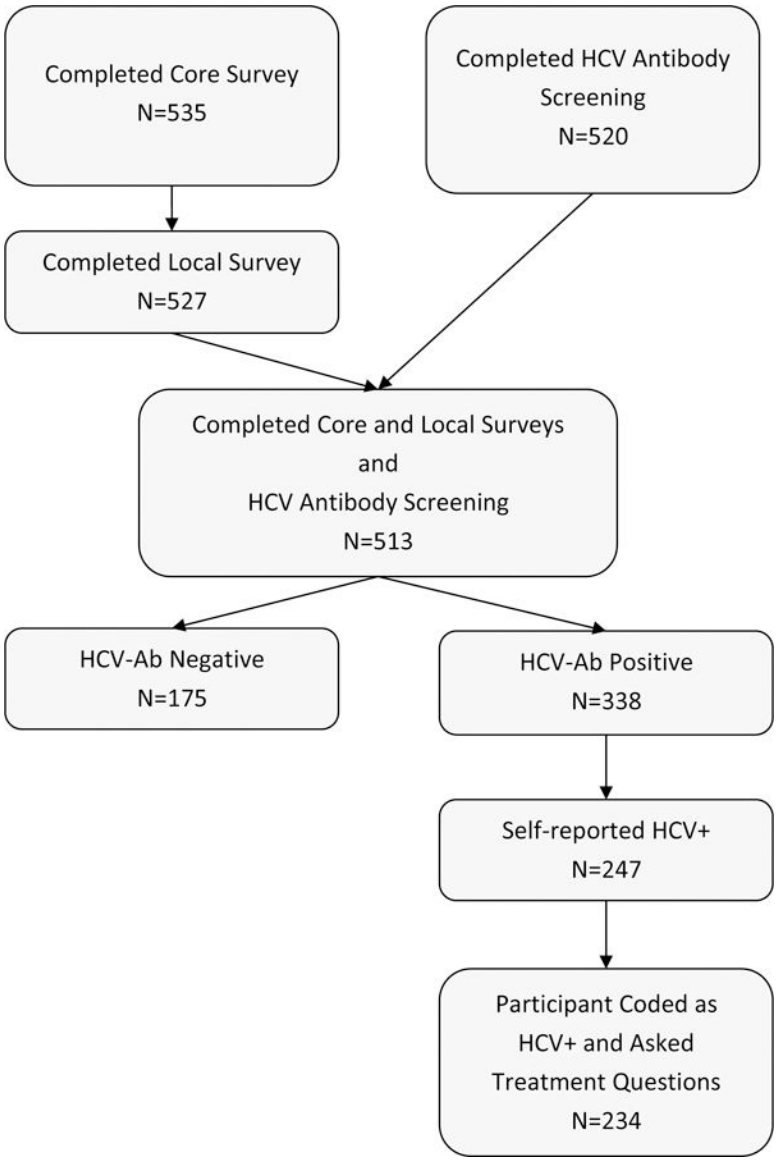

Figure 1.

Seattle Area National HIV Behavioral Surveillance Injection Drug Use (IDU4) Survey Participants, 2015

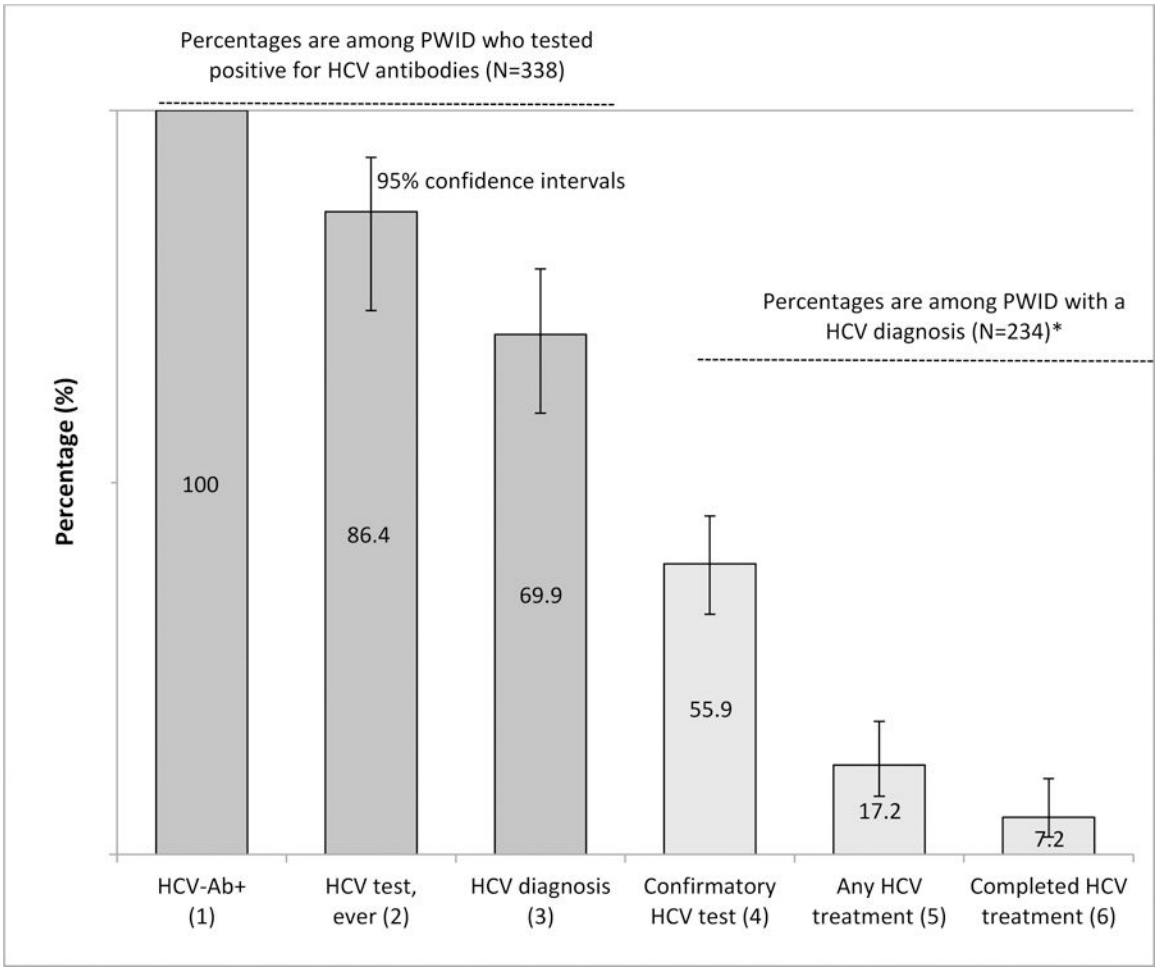

Figure 2: Hepatitis C Virus (HCV) Continuum of Care among HCV Seropositive People Who Inject Drugs (PWID), Seattle Area National HIV Behavioral Surveillance Injection Drug Use (IDU4) Survey, 2015 (N=338)

(1) Among 513 participants who completed HCV antibody testing; 338 (65.9%, crude; 59.7%, RDS-weighted) were positive.

(2) “Have you ever been tested for hepatitis C infection?”

(3) “Has a doctor, nurse, or other health care provider ever told you that you had hepatitis C?”

(4) “Did you get a confirmatory hepatitis C RNA test, also known as a viral load test?” Note: an additional 35 (15%, crude; 18.9%, RDS-weighted) people answered “I don’t know”.

(5) “Have you ever taken medicine to treat your hepatitis C infection?”

(6) Answered: “Already completed treatment” to “Would you be interested in getting the new treatments for hepatitis C?”

*Questions 4–6 were designed to be asked in the local survey to people who reported a prior HCV diagnosis (n=247). Thirteen people who reported a prior HCV diagnosis were miscoded by interviewers and not asked these questions, thus the sample size for these estimates is N=234.

Table 1.

Demographic and Drug Use Characteristics of People Who Inject Drugs by Hepatitis C Virus Antibody (HCV Ab) Status, Seattle Area National HIV Behavioral Surveillance Injection Drug Use (IDU4) Survey, 2015 (N=513)

	HCV Ab positive N=338			HCV Ab negative N=175			χ^2 p-value[4]
	Crude N	Crude %	Weighted %	Crude N	Crude %	Weighted %	
Gender identity							0.234
Female	115	34.0	30.5	70	40.0	39.0	
Male	222	65.7	69.3	105	60.0	61.0	
Transgender	1	0.3	0.2	0	0.0	0.0	
Age, mean (standard deviation)	44.3 (12.2)		N/A	35.1 (10.8)		N/A	<0.001
Age, years							<0.001
18–29	50	14.8	9.4	72	41.1	33.9	
30–39	75	22.2	19.0	45	25.7	30.6	
40–49	82	24.3	27.5	38	21.7	22.3	
50+	131	38.8	44.1	20	11.4	13.2	
Race/Ethnicity[1]							
White	271	80.9	69.3	157	90.2	83.9	0.129
Black	53	15.8	25.4	13	7.5	14.0	0.237
American Indian/Alaska Native	48	14.3	14.0	22	12.6	9.7	0.261
Hispanic	31	9.2	8.7	15	8.6	11.1	0.537
Asian/Pacific Islander	10	3.0	7.9	10	5.8	3.8	0.324
Education							0.969
Less than high school	100	29.6	23.9	53	30.3	25.7	
High school	131	38.8	38.4	64	36.6	38.6	
Post high school	95	28.1	31.1	47	26.9	30.6	
College grad. (4 yrs.)	12	3.6	6.6	11	6.3	5.1	
Household income, <$10,000 annual[2]	201	59.8	61.8	86	49.4	48.1	0.074
Homeless, currently[3]	197	58.5	48.0	100	57.5	46.8	0.876
Any opioid use, past 12 months	325	96.2	95.9	149	85.1	73.7	<0.001
Most common injection drug							<0.001

	HCV Ab positive N=338			HCV Ab negative N=175			χ^2 p-value[4]
	Crude N	Crude %	Weighted %	Crude N	Crude %	Weighted %	
Heroin alone	248	73.4	77.7	101	57.7	51.0	
Methamphetamine alone	37	11.0	9.7	57	32.6	40.9	
Other	53	15.7	12.5	17	9.7	8.1	

[1] Participants could select multiple responses; column percentages do not sum to 100%. Four participants selected no race (3 among HCV Ab+ and 1 among HCV Ab-) and are excluded from column percentage calculations.

[2] 3 missing values (2 among HCV Ab+ and 1 among HCV Ab-) are excluded from column percentage calculations.

[3] 2 missing values (1 among HCV Ab+ and 1 among HCV Ab-) are excluded from column percentage calculations.

[4] P-value is from a Pearson chi-square test adjusted for respondent driven sampling weights

Table 2:

Barriers to HCV Testing and Treatment among People Who Inject Drugs (PWID) with Hepatitis C Virus (HCV), Seattle Area National HIV Behavioral Surveillance Injection Drug Use (IDU4) Survey, 2015 (N=234)

	HCV+ PWID[1] N=234		
	Crude N	**Crude %**	**Weighted %**
Heard of new HCV treatments[2]			
No	55	23.5	29.0
Yes	179	76.5	71.0
Interested in getting the new treatments for HCV			
No	45	19.2	23.8
Yes	137	58.6	52.8
Already waiting to get treatment	21	9.0	9.7
Already completed treatment	14	6.0	7.3
Wanted to get treatment, but was unable to	15	6.4	6.4
Missing	2	0.9	--
Reasons for not getting a confirmatory HCV test (n=72)[3,4]			
Did not know that a confirmatory test was needed	23	31.9	27.1
Was not offered a confirmatory test	20	27.8	35.8
Did not make it to the appointment for the confirmatory test	13	18.1	17.8
Did not want a confirmatory test	7	9.7	4.0
Other reason	18	25.0	20.0

Abbreviations: HCV, hepatitis C virus

[1] Restricted to participants who self-reported being previously diagnosed with HCV, had a positive HCV antibody screening test, and completed the core and local surveys.

[2] Defined as “new treatments for hepatitis C that consist of taking pills for a few months and no interferon shots.”

[3] Among participants who did not report a prior confirmatory HCV test and answered the question (n=72, 1 additional participant did not answer).

[4] Participants could choose multiple responses; column percentages do not sum to 100%.

Table 3.

Health Care Access & Harm Reduction Utilization among People Who Inject Drugs with Hepatitis C Virus (HCV), Seattle Area National HIV Behavioral Surveillance Injection Drug Use (IDU4) Survey, 2015 (N=513)

	HCV Ab positive N=338			HCV Ab negative N=175			χ^2 p-value[4]
	Crude N	Crude %	Weighted %	Crude N	Crude %	Weighted %	
Current health insurance or health coverage[1]	312	93.1	93.1	156	89.7	91.9	0.703
Location of usual health care (n=434)[2]							0.023
Clinic or health center	134	45.6	50.0	60	42.9	47.5	
Doctor's office or HMO	37	12.6	13.5	28	20.0	24.4	
Hospital emergency room	115	39.1	33.9	42	30.0	19.4	
Some other place	6	2.0	1.5	9	6.4	8.2	
Doesn't go to one place most often	2	0.7	1.2	1	0.7	0.5	
Saw a health care provider, past 12 months	303	89.6	85.6	147	84.0	84.6	0.874
Used syringe service program, past 12 months	281	83.1	76.3	125	71.4	65.7	0.109
Addiction treatment, past 12 months	142	42.0	43.6	60	34.3	28.3	0.026
Methadone treatment, past 12 months (n=473)[3]	99	30.5	32.1	32	21.6	19.5	0.058
Buprenorphine treatment, past 12 months (n=473)[3]	17	5.2	5.7	5	3.4	3.8	0.456
Incarcerated, past 12 months[5]	130	38.6	31.7	78	44.6	40.7	0.194

[1] 3 missing values among HCV Ab+ and 1 missing value among HCV Ab- were excluded from column percentage calculations

[2] Among participants who have at least one place where they go when sick or have questions about health (n=434, 294 among HCV Ab+, 140 among HCV Ab-)

[3] Among participants who reported any opioid use in the past 12 months (325 among HCV Ab+, 148 among HCV Ab-, 1 additional participant did not answer)

[4] P-value is from a Pearson chi-square test adjusted for respondent driven sampling weights

[5] 1 missing value among HCV Ab+ excluded from column percentage calculations