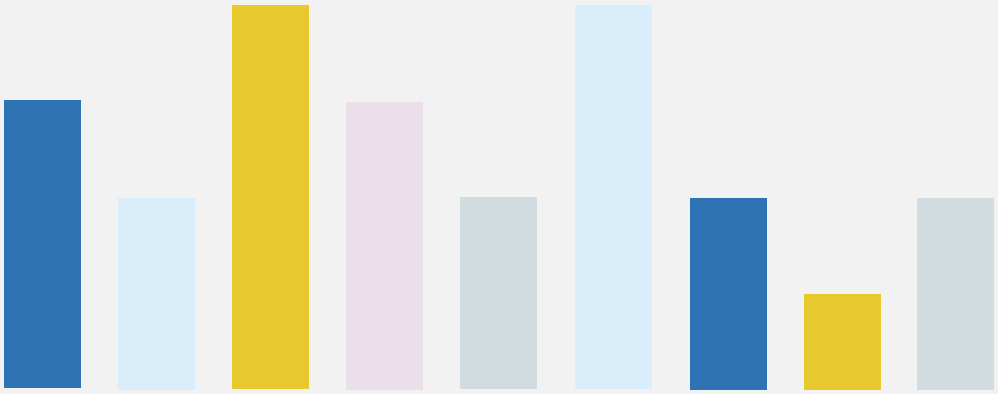


Working Toward a Hep Free NYC

Hepatitis A, B and C in New York City: 2022 Annual Report

New York City Department of Health and Mental Hygiene

About This Report: This report was developed by the New York City Department of Health and Mental Hygiene and provides surveillance data and summaries of viral hepatitis program activities from January 1, 2022, through December 31, 2022. This report is required pursuant to Local Law 43 of 2015. For additional details about the use of denominators and definitions in this report, please see Appendix 1. For more information, email hep@health.nyc.gov.

Prepared By: The New York City Department of Health and Mental Hygiene's Viral Hepatitis Program (Sarah Ahmed, MPH, CHES; Holly Anger, MPH; Angelica Bocour, MPH; Alexis Brenes, BA; Marie P. Bresnahan, MPH; Samantha Carpen, MPH; Alma Chaves, MPH; Diana Diaz Muñoz, MPH; Shaili Gandhi, MPH; Laura Graf, MPH; Yanting [Kelly] Huang, MPH, MA; Christina Hwang, MPH; Nadine Kela-Murphy, MPH; Adeeba Khan, MPH, CHES; Umaima Khatun, MPH; Ned Latham; Kevin Madera, BA; David Mangar, MPH; Tristan McPherson, MD; Kavita Misra, PhD, MPH; Cynthia Ortigoza, MPH; Farma Pene, MPH; Megan Plancher, MPH; Jackilyn Rivera, BS; Versalle Shelton, MPH; Shamar Smalls, MPH; Liz Tang, LMSW; Leandra Ureña, MPH; Aprielle Willis, MPH; Rahel Yosief; MPH), Bureau of Alcohol and Drug Use Prevention, Care and Treatment (Alexandra Harocopos, PhD, MS; Jonathan McAteer, MPH; Ellenie Tuazon, MPH), Bureau of Communicable Diseases (Julia Latash, MPH; Disease Investigation Unit; Hepatitis A Investigation Team; Surveillance, Informatics, and Analysis Unit), Bureau of Hepatitis, HIV, and Sexually Transmitted Infections (Jelani B. Cheek, MPH), Bureau of Immunization (Pierre Amiel, RN, MPH; Julie Lazaroff, MPH; Li Li, MS), and Bureau of Vital Statistics; and New York City Health + Hospitals/Correctional Health Services.

Suggested Citation: 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.

Table of Contents

Introduction: Achieving a Hep Free NYC

As of 2019, more than 300,000 people are estimated to be living with hepatitis B or C in New York City (NYC). Without care and treatment, more than 75,000 people may progress to serious liver disease, liver cancer or premature death. The NYC Department of Health and Mental Hygiene (Health Department) works to improve the health of people affected by hepatitis B and C through:


Prevention, Screening and Vaccinations


Reporting and Surveillance


Outbreak Response


Linkage to Care


Health Care Capacity Building


Community Engagement and Public Education


Research and Publication

Health Inequities in Viral Hepatitis

Not all New Yorkers have equitable access to viral hepatitis prevention and medical care. The Health Department takes a health equity approach in monitoring and responding to the viral hepatitis epidemic in NYC. The table below lists some of the priority groups for hepatitis B and C prevention, testing, and treatment. These groups are prioritized due to structural barriers they face when accessing health care, including structural racism, stigma and discrimination. These groups have been historically excluded from resources and opportunities to live healthy lives. Though not exhaustive, this table provides context for current data trends in hepatitis B and C in NYC.

Hepatitis B

Priority groups	Barriers to prevention	Barriers to testing and treatment
People born outside the United States (U.S.)	Many New Yorkers born outside the U.S. with hepatitis B received limited or no hepatitis B preventive care in their countries of birth.	Many New Yorkers born outside the U.S. have limited or no health insurance.
Infants of people living with hepatitis B	In NYC, complete hepatitis B vaccination and testing of newborns is not universal across all health care facilities.	
People of color	Structural racism and cultural and linguistic barriers impact the availability and quality of viral hepatitis health care services for people of color.	

Hepatitis C

Priority groups*	Barriers to prevention	Barriers to testing and treatment
People who use drugs	Criminalization of drug use and stigma of harm reduction are barriers to prevention.	Institutional discrimination (including in health care settings) against people who use drugs deters health care access.

Priority groups*	Barriers to prevention	Barriers to testing and treatment
People experiencing homelessness	Lack of affordable housing in NYC drives homelessness, and involuntary displacement or relocation of people experiencing homelessness decreases access to prevention and care.	Limited or no health insurance and institutional discrimination are barriers to health care access.
People with criminal justice involvement	People with criminal justice involvement have limited access to health care during incarceration and can have difficulty accessing health care and health insurance after incarceration.	
Men who have sex with men (MSM)	Institutional discrimination (including in health care settings) against MSM deters health care access.	
People of color	Structural racism and cultural and linguistic barriers impact the availability and quality of viral hepatitis health care services for people of color.	

*Hepatitis C priority groups are also priority groups for hepatitis A and B prevention.

NYC Viral Hepatitis Elimination Plan

The Health Department recognizes the need for structural changes to effectively eliminate viral hepatitis in NYC. From 2020 to 2021, the Health Department worked with community stakeholders to develop a set of coordinated strategies to reduce the number of hepatitis C infections, improve the health of people living with hepatitis B and C, and reduce health inequities related to viral hepatitis infection.

In 2021, the Health Department released the NYC Viral Hepatitis Elimination Plan. This plan proposes three goals:

1. Reduce new hepatitis C infections among people in NYC by 90% by 2030.
2. Reduce premature deaths among people with chronic hepatitis B and chronic hepatitis C in NYC by 65% by 2030; Improve the health of people living with hepatitis B and C in NYC.
3. Reduce health inequities related to viral hepatitis infection among people in NYC.

To achieve these goals, the Health Department developed systems to track progress and met with subject matter experts and community stakeholders to implement the strategies prioritized for 2023. The Health Department established regular meetings with colleagues at the New York State (NYS) Health Department AIDS Institute's Bureau of Hepatitis Health Care and Epidemiology to collaborate on policy-related strategies, many of which overlap with the NYS Hepatitis C Elimination Plan.

›› Read the NYC Viral Hepatitis Elimination Plan at **nyc.gov/assets/doh/downloads/pdf/cd/viral-hepatitis-elimination-plan.pdf**.

During the NYC Viral Hepatitis Elimination Plan implementation period (2022 to 2030), the Health Department will assess and annually report NYC's progress implementing the strategies.

NYC Viral Hepatitis Elimination Plan: 2022 Update

Since the release of the NYC Viral Hepatitis Elimination Plan on December 27, 2021, the Health Department and community partners have made progress on several priority strategies.

Hepatitis B Elimination Strategies

Strategy	Status update
To increase accessibility of hepatitis B awareness, education and prevention:	
1.4 Expand no- or low-cost, adult hepatitis B vaccination for people who are uninsured or underinsured. Focus vaccination efforts on adults with comorbidities such as HIV and hepatitis C that can make it more difficult to clear acute hepatitis B infection. Offer testing co-located with vaccination across a wide variety of health care facilities.	Hep Free NYC members joined the Hep B Foundation, Hep B United and other stakeholders to advocate for expansion of adult hepatitis B vaccination programs and disseminated updated Centers for Disease Control (CDC) recommendations for universal hepatitis B vaccination.
To increase acceptability of hepatitis B testing and linkage to care:	
2.2 Join national stakeholder groups advocating for a universal, one-time adult hepatitis B screening recommendation to be covered by insurers without cost sharing.	CDC completed peer review of one-time adult hepatitis B screening recommendation and released new guidance in 2023.
2.8 Offer hepatitis B testing at community venues, especially those located in or serving communities with high hepatitis B prevalence or vulnerability, and alongside other types of testing to normalize hepatitis B screening as a part of routine health care.	The Health Department partnered with the Empire Liver Foundation to deliver clinical training on hepatitis B testing (for more details, see Page 43) and will collaborate with community partners to increase and normalize screenings at community venues.
To increase accessibility of hepatitis B care and treatment:	
3.4 Advocate for Medicaid, Medicaid Managed Care Plans and private insurance plans to require insurers to fully cover hepatitis B screening, treatment, lab work, routine ultrasound/liver cancer screening, and other related costs, without cost sharing.	The Health Department will continue to meet with the New York State Department of Health (NYSDOH) to identify mechanisms to expand coverage for the full range of hepatitis B care.
3.5 Advocate to expand the NYSDOH AIDS Drug Assistance Program (ADAP) to include all hepatitis B treatment options for people with HIV and coinfected with hepatitis and to raise the income level for eligibility and simplify the application process.	The Health Department will increase awareness of existing NYSDOH ADAP coverage of screening, serology and two hepatitis B treatment options for people with HIV through trainings offered in Check Hep B program and NYC DOHMH Training and Technical Assistance Program (TTAP).
To increase availability of hepatitis B surveillance data:	
4.2 Amend the NYC Health Code to require laboratories to report the tests commonly used to monitor hepatitis B (for example, negative HBeAg).	The Health Department included these proposed amendments to the NYC Health Code in the agency's Regulatory Agenda for Fiscal Year (FY) 23.

Hepatitis C Elimination Strategies

Strategy	Status update
To increase acceptability of hepatitis C awareness, education and prevention:	
5.7 Develop additional trainings and materials for clinical providers that communicate the importance of delivering trauma-informed, stigma-free and harm reduction-oriented hepatitis C care. Ensure that clinical provider trainings include education about reinfection and cirrhosis follow-up care and address the need for urgency in initiation of hepatitis C care.	The Health Department partnered with Empire Liver Foundation to deliver clinical education on harm reduction, hepatitis C reinfection, cirrhosis and liver cancer follow-up care, and the importance of initiating hepatitis C treatment for all people diagnosed with hepatitis C including people who use drugs and people with HIV.
To increase accessibility of hepatitis C testing and linkage to care:	
6.5 Support increased funding for patient navigation programs (such as Check Hep C) for people living with hepatitis C.	The Hep Free NYC Advocacy Committee developed materials and trainings to support the Viral Hepatitis Initiative and to advocate for increased funding for navigation programs.
To increase accessibility of hepatitis C treatment:	
7.7 Advocate for Medicaid, Medicaid Managed Care Plans and private insurance plans to make hepatitis C treatment and ongoing monitoring via telemedicine available and reimbursable beyond the COVID-19 public health emergency.	The NYSDOH announced that New York State Medicaid will continue to provide comprehensive coverage of telehealth through Dec. 31, 2024.
To increase acceptability of hepatitis C treatment:	
7.13 Expand efforts to aid facilities serving populations with a high prevalence of hepatitis C (such as federally qualified health centers [FQHCs], SSPs, opioid treatment programs [OTPs], alternatives to incarceration programs, and inpatient drug treatment programs) to have the capacity to treat on-site. Specifically, support OTPs in addressing the staffing and administrative barriers to providing and billing for hepatitis C treatment. This may include supporting the development of 340B applications and facilitating collaborations with community health centers.	The Health Department supported two organizations' applications for 340B certification to increase access to affordable hepatitis C medications. However, on April 1, 2023, the New York State Medicaid pharmacy benefit was moved under the Medicaid Fee-For-Service pharmacy program, now called NYRx. This transition removed the option to purchase prescription drugs at a discount and then invest those savings into reduced-cost or free medications for patients. Advocacy related to this issue is ongoing among community partners.
To increase availability of hepatitis C surveillance data:	
8.1 Increase the number of facilities that report hepatitis C screening rates to the NYC Health Department.	The Health Department is onboarding grant-funded organizations specifically serving people with HIV and people who use drugs, to routinely report hepatitis C screening rates.
8.2 Amend the NYC Health Code to require laboratories to report negative hepatitis C antibody results to enable the NYC Health Department to develop and share citywide and facility-specific screening rates and identify acute infections.	The Health Department included these proposed amendments to the NYC Health Code in the agency's Regulatory Agenda for FY 23.

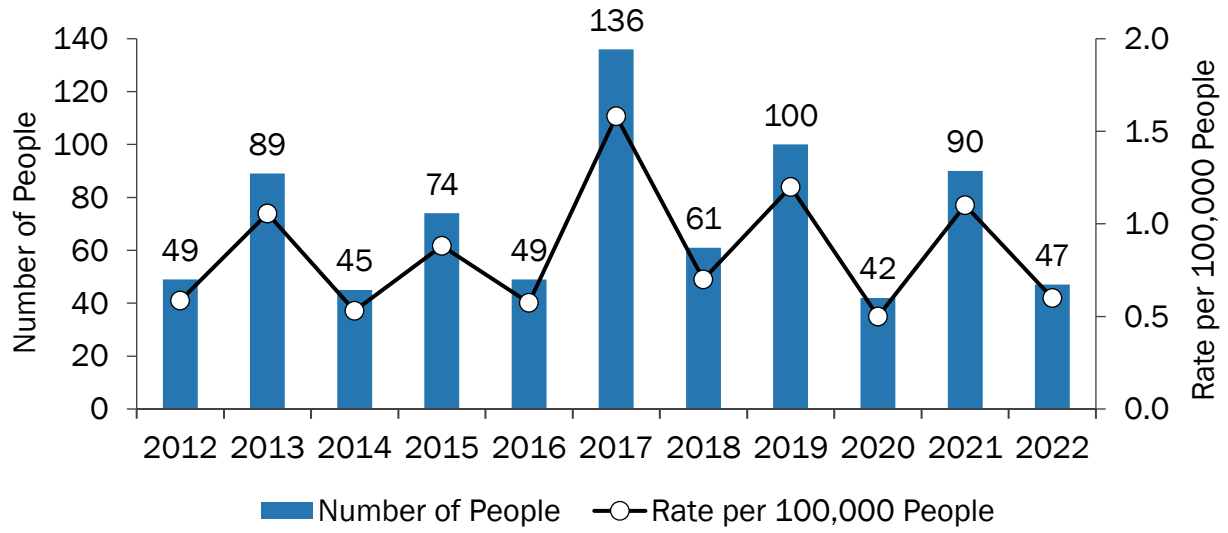
Surveillance

Each year, the Health Department monitors the number of people with newly reported hepatitis A, B and C infections in NYC. The Health Department uses these data to describe trends over time and across groups, prevent new infections, and promote linkage to care and treatment. For more information, see the surveillance technical data notes in Appendix 1.

Hepatitis A[1]

47	Number of people reported with hepatitis A in NYC in 2022	-48%	Percentage change from 2021 to 2022	0.6	Rate per 100,000 people in NYC in 2022

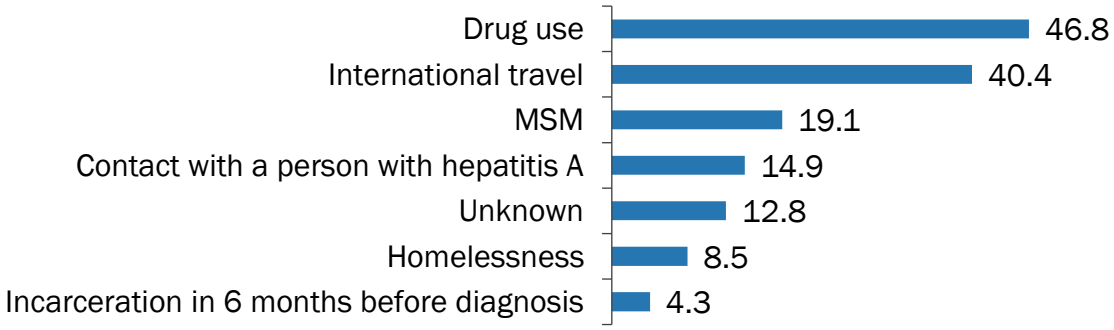
Figure 1. Number and rate of people reported with hepatitis A[2] in NYC by year of diagnosis, 2012–2022



With the availability of hepatitis A vaccine and universal childhood vaccine recommendations, the number of reported hepatitis A infections in NYC has generally been low. Increases in infections since 2012 were related to food handlers (2013), clusters associated with restaurants and social networks (2015), outbreaks among MSM (2017-2018,[3] 2019), and people experiencing homelessness or people who use drugs (2021).

[1] All data reported to the NYC Health Department as of April 5, 2023.
[2] Case definition for acute hepatitis A: Discrete onset of symptoms consistent with hepatitis A infection, positive anti-hepatitis A virus IgM or hepatitis A RNA nucleic acid amplification test, either jaundice or elevated total bilirubin levels or elevated serum alanine aminotransferase levels, and the absence of a more likely diagnosis.
[3] For more information, visit **cdc.gov/mmwr/volumes/66/wr/mm6637a7.htm**.

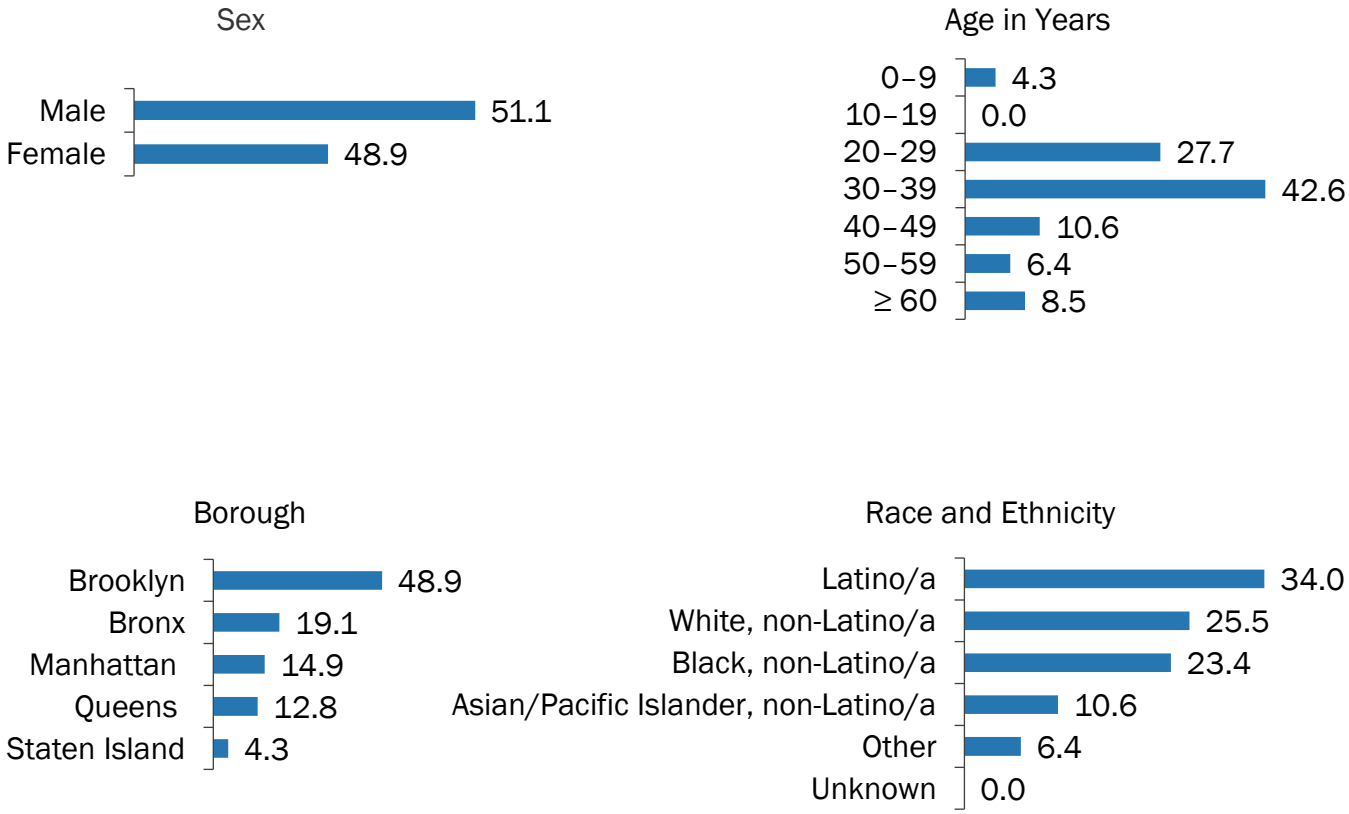
Figure 2. Percentage of people reported with hepatitis A in NYC by reported risk factors,[4] 2022



Health Department Requirement

- Health care providers in NYC are required to report hepatitis A cases within 24 hours or in some cases immediately. For more information on reporting hepatitis A cases, see Appendix 2.

Figure 3. Percentage of people reported with hepatitis A in NYC by sex, age, borough, and race and ethnicity, 2022



›› For full data, see Appendix 3.

[4] Not mutually exclusive

Health Department Recommendations

Health care providers should offer two doses of single-antigen hepatitis A vaccine at least six months apart to children beginning at age 1, as well as to the following groups:

- MSM
- Travelers to countries with high rates of hepatitis A, including countries in the Caribbean, Central and South America, Africa, Eastern Europe, and parts of Asia
- People with chronic liver disease, including hepatitis B and C
- People who use drugs (non-injection, injection and intranasal)
- People experiencing homelessness, including people who live on the street, live in a shelter, access homeless services or otherwise do not have a permanent address
- People with HIV

For more information, see CDC recommendations at **cdc.gov/hepatitis/hav/havfaq.htm#vaccine**. People with limited or no health insurance can receive low- or no-cost hepatitis A vaccines at the Health Department's immunization clinic. For more information, visit **nyc.gov/health/clinics**.

Hepatitis A transmission has continued during the COVID-19 pandemic. Current CDC guidance allows for administration of COVID-19 vaccines and other vaccines, such as the hepatitis A vaccine, without regard to timing, including vaccine coadministration (at the same time).[5]

[5] For more information, visit **cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html**.

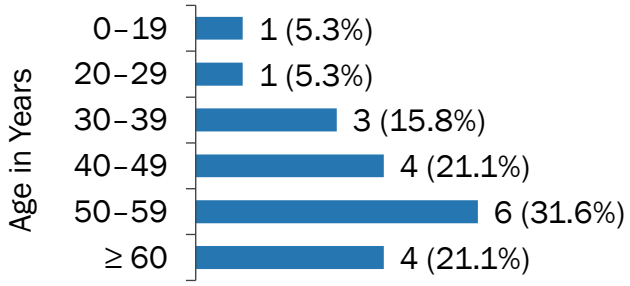
Acute Hepatitis B

19	Number of people reported with acute hepatitis B in NYC in 2022	0.2	Rate of acute hepatitis B per 100,000 people in NYC in 2022

Monitoring acute (initial infection or the six-month period following exposure to the virus) hepatitis B infections helps to determine where new infections occur, who is infected and how to implement effective prevention activities.[6]

›› For information on mandatory reporting of acute hepatitis B cases, see Appendix 2.

Figure 4. Number and percentage of people reported with acute hepatitis B in NYC by age, 2022



Sexual transmission was the most common reported risk factor for acute hepatitis B infection among people with a known risk.

›› For full data, see Appendix 4.

Health Department Recommendations

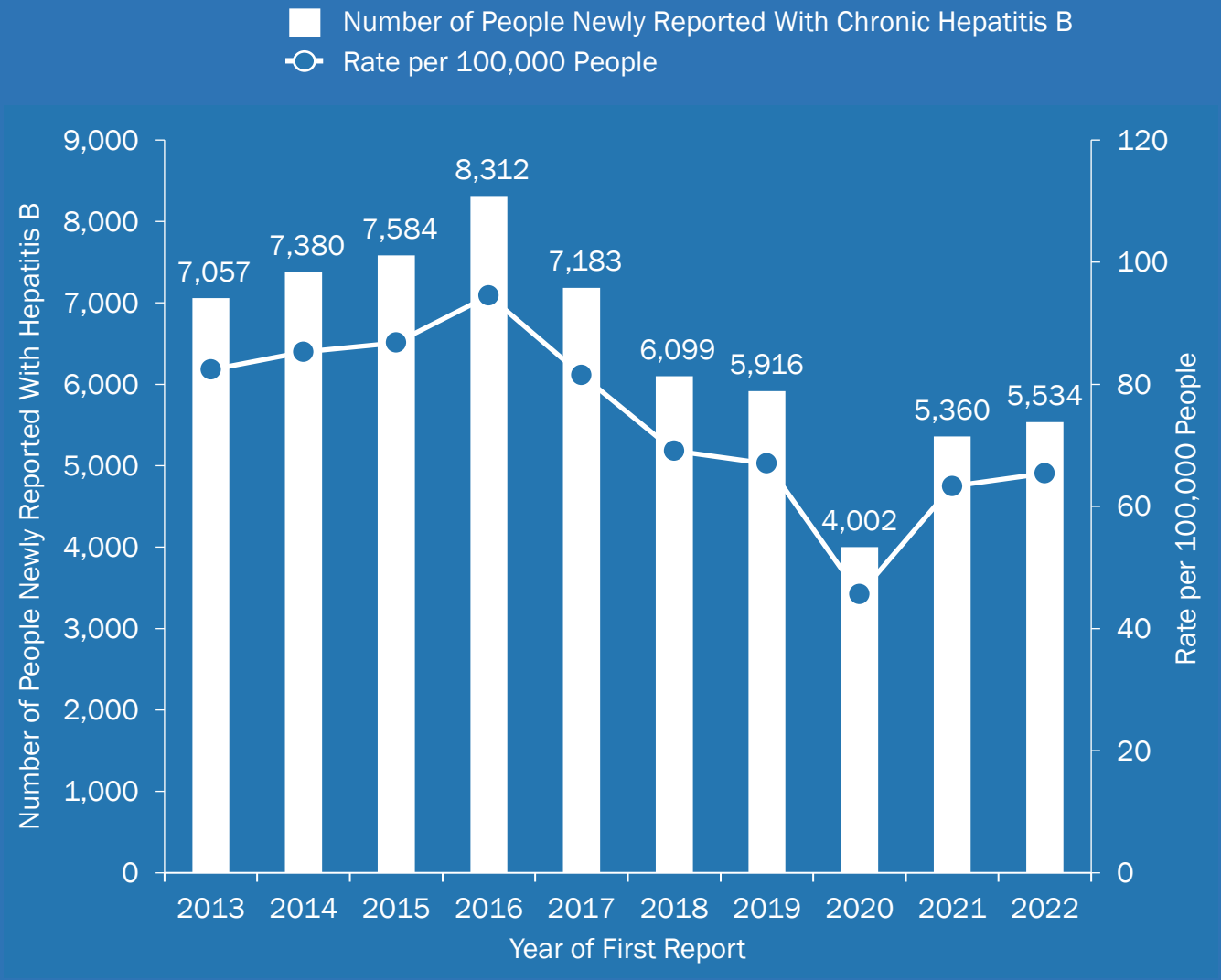
- Health care providers should offer postexposure prophylaxis (PEP) to people exposed to hepatitis B (for example, through sex, sharing drug-use equipment or blood exposure) to prevent infection. For more guidance, visit **cdc.gov/hepatitis/hbv/pep.htm**.
- Health care providers should offer the hepatitis B vaccine to all adults ages 19 to 59 years and adults 60 years or older with risk factors for hepatitis B or without identified risk factors but who are seeking protection, as recommended by the Advisory Committee on Immunization Practices. For more guidance, visit **cdc.gov/hepatitis/hbv/vaccadults.htm**.

[6] Potential acute hepatitis B cases are investigated to verify that they meet the CDC's definition of confirmed acute hepatitis B. Investigations of potential acute hepatitis B cases diagnosed in 2022 are ongoing. Therefore, the number of people reported with acute hepatitis B in NYC in 2022 is likely an underestimate.

Chronic Hepatitis B

New reports of chronic hepatitis B in NYC have declined since 2016. In 2020, the lowest number of cases were reported since reliable hepatitis B case reporting began in NYC, in 1999, because fewer people accessed health care services during the COVID-19 pandemic and fewer people were screened. Reports of newly diagnosed chronic hepatitis B increased in 2021 and 2022, approaching the level seen in 2019.

Figure 5. Number and rate of people newly reported with chronic hepatitis B in NYC by year of first report, 2013–2022



›› In NYC, there are many programs that provide supportive services and no- or low-cost hepatitis B care and treatment. For more information, visit **nyc.gov/health/hepb**.

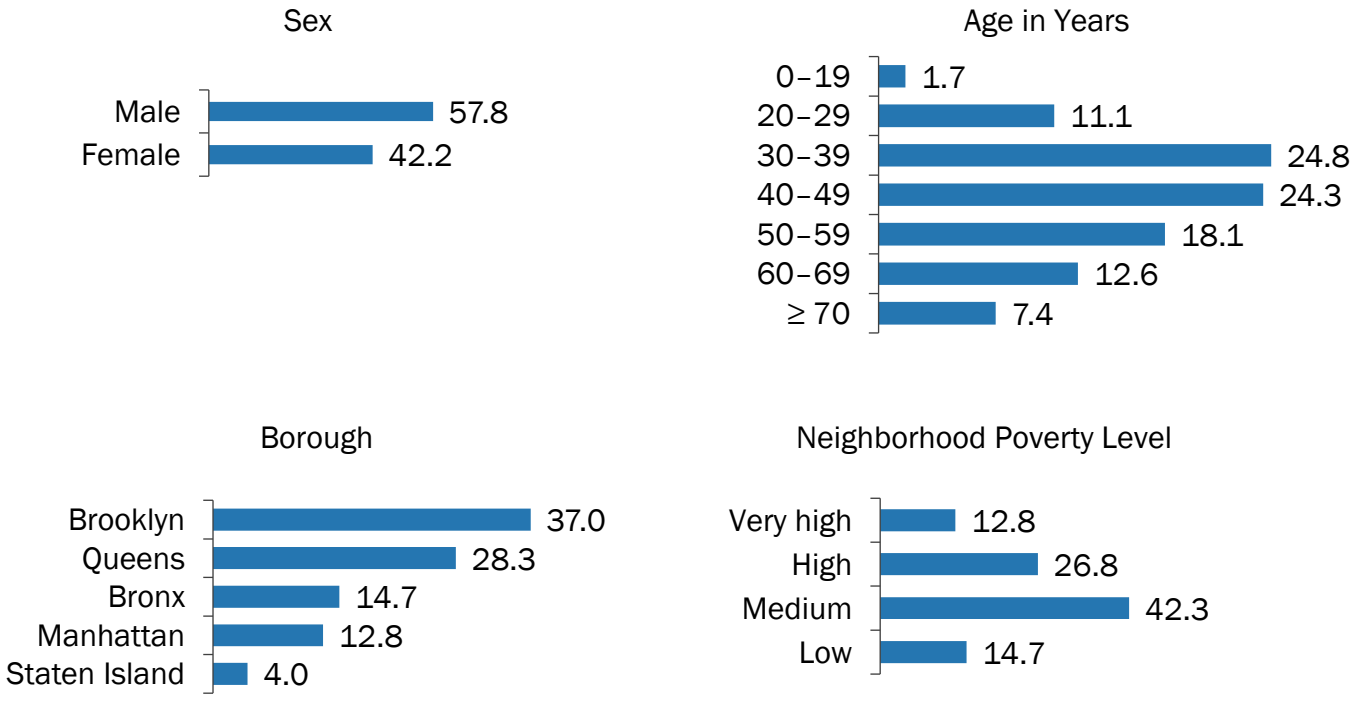
Chronic Hepatitis B

As of 2019, the Health Department estimates that 243,000 people (2.9% of NYC residents) are living with chronic hepatitis B in NYC.[7]

5,534	Number of people newly reported with chronic hepatitis B in NYC in 2022	65.4	Rate of newly reported chronic hepatitis B per 100,000 people in NYC in 2022

Characteristics of People Newly Reported With Chronic Hepatitis B

Figure 6. Percentage of people newly reported with chronic hepatitis B in NYC by sex, age, borough and neighborhood poverty level, 2022[8]



›› For full data, see Appendix 5.

[7] Estimate as of 2019. Learn about the methods the Health Department uses to calculate the hepatitis B prevalence estimate at **journals.sagepub.com/doi/full/10.1177/0033354919882962**.
[8] Unknown responses are not presented in the charts.

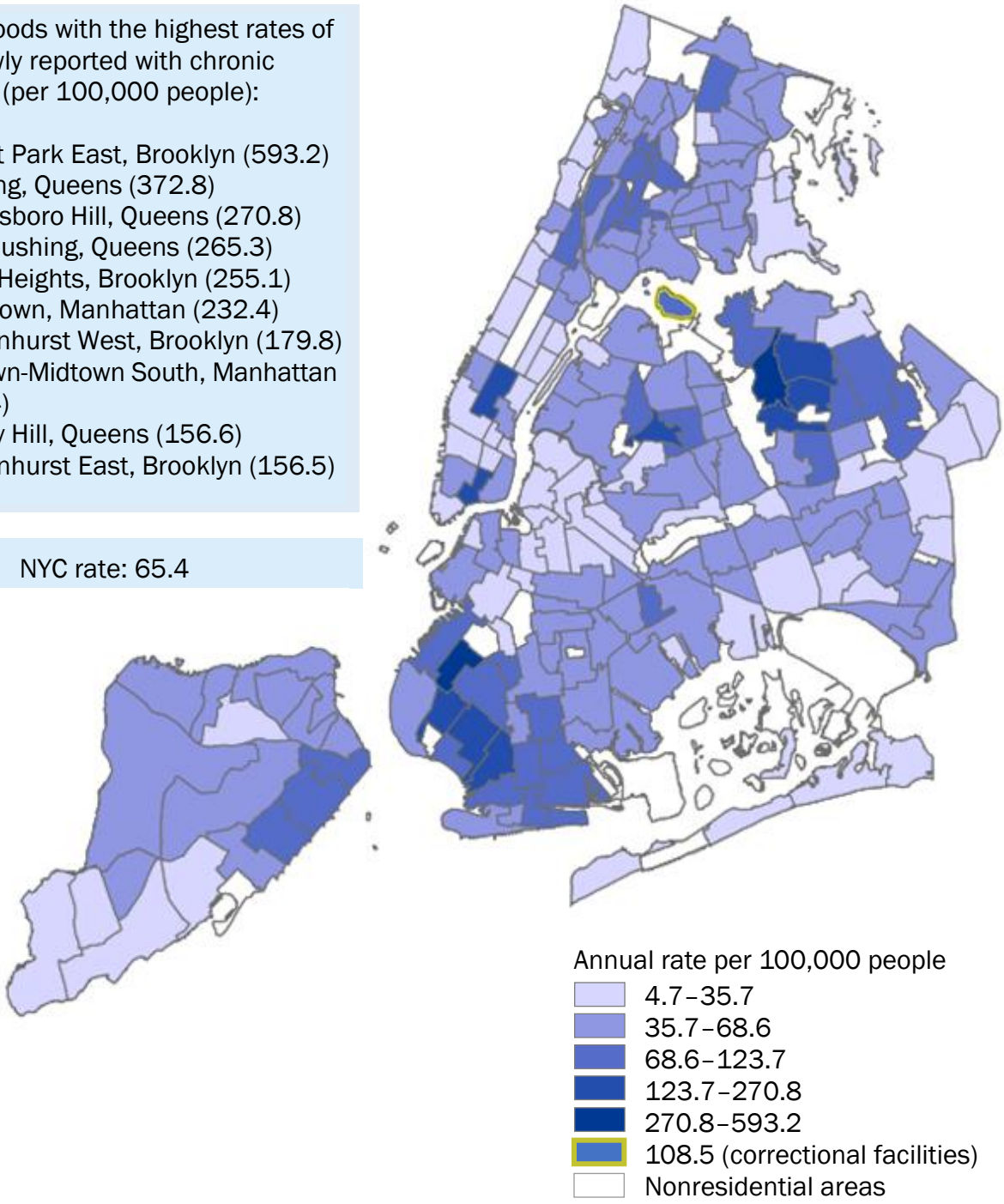
Chronic Hepatitis B: Geographic Distribution

Figure 7. Rate of people newly reported with chronic hepatitis B in NYC by neighborhood tabulation area (NTA), 2022[9]

Neighborhoods with the highest rates of people newly reported with chronic hepatitis B (per 100,000 people):

1. Sunset Park East, Brooklyn (593.2)
2. Flushing, Queens (372.8)
3. Queensboro Hill, Queens (270.8)
4. East Flushing, Queens (265.3)
5. Dyker Heights, Brooklyn (255.1)
6. Chinatown, Manhattan (232.4)
7. Bensonhurst West, Brooklyn (179.8)
8. Midtown-Midtown South, Manhattan (179.4)
9. Murray Hill, Queens (156.6)
10. Bensonhurst East, Brooklyn (156.5)

NYC rate: 65.4



›› For full data and map of NTAs, see Appendices 6 and 7.

[9] NTAs could not be determined for 270 people (4.9%) based on their address at first report.

Perinatal Hepatitis B

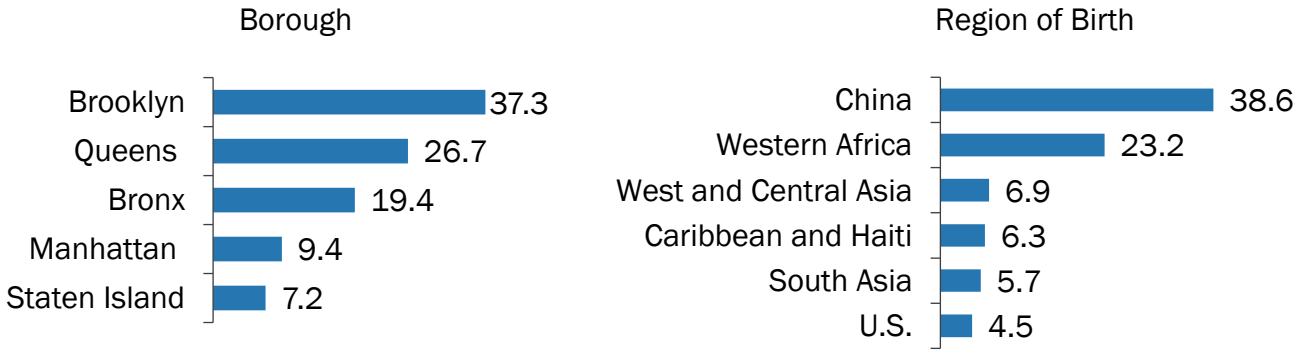
Pregnant People Living With Chronic Hepatitis B Who Delivered a Live Infant in 2022

Hepatitis B can be transmitted from a pregnant person with hepatitis B to an infant during and after delivery. The Health Department tracks and provides case management services to pregnant people living with hepatitis B to prevent perinatal transmission.

651 Number of pregnant people living with hepatitis B in NYC in 2022

95.5% Percentage of pregnant people living with hepatitis B in NYC in 2022 who were born outside the U.S.

Figure 8. Percentage of people living with hepatitis B who delivered a live infant in NYC by borough and region of birth, 2022



›› For full data, see Appendix 8.

Hepatitis B Prophylaxis, Vaccination and Testing at Birth for Infants Born in 2021

In 2021, 663 infants were born to a pregnant person with hepatitis B infection (see Appendix 9).

Figure 9. Percentage of infants born to pregnant people living with hepatitis B who received hepatitis B PEP, vaccination and testing, 2021

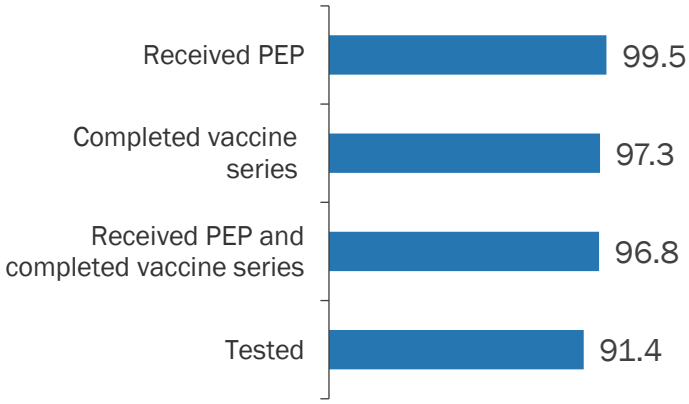
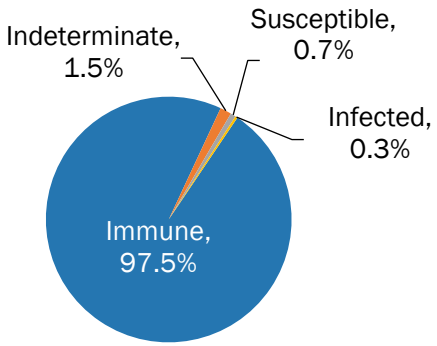


Figure 10. Test results of infants born to pregnant people living with hepatitis B in NYC, 2021



Health Department Recommendation

- Health care providers should administer PEP (including both hepatitis B immune globulin and hepatitis B vaccine) within 12 hours after birth to all infants born to pregnant people living with hepatitis B. For more information, visit **cdc.gov/hepatitis/hbv/perinatalxmtn.htm**.

›› For full data, see Appendix 9.

Hepatitis B Vaccination at Birth

To protect against hepatitis B infection, the CDC recommends universal hepatitis B vaccination of all infants at birth (known as "the birth dose").[10] In 2021, there were 96,976 infants born in NYC.

69.3% Percentage of infants born who received the birth dose within one day after birth in 2021

75.0% Percentage of infants born who received the birth dose within three days after birth in 2021

Health Department Recommendations

Health care providers should:

- Administer the hepatitis B vaccine to all infants within 24 hours after birth, followed by two or three additional doses for completion of the hepatitis B vaccine series
- Ensure that all children complete the full hepatitis B vaccine series
- Test infants born to pregnant people living with hepatitis B for hepatitis B immunity and infection between 9 and 12 months of age
- To prevent transmission to infants and children, screen and immunize all household, needle-sharing, and sexual contacts of people living with chronic hepatitis B for hepatitis B

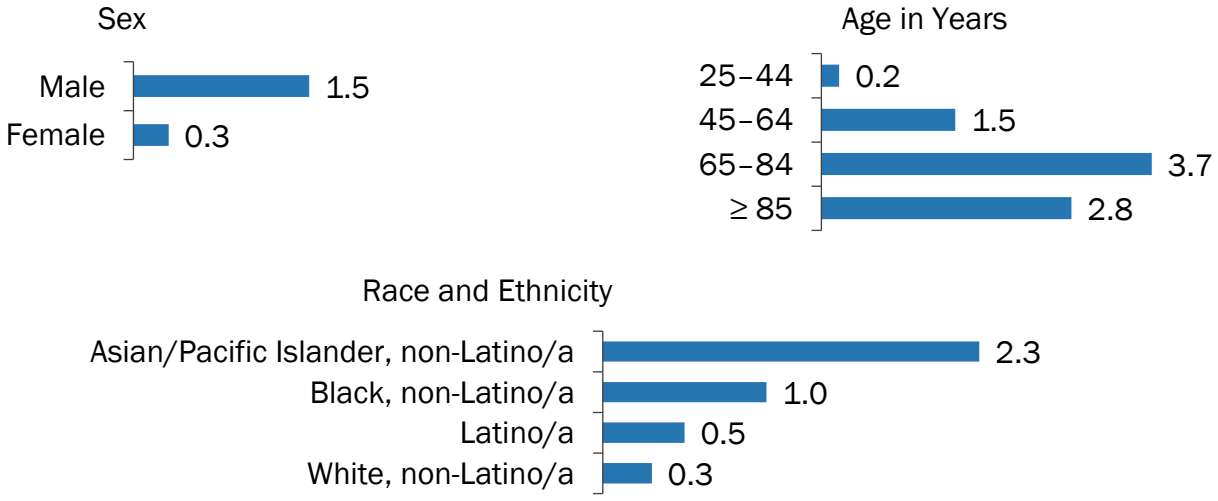
›› For more information, go to **nyc.gov/health** and search for **perinatal hepatitis B**.

Hepatitis B: Deaths

86 Number of deaths where hepatitis B was listed as cause of death in 2021

0.8 Rate per 100,000 people in 2021

Figure 11. Age-adjusted or age-specific death rate per 100,000 people[11] among NYC residents where hepatitis B is listed as the cause of death in 2021, by sex, age, and race and ethnicity



›› For full data, see Appendix 10.

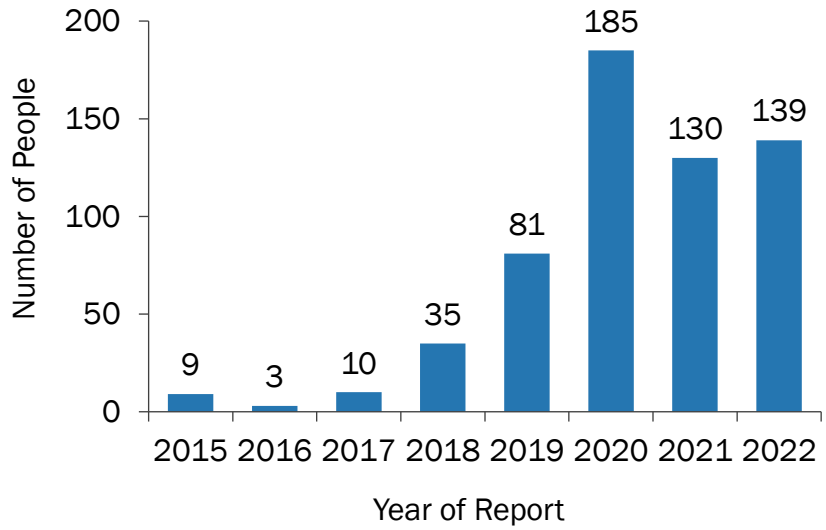
[10] The CDC universal hepatitis B birth dose recommendation is to administer hepatitis B vaccine within 24 hours after birth to all medically stable infants weighing ≥ 2,000 grams.

[11] The population used in the rate constructions are based on the 2020 Census population estimates, 2021 vintage. The 2020 Census counts are higher than the estimates, rendering potentially overestimated rates.

Acute Hepatitis C

Monitoring acute (initial infection or the six-month period following exposure to the virus) hepatitis C infections helps to determine where new infections occur, who is infected and how to implement effective prevention activities. The Health Department identifies acute infections from provider reports and enhanced surveillance. The Health Department conducts enhanced surveillance investigations for people ages 18 to 34 years newly reported with acute hepatitis C in NYC.

Figure 12. Number of people reported with acute hepatitis C in NYC, 2015–2022



In 2020, the Council of State and Territorial Epidemiologists (CSTE) implemented a new definition for acute hepatitis C. The addition of clinical criterion of peak elevated serum alanine aminotransferase (ALT) levels > 200 international units per liter (IU/L) in conjunction with a positive hepatitis C virus detection test drove the increase in acute hepatitis C cases in 2020. There were no provider-reported cases of acute hepatitis C infection made to the Health Department in 2022. All acute hepatitis C cases in 2022 were identified through mandatory laboratory reporting of ALTs.

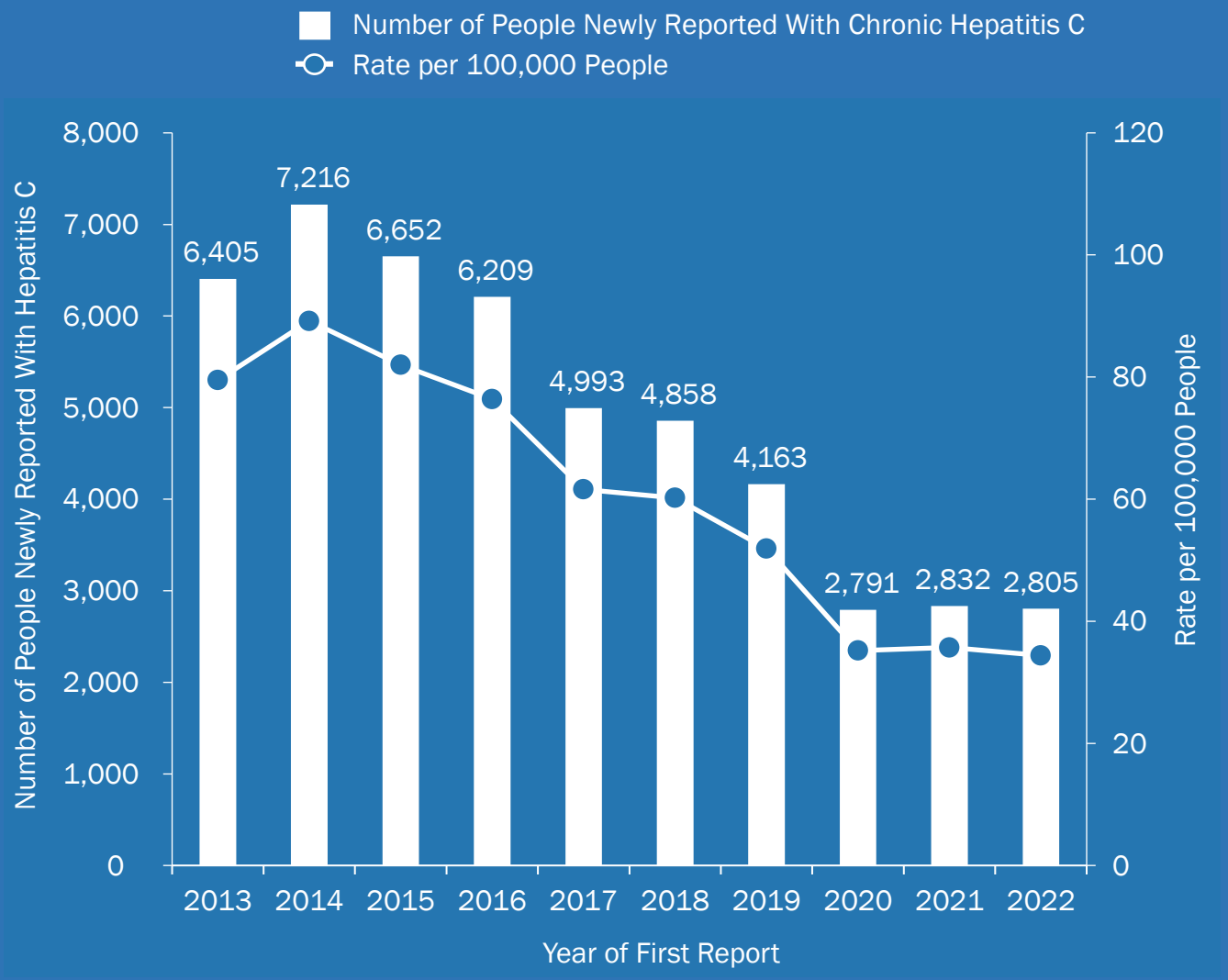
Health Department Requirement

- Health care providers in NYC are required to report all acute cases of hepatitis C within 24 hours. Reporting of acute hepatitis C cases helps to identify outbreaks and inform effective prevention programs. For more information on reporting acute hepatitis C cases, see Appendix 2.

Chronic Hepatitis C

Since 2014, newly reported cases of chronic hepatitis C have declined in NYC. The number of reported cases of chronic hepatitis C in 2022 was generally consistent with the numbers of reported cases in 2020 and 2021. Thousands of new cases of chronic hepatitis C continue to be reported each year.

Figure 13. Number and rate of people newly reported with chronic hepatitis C in NYC by year of first report, 2013–2022[12]



Data notes: In 2016 and 2018, CSTE implemented new case definitions for chronic hepatitis C. Since 2018, people first reported with hepatitis C between ages 2 and 36 months were classified using CSTE's perinatal hepatitis C case definition and were excluded from total case counts. Perinatal hepatitis C case counts can be found on Page 21.

[12] The total count of people with chronic hepatitis C is inclusive of people with confirmed acute hepatitis C. The number of cases of acute hepatitis C is a subset of the total number of confirmed and probable cases of chronic hepatitis C reported each year.

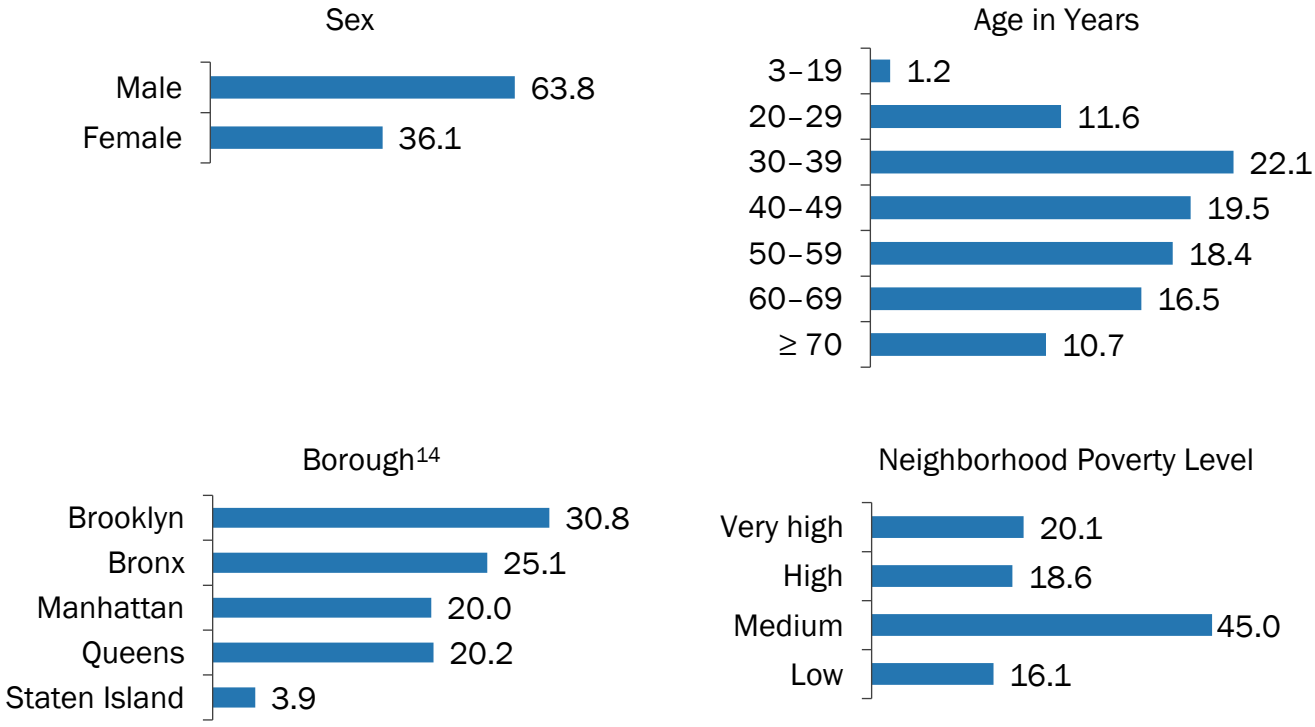
Chronic Hepatitis C

As of 2019, the Health Department estimates that 86,000 people (1.0% of NYC residents) are living with chronic hepatitis C.[13]

2,805	Number of people newly reported with chronic hepatitis C in NYC in 2022	34.4	Rate of newly reported chronic hepatitis C per 100,000 people in NYC in 2022

Characteristics of People Newly Reported With Chronic Hepatitis C

Figure 14. Percentage of people newly reported with chronic hepatitis C in NYC by sex, age, borough and neighborhood poverty level, 2022



›› These data exclude people with unknown information. For full data, see Appendix 11.

Health Department Recommendation

- Health care providers should screen all adults ages 18 to 79 years for hepatitis C according to 2020 U.S. Preventive Services Task Force guidelines. For more information, visit **uspreventiveservicestaskforce.org/uspstf/recommendation/hepatitis-c-screening**.

[13] Estimate as of 2019. For more information on how the hepatitis C prevalence estimate was calculated, visit **cambridge.org/core/journals/epidemiology-and-infection/article/estimating-the-prevalence-of-chronic-hepatitis-c-virus-infection-in-new-york-city-2015/4284F34C683E528319E0290AF0BAA3CF**.

[14] The Bronx includes people in Rikers Island jail facilities.

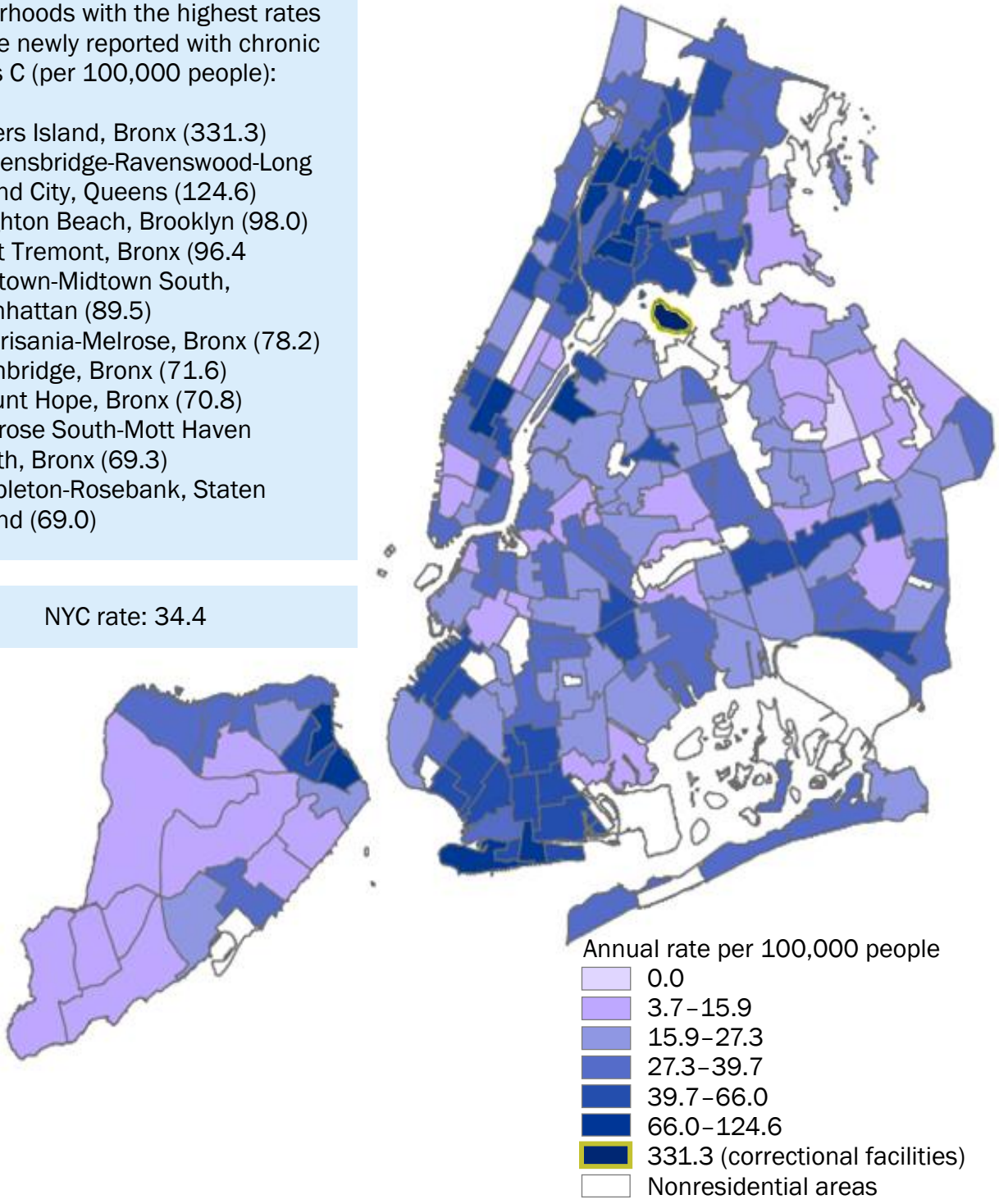
Chronic Hepatitis C: Geographic Distribution

Figure 15. Rate of people newly reported with chronic hepatitis C in NYC by NTA,[15] 2022

Neighborhoods with the highest rates of people newly reported with chronic hepatitis C (per 100,000 people):

1. Rikers Island, Bronx (331.3)
2. Queensbridge-Ravenswood-Long Island City, Queens (124.6)
3. Brighton Beach, Brooklyn (98.0)
4. East Tremont, Bronx (96.4
5. Midtown-Midtown South, Manhattan (89.5)
6. Morrisania-Melrose, Bronx (78.2)
7. Highbridge, Bronx (71.6)
8. Mount Hope, Bronx (70.8)
9. Melrose South-Mott Haven
10. North, Bronx (69.3)
11. Stapleton-Rosebank, Staten Island (69.0)

NYC rate: 34.4



›› For full data and map of NTAs, see Appendices 7 and 12.

[15] NTA could not be determined for 108 people (3.9%) based on their address at first report.

Perinatal Hepatitis C

The Health Department monitors newly reported hepatitis C in people who can become pregnant (defined as ages 15 to 44 years) as well as in children ages 0 to 36 months to identify perinatal hepatitis C transmission and prevention opportunities.

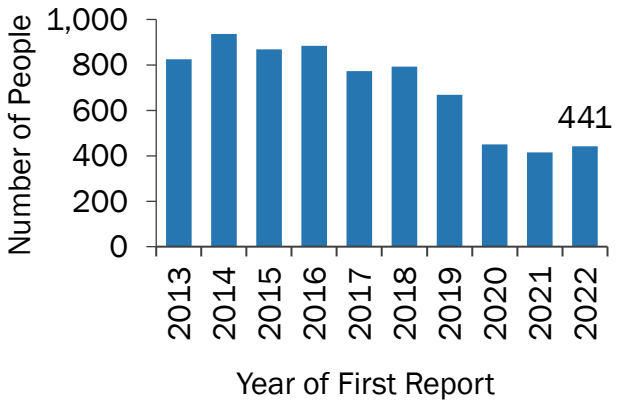
Hepatitis C: People Who Can Become Pregnant (Ages 15 to 44 Years)

In NYC, the number of people who can become pregnant and are newly reported with chronic hepatitis C has been declining since 2014.

441 Number of people who can become pregnant newly reported with chronic hepatitis C in NYC in 2022

24.5 Rate of people who can become pregnant newly reported with chronic hepatitis C per 100,000 people in NYC in 2022

Figure 16. Number of people who can become pregnant reported with chronic hepatitis C in NYC by year of first report, 2013–2022



Health Department Recommendation
Health care providers should screen all pregnant people for hepatitis C during each pregnancy according to 2020 CDC guidelines. For more information, visit **cdc.gov/mmwr/volumes/69/rr/rr6902a1.htm**.

Characteristics of Children Newly Reported With Hepatitis C

In 2018, the Health Department began classifying children ages 2 to 36 months newly reported with hepatitis C in NYC using the 2018 CSTE perinatal hepatitis C case definition.

6 Number of children ages 2 to 36 months newly reported with hepatitis C in NYC in 2022

47% Percentage of children tested because the birthing parent was known to have hepatitis C in NYC in 2022

›› For full data, see Appendix 13.

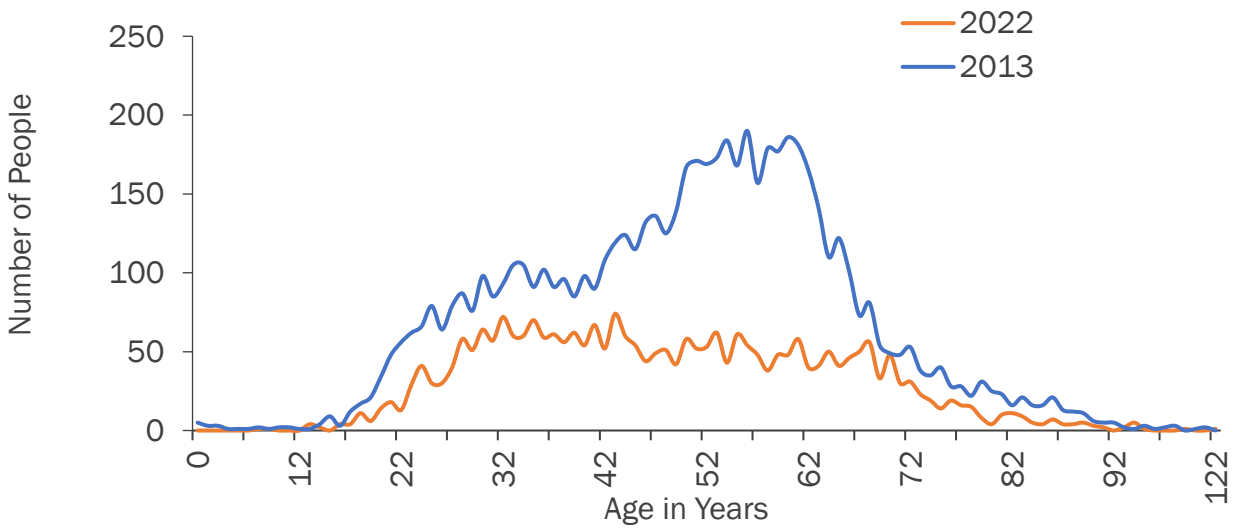
Health Department Recommendations

- Health care providers should test all children born to people living with hepatitis C for hepatitis C antibody at age 18 months or older. Children who test hepatitis C antibody positive at 18 months or older should be tested for hepatitis C RNA at age 3 to confirm chronic hepatitis C, according to the American Association for the Study of Liver Diseases and the Infectious Diseases Society of America. All people diagnosed with hepatitis C should be connected to care and treatment.
- For more guidance, visit **hcvguidelines.org/unique-populations/children**.

Chronic Hepatitis C: Age Distribution

In 2013, the age distribution of hepatitis C cases in NYC showed that cases were concentrated in baby boomers (people born between 1945 and 1965) with another peak starting to form for younger people. Ten years later, there was a distinct second peak showing a concentration of hepatitis C cases in younger people, who are likely to have been infected from recent drug use.

Figure 17. Age distribution of people reported with chronic hepatitis C in NYC, 2013 and 2022

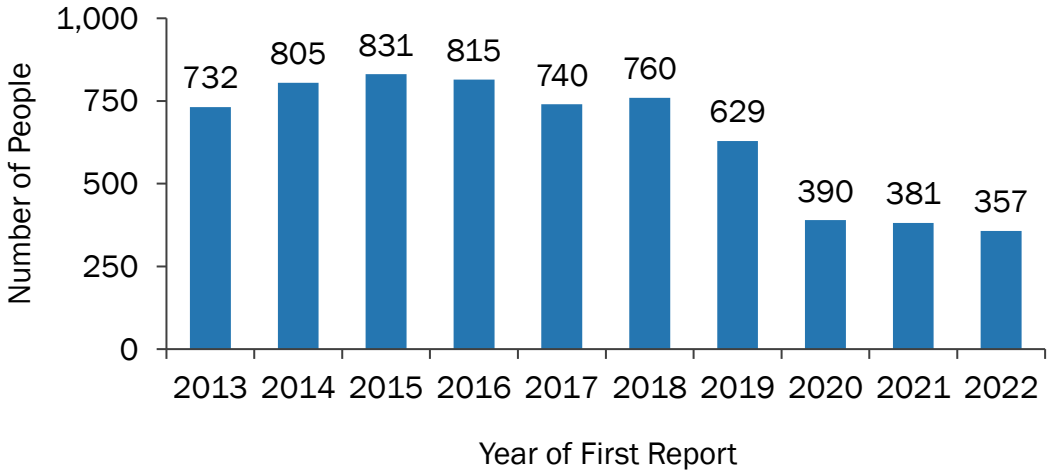


Hepatitis C: People Ages 3 to 29 Years

The Health Department monitors trends of hepatitis C in people ages 3 to 29 years since new cases among young people are more likely to be recent infections. In 2022, 90.8% of people ages 3 to 29 years newly reported with chronic hepatitis C in NYC were ages 20 to 29 years.

357	Number of people ages 3 to 29 years newly reported with chronic hepatitis C in NYC in 2022	12.8	Rate of newly reported chronic hepatitis C per 100,000 people ages 3 to 29 years in NYC in 2022

Figure 18. Number of people ages 3 to 29 years newly reported with chronic hepatitis C in NYC by year of first report, 2013–2022



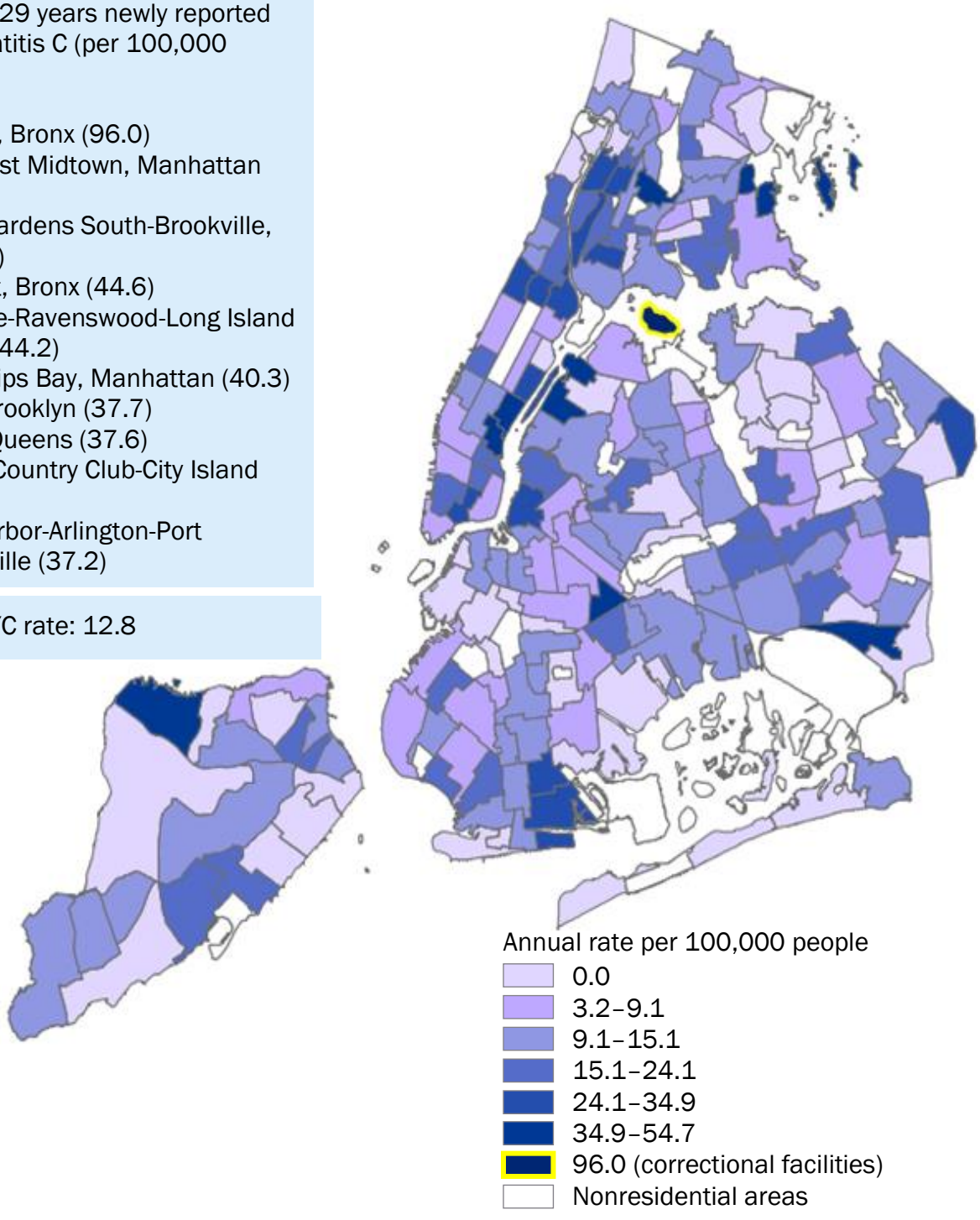
Geographic Distribution

Figure 19. Rate of people ages 3 to 29 years newly reported with chronic hepatitis C in NYC by NTA,[16] 2022

Neighborhoods with the highest rates of people ages 3 to 29 years newly reported with chronic hepatitis C (per 100,000 people):

1. Rikers Island, Bronx (96.0)
2. Turtle Bay-East Midtown, Manhattan (54.7)
3. Springfield Gardens South-Brookville, Queens (52.6)
4. East Tremont, Bronx (44.6)
5. Queensbridge-Ravenswood-Long Island City, Queens (44.2)
6. Murray Hill-Kips Bay, Manhattan (40.3)
7. Ocean Hill, Brooklyn (37.7)
8. Old Astoria, Queens (37.6)
9. Pelham Bay-Country Club-City Island (37.4)
10. Mariner's Harbor-Arlington-Port Ivory-Graniteville (37.2)

NYC rate: 12.8



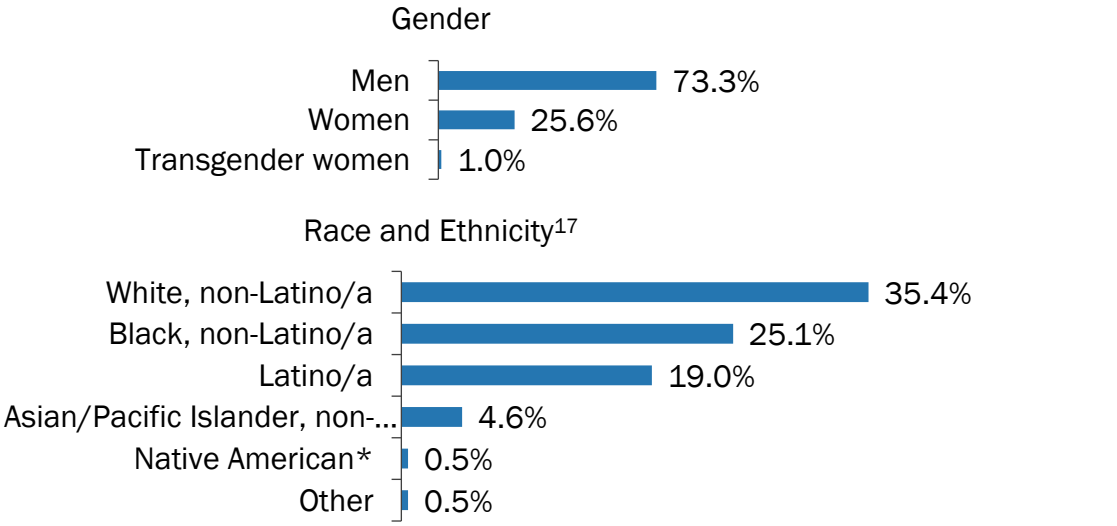
[16] NTAs could not be determined for 16 (4.5%) people based on their address at first report.

Enhanced Chronic Hepatitis C Surveillance of People Ages 18 to 34 Years

In 2022, the Health Department investigated 195 out of 313 (62.3%) newly reported cases of chronic hepatitis C in people ages 18 to 34 years. Interviews were conducted with the health care providers for all 195, and patients were interviewed for 74 (38.0%) investigations.

Patient Demographics

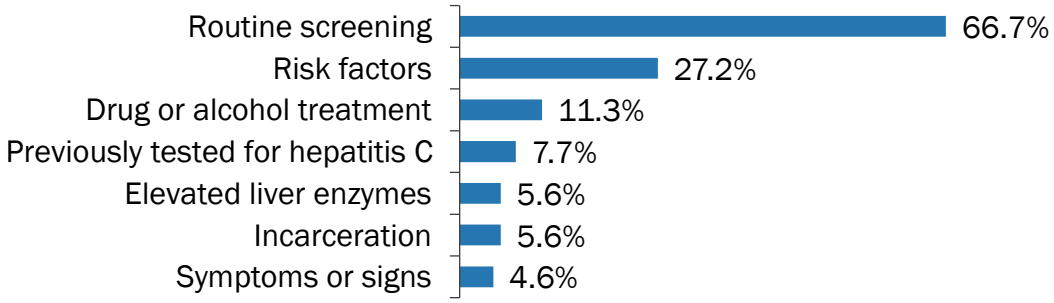
Figure 20. Characteristics of people ages 18 to 34 years newly reported with chronic hepatitis C in NYC in 2022 interviewed through enhanced surveillance (n=195)



*Or Alaska Native, non-Latino/a

Hepatitis C Screening

Figure 21. Reason for hepatitis C screening among people ages 18 to 34 years newly reported with chronic hepatitis C in NYC in 2022 interviewed through enhanced surveillance (n=195)[18]



Access to Hepatitis C Health Care

79% Percentage of 195 people ages 18 to 34 years with health insurance at the time of interview in NYC in 2022

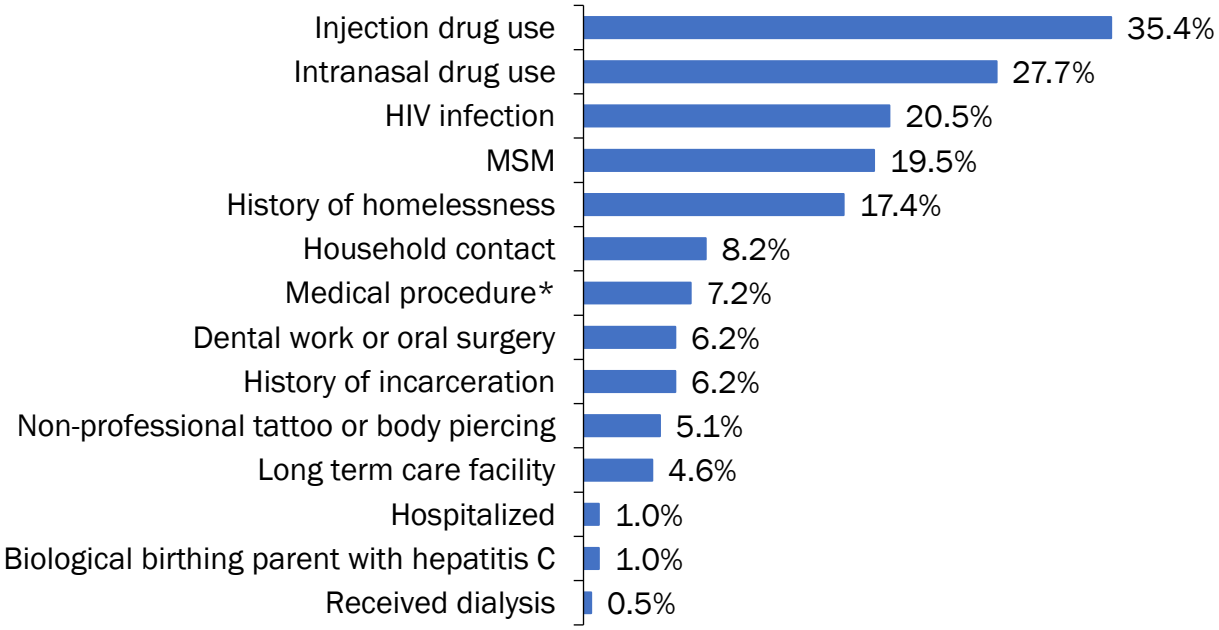
11% Percentage of 195 people ages 18 to 34 years referred to Health Department navigator for linkage to care at the time of interview in NYC in 2022

[17] Race and ethnicity were unknown for 29 (14.9%) people.
[18] Not mutually exclusive

Hepatitis C Risk Factors

In 2022, people with a history of injection or intranasal drug use made up 41.0% of people ages 18 to 34 years newly reported with chronic hepatitis C in NYC.

Figure 22. Risk factors for hepatitis C infection among people ages 18 to 34 years newly reported with chronic hepatitis C in NYC in 2022 interviewed through enhanced surveillance (n=195)[19]



*Involving injections, anesthesia or blood

Hepatitis C Health Care

29%	Percentage of 195 people ages 18 to 34 years treated for hepatitis C at the time of interview in NYC in 2022	11%	Percentage of 195 people ages 18 to 34 years vaccinated against hepatitis A, B or both as per provider interview in NYC in 2022

Health Department Recommendations

Health care providers should ensure that all people living with chronic hepatitis C are:

- Vaccinated for hepatitis A and B;
- Assessed for fibrosis or cirrhosis;
- Screened for liver cancer if cirrhotic; and
- Treated to cure infection.

For more information, see the Health Department's City Health Information: Diagnosing and Managing Hepatitis C at **nyc.gov/assets/doh/downloads/pdf/chi/chi-37-2.pdf**.

[19] Not mutually exclusive

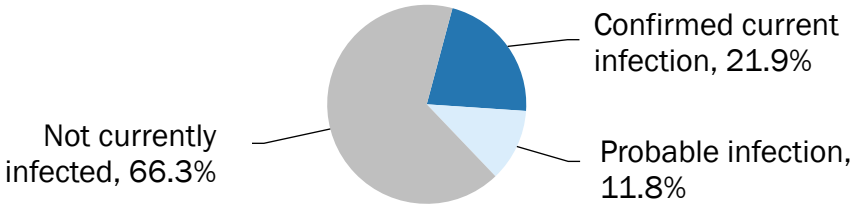
Hepatitis C Testing and Care Outcomes

Getting a positive hepatitis C test result is just the first step toward getting cured. The Health Department analyzes surveillance and laboratory data to determine how many people are currently infected, have received treatment for hepatitis C, and have been cured or cleared. This information helps to identify opportunities to eliminate hepatitis C.

Hepatitis C Diagnosis

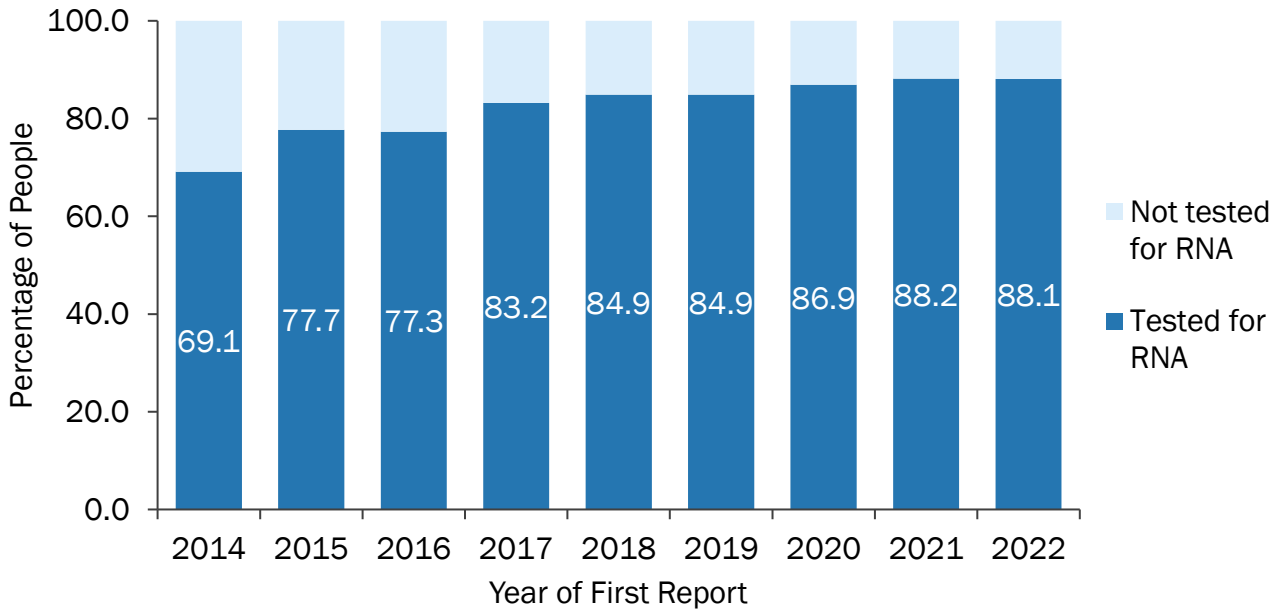
Hepatitis C viral (RNA) testing is an essential step in hepatitis C diagnosis to determine current infection status so those currently infected can initiate treatment. In 2022, 88.0% of people in NYC with a positive hepatitis C antibody test received a confirmatory test, which could include an RNA or a genotype test.

Figure 23. Test results of people in NYC with a positive hepatitis C antibody test who received an RNA test or a genotype test, 2022



The Health Department works with health care facilities to increase the number of people in NYC screened positive for hepatitis C antibody who receive an RNA test (learn more on Page 46). From 2014 to 2022, this percentage increased from 69% to 88%.

Figure 24. Percentage of people in NYC with a positive hepatitis C antibody test who received an RNA test, 2014 to 2022

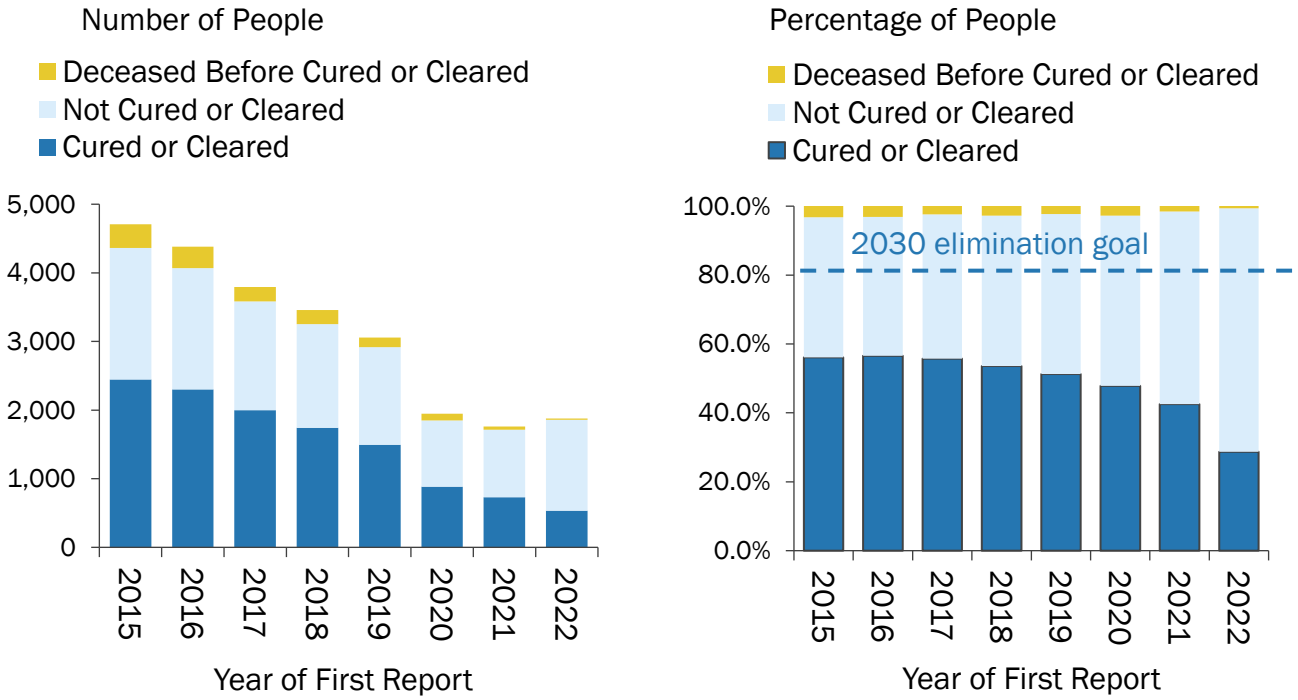


›› For full data on the RNA and genotype test results for people newly reported with hepatitis C in NYC in 2022, see Appendix 14.

Hepatitis C Treatment

Hepatitis C treatment and cure are key steps toward achieving hepatitis C elimination goals.

Figure 25. Hepatitis C cure and clearance among people newly reported with a positive hepatitis C RNA test in NYC by year of first report as of March 31, 2023, 2015–2022



Although nearly seven years have passed for people newly reported with hepatitis C during 2015, only 56.0% of them were RNA negative as of March 31, 2023. Some may have moved or died outside of NYC.

›› For full data on cure or clearance among people newly reported with hepatitis C in NYC in 2022, see Appendix 15.

The NYC Viral Hepatitis Elimination Plan's hepatitis C treatment goal is to increase the percentage of people treated and cured within one year of diagnosis (as indicated by a negative RNA test). To reach this goal, treatment should be initiated for more people newly diagnosed with hepatitis C.

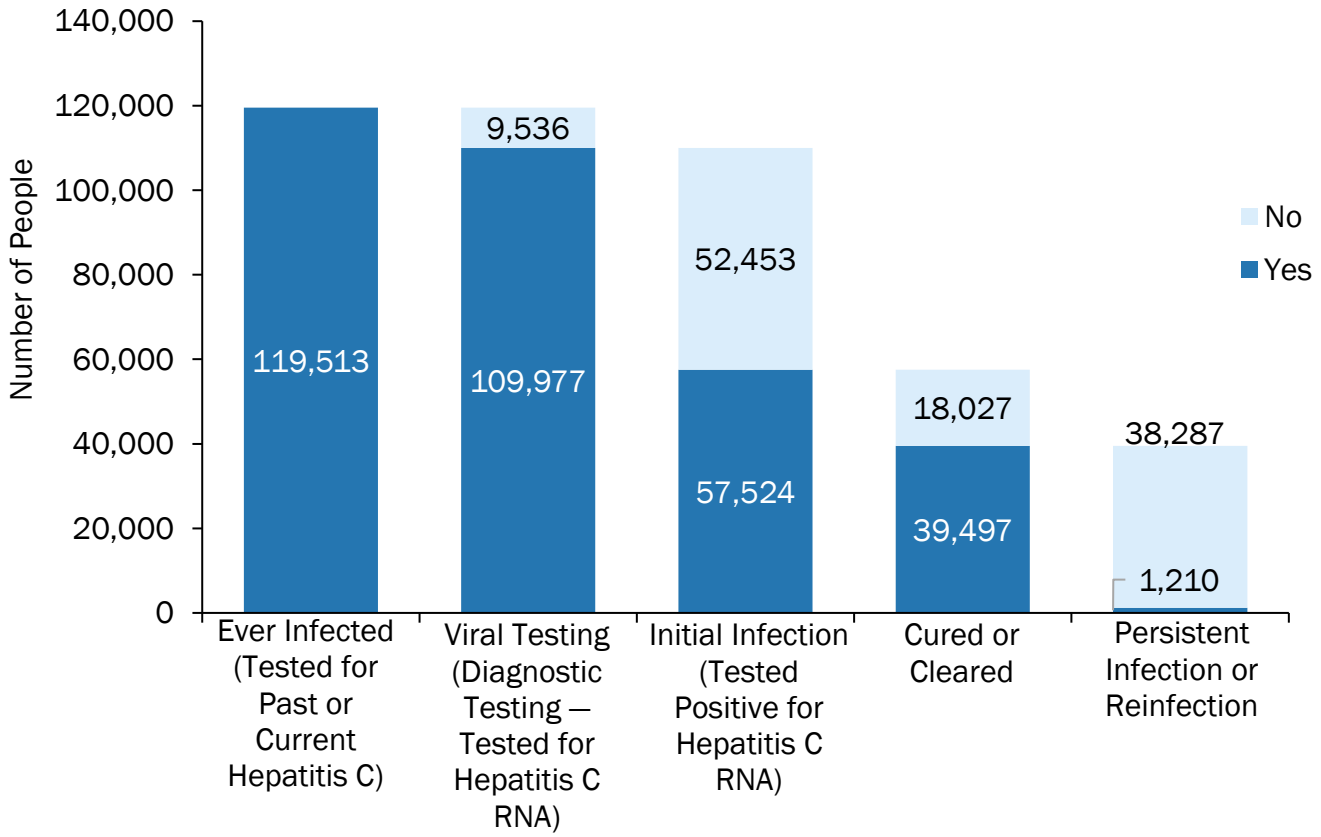
Health Department Recommendation

To reach hepatitis C elimination goals, all people living with chronic hepatitis C should be treated and cured. Health care providers should refer patients to no- or low-cost hepatitis C care and treatment programs in NYC. For more information, see Page 38 and visit **nyc.gov/health/hepc**.

Hepatitis C Clearance Cascade

In 2021, the CDC developed a new method for calculating the number and percentage of people who are tested for and cured of hepatitis C. This laboratory-based hepatitis C virus clearance cascade updates the NYC surveillance-based care cascade used in previous reports.

Figure 26. Laboratory-based hepatitis C virus clearance cascade for NYC, July 1, 2014–December 31, 2022

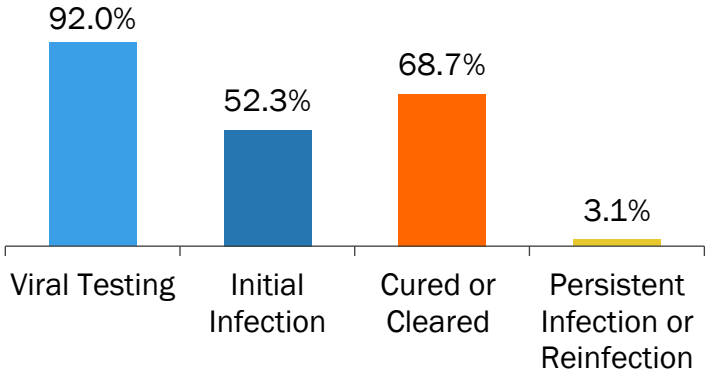


What the cascade shows	Opportunities for intervention
Most (92.0%) of the 119,513 people in NYC who were ever infected with hepatitis C since July 2014 were tested for hepatitis C RNA to diagnose hepatitis C infection.	9,536 people in NYC have not completed hepatitis C RNA viral diagnostic testing.
Of the 57,524 people whose first RNA test was positive, 68.7% are no longer infected with hepatitis C.	More than 18,000 people in NYC have not been cured or cleared of their hepatitis C infection.
Of the 39,497 people who have been cured or cleared of the hepatitis C virus in NYC, 1,210 were reinfected or had a persistent infection.	Learn more about hepatitis C reinfection on Page 30.

›› For full data and definitions for each category, see Appendix 16.

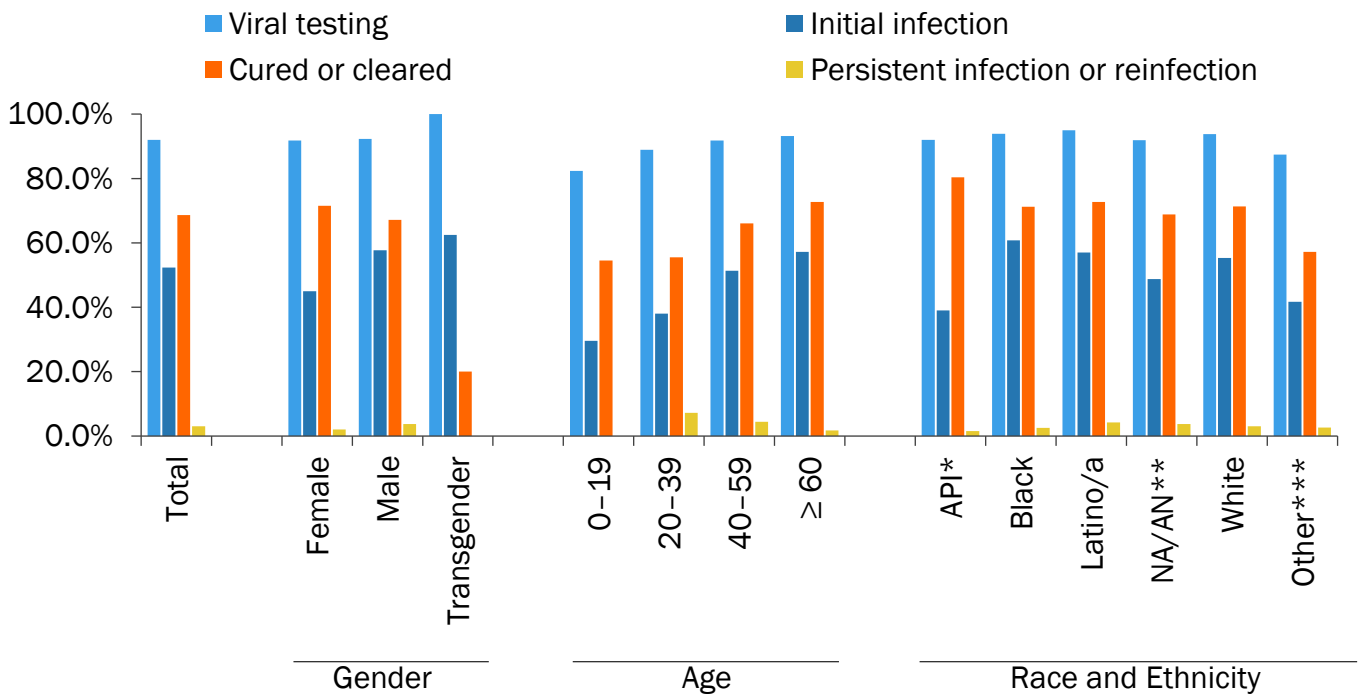
In addition to calculating the number of people tested and cured, the Health Department calculates the percentage of people at each stage of the hepatitis C care process to identify gaps in care.

Figure 27. Proportion of people at each stage of hepatitis C care for laboratory-based hepatitis C virus clearance cascade for NYC, July 1, 2014–December 31, 2022



Of people who were ever infected with hepatitis C in NYC from July 2014 to December 2021, 92.0% received viral (hepatitis C RNA) testing by December 2022. Of this group, 52.3% had a positive RNA test (initial infection). Of the initial infection group, 68.7% have been cured or cleared of the virus. Of the cured or cleared group, 3.1% had a persistent infection or were reinfected.

Figure 28. Proportion of people at each stage of hepatitis C care for laboratory-based hepatitis C virus clearance cascade by gender, age, and race and ethnicity, for NYC July 1, 2014–December 31, 2022



*Asian/Pacific Islander; **Native American or Alaska Native; ***Unknown

The percentage of people ever infected with hepatitis C in NYC who received a viral diagnostic (hepatitis C RNA) test is similar across subpopulations. A greater percentage of people ages 40 or older were cured or cleared of hepatitis C compared with people younger than the age of 40. Persistent infection or reinfection was higher among people ages 20 to 39 years.

›› For full data and definitions for each category, see Appendix 16.

Hepatitis C Reinfection

Understanding hepatitis C reinfection patterns helps to guide hepatitis C prevention and elimination efforts in NYC. The Health Department identified 139 people reported with a positive hepatitis C RNA test in 2021 after cure.[28] Of those, 113 (81.0%) people were classified as hepatitis C reinfections by provider interviews and chart reviews.

76%	Percentage of people living with hepatitis C reinfection in NYC who are male	45	Median age of people living with hepatitis C reinfection in NYC

Of people with a hepatitis C reinfection, 28.0% were reinfected one year or less from their estimated cure date.

›› For full data, see Appendices 17 and 18.

Health Department Recommendations

Reinfection may occur in some people who continue to share drug-use equipment or otherwise remain at risk for infection. However, the rate of hepatitis C reinfection is lower than the rate of initial infection among people who inject drugs.[20] Health care providers should:

- Test all adults once for hepatitis C infection and people with ongoing risk factors such as injection drug use annually.
- Re-treat people who are reinfected with hepatitis C to reduce poor liver-related outcomes and to prevent ongoing transmission.
- Refer people who inject drugs to harm reduction services to prevent reinfection. Find harm reduction services in NYC at **nyc.gov/site/doh/health/health-topics/alcohol-and-drug-use-services.page**.

›› For guidance on addressing drug use in primary care, visit **nyc.gov/assets/doh/downloads/pdf/chi/chi-35-3.pdf**.

[20] For more information, visit **hcvguidelines.org/unique-populations/pwid**.

Hepatitis C and HIV Coinfection

The Health Department matches hepatitis C and HIV surveillance data to characterize NYC's population with hepatitis C and HIV coinfection and identify opportunities to improve access to hepatitis C treatment.

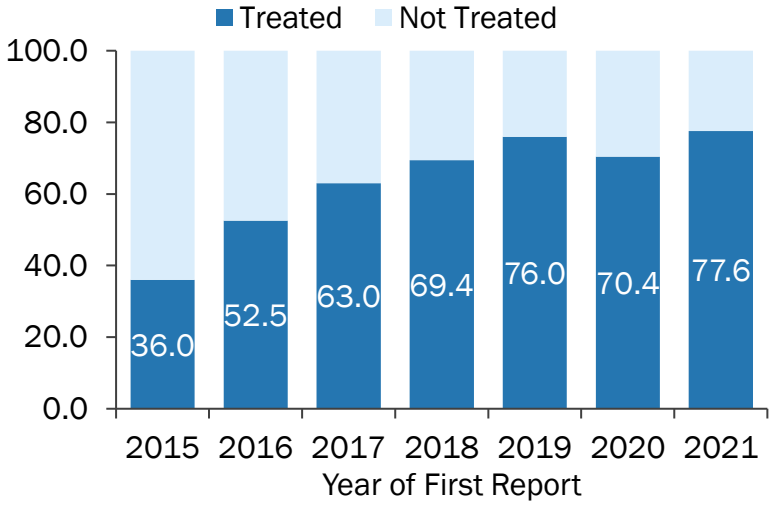


Figure 29. Percentage of people living with confirmed chronic hepatitis C and HIV coinfection in NYC who were cured or cleared of hepatitis C virus, by year of first report, 2015–2021

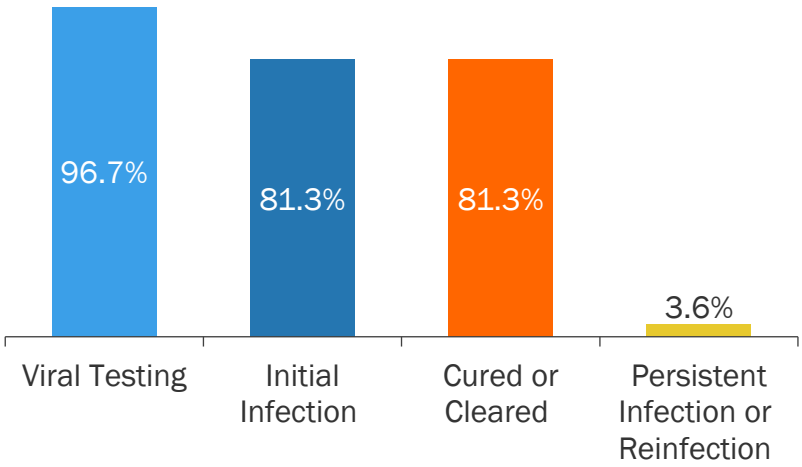
By the end of 2021, 77.6% of people with HIV in NYC who had ever tested positive for hepatitis C RNA from 2014 to 2021 were cured or cleared of hepatitis C.

›› For data on people reported with hepatitis C and HIV coinfection who cleared hepatitis C or were cured, see Appendix 19.

Hepatitis C Clearance Cascade for People With HIV

The Health Department calculates the percentage of people with HIV at each stage of hepatitis C testing and clearance or cure using the laboratory-based hepatitis C virus clearance cascade.

Figure 30. Proportion of people with HIV ever infected with hepatitis C at each stage of hepatitis C care for NYC (n=9,925), July 1, 2014–December 31, 2022



In NYC, 96.7% of people with HIV and ever infected with hepatitis C (from July 2014 to December 2021) were tested for hepatitis C RNA (from July 2014 to December 2022). Of people tested, 81.3% had a positive RNA test (initial infection). Of people with a positive RNA test, 81.3% were cured or cleared of the hepatitis C virus. Of this group, 3.6% were reinfected or had a persistent infection.

›› For full cascade data and the definitions for each category, see Appendix 20.

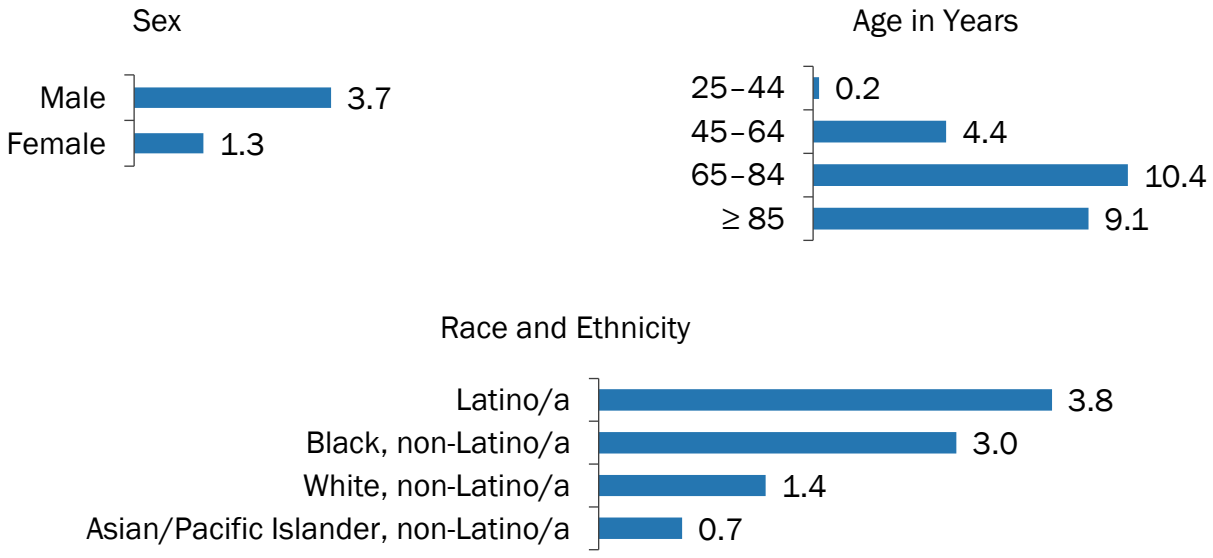
Health Department Recommendation

Health care providers should prioritize hepatitis C screening and treatment in all patients with HIV. For more information, visit **hcvguidelines.org/unique-populations/hiv-hcv**.

Hepatitis C: Deaths

240	Number of deaths where hepatitis C was listed as the cause of death in NYC in 2021	2.4	Rate per 100,000 people in NYC in 2021

Figure 31. Age-adjusted or age-specific death rate per 100,000 people[21] among NYC residents where hepatitis C is listed as the cause of death in 2021, by sex, age, and race and ethnicity



›› For full data, see Appendix 21.

[21] The population used in the rate constructions are based on the 2020 Census population estimates, 2021 vintage. The 2020 Census counts are higher than the estimates, rendering potentially overestimated rates.

Prevention and Screening

The Health Department promotes hepatitis A, B and C prevention and screening among people at high risk of acquiring these infections, including people who use drugs; people who have sexual partner(s) with hepatitis A, B or C; MSM; and infants born to pregnant people living with hepatitis B or C. The Health Department offers low- or no-cost hepatitis A and B vaccinations, including to people who are underinsured or uninsured.

Hepatitis A and B Vaccinations

	Number of vaccine doses provided at Health Department clinics in 2022	Number of people who completed the vaccine series in NYC in 2022*
Hepatitis A	2,733	91,358
Hepatitis B	4,341	109,368

*As reported to the Citywide Immunization Registry (CIR)

CIR data are less representative of adult vaccination. NYC health care providers are required to report all immunizations administered to children ages 0 to 18 years. Vaccinations administered to adults ages 19 and older may be reported with consent of the patient, according to New York State Public Health Law and the NYC Health Code.

›› For full data on Hepatitis A and B vaccination in NYC, see Appendices 22 and 23.

Viral Hepatitis in Correctional Facilities

Since 2013, New York City Health + Hospitals (NYC H+H)/Correctional Health Services has screened people in NYC jails for hepatitis C. In 2018, Correctional Health Services implemented universal hepatitis C screening at the intake examination upon admission to jail. Correctional Health Services also provides hepatitis B vaccinations.

2,936 Number of hepatitis C screening tests performed at intake examination in 2022

17% Percentage of intake examinations that included hepatitis C screening tests in 2022[22]

84 Number of people who received hepatitis C treatment in NYC jails in 2022*

85 Number of people vaccinated against hepatitis B in NYC jails in 2022

*Includes those who completed or partially completed hepatitis C treatment while in NYC jails

›› For guidance on providing primary care to patients with a history of criminal justice system involvement, see **nyc.gov/assets/doh/downloads/pdf/chi/chi-38-2.pdf**.

[22] Based on hepatitis C rapid test, antibody test or viral load test in 2022 for individuals who received an intake examination in 2022. Numerator excludes those who refused screening.

Syringe Service Programs and Medications for Addiction Treatment

The Health Department funds 14 syringe service programs across NYC to provide health care services to people who use drugs. Services include hepatitis B vaccination, hepatitis C testing and care coordination, overdose prevention and harm reduction education, distribution of sterile syringes and other drug use equipment to prevent the transmission of viral hepatitis and other blood-borne infections, and access to buprenorphine treatment.

22,004 Number of syringe service program participants in NYC in 2022

6,087,977 Number of syringes distributed in NYC in 2022

›› For more information on syringe service programs in NYC, see the NYC Health Department's Epi Data Brief at **nyc.gov/assets/doh/downloads/pdf/epi/databrief110.pdf**.

The Health Department works to expand access to methadone and buprenorphine, which are medicines for addiction treatment for people with opioid use disorder. Treatment with methadone and buprenorphine has been shown to reduce the risk of acquiring hepatitis B and C and risk of overdose.

25,158 Number of people in methadone treatment in NYC in 2022

15,034 Number of people filling a buprenorphine prescription in NYC in 2022

3,032 Number of health care providers who issued buprenorphine prescriptions to NYC residents in 2022

Provisional data show that in 2021, 2,668 people died from drug overdose in NYC. The Health Department estimates there are more than 10,000 nonfatal overdoses each year. People with a history of nonfatal overdose are at risk for hepatitis B and C and should be tested and connected to care and treatment.

›› For more information on drug overdose in NYC, see the NYC Health Department's Epi Data Brief at **nyc.gov/assets/doh/downloads/pdf/epi/databrief133.pdf**.

Health Department Recommendations

Health care providers should:

- Assess all patients for drug use and provide overdose and infection prevention services to patients who use drugs.
- Offer hepatitis A and B vaccination to patients who report current injection or intranasal drug use, are at risk for sexual transmission of hepatitis A and B, or have hepatitis C.
- Screen people who have had a nonfatal overdose for hepatitis B and C.

Health Department Tele-Navigation

The Health Department uses hepatitis B and C surveillance data to identify people with hepatitis who are not in care. From 2017 to 2022, the Health Department called 3,685 people living with hepatitis B or C to provide health care navigation services and support linkage to care and treatment.

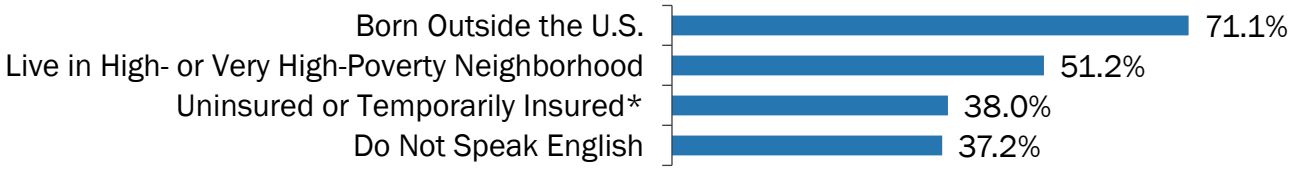
989	Number of people living with hepatitis B or C in NYC called to offer tele-navigation services in 2022	374	Number of people living with hepatitis B or C in NYC reached who received tele-navigation services in 2022

Hepatitis B Tele-Navigation Program

In 2022, the Health Department provided linkage to care services to 121 people living with hepatitis B in NYC including people who were pregnant or recently gave birth.

62%	Percentage of people linked to hepatitis B medical care in 2022	71%	Percentage of people linked to hepatitis B medical care who were virally suppressed in 2022

Figure 32. Characteristics of people who received hepatitis B tele-navigation services in NYC, 2022



*Temporary Medicaid for pregnant people only

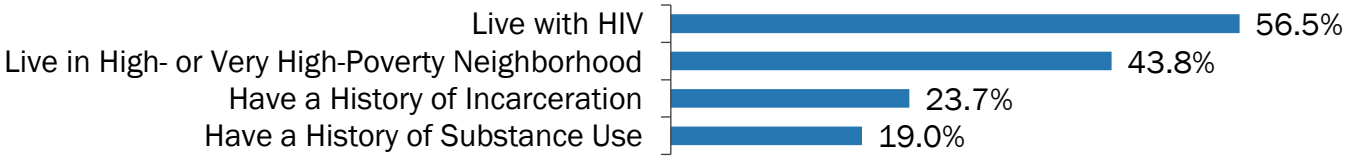
Hepatitis C Tele-Navigation Program

The Health Department reached out to people living with hepatitis C who were coinfected with HIV, were younger than age 34, recently gave birth, or tested positive for hepatitis C in NYC jails, Health Department Sexual Health Clinics, urgent care facilities or substance use treatment facilities. In 2022, the Health Department provided linkage to care services to 253 people living with hepatitis C in NYC.

74%	Percentage of people linked to hepatitis C medical care in 2022	43%	Percentage of people linked to hepatitis C medical care who initiated treatment*

*Defined by negative hepatitis C RNA test reported on a date after linkage to care

Figure 33. Characteristics of people who received hepatitis C tele-navigation services in NYC, 2022



Community Hepatitis Navigation Programs

The New York City Council Viral Hepatitis Initiative funds community organizations to support programming and services designed to help people at risk for hepatitis B and C overcome barriers to testing, care and treatment. Since 2014, the initiative has enabled 30 community health organizations to hire and train hepatitis B patient navigators and hepatitis C peer and patient navigators.

Navigation Description
Peer and patient navigators are trained and employed to provide:

- Outreach and prevention (such as harm reduction) for people at risk for hepatitis B and C
- Health promotion and help accessing supportive services
- Navigation through complete hepatitis B and C testing
- Linkage to hepatitis A and B vaccination and hepatitis B and C care and treatment

Training Description
Training programs aim to:

- Build capacity of navigators and other nonclinical service providers to support patients with hepatitis A, B and C through testing, care and treatment
- Equip navigators to educate people at risk for hepatitis B and C

Navigators are trained in:

- Peer and patient navigation program protocols
- Patient navigation approaches, including Motivational Interviewing
- Hepatitis B and C transmission, prevention, and recommended testing and care practices
- Trauma-informed care
- Mental health first aid
- Overdose prevention

Fiscal Year (FY) 2015 to FY 2022 Program Outcomes
From July 1, 2014, through June 30, 2022:

203	Number of peer and patient navigators trained and employed at community organizations such as health centers, hospitals and syringe service programs
21,582	Number of people at risk for or living with hepatitis B or C who received hepatitis education and navigation services
7,833	Number of people who were linked to hepatitis B or C medical care
4,729	Number of people who initiated treatment for hepatitis B or C

Check Hep B Patient Navigation Program

Since 2014, the Viral Hepatitis Initiative has supported hospitals, health centers and community organizations to provide patient navigation to people living with chronic hepatitis B. Check Hep B patient navigators help patients complete hepatitis B testing, evaluation and treatment. In FY 22 (July 1, 2021, through June 30, 2022), there were 13 navigators employed in the program who served 583 people living with chronic hepatitis B, including people served in previous years who needed ongoing care coordination.

FY 15 to FY 22 Program Outcomes
From July 1, 2014, through June 30, 2022:

2,588 Number of participants enrolled

93% Percentage of participants with a hepatitis B medical evaluation completed

93% Percentage of treatment-eligible participants who started treatment

Participant Characteristics

84% Percentage of participants who were born outside the U.S.

26% Percentage of participants who were uninsured

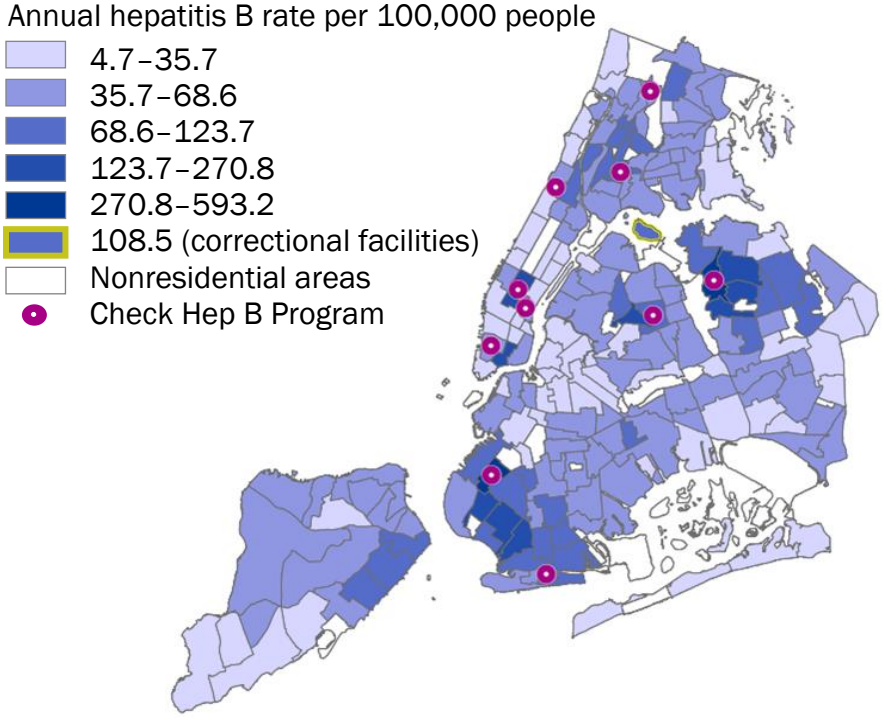
76 Number of participants' countries of birth

44 Number of languages other than English spoken by participants

Program Organizations
The map below shows the rate of people newly reported with chronic hepatitis B in NYC in 2022 by NTA and Check Hep B Patient Navigation Program locations.

Health Centers and Hospitals
1. APICHA Community Health Center
2. BronxCare Health System
3. Charles B. Wang Community Health Center
4. Montefiore Medical Center
5. NYC H+H/Bellevue
6. NYC H+H/South Brooklyn Health, Ruth Bader Ginsburg Hospital
7. NYC H+H/Elmhurst
8. Seventh Avenue Family Health Center at NYU Langone

Community Organizations
1. African Services Committee
2. Korean Community Services



Note: Two programs serve the neighborhood SoHo-TriBeCa-Civic Center-Little Italy (MN24) and only one dot appears in the map.

Check Hep C Patient Navigation Program

Since 2014, the Viral Hepatitis Initiative has supported health centers and hospitals to provide patient navigation to people living with chronic hepatitis C. Check Hep C patient navigators help patients complete hepatitis C testing, evaluation and treatment. In FY 22 (July 1, 2021, through June 30, 2022), there were 12 navigators employed in the program who served 533 people living with chronic hepatitis C.

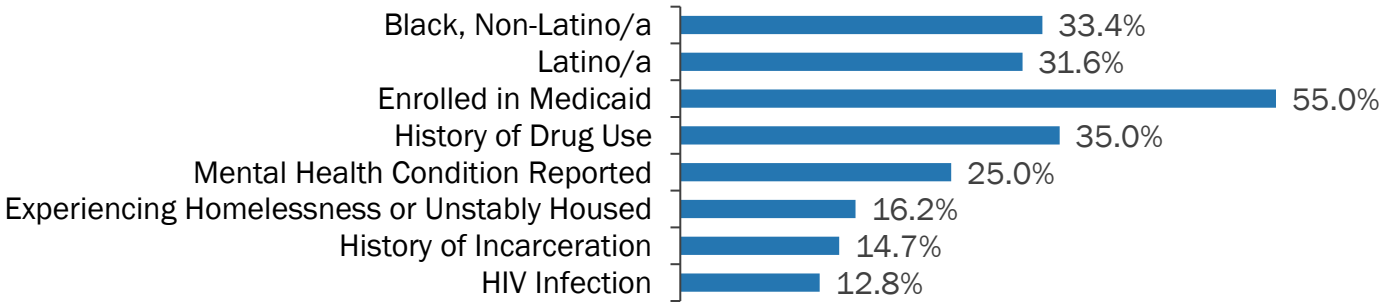
FY 15 to FY 22 Program Outcomes
From July 1, 2014, through June 30, 2022:

5,193 Number of participants enrolled

87% Percentage of participants linked to care

67% Percentage of participants linked to care who received treatment

Participant Characteristics'

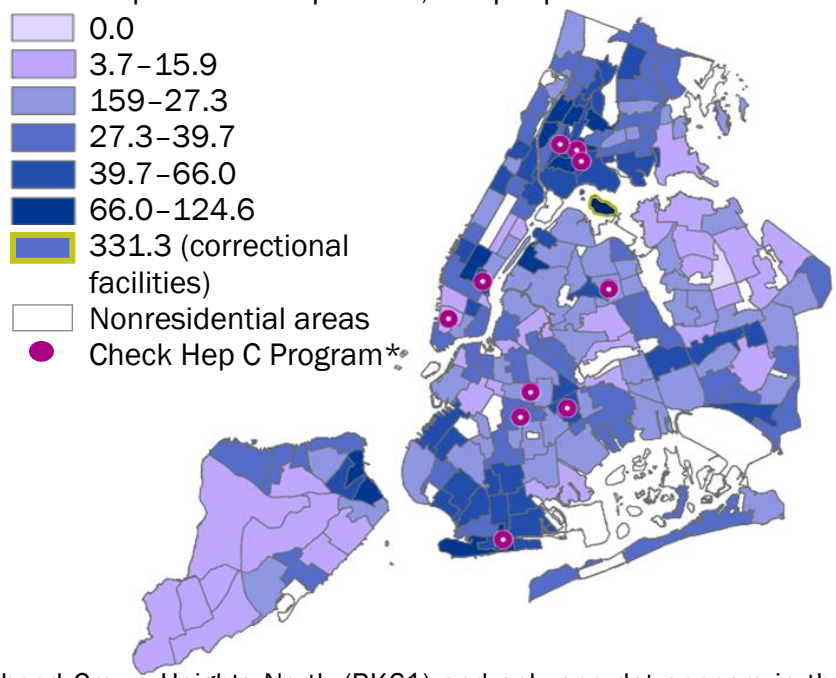


Program Organizations

The map below shows the rate of people newly reported with chronic hepatitis C in NYC in 2022 by NTA and Check Hep C Patient Navigation Program health center and hospital locations.

Health Centers and Hospitals

1. APICHA Community Health Center
2. Bedford-Stuyvesant Family Health Center
3. BronxCare Health System
4. Brownsville Multiservice Family Health Center
5. Community Healthcare Network
6. Montefiore Medical Center
7. NYC H+H/Bellevue
8. NYC H+H/South Brooklyn Health, Ruth Bader Ginsburg Hospital
9. NYC H+H/Elmhurst
10. NYC H+H/Kings County
11. One Brooklyn Health/ Kingsbrook Jewish Medical Center



Note: Two programs serve the neighborhood Crown Heights North (BK61) and only one dot appears in the map.

Hep C Navigation in Syringe Service Programs

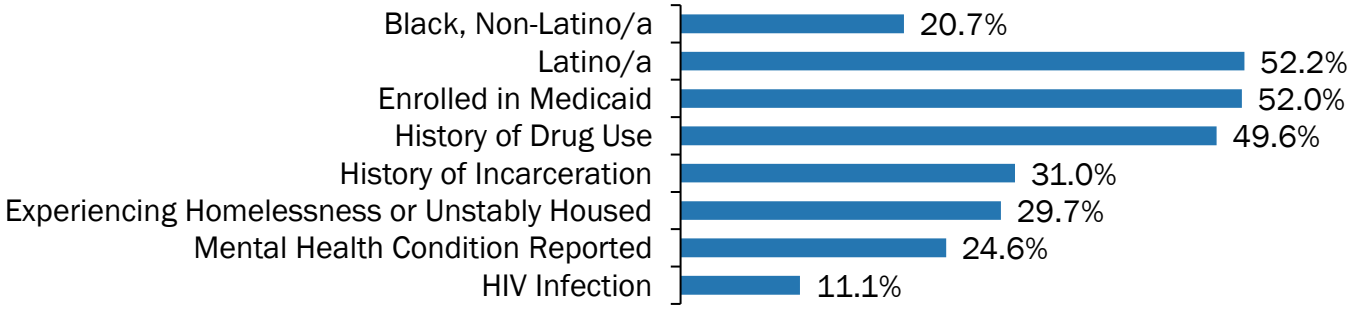
Since 2014, the Viral Hepatitis Initiative has supported SSPs in NYC to provide peer and patient navigation services to people at risk for hepatitis C. Peers use lived experience expertise to conduct outreach, prevention and linkage to care, while patient navigators coordinate care to complete hepatitis C treatment. In FY 22 (July 1, 2021, through June 30, 2022), organizations employed 20 peer navigators and five patient navigators who served 1,913 people at risk for hepatitis C.

FY 15 to FY 22 Program Outcomes
From July 1, 2014, through June 30, 2022:

13,801	Number of people at risk for hepatitis C who were reached and received hepatitis C health education and prevention services
2,973	Number of participants who tested positive for hepatitis C
1095	Number of participants with chronic hepatitis C referred to care*
783	Number of participants with chronic hepatitis C linked to care*
580	Number of participants with chronic hepatitis C who received treatment

*Referred to care is defined as participants receiving a referral or prompted to reengage in care with a provider for hepatitis C treatment; linked to care is defined as attending a medical visit.

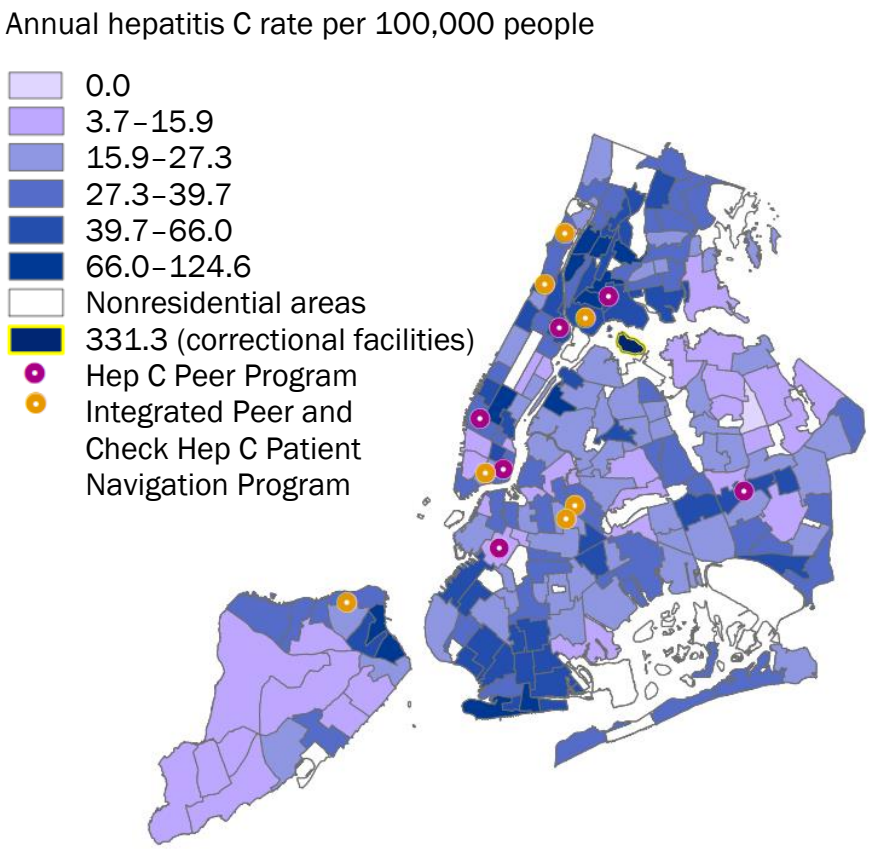
Participant Characteristics**



**Based on available data from 2,973 participants who tested positive for hepatitis C

Program Organizations

The map below shows the rate of people newly reported with chronic hepatitis C in NYC in 2022 by NTA and SSP locations.



Hep C Peer Program

1. AIDS Center of Queens County
2. Housing Works
3. OnPoint NYC-Harlem
4. Positive Health Project
5. Safe Horizon Streetwork Project
6. St. Ann's Corner of Harm Reduction
7. VOCAL-NY

Integrated Hep C Peer and Check Hep C Program

1. After Hours Project
2. Alliance for Positive Change
3. BOOM!Health
4. Community Health Action of Staten Island
5. Family Services Network of New York
6. OnPoint NYC-Washington Heights
7. Praxis Housing Initiatives

Note: One Hep C Peer Program and one Integrated Hep C Peer and Check Hep C Program serve the neighborhood Chinatown (MN27) and only one dot appears in the map.

Impact of COVID-19 and Adaptations in Community Navigation Programs

From 2020 through 2022, the community organizations providing hepatitis B and C outreach and navigation services reported the following barriers brought on by the COVID-19 pandemic:

- Reduced office hours and outreach activities to protect the safety of staff and patients
- Limited hepatitis B and C testing services due to physical distancing requirements and reduced laboratory capacity, which delayed diagnosis and treatment initiation
- Patient apprehension to seek care to avoid exposure to COVID-19
- Psychosocial needs of patients exacerbated by the pandemic such as lack of housing, unemployment, food insecurity and mental health issues

Organizations adapted to provide navigation services via telephone during the COVID-19 public health emergency. In 2022, navigators continued to focus on reengaging patients and helping them to return to care for in-person or telemedicine appointments. Additionally, organizations integrated COVID-19 testing and vaccination activities into hepatitis navigation efforts to ensure people at risk for or living with hepatitis B and C received critical care given their increased risk for severe COVID-19 illness. In 2020–2022, the Health Department provided support to programs on navigating health insurance requirements and accessing hepatitis B and C care, facilitated community-of-practice and learning meetings with navigators, and coordinated trainings for navigators and clinicians. Despite the additional responsibilities, the programs have met and even exceeded most goals for client engagement and linkage to and retention in care.

Health Care Provider Training and Workforce Development

Since 2014, the Viral Hepatitis Initiative has supported the Harm Reduction Coalition, Empire Liver Foundation and, since 2018, the Hepatitis C Mentor and Support Group (HCMSG) to train peer and patient navigators and clinical providers in hepatitis B and C prevention, testing, linkage to care, evaluation and treatment.

Harm Reduction Coalition Navigation Training Program Outcomes

Since 2014, Harm Reduction Coalition has supported staff from 14 syringe service programs in implementing hepatitis C peer navigation activities and provided 107 trainings with more than 1,700 participants. In FY 22, Harm Reduction Coalition trained 230 navigators and case managers through nine trainings including Hepatitis C Basics for Peer Workers, Hepatitis C Medical Care and Treatment Update for Front Line Staff, Hepatitis C Patient Navigation, and Overdose Prevention for Hepatitis Navigators.

From July 1, 2014, through June 30, 2022:

73 Number of patient navigators trained and employed at health care facilities and community organizations in the Viral Hepatitis Initiative

131 Number of people with lived experience trained in hepatitis C peer navigation

Hepatitis C Mentor and Support Group Education Program Outcomes

Since 2018, HCMSG has reached 1,061 people at risk for or living with hepatitis C through educational programs and support groups at more than 30 community organizations and substance use treatment and harm reduction programs. HCMSG hosts public education training programs online through an interactive module that has been viewed by 578 people at risk for hepatitis C since its launch in 2021. In FY 22, HCMSG provided staff training and a demonstration of the online module to 281 care managers, health educators and other program staff at 20 community organizations.

> "HCMSG, has been an integral part of educating the clients in our clinic about hepatitis. The educational counseling kits from HCMSG have helped us to provide education on preventing hepatitis to clients at high risk."
>
> — Hepatitis C Program Coordinator from a community health center in Manhattan

Empire Liver Foundation Clinical Training Program Outcomes

Since 2014, Empire Liver Foundation has trained more than 6,600 clinicians providing care for people at risk for hepatitis B and C. In FY 22, specialized trainings included: Progress Towards a Cure for Hepatitis B, Universal Screening for Hepatitis C, Highlights From the International Network on Health and Hepatitis in Substance Users Conference, Hepatitis B and C During Pregnancy, and Approaches to Hepatitis C Elimination, among others.

›› For a full list of trainings or to request a training, visit **empireliverfoundation.org**.

From July 1, 2021, through June 30, 2022:

Clinical training event	Number of participants
Clinical hepatitis B and C grand rounds at health care facilities across NYC	74
Hepatitis B Clinical Training Series	158
Hepatitis C Clinical Training Series	475
Special topics viral hepatitis trainings	488

The three-course Hepatitis B Clinical Training Series reviews screening and treatment guidelines with a focus on diagnostic testing, assessment for treatment and hepatocellular carcinoma screening. The four-course Hepatitis C Clinical Training Series reviews screening and treatment guidelines with a focus on universal screening, simplified treatment and treating people who use drugs.

These series are designed to prepare clinicians with MD, DO, PA, NP and PharmD credentials to either begin treating hepatitis B and C patients or increase the number of patients treated for hepatitis B and C. Evaluation data from 2017 to 2021 show that 98.0% of attendees felt able to treat hepatitis C independently after completing a training and 84.0% of attendees felt they gained valuable information about treating hepatitis B.

“The Hepatitis C Training Series was an insightful learning experience and helped me get a better understanding of what patients with hepatitis C need. I now feel more confident in knowing when to treat and when to refer to a liver disease specialist.”

— Participating physician from a community health clinic in Brooklyn

Capacity Building

The Health Department engages with organizations throughout NYC to build capacity to prevent, screen and treat hepatitis B and C. The Health Department convenes coalition meetings, trains clinical and nonclinical providers, and conducts data-to-care quality improvement projects.

Hep Free NYC Community Coalitions

Since 2004, the Health Department has engaged with community organizations to convene Hep Free NYC, a citywide network of health care providers, patients and public health professionals working together to prevent, manage and treat hepatitis B and C in NYC.

174	Number of participating organizations in 2022	501	Number of unique meeting attendees in 2022	4,096	Number of social media followers*

*Facebook, Instagram, X (Twitter) and LinkedIn

Figure 34. Organizational makeup of Hep Free NYC meeting attendees by percentage, 2022*

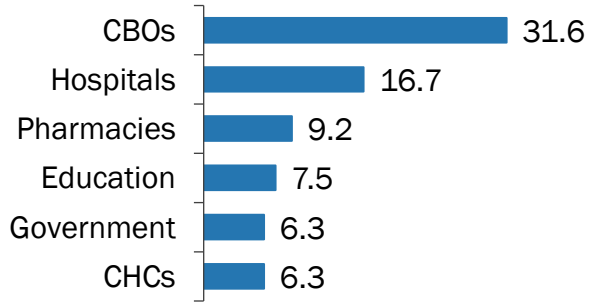
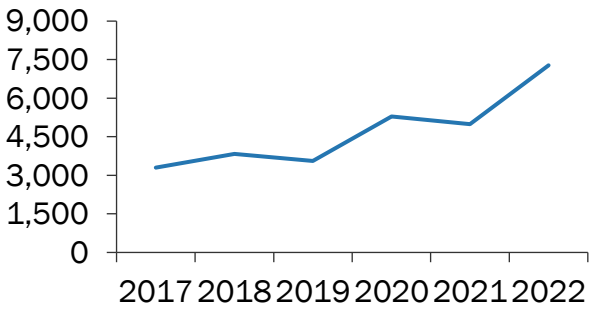


Figure 35. Number of Hep Free NYC newsletter subscribers, 2017–2022



*CBOs = community-based organizations, CHCs = community health centers; figure excludes other organizations

At Hep Free NYC meetings, attendees review the latest viral hepatitis data, share best practices in screening and linkage to care and treatment, collaborate on special projects to meet community needs, and develop new patient referral relationships.

›› For more information on Hep Free NYC, visit **hepfree.nyc**. To sign up for Hep Free NYC meetings and a monthly newsletter, email **hep@health.nyc.gov**.

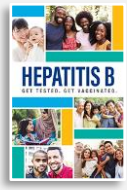
2022 Hep Free NYC Highlights

- Hep Free NYC led seven active committees, including the Advocacy, Awareness Day Planning, Clinical Education, Communications, Research, and Public Awareness committees.
- The Coalition Against Hepatitis in People of African Origin NYC Committee and the South Asian Hepatitis Initiative developed a range of resources, including multilingual pocket cards and trainings for African and South Asian communities.

Public Education

The Health Department develops and distributes free educational materials to community organizations and health care facilities to promote up-to-date hepatitis B and C health prevention, care and treatment, and to promote referrals to resources in NYC.

Public Education Materials



Hepatitis B: The Facts (English, Spanish, Simplified Chinese, Traditional Chinese, French, Korean, Russian, Bengali, Albanian, Uzbek, Twi/Akan, and Hausa): Booklet with basic information on hepatitis B testing, treatment, prevention and care

Hepatitis B Vaccine Palm Card (English, Spanish, Simplified Chinese, Traditional Chinese, French, Korean, Russian, Bengali, Albanian, Uzbek, Twi/Akan, and Hausa): Palm card to track hepatitis B vaccine doses

Hepatitis C and Your Liver (English, Spanish, Arabic, Russian, Urdu, Bengali and Hindi): Booklet with basic information on hepatitis C testing, treatment, prevention and care

Hepatitis C: Get Checked, Get Cured (English, Spanish and Russian): Palm card with basic information on hepatitis C testing, treatment prevention and care

Your Liver Keeps You Healthy: Protect It (English, Spanish and Traditional Chinese): Booklet with basic information on hepatitis A, B and C testing, treatment, prevention and care

Alcohol and Hepatitis (English and Spanish): Palm card with alcohol use reduction tips and action plan template

Hepatitis C: Get Tested, Get Cured (English, Spanish and Traditional Chinese): Poster promoting hepatitis C testing and treatment among baby boomers

Hepatitis C Treatment: Before and Now (English and Spanish): Poster promoting hepatitis C treatments

Get Hepatitis C Checked (English and Spanish): Posters promoting hepatitis C testing

Get Hepatitis C Cured (English and Spanish): Posters promoting hepatitis C treatment

Public Education Materials (Continued)

Reduce Your Risk of Overdose, Hep C and HIV (English, Spanish and Russian): Palm card with tips for reducing harms related to injection drug use

Take Care, Take Charge: Safety Tips for People Who Use or Inject Drugs (English, Spanish and Russian): Booklet with basic information on safer drug use, including on preventing hepatitis C

Buprenorphine (English, Spanish, Traditional Chinese, Arabic and Russian): Pamphlet with basic information on buprenorphine safety, side effects and insurance coverage

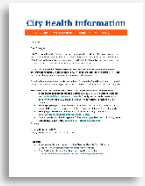
Your Guide to Syringe Service Programs (English, Spanish and Russian): Palm card listing SSP locations in NYC

Fentanyl (English, Spanish, Simplified Chinese, Traditional Chinese and Russian): Postcard with basic information on preventing opioid overdose

Provider Education Materials

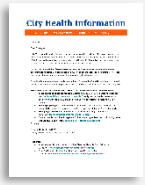
Preventing, Identifying and Managing Hepatitis B (English): Clinical recommendations for hepatitis B prevention, diagnosis and management, 2018

Diagnosing and Managing Hepatitis C (English): Clinical recommendations for hepatitis C prevention, diagnosis and management, 2018

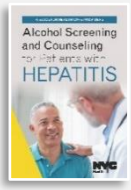


Dear Colleague Letter: Hepatitis B and C Screening, Care and Treatment Recommendations, 2020 (English)

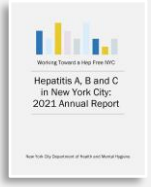
Dear Colleague Letter: Hepatitis B Vaccination Recommendations, 2022 (English)



Dear Colleague Letter: Universal Hepatitis C Screening Is Recommended for Pregnant People, 2021 (English)



Alcohol Screening and Counseling for Patients With Hepatitis (English): Alcohol counseling guidance for patients with hepatitis C



Hepatitis A, B and C in New York City: 2021 Annual Report (English): 2021 viral hepatitis surveillance data and programmatic activities

›› For more information or to order materials, email **hep@health.nyc.gov**.

Health Department Training

The Health Department trains nonclinical service providers on effective outreach, prevention, testing, linkage to care and treatment adherence strategies. In 2022, the Health Department delivered 10 trainings, including Introduction to Viral Hepatitis and Hepatitis C Patient Navigation.

	Number of trainings	Number of participants	Number of organizations represented
Introduction to Viral Hepatitis	5	79	38
Hepatitis C Patient Navigation	5	80	36

›› See trainings provided to clinical providers on Page 36.

Health Care Practice Facilitation

The Health Department supports acute care hospitals, community health centers and other patient care settings where people at risk for hepatitis B or C seek care to increase the settings' capacity to screen for and treat hepatitis B and C. Using surveillance data, the Health Department identifies health care facilities in high prevalence areas or areas with large populations of patients with hepatitis B, C or both to participate in clinical practice improvement projects. Participating facilities engage in an array of tailored capacity-building interventions, including:

- Querying electronic health records (EHRs) and using surveillance data to assess screening and treatment rates
- Training clinical and nonclinical service providers
- Implementing quality improvement projects
- Enrolling in peer-to-peer provider mentoring
- Participating in Hep Free NYC

Through these projects, participating facilities align workflows, data systems, resources and staff training to increase hepatitis B and C screening and treatment rates. The Health Department provides support to improve access to care and health outcomes in people affected by hepatitis B and C through sustained systemic changes at participating facilities. Substance use treatment programs participating in health care practice improvement projects reported an average hepatitis C screening rate of 83.8% in 2022, up from 77.0% in 2021.

Integration of Overdose Prevention in Hepatitis C Patient Navigation

From 2019 to 2022, the Health Department expanded the scope of its hepatitis C navigation programs (Health Department Hepatitis C Telephone Navigation and City Council Viral Hepatitis Initiative Check Hep C and Hep C Navigation at Syringe Service Programs) to include overdose prevention services. From September 1, 2019, through February 28, 2023*:

63 Number of navigators trained in overdose prevention education for people living with hepatitis C

6,240 Number of people living with hepatitis C who received overdose prevention education

1,409 Number of people linked to integrated care for treatment of hepatitis C and medication for opioid use disorder (MOUD)

*These data are provisional and may be subject to change.

Improving Linkage to Hepatitis C Care in a Substance Use Treatment Facility

The Health Department worked with Addiction Care Interventions, a substance use treatment facility that provides inpatient, outpatient and detox services, to increase linkage to hepatitis C and substance use care for people at risk for overdose. From September 1, 2019, through February 28, 2023:

38 Number of clinical providers trained in hepatitis C treatment for people who use drugs

36 Number of front-line staff* trained in overdose prevention and hepatitis C patient navigation services

33 Number of clinical and nonclinical staff trained in hepatitis C and overdose prevention resources and patient education

*Front-line staff include case managers, social workers, phlebotomists and other nonclinical staff.

The substance use treatment facility established a novel partnership with Mount Sinai REACH, a hospital program that provides a patient-centered and harm reduction approach to primary care and treatment for MOUD and hepatitis C. This partnership is one of the first in NYC to provide, in an inpatient setting, telemedicine and continuation of care for MOUD and hepatitis C after discharge from the facility.

From October 2020 through February 2023, the substance use treatment facility served 10,784 patients:

9,878 Number of patients who received overdose prevention education

6,483 Number of patients who received Naloxone

627 Number of patients with hepatitis C infection

195 Number of patients with hepatitis C infection who were referred to integrated care for hepatitis C and opioid use disorder

*These data are provisional and may be subject to change.

Hepatitis C Treatment via Telemedicine at Substance Use Treatment Programs

From 2021 to 2022, the Health Department implemented a project to improve access to hepatitis C treatment for people who use drugs. The Health Department partnered with Mount Sinai REACH, an outpatient primary care clinic to offer hepatitis C treatment via telemedicine to two inpatient substance use treatment programs experienced in treating opioid addiction. Both sites screened admitted patients for hepatitis C and developed a workflow to link those who tested positive to care and treatment.

From May 2021 to April 2022:

845	Number of admitted patients with a positive hepatitis C RNA test
199	Number of patients with a positive hepatitis C RNA test who were linked to hepatitis C care
40	Number of patients linked to hepatitis C care who were referred to telemedicine services at an outpatient primary care clinic
35	Number of patients referred to telemedicine services who attended at least one telemedicine visit
14	Number of patients who attended a telemedicine visit and began hepatitis C treatment
12	Number of patients who completed treatment

Between May 2022 and April 2023, the outpatient site hired a community health worker to support the patient workflow and liaise with the substance use treatment programs.

Integrating Hepatitis C and HIV Care at Substance Use Treatment Programs

In 2022, the Health Department completed a nine-month project to integrate hepatitis C and HIV testing and linkage to care at four substance use treatment programs with sites located in the Bronx, Brooklyn, Manhattan and Queens. At least two staff from each program participated in monthly meetings, and 48 nonclinical and clinical staff participated in eight trainings on a range of topics, including database management, patient navigation, hepatitis C and HIV treatment, and harm reduction. Each program developed a workflow and reported on testing, diagnosis and patient navigation activities, in addition to providing quarterly narrative reports describing successes and challenges in integrating hepatitis C and HIV services.

From November 2021 to July 2022, a total of 912 individuals were admitted to the four substance use treatment programs:

60%	Percentage of participants ages 20 to 49.
24%	Percentage of participants who reported injection drug use in the last 12 months
3%	Percentage of participants who identified as transgender
30%	Percentage of participants experiencing homelessness

The programs performed 510 HIV tests, and 48 people tested HIV positive. They also performed 477 hepatitis C antibody tests, and 166 (35%) people tested hepatitis C antibody positive, 33 people tested hepatitis C RNA positive and five people were found coinfected with HIV and hepatitis C. Of those who tested positive for hepatitis C RNA, HIV or coinfected hepatitis C and HIV, 94% were linked to coinfection care. Of those who tested positive for hepatitis C or HIV, 71% started treatment for HIV or hepatitis C.

Publications and Presentations

Publications

- Foster MA, Hofmeister MG, Albertson JP, et al. Hepatitis A virus infections among men who have sex with men — eight U.S. states, 2017-2018. *MMWR Morb Mortal Wkly Rep*. 2021;70(24):875-878. doi:10.15585/mmwr.mm7024a2
- Miller-Archie SA, Walters SC, Bocour A, et al. The impact of supportive housing on liver-related outcomes among persons with hepatitis C virus infection. *J Infect Dis*. 2022;226(Suppl 3):S363-S371. doi:10.1093/infdis/jiac292. PMID: 36208165; PMCID: PMC9547527
- Woodworth KR, Newton SM, Olsen EO, et al. Timing of positive hepatitis C virus test results during and 1 year before pregnancy. *Obstet Gynecol*. 2022;140(6):997-999. doi: 10.1097/AOG.0000000000004980. Epub 2022 Nov 2. PMID: 36357975

Posters and Presentations

- Bhatti M, Kela-Murphy N, Ray A, Taylor M, Ventuneac A. Increasing Capacity within Substance Use Disorder Treatment Programs to Provide Hepatitis Services. 2022 World AIDS Day & Ending the Epidemic Summit. Nov 2022.
- Bresnahan M. Viral hepatitis epidemiology, public health infrastructure, and elimination in New York City. Presented at Fast Track Cities Conference. Oct 2022.
- Clay A, Flanigan C, Gaudino A, Kela-Murphy N, Kerr C. Advances in Overdose Prevention and Harm Reduction in New York State. 2022 Annual New York State Hepatitis C and Drug User Health Conference. Sep 2022.
- Fratto E, Horn T, Kela-Murphy N, Ventuneac A. The Wonders of 340B for Viral Hepatitis and Drug User Health. National Alliance of State and Territorial AIDS Directors' Annual Meeting. May 2022
- Graf L, Bocour A, Huang Y, Romano A, Varigonda R. Characterizing New York City's HIV/Hepatitis C Coinfected Population, 2015-2020. Presented at 2022 CSTE. Jun 2022.
- Graf L, Bocour A, Huang Y, Romano A, Varigonda R, McPherson TD. Evaluating Hepatitis C Virus (HCV) Diagnostic Testing, Cure and Reinfection Among People Living with HCV and HIV Coinfection in New York City. Presented at ID Week 2022. Oct 2022.
- Hwang C, Montgomery M, Diaz Muñoz D, Yin S, Tshale E, Bocour A. Validation of a Simplified Laboratory-Based HCV Clearance Definition using New York City Hepatitis C Program and Surveillance Data. Presented at 2022 CSTE. Jun 2022.
- Kela-Murphy N, Shelton V. Building the Capacity of Four Drug Treatment Programs in NYC for HIV/HCV Screening and Linkage to Care. Presented at United States Conference on HIV/AIDS and National Alliance of State and Territorial AIDS Directors' National HIV and Hepatitis Technical Assistance (NASTAD TA). Oct 2022.
- Latash J. Re-Emergence of Hepatitis A among Men Who Have Sex with Men — New York City, 2017-2019. Presented at 2022 International Conference on Emerging Infectious Diseases. Aug. 2022
- Rivera J, Tang L, Bocour A, Mikati T, Huang Y, Khan A, Pene F, Brenes A, Huang A, Chung P. The New York City Health Department collaborates to improve hepatitis C screening and navigation services to underserved population in New York City. Presented at the 10th International Conference on Health and Hepatitis Care in Substance Users. Oct 2022.
- Rivera J, Tang L, Bocour A, Mikati T, Huang Y, Khan A, Pene F, Brenes A, Huang A, Chung P. Improving hepatitis B and C care by increasing NYC Health Department screening and patient

- navigation service collaboration. Presented at the 8th Annual NYC Epidemiology Forum (NYCEF) Conference. May 2022.
- Tang L, Bocour A, Mikati T, Huang Y, Rivera, J, Khan, A, Pene, F, Brenes, A, Huang, A, Chung, P. Improving hepatitis B and C care by increasing NYC Health Department screening and patient navigation services collaboration. Presented at 2022 Open Forum: Next Generation. Jan 2022.
- Tang L, Huang Y, Brenes A, Pene F, Khan A, Rivera J, McPherson TD, Bocour A. Linking patients to hepatitis C treatment through New York City Health Department telephone-based patient navigation services. Presented at the 7th Annual Ending the Epidemic (ETE) Summit. Nov 2022.
- Tang L, Huang Y, Brenes A, Pene F, Khan A, Rivera J, McPherson TD, Bocour A. Supporting people living with HIV to be cured of hepatitis C through telephone patient navigation services from the New York City Health Department. Presented at the 10th International Conference on Health and Hepatitis Care in Substance Users. Oct 2022.
- Tang L, Huang Y, Brenes A, Pene F, Khan A, Rivera J, McPherson TD, Bocour A. Using telephone-based patient navigation services to access hepatitis C care in New York City with a public health approach. Presented at the 10th International Conference on Health and Hepatitis Care in Substance Users. Oct 2022.

References and Resources

Local and national hepatitis B and C epidemiological data

- EpiQuery: Provides data on the health of New Yorkers from a variety of sources, including surveys, surveillance data and vital records (births and deaths): **a816-health.nyc.gov/hdi/epiquery**.
- New York City Department of Health and Mental Hygiene Hepatitis A, B and C Reports: **nyc.gov/site/doh/data/data-publications/hepatitis-abc-surveillance-data.page**.
- Moore MS, Bocour A, Winters A. Surveillance-based estimate of the prevalence of chronic hepatitis B virus infection, New York City, 2016. *Public Health Rep.* 2019; 134(6):695-702. doi: 10.1177/0033354919882962
- Bocour A, Greene SK, Laraque F, Winters A. Estimating the prevalence of chronic hepatitis C virus infection in New York City, 2015. *Epidemiol Infect*. 2018;146(12):1537-1542. doi: 10.1017/S095026881800170X

Viral hepatitis elimination planning

- World Health Organization. Combating hepatitis B and C to reach elimination by 2030. Geneva, 2016: **apps.who.int/iris/bitstream/handle/10665/206453/WHO_HIV_2016.04_eng.pdf**.
- National Academies of Sciences, Engineering and Medicine. A national strategy for the elimination of hepatitis B and C: Phase two report: **nap.edu/24731**.
- New York State Health Department Viral Hepatitis Strategic Plan 2016-2020: **health.ny.gov/publications/1806.pdf**.
- New York State Health Department. New York State hepatitis C elimination plan: **health.ny.gov/diseases/communicable/hepatitis/hepatitis_c/docs/hepatitis_c_elimination_plan.pdf**.

Clinical guidance on hepatitis screening, care and treatment

- New York City Department of Health and Mental Hygiene, 2018. Diagnosing and Managing Hepatitis C: **nyc.gov/assets/doh/downloads/pdf/chi/chi-37-2.pdf**.
- New York City Department of Health and Mental Hygiene, 2018. Diagnosing and Managing Hepatitis B: **nyc.gov/assets/doh/downloads/pdf/chi/chi-37-4.pdf**.
- American Association for the Study of Liver Diseases Practice Guidelines: **aasld.org/practice-guidelines**.
- Schillie S, Wester C, Osborne M, Wesolowski L, Ryerson AB. CDC recommendations for hepatitis C screening among adults — United States, 2020. *MMWR Recomm Rep*. 2020;69(2):1-17. doi:10.15585/mmwr.rr6902a1
- Dieterich DT. A simplified algorithm for the management of hepatitis C infection. *Gastroenterol Hepatol*. 2019;15(5 Suppl 3):1-12. PMID: 31641341; PMCID: PMC6799873
- Weng MK, Doshani M, Khan MA, et al. Universal hepatitis B vaccination in adults aged 19-59 years: Updated recommendations of the Advisory Committee on Immunization Practices — United States, 2022. *MMWR Morb Mortal Wkly Rep*. 2022;71:477-483. doi: 10.15585/mmwr.mm7113a1

For interpreting Health Department surveillance data

- CSTE case definitions: **ndc.services.cdc.gov**.
- NTAs: **nyc.gov/site/planning/data-maps/open-data/dwn-nynta.page**.

Appendices

Appendix 1: Surveillance technical data notes

When interpreting NYC hepatitis B and C surveillance data, please note:

- This report includes surveillance data on people who meet the CSTE's current case definition for chronic hepatitis C confirmed or probable cases, which was implemented in 2020. Therefore, cases that are antibody positive with only negative RNA results are excluded from most analyses, unless otherwise specified. For more information, visit **ndc.services.cdc.gov**.
- Laboratories are required to report positive hepatitis B and C tests to the Health Department, as well as negative results for hepatitis C RNA tests and hepatitis B DNA tests. For more information about hepatitis labs reportable to the Health Department, visit **wadsworth.org/sites/default/files/WebDoc/CDRG%20NYState%202020_101920%202.pdf**.
- The Health Department often receives more than one hepatitis B or C laboratory report per person and uses automatic deduplication methods to identify multiple reports for the same person based on name, date of birth and other information. Only the first report is counted in the counts of newly reported cases for the year in which the person was first reported.
- The Health Department does not investigate all chronic hepatitis B and C cases, so only minimal information from laboratory reports — patient name, address, date of birth and sex — is available. Gender identity (how one lives or sees themselves — for example: woman, transgender woman, man, transgender man, nonbinary person, gender-nonconforming) is not consistently reported by all laboratories. and is therefore underreported.
- The Health Department investigates all positive hepatitis B core IgM antibody reports and other positive hepatitis B reports that include significantly elevated liver function tests as potential cases of acute hepatitis B.
- Veterans Affairs (VA) health care facilities began reporting cases through routine surveillance at the end of 2016; therefore, people with viral hepatitis who receive health care at only VA facilities are not fully represented in this report.
- Differences in data between this report and previous reports may be related to factors such as delays in disease reporting, correction of errors and refinements in data processing (for example, the removal of duplicate reports).
- Many people with acute hepatitis B or C have no or mild symptoms. As a result, these infections might not be diagnosed at the time of infection. Therefore, surveillance data underestimate the true incidence of acute hepatitis B and C in NYC.
- Many patients with chronic hepatitis B or C are asymptomatic; as a result, many cases are not diagnosed or reported. Therefore, surveillance data underestimate the true level of chronic hepatitis B and C in NYC.
- Neighborhood poverty based on ZIP code was defined as the percentage of residents with incomes below 100% of the Federal Poverty Level (FPL), per American Community Survey data from 2016 to 2020. Neighborhood poverty categories are defined as follows:
  - Low (less than 10% below FPL)
  - Medium (10% to less than 20% below FPL)
  - High (20% to less than 30% below FPL)
  - Very high (greater than or equal to 30% below FPL)

  These categories are not applied to people whose first or most recently reported address is a NYC correctional facility.
- All people reported from a NYC correctional facility have been aggregated to Rikers Island in maps.
- Ten-year trends are shown for hepatitis A and chronic hepatitis B and C. Years prior to 2013 can be found on EpiQuery: **a816-health.nyc.gov/hdi/epiquery**.

Rates

- Rates presented include people newly reported to the Health Department. They are not prevalence rates or incidence rates.
- Age adjustment was performed using the following age categories: 0-24, 25-44, 45-64, 65-84 and ≥ 85 years, and weighted to the U.S. 2000 standard population.
- Rates stratified by age group are presented as age-specific rates (in other words, no age adjusting within a presented age stratum was performed).
- Denominators used throughout this report are intercensal estimates for 2021, except denominators for the Rikers Island population, which were provided by NYC Correctional Health Services.
- The jail at Rikers Island is part of the Bronx, although it has a Queens ZIP code (11370; note that ZIP code 11370 also includes parts of mainland Queens). Therefore, for numbers and rates presented by borough, Rikers Island cases are included with other Bronx cases.
- The Health Department is presenting maps using NYC NTAs, which are aggregations of census tracts that are subsets of NYC's 55 Public Use Microdata Areas. For details on NTAs, please see nyc.gov/site/planning/data-maps/open-data/dwn-nynta.page.

Prevalence Estimates

- Hepatitis B and C prevalence estimates were updated for 2019 and used the methods described in Moore MS et al., Surveillance-based estimate of the prevalence of chronic hepatitis B virus infection, New York City, 2016, and Bocour A et al., Estimating the prevalence of chronic hepatitis C virus infection in New York City, 2015. Estimates will be updated contingent upon data availability.

Death Data

- Deaths occurring outside NYC or those of non-NYC residents are not included.
- Both underlying and contributing causes are included. Underlying cause of death is the disease or condition that set off the chain of events leading to death. Contributing causes of death are diseases, morbid conditions or injuries that either resulted in or contributed to death.
- Causes of death are coded using ICD-10 classifications. The codes used for hepatitis B are B16, B170, B180 and B181; the codes used for hepatitis C are B171 and B182. Both acute and chronic hepatitis B and C are included as causes of death.
- Causes of death are not mutually exclusive.

Reporting Year

Differences in year of report for perinatal hepatitis B, hepatitis C reinfections, HIV coinfection and death data are related to data availability lag times from external data sources.

Appendix 2: Hepatitis A, B and C reporting in NYC

Laboratories are required to electronically report hepatitis A, B and C test results to the Health Department. Providers must report all hepatitis A (IgM positive), and acute B and acute C cases (based on clinical criteria, such as jaundice) and hepatitis B in pregnant and postpartum patients to the Health Department. The Health Department uses demographic and risk information to determine the characteristics of those infected with acute hepatitis B and C and to prevent ongoing transmission.

Health care providers can report hepatitis A, B and C cases:

- Online: Visit **nyc.gov/nycmed**.
- By mail: Download the Universal Reporting Form at **nyc.gov/assets/doh/downloads/pdf/hcp/urf-0803.pdf**.
- By phone: Call the Health Department's Provider Access Line (PAL) at 866-NYC-DOH1 (866-692-3641).

Appendix 3: Characteristics of people reported with confirmed hepatitis A infection in NYC, 2022

Characteristics	Number	Percentage of each group	Rate per 100,000 people
Overall	47	100.0	0.6
Sex			
Female	23	48.9	0.5
Male	24	51.1	0.6
Age at time of report			
0–9	2	4.3	0.2
10–19	0	0.0	0.0
20–29	13	27.7	1.1
30–39	20	42.6	1.5
40–49	5	10.6	0.5
50–59	3	6.4	0.3
≥ 60	4	8.5	0.2
Borough of residence			
Bronx	9	19.1	0.6
Brooklyn	23	48.9	0.9
Manhattan	7	14.9	0.4
Queens	6	12.8	0.3
Staten Island	2	4.3	0.4
Neighborhood poverty level by ZIP code			
Low (< 10% below poverty)	7	14.9	0.4
Medium (10 to < 20%)	22	46.8	0.6
High (20 to < 30%)	10	21.3	0.6
Very high (≥ 30%)	8	17.0	0.8
Race and ethnicity			
Asian, non-Latino/a	5	10.6	0.4
Black, non-Latino/a	11	23.4	0.6
Latino/a	16	34.0	0.6
White, non-Latino/a	12	25.5	0.4
Other	3	6.4	1.6
Unknown	0	0.0	N/A
Risk factors (not mutually exclusive)			
Drug use	22	46.8	N/A
International travel	19	40.4	N/A
MSM	9	19.1	N/A
Contact with a person with hepatitis A	7	14.9	N/A
Homelessness	4	8.5	N/A
Incarceration within six months before diagnosis	2	4.3	N/A
Unknown	6	12.8	N/A

Appendix 4: Characteristics of people reported with acute hepatitis B in NYC, 2022

Characteristics	Number	Percentage of each group	Rate per 100,000 people
Overall	19	100.0	0.2
Sex			
Female	6	31.6	0.1
Male	13	68.4	0.3
Age at time of first report			
0–19	1	5.3	0.1
20–29	1	5.3	0.1
30–39	3	15.8	0.2
40–49	4	21.	0.4
50–59	6	31.6	0.6
≥ 60	4	21.1	0.2
Borough of residence			
Bronx	4	21.1	0.3
Brooklyn	9	47.4	0.3
Manhattan	3	15.8	0.2
Queens	3	15.8	0.1
Staten Island	0	0	N/A
Neighborhood poverty level by ZIP code			
Low (< 10% below poverty)	3	15.8	0.2
Medium (10 to < 20%)	8	42.1	0.2
High (20 to < 30%)	4	21.1	0.3
Very high (≥ 30%)	4	21.1	0.4
Race and ethnicity			
Asian, non-Latino/a	2	10.5	0.2
Black, non-Latino/a	10	52.6	0.5
Latino/a	2	10.5	0.1
White, non-Latino/a	2	10.5	0.1
Multi-race	1	5.3	0.6
Unknown	2	10.5	N/A

Appendix 5: Characteristics of people reported with chronic hepatitis B in NYC, 2022

Characteristics	People newly reported in 2022			All people reported 2019–2022, regardless of year of first report	
	Number	Percentage of each group	Rate per 100,000 people	Number	Percentage of each group
Overall	5,534	100.0	65.4	93,614	100.0
Sex					
Female	2,333	42.2	53.0	41,746	44.6
Male	3,201	57.8	78.8	51,825	55.4
Age at time of first report					
0–19	92	1.7	4.8	4,255	4.5
20–29	612	11.1	52.	19,640	21.0
30–39	1,375	24.8	102.1	25,526	27.3
40–49	1,345	24.3	127.0	20,790	22.2
50–59	1,000	18.1	93.3	13,821	14.8
60–69	698	12.6	74.1	6,957	7.4
≥ 70	412	7.4	43.7	2,625	2.8
Borough of residence					
Bronx[1]	814	14.7	57.1	9,845	10.5
Brooklyn	2,045	37.0	77.4	34,472	36.8
Manhattan	706	12.8	44.8	17,323	18.5
Queens	1,567	28.3	67.2	28,474	30.4
Staten Island	224	4.0	45.4	2,208	2.4
Unknown	178	3.2	N/A	1,292	1.4
Neighborhood poverty level by ZIP code[2]					
Low (< 10% below poverty)	813	14.7	40.7	15,525	16.6
Medium (10 to < 20%)	2,335	42.3	60.7	38,153	40.8
High (20 to < 30%)	1,477	26.8	95.0	27,121	29.0
Very high (≥ 30%)	705	12.8	66.2	11,100	11.9
Unknown	185	3.4	N/A	1,601	1.7

[1] The Bronx includes 18 people reported in Rikers Island facilities and 126 people in 2019–2022.
[2] Neighborhood poverty level data excludes people incarcerated at the time of first report. In 2022, there were 17 newly reported people incarcerated at the time of first report. In 2019–2022, there were 114 people who were incarcerated at the time of their most recent report.

Appendix 6: Number and rate of people newly reported with chronic hepatitis B by NTA in NYC, 2022[1]

NTA name (code)	Number of cases	Rate per 100,000 people
Allerton-Pelham Gardens (BX31)	17	53.8
Annadale-Huguenot-Prince's Bay-Eltingville (SI01)	4	13.2
Arden Heights (SI48)	13	47.6
Astoria (QN70)	29	39.7
Auburndale (QN48)	26	123.7
Baisley Park (QN76)	11	29.1
Bath Beach (BK27)	42	118.3
Battery Park City-Lower Manhattan (MN25)	15	35.7
Bay Ridge (BK31)	47	56.7
Bayside-Bayside Hills (QN46)	41	92.7
Bedford (BK75)	24	30.4
Bedford Park-Fordham North (BX05)	36	62.6
Bellerose (QN43)	7	24.8
Belmont (BX06)	12	43.1
Bensonhurst East (BK29)	109	156.5
Bensonhurst West (BK28)	171	179.8
Borough Park (BK88)	100	96
Breezy Point-Belle Harbor-Rockaway Park-Broad Channel (QN10)	5	17.6
Briarwood-Jamaica Hills (QN35)	21	46.6
Brighton Beach (BK19)	45	122.4
Bronxdale (BX07)	9	23.2
Brooklyn Heights-Cobble Hill (BK09)	4	16
Brownsville (BK81)	28	56.2
Bushwick North (BK77)	11	19.9
Bushwick South (BK78)	19	26.6
Cambria Heights (QN33)	3	13.5
Canarsie (BK50)	36	41.3
Carroll Gardens-Columbia Street-Red Hook (BK33)	24	52.9
Central Harlem North-Polo Grounds (MN03)	69	83.6
Central Harlem South (MN11)	23	48.5
Charleston-Richmond Valley-Tottenville (SI11)	6	25.6
Chinatown (MN27)	103	232.4
Claremont-Bathgate (BX01)	29	85
Clinton (MN15)	24	48.1
Clinton Hill (BK69)	9	22.9
Co-op City (BX13)	28	57.8
College Point (QN23)	27	107.3
Corona (QN25)	30	51.9
Crotona Park East (BX75)	13	58.6
Crown Heights North (BK61)	54	48.9
Crown Heights South (BK63)	22	55.2
Cypress Hills-City Line (BK83)	18	36.9
Douglas Manor-Douglaston-Little Neck (QN45)	13	49.3
DUMBO-Vinegar Hill-Downtown Brooklyn-Boerum Hill (BK38)	20	42.1
Dyker Heights (BK30)	118	255.1
East Concourse-Concourse Village (BX14)	53	82.4
East Elmhurst (QN27)	10	53
East Flatbush-Farragut (BK91)	28	53.4

[1] Based on their address at first report, 270 people could not be assigned to an NTA.

Appendix 6: Number and rate of people newly reported with chronic hepatitis B by NTA in NYC, 2022

NTA name (code)	Number of cases	Rate per 100,000 people
East Flushing (QN52)	70	265.3
East Harlem North (MN34)	32	53.9
East Harlem South (MN33)	22	38.7
East New York (BK82)	56	57
East New York (Pennsylvania Ave) (BK85)	26	94.9
East Tremont (BX17)	31	71.4
East Village (MN22)	8	20.4
East Williamsburg (BK90)	5	13.4
Eastchester-Edenwald-Baychester (BX03)	16	42.1
Elmhurst (QN29)	87	102.2
Elmhurst-Maspeth (QN50)	38	154.7
Erasmus (BK95)	19	67.1
Far Rockaway-Bayswater (QN15)	10	17.1
Flatbush (BK42)	66	62.9
Flatlands (BK58)	30	42.1
Flushing (QN22)	276	372.8
Fordham South (BX40)	22	80.1
Forest Hills (QN17)	36	39.8
Fort Greene (BK68)	14	42.1
Fresh Meadows-Utopia (QN41)	13	65
Ft. Totten-Bay Terrace-Clearview (QN47)	8	34.6
Georgetown-Marine Park-Bergen Beach-Mill Basin (BK45)	19	39
Glen Oaks-Floral Park-New Hyde Park (QN44)	7	27.3
Glendale (QN19)	12	33.8
Gramercy (MN21)	4	16.2
Grasmere-Arrochar-Ft. Wadsworth (SI14)	14	80.5
Gravesend (BK26)	28	88.3
Great Kills (SI54)	15	35.3
Greenpoint (BK76)	6	17.3
Grymes Hill-Clifton-Fox Hills (SI08)	12	52.8
Hamilton Heights (MN04)	18	36.2
Hammels-Arverne-Edgemere (QN12)	13	30.5
Highbridge (BX26)	30	78.9
Hollis (QN07)	12	56.6
Homecrest (BK25)	39	83.5
Hudson Yards-Chelsea-Flatiron-Union Square (MN13)	20	27.6
Hunters Point-Sunnyside-West Maspeth (QN31)	35	50.2
Hunts Point (BX27)	11	42.5
Jackson Heights (QN28)	49	48.2
Jamaica (QN61)	23	41
Jamaica Estates-Holliswood (QN06)	4	13.9
Kensington-Ocean Parkway (BK41)	35	96.2
Kew Gardens (QN60)	6	26.3
Kew Gardens Hills (QN37)	17	44.6
Kingsbridge Heights (BX30)	21	62.1
Laurelton (QN66)	11	40.8
Lenox Hill-Roosevelt Island (MN31)	27	33.8
Lincoln Square (MN14)	15	23.8
Lindenwood-Howard Beach (QN57)	3	10.4
Longwood (BX33)	12	43.3
Lower East Side (MN28)	40	57.5
Madison (BK44)	33	75.9
Manhattanville (MN06)	8	35.4
Marble Hill-Inwood (MN01)	19	37.2

Appendix 6: Number and rate of people newly reported with chronic hepatitis B by NTA in NYC, 2022

NTA name (code)	Number of cases	Rate per 100,000 people
Mariner's Harbor-Arlington-Port Ivory-Graniteville (SI12)	16	46.8
Maspeth (QN30)	9	27
Melrose South-Mott Haven North (BX34)	29	68.6
Middle Village (QN21)	17	40.5
Midtown-Midtown South (MN17)	47	179.4
Midwood (BK43)	48	86
Morningside Heights (MN09)	18	35.2
Morrisania-Melrose (BX35)	28	69.7
Mott Haven-Port Morris (BX39)	20	38.3
Mount Hope (BX41)	39	73.2
Murray Hill (QN51)	83	156.6
Murray Hill-Kips Bay (MN20)	21	45.5
New Brighton-Silver Lake (SI35)	12	67.2
New Dorp-Midland Beach (SI45)	16	73.3
New Springville-Bloomfield-Travis (SI05)	23	73.3
North Corona (QN26)	20	37.6
North Riverdale-Fieldston-Riverdale (BX22)	3	10.6
North Side-South Side (BK73)	10	17.3
Norwood (BX43)	21	52.9
Oakland Gardens (QN42)	23	74.5
Oakwood-Oakwood Beach (SI25)	11	51.7
Ocean Hill (BK79)	21	58.4
Ocean Parkway South (BK46)	9	42.6
Old Astoria (QN71)	7	30.1
Old Town-Dongan Hills-South Beach (SI36)	20	72.5
Ozone Park (QN56)	12	50.1
Park Slope-Gowanus (BK37)	7	9.1
Parkchester (BX46)	12	50.1
Pelham Bay-Country Club-City Island (BX10)	6	22.2
Pelham Parkway (BX49)	12	41.9
Pomonok-Flushing Heights-Hillcrest (QN38)	44	120.2
Port Richmond (SI28)	10	49.5
Prospect Heights (BK64)	5	21.8
Prospect Lefferts Gardens-Wingate (BK60)	27	39
Queens Village (QN34)	19	33.9
Queensboro Hill (QN62)	57	270.8
Queensbridge-Ravenswood-Long Island City (QN68)	8	41.9
Rego Park (QN18)	16	54.3
Richmond Hill (QN54)	25	38
Ridgewood (QN20)	38	50.6
Rikers Island (BX98)	19	108.5
Rosedale (QN05)	12	45.1
Rossville-Woodrow (SI32)	5	23
Rugby-Remsen Village (BK96)	21	37.9
Schuylerville-Throgs Neck-Edgewater Park (BX52)	11	24.5
Seagate-Coney Island (BK21)	19	59.5

Appendix 6: Number and rate of people newly reported with chronic hepatitis B by NTA in NYC, 2022

NTA name (code)	Number of cases	Rate per 100,000 people
Sheepshead Bay-Gerritsen Beach-Manhattan Beach (BK17)	65	94.8
SoHo-TriBeCa-Civic Center-Little Italy (MN24)	21	60.4
Soundview-Bruckner (BX55)	20	54.5
Soundview-Castle Hill-Clason Point-Harding Park (BX09)	21	37.8
South Jamaica (QN01)	20	45.5
South Ozone Park (QN55)	23	28
Springfield Gardens North (QN02)	9	32
Springfield Gardens South-Brookville (QN03)	12	53.9
Spuyten Duyvil-Kingsbridge (BX29)	3	9.5
St. Albans (QN08)	22	40.7
Stapleton-Rosebank (SI37)	13	48.1
Starrett City (BK93)	1	7.6
Steinway (QN72)	17	36.5
Stuyvesant Heights (BK35)	23	33.2
Stuyvesant Town-Cooper Village (MN50)	1	4.7
Sunset Park East (BK34)	397	593.2
Sunset Park West (BK32)	50	92.4
Todt Hill-Emerson Hill-Heartland Village-Lighthouse Hill (SI24)	16	46.5
Turtle Bay-East Midtown (MN19)	16	32.2
University Heights-Morris Heights (BX36)	36	64
Upper East Side-Carnegie Hill (MN40)	15	26.3
Upper West Side (MN12)	30	23.2
Van Cortlandt Village (BX28)	21	41.7
Van Nest-Morris Park-Westchester Square (BX37)	16	57.5
Washington Heights North (MN35)	22	31.3
Washington Heights South (MN36)	22	24.7
West Brighton (BK23)	7	37.8
West Concourse (BX63)	23	60.8
West Farms-Bronx River (BX08)	22	62.4
West New Brighton-New Brighton-St. George (SI22)	14	42.8
West Village (MN23)	6	9.6
Westchester-Unionport (BX59)	16	55.5
Westerleigh (SI07)	4	15.6
Whitestone (QN49)	22	67.1
Williamsbridge-Olinville (BX44)	53	79.2
Williamsburg (BK72)	7	19.9
Windsor Terrace (BK40)	4	16.7
Woodhaven (QN53)	35	57.5
Woodlawn-Wakefield (BX62)	20	45.2
Woodside (QN63)	34	79.4
Yorkville (MN32)	16	21.2

Appendix 7: NYC NTAs

Appendix 8: Demographic characteristics of pregnant people living with hepatitis B in NYC who delivered a live infant in 2022

Characteristics	Number	Percentage of each group
Overall	651	100.0
Borough of residence		
Bronx	126	19.4
Brooklyn	243	37.3
Manhattan	61	9.4
Queens	174	26.7
Staten Island	47	7.2
Race and ethnicity		
Asian/Pacific Islander, non-Latino/a	363	55.8
Black, non-Latino/a	197	30.3
Latino/a	27	4.2
White, non-Latino/a	61	9.4
Other	3	0.5
Unknown	0	0
Country of birth		
China	251	38.6
Uzbekistan	40	6.1
Guinea	31	4.8
U.S.	30	4.6
Ghana	24	3.7
Bangladesh	22	3.4
Dominican Republic	16	2.5
Haiti	15	2.3
Nigeria	15	2.3
Senegal	15	2.3
Unknown	1	0.2
Other	191	29.3

Appendix 8: Demographic characteristics of pregnant people living with hepatitis B in NYC who delivered a live infant in 2022 (continued)

Characteristics	Number	Percentage of each group
Region of birth[1]		
China	251	38.6
Western Africa	151	23.2
West and Central Asia	45	6.9
Caribbean	41	6.3
South Asia	37	5.7
U.S.	29	4.5
Europe	29	4.5
Mexico, Central and South America	23	3.5
Southeast Asia	18	2.8
East Asia (excluding China)	13	2.0
Middle East	6	0.9
Africa (excluding Western Africa)	5	0.8
Pacific Islands	1	0.2
Unknown	2	0.3

[1] Includes countries counted as separate regions for comparison with larger regions. Excludes regions that were not reported as a region of birth for any reported person (Australia/Oceania and Canada).

Appendix 9: Hepatitis B, postexposure prophylaxis (PEP), vaccination and testing among infants born in 2021 to pregnant people living with hepatitis B, NYC

Characteristics	Number	Percentage of each group
Overall	663	100.0
PEP[1] and vaccination status[2]		
Received PEP	660	99.5
Completed vaccine series[3]	645	97.3
Received PEP and completed vaccine series	642	96.8
Testing status		
Tested	606	91.4
Not tested	57	8.6
Test results[4]		
Infected	2	0.3
Immune	591	97.5
Susceptible	4	0.7
Indeterminate	9	1.5

[1] Defined as administration of hepatitis B immune globulin and birth dose of hepatitis B vaccine series within one day of birth.
[2] Not mutually exclusive.
[3] Defined as receiving three valid doses of hepatitis B vaccine including a dose given at age greater than or equal to 164 days.
[4] Percentage calculated out of those tested (n=606).

Appendix 10: Characteristics of decedents where hepatitis B is listed as the underlying cause or contributing cause of death, NYC, 2021

Characteristics	Number	Percentage of each group	Age-adjusted rate per 100,000 people[1]
Overall	86	100	0.8
Sex			
Female	19	22	0.3
Male	67	78	1.5
Race and ethnicity			
Asian/Pacific Islander, non-Latino/a	36	42	2.3
Black, non-Latino/a	23	27	1.2
Latino/a	13	15	0.5
White, non-Latino/a	13	15	0.3
Other/Unknown	1	1	N/A
Age			Age-specific rate per 100,000 population[1]
0–24	0	0	0.0
25–44	5	6	0.2
45–64	32	37	1.5
65–84	44	51	3.7
≥ 85	5	6	2.8

[1] Rates stratified by age group are presented as age-specific rates.

Appendix 11: Characteristics of people reported with chronic hepatitis C in NYC, 2022

Characteristics	People newly reported in 2022			All people reported 2019–2022, regardless of year of first report	
	Number	Percentage of each group	Rate per 100,000 people	Number	Percentage of each group
Overall	2,805	100.0	34.4	75,853	100.0
Sex[1]					
Female	1,012	36.1	23.8	28,315	37.3
Male	1,789	63.8	45.8	47,482	62.6
Unknown	3	0.1	N/A	51	0.1
Age at time of first report[2]					
3–19	33	1.2	2.0	748	1.0
20–29	324	11.6	27.7	6,348	8.4
30–39	621	22.1	46.1	13,712	18.1
40–49	547	19.5	51.6	21,955	28.9
50–59	517	18.4	48.3	20,826	27.5
60–69	463	16.5	49.1	9,083	12.0
≥ 70	300	10.7	31.8	3,150	4.2
Unknown	N/A	N/A	N/A	31	0.1
Birth cohort					
1900–1944	105	3.7	24.4	4,777	6.3
1945–1965	821	29.3	46.6	44,857	59.1
1966–1983	988	35.2	50.7	18,972	25.0
1984–2019	891	31.8	22.2	7,247	9.6
Borough of residence					
Bronx[3]	703	25.1	51.4.	19,864	26.2
Brooklyn	863	30.8	34.1	22,463	29.6
Manhattan	561	20.0	36.6	16,940	22.3
Queens	568	20.2	25.2	13,258	17.5
Staten Island	109	3.9	22.8	3,324	4.4
Unknown	1	0.0	N/A	4	0.0
Neighborhood poverty level by ZIP code[4]					
Low (< 10% below poverty)	441	16.1	22.8	10,627	14.2
Medium (10 to < 20%)	1,236	45.0	33.3	29,125	38.9
High (20 to < 30%)	512	18.6	34.2	16,243	21.7
Very high (≥ 30%)	552	20.1	54.4	16,783	22.4
Unknown	5	0.2	N/A	2,040	2.7

[1] In 2022, there was one person reported with "transgender identity." Gender identity is not consistently reported by all labor.

[2] People newly reported in 2022 ages 0 to 2 years are classified using the 2018 CDC perinatal hepatitis C case definition and are reported in Appendix 12.

[3] The Bronx includes 58 people reported from Rikers Island facilities.

[4] Neighborhood poverty level data excludes people incarcerated at the time of first report. In 2022, there were 59 newly reported people incarcerated at the time of first report. In 2019–2022, there were 1,035 people incarcerated at time of their most recent report.

Appendix 12: Number and rate of people newly reported with chronic hepatitis C by NTA in NYC, 2022[1]

NTA name (code)	Number of cases	Rate per 100,000 people
Allerton-Pelham Gardens (BX31)	12	29.2
Annadale-Huguenot-Prince's Bay-Eltingville (SI01)	4	13.6
Arden Heights (SI48)	3	11.3
Astoria (QN70)	18	25.3
Auburndale (QN48)	0	0.0
Baisley Park (QN76)	11	30.2
Bath Beach (BK27)	17	49.8
Battery Park City-Lower Manhattan (MN25)	15	37.2
Bay Ridge (BK31)	18	22.5
Bayside-Bayside Hills (QN46)	5	11.6
Bedford (BK75)	21	28.3
Bedford Park-Fordham North (BX05)	19	52.8
Bellerose (QN43)	7	25.6
Belmont (BX06)	15	56.3
Bensonhurst East (BK29)	37	55.1
Bensonhurst West (BK28)	57	62.1
Borough Park (BK88)	16	16.8
Breezy Point-Belle Harbor-Rockaway Park-Broad Channel (QN10)	9	32.6
Briarwood-Jamaica Hills (QN35)	3	6.9
Brighton Beach (BK19)	35	98.0
Bronxdale (BX07)	12	32.1
Brooklyn Heights-Cobble Hill (BK09)	1	4.2
Brownsville (BK81)	24	50.3
Bushwick North (BK77)	18	33.9
Bushwick South (BK78)	19	27.5
Cambria Heights (QN33)	6	27.7
Canarsie (BK50)	18	21.4
Carroll Gardens-Columbia Street-Red Hook (BK33)	10	23.1
Central Harlem North-Polo Grounds (MN03)	44	53.2
Central Harlem South (MN11)	17	37.2
Charleston-Richmond Valley-Tottenville (SI11)	3	13.2
Chinatown (MN27)	9	20.8
Claremont-Bathgate (BX01)	16	49.3
Clinton (MN15)	22	45.0
Clinton Hill (BK69)	9	23.9
Co-op City (BX13)	15	31.7
College Point (QN23)	3	12.4
Corona (QN25)	12	21.7
Crotona Park East (BX75)	8	37.6
Crown Heights North (BK61)	29	27.3
Crown Heights South (BK63)	11	28.9
Cypress Hills-City Line (BK83)	6	12.8
Douglas Manor-Douglaston-Little Neck (QN45)	4	15.6
DUMBO-Vinegar Hill-Downtown Brooklyn-Boerum Hill (BK38)	14	30.9
Dyker Heights (BK30)	13	29.2
East Concourse-Concourse Village (BX14)	31	50.4
East Elmhurst (QN27)	6	33.0
East Flatbush-Farragut (BK91)	10	19.6

[1] Based on their address at first report, 108 people could not be assigned to an NTA.

Appendix 12: Number and rate of people newly reported with chronic hepatitis C by NTA in NYC, 2022

NTA name (code)	Number of cases	Rate per 100,000 people
East Flushing (QN52)	3	11.7
East Harlem North (MN34)	37	64.5
East Harlem South (MN33)	21	38.2
East New York (BK82)	36	38.2
East New York (Pennsylvania Ave) (BK85)	7	26.8
East Tremont (BX17)	40	96.4
East Village (MN22)	19	49.1
East Williamsburg (BK90)	5	13.8
Eastchester-Edenwald-Baychester (BX03)	11	30.0
Elmhurst (QN29)	16	19.5
Elmhurst-Maspeth (QN50)	11	46.4
Erasmus (BK95)	5	18.3
Far Rockaway-Bayswater (QN15)	14	25.2
Flatbush (BK42)	40	39.7
Flatlands (BK58)	17	24.7
Flushing (QN22)	17	23.6
Fordham South (BX40)	12	46.1
Forest Hills (QN17)	24	27.6
Fort Greene (BK68)	12	37.4
Fresh Meadows-Utopia (QN41)	3	15.6
Ft. Totten-Bay Terrace-Clearview (QN47)	4	17.8
Georgetown-Marine Park-Bergen Beach-Mill Basin (BK45)	5	10.7
Glen Oaks-Floral Park-New Hyde Park (QN44)	7	28.0
Glendale (QN19)	3	8.8
Gramercy (MN21)	9	37.0
Grasmere-Arrochar-Ft. Wadsworth (SI14)	4	23.3
Gravesend (BK26)	12	39.3
Great Kills (SI54)	9	21.8

NTA name (code)	Number of cases	Rate per 100,000 people
Greenpoint (BK76)	8	23.6
Grymes Hill-Clifton-Fox Hills (SI08)	10	45.6
Hamilton Heights (MN04)	21	43.5
Hammels-Arverne-Edgemere (QN12)	14	34.3
Highbridge (BX26)	26	71.6
Hollis (QN07)	11	53.4
Homecrest (BK25)	23	51.6
Hudson Yards-Chelsea-Flatiron-Union Square (MN13)	22	31.1
Hunters Point-Sunnyside-West Maspeth (QN31)	14	20.8
Hunts Point (BX27)	13	52.6
Jackson Heights (QN28)	25	25.5
Jamaica (QN61)	27	50.3
Jamaica Estates-Holliswood (QN06)	6	21.5
Kensington-Ocean Parkway (BK41)	9	25.9
Kew Gardens (QN60)	7	31.8
Kew Gardens Hills (QN37)	9	25.0
Kingsbridge Heights (BX30)	11	34.0
Laurelton (QN66)	5	19.0
Lenox Hill-Roosevelt Island (MN31)	16	20.7
Lincoln Square (MN14)	17	28.0
Lindenwood-Howard Beach (QN57)	5	17.8
Longwood (BX33)	12	45.4
Lower East Side (MN28)	20	29.5
Madison (BK44)	21	50.0
Manhattanville (MN06)	5	22.8
Marble Hill-Inwood (MN01)	11	22.3

Appendix 12: Number and rate of people newly reported with chronic hepatitis C by NTA in NYC, 2022

NTA name (code)	Number of cases	Rate per 100,000 people
Mariner's Harbor-Arlington-Port Ivory-Graniteville (SI12)	11	33.5
Maspeth (QN30)	6	18.7
Melrose South-Mott Haven North (BX34)	28	69.3
Middle Village (QN21)	6	14.8
Midtown-Midtown South (MN17)	23	89.5
Midwood (BK43)	26	38.8
Morningside Heights (MN09)	27	54.0
Morrisania-Melrose (BX35)	30	78.2
Mott Haven-Port Morris (BX39)	33	66.0
Mount Hope (BX41)	36	70.8
Murray Hill (QN51)	8	15.5
Murray Hill-Kips Bay (MN20)	29	64.2
New Brighton-Silver Lake (SI35)	4	23.2
New Dorp-Midland Beach (SI45)	3	14.2
New Springville-Bloomfield-Travis (SI05)	7	15.9
North Corona (QN26)	10	19.8
North Riverdale-Fieldston-Riverdale (BX22)	5	18.4
North Side-South Side (BK73)	18	32.4
Norwood (BX43)	23	60.7
Oakland Gardens (QN42)	4	13.3
Oakwood-Oakwood Beach (SI25)	6	29.0
Ocean Hill (BK79)	21	61.0
Ocean Parkway South (BK46)	10	50.4
Old Astoria (QN71)	12	53.2
Old Town-Dongan Hills-South Beach (SI36)	1	3.7
Ozone Park (QN56)	4	17.3
Park Slope-Gowanus (BK37)	7	9.5
Parkchester (BX46)	6	20.0
Pelham Bay-Country Club-City Island (BX10)	6	22.9
Pelham Parkway (BX49)	7	25.4
Pomonok-Flushing Heights-Hillcrest (QN38)	6	16.9
Port Richmond (SI28)	6	30.9
Prospect Heights (BK64)	1	4.6
Prospect Lefferts Gardens-Wingate (BK60)	24	36.0
Queens Village (QN34)	13	23.9
Queensboro Hill (QN62)	4	19.6
Queensbridge-Ravenswood-Long Island City (QN68)	23	124.6
Rego Park (QN18)	9	31.5
Richmond Hill (QN54)	34	53.8
Ridgewood (QN20)	14	19.4
Rikers Island (BX98)	58	331.3
Rosedale (QN05)	8	31.1
Rossville-Woodrow (SI32)	3	14.3
Rugby-Remsen Village (BK96)	12	22.4
Schuylerville-Throgs Neck-Edgewater Park (BX52)	5	11.5
Seagate-Coney Island (BK21)	21	67.9

Appendix 12: Number and rate of people newly reported with chronic hepatitis C by NTA in NYC, 2022

NTA name (code)	Number of cases	Rate per 100,000 people
Sheepshead Bay-Gerritsen Beach-Manhattan Beach (BK17)	29	43.6
SoHo-TriBeCa-Civic Center-Little Italy (MN24)	6	14.9
Soundview-Bruckner (BX55)	10	28.5
Soundview-Castle Hill-Clason Point-Harding Park (BX09)	25	46.6
South Jamaica (QN01)	8	18.9
South Ozone Park (QN55)	21	26.5
Springfield Gardens North (QN02)	8	29.3
Springfield Gardens South-Brookville (QN03)	10	46.8
Spuyten Duyvil-Kingsbridge (BX29)	10	33.1
St. Albans (QN08)	8	15.3
Stapleton-Rosebank (SI37)	18	69.0
Starrett City (BK93)	5	38.7
Steinway (QN72)	11	24.3
Stuyvesant Heights (BK35)	15	22.4
Stuyvesant Town-Cooper Village (MN50)	2	9.6
Sunset Park East (BK34)	27	42.5
Sunset Park West (BK32)	30	57.6
Todt Hill-Emerson Hill-Heartland Village-Lighthouse Hill (SI24)	4	12.0
Turtle Bay-East Midtown (MN19)	12	24.7
University Heights-Morris Heights (BX36)	37	68.7
Upper East Side-Carnegie Hill (MN40)	7	12.6
Upper West Side (MN12)	24	19.1
Van Cortlandt Village (BX28)	18	37.2
Van Nest-Morris Park-Westchester Square (BX37)	8	29.9
Washington Heights North (MN35)	24	35.2
Washington Heights South (MN36)	31	35.9
West Brighton (BK23)	9	49.5
West Concourse (BX63)	13	36.0
West Farms-Bronx River (BX08)	9	26.7
West New Brighton-New Brighton-St. George (SI22)	9	28.6
West Village (MN23)	8	13.1
Westchester-Unionport (BX59)	11	39.6
Westerleigh (SI07)	1	4.0
Whitestone (QN49)	3	9.4
Williamsbridge-Olinville (BX44)	28	43.6
Williamsburg (BK72)	3	9.6
Windsor Terrace (BK40)	5	21.8
Woodhaven (QN53)	12	20.4
Woodlawn-Wakefield (BX62)	13	30.4
Woodside (QN63)	7	16.9
Yorkville (MN32)	7	9.6

Appendix 13: Characteristics of children ages 2 to 36 months newly reported with hepatitis C in NYC, 2022

Characteristics	Number	Percentage of each group
Overall	19	100.0
Hepatitis C test results		
Confirmed[1]	6	31.6
Exposed (infection status unknown)[2]	10	52.6
Not currently infected[3]	3	15.8
Reason child was tested for hepatitis C[4]		
Birthing parent known to have hepatitis C	9	47.4
Birthing parent's current or past injection drug use	2	20.5
Other reason	5	26.3
Unknown	7	36.8
Sex		
Female	12	63.2
Male	7	36.8
Race and ethnicity		
Asian, non-Latino/a	0	0.0
Black, non-Latino/a	2	10.5
Latino/a	3	15.8
Multi-race	0	0.0
White, non-Latino/a	2	10.5
Other	1	5.3
Unknown	11	57.9
Borough of residence		
Bronx	2	10.5
Brooklyn	6	31.6
Manhattan	8	42.1
Queens	3	15.8
Staten Island	0	0.0
Other characteristics[5]		
Birthing parent previously reported to Health Department with hepatitis C	0	0.0
Child known to live with biological birthing parent	6	31.6

[1] RNA positive between ages 2 to 36 months.
[2] Antibody positive between ages 2 to 36 months or RNA positive between ages 0 to 2 months.
[3] RNA negative between ages 2 to 36 months or antibody negative between ages 18 to 36 months.
[4] Not mutually exclusive.
[5] Unknown for nine children.

Appendix 14: RNA and genotype test results of people newly reported with chronic hepatitis C in NYC, 2022

Characteristics	Number	Percentage of each group
All new reports of hepatitis C	8,303	100.0
Any RNA test performed[1]	7,317	88.1
Case definition		
Not currently infected: antibody positive, RNA negative only	5,507	66.3
Probable: antibody positive only	976	11.8
Confirmed: antibody positive, RNA positive or genotype tested[2]	1,820	21.9
Genotype test performed[3]		
Yes	920	50.5
No	900	49.5

[1] Based on the Health Department's hepatitis C surveillance data as of March 31, 2023. Reporting of negative RNA test results to the Health Department was mandated on July 21, 2014.
[2] Only a genotype result with no RNA positive result was found in 25 people.
[3] Genotype data are presented for patients who had a positive RNA or genotype test reported (n=1,820).

Appendix 15: People who subsequently tested RNA negative among those newly reported with a positive hepatitis C RNA test, 2015–2022

Report year	Tested RNA negative after HCV diagnosis		Did not test RNA negative after HCV diagnosis		Deceased before testing RNA negative	
	Number	Percentage	Number	Percentage	Number	Percentage
2015	2,446	56.1	1,916	40.7	345	7.3
2016	2,301	56.6	1,766	40.3	313	7.1
2017	1,997	55.7	1,589	41.9	207	5.5
2018	1,744	53.6	1,510	43.7	204	5.9
2019	1,494	51.3	1,421	46.5	144	4.7
2020	884	47.9	963	49.4	102	5.2
2021	729	42.6	984	55.9	46	2.6
2022	534	28.7	1325	70.7	16	0.9

Appendix 16: Conditional proportions, time frame and definitions for the 2022 hepatitis C virus clearance cascade

Conditional Proportions for 2022 Laboratory-Based Hepatitis C Virus Clearance Cascade by Subpopulation

Characteristics	Ever infected	Viral testing		Initial infection		Cured/cleared		Persistent infection/ reinfection	
	Number (1)	Number (2b)	Percentage (2b/1)	Number (3b)	Percentage (3b/2b)	Number (4b)	Percentage (4b/3b)	Number (5b)	Percentage (5b/4b)
Total	119,513	109,977	92.0	57,524	52.3	39,497	68.7	1,210	3.1
Gender[1]									
Female	50,932	46,728	91.7	21,034	45.0	15,043	71.5	303	2.0
Male	68,459	63,149	92.2	36,432	57.7	24,443	67.1	907	3.7
Transgender	8	8	100.0	5	62.5	1	20.0	0	0.0
Age									
0–19	407	335	82.3	99	29.6	54	54.5	0	0.0
20–39	18,671	16,596	88.9	6,302	38.0	3,496	55.5	253	7.2
40–59	38,912	35,732	91.8	18,353	51.4	12,129	66.1	532	4.4
≥ 60	61,523	57,314	93.2	32,770	57.2	23,818	72.7	425	1.8
Race and ethnicity									
Asian/Pacific Islander[2]	5,476	5,038	92.0	1,967	39.0	1,580	80.3	25	1.6
Black[2]	27,853	26,156	93.9	15,897	60.8	11,328	71.3	288	2.5
Latino/a	24,167	22,955	95.0	13,077	57.0	9,506	72.7	405	4.3
Native American or Alaska Native[2]	172	158	91.9	77	48.7	53	68.8	2	3.8
White[2]	25,674	24,063	93.7	13,318	55.3	9,491	71.3	292	3.1
Other/ Unknown	36,171	31,607	87.4	13,188	41.7	7,539	57.2	198	2.6

[1] Gender was missing for 114 patients.
[2] Non-Latino/a.

Time Frame and Definitions for the 2022 Laboratory-Based Hepatitis C Virus Clearance Cascade

- Cascade starting point: July 1, 2014, the date when hepatitis C virus RNA negative/"not detected" reporting was fully implemented in New York City.
- Evaluation time frame: the time period from the starting point (July 1, 2014) to the analysis point.
- Step 1: Ever infected with hepatitis C. All individuals with any positive/"detected" hepatitis C virus test (anti-HCV, RNA, detectable genotype or core antigen) performed from the starting point through the end of the "ever infected" period (December 31, 2021). The test performance date is the specimen collection date (or laboratory result date if specimen collection date is not available).
- Step 2: Viral testing performed. This category includes all individuals who were ever infected (Step 1):
    - 2a — No hepatitis C viral test reported. All individuals who have no hepatitis C viral test performed by the end of the follow-up period (December 31, 2022).
    - 2b — Hepatitis C viral test performed. All individuals who have any hepatitis C viral test performed by the end of the follow-up period (December 31, 2022), regardless of result.
- Step 3: Initial infection status. This category includes all individuals with viral testing performed (Step 2b):
    - 3a — Initial hepatitis C virus infection cured or cleared. All individuals whose initial hepatitis C viral test result performed during the follow-up period (through December 31, 2022) was "not detected."
    - 3b — Initial hepatitis C virus infection present. All individuals whose initial hepatitis C viral test result performed during the follow-up period (through December 31, 2022) was "detected."
- Step 4: Cured or cleared. This category includes all individuals with an initial hepatitis C viral test result "detected" (Step 3b):
    - 4a — Hepatitis C virus infection not cured or cleared during the cascade time frame. All individuals where no subsequent hepatitis C viral test results were performed or where all subsequent hepatitis C viral test results during the follow-up period (through December 31, 2022) were "detected."
    - 4b — Hepatitis C virus infection cured or cleared during the cascade time frame. All individuals where a subsequent hepatitis C viral test result "not detected" was performed during the follow-up period (through December 31, 2022).
    - Note: The cascade is unable to distinguish between cured (referring to successful treatment response) and cleared (referring to natural, spontaneous clearance).
    - Note: A patient with a single, detectable hepatitis C RNA result would populate all the first four Steps: Step 1, Step 2b, Step 3b, and Step 4a.
- Step 5: Persistent infection or reinfection.
    - 5a — Persistent infection or reinfection. All individuals where a negative/"not detected" result (Step 3a) is followed by an hepatitis C viral test result positive/"detected."
    - 5b — Persistent infection or reinfection. All individuals where a negative/"not detected" result (Step 4b) is followed by an hepatitis C viral test result positive/"detected."
    - Note: The cascade is unable to distinguish among the reasons for persistent infection (for example, incomplete treatment, treatment failure, viral breakthrough), reinfection or false positive reports (rare). For simplicity, there is no minimum time period after a hepatitis C viral negative/"not detected" test result (cured or cleared) and before a subsequent hepatitis C

viral positive/“detected” test result occurs to qualify as a persistent infection or reinfection. Regardless of whether these infections represent persistent infections or reinfections, this group represents an important opportunity for linkage to care and treatment.

- Pre-direct acting antiviral (DAA) medication treatment and cure rates are not included in the cascade.
- All individuals who are known to be living outside the jurisdiction or deceased as of the end of the follow-up period (December 31, 2022) were excluded from the cascade.

Appendix 17: Number and percentage of people who had a recurrent hepatitis C RNA positive test, by clinical interpretation, 2021

Interpretation	Number	Percentage of each group
False positive	1	1.0
Reinfection	113	81.3
Relapse/treatment failure	7	5.0
Unknown	18	12.9

Appendix 18: Number and percentage of people reinfected with hepatitis C infection in NYC, by gender, age at reinfection, time to reinfection and reported risk factors, 2021

Interpretation	Number	Percentage of each group
Overall	113	100.0
Gender		
Male	86	76.1
Female	27	23.9
Age at reinfection		
20–29	7	6.2
30–39	32	28.3
40–49	30	26.5
50–59	31	27.4
60+	13	11.5
Time to reinfection		
≤ 1 year from cure date	32	28.3
> 1 year from cure date	81	72.7
Risk factors (not mutually exclusive)		
Ever used intranasal or injection drugs	95	84.1
Ever incarcerated	55	48.7
HIV-positive	4	3.5

Appendix 19: Characteristics of people reported with hepatitis C and HIV coinfection in NYC by end of 2021[1,2]

Characteristics	Total		Cleared of HCV or cured by end of 2021[3]		No evidence of cleared infection or cure by end of 2021	
	Number	Percentage (column)	Number	Percentage (row)	Number	Percentage (row)
Overall	9,263	100.0	7,188	77.6	2,075	22.4
Gender						
Male	6,844	73.9	5,329	77.9	1,515	22.1
Female	2,235	24.1	1,734	77.6	501	22.4
Transgender	184	2.0	125	67.9	59	32.1
Age						
0–19	4	0.0	2	50.0	2	50.0
20–29	134	1.5	69	51.5	65	48.5
30–39	789	8.5	478	60.6	311	39.4
40–49	1,118	12.1	778	69.6	340	30.4
50–59	2,575	27.8	2,018	78.4	557	21.6
60–69	3,510	37.9	2,895	82.5	615	17.5
≥ 70	1,133	12.2	948	83.7	185	16.3
Current borough of residence						
Bronx	3,360	36.3	2,589	77.1	771	22.9
Brooklyn	2,358	25.5	1,840	78.0	518	22.0
Manhattan	2,176	23.5	1,694	77.8	482	22.2
Queens	1,094	11.8	842	77.0	252	23.0
Staten Island	275	3.0	223	81.1	52	18.9
Neighborhood poverty level by ZIP code[4]						
Low (< 10% below poverty)	989	10.7	773	78.2	216	21.8
Medium (10 to < 20%)	2,953	31.9	2,326	78.8	627	21.2
High (20 to < 30%)	2,404	26.0	1,869	77.8	535	22.3
Very high (≥ 30%)	2,901	31.3	2,210	76.2	691	23.8
Unknown	16	0.2	10	62.5	6	37.5
Race and ethnicity						
Asian/Pacific Islander, non-Latino/a	134	1.5	105	78.4	29	21.6
Black, non-Latino/a	3,735	40.3	2,856	76.5	879	23.5
Latino/a	3,949	42.6	3,055	77.4	894	22.6
White, non-Latino/a	1,396	15.1	1,137	81.4	259	18.6
Other[5]	43	0.5	32	74.4	11	25.6
Unknown	6	0.1	3	50.0	3	50.0

Appendix 19: Characteristics of people reported with hepatitis C and HIV coinfection in NYC by end of 2021 (continued)[1,2]

Characteristics	Total		Cleared of HCV or cured by end of 2021[3]		No evidence of cleared infection or cure by end of 2021	
	Number	Percentage (column)	Number	Percentage (row)	Number	Percentage (row)
Birth cohort						
Before 1945	374	4.0	302	80.7	72	19.3
1945–1965	6,360	68.7	5,188	81.6	1,172	18.4
1966–1983	2,050	22.1	1,429	69.7	621	30.3
1984–2017	479	5.2	269	56.2	210	43.8
Years since HIV diagnosis						
< 5	345	3.7	181	55.5	164	47.5
5–9	632	6.8	409	64.7	223	35.3
10–19	2,362	25.5	1,760	74.5	602	25.5
≥ 20	5,924	64.0	4,838	81.7	1,086	18.3
HIV viral load < 200 copies per mL at most recent lab in 2021						
Yes	6,613	71.4	5,628	85.1	985	14.9
No	1,235	13.3	754	61.1	481	38.9
Unknown (no HIV viral loads in 2021)	1,415	15.3	806	57.0	609	43.0

[1] Individuals were diagnosed with HIV and hepatitis C and living as of December 31, 2021, with at least one HIV or hepatitis C lab reported since January 1, 2014. Individuals with a residential address outside NYC were excluded, as the Health Department only receives hepatitis C lab results for NYC residents. Individuals were considered to have a history of confirmed hepatitis C infection if they had at least one positive hepatitis C RNA test reported prior to the end of 2021.
[2] Demographic characteristics and HIV clinical characteristics were obtained from the NYC HIV surveillance registry. Hepatitis C outcomes were obtained from the NYC hepatitis C surveillance registry.
[3] Individuals were considered to have been cured or cleared of hepatitis C virus if they had at least one negative hepatitis C RNA result reported after a positive RNA result prior to the end of 2021.
[4] Based on ZIP code at most recent report.
[5] Other race/ethnicity includes Native American and multi-race categories.

Appendix 20: Conditional proportions, time frame and definitions for the 2022 hepatitis C virus clearance cascade for people coinfected with hepatitis C and HIV

Conditional Proportions for the 2022 Laboratory-Based Hepatitis C Virus Clearance Cascade for People Coinfected With Hepatitis C and HIV by Subpopulation

Characteristics	Ever infected	Viral testing		Initial infection		Cured/cleared		Persistent infection/ reinfection	
	Number (1)	Number (2b)	Percentage (2b/1)	Number (3b)	Percentage (3b/2b)	Number (4b)	Percentage (4b/3b)	Number (5b)	Percentage (5b/4b)
Total	11,157	10,790	96.7	8,939	82.8	6,910	77.3	300	4.3
Gender[1]									
Female	2,819	2,723	96.6	2,200	80.8	1,688	76.7	46	2.7
Male	8,330	8,059	96.7	6,731	83.5	5,221	77.6	254	4.9
Transgender	2	2	100.0	2	100.0	1	50.0	0	0.0
Age									
0–19	2	2	100.0	2	100.0	1	50.0	0	0.0
20–39	921	866	94.0	802	92.6	503	62.7	44	8.7
40–59	4,263	4,121	96.7	3,414	82.8	2,596	76.0	145	5.6
≥ 60	5,971	5,801	97.2	4,721	81.4	3,810	80.7	111	2.9
Race and ethnicity									
Asian/Pacific Islander[2]	106	105	99.1	80	76.2	66	82.5	2	3.0
Black[2]	4,374	4,226	96.6	3,663	86.7	2,824	77.1	106	3.8
Latino/a	4,013	3,932	98.0	3,130	79.6	2,487	79.5	143	5.7
Native American or Alaska Native[2]	16	16	100.0	14	87.5	12	85.7	0	0.0
White[2]	1,674	1,639	97.9	1,274	77.7	1,011	79.4	31	3.1
Other/ Unknown	974	872	89.5	778	89.2	510	65.6	18	3.5

[1] Six patients had missing gender.
[2] Non-Latino/a.

See Appendix 16 for the time frame and definitions.

Appendix 21: Characteristics of decedents where hepatitis C is listed as the underlying or contributing cause of death, NYC, 2021

Characteristics	Number	Percentage of each group	Age-adjusted rate per 100,000 people[1]
Overall	240	100	2.4
Sex			
Female	73	30.0	1.3
Male	167	70.0	3.7
Race and ethnicity			
Asian/Pacific Islander, non-Latino/a	11	5.0	0.7
Black, non-Latino/a	69	29.0	3.0
Latino/a	95	40.0	3.8
White, non-Latino/a	50	21.0	1.4
Other/Unknown	15	6.0	N/A
Age			Age-specific rate per 100,000 population[1]
0–24	0	0.0	0.0
25–44	6	3.0	0.2
45–64	93	39.0	4.4
65–84	125	52.0	10.4
≥ 85	16	7.0	9.1

[1] Rates stratified by age group are presented as age-specific rate.

Appendix 22: Number of hepatitis A and B vaccines provided by Health Department facilities, 2022

Vaccine	Total hepatitis vaccine doses[1]	Completed hepatitis vaccine series[2]
Immunization clinics		
Hepatitis A only, ages 4 to 18 years	2,196	770
Hepatitis A only, ages 19 years and older	250	83
Hepatitis B only, ages 4 to 18 years	2,224	669
Hepatitis B only, ages 19 years and older	1,667	299
NYC Sexual Health Clinics		
Hepatitis A only	287	14
Hepatitis B only	450	72

Appendix 23: Number of hepatitis A and B vaccines provided by NYC providers, 2022

Vaccine	Total hepatitis vaccine doses[1]	Completed hepatitis vaccine series[2]
Hepatitis A only, ages 0 to 18 years	195,767	88,663
Hepatitis A only, ages 19 years and older	17,267	1,828
Hepatitis B only, ages 0 to 18 years	325,851	93,091
Hepatitis B only, ages 19 years and older	96,483	15,237

[1] Total of hepatitis A and hepatitis B vaccine doses.
[2] Total number of individuals who completed either hepatitis A or hepatitis B vaccine series in 2022.