Hepatitis C Virus Infection and Cure by Priority Population Among New York City Ryan White HIV/AIDS Program Part A Clients

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Background

- **Hepatitis C virus (HCV) is a common comorbidity among people with HIV (PWH). HCV-related liver disease is an important cause of non-AIDS-related death among PWH.**
- **Despite the availability of effective treatments for HCV, there remain persistent gaps in the HCV care cascade, from testing to treatment initiation to cure.**
- **Specific groups of clients in New York City (NYC) Ryan White HIV/AIDS Program Part A (RWPA) services have been identified as priority populations, based on being historically marginalized and having recognized barriers to care/treatment.**
- **Although HCV infection and cure has been well-described among all NYC residents, much less is known about HCV outcomes among NYC RWPA clients or clients in these specific priority populations.**
- **Understanding gaps in the HCV care cascade among RWPA clients could lead to improved integration of HCV and HIV treatment and prevention for historically marginalized populations.**

Objective

The purpose of this study was to examine HCV infection and cure among NYC RWPA priority populations, to identify opportunities to improve service delivery and health equity.

Methods

Data sources: Combined HIV registry, HCV registry, and RWPA program data.
Inclusion criteria: PWH enrolled in any RWPA program (clients) who received at least 1 service between January 2019 and December 2022.
Priority Populations:
- **Black/Latino men who have sex with men (MSM):** Black or Hispanic/Latino clients assigned male at birth who self-identify as men and as gay, bisexual, pansexual, or queer
- **Black/Latina cisgender women:** Black or Hispanic/Latina clients assigned female at birth who self-identify as women
- **People aging with HIV (PAWH):** Clients 50 years of age or older
- **Transgender, intersex, gender non-conforming, or non-binary (TIGNCNB) people:** Clients who: 1) self-identify as transgender men, transgender women, gender non-conforming, or gender non-binary; 2) were assigned intersex at birth; 3) were assigned male at birth and self-identify as women; or 4) were assigned female at birth and self-identify as men
- **People who inject drugs (PWID):** Clients with any report of recent (past 3 months) injection drug use on a RWPA assessment

Primary outcomes:
- **HCV infection:** Any positive result on an HCV RNA test reported to the HCV registry through December 2022.
- **HCV cure:** Negative RNA result on the most recent HCV test during the analysis period and dated at least 12 weeks after the most recent positive RNA result. Negative RNA tests were evaluated beginning in 2014, the first year negative RNA tests became reportable.

Statistical analyses:
- **Comparing HCV infection and cure across priority populations:** We used separate logistic regression models to estimate adjusted odds ratios for HCV infection and cure, comparing each of the priority populations to all other RWPA clients. Confounders were selected a priori for each model using directed acyclic graphs.
- **HCV outcomes by baseline HIV viral suppression status:** We compared HCV infection and cure proportions among clients in each priority population by baseline HIV viral suppression status. Clients were considered virally suppressed at baseline if they had a viral load < 200 copies/mL on their most recent viral load result as of their RWPA enrollment date or January 1, 2019, whichever came later.
- **HCV care cascade:** We compared the HCV care cascade among RWPA clients to the care cascade among other (non-RWPA) PWH.

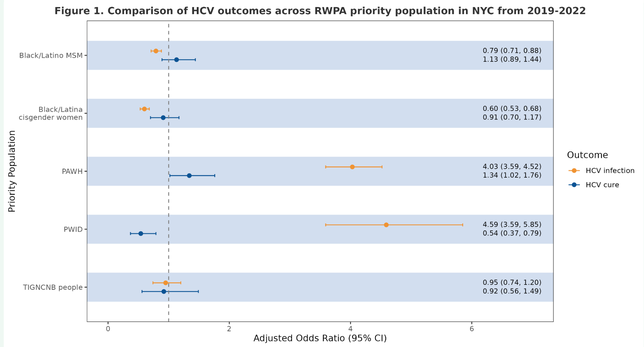
Results

Table 1. Characteristics of RWPA clients in NYC by priority population

Characteristics	All RWPA Clients	Black/Latino MSM (N=5,675)	Black/Latina cisgender women (N=4,015)	PAWH (N=8,383)	PWID (N=337)	TIGNCNB people (N=862)
		N (%)	N (%)	N (%)	N (%)	N (%)
Age group						
13-29	1119	585 (10)	178 (4)	-	18 (5)	147 (17)
30-49	6188	3043 (54)	1189 (30)	-	199 (59)	513 (60)
50 and older	8383	2046 (36)	2644 (66)	8383 (100)	119 (35)	202 (23)
Education						
High school/GED[a] or greater	10255	4301 (76)	2188 (55)	5063 (60)	252 (75)	565 (66)
Less than high school/GED	5077	1255 (22)	1742 (43)	3098 (37)	84 (25)	285 (33)
Insurance status						
Any private insurance	422	176 (3)	73 (2)	202 (3)	4 (1)	5 (1)
Public insurance only	13177	4592 (81)	3525 (88)	7327 (87)	265 (79)	721 (83)
Uninsured	2163	907 (16)	417 (10)	854 (10)	68 (20)	136 (16)
Percentage of federal poverty level						
Greater than 100%	2916	1210 (21)	633 (16)	1607 (19)	55 (16)	107 (12)
100% or lower	11796	4105 (73)	3119 (78)	6255 (75)	281 (83)	734 (85)
Incarceration history						
Never	4464	1820 (32)	1115 (28)	2205 (26)	125 (38)	259 (30)
Past 12 months	330	117 (2)	34 (1)	154 (2)	21 (6)	34 (4)
Greater than 12 months ago	909	242 (4)	182 (5)	570 (7)	62 (18)	53 (6)
Missing	9999	3496 (62)	2684 (66)	5454 (65)	129 (38)	516 (60)
Housing status						
Stable	11374	3885 (69)	3359 (84)	6668 (80)	158 (47)	456 (53)
Unstable/temporary	4321	1787 (31)	655 (16)	1711 (20)	179 (53)	406 (47)
Borough of residence						
Manhattan	2987	1161 (21)	495 (12)	1786 (21)	93 (28)	144 (17)
Brooklyn	4275	1468 (26)	1306 (33)	2193 (26)	68 (20)	238 (28)
Bronx	5393	1798 (32)	1538 (38)	2976 (36)	142 (42)	320 (37)
Queens	2006	899 (16)	448 (11)	917 (11)	17 (5)	107 (12)
Staten Island	495	137 (2)	136 (3)	280 (3)	6 (2)	27 (3)
Outside of NYC	116	50 (1)	20 (1)	42 (1)	3 (1)	4 (1)
Homeless/unknown	430	162 (2)	72 (2)	189 (2)	8 (2)	22 (2)
Recent injection drug use						
Yes	337	140 (2)	21 (1)	119 (1)	337 (100)	30 (4)
No	15365	5535 (98)	3994 (99)	8264 (99)	-	832 (96)
HIV virally suppressed						
Yes	12324	4444 (78)	3193 (80)	6780 (81)	228 (68)	677 (79)
No	3378	1231 (22)	822 (20)	1603 (18)	109 (32)	185 (21)
HCV outcomes						
HCV infection	2278	596 (11)	471 (12)	1758 (21)	127 (38)	88 (10)
HCV cure[b]	1597	404 (67)	338 (72)	1291 (73)	65 (51)	58 (66)

[a]General Educational Development test (GED)
[b]Number and percentage cured between 2019 and 2022 among people with an HCV infection

Figure 1. Comparison of HCV outcomes across RWPA priority populations in NYC, 2019 - 2022



Models were adjusted for the following covariates:
Black/Latino MSM & **Black/Latina cisgender women:** age group, injection drug use, housing stability, percentage of federal poverty level, borough of residence and baseline HIV viral suppression status; **PAWH:** race, gender, injection drug use, housing stability, percentage of federal poverty level, borough of residence, and baseline HIV viral suppression status; **PWID**: age group, race, gender, housing stability, percentage of federal poverty level, borough of residence, and baseline HIV viral suppression status; **TIGNCNB people**: age group, race, injection drug use, housing stability, percentage of federal poverty level, borough of residence, and baseline HIV viral suppression status. All models for HCV cure are also adjusted for time since first positive HCV result.

PWID have the highest odds of HCV infection and the lowest odds of HCV cure, compared to people who do not inject drugs, after adjusting for potential confounders.

Figure 2. HCV infection and cure among NYC RWPA clients by HIV viral suppression status

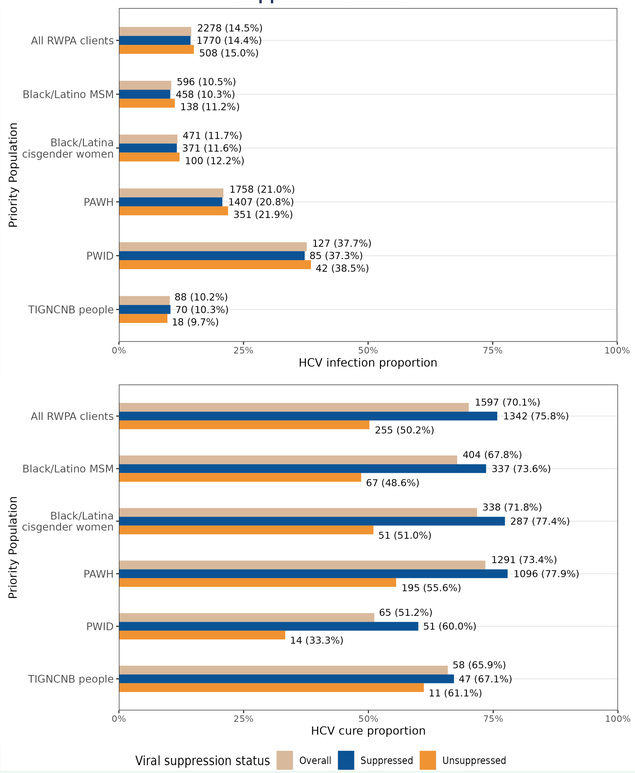
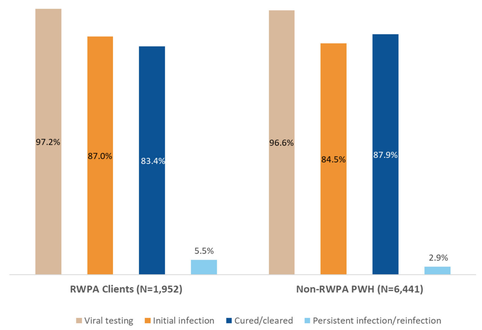


Figure 3. HCV care cascade for PWH accessing RWPA services vs. PWH not accessing RWPA services in January 2019 – December 2022 in NYC



Viral testing: Any RNA test between 07/2014 and 12/2022; **Initial infection**: any report of a positive RNA test; **Persistent infection/reinfection:** positive RNA test after being cured of HCV.

NYC RWPA clients had lower rates of HCV cure and higher rates of persistent infection/reinfection compared to other PWH living in NYC.

Key Takeaways & Equity Considerations

- **The federal Ryan White HIV/AIDS Program works to reduce HIV-related health disparities by covering services to mitigate the effects of poverty, housing instability, food insecurity, mental health challenges, substance use challenges, stigma, and other challenges experienced by low-income PWH.**
- **In NYC, 87% of RWPA clients and 83% of people with reported HCV and HIV coinfection were Black or Latinx, reflecting the role of systemic racism in producing and perpetuating socioeconomic and health inequities.**
- **From January 2019 through December 2022, NYC RWPA clients had worse HCV outcomes at every step of the HCV care cascade, except testing, compared to other PWH living in NYC. HIV unsuppressed RWPA clients had a higher HCV infection proportion and a lower HCV cure proportion than RWPA clients who were suppressed.**
- **Compared to other NYC RWPA clients, PWID had higher odds of HCV infection, but lower odds of HCV cure, highlighting gaps in HIV/HCV care in this priority population.**
- **Integrating HCV services into RWPA programs and coordinating with HIV care could promote equity in both HCV and HIV outcomes for NYC RWPA clients.**

Limitations

- **Receipt of HCV treatment is not collected in the NYC HCV registry. HCV cure was defined using HCV lab results, which do not differentiate between HCV cure due to treatment and spontaneous clearance.**
- **HCV negative labs were not routinely collected in the NYC HCV registry until 2014. People diagnosed before 2014 might have negative labs absent from the NYC HCV Registry, making them appear to need linkage to HCV care despite potential cure or spontaneous clearance having already occurred.**
- **The HIV and HCV registry do not capture sufficient demographic information to identify the priority populations described in this study. Therefore, we cannot directly compare trends among these groups in the RWPA program to the same groups outside of the RWPA program.**

Future Directions

- **Identifying strategies to efficiently integrate HCV services within RWPA in both HCV and HIV outcomes.**
- **Further research on upstream factors such as housing stability, mental health, and substance use is needed to understand the associations between these factors and the risk of HCV infection and access to HCV treatment among priority populations.**

References

- **HIV Care and Treatment Program. Annual Ryan White Part A Enrollment Report, March 2022 - February 2023. New York City Department of Health and Mental Hygiene: New York, NY. October 2023.**
- **New York City Department of Health and Mental Hygiene. Hepatitis A, B and C in New York City: 2022 Annual Report. Long Island City, NY. 2023**

Acknowledgements

We would like to thank the RWPA providers for their program implementation and reporting. We acknowledge Laura Graf, former surveillance analyst in the Viral Hepatitis program, for her input and involvement in the development of this analysis. We also wish to extend gratitude to the Viral Hepatitis program for providing and sharing HCV registry data and to the HIV Epidemiology Program for providing and sharing HIV registry data.

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