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Missed Opportunities for Prevention and Treatment of Hepatitis C among Persons with HIV/HCV Coinfection

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Abstract

Hepatitis C (HCV) and HIV have common modes of transmission but information about HCV transmission risk, prevention, and treatment among persons with coinfection is lacking. The Medical Monitoring Project produces nationally representative estimates describing adults with diagnosed HIV in the United States. Using medical record data recorded during 6/2013–5/2017, we identified persons with detectable HCV RNA documented during the past 24 months. Among persons with coinfection, we described HCV transmission risk factors and receipt of HCV prevention services during the past 12 months and prescription of HCV treatment during the past 24 months. Overall, 4.9% had documented active HCV coinfection, among whom 30.2% were men who have sex with men (MSM), 6.7% reported injection drug use, and 62.1% were prescribed HCV treatment. Among MSM, 45.5% reported condomless anal sex and 45.5% received free condoms. Among persons who used drugs, 30.8% received drug or alcohol counseling, and among persons who injected drugs, 79.2% received sterile syringes. Among persons with HIV/HCV coinfection, recent drug injection was uncommon and most received sterile syringes. However, 1 in 3 were MSM, of whom half reported recent HCV sexual transmission risk behaviors. More than one-third of those with coinfection were not prescribed curative HCV treatment.

Keywords

Coinfection; direct acting antiviral; hepatitis C; HIV; prevention

In the United States, hepatitis C virus (HCV) infection is a leading cause of liver-related morbidity and mortality, and co-infection with HCV and HIV increases risk for accelerated liver fibrosis, non-hepatic organ dysfunction, and overall mortality (Ly et. al, 2014). In the

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Single overriding communication objective: One-third of persons with active HIV/HCV coinfection were not treated for HCV during 2013–2017. Half of coinfected MSM reported recent HCV transmission risk behaviors.

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past, interferon-based HCV treatments were used infrequently because of side effects and modest efficacy (Conteduca V, Sansonno D, Russi S, Pavone F, Dammacco F, 2014). Despite the greater risk of HCV-associated morbidity and mortality in persons with HIV/HCV coinfection, uptake of interferon-based HCV treatments was lower among HIV/HCV coinfected compared with the HCV monoinfected persons (Thomas, 2008, Vellozzi, 2011). Starting in 2011, the development of a new class of HCV medications—direct acting antivirals (DAA)—marked the beginning of a new era in HCV therapeutics (Conteduca, 2014). In clinical practice since early 2014, safe, tolerable, interferon-sparing DAA treatment regimens have made HCV cure possible for 92–97% of persons with HIV/HCV coinfection and have resulted in a shift in clinical and public health efforts related to the prevention, control, and clinical management of HCV and HCV elimination goals proposed for the United States (2014; American Association for the Study of Liver Disease-Infectious Disease Society of America 2018; Wyles, 2015; Naggie, 2015; Sulkowski, 2014).

HCV in the United States affects persons born from 1945–1965 disproportionately (Smith, 2012; Hofmeister, 2018; Centers for Disease Control and Prevention, 2018a). However, with aging of the US population (US Census Bureau, 2017), deaths in this birth cohort due to HCV-related and other causes may lower the overall prevalence of HCV (Hofmeister, 2018). Concurrently, the incidence of HCV infections has increased among young people who inject drugs (PWID) and among HIV-infected gay, bisexual, and other men who have sex with men (collectively referred to as MSM) (Suryaprasad, 2014; Zibbel, 2015; Hagan, Jordan, Neurer, Cleland, 2015; Fierer, 2011; Kaplan-Lewis & Dierer, 2015). The Centers for Disease Control and Prevention (CDC) recommends HCV testing of persons with HIV infection (PWHIV), persons with HCV transmission risk factors, such as current or past injection drug use, and persons born from 1945–1965 regardless of risk factor (Alter, 1998). Additionally, individuals should be tested for HCV before receiving HIV pre-exposure prophylaxis (PrEP) (United States Public Health Service, 2017). Although new HIV diagnoses have decreased nationally from 2011–2016 due at least in part to improvements in access to HIV care and treatment including biomedical prevention strategies such as antiretroviral treatment as prevention and PrEP (Centers for Disease Control and Prevention 2016b), these interventions may be insufficient to reduce transmission of HCV resulting from ongoing behavioral risk among persons with HIV/HCV coinfection and limited access to HCV treatment. Information about the prevalence of behavioral risk factors for HCV transmission, receipt of prevention services, and prescription of HCV treatment among persons with HIV/HCV coinfection is very limited. To address this knowledge gap and to inform the development of successful interventions to prevent HCV transmission and reduce HCV-associated morbidity and mortality among PWHIV, we analyzed data from the Medical Monitoring Project (MMP) describing these factors among persons with HIV/HCV coinfection, To better understand persons who may be at highest risk for forward transmission of HCV, we also measured behavioral risk factors among persons not prescribed HCV treatment. Finally, to inform efforts to promote health equity, we assessed possible sociodemographic disparities in prescription of hepatitis C treatment.

Methods

MMP is an annual cross-sectional survey designed to produce nationally representative estimates of behavioral and clinical characteristics of adults with diagnosed HIV in the United States. MMP data collection is a part of routine public health surveillance, and was thus determined to be nonresearch (Centers for Disease Control and Prevention 2010c). Participating states or territories obtained local institutional review board approval to collect data, when required. Informed consent was obtained from all participants.

Sample Design

Briefly, MMP used a two-stage sampling method, in which during the first stage, 16 states and Puerto Rico were sampled from all states, the District of Columbia, and Puerto Rico. During the second stage, simple random samples of persons with diagnosed HIV aged 18 years and older and alive as of December 31st of the previous year were drawn for each participating state/territory from the National HIV Surveillance System (Centers for Disease Control and Prevention, 2018d), a census of persons with diagnosed HIV in the United States. All sampled states and 1 territory participated in MMP, and included California (including the separately funded jurisdictions of Los Angeles County and San Francisco), Delaware, Florida, Georgia, Illinois (including Chicago), Indiana, Michigan, Mississippi, New Jersey, New York (including New York City), North Carolina, Oregon, Pennsylvania (including Philadelphia), Puerto Rico, Texas (including Houston), Virginia, and Washington. Data were weighted based on known probabilities of selection at state or territory and person levels (American Association for Public Opinion Research 2011). In addition, data were weighted to adjust for person nonresponse and post-stratified to National HIV Surveillance System population totals (Harringa & West, 2010).

Data Collection

Data were collected via phone or face-to-face interviews and medical record abstractions. For the 2015 cycle, interviews were conducted during June 2015-May 2016. For the 2016 cycle, interviews were conducted during June 2016-May 2017. Clinical data recorded in medical records during 24 months prior to the interview were collected. We pooled data from the 2015 and 2016 data collection cycles for this analysis, which included data recorded in medical records during June 2013–May 2017. Response rates for adults with diagnosed HIV were 39.8% for the 2015 cycle and 44.3% for the 2016 cycle.

Measures

Transmission risk factors, such as condomless anal sex, non-injection and injection drug use, and alcohol and drug use before or during sex, were assessed with validated interview questions (Centers for Disease Control and Prevention 2019e). Description of alcohol use was based on responses to interview questions about the number of days in the past month during which women consumed more than 4 units or men consumed more than 5 units of alcohol in one sitting. Drug use was described based on responses to interview questions about the frequency of use of specific injection and noninjection drugs during the past 12 months. Respondents also indicated whether they drank alcohol or used injection or non-injection drugs before or during sex in the past 12 months. Active HCV infection was

defined as having a positive test for viremia (qualitative or quantitative HCV RNA PCR assay result) recorded in the medical record. HCV RNA levels were categorized as < or ≥6 million copies/mL which is a predictor of relapse following treatment with DAAs (American Association for the Study of Liver Disease-Infectious Disease Society of America 2018). Most recent HIV RNA levels were categorized as undetectable or <200 copies/mL vs. ≥200 copies/mL based on the ability of these cut-offs to predict subsequent virologic failure (Panel on Antiretroviral Guidelines for Adults and Adolescents, 2019). CD4 counts were categorized as 0–199, 200–499, and ≥500 cells/μL based on CDC disease stage classification (Centers for Disease Control and Prevention HIV Surveillance Report, 2017). For the assessment of severity of liver disease, laboratory data recorded in the medical record, including platelets, alanine aminotransferase (ALT), and aspartate aminotransferase (AST), were used to calculate Fibrosis-4 (FIB-4) and serum AST-to-platelet ratio index (APRI) scores with cut-offs developed to predict significant fibrosis and cirrhosis in patients with HIV/HCV coinfection (Sterling, 2006; Wai, 2003). Prescription of HCV treatment was defined as documentation of prescription of any approved HCV antiviral agent.

Analytic Methods

The analytic dataset included 415 records of persons with medical record documentation of detectable HCV RNA in the past 24 months among 7692 records in the full dataset. Those with an undetectable HCV RNA or no available HCV RNA result were excluded from the analytic population. We computed frequencies, weighted percentages, and 95% confidence intervals (CI) to estimate the prevalence of sociodemographic and clinical characteristics, behavioral risk factors for HCV transmission and receipt of prevention services during the preceding 12 months, and prescription of HCV treatment in the previous 24 months. The Rao-Scott chi-square was used to assess associations between clinical and sociodemographic characteristics of persons with HIV/HCV coinfection and prescription of any HCV treatment in the past 24 months. All comparisons were 2-sided and $P < .05$ was considered significant. Data were not reported for estimates with a coefficient of variation ≥30%. All analyses accounted for complex sample design and unequal selection probabilities, and were conducted using SAS and SAS-callable SUDAAN.

Results

An estimated 4.9% (CI 4.4–5.4) of adults with diagnosed HIV had documented active HCV infection during the past 24 months (data not displayed on a table). An estimated 80.2% of persons with HIV/HCV coinfection were male (Table 1), 71.6% were born from 1945–1965, 45.2% were black/African American non-Hispanic, 41.9% had education beyond high school, 44.9% were men who had sex with women only, and 30.2% were MSM. An estimated 75.0% had public insurance only, 60.3% were living below the federal poverty level, 11.8% reported having been homeless in the past 12 months, and 8.2% reported having been incarcerated in the past 12 months. Most (92.4%), had been prescribed antiretroviral treatment, 80.7% had an HIV viral load that was undetectable or <200 copies/mL at last testing, and 52.6% had a mean CD4+ T-lymphocyte cell (CD4) count ≥500 cells/mm^3 in the past 12 months. There was evidence of advanced liver fibrosis/cirrhosis in 14.1% who had a FIB-4 score of >3.25 and 10.5% who had an APRI score >1.5.

Overall, 27.0% of persons with HIV/HCV coinfection reported engaging in condomless anal or vaginal sex in the past 12 months (Table 2). Among MSM with coinfection, 45.5% reported condomless anal sex in the past 12 months. Regarding substance use, an estimated 17.5% reported drinking alcohol before or during sex, 10.2% reported binge drinking alcohol (defined as men who drank ≥5 or women who drank ≥4 alcoholic beverages on a single occasion) in the past 30 days, 30.1% reported non-injection drug use, 30.5% reported non-injection drug use before or during sex, 6.7% reported injection drug use, and 6.4% reported injection drug use before or during sex in the past 12 months.

An estimated 73.1% of persons with HIV/HCV coinfection reported receiving at least one prevention service in the past 12 months designed to protect themselves and their partners from HIV and sexually transmitted infections, including receiving informational materials, or having a conversation with an outreach worker, counselor, or prevention worker, with a doctor, nurse, or other healthcare worker, or in an organized small group (Table 3). Among those reporting any anal or vaginal sex, 67.0% reported receiving free condoms in the past 12 months. Among MSM, 42.3% reported receiving free condoms in the past 12 months. Among those reporting injection or non-injection drug use, an estimated 30.8% reported receiving drug or alcohol counseling in the past 12 months. Among PWID, 79.2% received sterile syringes from a needle exchange, pharmacy, or health care facility.

HCV treatment was prescribed during the past 24 months for an estimated 62.1% of persons with HIV/HCV coinfection (Table 4). Prescription of HCV treatment was associated with being prescribed HIV antiretroviral therapy in the past 12 months, having less advanced liver fibrosis, and not using non-injection drugs before or during sex (Supplementary Tables 1, 2). Prescription of HCV treatment was not associated with being born during 1945–1965, race/ethnicity, gender, education, type of health insurance, reported incarceration or homelessness, sexual transmission risk behaviors, or receipt of prevention services (Supplementary Tables 1–3).

Discussion

An estimated 4.9% of PWHIV had recent medical record documentation of active HCV coinfection. We found substantial missed opportunities in this population to prevent HCV transmission, decrease HCV-related morbidity, and reduce health disparities. Ending HCV will require effective interventions to address substance use disorders, reduce sexual transmission risk behaviors among MSM, and remove barriers to HCV treatment for persons with HIV/HCV coinfection.

Our estimate that nearly 5% of PWHIV had documented active HCV infection in the past 24 months compares with 1% of non-institutionalized US civilians as reported by The National Health and Nutrition Survey (NHANES) between 2013 and 2016 (Hofmeister, 2018). NHANES did not report estimates of HIV/HCV coinfection during this time period. Previous information about HCV infection among PWHIV in the United States is limited. In 2009, an estimated 21% of HIV patients who were tested for past or present HCV infection tested positive (Garg, Brooks, Luo, Skarbinski, 2014). However, prevalence varies widely by subgroup: 1–12% among MSM, 9–27% among heterosexuals, and 72–95% among PWID

(Alter, 2006). HIV cohort studies have reported HCV viremia among approximately 12% of cohort members (Cacahy, 2014; Vellozzi, 2011). Several factors could explain why our estimate of active HCV coinfection is lower than these earlier reports. First, our data describe HCV viremia in the era of DAAs, during which some persons with coinfection would presumably have been cured prior to our 2-year observation period. HIV cohort data were obtained prior to or early after the introduction of DAAs. Second, we recorded HCV lab data from the most recent 2-year period. HIV cohorts recorded viremia at any time since cohort enrollment. Third, previous studies may have included a higher percentage of PWID.

There are similarities in the sociodemographic characteristics of the HIV/HCV coinfected population and the overall HCV-infected population in the United States. We estimated that persons born from 1945–1965 accounted for 72% of persons with coinfection, which is comparable to previous estimates among all persons with HCV-infection in the United States (Smith, 2012; Hofmeister, 2018). Males accounted for 80% of persons with coinfection compared with 64% of all persons with HCV infection. However, compared with persons with HCV overall, double the percentages of persons with coinfection were living in poverty (60% vs. 29%) and were black (45% vs. 25%) (Hofmeister, 2018). The increased risk of poor outcomes among persons with coinfection compared with HCV monoinfected persons, including end-stage liver disease, hepatocellular carcinoma, and death (Rein et al 2011), compounds the burden of these income and racial disparities. To reduce the risk of morbidity and mortality from these complications and to reduce health disparities, access to curative treatment for persons with coinfection is urgently needed.

Injection drug use remains the leading cause of HCV transmission and the incidence of acute HCV infection among young PWID has been increasing since the mid-2000s, especially in nonurban settings including Appalachia (Suryaprasad, 2014; Zibebell, 2015). However, we found that only 1 in 13 persons with HIV reported injection drug use in the past 12 months and, although our relatively small sample size did not permit us to generate a stable estimate of the percentage of PWID who shared needles or other injecting equipment, 79% of those who injected reported receiving sterile syringes. Although we did not ascertain the percentage that used drugs intranasally, this route of drug use is considered a risk factor for HCV transmission and warrants HCV screening per United States Preventative Services Task Force recommendations (Moyer, 2013). We found that among persons with HIV/HCV coinfection, 31% reported non-injection drug use in the past 12 months. Receipt of substance use counseling among persons who used drugs was low. Given the increasing number of reported acute HCV cases among PWID (Suryaprasad, 2014; Zibebell, 2015), access to substance use services and sterile injecting equipment for all PWID is vital.

Although sexual transmission of HCV is generally inefficient (Terrault, 2013), sexual transmission among MSM with HIV has been identified as an emerging challenge for HCV prevention (Suryaprasad, 2014; Zibbell, 2015; Hagan, 2015; Fierer, 2011; Kaplan-Lewis & Fierer, 2015). Two US studies have reported an HCV incidence rate of 0.21–0.51 per 100 person-years among MSM with HIV (Witt, 2013; Taylor, 2011). Factors associated with incident HCV infection in this population include condomless anal intercourse, antecedent syphilis, gonorrhea, or chlamydial infection, history of injection drug use, having sex with concurrent methamphetamine use, and douching prior to anal intercourse (Fierer, 2011; Witt,

2013; Apers, 2015). We found that among MSM with HIV/HCV coinfection, an estimated 46% reported engaging in condomless anal sex in the past 12 months. A case-control study in New York City found that condomless insertive and receptive anal sex increase the odds of becoming HCV-infected 8-fold and 25-fold, respectively among HIV-positive MSM (Fierer, 2011). The high prevalence of condomless anal sex among MSM with HIV underscores the importance of testing this population for HCV and counseling MSM with HIV/HCV coinfection about sexual risk reduction to prevent HCV transmission to their partners. Providers must explain to HIV patients that highly effective biomedical strategies for reducing HIV transmission, including HIV treatment as prevention and PrEP, have no biologic activity against HCV and cannot be relied upon to prevent HCV transmission.

Despite widely disseminated recommendations to treat persons with HIV/HCV coinfection for HCV (American Association for the Study of Liver Disease-Infectious Disease Society of America 2018), more than one-third were not prescribed HCV treatment during the period following the introduction of DAAs. We found that a higher percentage of untreated persons reported risky drug use suggesting that providers may be deferring treating patients with active drug use or that Medicaid sobriety requirements in some states may be a barrier to prescribing treatment (Canary, Klevens, Holmberg, 2015; Barua, Greenwald, Grebely, Dore, Swan, Taylor, 2015), Despite treatment eligibility requirements of some payers that patients must have more advanced liver fibrosis, treated patients had lower fibrosis scores suggesting that patients with more advanced fibrosis may be less likely to receive treatment. Although HCV monoinfected patients face Medicaid restrictions and cumbersome pre-authorization requirements limiting access to treatment in some states, we did not find differences in prescription of HCV treatment for coinfected persons based on insurance type. Further research is needed to identify health system factors that could explain why some patients are treated and others are not, including facility type, availability of onsite supportive services designed to increase care engagement, and the use of decision support including clinical reminders in electronic health records.

Although nearly all persons with HIV/HCV coinfection can be cured with DAAs (Wyles, 2015; Naggie, 2015), reinfection rates are high. Incidence of reinfection of MSM with HIV ranges from 2.9–15.2 per 100 persons-years and 2-year cumulative rates of reinfection ranging from 25–33% (Ingiliz, 2016; Lambers, 201; Chaillon, 2017) Incidence of reinfection of PWID ranges from 0–5.3 per 100 person-years for those following completion of interferon-based treatment to as high as 28.8 per 100 person-years among a prospective cohort of active users (Grady, Schinkel, Thomas, Dalgard, 2013, Weir, 2016; Midgard, 2016, Aspinall, 2013; Sacks-Davis, 2013). The high reinfection risk among persons with HIV/HCV coinfection highlights the challenges of applying a treatment as prevention strategy for HCV without concurrently addressing ongoing sexual and drug use risk behaviors. Theoretical models suggest that scaling up treatment with DAAs for PWID coupled with opioid substitution therapy and access to needle and syringe services could reduce HCV transmission and achieve reductions in prevalence of >50% over 10 years (Martin, Hickman, Hutchinson, Goldberg, Vickerman, 2013; Hickman, De Angelis, Vickerman, Hutchinson, Martin, 2015; Hellard, 2015).

Our analysis is subject to the following limitations. First, our definition of HCV coinfection as documentation of detectable RNA during the study period allowed us to conservatively estimate active HCV coinfection among persons who were tested during the study period, but did not capture persons with coinfection who did not have an HCV RNA test during that period. Also, because of uncertainty about the HCV status of persons not tested for HCV RNA during the study period, we were unable to confidently classify persons as HIV monoinfected for comparison with coinfected persons across sociodemographic characteristics and risk behaviors. Second, we were unable to evaluate the temporality of HIV and HCV infections or identify incident HCV infection because of the cross-sectional design of MMP. Third, since we lack longitudinal data on respondents, we were unable to evaluate treatment outcomes, or cases of possible reinfection in this population. Fourth, we were unable to evaluate the infection status and risk behaviors of the sexual or drug using partners of our population. Fifth, since data collected on risk behaviors relied on interview questions, reported risk behaviors may be underestimated due to socially desirable responding. Finally, our sampling and weighting design did not allow geographic comparisons.

Conclusions

Recent injection drug use is relatively uncommon among persons with coinfection and most who injected received sterile syringes. However, nearly half of MSM with coinfection reported sexual behaviors placing their partners at high risk of acquiring HCV. Despite recommendations to treat all persons with HCV, over one-third of persons with HIV/HCV coinfection were not prescribed curative HCV treatment. Health care providers should evaluate persons with HIV/HCV coinfection for transmission risk behaviors, link them to appropriate prevention services to reduce HCV transmission, and prescribe treatment for HCV. Improving access to HCV prevention services and treatment for persons with HIV/HCV coinfection is essential for achieving HCV elimination goals and reducing health disparities.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Sociodemographic and Clinical Characteristics of Persons with HIV/Hepatitis C Coinfection in the United States, Medical Monitoring Project, June 2013–May 2017. N=415

	No.	Weighted Column % (95% CI)
Gender		
Male	318	80.2 (76.0–84.4)
Female	89	19.8 (15.6–24.0)
Born 1945–1965		
No	124	28.4 (23.3–33.5)
Yes	291	71.6 (66.5–76.7)
Race/Ethnicity[a]		
White, non-Hispanic	111	27.1 (18.1–36.1)
Black, non-Hispanic	189	45.2 (34.8–55.7)
Hispanic or Latino	91	21.4 (13.0–29.8)
Other	24	6.3 (3.1–9.6)
Age (years)		
18–39	31	8.2 (5.2–11.1)
40–49	85	18.8 (14.8–22.9)
50–59	179	42.5 (36.5–48.5)
≥60	120	30.5 (25.6–35.3)
Education		
<High School	122	29.2 (22.8–35.6)
High School diploma or equivalent	121	28.9 (23.8–34.0)
>High School	171	41.9 (35.6–48.2)
Sexual behavior/orientation[b]		
MSW only	177	44.9 (39.3–50.5)
Any MSM	135	30.2 (24.9–35.6)
Any WSM	86	18.8 (14.8–22.7)
Other	17	6.1 (1.6–10.6)
Health Insurance		
Any private insurance	76	17.3 (13.6–21.0)
Public insurance only	311	75.0 (69.1–80.8)
RW[c] only/Uninsured/Unspecified	28	7.7 (3.6–11.8)
At or below the federal poverty level (FPL) in the past 12 months		
<100% FPL	240	60.3 (55.1–65.6)
≥100% - <139% FPL	35	8.3 (5.7–10.9)
≥139% - <400% FPL	94	25.0 (19.6–30.4)
≥400% FPL	28	6.4 (3.8–9.0)
Homeless[d] **in the past 12 months**		
No	367	88.2 (83.9–92.5)
Yes	48	11.8 (7.5–16.1)

	No.	Weighted Column % (95% CI)
Incarcerated in the past 12 months		
No	384	91.8 (88.4–95.2)
Yes	31	8.2 (4.8–11.6)
Major depression in the past 12 months		
No depression	300	71.9 (67.6–76.1)
Other depression	62	16.7 (11.6–21.7)
Major depression	46	11.5 (7.7–15.3)
Prescribed ART in the past 12 months		
No or Missing/Unknown	27	7.6 (4.5–10.8)
Yes	388	92.4 (89.2–95.5)
Most recent HIV viral load undetectable or less than 200 copies/mL		
HIV viral load undetectable or <200 copies/ml	339	80.7 (75.9–85.5)
HIV viral load detectable, ≥200 copies/ml or Missing/unknown	76	19.3 (14.5–24.1)
Mean CD4 count in the past 12 months		
0–199	57	16.2 (11.2–21.2)
200–499	129	31.2 (25.1–37.2)
≥500	205	52.6 (44.9–60.4)
HCV quantitative viral load in the past 12 months		
<6 million international units/mL	213	82.6 (78.1–87.0)
≥6 million international units/mL	46	17.4 (13.0–21.9)
FIB-4 score[e]		
≤ 1.45	152	40.9 (35.1–46.7)
1.45–3.25	184	45.1 (40.1–50.1)
> 3.25	58	14.1 (10.2–17.9)
APRI score[f]		
≤ 0.5	218	55.4 (49.4–61.3)
0.5–1.5	134	34.1 (28.7–39.6)
> 1.5	42	10.5 (6.9–14.0)

Abbreviations: No., sample size; CI, confidence interval; MSM, men who have sex with men; MSW, men who have sex with women; WSM, women who have sex with men; ART, antiretroviral therapy; HCV, hepatitis C virus; FIB-4, Fibrosis-4; APRI, serum AST-to-platelet ratio index

[a] Categories are mutually exclusive. Hispanics or Latinos could be of any race.

[b] Sexual transmission risk or potential risk based on reported sexual behavior and sexual orientation

[c] Ryan White HIV/AIDS Program, AIDS Drug Assistance Program

[d] Defined as having lived on the street, in a shelter, in a single room occupancy hotel or in a car

[e] FIB-4 score calculated as Age(years) × AST(U/L)/(Platelets(10^9/L) × sqrt (ALT(U/L))

[f] APRI score calculated as (AST(U/L)/40) / Platelets(10^9/L) × 100

Table 2.

Prevalence of Sexual and Substance Use Behaviors in the Past 12 Months Among Persons With HIV/HCV Coinfection in the United States, Medical Monitoring Project, June 2013–May 2017. N=415

Risk behavior	No.	Weighted Column % (95% CI)[a]
Sexual risk behaviors		
Any condomless anal or vaginal sex[a]		
No	299	73.0 (67.0–79.0)
Yes	109	27.0 (21.0–33.0)
Any condomless anal sex among MSM[b]		
No	72	54.5 (43.8–65.2)
Yes	63	45.5 (34.8–56.2)
Substance use risk behaviors		
Drank alcohol before or during sex[a]		
No	330	82.4 (77.7–87.0)
Yes	75	17.6 (13.0–22.3)
Binge drank in past 30 days[c]		
No	363	89.8 (85.5–94.1)
Yes	42	10.2 (5.9–14.5)
Any non-injection drug use		
No	288	69.9 (62.7–77.0)
Yes	119	30.1 (23.0–37.3)
Use of non-injection drugs before or during sex[a]		
No	339	83.4 (77.5–89.3)
Yes	69	16.6 (10.7–22.5)
Any injection drug use		
No	370	93.3 (91.0–95.6)
Yes	37	6.7 (4.4–9.0)
Injection drug use before or during sex[a]		
No	287	96.6 (94.9–98.3)
Yes	20	3.4 (1.7–5.1)

Abbreviations: No., sample size; CI, confidence interval; MSM, men who have sex with men

[a] The denominator is persons with HIV/HCV coinfection (N=415). Missing data for this variable were excluded for calculation.

[b] Of the 415 HIV/HCV coinfected individuals, 135 respondents were men who had sex with men in the past 12 months or who described themselves as gay or bisexual, which is the denominator for this variable. Missing data for this variable were excluded for calculation.

[c] Defined as consumptions of ≥5 alcoholic beverages for men or ≥4 alcoholic beverages for women in a single occasion

Table 3.

Prevention Services Received in the Past 12 Months by Persons With HIV/HCV Coinfection in the United States, Medical Monitoring Project, June 2013–May 2017. N=415

Prevention Service	No.	Weighted % (95% CI)
Prevention Service Designed to Protect Oneself and Others from HIV/STDs		
Received informational materials	254	58.0 (51.4–64.7)
Conversation with outreach worker, counselor or prevention worker	149	33.3 (27.5–39.1)
Conversation with doctor, nurse, or healthcare worker	237	56.7 (51.4–62.0)
Participated in organized small group	87	20.5 (16.0–25.0)
Any of the above prevention services	314	73.1 (67.3–78.8)
Received free condoms (all sexually active persons)[a]	148	67.0 (60.2–73.8)
Received free condoms (MSM)[b]	56	42.3 (32.3–52.3)
Drug or alcohol counseling[c]	42	30.8 (21.2–40.3)
Received sterile syringes[d]	32	79.2 (62.2–96.3)

Abbreviations: No., sample size; CI, confidence interval; STD, sexually transmitted disease: MSM, Men who have sex with men

[a] The denominator is persons reporting any anal or vaginal sex in the past 12 months (N = 223)

[b] The denominator is men who had sex with men in the past 12 months or who described themselves as gay or bisexual (N = 135)

[c] The denominator is limited to those reporting any injection or non-injection drug use in the past 12 months (N = 133)

[d] The denominator is persons who reported injecting drugs in the past 12 months (N = 37). Syringes were received at a needle exchange, pharmacy, or health care facility.

Table 4.

HCV Treatment Prescribed in the Past 24 Months for Adults With HIV/HCV Coinfection in the United States, Medical Monitoring Project, June 2011–May 2015. N=415

HCV Treatment[a]	No.	Weighted % (95% CI)
Any treatment regimen	257	62.1 (56.9–67.3)
DAA regimen only[b]	226	55.8 (50.4–61.1)
DAA[b] and ribavirin	21	4.0 (2.0–6.1)
Other regimen		
No treatment	151	37.9 (32.7–43.1)

Abbreviations: No., sample size; CI, confidence interval; DAA, direct acting Antiviral

[a] The coefficient of variation for the weighted estimate of persons prescribed interferon regimens was >.3 and therefore the estimate was unstable and is not reported.

[b] DAAs include: ledipasvir/sofosbuvir (Trade name: Harvoni), paritaprevir/ritonavir/ombistavir/dasabuvir (Trade name: Viekera Pak or Technivie (combination excluding dasabuvir)), simeprevir/sofosbuvir (Trade name: olysio/sovaldi), daclatasvir/sofosbuvir (Trade name: Daklinza/sofosbuvir), simeprevir (Trade name: Olysio), telaprevir (Trade name: Victrelis), boceprevir (Trade name: Incivek), elbasvir/grazoprevir (Trade name: Zepatier), Glecaprevir/pibrentavir (Mavyret), Sofosbuvir/velpatasvir (Trade Name: Epclusa), Sofosbuvir/velpatasvir/voxilaprevir (Trade Name: Vosevi)