



Hepatitis B and Hepatitis C in Philadelphia

2022 ANNUAL REPORT



JULY 2024



Department of
Public Health

CITY OF PHILADELPHIA

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Introduction

This report by the Philadelphia Department of Public Health (PDPH) Division of Disease Control (DDC) serves as a high-level summary of the epidemiology of hepatitis B and hepatitis C in Philadelphia. This information should be used to inform residents and service providers about the importance of these two infectious diseases, and the need for enhanced attention and resources to prevent, diagnose, and treat hepatitis B and hepatitis C in Philadelphia.

The burden of these two diseases amongst Philadelphia residents is substantial, with steady trends of new infections each year. Diagnostic and clinical tools exist to prevent new hepatitis B and hepatitis C infections, and to diagnose, treat, and cure (in the case of hepatitis C) existing infections amongst Philadelphia residents. Many healthcare providers, clinics, and systems actively support vaccination, screening, and treatment of hepatitis B and hepatitis C (see www.phillyhepatitis.org and www.hepcap.org for some examples).

PDPH maintains a program focused on public health surveillance of hepatitis B and hepatitis C in tandem with work with patients, communities, and providers. This work includes community, patient, and provider education, care navigation support, and facilitating improving access to hepatitis B and hepatitis C services in Philadelphia.

The existing work of PDPH and other stakeholders in Philadelphia is a meaningful foundation for addressing the impacts of hepatitis B and hepatitis C. In 2024, PDPH will release the Philadelphia Hepatitis B and Hepatitis C Elimination Plan to inform future activities through 2030. PDPH hopes this report supports local efforts to work towards elimination of hepatitis B and hepatitis C.



Background

Hepatitis B and hepatitis C are infections of the liver and are caused by two different viruses, hepatitis B virus and hepatitis C virus, respectively. Both infections cause inflammation of the liver and have an acute (short-term) and a chronic (long-term) phase. After an exposure some people will develop hepatitis B or hepatitis C infection, and the first six months are considered an acute phase of the infection. For some, their body will fight off the virus and they will no longer have the infection. For others, their infection will become chronic and they will need treatment. In the case of hepatitis B, vaccination can support the body being able to prevent infection. Many people do not experience any symptoms of these infections or know they were exposed to hepatitis B or hepatitis C, leading some people to live for decades before being diagnosed.

Hepatitis B and hepatitis C are spread through contact with blood or semen of a person living with the infection or vertically (from a birthing person to infant). Hepatitis B is also spread through vaginal fluid. Both epidemiology profiles show a historical versus current duality in how and among which populations they have been transmitted.

For example, many people living in Philadelphia with hepatitis B acquired the infection perinatally or in young childhood when born in a country where hepatitis B is endemic.

Chronic hepatitis C among the baby boomer generation resulted from transmission in medical procedures and a variety of behavioral exposures. More recent transmission in Philadelphia for both hepatitis B and hepatitis C has been largely due to exposure to blood or body fluids among adults, primarily through injection drug use.

Clinical monitoring for anyone with chronic hepatitis B and hepatitis C is critical, as these long-term infections can lead to liver damage, cancer, and death. Hepatitis B medications can limit the liver damage and regular cancer screenings are important. Hepatitis C is curable, with medications that can be taken for as few as eight weeks.

For more information about hepatitis B and hepatitis C:

www.phillyhepatitis.org/

www.cdc.gov/hepatitis/abc/index.htm

www.hepb.org/what-is-hepatitis-b/what-is-hepb/

www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hepb.html

Report Highlights

Hepatitis B

- In 2022, there were 14 reported acute hepatitis B infections, continuing increases since 2013.
 - 71% were 25-44 years old and 71% were male.
 - 57% were non-Hispanic White, but there was an increase proportion of non-Hispanic Black individuals since 2021.
 - A history of substance use was the primary risk factor, however an increase since 2021 of men who have sex with men was detected as well.
- 569 people with chronic hepatitis B were reported in 2022, following a trend of decreases.
 - Median age was 47 years, though of note 42% of individuals were 24-44 years old.
 - 34% of individuals were non-Hispanic Asian or Pacific Islanders and 30% were non-Hispanic Black.
- 98 infants were born to people with chronic hepatitis B, and zero cases of perinatal transmission were reported, due to post-exposure prophylaxis at birth for these infants.
- In 2022, 23 deaths were attributed to hepatitis B.
- In 2021, 18 cancer diagnoses were attributable to hepatitis B.
- PDPH estimates that in 2022, 1.5% of the population or 24,268 residents were living in Philadelphia with chronic hepatitis B. These individuals live in every Zip code, 57% are male and 43% are aged 45-64 years. While 36% of individuals' race and ethnicity were unknown, 26% were non-Hispanic Black and 22% were non-Hispanic Asian or Pacific Islanders.

Hepatitis C

- 147 new individuals reported with acute hepatitis C in 2022, continuing elevated rates.
 - 60% were male, 37% were 30-39 years of age, 33% were non-Hispanic Black, and 43% were non-Hispanic White.
 - Risk factors were primarily drug use related.
- 1,021 new chronic hepatitis C infections were reported in 2022.
 - 58% were male, 24% were aged 30-39 years and 30% were 60 years or older.
 - Primarily among non-Hispanic Black (34%) or non-Hispanic White (37%) residents.
- 61 infants were born to a person with chronic hepatitis C infection in 2022.
 - 4 reported hepatitis C infections among children born in 2021, attributable to perinatal transmission.
- In 2022, 139 deaths occurred attributed to hepatitis C.
- In 2021, 113 diagnoses of liver cancer due to hepatitis C.
- In 2022, 23,460 people were living with chronic hepatitis C in Philadelphia.
 - 65% were male, 30% were non-Hispanic Black and 26% were non-Hispanic White.
- 52,364 individuals have been reported with a history of hepatitis C from 2013 to 2021
 - Only 88% ever received confirmatory HCV RNA testing of whom 74% had a confirmed initial infection reported to PDPH, and 45% of them no longer have hepatitis C.
 - 55% of these individuals need HCV treatment and 12% still need confirmatory testing.
 - Some variations exist between race/ethnicity groups and between age groups. For example, people 36-64 years of age were more likely to be cured or cleared of chronic hepatitis C compared to younger and older age groups.

Acute Hepatitis B

Reports of acute hepatitis B have been gradually increasing since 2013, primarily among younger individuals and associated with a history of substance use and/or transmission among men who have sex with men. The large increase of cases in 2019 and subsequent decrease in 2020 is likely due to a combination of changes to how people accessed hepatitis B testing including increases during a hepatitis A outbreak in 2019 and testing decreases due to the COVID-19 pandemic.

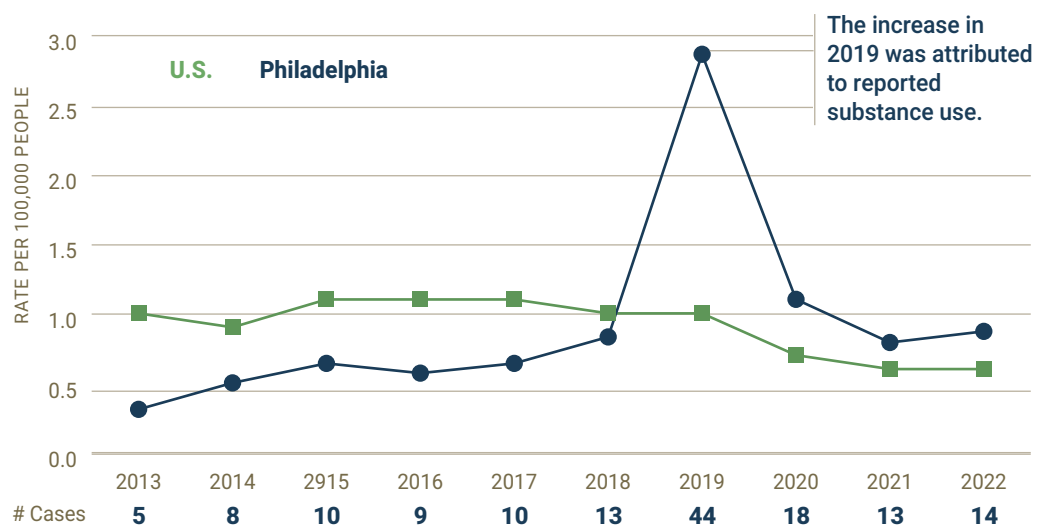
Number of People Reported with Acute Hepatitis B in 2022:

14

Rate of Acute Hepatitis B in 2022:

0.9 per 100,000 people

Figure 1: Rate of Reported Acute Hepatitis B: Philadelphia and United States, 2013–2022



*Totals for 2020 and 2021 may have been impacted by the COVID-19 pandemic

Number and Percentage of People Reported with Acute Hepatitis B in 2022:

BY AGE

71% (n=10) were 25–44 Years of Age with a Median Age of 37 Years

BY SEX

71% are Male (n=10)

BY RACE/ETHNICITY

57% (n=8) were Non-Hispanic White

Note: There was an increase in acute hepatitis B cases in the non-Hispanic Black population.

BY REPORTED RISK FACTOR

64% (n=9) had a History of Substance Use

Note: There was an increase in reported transmission among men who have sex with men (MSM).

Chronic Hepatitis B

The number of chronic hepatitis B infections has been decreasing since 2013. In 2022, the proportion of newly reported chronic hepatitis B cases was higher among Asian and non-Hispanic Black communities while the majority of individuals were 24-64 years old.

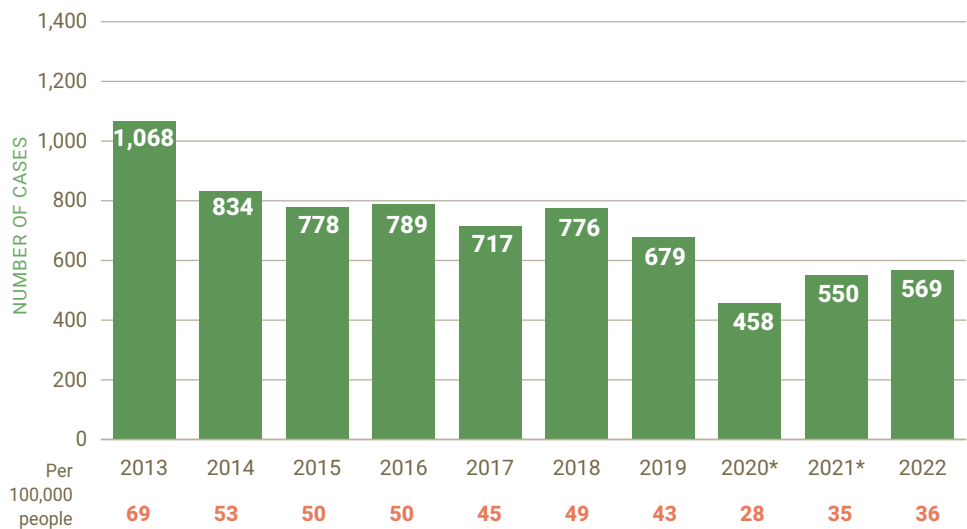
Number of People Newly Reported with Chronic Hepatitis B in 2022:

569

Rate of Newly Reported Chronic Hepatitis B in 2022:

36.3 per 100,000 people

Figure 2: Number & Rate of People Newly Reported with Chronic Hepatitis B in Philadelphia by Year of First Report, 2013–2022



*Totals for 2020 and 2021 may have been impacted by the COVID-19 pandemic

Characteristics of People Newly Reported with Chronic Hepatitis B in 2022:

Figure 3: By Sex

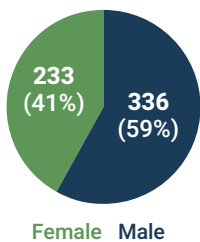
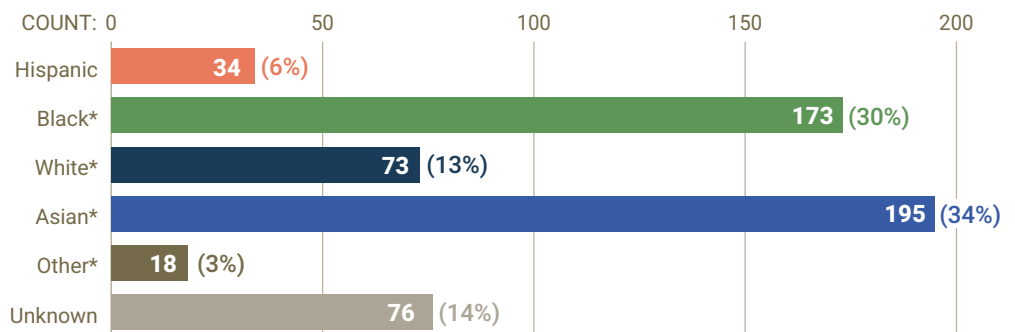


Figure 4: By Race/Ethnicity

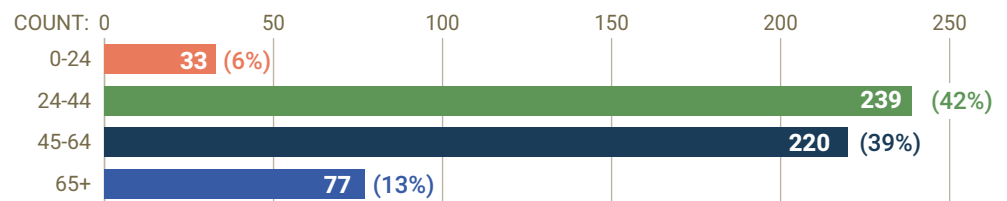


* Non-Hispanic

Median Age:

46 years

Figure 5: By Age (in years) at Time of Report



Vital Statistics: Hepatitis B

The prevalence of people living with chronic hepatitis B who could become pregnant resulted in 98 perinatal hepatitis B exposures in 2022, primarily among people born in Asian/Pacific Island, and sub-Saharan African nations. Post exposure prophylaxis adherence prevented any known perinatal hepatitis B transmission. Deaths associated with hepatitis B remain low in 2021, and 8% of liver cancer was associated with hepatitis B.

Perinatal Hepatitis B

People (age 15–44 Years) Who Could Become Pregnant living with Chronic Hepatitis B in 2022:

Number:

3,230

Rate:

1,007 per 100,000 people

Perinatal HBV Infections Among Infants Born in 2022:

0

85% of pregnant people living with hepatitis B were born in regions where HBV is endemic.

48% were born in Southeast Asian/Pacific Island, and 29% in African nations.

Number of Infants Born to a Pregnant Person Living with Chronic Hepatitis B, Live Births:

98

Figure 6: By Race/Ethnicity

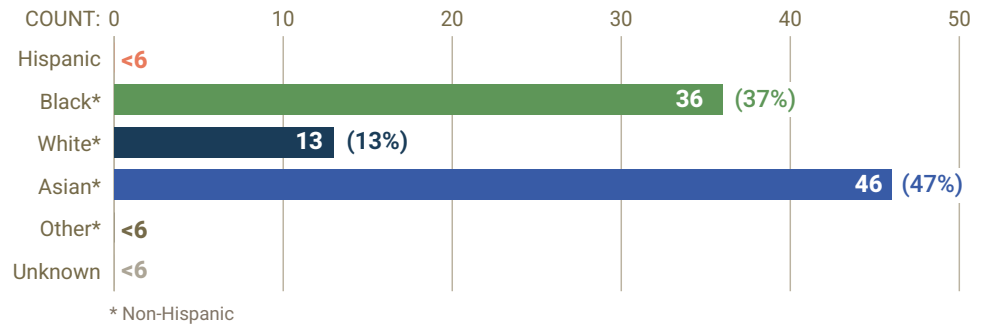
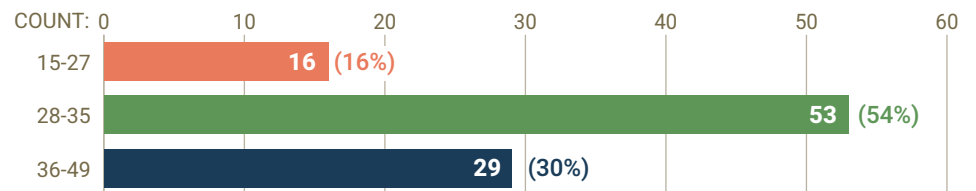


Figure 7: By Age (in years) at Time of Report



Deaths from Hepatitis B

23

Deaths

1.5

per 100,000 people

Liver Cancer Diagnoses in Individuals with Hepatitis B, 2021

18

Diagnoses

8%

of people with Liver Cancer Diagnoses have Hepatitis B

Prevalence: Hepatitis B

PDPH estimates that 24,268 residents are living in Philadelphia with chronic hepatitis B. These individuals live across the city, and are majority male, NH Black or Asian, and 45-64 years of age.

The Health Department estimates that **24,268** people (**1.5%** of Philadelphia residents) are living with chronic hepatitis B in Philadelphia.

Map 1: 2022 Prevalence of People with Chronic Hepatitis B, Reported in 1987–2022; Rate by Zip Code (N=21,747)

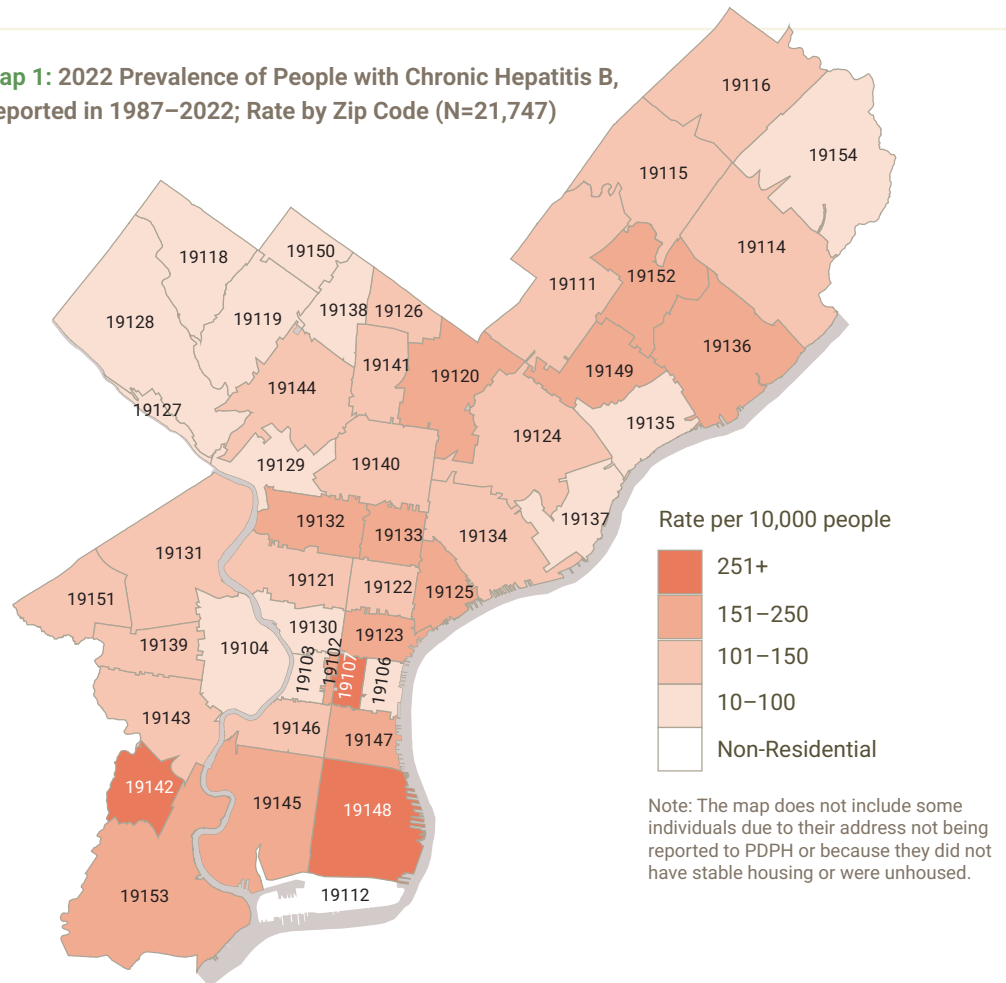
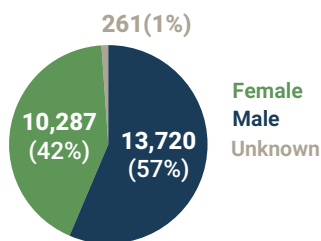
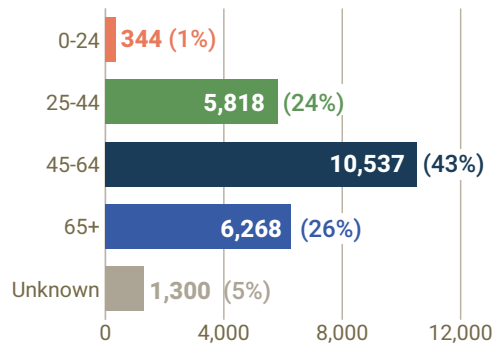


Figure 8: People Reported with Chronic Hepatitis B in Philadelphia, 1987 -2022 (N=24,268)

BY SEX

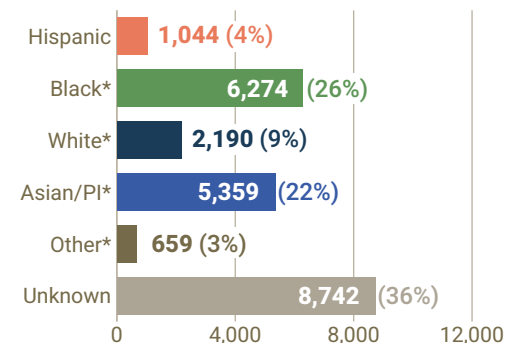


BY AGE (in Years) IN 2022



BY RACE/ETHNICITY

* Non-Hispanic



Note: Race/ethnicity data is often received only through active outreach which is not comprehensive. As a result, unknown values are elevated and may affect race/ethnicity distribution.

Acute Hepatitis C

Reports of acute hepatitis C have steadily increased between 2013 and 2018, followed by a dip in cases in 2019 likely associated with a hepatitis A outbreak and subsequently by the COVID-19 pandemic (see Note). Acute hepatitis C is primarily among individuals 30-39 years of age and associated with injection drug use and non-injection drug use.

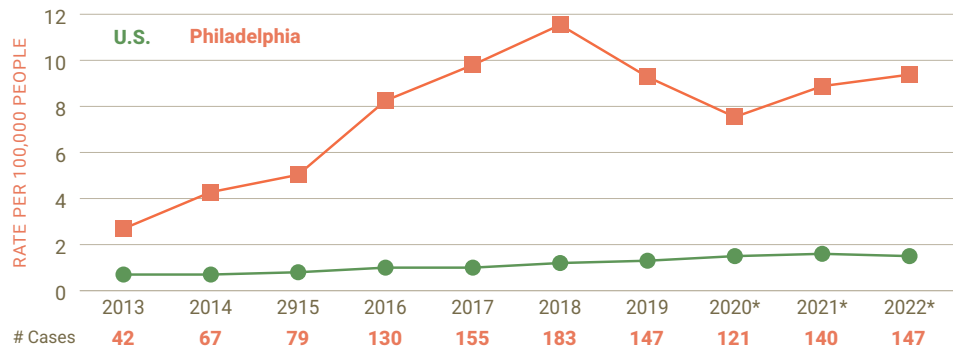
Number of People Reported with Acute Hepatitis C in 2022:

147

Rate of Acute Hepatitis C in 2022:

9.4 per 100,000 people

Figure 9: Number and Rate of Confirmed Acute Hepatitis C: Philadelphia and U.S., 2013-2022



*Totals for 2020 and 2021 may have been impacted by the COVID-19 pandemic.

Note: A local hepatitis A outbreak in 2019 related to substance use occurred. There were many people with suspected acute hepatitis C infections that also had a hepatitis A infection and could not be counted as hepatitis C cases according to the CDC case definition. (<https://ndc.services.cdc.gov/casedefinitions/hepatitis-c-acute-2020/>). Therefore, additional suspected acute hepatitis C cases occurred in 2019 that are not shown here.

People Reported with Acute Hepatitis C in 2022:

Figure 10: By Sex

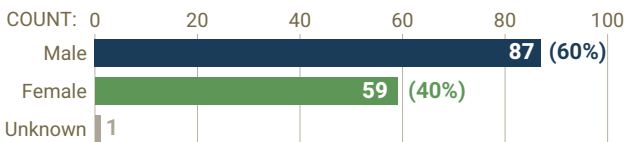


Figure 11: By Age (in years) at Time of Report

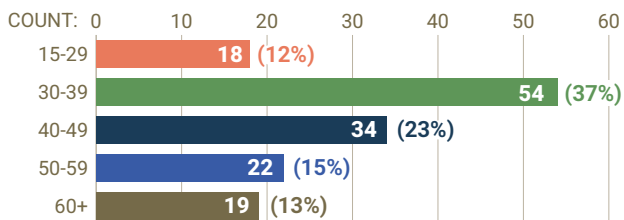


Figure 12: By Race/Ethnicity

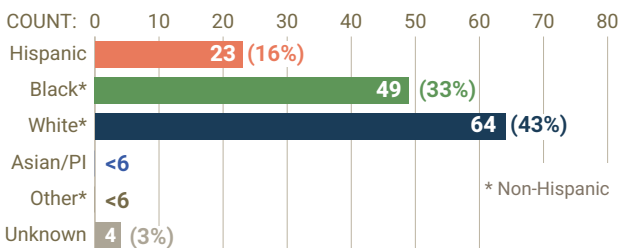
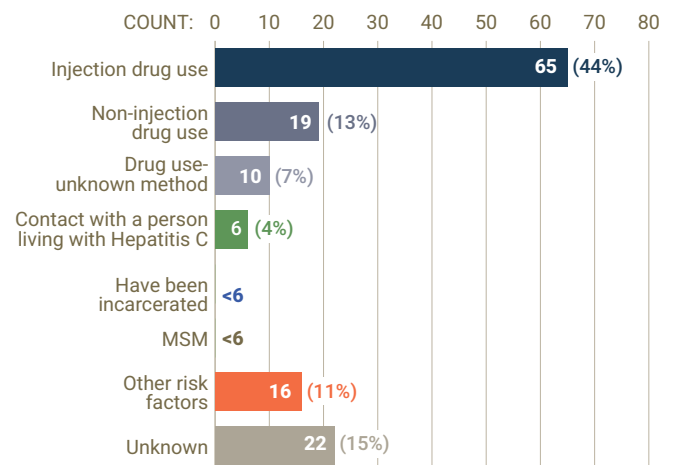


Figure 13: By Reported Risk Factors



Other risk factors: Non-commercial tattoo, Healthcare related exposure, Transplant of a HCV positive organ, Born in an HCV endemic country, Ever unhoused

Note: Risk data is often received only through active outreach to providers and patients. As a result, unknown values are elevated and may affect distribution.

Chronic Hepatitis C

While reports of chronic hepatitis C have declined since a peak in 2016, 1,021 new individuals were reported in 2022. The majority were male, 30-39 years or 60 years and older, and NH White or NH Black.

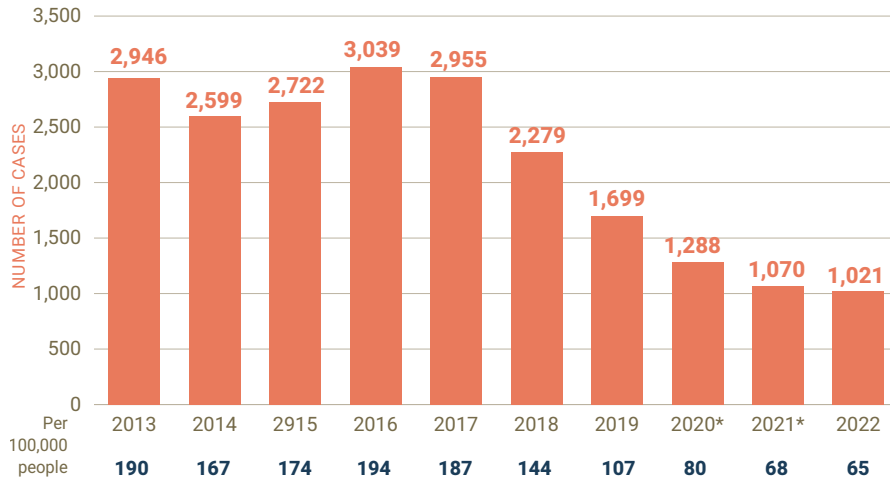
Number of People with Newly Reported Chronic Hepatitis C in 2022:

1,021

Rate of Newly Reported Chronic Hepatitis C in 2022:

65 per 100,000 people

Figure 14: Number & Rate of People Newly Reported with Chronic Hepatitis C in Philadelphia by Year of First Report, 2013–2022



*Totals for 2020 and 2021 may have been impacted by the COVID-19 pandemic

Characteristics of People Newly Reported with Chronic Hepatitis C in 2022:

Figure 15: By Sex

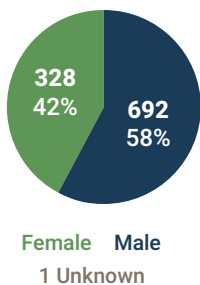


Figure 16: By Age (in years) at Time of Report

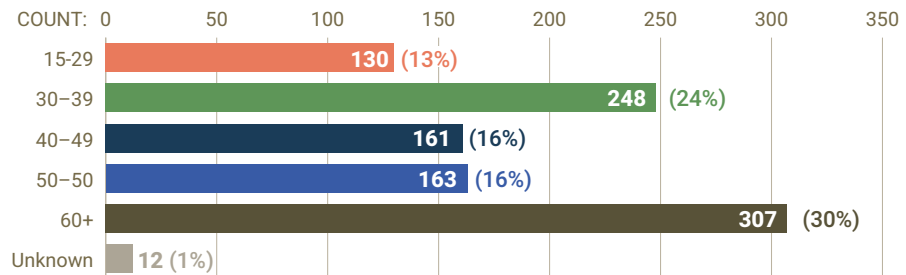
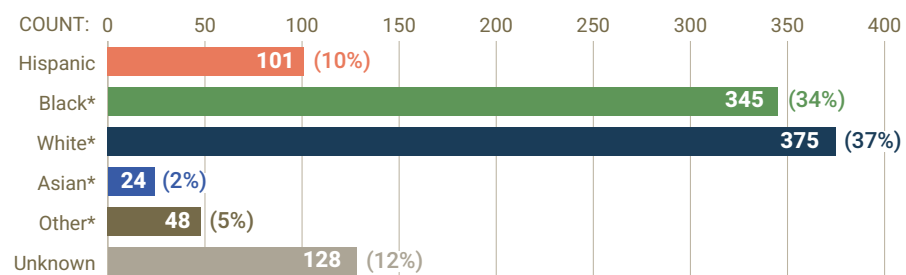


Figure 17: By Race/Ethnicity



* Non-Hispanic

Vital Statistics: Hepatitis C

There were 61 live births to people living with chronic hepatitis C. Of these infants, less than half were screened for hepatitis C and detected 4 instances of perinatal transmission. There were 139 deaths associated with hepatitis C in 2021, and 52% of liver cancer was associated with hepatitis C.

Perinatal Hepatitis C

People (Age 15–44) Who Could Become Pregnant Living with Chronic Hepatitis C in 2022:

Number:

3,380

Rate:

1,053 per 100,000 people

*HCV has decreased significantly in people of childbearing age and pregnant people in Philadelphia due to HCV treatment and emigration.

Percent of Infants Born to Persons Living with Chronic Hepatitis C in 2022, Tested:

49%

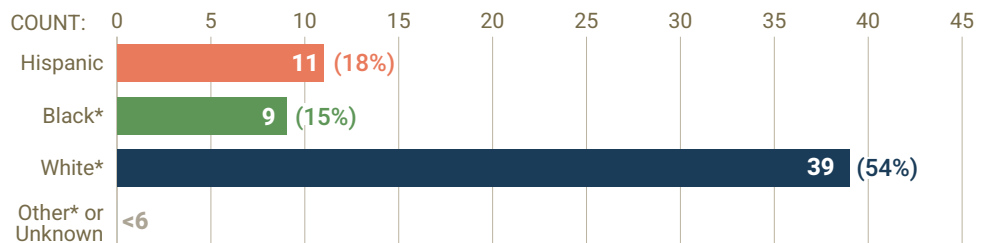
New Infections from Perinatal Hepatitis C Transmission Among Infants Born to Persons Living with Chronic Hepatitis C in 2021:

4

Number of Infants Born to a Pregnant Person Living with Chronic Hepatitis C, Live Births:

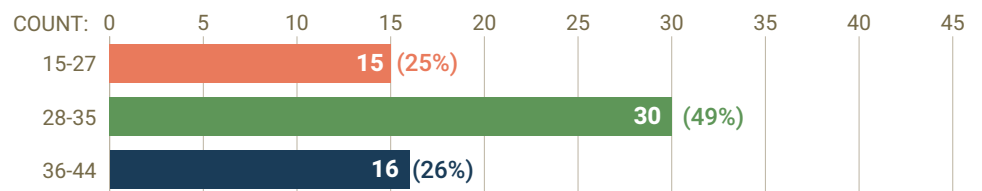
61

Figure 18: By Race/Ethnicity



* Non-Hispanic

Figure 19: By Age (in years)



82% (N=50) of Pregnant People Living with Hepatitis C were Born in Regions where HCV is Not Endemic.

Deaths from Hepatitis C

139

Deaths

8.8

per 100,000 people

Liver Cancer Diagnoses in Individuals with Hepatitis C, 2021

113

Diagnoses

52%

of people with Liver Cancer

Prevalence: Hepatitis C

Of the 23,460 people living with chronic hepatitis C in Philadelphia in 2022, male, NH Black or NH White, 45-64 years or 65 years and up.

The Health Department estimates that **52,364** people have had chronic hepatitis C since 2013. Currently, because of treatment and natural clearance **23,460** people (**1.5%** of Philadelphia residents) are living with chronic hepatitis C.

Map 2: 2022 Prevalence of People with Chronic Hepatitis C, Reported 2013–2022; Rate by Zip Code (N=22,313)

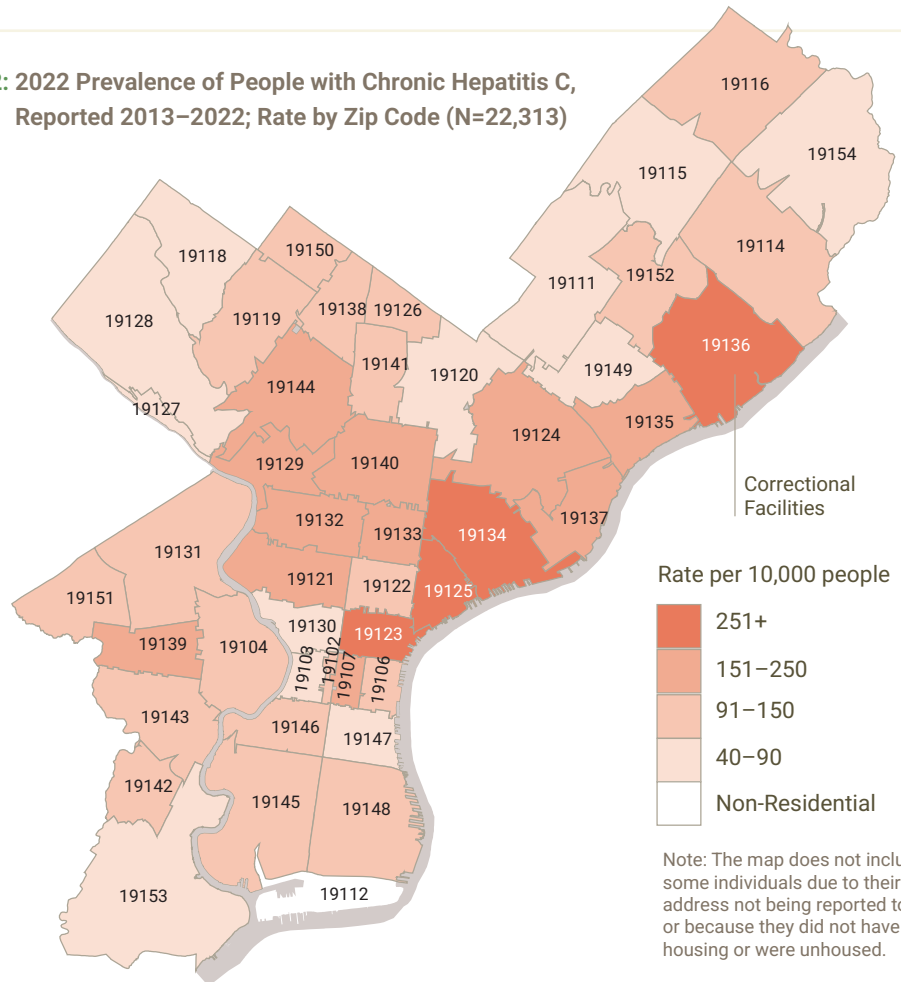
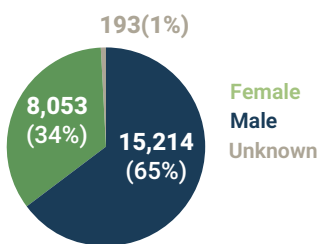
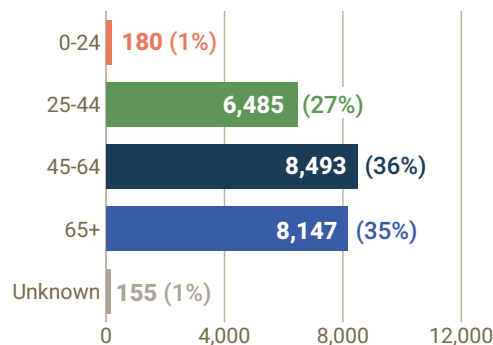


Figure 20: People Reported with Chronic Hepatitis C in Philadelphia, 2013-2022 (N=23,460)

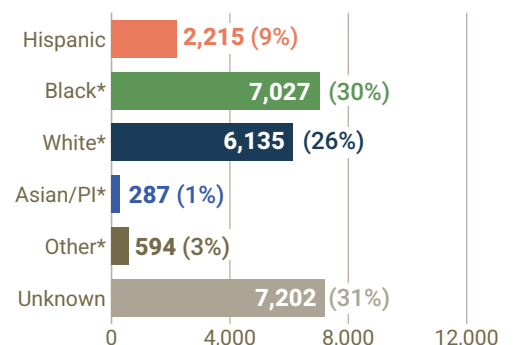
BY SEX



BY AGE IN YEARS IN 2022



BY RACE/ETHNICITY



* Non-Hispanic

Note: Race/ethnicity data is often received only through active outreach which is not comprehensive. As a result, unknown values are elevated and may affect race/ethnicity distribution.

Continuum of Care: Hepatitis C

Of the 52,364 living in Philadelphia in 2022 who ever were reported to have chronic hepatitis C, 88% received HCV viral load testing of whom 74% of them were ever reported with an active infection (positive viral load). From curative treatments or people’s natural immune responses, 45% of these individuals cleared their infections. 55% of people with active chronic hepatitis C remain who need treatment.

The Hepatitis C Continuum of Care is a way to visualize the progress of people through each step of care for hepatitis C, from diagnosis to viral clearance. The figure below shows progress, or lack of progress, of individuals from one bar to the next, with each bar representing a step in the continuum. A percentage is indicated from each bar to the next showing the proportion of people who have progressed to the next step. The ultimate goal of elimination efforts is for the Viral Clearance group to equal 100% of the people in the Initial Infection group, indicating that all people who need to be treated for Hepatitis C have received those services and are cured. The first figure shows this continuum for all groups in Philadelphia with subsequent figures looking at progress within race/ethnicity and age groups.

Definitions of Hepatitis C Care Continuum Categories

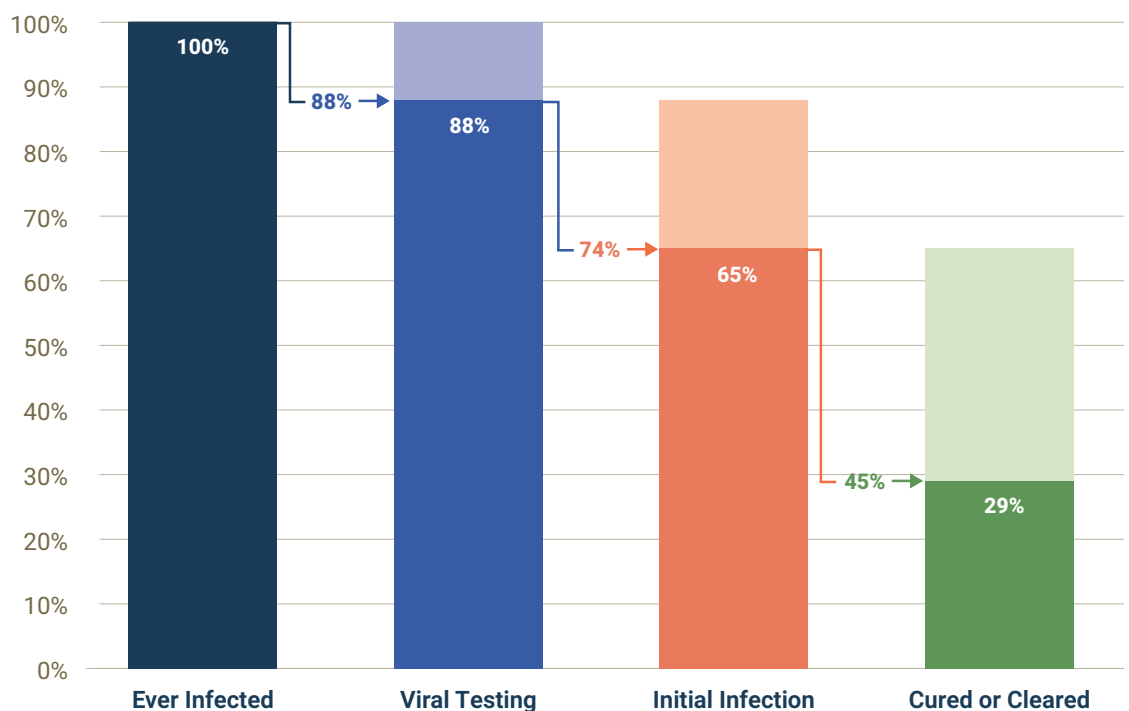
Ever Infected: Ever reported with a positive HCV antibody or HCV RNA or HCV genotype between January 1, 2013 & December 31, 2021

Viral Testing: An HCV RNA or HCV genotype test of any result reported between January 1, 2013 & December 31, 2022

Initial Infection: Ever reported with a positive HCV RNA test

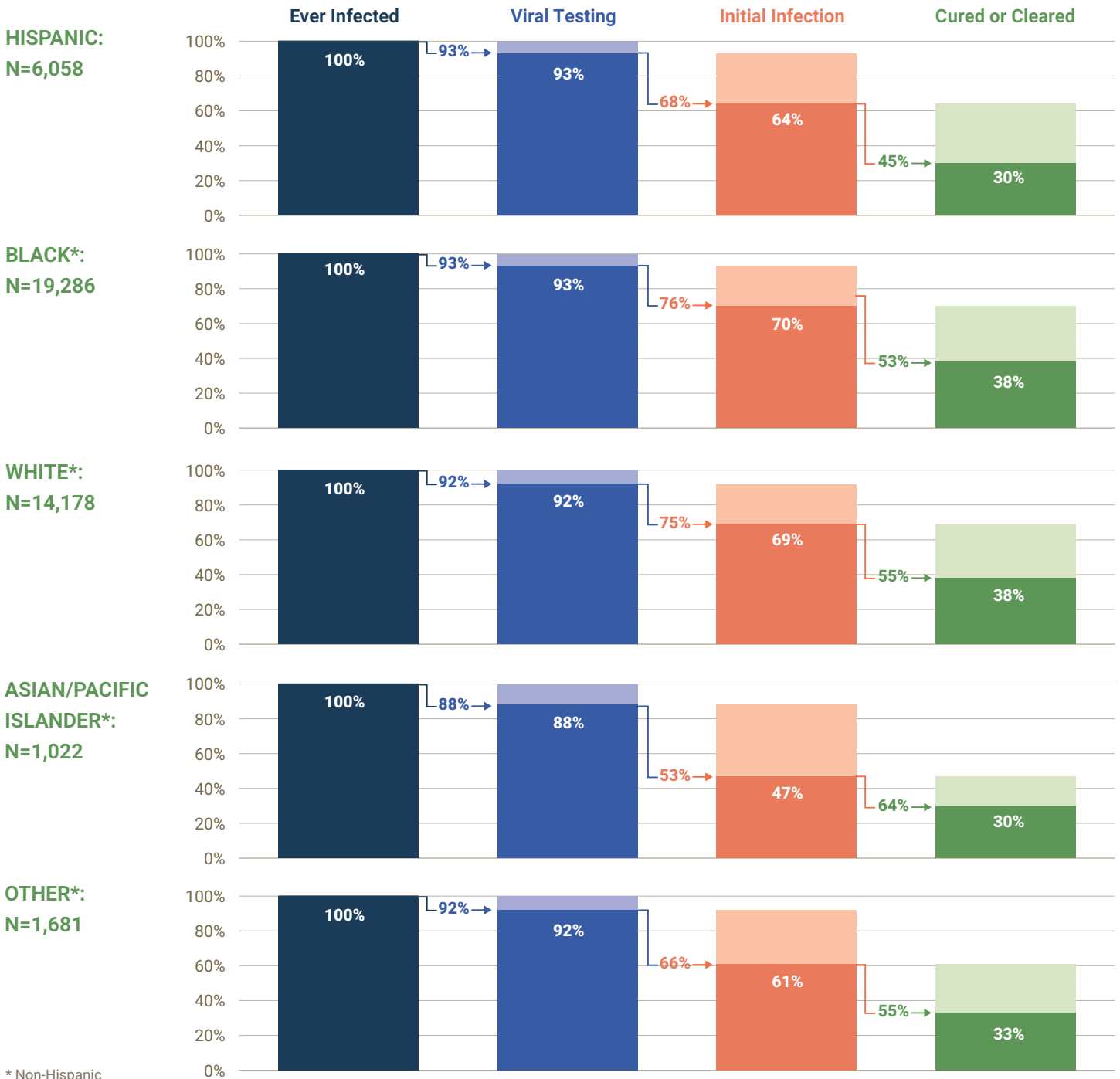
Cured or Cleared: A reported negative HCV RNA test result following a positive HCV RNA over any time period

Figure 21:
Laboratory-based
Hepatitis C Virus
Continuum of Care for
2022 Evaluation Year—
Philadelphia, January 01,
2013–December 31, 2021
(N=52,364)



Continuum of Care: Hepatitis C

Figure 22: Laboratory-based Hepatitis C Virus Continuum of Care for 2022 Evaluation Year by Reported Race/Ethnicity—Philadelphia, January 01, 2013–December 31, 2021 (N=42,225).

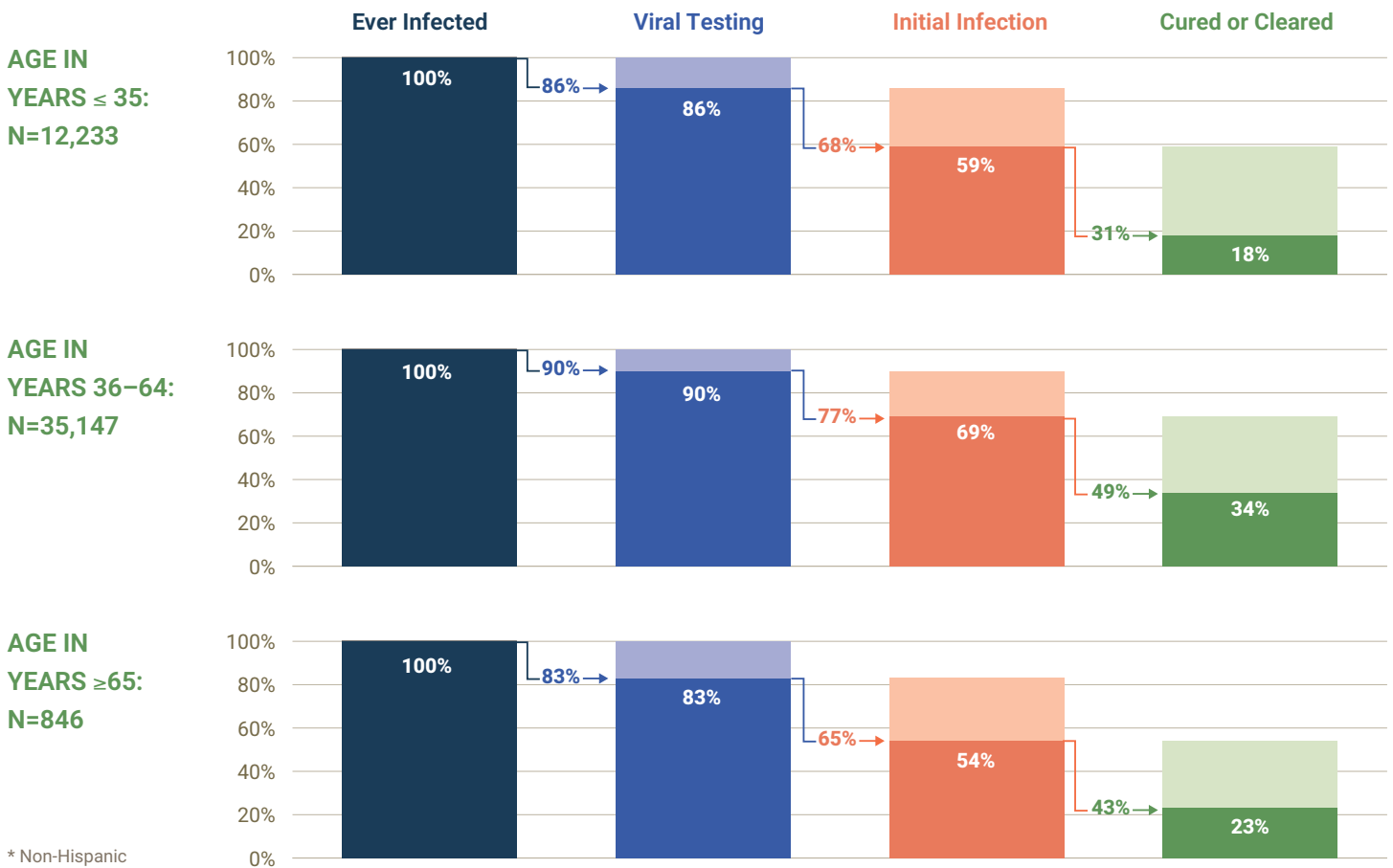


Note for Figures 22 & 23: People with missing race & ethnicity information (Figure 22) and age (Figure 23) are excluded.

Continuum of Care: Hepatitis C

Variations in testing and treatment/clearance exist between race and ethnicity groups and age groups. For example, Hispanic individuals are less likely to be cured or to clear hepatitis C infections than other groups. People 36-64 years old are more likely to be cured or to have cleared than younger or older individuals.

Figure 23: Laboratory-based Hepatitis C Virus Continuum of Care for 2022 Evaluation Year by Age Group: Philadelphia, 2013-2021 (N=52,226).



Note for Figures 22 & 23: People with missing race & ethnicity information (Figure 22) and age (Figure 23) are excluded.

Elimination Goals

Impact Target

PDPH, in collaboration with local communities and stakeholders has developed a plan to eliminate hepatitis B and hepatitis C in Philadelphia. Upon the plan's release in 2024, PDPH will continue to collaborate citywide to achieve the elimination targets by 2030. The Hepatitis B and Hepatitis C Elimination Plan will contain strategies and activities to achieve these goals, and metrics will be updated annually to track and inform progress.

WHO Indicator	WHO 2030 Targets
New Cases of Chronic Hepatitis B Infections	90% reduction
New Cases of Chronic Hepatitis C Infections	
Hepatitis B Deaths	65% reduction
Hepatitis C Deaths	

Source:
World Health Organization. Global Health Sector Strategy on Viral Hepatitis, 2016-2021: Towards Ending Viral Hepatitis. 2016.

Philadelphia Indicator	Baseline (2019)	Latest Available Philadelphia Data	Percent Change
Newly Reported Cases of Chronic Hepatitis B	679	569 (2022)	16% Decrease
Newly Reported Cases of Chronic Hepatitis C	1,699	1,021 (2022)	40% Decrease
% of People with Hepatitis B Who Died Prematurely*	65%	43% (2021)	34% Decrease
% of People with Hepatitis C Who Died Prematurely*	59%	46% (2021)	22% Decrease

Note: World Health Organization. (2016) Combating Hepatitis B and C to Reach Elimination by 2030: Advocacy Brief. World Health Organization.

* Died Prematurely is defined as occurring before the age of 65 years

The PDPH Viral Hepatitis Program (HEP) coordinates public health surveillance and epidemiology- related activities including direct education and outreach to people living with hepatitis B and hepatitis C. Using data to inform activities, HEP programming includes prevention activities including education and some direct care navigation for perinatal hepatitis B and hepatitis C, as well as for people living with a substance use disorder. Additional work includes outreach and engagement through leadership of the local hepatitis C coalition, Hepatitis C Allies of Philadelphia, technical assistance for providers to integrate hepatitis B and hepatitis C services into their practices, as well as support for provider treatment training programs.

Abbreviations and Technical Notes

Abbreviations

HBV: Hepatitis B virus, the virus that causes hepatitis B infections

HCV: Hepatitis C virus, the virus that causes hepatitis C infections

HEP: Viral Hepatitis Program at PDPH

MSM: Men who have sex with men

PDPH: Philadelphia Department of Public Health

RNA: Ribonucleic acid

Technical Notes

Acute Hepatitis B: A new HBV infection, reported with evidence of symptoms of acute viral hepatitis, jaundice or elevated alanine aminotransferase (ALT) levels, and Hepatitis B Surface Antigen (HBsAg) and Immunoglobulin M (IgM) antibody to hepatitis B core antigen (IgM anti-HBc) positive (if done). Alternatively, a reported HBV infection with a negative HBsAg result followed by an HBsAg or hepatitis B virus DNA (HBV DNA) positive result within six months.

Acute Hepatitis C: A new HCV infection in a person older than 3 years of age, reported with jaundice, elevated bilirubin or ALT levels, no evidence of a more likely diagnosis, AND a positive HCV RNA result. Alternatively, a reported HCV infection with a negative anti-HCV antibody and/or HCV RNA laboratory test result followed by positive HCV antibody (anti-HCV) and/or HCV RNA laboratory test result within twelve months.

Chronic Hepatitis B: An HBV infection reported to PDPH with at least one positive laboratory test result for HBsAg, hepatitis B e Antigen (HBeAg), or nucleic acid test for HBV DNA AND not known to have an acute HBV infection in the same year.

Chronic Hepatitis C: An HCV infection reported to PDPH with at least one positive anti-HCV and/or HCV RNA or HCV genotype laboratory test result. If an undetected HCV RNA result was reported, the infection is considered cleared or cured.

Inclusion Criteria: All data pertains to people who were Philadelphia residents who were not known to have died or moved as of December 31st, 2022.

Newly Reported: Infections that are reported to PDPH for the first time in the given year. In the case of chronic hepatitis B and chronic hepatitis C, these may not be newly acquired infections because many people are asymptomatic and may be screened for infections without the presence of risk or symptoms.

Perinatal Hepatitis B: Hepatitis B infection in infant or child due to HBV transmission from the birthing parent occurring during pregnancy or during labor and delivery.

Perinatal Hepatitis C: Hepatitis C infection in infant or child due to HCV transmission from the birthing parent occurring during pregnancy or during labor and delivery.

Prevalence: Hepatitis B and C prevalence estimates were updated for 2022 and included individuals who had a positive diagnostic hepatitis B laboratory test reported to PDPH from January 1, 1987- December 31, 2022 or a positive hepatitis C laboratory test reported to PDPH from January 1, 2013- December 31, 2022. Individuals were excluded if they were reported to PDPH to have died or were no longer a resident of Philadelphia throughout the identified time period. The hepatitis C estimate also excludes individuals who had resolved (most recent hepatitis C RNA was negative) infection through 2022.

Appendices

Data Sources

All surveillance data is collected by the Philadelphia Department of Public Health as a part of mandated reporting of hepatitis B and hepatitis C infections among Philadelphia residents. In addition, pregnancy among these individuals is also reportable. In addition, supplementary information on demographics, transmission risk factors, and clinical care are collected through patient and provider interviews.

Birth, Death, and Cancer data is sourced from the Pennsylvania Vital Registration System.

These data were supplied by the Bureau of Health Statistics and Research, Pennsylvania Department of Health, Harrisburg, Pennsylvania. The Pennsylvania Department of Health specifically disclaims responsibility for any analyses, interpretations, or conclusions.

Population estimates for Philadelphia residents is sourced from the U.S. Census Bureau; American Community Survey, 2022 American Community Survey 1-Year Estimates.

References to U.S. rates of acute hepatitis B and acute hepatitis C were sourced from Centers for Disease Control and Prevention. United States Viral Hepatitis Surveillance Reports, 2013 – 2021.

Authorship

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