# Women With Hepatitis C Who Inject Drugs Are Initiating Treatment at Lower Rates Than Men Who Inject Drugs in the United States

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## Conclusions

- Among people with hepatitis C virus (HCV) infection who have a history of injection drug use in the US, women initiated direct-acting antiviral (DAA) treatment at lower rates than men
- Differences were most pronounced among those aged 25 to 34 years and/or people of Hispanic and Asian ancestry
- Women and men who initiated DAA treatment for HCV had similar treatment-completion rates, with the exception of Asian women, who completed treatment at lower rates than Asian men
- These data highlight the need for gender-specific efforts to engage women who inject drugs in HCV treatment

## Plain Language Summary

- Among people with hepatitis C virus who have a history of injecting drugs, women were less likely to start direct-acting antiviral treatment than men
- Likelihood of starting treatment varied depending on race and gender

## Introduction

- Hepatitis C virus (HCV) infection is a major cause of chronic liver disease and the leading cause of hepatocellular carcinoma in the US[1]
- People who inject drugs are at higher risk of acquiring HCV[2]
  - Among people who have a history of injection drug use (IDU), women have a higher incidence of HCV than men[3,4]
- Despite the availability of direct-acting antivirals (DAAs) for HCV treatment, observational studies show mixed results around treatment rates by gender, especially among people who have a history of IDU[5,6,7]

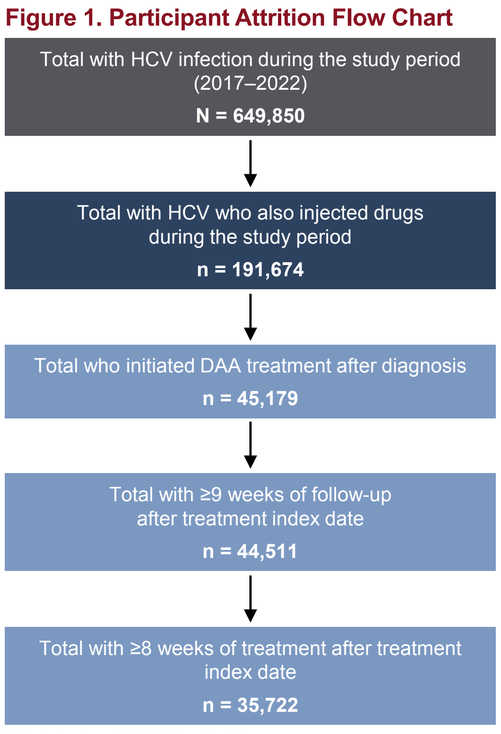
## Objective

- To learn whether there are demographic differences in DAA initiation and completion rates among people with HCV infection who have a history of IDU in the US

## Methods

- HealthVerity administrative claims data were used to identify adults (aged ≥18 years) with evidence of HCV from diagnostic or medication claims between 1 Jan 2017 and 31 Dec 2022 (cohort entry date)
  - Inclusion criteria: individuals with 1 inpatient or outpatient claim code (*ICD-10-CM*) for HCV during the study period or those who had an HCV diagnosis prior to 2017 but were never treated
    - Individuals were required to be continuously enrolled in the database for ≥365 days prior to cohort entry date
  - Exclusion criteria: evidence of HIV or hepatitis B virus
- Definitions
  - People who inject drugs: individuals with 1 inpatient or 2 outpatient codes (*ICD-10-CM*) for IDU or 1 dispensing code for opioid substitution therapy in the 365 days prior to cohort entry
  - Treatment initiation: individuals with evidence of ≥1 DAA dispensing claim
  - Treatment completion: individuals with evidence of ≥8 weeks of treatment with a DAA among those with adequate follow-up (≥9 weeks after treatment initiation)
- Analysis: Treatment initiation is presented as an unadjusted incidence rate per 100 person-years with 95% CIs
  - Stratified by age, gender, and race

### Figure 1. Participant Attrition Flow Chart




DAA, direct-acting antiviral; HCV, hepatitis C virus.

**References:** **1.** Westbook RH, et al. *J Hepatol.* 2014;61:S58-S68. **2.** Janjua NZ, et al. *Int J Drug Policy.* 2018;55:31-9. **3.** Larney S, et al. *Int J Drug Policy.* 2022;103:103654. **4.** Esmaeli A, et al. *J Viral Hepat.* 2017;24(2):117-27. **5.** Corcorran MA, et al. *Drug Alcohol Depend.* 2021;220:108525. **6.** Valerio H, et al. *Clin Infect Dis.* 2021;73(1):e69-e78. **7.** Kapadia SN, et al. *JAMA Netw Open.* 2023;6(8):e2327326.

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## Results

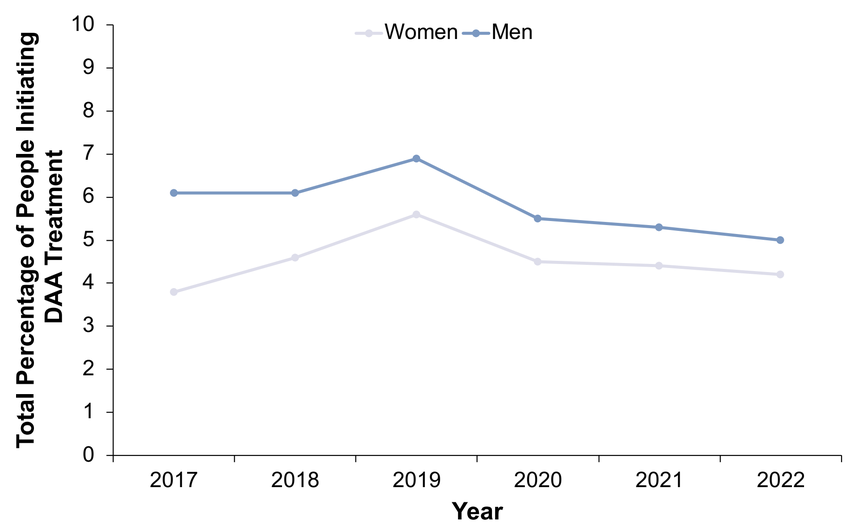
### Table 1. Gender, Age, and Race of People With HCV and History of IDU

| Women n = 87,495 | | Men n = 104,179 | |
|---|---|---|---|
| **Age group, years, n (%)** | | **Age group, years, n (%)** | |
| 18–24 | 4,813 (5.5) | 18–24 | 2,746 (2.6) |
| 25–34 | 33,104 (37.8) | 25–34 | 28,204 (27.1) |
| 35–44 | 24,034 (27.5) | 35–44 | 28,241 (27.1) |
| 45–54 | 12,815 (14.6) | 45–54 | 19,560 (18.8) |
| 55–64 | 10,354 (11.8) | 55–64 | 19,926 (19.1) |
| 65+ | 2,375 (2.7) | 65+ | 5,502 (5.3) |
| **Race, n (%)** | | **Race, n (%)** | |
| Asian | 555 (0.6) | Asian | 843 (0.8) |
| Black | 5,235 (6.0) | Black | 9,626 (9.2) |
| Hispanic | 2,991 (3.4) | Hispanic | 6,504 (6.2) |
| White | 55,839 (63.8) | White | 55,820 (53.6) |
| Other | 2,172 (2.5) | Other | 2,977 (2.9) |
| Not Reported | 20,703 (23.7) | Not reported | 28,409 (27.3) |

The "Other" racial category describes any reported race outside of White, Black, Hispanic, or Asian; this would include Native American, Alaskan Native, Pacific Islander, etc.
HCV, hepatitis C virus; IDU, injection drug use.

- Among 649,850 individuals with HCV, 191,674 were people who had a history of IDU (women, 87,495; men, 104,179)
- Among women and men with HCV and history of IDU, the proportion of women was higher in younger age groups: 6% vs 3% in those aged 18–24 and 38% vs 27% in those aged 25–34
- Most women and men with IDU were White (58%) and <45 years old (63%); 36% of men and women aged <35 years had HCV with a history of IDU

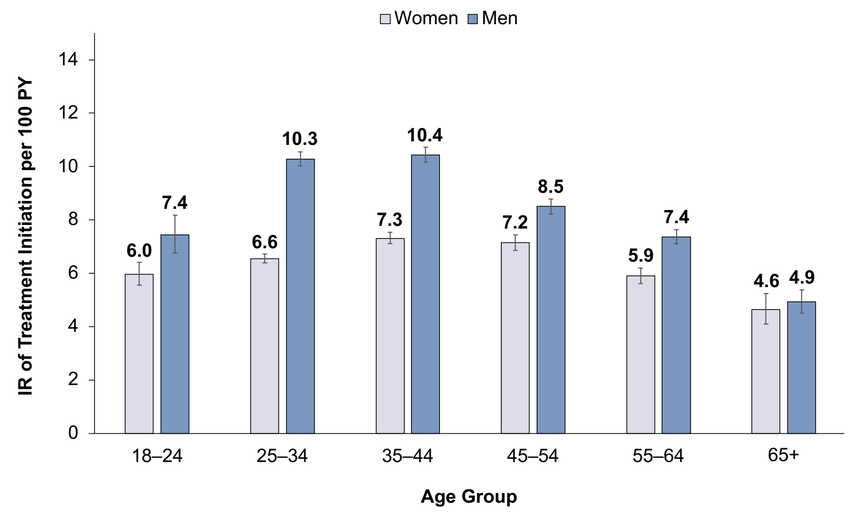
### Figure 2. Men vs Women With HCV Diagnosis Who Initiated Treatment Between 2017 and 2022




DAA, direct-acting antiviral; HCV, hepatitis C virus.

- Between 2017 and 2022, most people (76.6%) did not initiate HCV treatment, but of those who did, treatment initiation peaked in 2019
- From 2020 to 2022 (COVID-19 era), treatment initiation rates were stable
- By year, men consistently initiated treatment more frequently than women

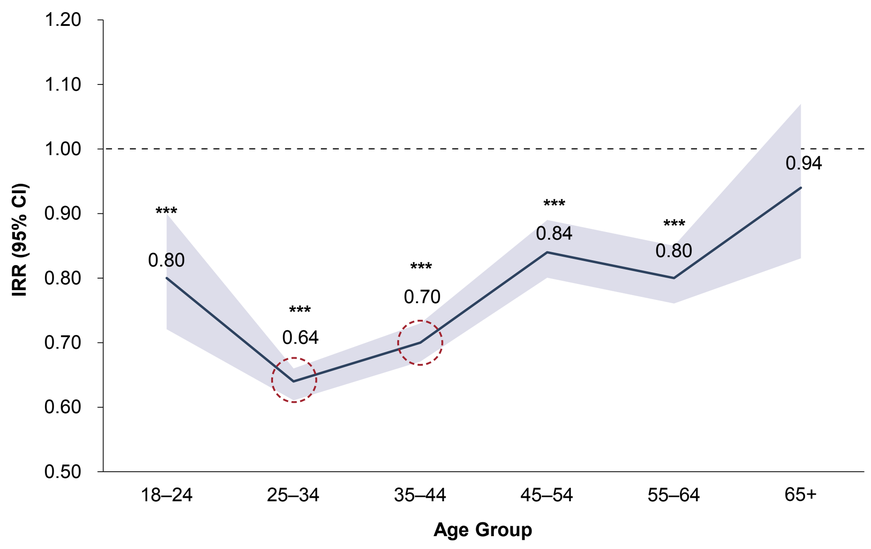
### Figure 3. IRs of DAA Treatment Initiation Among People With IDU Between 2017 and 2022 by Age Group




Unadjusted IRs of treatment initiation per 100 PY were calculated. Error bars indicate 95% CIs.
DAA, direct-acting antiviral; IDU, injection drug use; IR, incidence rate; PY, person-years.

- Between 2017 and 2022, 18,772 women (21.5%) and 26,407 men (25.3%) initiated DAA treatment
- Among people with HCV and a history of IDU, women consistently had lower treatment-initiation rates than men across age groups
- Both women and men had similarly low treatment-initiation rates among those aged 65+

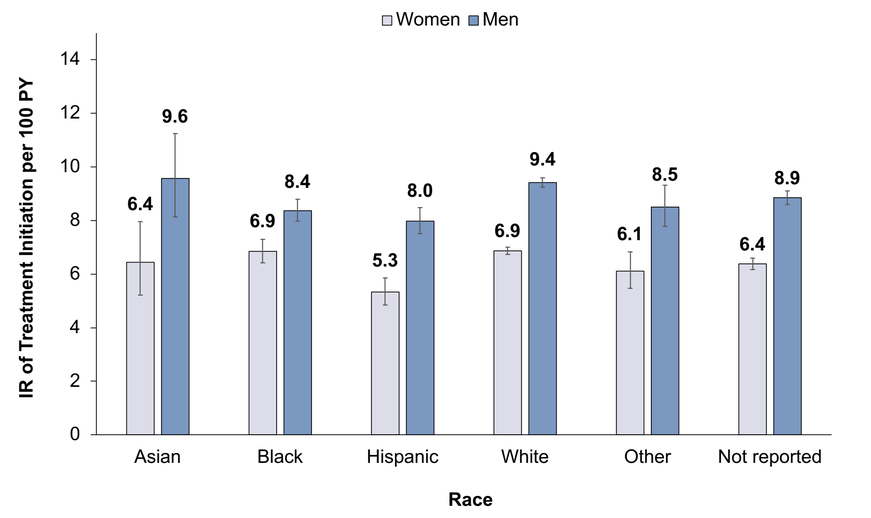
### Figure 4. IRRs of DAA Treatment Initiation Among Women vs Men With IDU Between 2017 and 2022 by Age Group




Unadjusted IRs were used to calculate IRR, which was plotted with 95% CI. The described IRR for each age group on the plot is relative to treatment initiation in men for the same corresponding age group. ***$P$ <0.005.
DAA, direct-acting antiviral; IDU, injection drug use; IR, incidence rate; IRR, incidence rate ratio.

- Among people with HCV and a history of IDU, women aged 25–34 and 35–44 were 36% and 30% less likely to initiate treatment compared with men of the same age (incidence rate ratios [IRRs], 0.64, 95% CI, 0.61-0.66 and 0.70, 95% CI, 0.67-0.73, respectively)

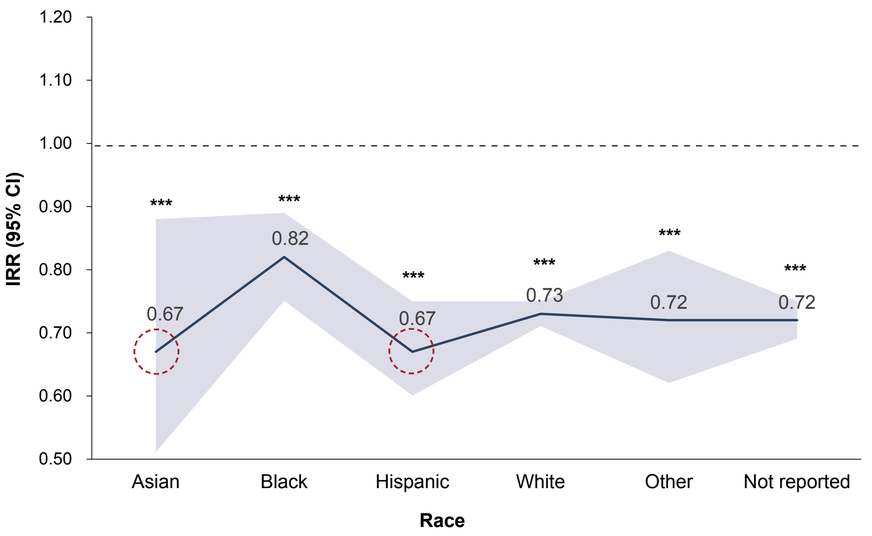
### Figure 5. IRs of DAA Treatment Initiation Among People With a History of IDU Between 2017 and 2022 by Race




Unadjusted IRs of treatment initiation per 100 PY were calculated. Error bars represent 95% CIs. The "Other" racial category describes any reported race outside of White, Black, Hispanic, or Asian; this would include Native American, Alaskan Native, Pacific Islander, etc.
DAA, direct-acting antiviral; IDU, injection drug use; IR, incidence rate; PY, person-years.

- In general, women had lower DAA treatment initiation rates than men across racial groups
  - This was most pronounced among Hispanic and Asian people

### Figure 6. IRRs of DAA Treatment Initiation Among Women vs Men With HCV and History of IDU Between 2017 and 2022 by Race




Unadjusted IRs were used to calculate IRR, which was plotted with 95% CI. The described IRR for each racial group on the plot is relative to treatment initiation in men for the same corresponding racial group. The "Other" racial category describes any reported race outside of White, Black, Hispanic, or Asian; this would include Native American, Alaskan Native, Pacific Islander, etc. ***$P$ <0.005.
DAA, direct-acting antiviral; HCV, hepatitis C virus; IDU, injection drug use; IR, incidence rate; IRR, incidence rate ratio.

- Among those with HCV who had a history of IDU, Asian (IRR, 0.67; 95% CI, 0.51-0.88) and Hispanic (IRR, 0.67; 95% CI, 0.51-0.88) women were 33% less likely to initiate treatment compared to men of the same racial origin
- Women who initiated DAA treatment for HCV completed treatment at rates similar to those seen among men (79.9% vs 80.5%; data not shown)
  - One notable exception: Asian women completed treatment at lower rates than Asian men (73.8% vs 84.1%)
    - This finding should be interpreted with caution, as the numbers of Asian women (n = 105 of 18,772) and men (n = 212 of 26,407) who initiated treatment are small

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