

HEPATITIS B AND C IN NEW YORK CITY 2016

ANNUAL REPORT

by the New York City Department
of Health and Mental Hygiene

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EXECUTIVE SUMMARY

The public health burden of viral hepatitis in New York City (NYC) is substantial, with an estimated 100,000 New Yorkers infected with hepatitis B and 146,500 adults infected with hepatitis C. Fortunately, these diseases can be eliminated; hepatitis C can be treated and cured, and hepatitis B can be prevented with vaccination and treated to limit disease progression.

This report presents an overview of the New York City Health Department's 2016 hepatitis B and C surveillance, research and programmatic activities. The following strategic goals guided the Health Department's efforts to address hepatitis B and C in 2016.

Goal 1: Use and Enhance Surveillance Data to Inform Policy and Interventions

- 8,439 people were newly reported with chronic hepatitis B in 2016, a 9.4 percent increase from 2015.
- In alignment with the 2016 revision of the Council of State and Territorial Epidemiologists (CSTE) and the Centers for Disease Control and Prevention (CDC) case definition for chronic hepatitis C, laboratories are required to report all positive hepatitis C antibody tests, regardless of signal-to-cutoff ratio. As a result of the CDC's new hepatitis C case definition,* 11,847 people were newly reported with chronic hepatitis C, a 67.8 percent increase from 2015. 3,781 people were newly reported with confirmed hepatitis C (RNA positive) infection, a decrease from 4,171 in 2015.
- The number of women of childbearing age, and people aged 0 to 29, with confirmed hepatitis C (RNA positive) infection has remained relatively stable since 2010.
- The Health Department developed an innovative surveillance-based algorithm using patterns of hepatitis C RNA testing to estimate treatment initiation and cure. This algorithm will be used to monitor population and facility-level trends.

Goal 2: Educate Clinical Providers and Communities

- The Health Department organizes the Hep Free NYC network, comprised of the NYC Hep B Coalition and NYC Hep C Task Force. In partnership with community leaders, the Health Department convened 23 network meetings with 860 participants representing 135 organizations from all five boroughs.
- The Health Department also oversees the Hepatitis C Clinical Exchange Network (HepCX), a peer-to-peer learning collaborative of 59 hepatitis C clinical provider champions at 36 NYC hospitals. The focus in 2016 was improving hepatitis C RNA testing rates. By the end of the year, 15 hospitals used antibody to RNA reflex testing, as compared with five in 2015.

*See the "References and Links" section

Goal 3: Improve Testing, Linkage to Care and Treatment

- The Health Department developed and managed the City Council-funded Check Hep B and Check Hep C Patient Navigation and Hep C Peer Navigation programs. These programs provided outreach, education, linkage to care and clinical care coordination for more than 6,000 people by the end of 2016.
- Project INSPIRE, a Centers for Medicare and Medicaid Services-funded comprehensive hepatitis C care coordination program, enrolled 2,551 people by the end of 2016. Of these, 53 percent completed treatment by the end of 2016.

Goal 4: Advance Public Policies and Infrastructure

The Health Department:

- Organized pharmacist advocates to discuss the feasibility of allowing hepatitis C and HIV rapid testing by community pharmacists
- Closely monitored legislation to increase drug price transparency and lower the cost to insurers and patients
- Joined with the New York State Department of Health to advise community advocates beginning a statewide effort to eliminate hepatitis C

Goal 5: Promote Policies and Practices to Eliminate Perinatal Hepatitis B Transmission

- 99.5 percent (1,508) of the 1,516 babies born to hepatitis B positive mothers served by the Health Department Perinatal Hepatitis B Program received hepatitis B post-exposure prophylaxis. 91.6 percent completed the full hepatitis B vaccine series.
- The Health Department launched a new program to improve linkage to care rates for pregnant women infected with hepatitis B.

Goal 6: Prevent New Infections

- The Health Department developed and administered a City Council-funded Hepatitis C Peer Navigation program at all 15 NYC syringe exchange programs in NYC. This program provided primary and secondary prevention, as well as reinfection prevention services, to 4,438 at-risk people by the end of 2016.
- The Health Department clinics administered more than 12,000 hepatitis B vaccine doses.

Future Priorities

The National Academies' "Strategy for the Elimination of Hepatitis B and C in NYC by 2030" calls for an increase in efforts to reach people disproportionately affected by hepatitis B and C and link them to screening, treatment and care.¹ These communities include people who use drugs, people with a history of incarceration, immigrants, people infected with HIV, people of color and people who reside in high poverty neighborhoods.

Reducing transmission of hepatitis C and decreasing morbidity and mortality depends on the diagnosis and treatment of all affected. This includes both baby boomers infected decades ago and younger people recently infected as a result of the national opioid epidemic.

Preventing hepatitis B through vaccination and diagnosing and treating chronic hepatitis B is essential to reducing hepatitis B-related liver disease, cancer and premature death.

Elimination of hepatitis B and C are achievable goals and the Health Department is committed to working in collaboration with other stakeholders towards this outcome.

¹ National Academies of Sciences, Engineering, and Medicine. 2017. A national strategy for the elimination of hepatitis B and C. Washington, DC: The National Academies Press.

SURVEILLANCE DATA

When interpreting the hepatitis B and C surveillance data presented in the following pages, note that:

- Rates are reported per 100,000 people
- Neighborhood poverty level by ZIP code is defined as the percentage of residents with incomes below 100 percent of the federal poverty level (FPL), per American Community Survey data from 2011 to 2015:
 - Low (less than 10 percent below FPL)
 - Medium (10 to less than 20 percent below FPL)
 - High (20 to less than 30 percent below FPL)
 - Very high (greater than or equal to 30 percent below FPL)
- **In alignment with the 2016 revision of the Council of State and Territorial Epidemiologists (CSTE)/CDC case definition for chronic hepatitis C, laboratories are required to report all positive hepatitis C antibody tests, regardless of signal-to-cutoff ratio. This change resulted in a higher number of newly reported cases in 2016. Additional information about the 2016 CSTE/CDC case definition of chronic hepatitis C can be found here:**
<https://wwwn.cdc.gov/nndss/conditions/hepatitis-c-chronic/case-definition/2016/>

Hepatitis B and C reporting in NYC:

Laboratories are required to electronically report chronic hepatitis B and C tests to the Health Department. Providers should report acute hepatitis B and C cases based on clinical criteria (e.g., jaundice) to the Health Department as well. The Health Department uses demographic and risk information to determine the characteristics of those recently infected with acute hepatitis B and C and to prevent ongoing transmission.

HEALTH CARE PROVIDERS CAN REPORT ACUTE HEPATITIS B AND C CASES:

- Online:
 - Visit nyc.gov/nycmed
- By mail:
 - Visit nyc.gov/health and search "universal reporting" to download the Universal Reporting Form. Mail the form to the Health Department at 42-09 28th Street, CN-22, Long Island City, NY 11101.
- Phone:
 - Call the Health Department's Provider Access Line at 866-NYC-DOH1 (866-692-3641).



Acute Hepatitis B in New York City

Monitoring acute hepatitis B infections enables the Health Department to monitor trends in recent transmission of hepatitis B and inform the development of targeted interventions to prevent new infections.

DATA HIGHLIGHTS

- In 2016, 61 people were reported with acute hepatitis B in NYC:
- No children were reported with acute hepatitis B due to effective vaccination and perinatal prevention policies.
 - Sexual transmission was the most common risk factor—37.7 percent cited heterosexual sex and 18.0 percent reported being men who have sex with men (MSM) as risk factors for infection.
 - More than half (62.3 percent) of those with acute hepatitis B were Black or Latino.



PUBLIC HEALTH OPPORTUNITY

Health care providers, ensure that your at risk patients receive the hepatitis B vaccine, including sexual partners of people chronically infected with hepatitis B as well as men who have sex with men (MSM) and people with multiple sex partners.



Patient Characteristics

Table 1. Characteristics of people reported with acute hepatitis B in New York City, 2016

Characteristic	Number	Percentage of Each Group	Rate Per 100,000 People
Overall	61	N/A	0.7
Sex			
Female	19	31.1	0.4
Male	42	68.9	1.0
Age at Time of First Report (in years)			
0-19	0	0.0	0.0
20-29	8	13.1	0.6
30-39	17	27.9	1.3
40-49	14	23.0	1.2
50-59	17	27.9	1.6
60+	5	8.2	0.3
Race/Ethnicity			
Latino	21	34.4	0.8
White, non-Latino	16	26.2	0.6
Black, non-Latino	17	27.9	0.9
Asian/Pacific Islander	5	8.2	0.4
Other	1	1.6	0.7
Unknown	1	1.6	N/A
Borough of Residence			
Bronx	15	24.6	1.0
Brooklyn	18	29.5	0.7
Manhattan	19	31.1	1.2
Queens	9	14.8	0.4
Staten Island	0	0.0	0.0
Neighborhood Poverty Level by ZIP Code¹			
Low	6	10.0	0.4
Medium	23	38.3	0.7
High	13	21.7	0.6
Very high	18	30.0	1.0
Reported Risk Factors (mutually exclusive²)			
Injection drug use	4	6.6	N/A
Household contact	5	8.2	N/A
Men who have sex with men (MSM)	11	18.0	N/A
Heterosexual contact (multiple partners)	18	29.5	N/A
Heterosexual contact (one partner)	5	8.2	N/A
Health care-related exposure	5	8.2	N/A
Other	2	3.3	N/A
Unknown	11	18.0	N/A

¹ Excludes one person incarcerated at time of report.

² "Mutually exclusive" means that each patient is represented by the risk factor, among the reported risk factors, that poses the highest risk of hepatitis B infection. For example, a person who injected drugs and had a health care-related exposure is represented only once, in the "Injection drug use" row. The table lists risk factors from highest to lowest risk.

Chronic Hepatitis B in New York City

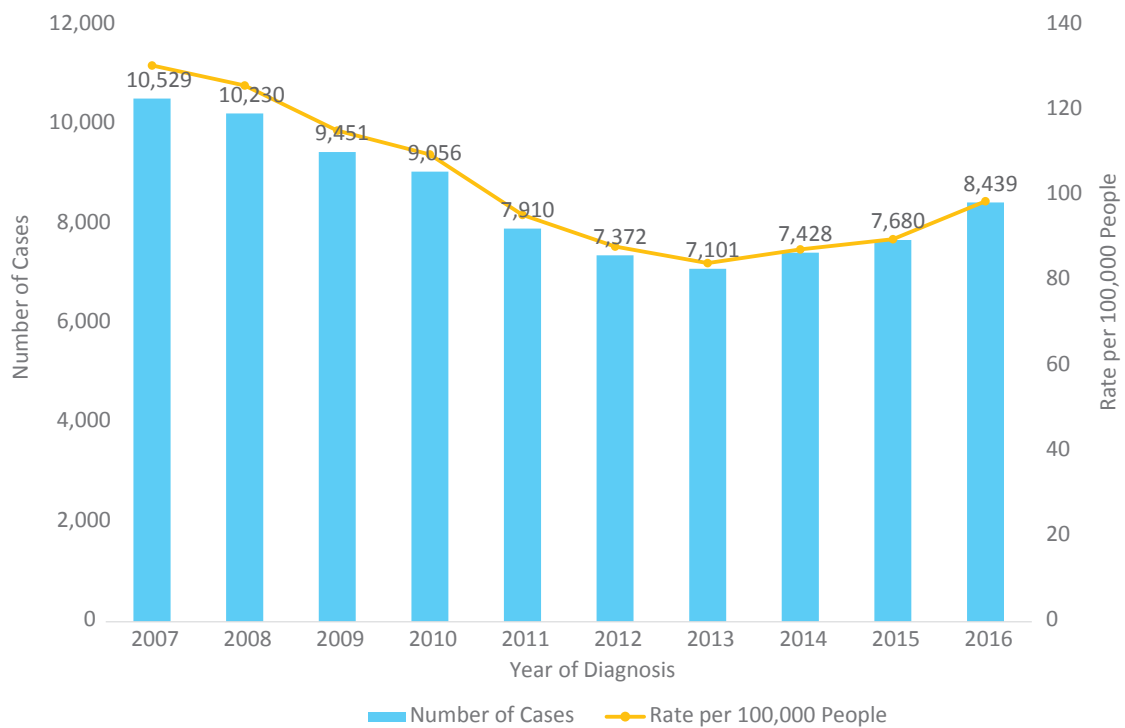
Trends

DATA HIGHLIGHTS

Overall, chronic hepatitis B case rates have been decreasing since 2007. However, there continues to be an increase in newly reported cases since 2013. There are many factors influencing the increase of chronic hepatitis B.

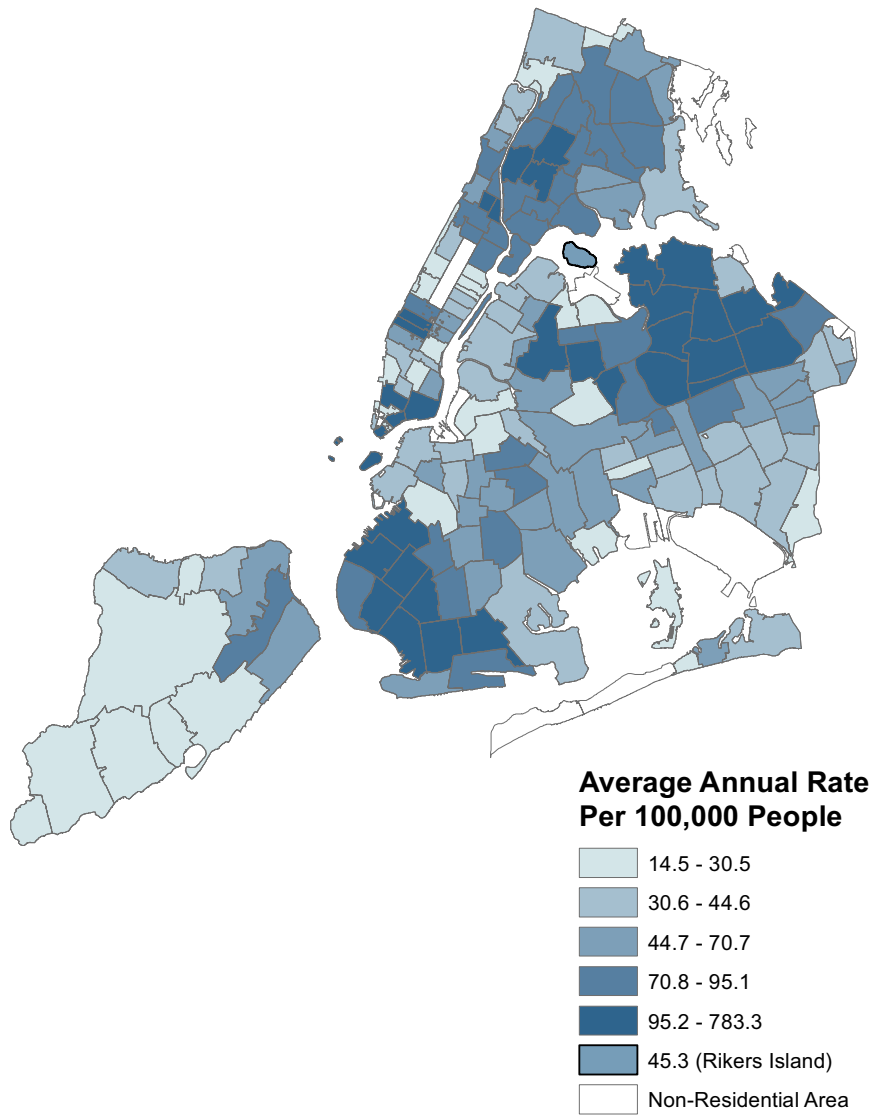


Figure 1. People newly reported with chronic hepatitis B in New York City, 2005-2016



Geographic Distribution

Map 1. Newly reported cases of chronic hepatitis B in New York City by ZIP code, 2015-2016



DATA HIGHLIGHTS

In 2016:

- There were 8,439 people newly reported with chronic hepatitis B in NYC, a 9.3 percent increase from 2015.
- Neighborhoods with the highest chronic hepatitis B rates were Sunset Park, Brooklyn, and Flushing, Queens—neighborhoods with large Asian populations.



Patient Characteristics

Characteristics of people reported with hepatitis B from 2013 to 2016 can serve as a proxy for all people currently living with and accessing care for hepatitis B in NYC.

Table 2. Characteristics of people reported with chronic hepatitis B in New York City, 2016

	People Newly Reported in 2016			All Case Reports, 2013-2016	
	Number	Percentage of Each Group	Rate Per 100,000 People	Number	Percentage of Each Group
Overall	8,439	N/A	98.8	89,912	N/A
Sex¹					
Female	3,601	42.7	80.6	40,153	44.7
Male	4,810	57.0	117.8	49,543	55.1
Unknown	28	0.3	N/A	213	0.2
Age at Time of First Report (in years)					
0-19	190	2.3	9.5	4,899	5.4
20-29	1,465	17.4	103.9	22,050	24.5
30-39	2,180	25.8	161.6	24,264	27.0
40-49	1,709	20.3	152.3	18,619	20.7
50-59	1,517	18.0	138.9	12,192	13.6
60-69	970	11.5	116.4	5,765	6.4
70-79	294	3.5	64.4	1,613	1.8
80+	114	1.4	38.6	510	0.6
Borough of Residence					
Bronx ²	1,158	13.7	79.6	9,023	10.0
Brooklyn	2,926	34.7	111.0	32,337	36.0
Manhattan	1,241	14.7	75.5	18,871	21.0
Queens	2,545	30.2	108.8	26,216	29.2
Staten Island	172	2.0	36.2	1,695	1.9
Unknown	397	4.7	N/A	1,770	2.0
Neighborhood Poverty Level by ZIP Code³					
Low	566	6.7	39.1	6,073	6.8
Medium	2,666	31.7	85.5	29,343	32.7
High	2,414	28.7	114.7	28,094	31.3
Very high	2,361	28.1	125.5	24,273	27.1
Unknown	407	4.8	N/A	1,877	2.1

¹ People reported as transgender are excluded. Gender identity is not reported by laboratories and is therefore underreported.

² The Bronx includes people in Rikers Island facilities. In 2016, 16 people were reported from Rikers Island.

³ Neighborhood poverty level data excludes people incarcerated at the time of report. In 2016, there were 25 newly reported people incarcerated at the time of report.

Perinatal Hepatitis B in New York City

To prevent perinatal hepatitis B infection, the Health Department conducts disease surveillance and health counseling for women infected with hepatitis B during pregnancy, refers their sexual and household contacts for testing, and monitors vaccination of their children. To learn more, visit nyc.gov and search "hepatitis B and pregnancy."

In an effort to increase identification of hepatitis B-infected pregnant women and to improve prenatal reporting, the NYC Health Code was amended in 2014 to require laboratories to include pregnancy status, if known, with positive hepatitis B reports. The proportion of cases of hepatitis B in pregnancy, first identified by the Health Department through a laboratory report specifying pregnancy status, increased from 29 percent in 2014 to 42 percent in 2016. Of the 1,630 hepatitis B-infected pregnant or post-partum women who were reported in 2016 (regardless of pregnancy outcome), 1,132 (69.4 percent) were reported to the Health Department prenatally.

Table 3. Demographic characteristics of hepatitis B-infected pregnant women in New York City who delivered a live birth in 2016

Group	Number	Percentage of Each Group	Rate Per 100,000 People
Overall	1,518	N/A	1,371
Borough of Residence			
Bronx	198	13.0	996
Brooklyn	661	43.5	1,613
Manhattan	146	9.6	822
Queens	467	30.8	1,739
Staten Island	46	3.0	874
Unknown	0	0.0	N/A
Race/Ethnicity			
Latino	51	3.4	151
White, non-Latino	108	7.1	311
Black, non-Latino	155	10.2	711
Asian/Pacific Islander	1,050	69.2	5,614
Other	153	10.1	N/A
Unknown	1	0.1	N/A
Country of Birth			
China	855	56.3	11,514
Other	346	22.8	N/A
USA	67	4.4	131
Uzbekistan	54	3.6	4,401
Dominican Republic	36	2.4	465
Ghana	34	2.2	5,113
Nigeria	34	2.2	4,964
Guinea	32	2.1	8,579
Haiti	19	1.3	1,313
Mali	16	1.1	6,809
Albania	17	1.1	5,199
Unknown	8	0.5	N/A
Region of Birth¹			
China	855	56.3	11,514
Western Africa	219	14.4	7,290
Caribbean and Haiti	70	4.6	520
USA	67	4.4	131
West and Central Asia	61	4.0	3,152
Europe	48	3.2	880
South Asia	48	3.2	884
East Asia (excl. China)	45	3.0	2,957
Southeast Asia	43	2.8	3,485
Mexico, Central and South America	29	1.9	213
Middle East	11	0.7	485
Northern Africa	6	0.4	523
Central Africa	4	0.3	7,407
Eastern Africa	4	0.3	N/A
Other and Unknown	8	0.5	1,441

Source: Denominators for rates from the Health Department Office of Vital Statistics, based on 2015 data

¹ Excludes regions that were not reported as a region of birth for any case (Australia/Oceania, Pacific Islands, Canada, Northern and Western Europe)

DATA HIGHLIGHTS

In 2016, 1,518 hepatitis B-infected women delivered a live birth in NYC. Most of these women were born in China (56.3 percent) or Western Africa (14.4 percent). The majority self-identified as Asian/Pacific Islander (69.2 percent). Most resided in Brooklyn (43.5 percent) or Queens (30.8 percent). 99.5 percent of infants born to hepatitis B-infected mothers received post-exposure prophylaxis (PEP) at the time of delivery, 91.1 percent received PEP and the complete hepatitis B vaccine series, and 85.2 percent had post-vaccination hepatitis B serology testing by 18 months of age.



PUBLIC HEALTH OPPORTUNITY

The Health Department supports a universal dose of the hepatitis B vaccine within 24 hours of birth, followed by a complete hepatitis B vaccine series. Of the 119,505 children born in NYC in 2016, 70 percent received their first dose of hepatitis B vaccine within the first three days of life.

Programs to support linkage to care for hepatitis B-infected pregnant women offer a unique opportunity to improve health outcomes in a vulnerable population.



Table 4. Hepatitis B vaccination, post-exposure prophylaxis (PEP) and testing for infants born to mothers with hepatitis B in New York City, 2015

Group	Number	Percentage of Each Group
Overall	1,516	N/A
PEP¹ and Vaccination Status		
PEP	1,508	99.5
Vaccine series completion ²	1,388	91.6
PEP and vaccine series completion ²	1,381	91.1
Testing Status		
Tested	1,292	85.2
Test Results (among those tested)		
Infected	4	0.3
Immune	1,249	96.7
Susceptible	28	2.2
Indeterminate	11	0.9

¹ Defined as administration of hepatitis B immune globulin and first dose of hepatitis B vaccine series within one day of life.

² Defined as receiving all three doses of hepatitis B vaccine with final dose given at ≥ 164 days of age.

Table 5. Hepatitis B status for sexual and household contacts of hepatitis B-infected pregnant women in New York City, 2016

Contacts	Number	Percentage of Each Group
Total Identified	2,060	N/A
Children Aged 18 or Younger¹	1,040	N/A
Children Tested	882	84.8
Immune	810	91.8
Infected	11	1.2
Susceptible	27	3.1
Inconclusive	34	3.9
Adults	1,020	N/A
Adults Tested	248	24.3
Immune	146	58.9
Infected	75	30.2
Susceptible	18	7.3
Inconclusive	9	3.6

¹ Excludes children born in 2016.

Chronic Hepatitis C in New York City

Trends

DATA HIGHLIGHTS

In 2016, the CDC case definition for chronic hepatitis C was updated. In response, the Health Department began requiring laboratories to report all positive hepatitis C antibody tests, regardless of signal-to-cutoff ratio for NYC residents. As a result, the number and rate of people newly reported with chronic hepatitis C have increased. Additional details on the 2016 CDC case definition of chronic hepatitis C can be found here:

cdc.gov/nndss/conditions/hepatitis-c-chronic/case-definition/2016/.

The 2016 increase in the number of newly reported hepatitis C cases can mostly be attributed to people with antibody positive and RNA negative test results. In 2016, 45.4 percent of people newly reported with hepatitis C had a test combination of antibody positive and RNA negative compared with 21.4 percent in 2015. The proportion of people newly reported with a hepatitis C RNA test is relatively stable.



Figure 2. People newly reported with chronic hepatitis C in New York City, 2007-2016

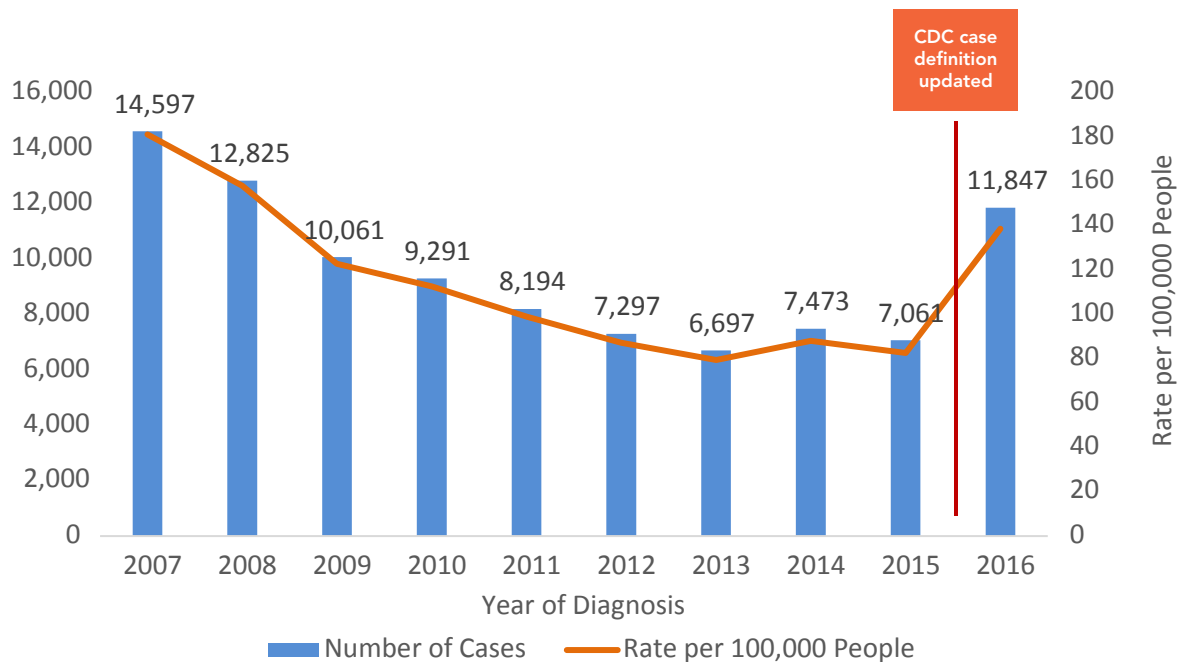


Figure 3. People newly reported with chronic hepatitis C by RNA status in New York City, 2007-2016

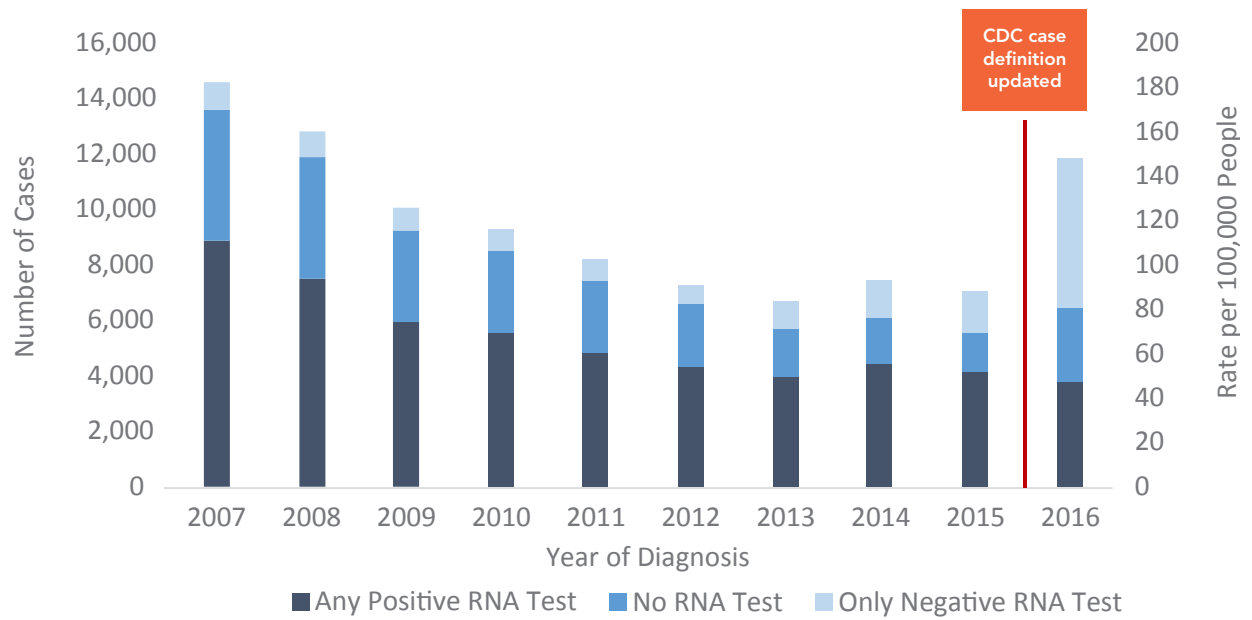
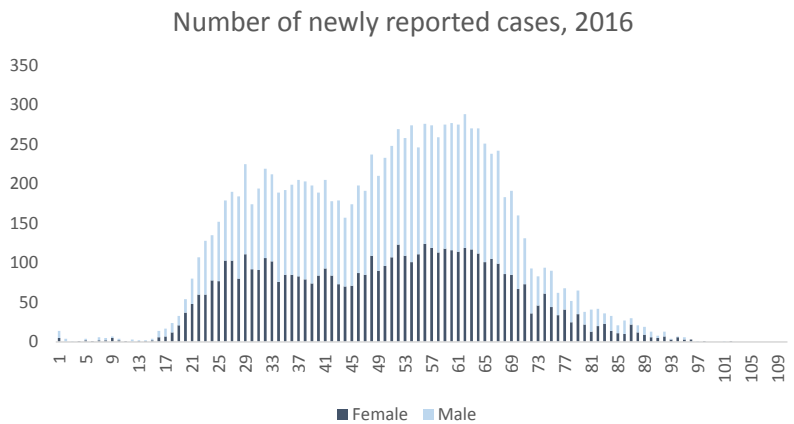
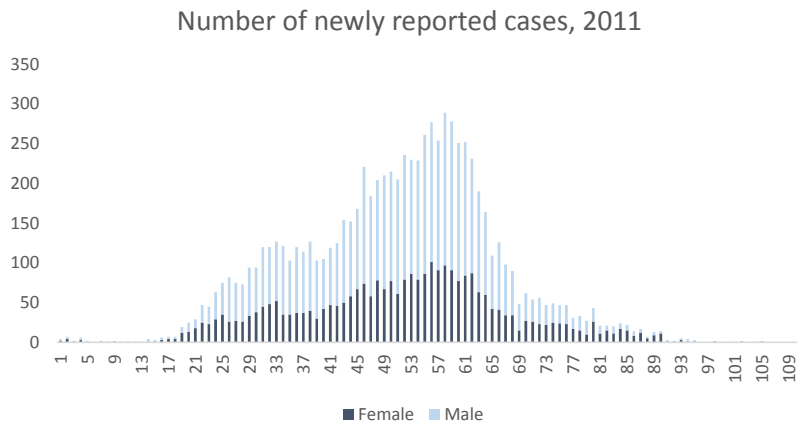
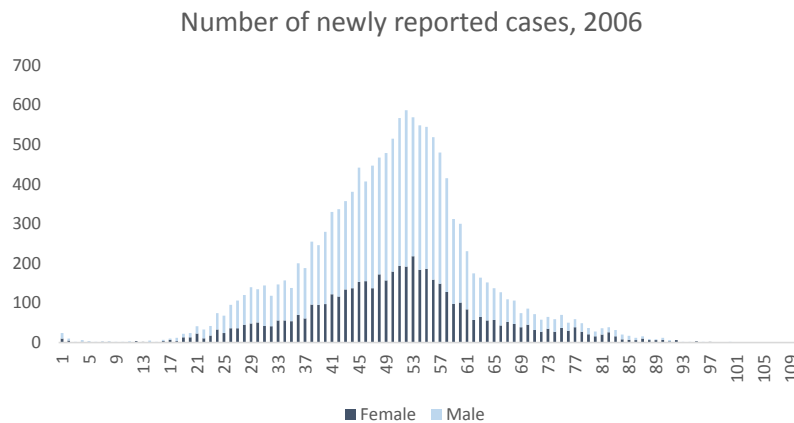
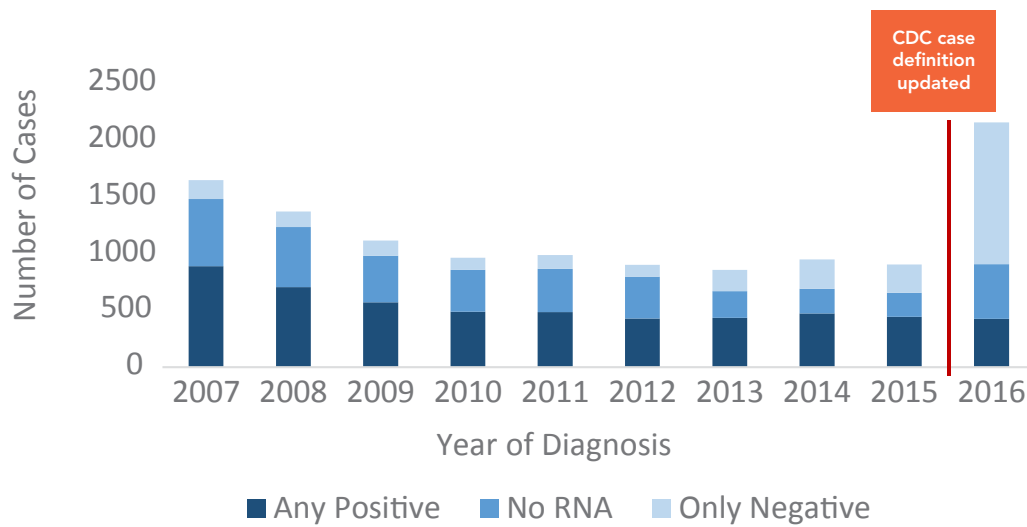


Figure 4. Age distribution of people newly reported with chronic hepatitis C in New York City, 2006, 2011, 2016



In 2006, there was a unimodal age distribution, with most newly reported cases of hepatitis C concentrated among the baby boomers (i.e., 41 to 61 years of age in 2006). Ten years later, in 2016, there is a bimodal distribution, with a distinct peak emerging among the younger age group (i.e., those born after 1964). Among this group, females comprise over half of the newly reported hepatitis C cases, which was not observed in 2006 and 2011.

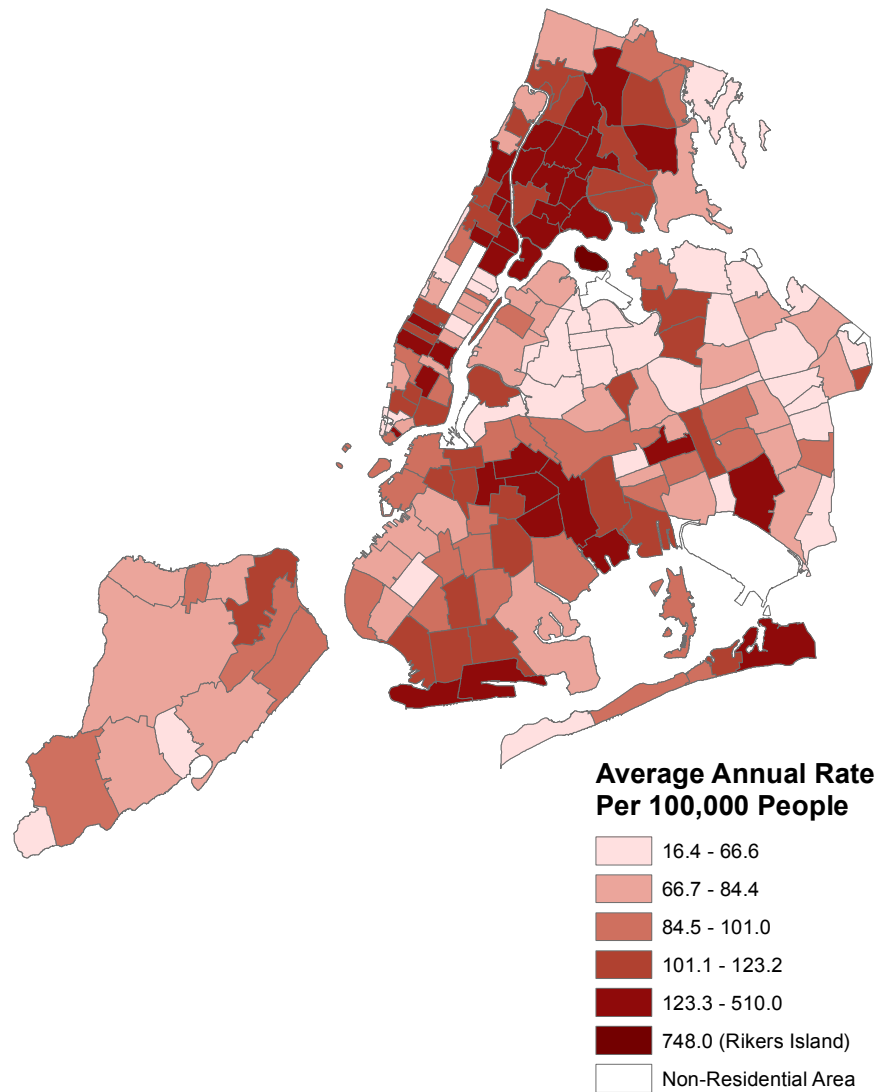
Figure 5. Women of childbearing age (15-44 years of age) newly reported with chronic hepatitis C by RNA Status, 2007-2016



The number of women of childbearing age (15-44 years of age) with any positive RNA test has remained relatively stable since 2010.

Geographic Distribution

Map 2. People newly reported with chronic hepatitis C in New York City by ZIP code, 2015-2016.



DATA HIGHLIGHTS

- From 2015 to 2016, the highest rate of newly reported chronic hepatitis C was in the Rikers Island incarcerated population, at 748.0 people per 100,000.
- East Harlem and Chelsea-Clinton in Manhattan and Hunts Point and Mott Haven in the Bronx had the highest rates of newly reported cases, similar to 2014 and 2015.
 - Many of the patients reporting an address in Chelsea-Clinton use Manhattan's main post office address, which is often used by homeless people to receive mail.



Patient Characteristics

Characteristics of patients reported from 2013 to 2016 can serve as a proxy for all people currently living with and accessing care for hepatitis C in NYC.

Table 6. Characteristics of people reported with chronic hepatitis C in New York City, 2016

	People Newly Reported in 2016			All Case Reports, 2013-2016	
	Number	Percentage of Each Group	Rate Per 100,000 People	Number	Percentage of Each Group
Overall	11,847	N/A	138.6	103,877	N/A
Sex¹					
Female	5,375	45.4	120.3	39,504	38.0
Male	6,470	54.6	158.5	64,106	61.7
Unknown	2	0.0	N/A	266	0.3
Age at Time of First Report (in years)					
0-19	201	1.7	10.1	1,007	1.0
20-29	1,555	13.1	110.3	7,696	7.4
30-39	2,001	16.9	148.3	16,219	15.6
40-49	1,962	16.6	174.9	29,032	27.9
50-59	2,656	22.4	243.2	31,034	29.9
60-69	2,368	20.0	284.2	13,848	13.3
70-79	776	6.6	170.0	3,774	3.6
80+	328	2.8	111.1	1,267	1.2
Year of Birth					
1900-1944	921	7.8	144.2	9,899	9.5
1945-1965	5,094	43.0	265.8	65,092	62.7
1966-1983	3,556	30.0	166.3	22,520	21.7
1984-2015	2,276	19.2	59.0	6,366	6.1
Borough of Residence					
Bronx ²	2,706	22.8	185.9	27,348	26.3
Brooklyn	3,555	30.0	134.8	29,598	28.5
Manhattan	2,396	20.2	145.7	23,271	22.4
Queens	2,412	20.4	103.1	18,020	17.3
Staten Island	506	4.3	106.6	4,349	4.2
Unknown	272	2.3	N/A	1,291	1.2
Neighborhood Poverty Level by ZIP Code³					
Low	1,328	11.5	91.7	10,262	10.4
Medium	3,788	32.9	121.5	30,060	30.4
High	2,960	25.7	140.7	25,476	25.7
Very high	3,144	27.3	167.1	31,727	32.1
Unknown	282	2.5	N/A	1,415	1.4

¹ People reported as transgender are excluded. Gender identity is not reported by laboratories and is therefore underreported.

² The Bronx includes people in Rikers Island facilities. In 2015, 288 people were reported from Rikers Island.

³ Neighborhood poverty level data excludes people incarcerated at the time of report. In 2016, there were 345 newly reported people incarcerated at the time of report.

RNA and Genotype Tests

People with a positive hepatitis C antibody (screening) test need the hepatitis C RNA test to confirm infection. Providers use genotype tests to determine appropriate hepatitis C treatment. Hepatitis C RNA and genotype tests reported to the Health Department can inform patient- and provider-targeted interventions to promote confirmatory testing and linkage to hepatitis C care.

DATA HIGHLIGHTS

- 77.3 percent of people with a positive hepatitis C antibody test received hepatitis C RNA testing, similar to what was reported in 2015 (80.5 percent).
- 70.3 percent of people were infected with genotype 1, followed by 3, 2 and 4. Genotype 6 was rarely reported and there were no patients with genotype 5, similar to what was reported in 2015.
- Genotype distribution of hepatitis C patients in NYC mainly consists of genotype 1a and 1b. Infection with genotype 3 has nearly doubled since 2006 (from 8.2 percent to 14.1 percent).



Table 7. RNA and genotype test results of people newly reported with chronic hepatitis C in New York City, 2016

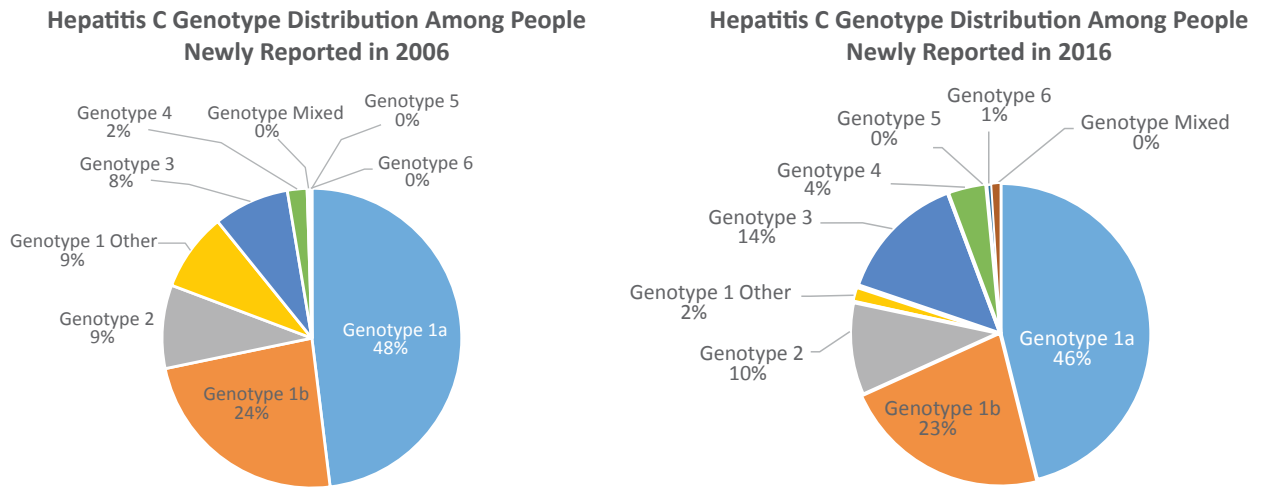
	People Newly Reported in 2016	
	Number	Percentage of Each Group
Overall	11,847	N/A
RNA Test Performed¹		
Yes	9,163	77.3
No	2,684	22.7
Positive RNA Test		
Yes	3,781	41.3
No	5,382	58.7
Reflex RNA Test Performed²		
Yes	5,479	59.8
No	3,684	40.2
RNA Latest Result		
Positive	2,807	30.6
Negative	6,256	68.3
Indeterminate	100	1.1
RNA Test Performed Within Three Months of Initial Report		
Yes	8,606	72.6
No	3,241	27.4
Genotype Test Performed³		
Yes	2,067	54.7
No	1,714	45.3

¹ Based on the Health Department's hepatitis C surveillance data as of April 2017. Reporting of negative RNA test results to the Health Department was mandated July 21, 2014.

² RNA reflex test data are shown for cases who had a hepatitis C antibody and RNA test on the same date. Percentage is out of people with a RNA test performed.

³ Genotype data are presented for patients who had a positive RNA reported (n=3,781).

Figure 6. Hepatitis C genotype distribution in New York City, 2006 vs. 2016



PUBLIC HEALTH OPPORTUNITY

All people with a positive hepatitis C antibody (screening) test should receive the hepatitis C RNA test to confirm infection. The Health Department recommends that clinicians order the hepatitis C antibody to reflex RNA test. With the reflex test, the laboratory will immediately do an RNA test on the same specimen as the positive antibody test.



People Aged 0 to 29 years

Identifying new hepatitis C infections is challenging because new infections are usually asymptomatic. Newly reported hepatitis C patients who are young are more likely to have been recently infected than older people. Understanding the characteristics of this population can inform effective hepatitis C prevention strategies.

DATA HIGHLIGHTS

- From 2015 to 2016, the highest rate of newly reported hepatitis C cases among people aged 0 to 29 years was in the Rikers Island population (157.1 per 100,000 people).
- Of the five boroughs, Manhattan had the highest rate of newly reported hepatitis C cases in people aged 0 to 29 years (58.4 per 100,000 people).
- Neighborhoods with the highest rates of newly reported hepatitis C in young people were East Harlem and Chelsea-Clinton in Manhattan and Bedford Stuyvesant-Crown Heights in Brooklyn.
- In 2016, rates of newly reported hepatitis C in people aged 0 to 29 years were higher for women than men.



Map 3. Newly reported cases of hepatitis C in people aged 0 to 29 in New York City by United Hospital Fund (UHF) neighborhood, 2015-2016

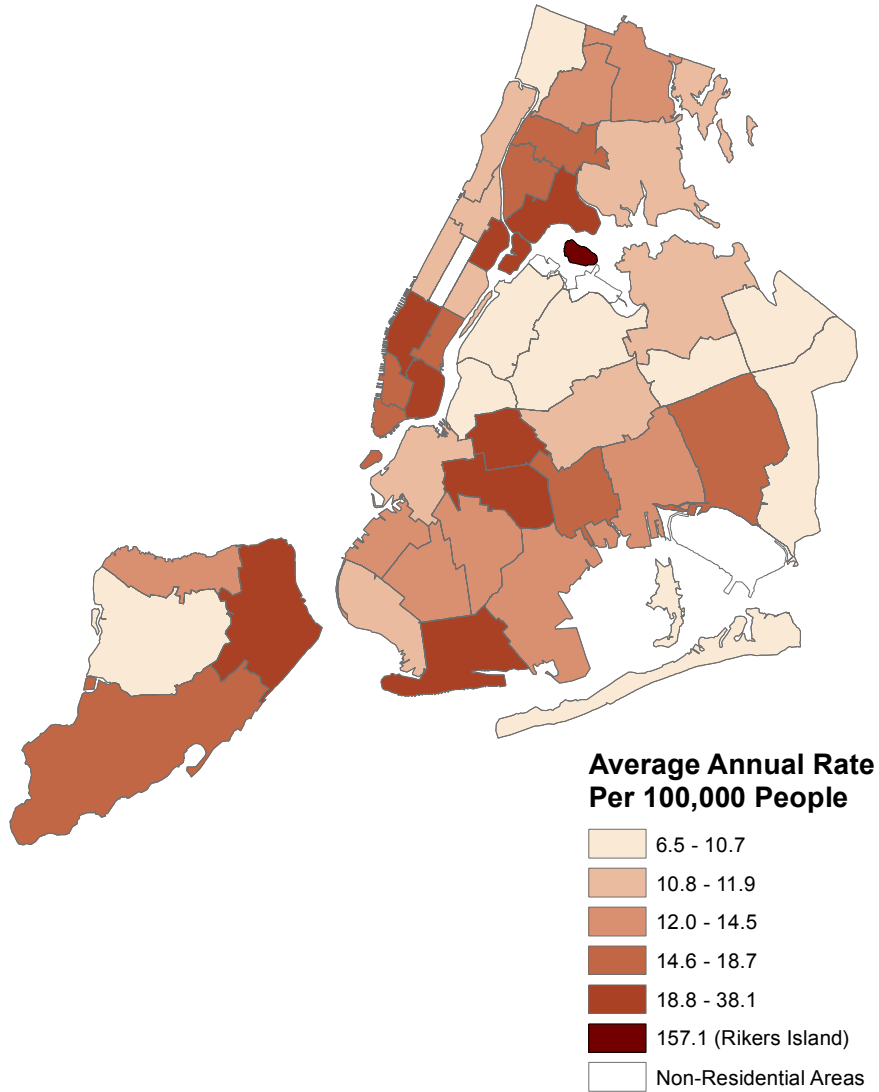


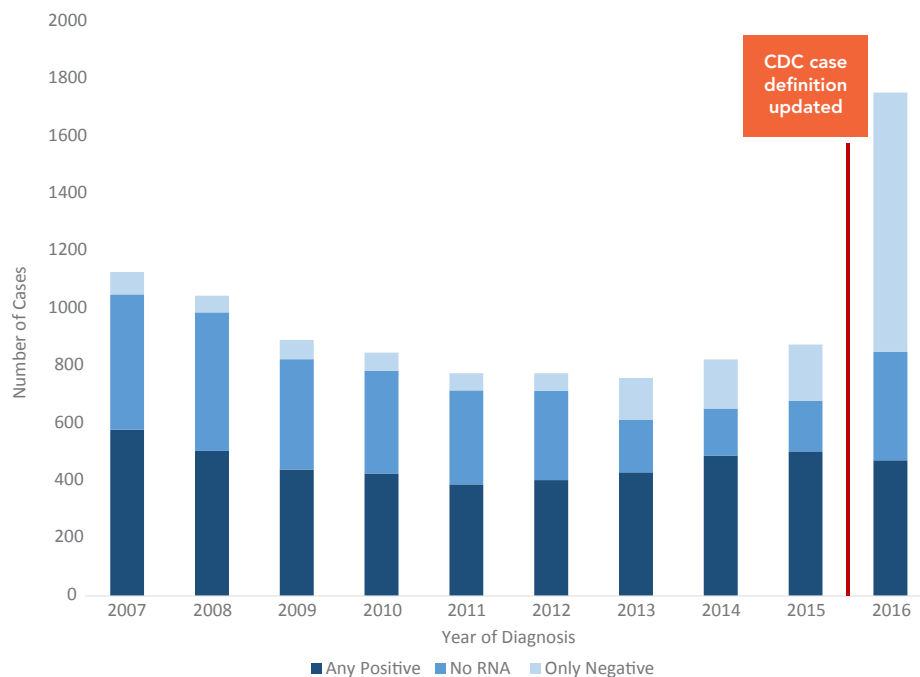
Table 8. People aged 0 to 29 years newly reported with chronic hepatitis C in New York City, 2016

Characteristic	Number	Percentage of Each Group	Rate Per 100,000 People
Overall	1,756	N/A	51.6
Sex			
Female	920	52.4	54.0
Male	835	47.6	49.1
Unknown	1	0.1	N/A
Age at Time of First Report (in years)			
0-4	24	1.4	4.2
5-9	23	1.3	4.7
10-14	12	0.7	2.6
15-19	142	8.1	30.3
20-24	602	34.3	98.8
25-29	95	54.3	119.0
Borough of Residence			
Bronx ¹	371	21.1	56.9
Brooklyn	545	31.0	49.5
Manhattan	347	19.8	58.4
Queens	351	20.0	40.1
Staten Island	102	5.8	56.8
Unknown	40	2.3	N/A
Neighborhood Poverty Level by ZIP Code²			
Low	208	12.4	14.4
Medium	569	33.8	18.3
High	416	24.7	19.8
Very high	451	26.8	24.0
Unknown	40	2.4	N/A

¹ The Bronx includes people in Rikers Island facilities (68 people aged 0 to 29 reported in 2016).

² Excludes 72 people incarcerated at time of report.

Figure 7. People aged 0 to 29 years newly reported with chronic hepatitis C by RNA status in New York City, 2007-2016



Acute Hepatitis C Surveillance

In 2016, the Health Department identified few acute cases of hepatitis C, but estimates actual incidence to be higher. Data on acute hepatitis C infections can inform effective prevention programs; therefore, the Health Department asks that health care providers report acute hepatitis C cases. To learn how to report acute hepatitis C cases, visit nyc.gov and search “provider hepatitis reporting.”



Hepatitis C Prevalence Estimate

Several data sources are used to estimate the prevalence of hepatitis C in NYC. The New York City Health and Nutrition Examination Survey (NYC HANES) is a community-based health survey, which uses the blood tests of consenting participants to estimate the prevalence of hepatitis C in NYC adults aged 20 years or older. The 2013 to 2014 survey estimates that the hepatitis C antibody prevalence, which is indicative of past or present infection, was 2.5 percent. Confirmatory RNA testing for those who had a positive antibody test suggests that 1.4 percent of adults aged 20 years or older are currently infected with hepatitis C.

The National Health and Nutrition Examination Survey (NHANES) uses the same method to collect data on national hepatitis C antibody prevalence. As a result, NHANES can be used to compare national estimates with state estimates. However, both surveys have several limitations. NYC HANES and NHANES survey only non-institutionalized, domiciled, adult civilian residents. People not surveyed include those who are homeless, incarcerated, on active military duty or living in nursing homes. Some of these populations are known to have high rates of hepatitis C, and their exclusion from the survey likely underestimates true prevalence.

NYC hepatitis C surveillance data were used to generate prevalence estimates, which included populations typically not captured in health surveys. Hepatitis C surveillance data were adjusted for death, out-migration, underdiagnosis and resolution of infection (either through treatment or natural

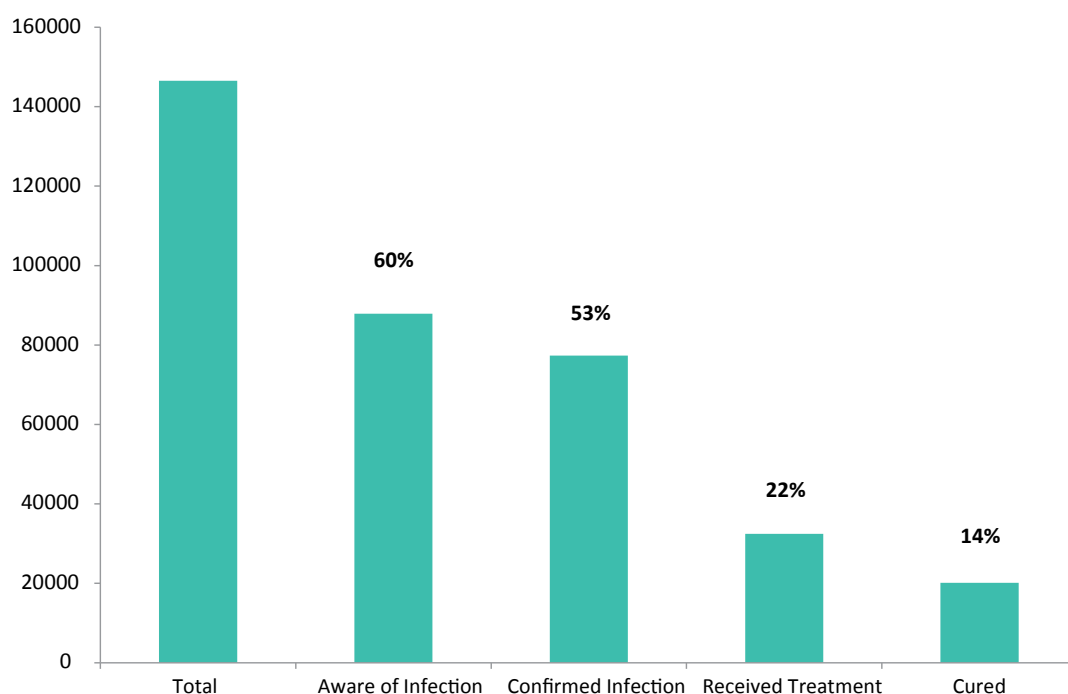
clearance). Based on surveillance reports through the end of 2010, the prevalence estimate among NYC adults aged 20 years or older is 2.4 percent (range 1.5-4.9 percent) or 146,500 adults. The surveillance-based prevalence estimate is currently being updated to include hepatitis C reports through 2015 and will be included in future annual reports.

New York City Hepatitis C Care Continuum

The NYC hepatitis C care continuum follows those infected with hepatitis C from the time of diagnosis, through their treatment and until they achieve cure. By documenting this progress, the continuum can identify gaps in hepatitis C-focused public health interventions. The continuum represents the surveillance-based estimate of hepatitis C prevalence in NYC (i.e., 146,500 adults).

- The percentage of people aware of their infection is based on the results of a serosurvey of a Bronx Emergency Department.
- “Confirmed infection” is defined as a positive RNA or genotype test.
- “Received treatment” is defined as a positive RNA test and a subsequent negative RNA test. This is based on the Health Department’s validated treatment and cure algorithm.
- “Cure” is calculated by identifying the date of the first negative, indeterminate or low-positive RNA test result after the last high positive RNA test result (proxy for four weeks into treatment). Based on this date, cure is achieved when the following criteria are met:
 - o At least one prior positive RNA test
 - o At least one subsequent negative RNA test
 - o Most recent negative RNA test is at least four months later
 - o No subsequent high positive RNA result (≥ 1000 IU/mL)
 - o Most recent RNA result is negative
- Pre-direct acting antiviral (DAA) medication treatment and cure rates are not included in the continuum. Estimates are based on people with a hepatitis C RNA test since July 1, 2014, when negative RNA reporting was implemented in NYC.

Figure 8. Hepatitis C care continuum for all infected individuals in New York City



DATA HIGHLIGHTS

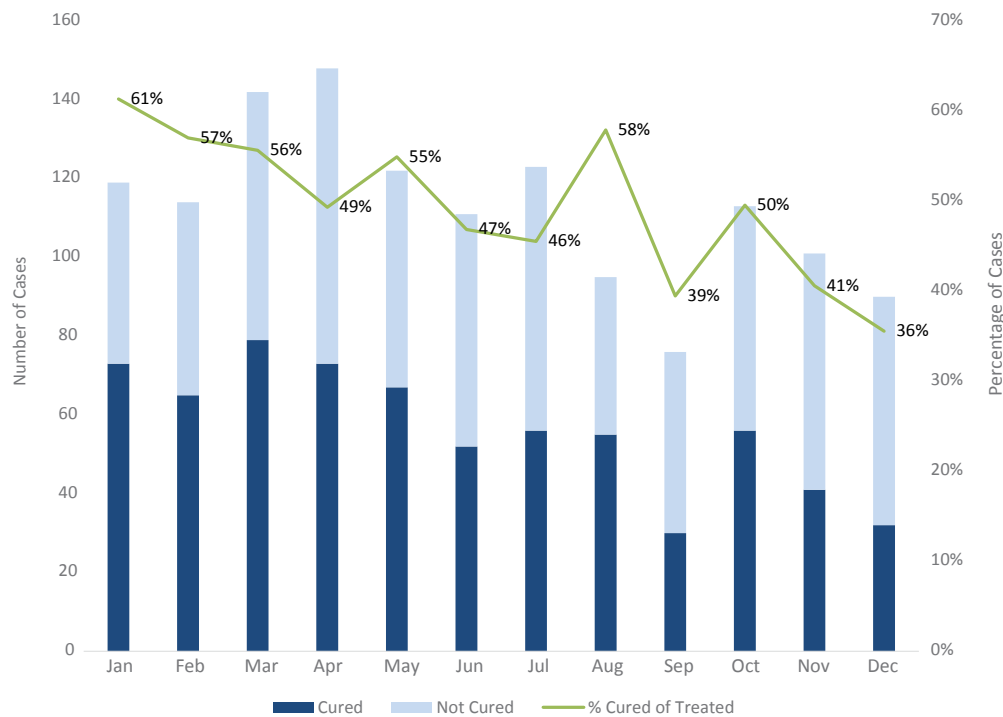
Of the estimated 146,500 people living with hepatitis C in NYC, 53 percent have confirmed infection, 22 percent received treatment and 14 percent (approximately 20,000 people) have been cured in the DAA era. Efforts are needed to diagnose people who are unaware of their infection and link them to care. Additional efforts are needed to help navigate people successfully through treatment.



Treatment and Cure Among People Newly Diagnosed With Hepatitis C Virus in 2015

Of the 7,061 people newly reported with hepatitis C virus in 2015, 3,809 had a positive RNA test in 2015. Among these, 1,339 initiated treatment by the end of 2016 as determined by the Health Department's validated treatment algorithm (a positive RNA test and a subsequent negative RNA test). Of those receiving treatment, 674 (50.3 percent of people treated and 9.5 percent of those newly reported) achieved cure by the end of 2016.

Figure 9. Hepatitis C treatment and cure among people newly diagnosed with hepatitis C in 2015 who initiated treatment by the end of 2016 in New York City, by diagnosis month



PUBLIC HEALTH OPPORTUNITY

Only one-third of people who tested hepatitis C RNA positive in 2015 initiated treatment by the end of 2016. Seek funding to support linkage to care, clinical care coordination, treatment readiness and adherence.



RESEARCH AND EVALUATION

Hepatitis C Screening Among People Who Inject Drugs

National HIV Behavioral Surveillance

As of 2017, the CDC funds 22 metropolitan statistical areas through the United States (U.S.), including NYC, to conduct an ongoing cross-sectional study of three risk groups: MSM, people who inject drugs (PWID) and high-risk heterosexuals. The study aims to determine HIV prevalence and frequency and correlates of HIV risk behaviors. In 2015, hepatitis C rapid testing was offered to PWID by the Health Department.

DATA HIGHLIGHTS

- In the 2015 survey of PWID, 80 percent reported ever being tested for hepatitis C and 47 percent reported ever being diagnosed with hepatitis C.
- Among those who reported being diagnosed with hepatitis C, 40 percent were diagnosed 10 or more years ago.
- Only one-third reported ever taking medicine to treat hepatitis C, and only 20 percent were told they were cured.
- Among those who were tested, 72 percent were currently infected with hepatitis C and most (77 percent) were aware of their infection.



Table 9. Hepatitis C screening, diagnosis and treatment history among people who inject drugs (PWID) in the New York City National HIV Behavioral Surveillance Study, 2015

	Number (Percentage)
Total	506
Ever tested for hepatitis C	
No	81 (16%)
Yes	407 (80%)
Unknown	18 (4%)
Of those tested - Ever diagnosed with hepatitis C	
No	191 (47%)
Yes	209 (51%)
Unknown	7 (2%)
When diagnosed with hepatitis C	
≤6 months	21 (10%)
More than 6 months to <1 year ago	15 (7%)
1 year to <5 years ago	54 (26%)
5 years to <10 years ago	31 (15%)
10+ years	84 (40%)
Unknown	4 (2%)
Ever taken medicine to treat hepatitis C	
No	138 (66%)
Yes	67 (32%)
Unknown	4 (2%)
Rapid hepatitis C antibody test result	
Non-reactive	245 (48%)
Reactive	254 (50%)
Not done	7 (1%)
Confirmatory RNA result²	
Negative	47 (28%)
Positive	121 (72%)
Aware of positive RNA result³	
Aware	93 (77%)
Unaware	23 (19%)
Unknown	5 (4%)

¹ Among those who completed the New York City local survey administered after the CDC core survey

² Blood sample was collected for confirmatory testing when rapid test was positive and a phlebotomist was present (n=168).

³ Self-reported diagnosis of hepatitis C virus

Deaths From Hepatitis B and C

DATA HIGHLIGHTS

In 2015, more than half of deaths related to both hepatitis B and C occurred in people aged 65 or younger.

Hepatitis B death rate:

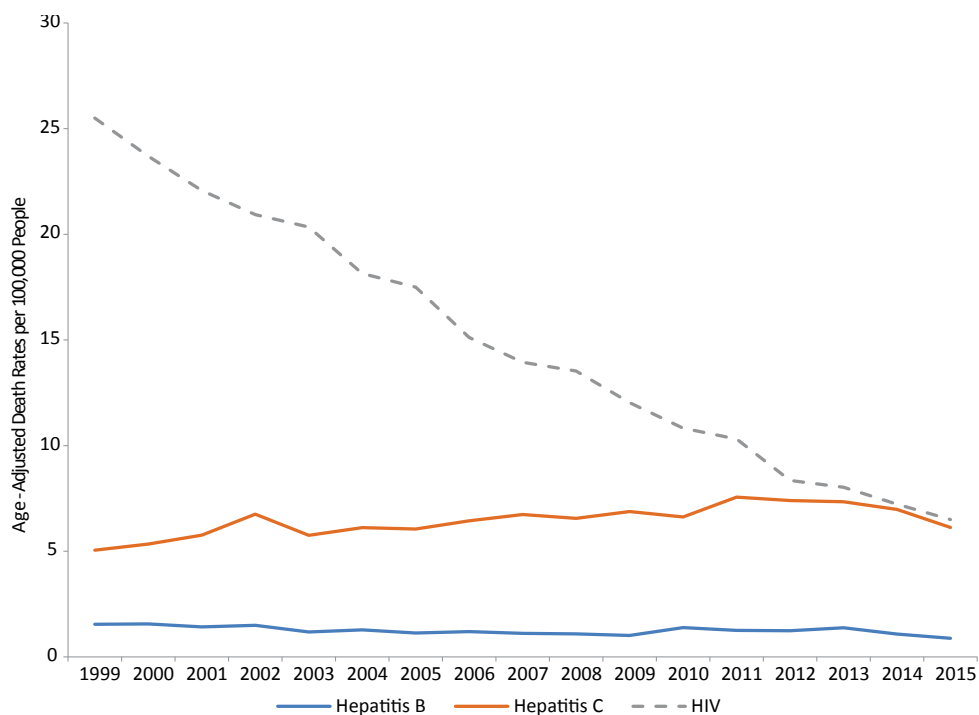
- Less than 1 per 100,000 people and has remained relatively stable in recent years
- Highest among Asians, followed by non-Latino Blacks

Hepatitis C death rate:

- Highest among Latinos and non-Latino Blacks
- Declined from 7.6 per 100,000 people in 2011 to 6.1 per 100,000 people in 2015
- Nearly equivalent to the HIV-related death rate in NYC, which continues to decrease



Figure 10. Age-adjusted death rates of hepatitis B, hepatitis C and HIV in New York City, 1999-2015



Source: New York City Department of Health and Mental Hygiene, Bureau of Vital Statistics

PUBLIC HEALTH OPPORTUNITY

Early screening, care and treatment of hepatitis B and C can prevent liver disease and premature death.



Table 10. Characteristics of patients with deaths associated with hepatitis B or C as the underlying or contributing cause of death, New York City residents, 2015

	Hepatitis B			Hepatitis C		
	Number	Percentage of Each Group	Age-Adjusted Rate Per 100,000	Number	Percentage of Each Group	Age-Adjusted Rate Per 100,000
Total	81	N/A	0.9	563	N/A	6.1
Age at Death	Number	Percentage of Each Group	Crude Rate Per 100,000	Number	Percentage of Each Group	Age-Adjusted Rate Per 100,000
0-24	0	0.0	0.0	0	0.0	0.0
25-44	5	6.2	0.2	11	2.0	0.4
45-64	41	50.6	1.9	307	54.5	14.6
65-84	31	38.3	3.2	230	40.9	23.7
≥85	4	4.9	2.5	15	2.7	9.5
Sex	Number	Percentage of Each Group	Age-Adjusted Rate Per 100,000	Number	Percentage of Each Group	Age-Adjusted Rate Per 100,000
Female	15	18.5	0.3	173	30.7	3.4
Male	66	81.5	1.6	390	69.3	9.5
Race/Ethnicity	Number	Percentage of Each Group	Age-Adjusted Rate Per 100,000	Number	Percentage of Each Group	Age-Adjusted Rate Per 100,000
Black, Non-Latino	21	25.9	1.0	177	21.4	8.2
White, Non-Latino	15	18.5	0.5	148	26.3	4.4
Asian or Pacific Islander	33	40.7	2.7	20	3.6	1.6
Latino	10	12.3	0.4	201	35.7	8.9
Other/Unknown	2	2.5	2.2	17	3.0	15.5

Source: New York City Department of Health and Mental Hygiene, Bureau of Vital Statistics

Liver Cancer: Geographic Distribution and Trends

Hepatocellular carcinoma, the most common type of liver cancer, is often caused by chronic hepatitis B or C.

DATA HIGHLIGHTS

- Liver cancer incidence and mortality remain high among NYC residents.
- In 2014, there was a decrease in liver cancer incidence for both men and women.
- Brooklyn continues to have the highest number of liver cancer cases, and the Bronx has the highest rate of liver cancer incidence and mortality in NYC.
- Men consistently experience higher liver cancer incidence and mortality than women.



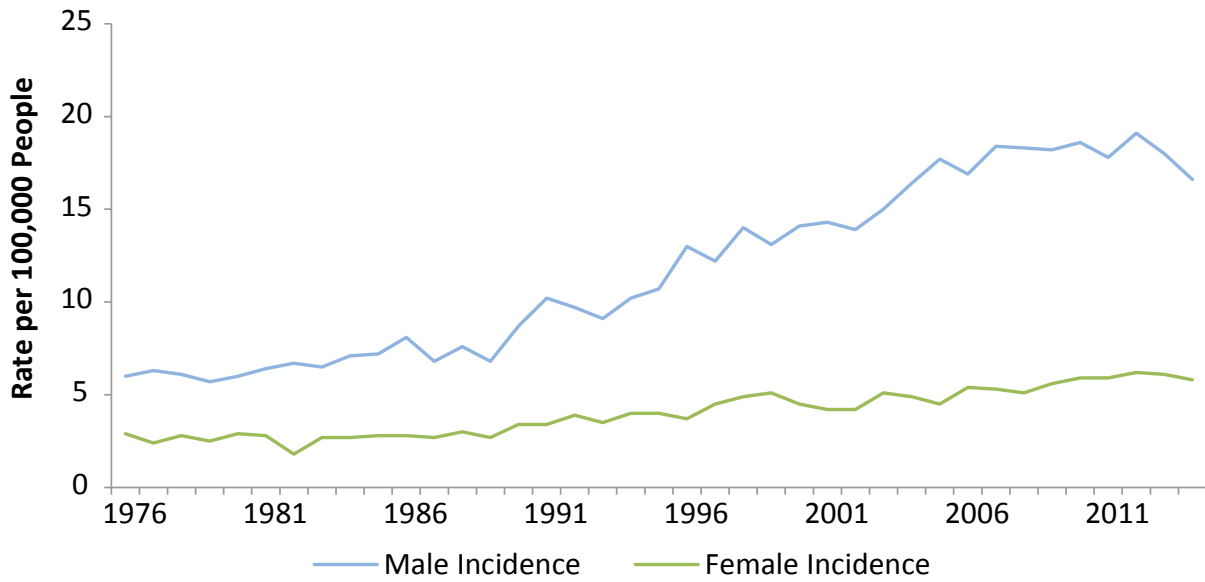
Table 11. Liver cancer incidence and mortality in New York City by borough, 2010-2014

Borough	Incidence				Mortality			
	Men		Women		Men		Women	
	Number*	Rate Per 100,000 People	Number*	Rate Per 100,000 People	Number*	Rate Per 100,000 People	Number*	Rate Per 100,000 People
New York City (total)	717**	18.0	302**	6.0	423	11.1	214	4.2
Bronx	165	27.2	67	8.3	91	15.9	40	5.0
Brooklyn	193	16.9	83	5.6	117	10.6	61	4.1
Manhattan	140	17.3	66	6.2	85	10.9	44	4.0
Queens	174	15.1	72	5.1	102	9.2	57	4.1
Staten Island	44	17.1	15	4.9	28	11.6	12	3.9

*Average annual cases

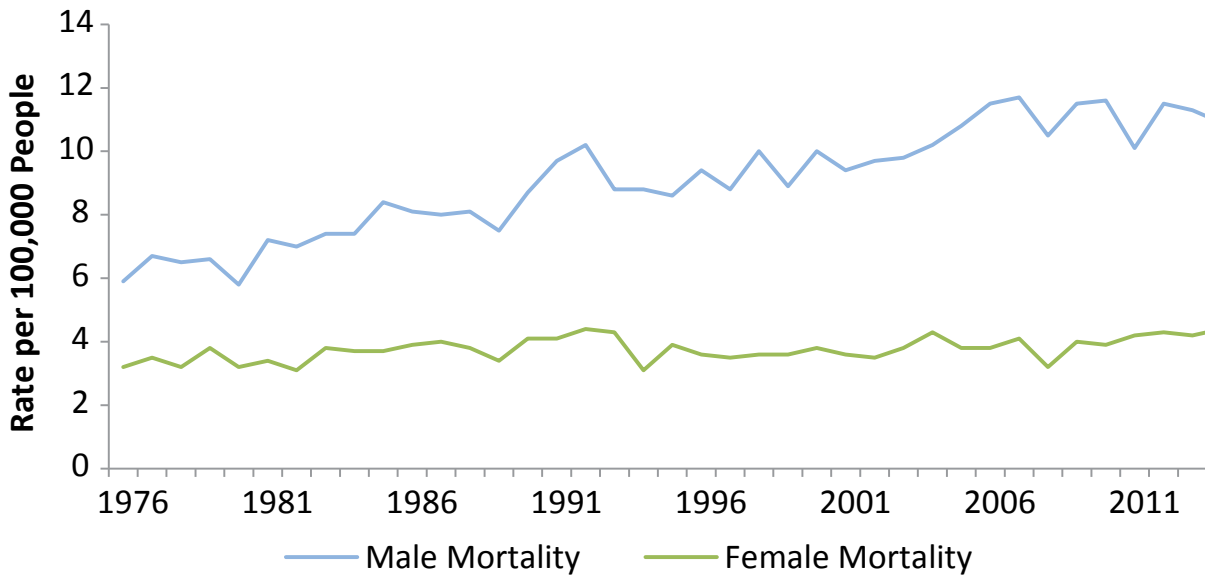
**Totals are different due to rounding.

Figure 11. Liver cancer incidence in New York City by year and sex, 1976-2014



Source: New York State Cancer Registry

Figure 12. Liver cancer mortality in New York City by year and sex, 1976-2014



Source: New York State Cancer Registry

PUBLIC HEALTH OPPORTUNITY

People with chronic hepatitis B should be screened for liver cancer according to American Association for the Study of Liver Diseases (AASLD) guidelines.* People with chronic hepatitis C and cirrhosis should be screened for liver cancer every six months. Cirrhotic patients should be screened for liver cancer according to guidelines, even after they have been cured of hepatitis C.

*See the "References and Links" section



Hepatitis C Medications Prescribed for Medicaid-Covered Patients

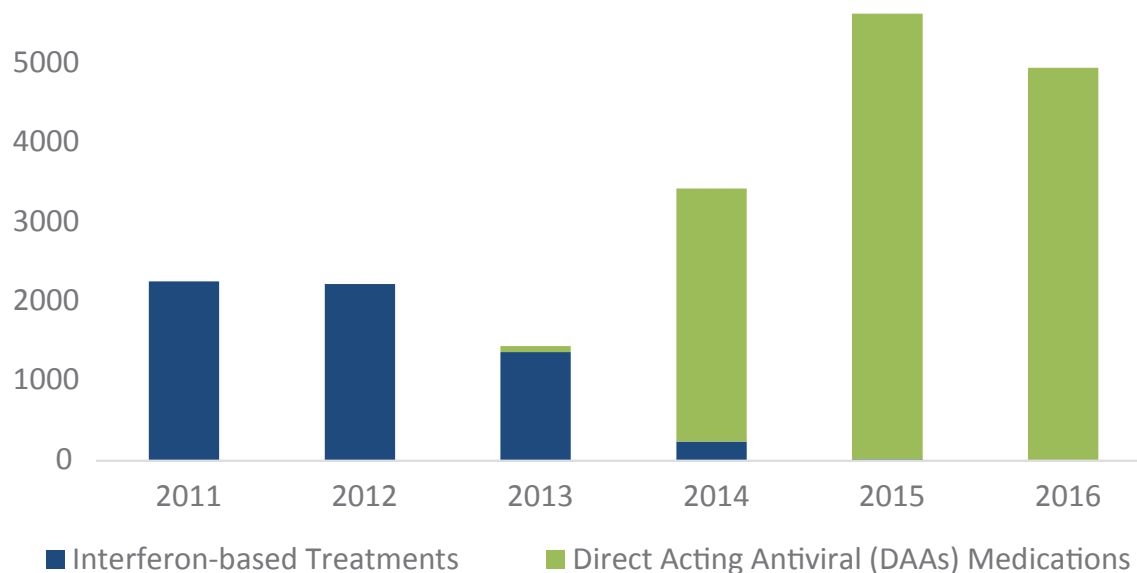
DATA HIGHLIGHTS

In 2016:

- Approximately 3,400 Medicaid recipients were prescribed hepatitis C treatments, a 61 percent decrease from 2015.
- Nearly all were prescribed direct-acting antiviral (DAA) medications. In 2016, ledipasvir/sofosbuvir accounted for 47 percent of the hepatitis C medications prescribed to Medicaid patients, compared with nearly three-quarters of prescriptions in 2015.

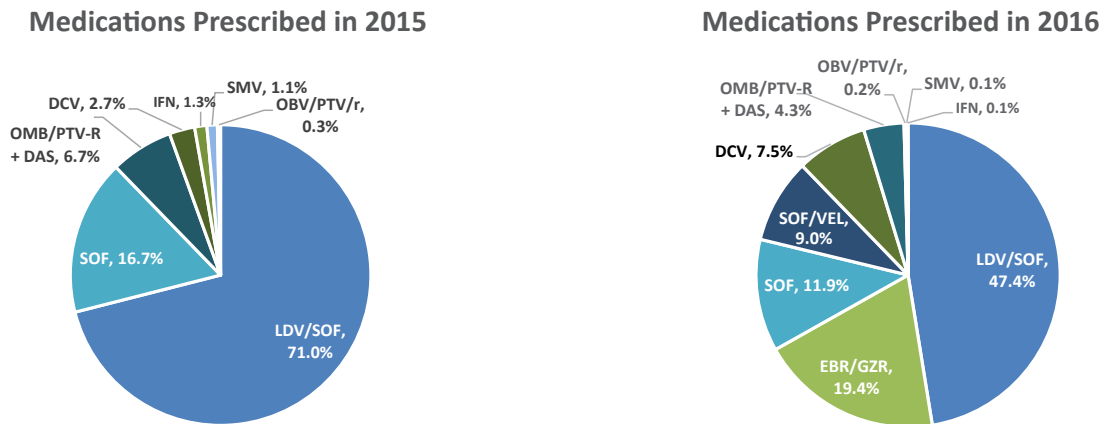


Figure 13. Hepatitis C medications prescribed to New York City Medicaid recipients by year of prescription, 2011-2016



Note: Some Medicaid recipients were prescribed interferon-based treatment and DAAs. Recipients with dual prescriptions are removed from the interferon-based treatment counts to avoid duplication.

Figure 14. Hepatitis C medications prescribed to New York City Medicaid recipients, 2015 versus 2016



Abbreviation	Generic Name	Brand Name
LDV/SOF	Ledipasvir/sofosbuvir	Harvoni
EBR/GZR	Elbasvir/Grazoprevir	Zepatier
SOF	Sofosbuvir	Sovaldi
SOF/VEL	Sofosbuvir/Velpatasvir	Epclusa
DCV	Daclatasvir Dihydrochloride	Daklinza
OMB/PTV-R + DAS	Ombita/Paritap/Riton/Dasabuvir	Viekira Pak
OBV/PTV/r	Ombitasvir/Paritaprev/Ritonav	Technivie
SMV	Simeprevir Sodium	Olysio
IFN	Interferon-based treatments	Interferon-based treatments

DIRECT SERVICES

Hepatitis B Vaccinations

The Health Department provides a free three-dose series of hepatitis B vaccination to at-risk, uninsured or underinsured people at its health facilities.

Table 12: Number of hepatitis B vaccines provided by Health Department facilities, 2016

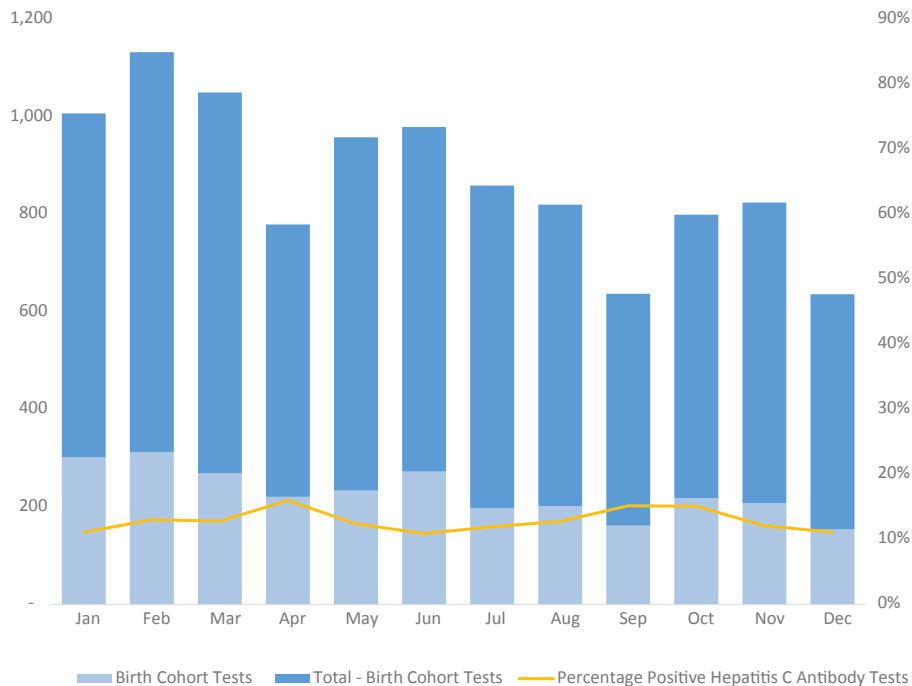
Facility	Total Hepatitis B Vaccine Doses	Third Hepatitis B Vaccine Doses
Immunization Clinic (aged 4 to 18)	3,608	1,108
Immunization Clinic (aged 19 and older)	5,670	1,364
Sexual Health Clinics (hepatitis B only)	2,501	595
Sexual Health Clinics (hepatitis A/B combination)	1,087	158
Total	12,866	3,225

In addition, 114,060 third doses of hepatitis B vaccines were administered by NYC medical providers to individuals aged 0 to 18 in 2016, a proxy for the number of individuals vaccinated.

Hepatitis C Screening in Correctional Facilities

In 2013, New York City Health + Hospitals' Correctional Health Services began screening inmates born between 1945 and 1965 for hepatitis C during intake. This practice is in line with U.S. Preventive Services Task Force recommendations. Antibody positivity is high among the population screened at correctional facilities.

Figure 15. Number of hepatitis C antibody tests, total and by birth cohort (born 1945-1965), and seropositivity rate of hepatitis C antibody tests by month, New York City jails, 2016



Linkage to Care and Care Coordination Services

Linkage to Care for Pregnant Women with Hepatitis B and Their Contacts

In 2016, the Health Department began providing outreach and patient navigation services to women identified with hepatitis B infection during pregnancy. The program engages women in recommended care for their infection after the birth of their child. The majority of the women in this program were born outside of the U.S., and many have only temporary insurance for pregnant women. The program also connects their contacts to hepatitis B screening, vaccination and medical care when needed.

Hepatitis B and C Patient Navigation

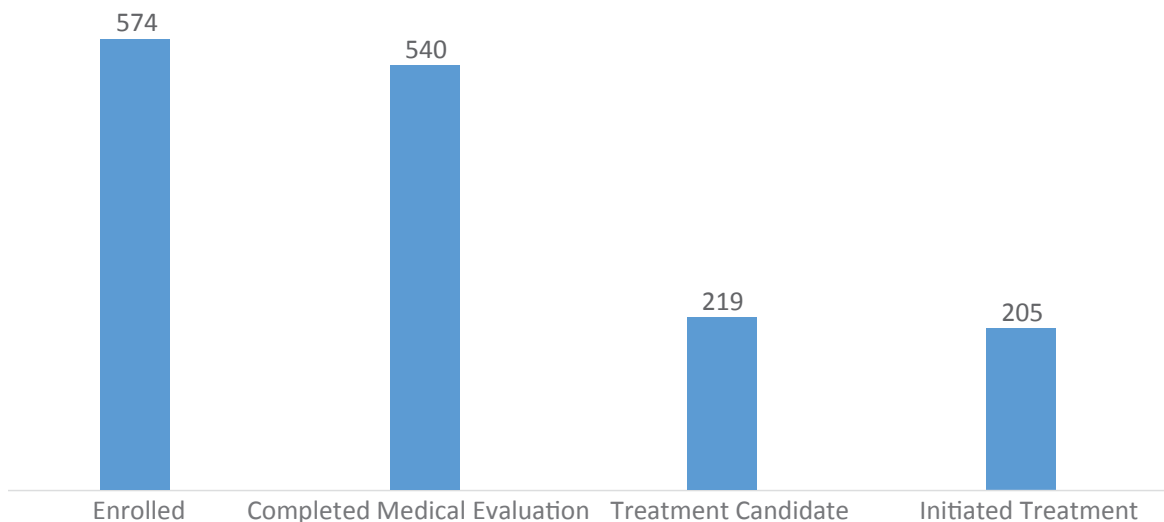
Using a combination of private and NYC Council funding, the Health Department developed and managed hepatitis B and C peer and patient navigation programs. From 2014 to 2016, 31 health care facilities, community-based organizations and syringe exchange programs across NYC participated in these programs.

Check Hep B and Check Hep C Patient Navigation Programs

The Check Hep B and Check Hep C Patient Navigation programs provide outreach, linkage to care and clinical care coordination services to patients living with chronic hepatitis B or C.

Check Hep B Patient Navigation Program

Figure 16. Number of patients receiving Check Hep B program services, 2016

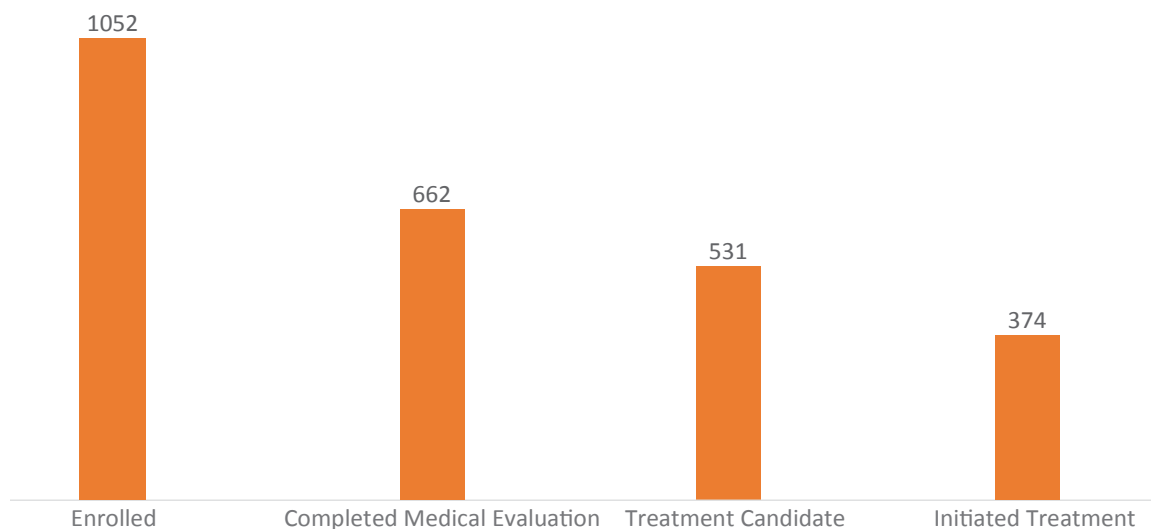


Check Hep B Patient Characteristics

- 99 percent of enrollees were born outside of the U.S. The most common country of birth was China (59 percent), followed by South Korea (11 percent) and Senegal (10 percent).
- 81 percent of patients spoke a language other than English and needed medical interpretation services. The most common languages spoken were Chinese (59 percent), Korean (11 percent) and French (6 percent).
- 34 percent were not eligible for health insurance, 50 percent had Medicaid and 10 percent were privately insured.

Check Hep C Patient Navigation Program

Figure 17. Number of patients receiving Check Hep C program services, 2016



Check Hep C Patient Characteristics

- 43 percent were Latino and 38 percent were non-Latino Black.
- 29 percent were homeless or unstably housed.
- 33 percent reported recent drug use.
- 48 percent reported mental health issues or psychiatric diagnosis.
- 71 percent had Medicaid and 7 percent had Medicare.
- 60 percent were baby boomers (i.e., born between 1945 and 1965), and 3 percent were youth (i.e., aged 29 years or younger).
- 1 percent identified as transgender.

The Check Hep B and C programs identified the following ongoing barriers to care and treatment:

- Lack of public and provider knowledge about hepatitis B or C, testing or medical care resources.
- Patient need for help applying for or retaining health insurance.
- Patient inability to enroll in health insurance because of immigration status or cost.

New York City Hep C Peer Navigation Program

The New York City Hep C Peer Navigation Program provides people at-risk with health education, outreach and prevention services, and navigation through hepatitis C testing and care at all 15 NYC syringe exchange programs.

Of the 4,438 patients enrolled in the Hep C Peer Navigation program in 2016,

- All received hepatitis education and prevention services.
- 1,375 tested positive for hepatitis C.
- 671 were referred to medical care.
- 99 initiated treatment.

New York City Hep C Peer Navigation Program Patient Characteristics

- All were recent or active drug users.
- 43 percent did not know their hepatitis C status at the time of enrollment.
- 40 percent were Latino and 33 percent were non-Latino Black.
- 33 percent were baby boomers and 17 percent were 29 years of age or younger.
- 4 percent identified as transgender.

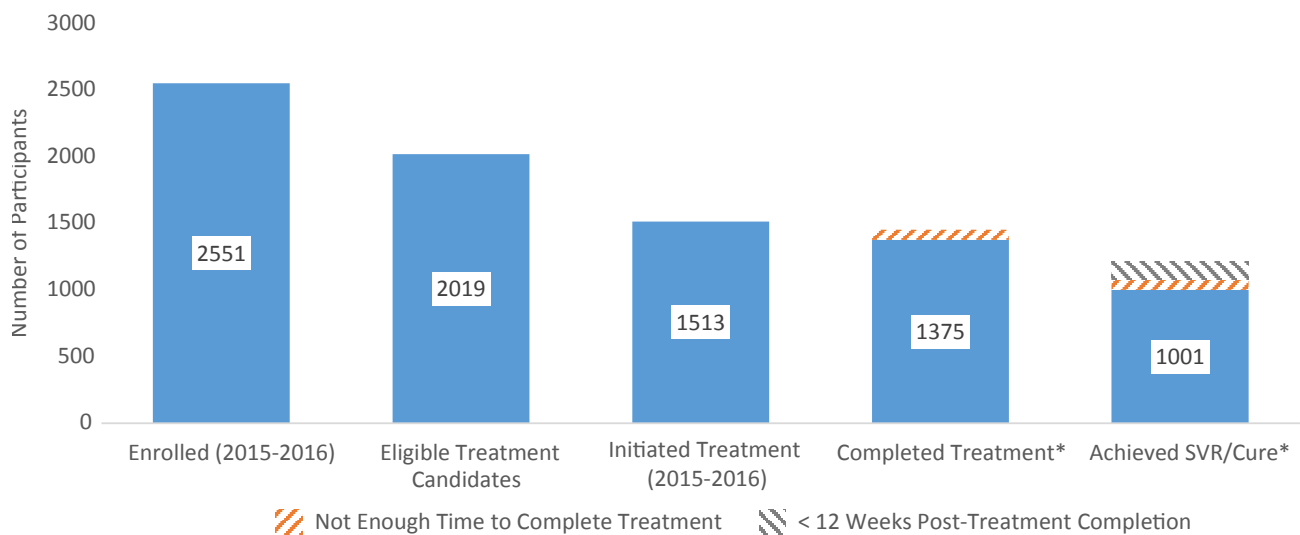
Peer navigators reported the following barriers to hepatitis C care or treatment:

- Homelessness or unstable housing
- Unmanaged drug use, alcohol use and/or psychiatric condition
- Challenges maintaining health insurance and insurance restrictions on medication coverage due to drug use
- Provider stigma against people who use drugs

Project INSPIRE Hepatitis C Care Coordination Program

Funded by the Centers for Medicare and Medicaid Services (CMS), Project INSPIRE is a three-year hepatitis C care coordination program serving CMS beneficiaries in Upper Manhattan and the Bronx in collaboration with two clinical partners (Mount Sinai School of Medicine and Montefiore Medical Center), two managed care organizations (Visiting Nurse Service of New York Choice and HealthFirst) and other partners.

Figure 18. Number of patients receiving Check Hep C program services, 2016



*Data on treatment completion and achieving sustained viral response (SVR)/cure was collected through March 2017.

Project INSPIRE Patient Characteristics

- 47 percent were Latino and 36 percent were non-Latino Black.
- 17 percent were homeless or unstably housed.
- 7 percent reported recent injection drug use.
- 41 percent reported mental health issues or psychiatric diagnosis.
- 68 percent had Medicaid and 16 percent had Medicare.
- 70 percent were baby boomers and 2 percent were youth.
- Less than 1 percent identified as transgender.

Enrollment in Project INSPIRE ended February 28, 2017, and care coordination services were delivered to all participants until August 31, 2017. The Health Department, INSPIRE payer partners and steering committee members will assess the sustainability of care coordination services by analyzing cost and utilization data. The Health Department will also advocate for alternative payment models to support care coordination services for people with hepatitis C.

Project INSPIRE Data highlights

- Many of the participants had a mental health diagnosis (41 percent), were previously incarcerated (29 percent), were homeless or unstably housed (17 percent) or reported injecting drugs in the past year (8 percent). Despite this, 91 percent of all participants who initiated treatment completed treatment.
- Approximately 1,000 participants achieved sustained viral response (SVR)/cure.

HIV/HEPATITIS C CO-INFECTION

According to the CDC, 25 percent of people with HIV in the U.S. are also infected with hepatitis C. In NYC, matched HIV and hepatitis C surveillance data from 2000 to 2010 showed that 16 percent of HIV-infected people also had hepatitis C. Rates of hepatitis C infection are especially high among HIV-infected people who have a history of injection drug use (67 percent), and 8% of HIV-infected MSM are co-infected with hepatitis C. People co-infected with HIV/hepatitis C are at high risk for advanced liver disease, liver cancer and premature death. The Health Department has various initiatives to increase hepatitis C screening for people infected with HIV, and to promote linkage to care, treatment and cure.

Project SUCCEED

Project SUCCEED (Scaling up Co-Infection Care & Eliminating Ethnic Disparities) began in 2016 when the Health Department was awarded a three-year Health Resources and Services Administration (HRSA) Ryan White Special Projects of National Significance (SPNS) grant. The goal of Project SUCCEED is to increase hepatitis C screening, linkage to care, treatment and cure rates among people living with HIV in New York City, the majority of whom are people of color. As of December 2016, over 11,000 people living with diagnosed HIV screened hepatitis C antibody positive, and over 4,000 have confirmed current hepatitis C infection. Project SUCCEED uses Health Department surveillance data to target interventions, including training and technical assistance for HIV clinical and non-clinical providers, patient outreach and linkage to hepatitis care services. The project's strong evaluation component will enable other jurisdictions to use elements of the intervention.

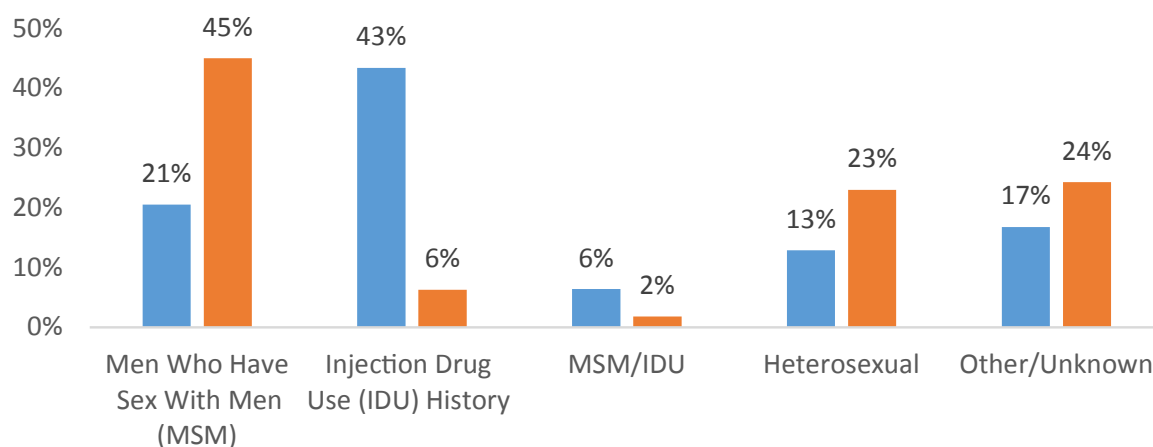
¹ Project SUCCEED is a cooperative agreement with the U.S. Department of Health and Human Services' Health Resources and Services Administration HIV/AIDS Bureau (Grant # U90HA30517)

Characteristics of people co-infected with HIV/hepatitis C in 2015¹

- 11,461 people were identified as having diagnosed HIV infection and a positive hepatitis C lab. This accounts for 14 percent of people diagnosed and living with HIV (PLWH) and 16 percent of people reported with hepatitis C.
- 72 percent were male.
- 74 percent were aged 50 years or older at the end of 2015, compared with 47 percent of HIV mono-infected people.
- 43 percent reported ever injecting drugs, compared with only 6 percent of HIV mono-infected people.

¹ Among co-infected people living at the end of 2015 who had an HIV or hepatitis C lab test done in 2014 or 2015.

Figure 19. HIV transmission risk category for people co-infected with HIV/hepatitis C vs. HIV only, 2015¹



¹ Heterosexual includes people who had heterosexual sex with a person they know to be HIV-infected, a person who injected drugs or a person who has received blood products. For females only, also includes history of sex work, multiple sex partners, sexually transmitted disease, crack/cocaine use, sex with a bisexual male, probable heterosexual transmission as noted in the medical chart, or sex with a male and negative history of injection drug use. HIV transmission risk data is gathered from the HIV surveillance registry.

Linkage to care for people newly diagnosed with hepatitis C in 2015

- 57 percent of HIV/hepatitis C co-infected people were linked to hepatitis C care within six months of their hepatitis C diagnosis, compared with 45 percent of hepatitis C mono-infected people.
- 28 percent of HIV/hepatitis C co-infected people initiated treatment, compared with 26 percent of hepatitis C mono-infected people.

Hepatitis C Screening Among HIV-Infected People Linked to Care

The Health Department conducts outreach to people with a positive HIV test who appear to be out of HIV care (i.e., no HIV laboratory test for nine months) or never in care (i.e., no HIV lab test after diagnosis). These people are reported to the Health Department and linked to medical providers who evaluate and provide both HIV and hepatitis C care.

Table 13: People living with HIV who returned to care, January to December 2016, New York City

	Number (Percentage)
Patients with unknown hepatitis C status	511
Total tested for hepatitis C antibody or RNA ¹	202 (40%)
Screened for hepatitis C antibody	200
Antibody positive	4 (2%)
Tested for hepatitis C RNA²	6
RNA positive	4 (67%)
RNA negative	2 (33%)

¹ Ascertained via hepatitis C registry and/or chart review
² Includes two people tested for RNA only

CAPACITY BUILDING AND EDUCATION

Capacity Building for Community-Based Service Providers

Organized by the Health Department, Hep Free NYC is a citywide network comprised of the NYC Hep B Coalition and NYC Hep C Task Force. The network brings together organizations and health care providers seeking to build their capacity to prevent, manage and treat hepatitis B and C. In 2016, Hep Free NYC:

- Convened 23 meetings with 860 participants representing 135 organizations from all five boroughs.
- Maintained three Hep Free NYC committees: Team HBV NYC, Coalition Against Hepatitis in People of African Origin and Awareness Day Planning. Launched five new committees: Hep C Prevention in Youth, LGBTQ, Faith-based, Hep C Consumer, and Communications.
- Enhanced the HepFree.nyc website and attracted 20,285 viewers in 2016. Gained over 600 Facebook, 1,200 Twitter and 335 LinkedIn followers. Maintained a Hep Free NYC email distribution list of over 3,300 subscribers.
- Sent out 66 emails with event invites, meeting highlights and monthly newsletters. The newsletters share the latest hepatitis B and C information and resources, and offer opportunities to build the capacity of network partners.

In addition to Hep Free NYC, the Health Department supports coordination of community resources through coalition building, provider training and public awareness activities. In 2016, the Health Department:

- Provided six “Intro to Hepatitis” trainings, four “Hepatitis C Point-of-Care Testing” trainings and eight “Patient or Peer Navigation” trainings with a total of 210 participants.
- Participated in a community-led press conference with 120 community members on Hepatitis Awareness Day on the steps of City Hall.
- Held a symposium to educate community pharmacists on hepatitis C and HIV rapid testing options.
- Distributed 120,256 printed patient education materials.
- Worked with Tackling Youth Substance Abuse to develop a video about the link between drug use and hepatitis C. Watch “Hep C Prevention in Youth” at hepfree.nyc/video-hep-c-rise-among-staten-island-youth-tackling-youth-substance-abuse/

Clinical Capacity Building for Hospitals

In 2015, the Health Department launched the Hepatitis C Clinical Exchange Network (HepCX), a peer-to-peer learning collaborative that aims to increase clinical capacity for screening, diagnosing, managing and treating hepatitis C infection. NYC health care providers in this network exchange best practices and participate in tailored quality improvement projects within their hospitals and hospital systems. The network is made up of 59 providers from 36 hospitals. These providers, or HepCX Champions, are clinical leaders in the fields of gastroenterology, infectious disease and primary care.

The Health Department provides technical assistance, detailing and coordination of HepCX activities. In 2016, the Health Department:

- Distributed patient and provider educational resources.
- Provided training and technical support towards the implementation of reflex testing and care coordination.
- Educated providers on hepatitis C screening and treatment to increase the number of qualified hepatitis C treaters.

The Health Department also released its second annual facility-level survey on hepatitis C care. Findings from the responding 20 hospitals revealed that:

- Fifteen HepCX hospitals provided automatic reflex RNA confirmatory testing for hepatitis C in their laboratories in 2016, compared with five hospitals in 2015.
- 94 percent of participating hospitals have screening alerts for baby boomers built into their electronic medical record (EMR) system. Despite this, baby boomer screening remains below 50 percent at half of the hospitals.

Looking to the Future

In 2017, the Health Department plans to release a clinical dashboard on hepatitis C RNA confirmation rates. This tool will provide clinicians with data on patients screened and confirmed for hepatitis C at their facility. The dashboard will allow clinicians to identify gaps in screening and confirmation and will encourage facilities to provide RNA testing for all patients with a positive hepatitis C antibody test result. The Health Department plans to enhance the dashboards, adding hepatitis C treatment and cure indicators. These dashboards can help hospitals make data-driven decisions to improve their testing and care practices.

POLICY

Strategic Planning for Hepatitis C Elimination in New York State

In 2016, a group of community advocates and stakeholders from diverse fields organized around a central vision: the elimination of hepatitis C in New York State. With leadership from the New York City Health Department and the New York State Department of Health, the group began working on a strategic plan.

A steering committee and five workgroups identified critical service gaps and developed recommendations for improving hepatitis C programs and policy. The workgroups focused on prevention; care and treatment access; testing and linkage to care; data and metrics; and social determinants of health. The steering committee completed a consensus document based on these recommendations, which was presented and finalized at the nation's first State Hepatitis C Elimination Summit in Albany in February 2017.

2016 Policy Action In Focus

Easing Restrictions on Hepatitis C Drug Insurance Coverage

- In 2016, the Health Department monitored and furthered the discussion about hepatitis C treatment coverage restrictions that limit New Yorkers' access to care.
 - The Medicaid Drug Utilization Review Board (DURB) overseeing the Medicaid Fee-For-Service (FFS) prescription formulary voted to remove prescribing restrictions on individuals with:
 - o Early stage disease, opening the way for individuals with chronic hepatitis C to be treated regardless of fibrosis score; and
 - o Detectable HIV viral load/uncontrolled HIV co-infection, so that now, HIV-positive individuals can be approved for treatment regardless of viral load.
- Remaining restrictions include:
 1. Requiring confirmation of prescriber experience and training
 2. Requiring confirmation of patient readiness and adherence



PUBLICATIONS AND PRESENTATIONS

In 2016, the Health Department authored the following peer-reviewed journal articles on hepatitis B and C and presented surveillance, research and direct service program data at local, regional and national conferences.

Publications

- Ford M, Johnson N, Desai P, Rude E, Laraque F. From care to cure: Demonstrating a model of clinical patient navigation for hepatitis C care and treatment in high-need patients. *Clinical Infectious Diseases*. 2016, 64(5) 685-691.
- King A, Bornschlegel K, Johnson N, Rude E, Laraque F. Barriers to treatment among New York City residents with chronic hepatitis C virus infection, 2014. *Public Health Reports*. 2016, 131(3): 430-7.
- Moore M, Ivanina E, Bornschlegel K, Qiao B, Schymura MJ, Laraque F. Hepatocellular carcinoma and viral hepatitis in New York City. *Clinical Infectious Diseases*. 2016, 63(12):1577-1583.

Presentations

- Duerme R, Maulana S, Schwartz J, Johnson N, Rude E, Laraque F. Foundation for a clinical intervention on hepatitis C: a 2015 survey of New York City hospitals' capacity to cure. Poster Presented at AASLD Liver Conference; November 2016; Washington, D.C.
- Johnson N. Check hep B patient navigation program and the African community. U.S. Conference on African Immigrant and Refugee Health. August 2016; New York, NY.
- Johnson N, Diaz Munoz D. Hep C peer navigation workshop. National Harm Reduction Conference; November 2016; San Diego, CA.
- Johnson N, Ip M. Hepatitis health promotions materials poster. CDC Health Media and Marketing Conference. August 2016; Atlanta, GA.
- King A. An epidemiologic profile of chronic hepatitis C virus infection in New York City. Poster presented at Council of State and Territorial Epidemiologists Conference; June 2016; Anchorage, AK.
- Laraque F. Using hepatitis C surveillance data to estimate linkage to care, treatment, and cure in a high prevalence area. Presented at Council of State and Territorial Epidemiologists Conference; June 2016; Anchorage, AK.
- Laraque F, Bresnahan M, Ford M, et al. Project INSPIRE: a comprehensive care coordination program for HCV-infection: preliminary year 1 results. Presented at Conference on Retroviruses and Opportunistic Infections; February 2016; Boston, MA.
- Moore M. Proactive text messaging as outreach to newly reported individuals with hepatitis C in New York City. Presented at Council of State and Territorial Epidemiologists Conference; June 2016; Anchorage, AK.

REFERENCES AND LINKS

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- Balter S, Stark JH, Kennedy J, Bornschlegel K, Konty K, et al. Estimating the prevalence of hepatitis C infection in New York City using surveillance data. *Epidemiology and Infection*. 2014, 142(2): 262-269. <http://www.ncbi.nlm.nih.gov/pubmed/23657093>
- France AM, Bornschlegel K, Lazaroff J, Kennedy J, Balter S, et al. Is chronic hepatitis B being undertreated in the United States? *Journal of Viral Hepatitis*. 2011, 18: 377-383. <https://www.ncbi.nlm.nih.gov/pubmed/21143343>
- France AM. et al. Estimating the prevalence of chronic hepatitis B virus infection--New York City, 2008. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*. 2012; 89(2): 373-383. <https://www.ncbi.nlm.nih.gov/pubmed/22246675>
- Hu D. J., Xing J., Tohme R. A., et al. Hepatitis B testing and access to care among racial and ethnic minorities in selected communities across the United States, 2009-2010. *Hepatology*. 2013, 58: 856-862. <https://www.ncbi.nlm.nih.gov/pubmed/23359276>
- Prussing C, Chan C, Pinchoff J, et al. HIV and viral hepatitis co-infection in New York City, 2000-2010: prevalence and case characteristics. *Epidemiology and Infection*. 2015, 143(7):1408-1416. <https://www.ncbi.nlm.nih.gov/pubmed/25170631>

Useful Links

- AASLD Practice Guidelines: aasld.org/publications/practice-guidelines-0
- CDC Case Definitions: cdc.gov/nndss/case-definitions.html
- The New York City Health Department's "Hepatitis B and C in New York City 2015 Annual Report": www1.nyc.gov/assets/doh/downloads/pdf/cd/hepatitis-b-and-c-annual-report-2015.pdf
- The New York City Health Department's "Hepatitis B and C in New York City 2014 Annual Report": www1.nyc.gov/assets/doh/downloads/pdf/cd/hepatitis-b-and-c-annual-report.pdf
- The National Academies of Sciences, Engineering and Medicine's "A National Strategy for the Elimination of Hepatitis B and C: Phase Two Report": nap.edu/24731
- Medicaid Pharmacy Prior Authorization Programs Update: https://newyork.fhsc.com/downloads/providers/NYRx_PDP_prescriber_notification_20160519.pdf
- U.S. Preventive Services Task Force's "Guide to Clinical Preventive Services 2014": <https://www.ahrq.gov/sites/default/files/publications/files/cpsguide.pdf>
- United Hospital Fund (UHF 34) Neighborhood Index a816-healthpsi.nyc.gov/epiquery/CHS/uhf-zip-information.pdf
- "Countries affected by hepatitis B," CDC, 2017: wwwnc.cdc.gov/travel/yellowbook/2018/infectious-diseases-related-to-travel/hepatitis-b
- New York State Health Department's "Viral Hepatitis Strategic Plan 2016-2020": health.ny.gov/publications/1806.pdf

TECHNICAL NOTES

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

Surveillance:

- This report includes surveillance data on people who meet the CDC's new case definition. For more information, visit www.cdc.gov/osels/ph_surveillance/nndss/casedef/case_definitions.htm.
- Laboratories are required to report hepatitis B and C cases to the Health Department, including negative results for hepatitis C nucleic acid tests (RNA). For more information on hepatitis labs reportable to the Health Department, visit www.wadsworth.org/sites/default/files/WebDoc/618150225/CDRG%202016%20Complete.pdf
- The Health Department often receives more than one hepatitis B or C laboratory report per person and uses automatic deduplication methods to identify repeat reports based on name, date of birth and other information. Only the first report is counted in the data presented here.
- The Health Department does not investigate all chronic hepatitis B and C cases, so only minimal information—patient name, address, date of birth and sex—from lab reports is available. Gender identity is not reported by 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.
- Veterans Affairs (VA) health care facilities began reporting cases through routine surveillance at the end of 2016; therefore, people with hepatitis who only receive health care at 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 (e.g., the removal of duplicate reports).
- Many people with acute hepatitis B or C have no or mild symptoms. As a result, the infection may not be diagnosed at the time of infection. Therefore, surveillance data underestimates the true incidence of acute hepatitis B and C in NYC.
- Neighborhood poverty based on ZIP code/census tract was defined as the percentage of residents with incomes below 100 percent of the Federal Poverty Level, per American Community Survey data from 2011 to 2015. This does not include incarcerated people.
- Many patients with chronic hepatitis B or C are asymptomatic; as a result, many cases are not diagnosed or reported. Therefore, surveillance data underestimates the true level of chronic hepatitis B and C in NYC.

Rates:

- Rates presented include people newly reported to the Health Department. They are not prevalence rates or incidence rates.
- Rates based on small numerators may not be reliable and should be interpreted with caution.
- Age adjustment was performed using the population age categories of 0-24, 25-44, 45-64, 65-84 and 85+ years and weighting to the U.S. 2000 standard population.
- Rates stratified by age group are presented as age-specific rates (i.e., no age adjusting within a presented age stratum was performed).
- Denominators used throughout this report are intercensal estimates for 2015, except denominators for the Rikers Island population, which were provided by NYC Correctional Health Services.
- The jail at Rikers Island is part of the borough of the Bronx, although it has a Queens ZIP code (11370; note that ZIP code 11370 includes parts of mainland Queens as well as Rikers Island). Therefore:
 - For numbers and rates presented by borough, Rikers Island cases are included with other Bronx cases.
 - For numbers and rates presented by ZIP code, Rikers Island is included in ZIP code 11370.
 - For numbers and rates presented by UHF neighborhood, Rikers Island is included in the United Hospital Fund neighborhood of West Queens.
- To protect confidentiality and avoid the publication of small numbers of diagnoses per specific geographic area, the Health Department is presenting maps containing two years of data for each disease shown and using the larger United Hospital Fund neighborhood designation, rather than ZIP code tabulation area (ZCTA), where appropriate. (ZIP codes in maps are represented by ZCTAs.) For details on the United Hospital Fund neighborhoods, please see www1.nyc.gov/assets/doh/downloads/pdf/survey/uhf_map_100604.pdf

Death Data:

- Deaths occurring outside New York City or those of non-New York City 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 were coded using ICD-10. The codes used for hepatitis B were B16, B170, B180 and B181; and for hepatitis C, B171 and B182. Both acute and chronic conditions were included for hepatitis B and C.
- Causes of death were not mutually exclusive.

BEST PRACTICES

The Health Department recommends the following best practices to prevent and manage hepatitis B and C.

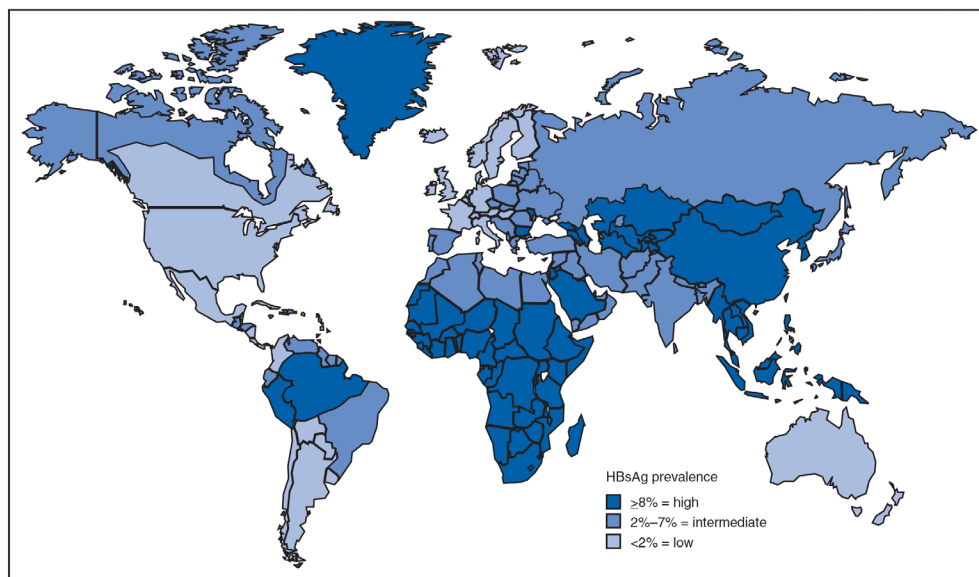
Hepatitis B Best Practices

Action Items for Primary Care Providers

1. **Screen all people at risk for hepatitis B infection.**
2. **Vaccinate all people who are at risk for hepatitis B infection** based on screening results.
3. **Link to care.** People who are found to be infected with hepatitis B should be linked to care immediately. For help finding referrals for your patients, visit NYC HealthMap, the online site locator, at nyc.gov/health/sitelocator, or contact hep@health.nyc.gov.
4. **Develop hepatitis B clinical care capacity.** Review the updated 2016 AASLD guidelines for chronic hepatitis B care and treatment here: <https://www.aasld.org/publications/practice-guidelines-0>.
5. **Evaluate and treat hepatitis B in all eligible patients.** Develop a care plan for all chronically infected people, including regular ongoing liver cancer surveillance according to AASLD guidelines.
6. **Engage all pregnant women diagnosed with hepatitis B infection in care** prior to and after childbirth. This can help protect the mother and baby from liver disease.



Figure 20. Geographic distribution of chronic hepatitis B virus (HBV) infection — worldwide, 2016*



Hepatitis C Best Practices

Action Items for Primary Care Providers

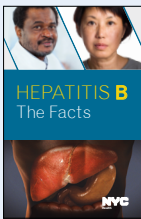

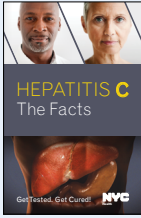

1. **Screen all people at risk for hepatitis C infection**, including baby boomers and anyone with history of blood exposure (e.g., medical exposures) or intranasal or injection drug use.
2. **Conduct RNA confirmatory testing** on all people who screen hepatitis C antibody positive.
3. **Implement reflex RNA testing.** Automatic confirmatory reflex testing is available from all major laboratories. Call your lab for specific ordering and specimen requirements.
4. **Link to care.** People who are found to be infected with hepatitis C should be linked to care immediately. For help finding referrals for your patients, visit NYC HealthMap, the online site locator, at nyc.gov/health/sitelocator, or contact hep@health.nyc.gov.
5. **Develop hepatitis C clinical care capacity.** Review the American Association for the Study of Liver Diseases (AASLD) guidelines at <https://www.aasld.org/publications/practice-guidelines-0> or access Critical Medical Education (CME) trainings at <https://www.clinicaloptions.com/Hepatitis/Topics/HCV.aspx>.
6. **Evaluate and treat hepatitis C in all infected patients**, including people who use drugs.
7. **Screen cirrhotic patients for liver cancer** according to AASLD guidelines, even after they have been cured of hepatitis C.
8. **Provide reinfection prevention education and support.** Call 311 for free educational materials and visit nyc.gov/nycwell to connect people to reinfection prevention services such as harm reduction and syringe exchange programs.

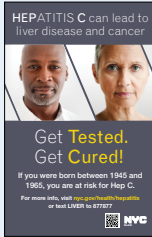


EDUCATIONAL RESOURCES

The Health Department publishes educational materials for providers, patients and the public. Email hep@health.nyc.gov or call 311 to order free materials.

Hepatitis B and C Educational Materials

Material	Description
HEPATITIS B	
 <p>Hepatitis B: The Facts Booklet (5.5 x 8.5 inch booklet) Languages: <i>English, Spanish, Chinese, French, Korean, Russian</i></p>	<p>For patients/general public</p> <p>Booklet with information about hep B testing, treatment, prevention and self-care.</p>
 <p>Hepatitis B Vaccine (2 x 3.5 inch palm card) Languages: <i>English, Spanish, Chinese, French</i></p>	<p>For patients/general public</p> <p>Hep B vaccine tracker with basic hep B facts.</p>
HEPATITIS C	
 <p>Hepatitis C: The Facts Booklet (5.5 x 8.5 inch booklet) Languages: <i>English, Spanish, Arabic, Russian, Urdu</i></p>	<p>For patients/general public</p> <p>Booklet with information about hep B testing, treatment, prevention and self-care.</p>
 <p>Hepatitis C: Get Checked, Get Cured (3.8 x 2.26 inch palm card) Languages: <i>English, Spanish, Russian</i></p>	<p>For patients/general public</p> <p>Palm card promoting hep C testing, care, treatment and prevention.</p>



Hepatitis C: Get Checked, Get Cured
 (11 x 17 inch poster)
 Languages: *English, Spanish, Chinese*

For patients/general public
 Poster promoting hep C testing among baby boomers.



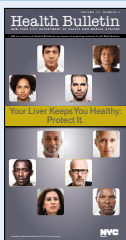
New Hepatitis C Treatments
 (11 x 17 inch poster)
 Languages: *English, Spanish*

For patients/general public
 Poster comparing old and new hep C treatments and explaining effectiveness of new medications.



Hepatitis C Risk Assessment
 (5.5 x 8.5 inch palm card)
 Languages: *English, Spanish*

For patients/general public
 Comprehensive hep C risk assessment questionnaire.



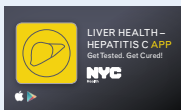
Your Liver Keeps You Healthy: Protect It
 (5.67 x 11.06 inch booklet)
 Languages: *English, Spanish, Chinese*

For patients/general public
 Brochure explaining the impact of viral hepatitis, fatty liver and excessive alcohol use on liver health.



Alcohol and Hepatitis
 (4 x 3.5 inch palm card)
 Languages: *English*

For patients/general public
 Palm card with alcohol reduction tips and action plan template.



NYC Liver Health Hepatitis C App
 (3.5 x 2 inch card)
 Languages: *English*

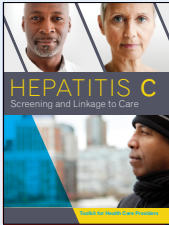
For patients/general public
 Promotes and instructs how to download the NYC Liver Health app.



**Reduce Your Risk of Overdose,
Hep C & HIV***
(3.8 x 2.26 inch palm card)
Languages: *English, Spanish, Russian*

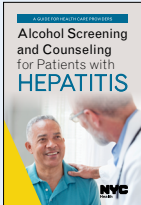
For patients/general public
Tips for preventing overdose, hep C and HIV among people who inject drugs.

FOR PROVIDERS



**Hepatitis C Screening and Linkage to Care
Toolkit for Health Care Providers**
(9.5 x 12 inch toolkit)
Languages: *English*

For health care providers
Toolkit with clinical tools and guidelines for increasing hep C screening and linkage to care. Also includes patient education resources.



**Alcohol Screening and Counseling for
Patients with Hepatitis**
(4 x 6 inch brochure)
Languages: *English*

For health care providers
Alcohol counseling guidance tailored to patients with hep C. Includes AUDIT-C.

