

Indiana Viral Hepatitis Epidemiologic Profile 2020



Indiana
Department
of
Health



VIRAL HEPATITIS EPIDEMIOLOGIC PROFILE, 2020 INDIANA DEPARTMENT OF HEALTH

Kristina Box, M.D., FACOG, State Health Commissioner

Megan Lytle, BA, Assistant Commissioner for the Public Health Protection Commission

Jeremy Turner, BS, HIV/STD/Viral Hepatitis Division Director

Report Prepared by:

Jena Rasor, MPH, Viral Hepatitis Surveillance Supervisor

Colin Stretch, MPA, HIV/STD/Viral Hepatitis Deputy Surveillance Director

Daniel Hillman, MPH, HIV/STD/Viral Hepatitis Surveillance Director

Indiana Department of Health Viral Hepatitis Surveillance Team

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Section 3: Abbreviations



ACIP	Advisory Committee on Immunization Practices
Anti-HCV	Hepatitis C Virus Antibody
CDC	Centers for Disease Control and Prevention
CSTE	Council of State and Territorial Epidemiologists
DAA	Direct Acting Antivirals
FCI	Federal Correctional Institute
FDA	Food and Drug Administration
HCC	Hepatocellular Carcinoma
HBIG	Hepatitis B Immunoglobulin
HBsAg	Hepatitis B Surface Antigen
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HDV	Hepatitis D Virus
HIV	Human Immunodeficiency Virus
IAC	Indiana Administrative Code
IDOC	Indiana Department of Corrections
IDOH	Indiana Department of Health
LFT	Liver Function Test
MSM	Men Who Have Sex with Men
NBS	NEDSS Based System
PEP	Post-Exposure Prophylaxis
PHBPP	Perinatal Hepatitis B Prevention Program
PHN	Public Health Nurse
PoCBA	Persons of Childbearing Age
PrEP	Pre-Exposure Prophylaxis
PVST	Post-Vaccination Serologic Testing
PWID	People Who Inject Drugs
RNA	Ribonucleic Acid
SVR	Sustained Viral Response

Section 3: Abbreviations



VH	Viral Hepatitis
ZIP-IN	Zero Is Possible: Indiana

Age Group – The age groups used within this profile are: Under 18 years old, 18-29 years old, 30-39 years old, 40-49 years old, 50-59 years old, 60-69 years old, and 70 years old and older.

Epidemiologic Profile – A document that describes the burden of disease on the population of an area in terms of sociodemographic, geographic, behavioral, and clinical characteristics of persons with the disease.¹

Epidemiology – The study of distribution and determinants of health-related states among specified populations and the application of that study to the control of health problems.²

Ethnicity – The ethnicity groups within this profile are: Hispanic or Latino and Not Hispanic or Latino.

Hepatitis B, Acute – A short-term illness that occurs within the first six months after someone is exposed to the hepatitis B virus. Some people with acute hepatitis B have no symptoms at all or only mild illness. For others, acute hepatitis B causes a more severe illness that requires hospitalization.³

Hepatitis B, Chronic – A lifelong infection with the hepatitis B virus. Most people living with chronic hepatitis B do not have any symptoms, do not feel ill, and remain symptom free for decades. However, over time, chronic hepatitis B can cause serious health problems including liver damage, cirrhosis, liver cancer, and even death.³

Hepatitis B, Perinatal – A surveillance stage of hepatitis B that identifies children younger than 2 years old who are born in the US to a parent who is living with HBV and the child has laboratory evidence of HBV infection.⁴

Hepatitis C, Acute - Occurs within the first six months after someone is exposed to the hepatitis C virus. Hepatitis C can be a short-term illness, but for most people, acute infection leads to chronic infection. Many people do not have symptoms.⁵

Hepatitis C, Chronic - Can be a lifelong infection if left untreated. Chronic hepatitis C can cause serious health problems, including liver damage, cirrhosis (scarring of the liver), liver cancer, and even death.⁵

Hepatitis C, Perinatal – A surveillance stage of hepatitis C that identifies children younger than 3 years old who are born to a parent who is living with HCV, the child has laboratory evidence of a HCV infection, and is not known to have been exposed to HCV via a mechanism other than perinatal (e.g., not acquired via healthcare).⁶

NBS (National Electronic Disease Surveillance System [NEDSS] Base System) – A CDC-developed integrated information system that helps local, state, and territorial public health departments manage reportable disease data and send notifiable disease data to CDC. NBS provides a tool to support the public health investigation workflow and to process, analyze, and share disease-related health information. NBS also provides reporting jurisdictions with a NEDSS-compatible information system to transfer epidemiologic, laboratory, and clinical data efficiently and securely over the Internet.⁷

Percentage – A proportion of the whole, in which the whole is 100.⁸

Race – The race groups within this profile are: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian and Other Pacific Islander, and White.

Rate – An expression of the frequency with which an event occurs in a defined population over a specified time period.⁹

Surveillance – The ongoing systematic collection, analysis, and interpretation of health-related data essential to planning, implementation, and evaluation of public health practice.¹⁰

Trend – Movement or change in frequency over time, usually upwards or downwards.¹¹

The Indiana 2020 Viral Hepatitis (VH) Epidemiology Profile presents an analysis for hepatitis B virus (HBV) and hepatitis C virus (HCV) cases reported to Indiana during 2020 and reflects the most complete information available for cases through Dec. 31, 2020. The Indiana Department of Health (IDOH) is striving, along with public health and community partners, to meet the Centers for Disease Control and Prevention's (CDC) goals of eliminating hepatitis B and C. This profile is one part of that overall goal. The goals of this profile are to provide descriptive information about hepatitis B and hepatitis C in the Indiana general population. This profile can be used to increase awareness, disseminate data, frame research and evaluation questions, apply for and receive funding, project future needs for prevention and care, and guide policy for viral hepatitis. It is intended to serve as a reference document for policy makers, program managers, health planners, researchers, and others who are concerned with the public health implications of the disease presented.

The Indiana Department of Health receives reports of HBV and HCV cases through the NEDSS Based System (NBS), a database application provided by the CDC to the state for use in managing the data received for notifiable communicable diseases. These reports are submitted as electronic laboratory reports, communicable disease reports from health care providers, and case investigations from local health departments. Data for this profile were gathered in 2021 from NBS. In accordance with the Communicable Disease Reporting Rule, Title 410, Article 1, Rule 2.5 of the Indiana Administrative Code (IAC), the Department of Health requires hospitals, medical labs, private and public health providers, and clinics to provide prompt reporting of positive HBV and HCV results to their local or state health department. The Department of Health's Communicable Disease Reporting Rule can be accessed at <https://www.in.gov/health/erc/infectious-disease-epidemiology/infectious-disease-epidemiology/communicable-disease-reporting/>.

The number of reported cases is determined by the number of initial cases started from positive hepatitis B or hepatitis C tests reported for the first-time during a given year. Cases are defined as either acute or chronic based on certain laboratory and clinical factors. The Department of Health uses the Council for State and Territorial Epidemiologists (CSTE) case definitions to standardize the classifications of an individual as a case based on clinical features and laboratory findings. A written form of the CSTE case definitions can be found in Additional Resources or at the links below:

Hepatitis B, Acute: <https://ndc.services.cdc.gov/case-definitions/hepatitis-b-acute-2012/>

Hepatitis B, Chronic: <https://ndc.services.cdc.gov/case-definitions/hepatitis-b-chronic-2012/>

Hepatitis B, Perinatal: <https://ndc.services.cdc.gov/case-definitions/hepatitis-b-perinatal-virus-infection-2017/>

Hepatitis C, Acute: <https://ndc.services.cdc.gov/case-definitions/hepatitis-c-acute-2020/>

Hepatitis C, Chronic: <https://ndc.services.cdc.gov/case-definitions/hepatitis-c-chronic-2020/>

Hepatitis C, Perinatal: <https://ndc.services.cdc.gov/case-definitions/hepatitis-c-perinatal-infection-2018/>

Acute cases are reportable to CDC, but data has also been collected on chronic cases to help assess risk factors when feasible. Investigation of chronic cases can contribute to the reduction in spread of disease by increasing the percentage of persons aware they have a hepatitis B or C infection, providing education to people living with viral hepatitis, and determining risk factors to drive intervention and prevention efforts.

The Indiana Department of Health works to promote, protect, and improve the health and safety of all Hoosiers. All Hoosiers should know their viral hepatitis status and should receive care to manage or cure their infection, if needed.

Figure 1: Map of Zero is Possible Indiana Coalition Regions

Figure 2: Rates of newly reported acute hepatitis B cases* – Indiana and United States, 2011-2020

Figure 3: Count and rate of newly reported acute and chronic hepatitis B cases* - Indiana, 2011-2020

Figure 4: Rates of newly reported acute and chronic hepatitis B cases*, by ZIP Coalition Region – Indiana, 2020

Figure 5: Rates of newly reported acute hepatitis B cases*, by sex – United States and Indiana, 2011-2020

Figure 6: Rates of newly reported acute and chronic hepatitis B cases*, by age group – Indiana, 2011-2020

Figure 7: Rates of newly reported acute and chronic hepatitis B cases*, by race – Indiana, 2011-2020

Figure 8: Count and rate of newly reported acute and chronic hepatitis C cases*- Indiana, 2011-2020

Figure 9: Rates of newly reported acute hepatitis cases*– Indiana and United States, 2011-2020

Figure 10: Indiana Acute Hepatitis C Iceberg, 2020 (Derived from Klevens et al., 2014)

Figure 11: Rates of newly reported acute and chronic hepatitis C cases*, by ZIP Coalition Region – Indiana, 2020

Figure 12: Rates of newly reported acute hepatitis C virus cases*, by sex – Indiana and United States, 2010-2020

Figure 13: Count of newly reported hepatitis C cases*, by age - Indiana, 2011, 2016, and 2020

Figure 14: Rates of newly reported acute and chronic hepatitis C cases*, by age group – Indiana, 2011-2020

Figure 15: Rates of newly reported acute and chronic hepatitis C cases*, by race† – Indiana, 2010-2020

Figure 16: Rates* of death† with HCV listed as a cause of death among residents – United States, Indiana, 2016-2020

Figure 17: Rates of newly reported acute and chronic hepatitis C cases*, by ethnicity – Indiana, 2010-2020

Figure 18: Persons of childbearing age (PoCBA) (10-50 years) with newly reported acute and chronic hepatitis C cases* and rates of perinatal hepatitis C – Indiana, 2018-2020

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Table 11: Percentage of responses* of newly reported acute and chronic hepatitis B cases, by reported risk behavior - Indiana, 2020

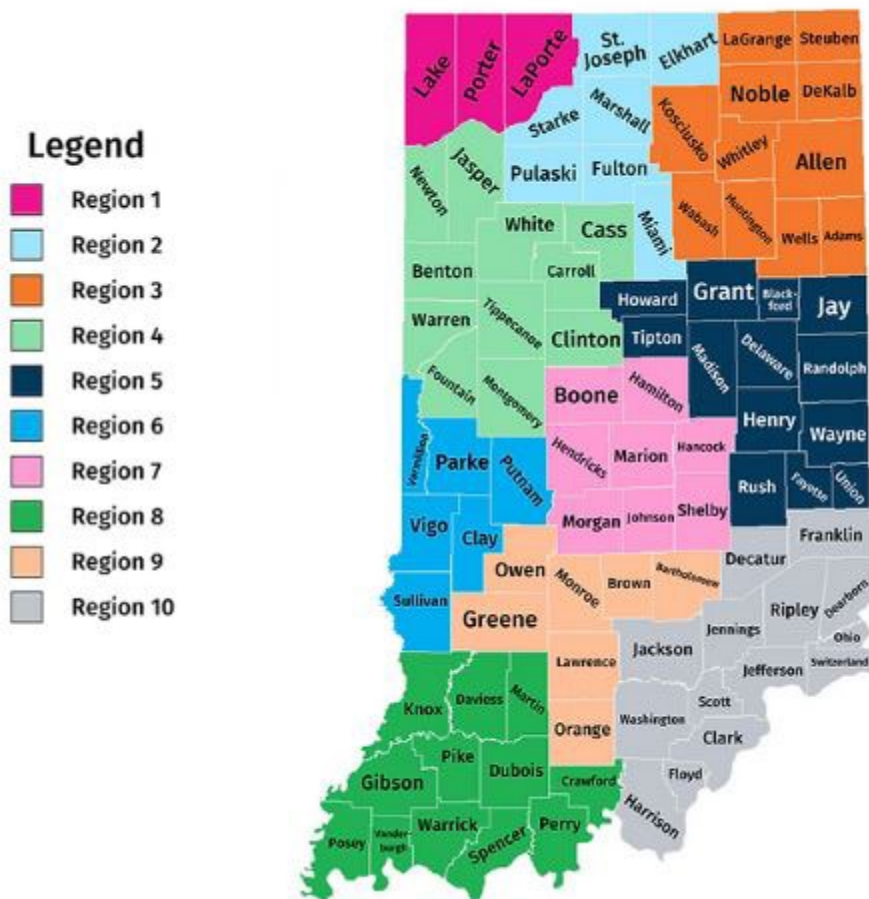
Table 12: Counts (and rates per 100,000 people) of newly reported acute and chronic hepatitis C cases*, by sex – Indiana, 2018-2020

Table 13: Percentage of responses* of newly reported acute and chronic hepatitis C cases*, by reported risk behavior - Indiana, 2020

VIRAL HEPATITIS

SUMMARY OF THE INDIANA VIRAL HEPATITIS EPIDEMIOLOGIC PROFILE, 2020:

Figure 1: Map of Zero Is Possible Indiana Coalition Regions



The data used for this profile are between January 1, 2020, to December 31, 2020, and were obtained from the database, NBS. Viral hepatitis case investigation data are collected from medical laboratories, private and public health providers, clinics, and hospitals, and through provider and patient interviews from investigators and public health nurses (PHNs). The case definitions for this report come from the 2012 hepatitis B, acute and chronic, classifications, the 2017 hepatitis B perinatal classification, the 2020 hepatitis C, acute and chronic classifications, and the 2018 hepatitis C perinatal classification. These case definitions are linked in the Executive Summary and are listed in Additional Resources. The counties in Indiana are divided into 10 Zero Is Possible: Indiana (ZIP-IN) coalitions based on regional similarities to address eliminating HIV and hepatitis C in Indiana.

The 2020 hepatitis data for Indiana does include cases for people who are incarcerated in the Indiana Department of Correction (DOC) and the Federal Correctional Institute (FCI) in Vigo County unless otherwise stated in the footnotes of the figures and tables. Unknown and missing values on sex, race, ethnicity, age, and various risk factors (injection drug use, close contact with a person living with viral hepatitis, experienced incarceration, etc.) were removed from both the numerator and denominator of calculations unless stated otherwise.

Hepatitis B

- In 2020, a total of 970 cases of hepatitis B were newly reported in Indiana. This case count corresponds to a rate of 14 cases per 100,000 people. Out of the total newly reported cases of hepatitis B, there were 872 newly reported chronic cases of hepatitis B (rate of 12.9 cases per 100,000 population). Ninety-eight cases were newly reported acute cases of hepatitis B, making up 10.1% of newly reported cases of hepatitis B. The newly reported acute cases of hepatitis B correspond to a rate 1.4 per 100,000 people. This rate is a 40% decrease from Indiana's 2019 newly reported acute hepatitis B rate (2.5 cases per 100,000 population) but is still higher than the 2020 United States' national rate (0.7 per 100,000 population for 2019). Indiana ranked sixth in the nation for highest rate of newly reported cases of acute hepatitis B in 2020. This was an increase, as Indiana ranked seventh in 2019.
- Males aged 40-49 and 30-39 made up the highest percentage of all newly reported hepatitis B cases (18% and 16% respectively). Males represent 64% of all hepatitis B cases newly reported in Indiana for 2020. Those aged 30-49 made up 53% of all HBV cases in 2020, which has remained above 50% from 2018-2020.
- Black or African American persons made up 15.8% of all HBV cases from 2018-2020, compared to 60.0% for White persons. Of the newly reported hepatitis B cases (acute and chronic) in 2020, Asian Hoosiers had the highest rate of 40.1 per 100,000 people and Black or African American Hoosiers had a rate of 18.5 per 100,000 people. In comparison, White Hoosiers had the lowest rate of newly reported hepatitis B for 2020 at 7.9 per 100,000 population. Rates for Native Hawaiian or Other Pacific Islander Hoosiers were unstable due to having case counts fewer than 20 and thus not reported. American Indian or Alaska Native persons had zero cases of hepatitis B reported in Indiana for 2020.
- Of the newly reported hepatitis B cases (acute and chronic), 2.8% were in Hispanic or Latino Hoosiers, 47.6% were in Non-Hispanic or Latino Hoosiers, and 49.6% of cases were unknown or missing ethnicity information.

- Previously, birth outside of the United States was the largest reported risk factor for hepatitis B in Indiana. In 2020, 37.3% of newly reported acute and chronic HBV cases reported being born outside of the United States. In the same year, other risk factors were reported more than being born outside of the United States. Of newly reported acute and chronic HBV cases in 2020, 54.4% reported having experienced incarceration. Of the newly reported HBV cases, 48.6% reported injection drug use (currently or in the past) and 36.1% of people living with HBV reported non-injection drug usage.

Hepatitis D

- A total of 12 suspected cases of hepatitis D were reported to the Indiana Department of Health in 2020. Of those 12 cases, 91.7% cases had known previous or current hepatitis B cases.
- Seventy-five percent of the suspected cases reported are male and 41.7% are White persons.

Hepatitis C

- In 2020, a total of 5,204 acute and chronic cases of hepatitis C were newly reported in Indiana. This case count corresponds to a rate of 77 cases per 100,000 people, a 19.7% decrease from 2019 (95.9 cases per 100,000). Of those 5,204 newly reported cases, 264 (5.1%) were acute cases of hepatitis C, 4,924 (94.6%) were chronic cases of hepatitis C, and 16 (0.3%) were perinatal cases of hepatitis C. The 264 newly reported cases of acute hepatitis C corresponds to a rate of 3.6 cases per 100,000 people. This ranked Indiana as the fifth highest rate in the United States in 2020. In 2019, Indiana ranked first in the nation for the highest rate of newly reported cases of acute hepatitis C.
- Those aged 18-39 account for 54.8% of all HCV cases from 2018 to 2020. In 2020, the 30-39 age group represented 30.7% of the total HCV cases. Males aged 30-39 and females aged 30-39 made up the highest percentages of all newly reported hepatitis C cases (18.1% and 12.6% respectively). Males represent 59% of all hepatitis C cases newly reported in Indiana for 2020.
- Of the newly reported hepatitis C cases (acute and chronic), White Hoosiers had the highest rate of 57.0 cases per 100,000 people. Black or African American Hoosiers had the next highest rate of 50.3 cases per 100,000 population. Asian Hoosiers had a rate of 12.3 cases per 100,000 population. Rates for American Indian or Alaska Native persons and Native Hawaiian or Other Pacific Islander Hoosiers were unstable due to having case counts less than 20.

- Despite Black Hoosiers having similar or lower rates of hepatitis C infection than White Hoosiers, there is a 12-year average age difference at the time of first reported hepatitis C infection between White Hoosiers (38.4 years) and Black Hoosiers (50.7 years) from 2016-2020. In 2020, there is a five-year average age difference at time of first reported hepatitis C infection between Hispanic or Latino females (44.4 years) and non-Hispanic or Latino females (39.3 years) in Indiana.
- Of the newly reported hepatitis C cases (acute and chronic), 1.8% were in Hispanic or Latino Hoosiers, 48.4% were in Non-Hispanic or Latino Hoosiers, and 49.7% of cases were unknown or missing ethnicity information.
- Age-adjusted HCV mortality rates among Black or African American Hoosiers have been consistently higher than White Hoosiers in Indiana since 2016. In 2020, age-adjusted HCV mortality rates for Black or African American Hoosiers was 6.2 per 100,000 population and was 2.3 per 100,000 population for White Hoosiers.
- Although there has been a decrease since 2018 of the number of reported people of child-bearing age who are living with HCV in Indiana, the rate of perinatal cases per 1,000 persons of child-bearing age have been increasing since 2018.
- In 2020, 17.8% of all newly reported cases of HCV were identified in local jails, IDOC, FCI, or other correctional facilities. The sharing of drug equipment is one of the main risk factors reported in transmission of HCV. In 2020, 77.6% of newly reported cases of HCV reported injection drug use (current or past), whereas 67.0% of newly reported HCV cases reported non-injection drug usage.

INDIANA POPULATION, AGE, AND SEX DISTRIBUTION

In 2020, the U.S. Census Bureau estimated that Indiana ranked 17th nationally in population. According to the U.S. Census, the estimated population in Indiana in 2020 was 6,785,644, up 2.3% from 2016. The most populated counties are in the northern and central parts of the state. The most populated county in Indiana is Marion, with a population of 976,770 people, and the least populated is Ohio County with 5,930 people. Thirty-eight counties in Indiana have fewer than 30,000 people each, while 17 counties each contain more than 100,000 people. White persons comprise the majority of the population at 84.5%, followed by Black or African American persons at 10.1% of the population. Hispanic or Latino persons make up 7.5% of the total population in Indiana. In 2020, females outnumbered males (50.38% vs 49.62%). There is a 21.5-year difference in county median age (ranging from 50.3 to 28.8). The overall median age for the state is 38 years old. In 2020, 11.6% of Hoosiers were experiencing poverty and 10.3% of Hoosiers were uninsured in 2019*. Below are tables that show the demographic breakdown of Indiana’s population in 2020.

Table 1: Population size and percentage, by ZIP-IN Coalition Region – Indiana, 2020

ZIP-IN Coalition Region	Population Size	Percentage
Coalition 1	784,075	11.6%
Coalition 2	617,611	9.1%
Coalition 3	797,358	11.8%
Coalition 4	420,341	6.2%
Coalition 5	626,600	9.2%
Coalition 6	221,450	3.3%
Coalition 7	1,931,499	28.5%
Coalition 8	487,074	7.2%
Coalition 9	354,093	5.2%
Coalition 10	545,543	8.0%
Total (State)	6,785,644	100.0%

Table 2: Population size and percentage, by race – Indiana, 2020

Race	Population Size	Percentage
White	5,733,020	84.5%
Black or African American	686,041	10.1%
American Indian and Alaska Native	29,455	0.4%
Asian	179,531	2.6%
Native Hawaiian and Other Pacific Islander	4,819	0.1%
Two or More Races	152,778	2.3%
Total	6,785,644	100.0%

Table 3: Population size and percentage, by ethnicity – Indiana, 2020

Ethnicity	Population Size	Percentage
Hispanic or Latino	508,910	7.5%
Non-Hispanic or Latino	6,276,734	92.5%
Total	6,785,644	100%

Table 4: Population size and percentage, by sex – Indiana, 2020

Sex	Population Size	Percentage
Male	3,367,242	49.62%
Female	3,418,402	50.38%
Total	6,785,644	100%

Table 5: Population size and percentage, by age group – Indiana, 2020

Age Group (in years)	Population Size	Percentage
Under 18	1,594,263	23.5%
18-29	1,108,857	16.3%
30-39	868,110	12.8%
40-49	827,775	12.2%
50-59	863,837	12.7%
60-69	803,078	11.8%
70 and Above	719,724	10.6%
Total	6,785,644	100%

Table 6: Percent of population living in poverty and median household income – Indiana, United States, 2020

Location	Percent of Population Living in Poverty	Median Household Income
United States	11.9%	\$67,340
Indiana	11.6%	\$60,794

Table 7: Percent of population that is without insurance – Indiana, United States, 2019*

Location	Percent of Population that is Without Insurance
United States	10.8%
Indiana	10.3%

*Data for 2020 has not been released yet for percentage of people with health insurance.

HEPATITIS B VIRUS

Disease Background

Hepatitis B virus (HBV) infection causes liver inflammation, which occurs when exposed to the virus through blood, semen, or another body fluid from a person who is living with HBV. This can happen through sexual contact, sharing needles, syringes, or other drug-injection equipment, or from mother to baby at birth.¹² HBV infection can be either acute, a short-term illness lasting for weeks, or chronic, a long-term illness. The CDC reports that approximately 90% of infected infants become chronically infected; in contrast, approximately 95% of adults will recover completely and will not form a chronic infection.¹³ Most children under age 5 and newly infected, immunosuppressed adults are generally asymptomatic, whereas 30%–50% of persons aged ≥ 5 years have signs and symptoms.¹³ When symptoms are present, they include fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, clay-colored bowel movements, joint pain, and jaundice;¹² however, most people with chronic HBV infection are asymptomatic and will not have evidence of liver disease.¹² Approximately 25% of those who become chronically infected with HBV during childhood and 15% of those who become chronically infected after childhood with HBV, die prematurely from cirrhosis or hepatocellular carcinoma (HCC) (or liver cancer), and the majority remain asymptomatic until onset of cirrhosis or end-stage liver disease.^{14,15}

In the United States, the estimated number of people living with chronic HBV infection is 862,000 people.³ In 2019, a total of 3,192 new cases of acute hepatitis B virus infection were reported to CDC with an incidence rate of 1.0 cases per 100,000 population.¹⁶ In 2020, there was a 32% decrease to 2,157 new cases of acute hepatitis B with an incidence rate of 0.7 cases per 100,000 population.¹⁶ This decrease is believed to be related to fewer people seeking healthcare and being tested for HBV during the pandemic.¹⁶ After adjusting for case under-ascertainment and underreporting, the CDC estimates that the actual number of people living with acute hepatitis B is closer to 14,000 in 2020.¹⁶ There were 11,635 cases of newly reported chronic hepatitis B to the CDC during 2020 with 88% of these cases occurring in persons 30-years and older.¹⁶ The rate of newly reported chronic hepatitis B cases among Asian and Pacific Islander persons was 17.6 cases per 100,000 people and is 12 times higher than the rate among non-Hispanic or Latino, White persons (1.5 cases per 100,000 people).¹⁶

Risk for hepatitis B infection varies with occupation, lifestyle, or the environment where there is contact with blood from people living with HBV. Those individuals at the greatest risk for HBV infection and should be screened include infants born to mothers with known HBV infection; persons born in countries where HBV is common; people who inject drugs (PWID) and share needles, syringes, or other drug equipment; sex partners of people living

with hepatitis B; men who have sexual contact with men (MSM); people who live with a person who has hepatitis B; health care and public safety workers exposed to blood on the job; and patients who undergo hemodialysis.³ All pregnant people are recommended for screening of HBV due to the risk for perinatal transmission. Infants who are perinatally exposed should receive the first dose of hepatitis B vaccine and hepatitis B immunoglobulin (HBIG) within 12 hours of life and receive post-vaccination serologic testing (PVST) during 9-12 months of age and 1-2 months after the final dose of the HBV vaccine.^{3,17}

Fortunately, there is a vaccine to prevent HBV infection. The vaccine for hepatitis B first became available in 1982.¹⁸ The HBV vaccine is recommended for all infants; all children and adolescents younger than 19 years of age who have not been vaccinated; people at risk for infection by sexual exposure; people whose sex partners have hepatitis B; people at risk for infection by exposure to blood; international travelers to countries where hepatitis B is common; people living with hepatitis C; people living with chronic liver disease; people living with HIV; people who are in jail or prison; all other people seeking protection from hepatitis B virus infection.³ Since 2016, the Hepatitis Vaccines Work Group for the Advisory Committee on Immunization Practices (ACIP) examined a possible universal adult hepatitis B vaccination recommendation that ACIP will vote on in 2021 to move away from the risk-based recommendation.^{19, i}

Testing

Testing for HBV can be conducted using a variety of tests that are able to detect either parts of the virus or the antibodies the body has made against the infection. Based on the results of some of these tests, a physician may determine if the patient has ever been exposed or has a current HBV infection. For interpretation of hepatitis B serology tests, visit: <https://www.cdc.gov/hepatitis/hbv/pdfs/serologicchartv8.pdf>

Treatment

There is no medication available to treat acute hepatitis B. During this short-term infection, doctors usually recommend rest, adequate nutrition, and fluids, although some people may need to be hospitalized.³ People with chronic hepatitis B should be monitored regularly for signs of liver disease and evaluated for possible treatment, especially since people living with hepatitis B can develop liver cancer even without cirrhosis being present. Several medications have been approved for hepatitis B treatment. However, not every person with chronic hepatitis B needs to be on medication, and some may need to take medication for life to manage their chronic hepatitis B.^{3,20,21}

For more information on treatment options for hepatitis B, visit:

<https://www.hepb.org/treatment-and-management/treatment/>

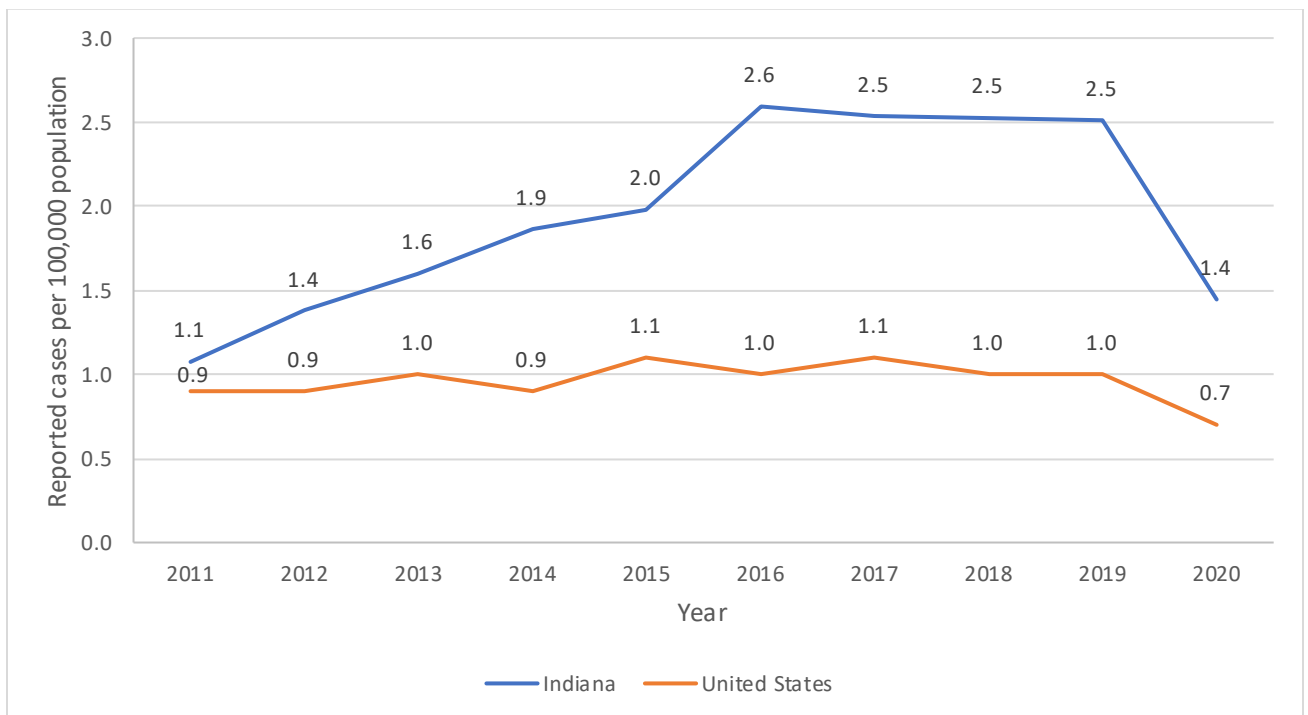
ⁱ At the time of writing this report, ACIP has recommended that all adults aged 19-59 should receive Hep B vaccines regardless of risk. See the following report for more information:

<https://www.cdc.gov/mmwr/volumes/71/wr/mm7113a1.htm>

HEPATITIS B IN INDIANA, 2020

The number of newly reported confirmed or probable, acute, and chronic HBV cases has increased 1.9% from 952 in 2016 to 970 in 2020, with an average of 995 new cases per year from 2016 to 2020. The number of confirmed acute HBV cases in Indiana decreased by 43.0% from 172 in 2016 to 98 cases in 2020. However, in 2020, Indiana ranked sixth nationally for the highest rates of newly reported confirmed acute hepatitis B, moving up from seventh highest rate in the nation in 2019.¹⁶

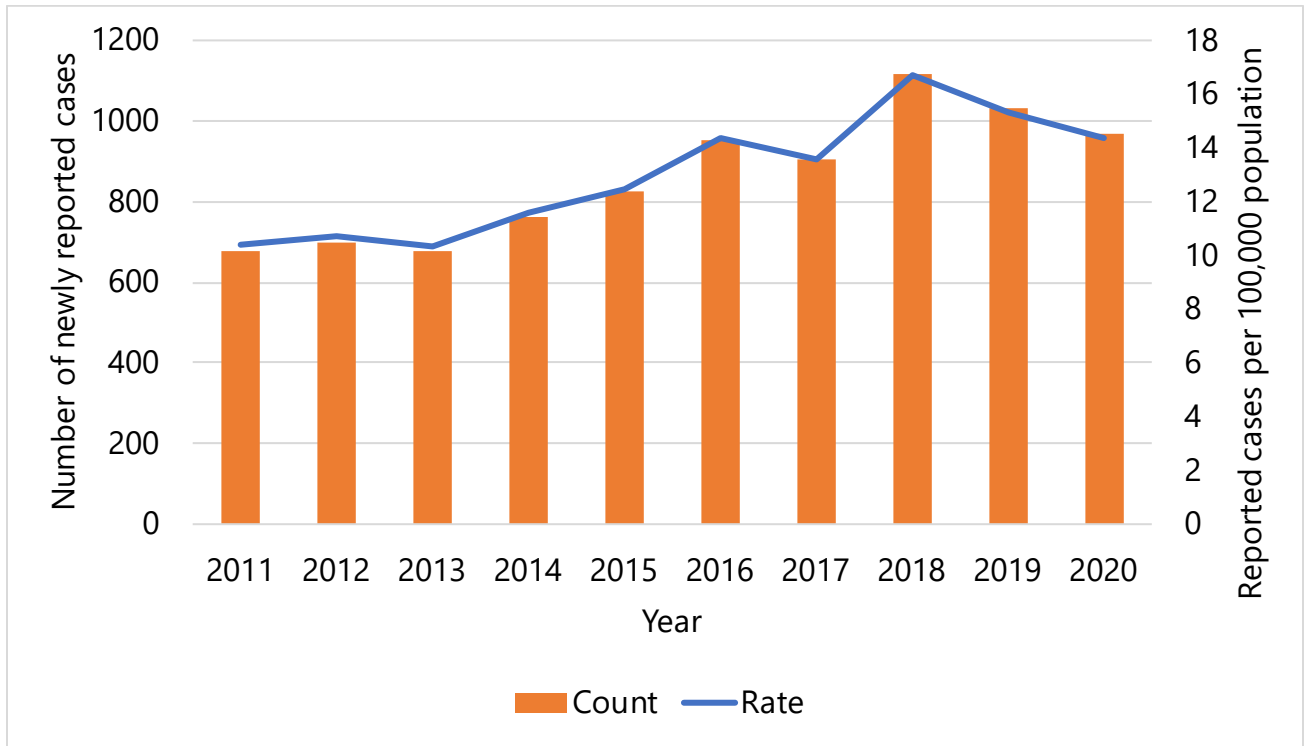
Figure 2: Rates of newly reported acute hepatitis B cases* – Indiana and United States, 2011-2020



* Cases include confirmed classifications only. IDOC and FCI cases are also included.

As shown in *figure 2*, Indiana's rate of newly reported acute cases has been consistently higher than the national rate of acute HBV cases. However, Indiana did have a decrease in 2020 in comparison to the past 4 years prior. The reasoning behind this decrease may be multifactorial since the COVID-19 pandemic disrupted many screening, reporting, and other healthcare processes.

Figure 3: Count and rate of newly reported acute and chronic hepatitis B cases* - Indiana, 2011-2020



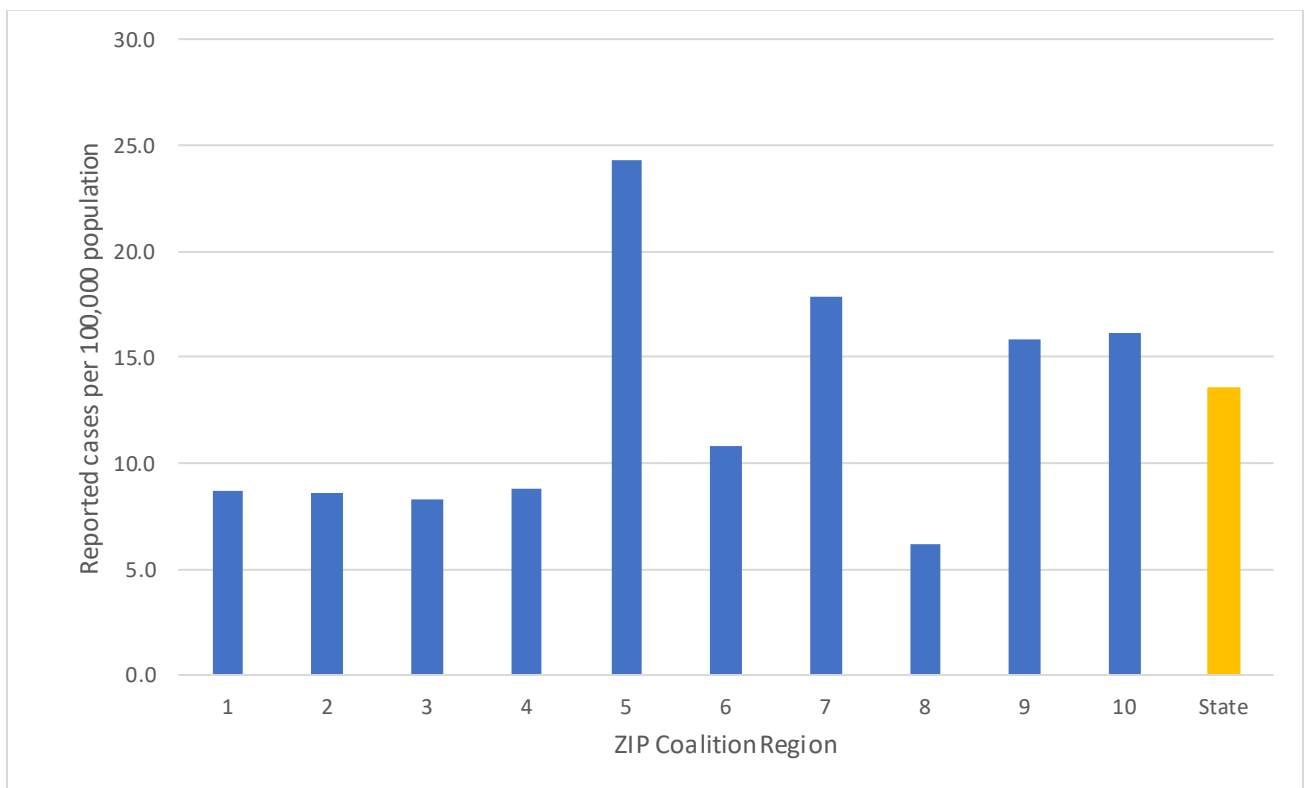
*Cases include probable and confirmed classifications. IDOC and FCI cases are also included.

Since 2011, Indiana has seen an overall increase of newly reported cases of acute and chronic HBV. Since 2018, however, there has been a slight decline in the number of newly reported HBV cases, from 1,118 cases in 2018 to 970 cases in 2020.

The states that were higher than the national rate (0.7 cases per 100,000 population) of newly reported acute hepatitis B in 2020 were located in or near the Appalachian region of the United States.¹⁶ Indiana was ranked sixth nationally for the highest rate of newly reported cases of acute hepatitis B.¹⁶

When looking at both newly reported acute and chronic hepatitis B cases, there are four ZIP Coalition regions across Indiana that are above the overall state's rate (13.5 cases per 100,000 population) in 2020. ZIP Coalition 5, in the central east part of Indiana, has the highest rates of newly reported acute and chronic hepatitis B in 2020 at 24.3 newly reported cases per 100,000 population.

Figure 4: Rates of newly reported acute and chronic hepatitis B cases*, by ZIP Coalition Region – Indiana, 2020

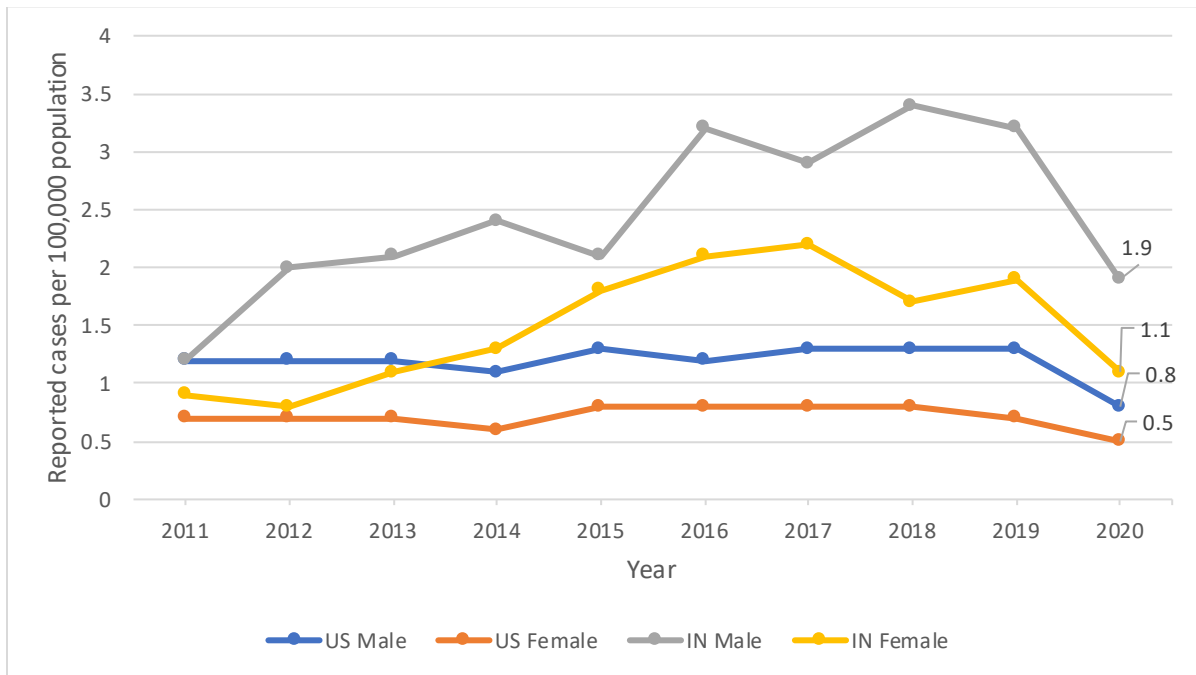


*Cases include probable and confirmed classifications. IDOC and FCI cases are excluded.

HBV cases in IDOC and FCI were not included in *figure 4*, but there were 52 newly reported cases of HBV that were identified through IDOC and the FCI facility in Vigo County. Of these 52 cases, 79% were White persons and 13% were Black or African American persons.

Since 2014, rates of newly reported acute hepatitis B cases for males and females in Indiana are higher than the national rates. However, there has been an overall decrease in rates for both Hoosier males and females in 2020 in comparison to 2019.

Figure 5: Rates of newly reported acute hepatitis B cases*, by sex – United States and Indiana, 2011-2020



*Cases include confirmed classifications only. IDOC and FCI cases are also included.

Males comprise a majority of newly reported cases of HBV in 2020 (63.8%); however, newly reported acute and chronic HBV cases for males decreased between 2019 and 2020, 64.5% and 63.8% respectively. In comparison, newly reported acute and chronic cases of HBV of females increased slightly from 35.4% in 2019 to 36.2% in 2020. Overall rates, however, decreased for both males and females with newly reported cases of acute and chronic HBV cases since 2018. *Table 8* highlights this decrease in the number and rates of newly reported acute and chronic cases of HBV by reported sex for 2018-2020.

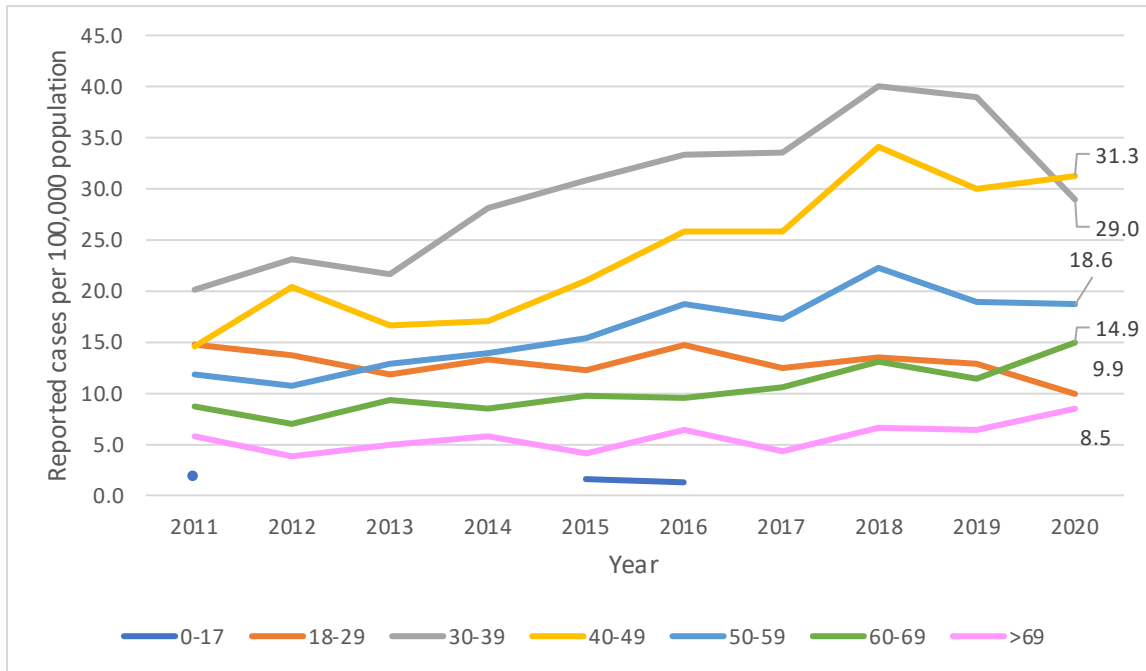
Table 8: Counts and rates of newly reported acute and chronic hepatitis B cases*, by sex – Indiana, 2018-2020

Sex	2018		2019		2020	
	Cases	Rate (per 100,000 population)	Cases	Rate (per 100,000 population)	Cases	Rate (per 100,000 population)
Female	432	12.7	365	10.7	351	10.3
Male	683	20.7	665	20.0	619	18.4

* Cases include probable and confirmed classifications. IDOC and FCI cases are also included.

People aged 40-49 and 60-69 exhibit the largest change in HBV cases from 2016-2020. Those aged 40-49 increased 22.7% from 2016 (n=211) to 2020 (n=259) and those aged 60-69 increased 69.0% from 2016 (n=71) to 2020 (n=120). However, people aged 30-39 and 40-49 made up 52.7% of all newly reported acute and chronic cases in 2020.

Figure 6: Rates of newly reported acute and chronic hepatitis B cases*, by age group – Indiana, 2011-2020

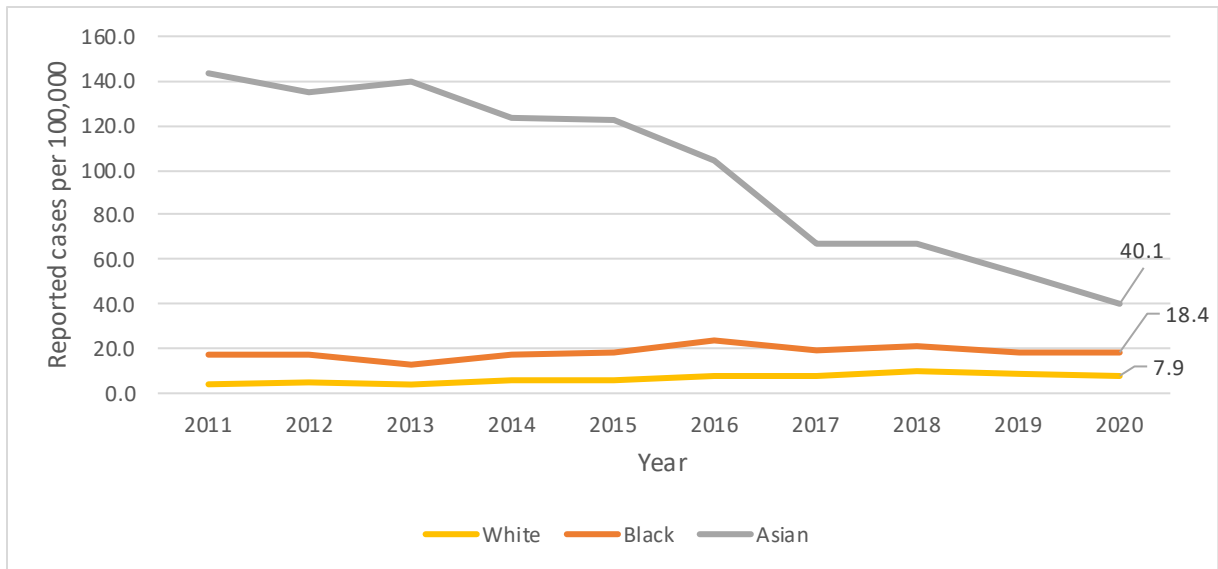


*Cases include suspect, probable, and confirmed classifications. IDOC and FCI cases are also included. Due to instability, rates calculated on case counts less than 20 were excluded.

Those aged 40-49 had the highest rate of newly reported acute and chronic hepatitis B in 2020 (31.3 newly reported cases per 100,000 population). This was followed by people aged 30-39 (29.0 newly reported cases per 100,000 population). This follows national trends as many people in these age groups have not been vaccinated previously for HBV.

In Indiana, White Hoosiers represent the greatest number of confirmed and probable, acute and chronic cases, which has increased 6.6% from 423 in 2016 to 451 in 2020. However, Asian Hoosiers represent 7.5% of newly reported acute and chronic cases of HBV in 2020 but only make up 2.6% of the population of Indiana. Similarly, Black or African American Hoosiers represent 13.1% of the newly reported acute and chronic cases in 2020 but only make up 10.1% of the population of Indiana. While this highlights the disproportion of cases by race, *figure 7* demonstrates how Asian Hoosiers and Black or African American Hoosiers have higher rates of newly reported acute and chronic HBV cases in Indiana. Both rates of newly reported acute and chronic hepatitis B cases for Asian Hoosiers and Black or African American Hoosiers were higher than the overall state’s rate of 14.4 newly reported acute and chronic hepatitis B cases in 2020, 40.1 and 18.4 respectively. *Table 9* further shows the breakdown of newly reported acute and chronic hepatitis B cases in Indiana by race from 2018-2020. During those years, a majority of newly reported cases of hepatitis B were in White Hoosiers but the rates show that Asian Hoosiers and Black or African American Hoosiers are disproportionately impacted by HBV through their higher rates. It is also important to note that race was missing or unknown in at least 20% of all newly reported hepatitis B cases for 2020.

Figure 7: Rates of newly reported acute and chronic hepatitis B cases*, by race – Indiana, 2011-2020



* Cases include probable and confirmed classifications. IDOC and FCI cases are also included.

Table 9: Counts and rates of newly reported acute and chronic hepatitis B cases*, by race – Indiana, 2018-2020

Race	2018		2019		2020	
	Cases	Rate (per 100,000 population)	Cases	Rate (per 100,000 population)	Cases	Rate (per 100,000 population)
American Indian or Alaska Native	<5	SD	<5	SD	0	NA
Asian	111	67.1	94	53.8	72	40.1
Black or African American	142	21.6	125	18.7	126	18.4
Native Hawaiian or Other Pacific Islander	<5	SD	<5	SD	5	SD
White	565	9.9	481	8.4	451	7.9

SD Suppressed Data: Due to instability, rates calculated were suppressed for American Indian or Alaska Native persons and Native Hawaiian or Other Pacific Islander persons from 2018-2020.

*Cases include probable and confirmed classifications. IDOC and FCI cases are also included.

Of note, ethnicity data was missing or unknown in at least 49% of all newly reported hepatitis B cases. Hispanic or Latino Hoosiers made up 2.8% of all newly reported hepatitis B cases, which may be underrepresented due to the missing ethnicity data in almost half of all newly reported hepatitis B cases in Indiana for 2020. This is shown in *Table 10* below.

Table 10: Counts and rates of newly reported acute and chronic hepatitis B cases*, by ethnicity – Indiana, 2018-2020

Ethnicity	2018		2019		2020	
	Cases	Rate (per 100,000 population)	Cases	Rate (per 100,000 population)	Cases	Rate (per 100,000 population)
Non-Hispanic or Latino	668	10.7	557	8.9	462	7.4
Hispanic or Latino	17	SD	28	5.7	27	5.3
Unknown and Missing	433	NA	447	NA	481	NA

SD Suppressed Data: Due to instability, the rate calculated for Hispanic or Latino persons was suppressed in 2018.

*Cases include probable and confirmed classifications. IDOC and FCI cases are also included.

RISK FACTORS

After positive HBV test results are received through the Department of Health reportable disease surveillance system, risk factor information is collected by local health departments and public health investigators during HBV case investigations. Due to case volume, collecting risk factor information during HBV case investigations can be challenging for local health departments. In 2020, the COVID-19 pandemic also hindered many local health departments and public health investigators, lessening their ability to conduct many investigations. Data collected on newly reported cases (both acute and chronic) indicate there was missing or unknown risk factor information for 67.2% of newly reported HBV cases in 2020.

Previously, birth outside of the United States has been the leading risk factor reported among both acute and chronic HBV cases in Indiana. In 2016, birth outside of the United States was reported in 46.0% of newly reported acute and chronic HBV cases. In comparison, 37.3% of newly reported acute and chronic HBV cases in 2020 reported being born outside of the United States. While the COVID-19 pandemic did impact some of the risk factor collection, the switch between the Department of Health’s old surveillance database and the current database might have also caused this risk factor to change between 2016 and 2020.

In the older surveillance database’s investigation, there was a dedicated question of “Was the county of origin other than the United States?” with possible answers of “Yes,” “No,” “Not answered,” and “Unknown.” The Department of Health’s current surveillance database does not have a dedicated question in the investigation but does have a spot to report

“Country of Birth” in the patient demographics page of the investigation. Due to the change in question and where it is in the investigation, it might have impacted some of the changes seen in the variable between 2016 and 2020.

Of those who answered ‘yes’ out of those who answered ‘yes’ and ‘no’ to having experienced incarceration, 54.4% of newly reported acute and chronic HBV cases in 2020 reported having experiencing incarceration. This is the highest risk factor reported in 2020 for newly reported acute and chronic cases. This was followed by cases reporting having a history of injection drug usage (48.6%), having a close contact (sexual and non-sexual) with someone living with HBV (43.6%), and having history of non-injection drug usage (36.1%). These results should be interpreted cautiously as many case investigations have these risk factors marked as ‘Unknown’ or are missing risk factor data. These risk factors are reported on in *table 11* below.

Table 11 – Percentage of responses* of newly reported acute and chronic hepatitis B cases, by reported risk behavior - Indiana, 2020**

Risk Behavior	Percentage of cases that reported the risk factor as ‘Yes’ out of cases that answered ‘Yes’ or ‘No’	Percentage of ‘Unknown’ responses of total newly reported cases†
Born outside of the United States	37.3%	86.1%
History of injection drug use	48.6%	77.6%
History of non-injection drug use	36.1%	53.2%
Ever experienced incarceration	54.4%	77.7%
Had a close contact (sexual or non-sexual) with someone who is living with HBV	43.6%	90.3%

*It is possible to report multiple risk behaviors within one investigation. These answers are not mutually exclusive.

**Cases include probable and confirmed classifications. IDOC and FCI cases are also included.

†Excludes missing data.

HEPATITIS D VIRUS

Disease Background

Delta hepatitis, also known as hepatitis D virus (HDV), is commonly referred to as a “satellite virus” because it can only infect people who are living with hepatitis B. Hepatitis D virus infection can be an acute or long-term illness.²² It can be a co-infection with HBV, when HDV infection is acquired simultaneously with HBV infection, or it can be a superinfection, when HDV infection is acquired in people who are living with chronic HBV.²² People who become infected simultaneously with HBV and HDV (the aforementioned “co-infection”), can have symptoms that range from mild to severe with more than 95% of immunocompetent adults clearing both HBV and HDV.²³ People who get HDV after being infected with HBV (the aforementioned “superinfection”) are more likely to experience severe outcomes such as liver damage, liver failure, and even death and 80% will form chronic infections of HDV.²³ Superinfection of HDV will accelerate the progression of HBV in 70%-90% of people and thus cause many of the serious long-term health outcomes.²³ This makes hepatitis D one of the most severe forms of liver disease.

Hepatitis D is spread similarly to hepatitis B. It is transmitted after coming into contact with the blood or other bodily fluid of someone who is living with HDV. This can happen through sexual contact, sharing syringes or other drug equipment, and from mother to baby during birth (although this is rare).²³ People who are at risk for HBV infection are also at risk for HDV infection. This includes infants born to mothers with known HDV infection; people who inject drugs (PWID) and share needles, syringes, or other drug equipment; sex partners of people living with hepatitis D; men who have sexual contact with men (MSM); people who live with a person who is living with hepatitis D; health care and public safety workers exposed to blood on the job; and patients who undergo hemodialysis.²³ Persons chronically living with HBV are also at risk for HDV infection since HDV can only infect people who are living with HBV.

The signs and symptoms of hepatitis D usually appear three to seven weeks after exposure and can include fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, clay-colored bowel movements, joint pain, and jaundice.^{24,23} Sometimes hepatitis D symptoms are missed due to being attributed to a possible exacerbation of the hepatitis B infection therefore it is important to screen for HDV.²⁵

It is believed that HDV is uncommon in the United States; however, HDV is not a nationally notifiable condition.²³ This means that the actual number of people living with HDV in the United States is unknown. Even though HDV data is limited in the United States, it is most commonly found in Eastern Europe, Southern Europe, the Mediterranean region, the Middle

East, West and Central Africa, East Asia, and the Amazon Basin in South America.²³ While there is no vaccine available to prevent hepatitis D, vaccination with the hepatitis B vaccine can protect people from HDV infection.²³

Testing

Diagnosis for hepatitis D can only be confirmed through testing. HDV infection should be considered in any person who has a positive hepatitis B surface antigen who presents with symptoms of hepatitis or other acute exacerbations.²³ The testing for HDV is typically done through testing for the presence of antibodies against HDV or through RNA testing (testing for the genetic material of the virus).²³

Treatment

The only medication currently available to treat HDV infection is interferon and people who have end-stage liver disease due to HDV infection may require a liver transplant.²⁶ However, there are many new treatments being studied by the Food and Drug Administration (FDA) and some have even been approved globally.

HEPATITIS B AND HEPATITIS D IN INDIANA, 2020

Even though hepatitis D is not a nationally notifiable disease, positive hepatitis D labs are reportable in the state of Indiana. In 2020, there were 12 newly reported suspected cases of hepatitis D. Of those 12 cases, 92% cases had previous or current known hepatitis B cases. 75.0% of the suspected cases reported are male and 41.7% are White Hoosiers.

HEPATITIS C VIRUS

Disease Background

Hepatitis C is one of the most commonly reported bloodborne infections in the United States.²⁷ Through surveys conducted from 2013-2016, the prevalence of HCV in the United States is estimated to be around 1.0% of all adults, approximately 2.4 million people, who are living with HCV.²⁸ In 2013, more people died of HCV in the United States than 60 other nationally notifiable diseases, including HIV, pneumococcal disease, and tuberculosis.²⁹ In 2018, there were an estimated 15,713 deaths related to HCV reported to the CDC but this is believed to be an underestimate.³⁰

At the time of HCV infection, most people will experience no symptoms, with more than half of people who become infected developing chronic infections.³⁰ Symptoms, if present, can be mild to severe and include fever, fatigue, abdominal pain, dark urine, clay-colored bowel movements, nausea, vomiting and jaundice.³⁰

A study that reviewed results from a yearly national survey from 2013-2016 found that about half of those infected with HCV reported being told they had hepatitis C.³¹ This means many may still not be aware of their infections, especially if they are asymptomatic. It's important that people are aware of their infection so they can receive care and treatment before liver disease progresses. Over a period of 10-20 years, approximately 5%-25% will develop cirrhosis.³² Cirrhosis caused by HCV is one of the most common reasons for needing a liver transplant.³³

Prior to the implementation of universal antibody screening of blood donors in 1992, many HCV infections were acquired through medical procedures – including blood, tissue, and organ donations.³⁴ These sources of infection account for how many people from the baby boomer generation (1945 through 1965) were exposed to hepatitis C. In 2018, the predominant route of exposure is the sharing of injection drug use equipment, including syringes and other equipment used to prepare and inject drugs.³⁵ Due to the shift in risk factors from blood products and medical procedures to sharing of drug use equipment, it has led to an increase of hepatitis C in younger generations, (millennials and Generation X), thus causing a bimodal distribution between the baby boomer generation and the younger generations.³⁵ The CDC found in 2018 that millennials made up 36.5% of newly reported chronic hepatitis C infections, baby boomers made up 36.3% of newly reported chronic hepatitis C infections, and that Generation X made up 23.1% of newly reported chronic hepatitis C infections.³⁵ With more generations being affected by hepatitis C, the CDC released new recommendations to screen all adults at least once for hepatitis C and that all pregnant people are screened in every pregnancy.³⁴ Other groups of people who are at increased risk for hepatitis C and should be screened include healthcare and public safety workers exposed to blood, people who ever injected drugs or shared drug equipment, people who have received hemodialysis, infants born to parents who are living with HCV,

people who get tattoos and body piercings from non-commercial establishments, and, in rarer instances, those who have sexual contact with someone who is already infected.^{30,32} However, with the new CDC testing recommendations of screening every person over the age of 18, any person who requests hepatitis C testing should be tested, regardless of any risk factors disclosed.

More than 90% of people infected with HCV can be cured of their infection, but it's estimated that 40% of people with hepatitis C between 2015 and 2018 were unaware of their infection.³⁶ From 2015 to 2020, the number of people who initiated hepatitis C treatment steadily declined in the United States from 164,247 people who initiated hepatitis C treatment in 2015 to 83,740 people in 2020.³⁶ With many people still unaware of their HCV status and with fewer people initiating treatment, it is possible for long-term mortality and morbidity from HCV to continue to increase. In addition to the long-term health effects from HCV, the economic costs associated with HCV are staggering. It is estimated that the average lifetime cost for HCV (without liver transplant) exceeds \$205,000 per patient and the total annual national healthcare cost will be as high as \$9 billion annually by the year 2024.³⁷

The Healthy People 2030 goal is to reduce the number of new hepatitis C infections to the rate of 0.1 per 100,000 population per year as well as to increase the proportion of people who no longer have hepatitis C to 80%.³⁸ Indiana has not met the goal of reducing the number of new infections to the rate of 0.1 per 100,000 population as the acute HCV rate for 2020 was 3.6 per 100,000 population.

Testing

Screening and diagnosing hepatitis C is very important. CDC recommends a hepatitis C screening at least once in a lifetime for all adults aged 18 and older and for all pregnant people for each pregnancy (except where the prevalence of HCV infection is less than 0.1%).³⁹ The testing for hepatitis C will either look for the presence of antibodies against HCV (anti-HCV) or through RNA testing (testing for the genetic material of the virus). Many times, hepatitis C testing begins with an antibody test. If this test is positive, it should be followed up with a nucleic acid test for the detection of HCV RNA and for the confirmation of a current infection.³⁹

Treatment

Hepatitis C can be cured in individuals who may not clear the virus or have chronic infections. Prior to the introduction of direct-acting antivirals (DAA), HCV infection was treated with a combination of pegylated interferon and ribavirin for a duration up to 48 weeks. Today, HCV treatment regimens are much more simple, shorter, and more effective. More than 90% of people living with HCV can be cured of their infection with the DAA treatments.³² These treatments cure each of the most common HCV genotypes, 1-6, and many are pangenotypic, or can cure multiple types of genotypes of HCV. Treatment success

is measured by a sustained virologic response (SVR), which is when the virus is not detected in the blood 12 weeks or more after treatment.

Patients who are living with HCV should be evaluated by their medical provider to determine the best treatment option. Choice of treatment can be determined by several factors including stage of illness, values of liver function tests (LFT), and presence of other diseases or illnesses. Most often, specialists, such as gastroenterologists and infectious disease physicians, care for and treat HCV, but treatment options allow for primary care providers to care and treat patients living with HCV too.

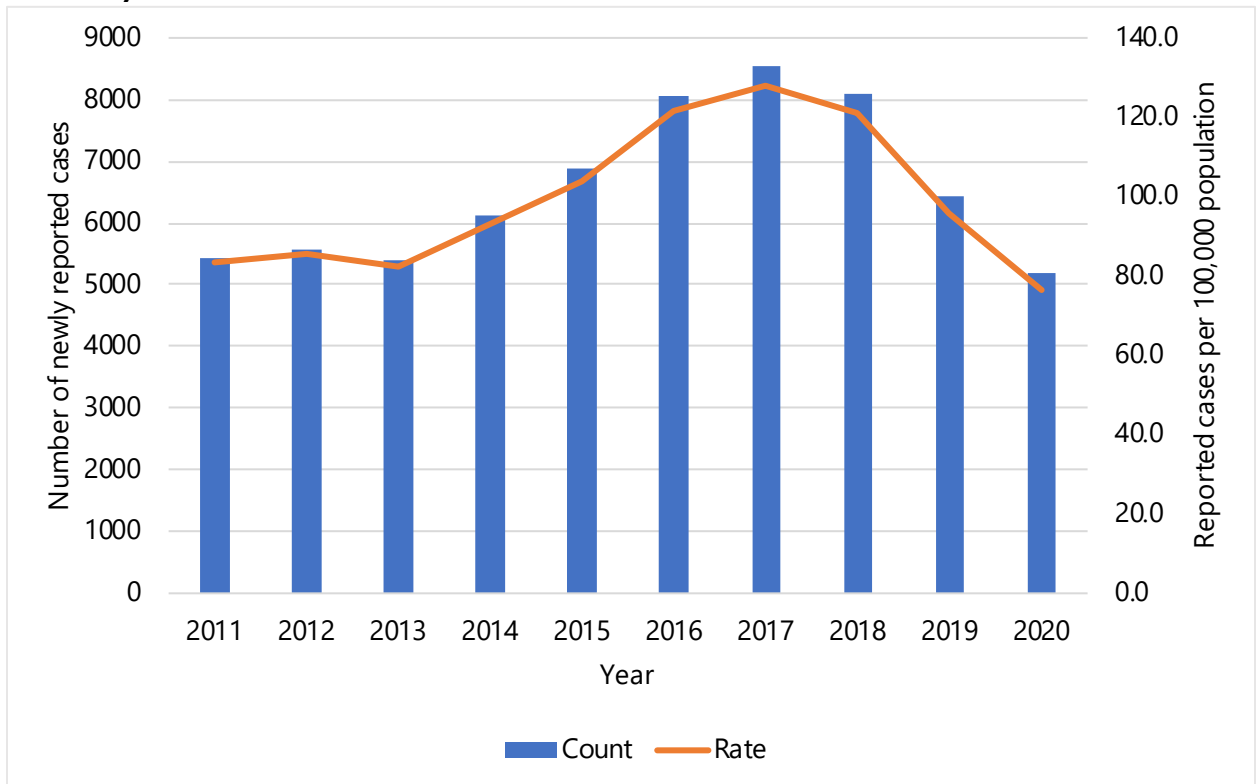
For a list of the most up-to-date treatments and their descriptions, visit:

<https://www.niddk.nih.gov/health-information/liver-disease/viral-hepatitis/hepatitis-c/#treatment>

HEPATITIS C IN INDIANA, 2020

In 2020, a total of 5,204 cases of acute and chronic hepatitis C were newly reported to the Department of Health. 264 of these cases are newly reported acute hepatitis C infection and 4,924 cases of these were newly reported chronic hepatitis C infection in Indiana. Incidence newly reported acute and chronic HCV cases has decreased 35.8% from 8,075 in 2016 to 5,188 in 2020, with an average of 7,269 new cases per year from 2016-2020.

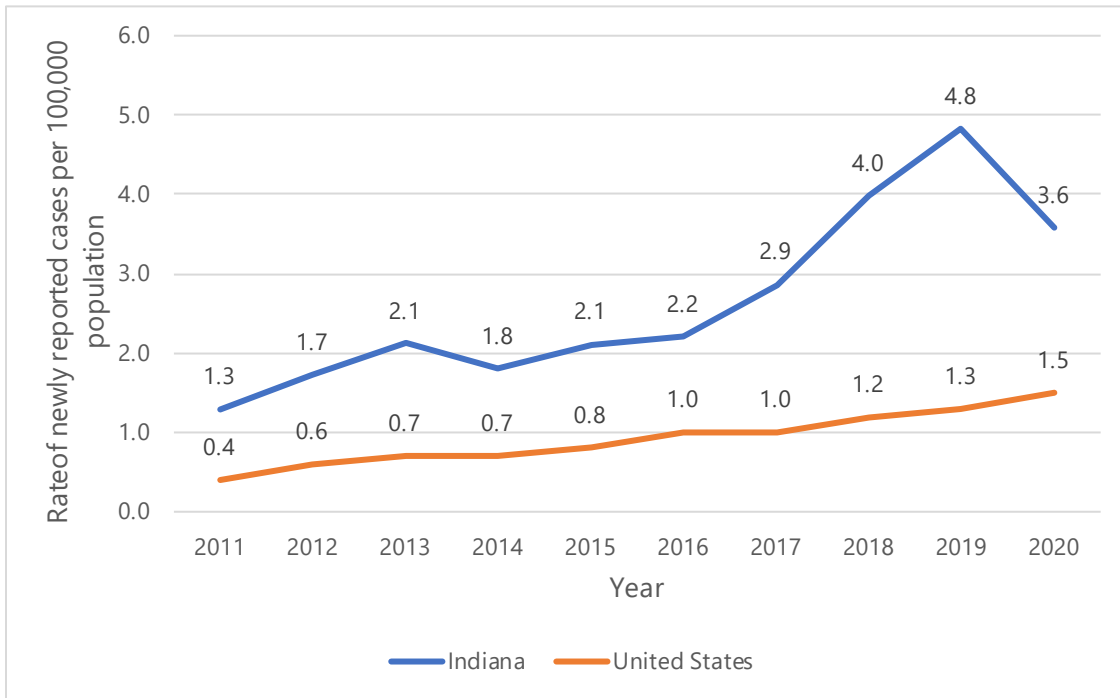
Figure 8: Count and rate of newly reported acute and chronic hepatitis C cases*- Indiana, 2011-2020



*Cases include probable and confirmed classifications. IDOC and FCI cases are also included.

Indiana's acute HCV rate was 3.7 times greater in 2019 than the national average and was 2.4 times greater in 2020. In 2019, Indiana ranked first nationally for the highest rate of newly reported confirmed acute hepatitis C.¹⁶ This ranking dropped in 2020 where Indiana ranked fifth nationally.¹⁶ However, from 2016-2020 in the United States, there has been a 1.6-fold increase in number of acute cases, mainly due to rising rates of injection drug usage and improved case detection.¹⁶ The number of acute cases in Indiana also increased 45.9% from 181 in 2016 to 264 in 2020.

Figure 9: Rates of newly reported acute hepatitis cases*– Indiana and United States, 2011-2020



*Cases include confirmed classifications only. IDOC and FCI cases are also included.

As shown in *figure 9*, Indiana's rate of newly reported acute HCV cases has been consistently higher than the national rate of acute HCV cases. While 2020 data does indicate there is a decrease in Indiana's acute HCV rate from the previous year, this decrease needs to be interpreted cautiously as the COVID-19 pandemic did disrupt many healthcare processes including screening of HCV and reporting.

Many people who are acutely (or newly) infected with hepatitis C will not show symptoms and therefore may not be screened. This can cause the acute cases of hepatitis C to be underreported to the Department of Health. It is estimated that for every single acute case diagnosed, approximately 13.9 cases go unidentified.⁴⁰ Extrapolating this to Indiana acute cases (n=264), an estimated 3,670 acute cases could occur in 2020 (figure 10).

Figure 10: Indiana Acute Hepatitis C Iceberg, 2020 (Derived from Klevens et al., 2014)

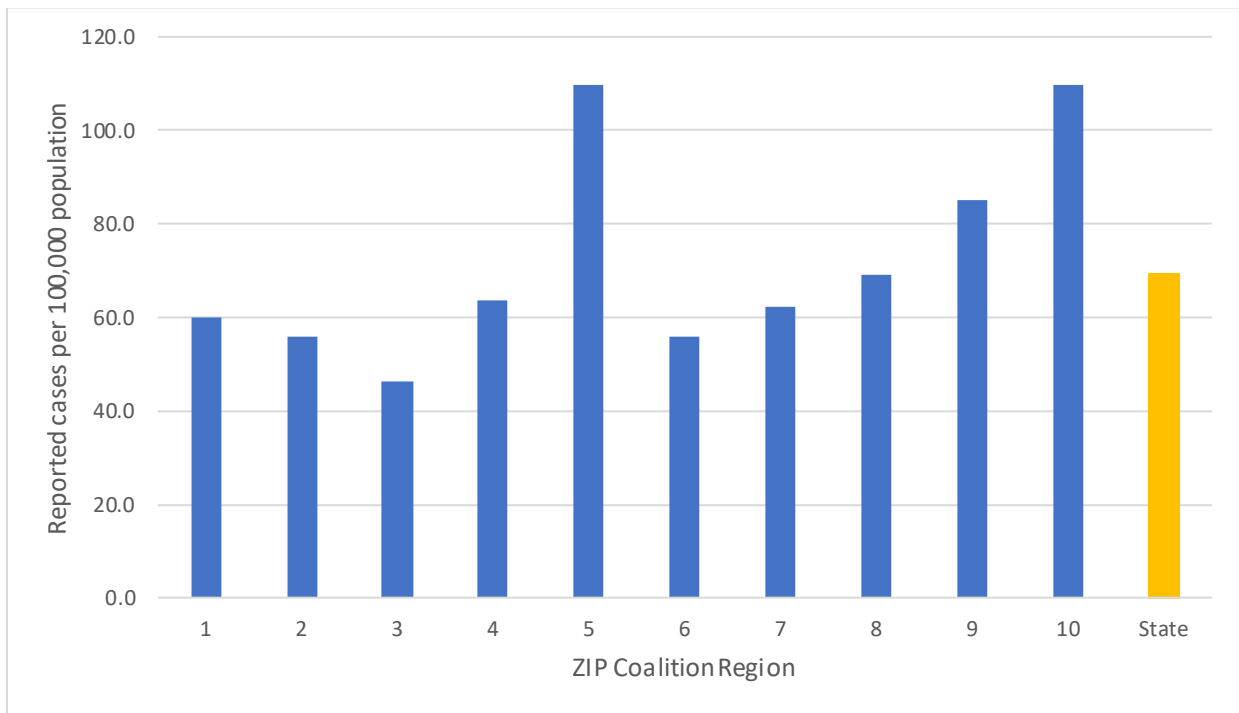


Nationally, in 2020, there were 4,798 new acute cases of hepatitis C reported to CDC.¹⁶ After accounting for underreporting and case under-ascertainment, the CDC estimated that there were 66,700 new acute hepatitis C infections during 2020.¹⁶ The number of acute cases has increased every year during 2013-2020.¹⁶ In fact, the national incidence rate of acute hepatitis C has more than doubled since 2013 and has had a 124% increase.¹⁶

Nationally, the majority of states that had the highest rates of acute hepatitis C are located in or near the Appalachian region (eastern and southern states).¹⁶ In 2019, Indiana ranked first in the nation for the highest rate of newly reported cases of acute hepatitis C.¹⁶ In 2020, Indiana ranked fifth nationally for the highest rate of newly reported cases of acute hepatitis C.¹⁶

The eastern side of Indiana has the highest rates of newly reported cases of acute and chronic hepatitis C infection in 2020. ZIP Coalitions 10 and 5 have rates that are higher than the state’s overall rate of newly reported HCV cases, 109.6 cases per 100,000 people and 109.8 cases per 100,000 people respectively.

Figure 11: Rates of newly reported acute, perinatal, and chronic hepatitis C cases*, by ZIP Coalition Region – Indiana, 2020

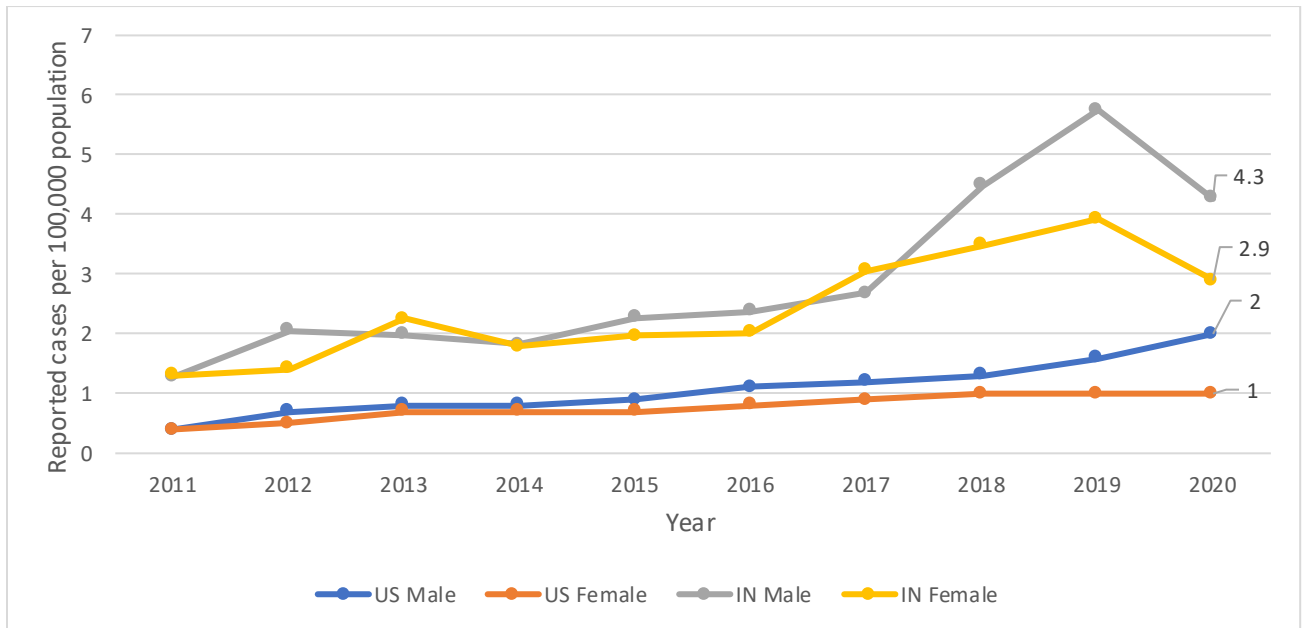


*Cases include probable and confirmed classifications. IDOC and FCI cases are excluded.

HCV cases reported from IDOC and FCI were not included in *figure 11*, but there were 500 newly reported cases of HCV that were identified through IDOC and the FCI facility in Vigo County. Of these 500 cases, 2% were American Indian or Alaska Native persons, 5% were Black or African American persons, and 76% were White persons.

Since 2011, rates of newly reported acute hepatitis C cases for males and females have been higher than the national rates. However, there has been an overall decrease for both Hoosier males and females since 2019.

Figure 12: Rates of newly reported acute hepatitis C virus cases*, by sex – Indiana and United States, 2010-2020



*Cases include confirmed classifications only. IDOC and FCI cases are also included.

Combined newly reported acute and chronic HCV cases of males decreased slightly from 60.6% to 59.1% from 2019 to 2020 while female HCV cases slightly increased from 39.4% to 40.9%. The overall rates of combined newly reported acute and chronic HCV cases of males and females have also been decreasing the past 3 years. See the table below for counts and rates of newly reported acute and chronic HCV cases by reported sex for Indiana in 2018-2020.

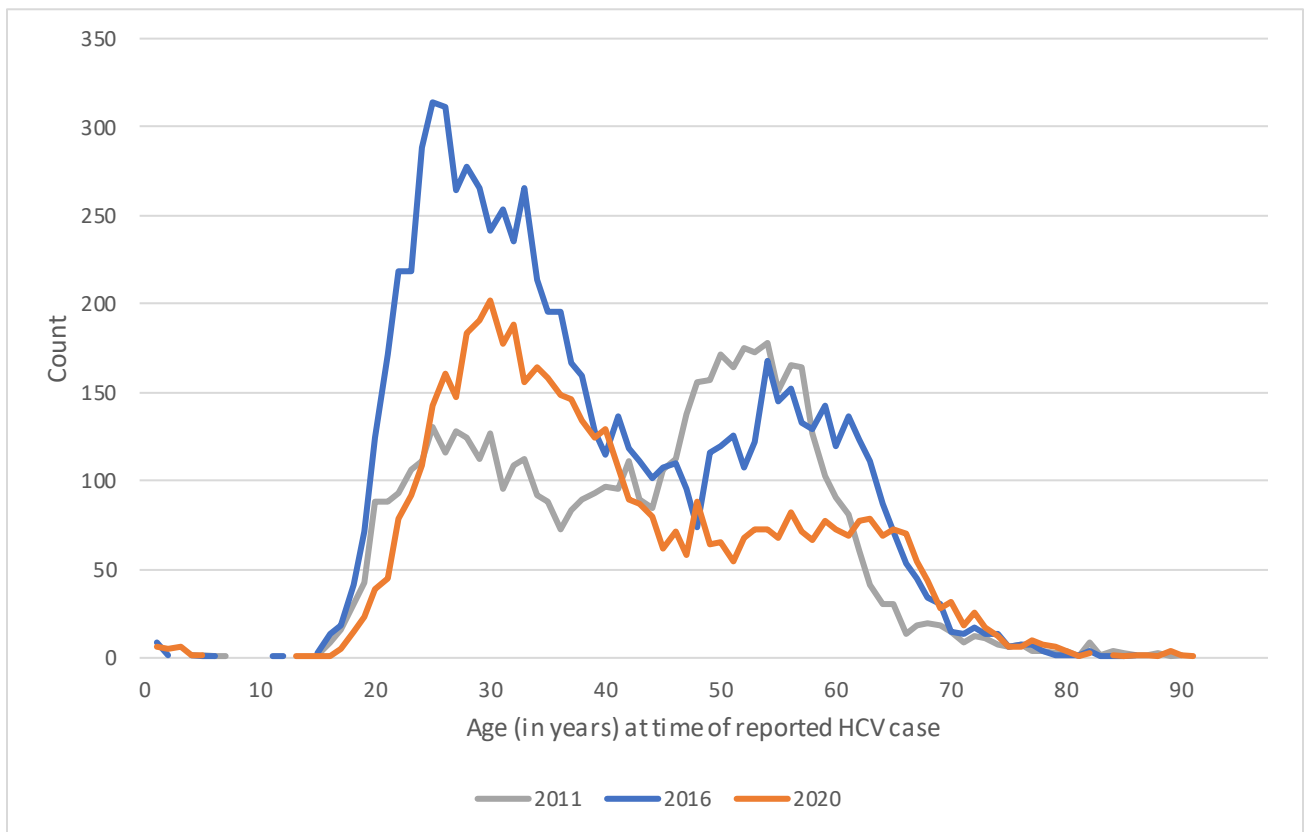
Table 12: Counts (and rates per 100,000 people) of newly reported acute and chronic hepatitis C cases*, by sex – Indiana, 2018-2020

Reported Sex	2018	2019	2020
Female	3354 (98.9)	2536 (74.3)	2123 (62.1)
Male	4751 (144.0)	3905 (117.6)	3062 (90.9)

*Cases include confirmed classifications only. IDOC and FCI cases are also included.

In 2016, people ages 18-29 years made up the largest percentage of newly reported acute and chronic HCV cases (31.8%) in Indiana and those aged 20-39 years had the highest incidence of acute hepatitis C cases and one of the highest age groups for chronic hepatitis C cases nationally.¹⁶ *Figure 13* compares the ages of newly reported cases of hepatitis C (both acute and chronic cases) for years 2011, 2016, and 2020 in Indiana.

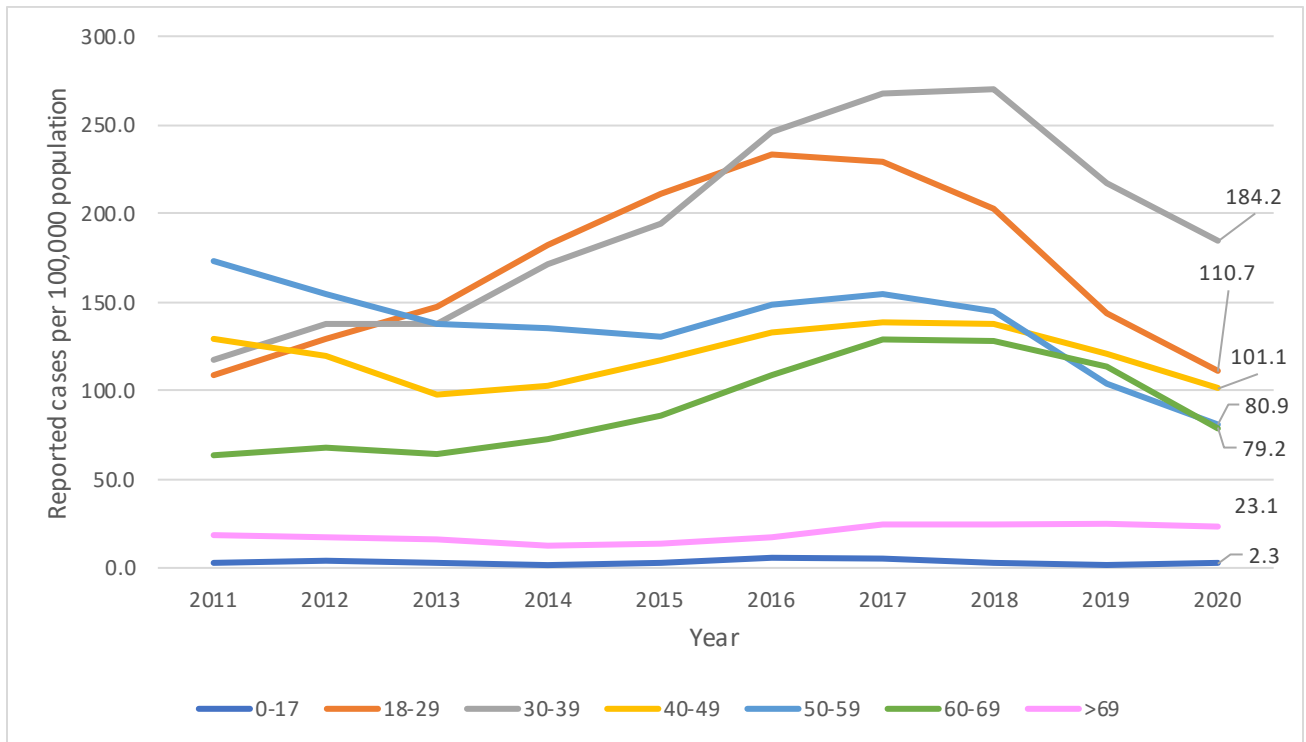
Figure 13: Count of newly reported hepatitis C cases*, by age - Indiana, 2011, 2016, and 2020



*Cases include acute, perinatal, and chronic cases with suspect, probable, and confirmed classifications. IDOC and FCI cases are also included.

In *figure 13*, the bimodal distribution of hepatitis C is notable. In 2011, there are two peaks around people aged 20-35 years and a slightly higher peak indicating more cases in people aged 45-65 years. In 2016, this bimodal distribution flipped. The higher peak is seen in people aged 20-40 years with a smaller peak for people aged 50-70 years. A possibility for this flip is that it mirrors the age groups most impacted by the opioid and substance use epidemic. In 2020, the peaks are similar to 2016 but aren't as large. People aged 30-39 make up the largest percentage of combined newly reported acute and chronic HCV cases (30.7%) whereas people ages 18-29 years makes up the second largest percentage (23.6%). Over half of the newly reported combined acute and chronic HCV cases in 2020 are in people who are aged 18-39 years.

Figure 14: Rates of newly reported acute and chronic hepatitis C cases*, by age group – Indiana, 2011-2020



*Cases include suspect, probable, and confirmed classifications. IDOC and FCI cases are also included.

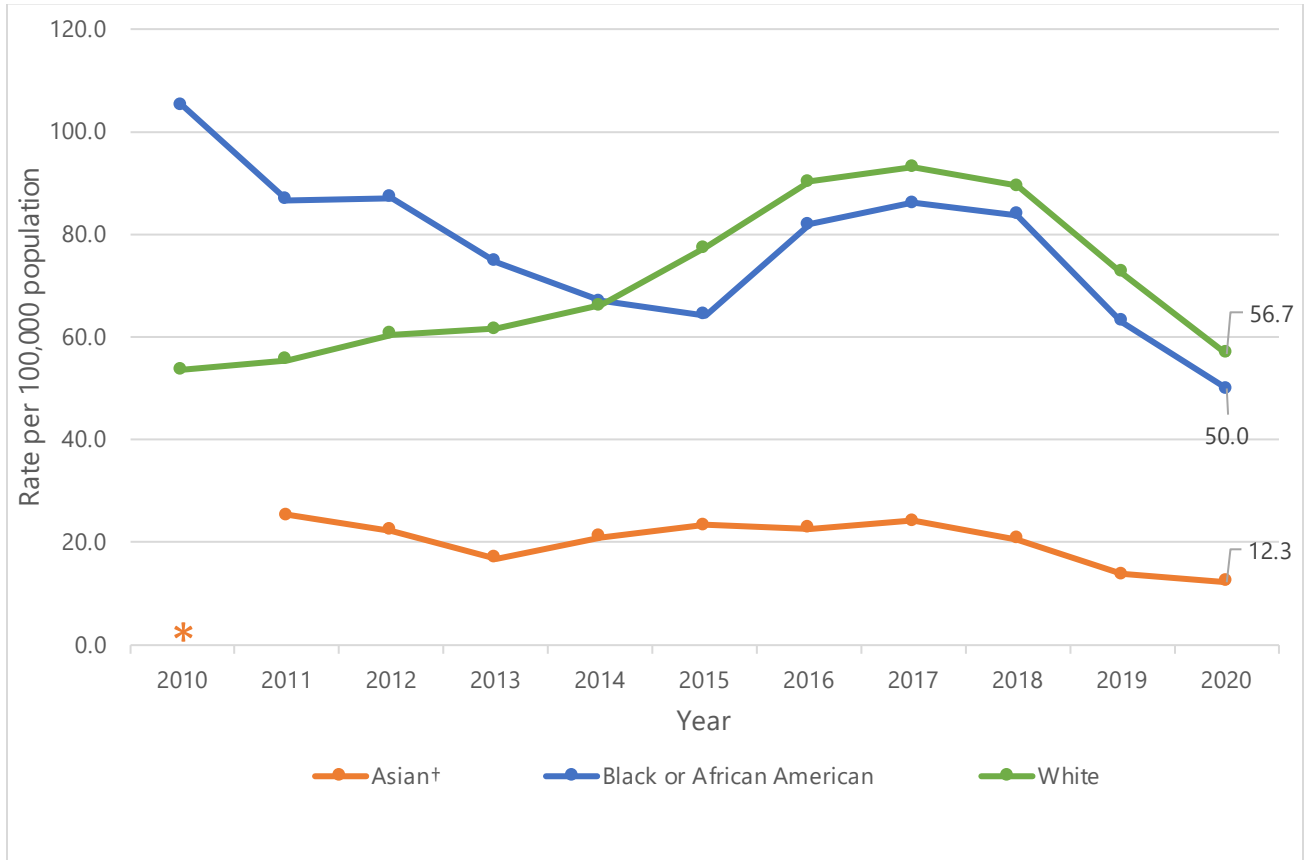
Those aged 30-39 years had the highest rate of newly reported acute and chronic hepatitis C in 2020 (184.2 newly reported cases per 100,000 population). This was followed by people aged 18-29 years (110.7 newly reported cases per 100,000 population).

Previously, the highest prevalence of chronic hepatitis C in the United States has been among the baby boomer generation (those born 1945-1965) whereas new HCV infections have occurred primarily among young adults due to the nation’s opioid and substance abuse epidemics.⁴¹ However, currently, all adults are being impacted by hepatitis C. A CDC study found that in 2018, millennials (most adults in their 20s and 30s) made up 36.5% of all newly reported chronic hepatitis C infections and baby boomers (most adults in their mid-50s to early 70s) made up 36.3% of newly reported chronic hepatitis C infections.⁴¹ Since chronic hepatitis C infection is affecting many generations, the CDC has recommended that every adult should be tested at least once in their lifetime regardless of risk factors.

While nationwide Black or African Americans are disproportionately affected by HCV, in Indiana, Black or African American Hoosiers account for 6.6% of all combined acute and chronic cases from 2016-2020, compared to 63.4% for White Hoosiers. Combined acute and chronic cases of Black or African American Hoosiers remained relatively the same from 6.7% in 2019 to 6.6% in 2020 while it has slightly decreased for White Hoosiers from 66.0% in

2019 to 63.0% in 2020. In 2020, race was not reported or was unknown for at least 21% of all hepatitis C cases reported.

Figure 15: Rates of newly reported acute and chronic hepatitis C cases*, by race† – Indiana, 2010-2020



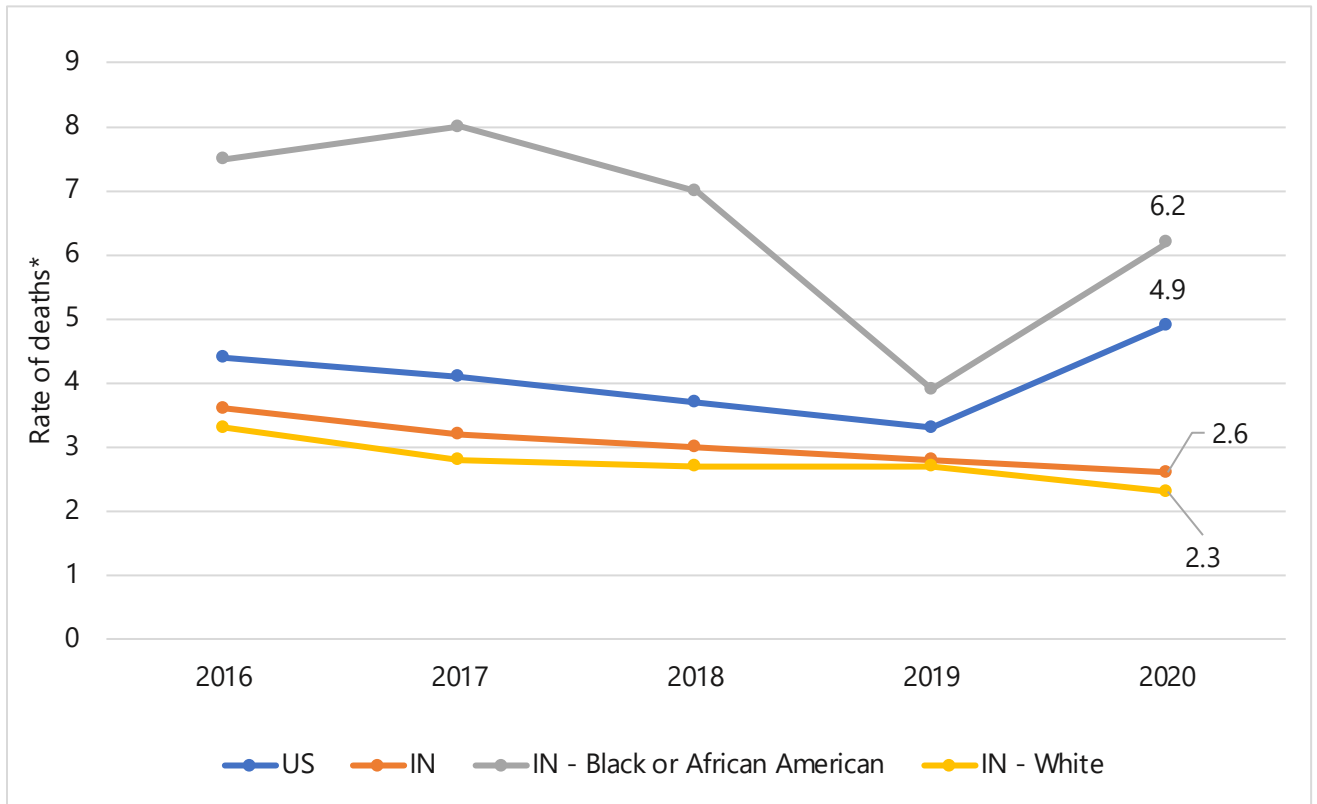
*Cases include suspect, probable, and confirmed classifications. IDOC and FCI cases are also included.

†Due to instability, rates calculated for American Indian or Alaska Native and Native Hawaiian or Other Pacific Islander are suppressed for 2010-2020. Rate for Asian is also suppressed for 2010.

As shown in *figure 15*, White Hoosiers have the highest rate of newly reported cases of acute and chronic hepatitis C. However, even though Black or African American Hoosiers have slightly lower HCV rates compared to White Hoosiers for 2016-2020, there is a 12-year gap in the average age at the time of the first reported hepatitis C infection between White (38.4 years old) and Black or African American Hoosiers (50.7 years old). This means that Black or African American Hoosiers of all genders are possibly getting screened later for hepatitis C than White Hoosiers. This time gap may allow for liver disease progression and may lead to worsening health outcomes.

The figure below, *figure 16*, shows the age-adjusted death rates with HCV listed as a cause of death among residents. Black of African American persons have had higher rates of death from HCV than both the overall death rates for Indiana or United States.

Figure 16: Rates* of death[†] with HCV listed as a cause of death among residents – United States, Indiana, 2016-2020

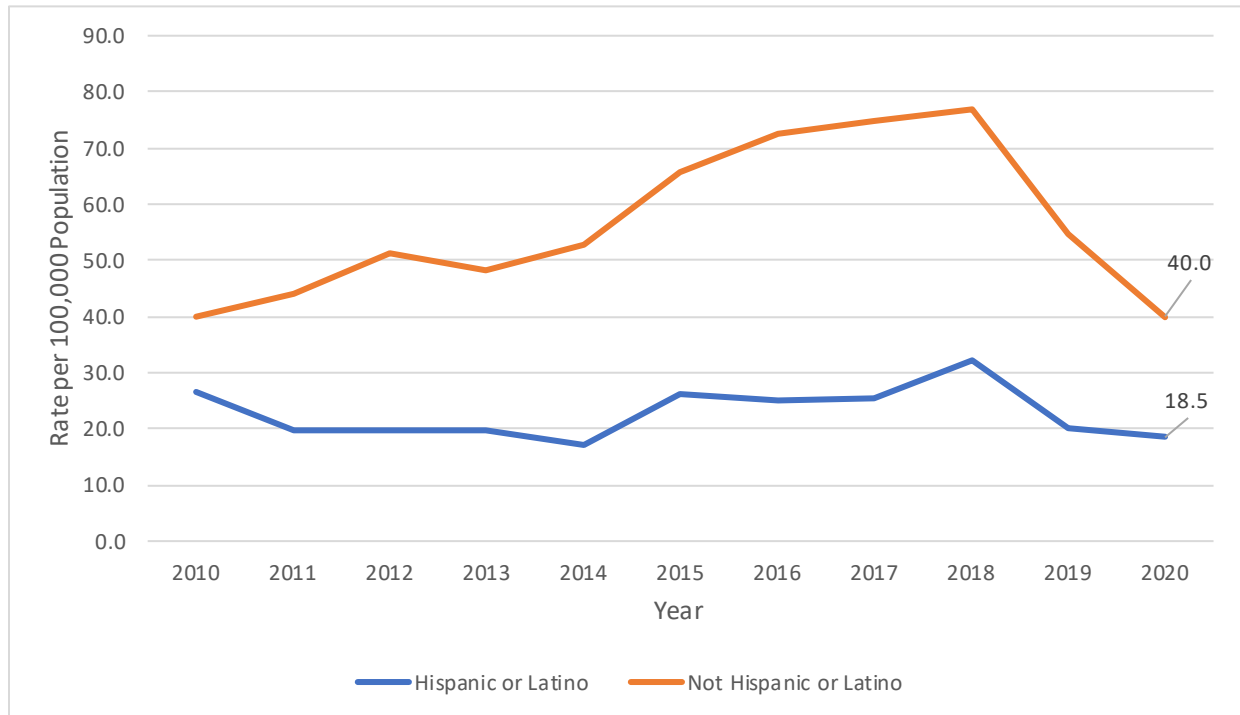


Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, Mortality 1999-2020 on CDC WONDER Online Database, released in 2021. Data are from the Multiple Cause of Death Files, 1999-2020, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/mcd-icd10.html> on Aug 11, 2022

Of note, data is excluded for American Indian or Alaska Native persons and Asian or Pacific Islander persons due to instability of calculated rates.

Of the newly reported hepatitis C cases (acute and chronic), 1.8% were in Hispanic or Latino Hoosiers. However, this may be an underrepresentation because ethnicity data was missing or unknown in almost 50% of all newly reported hepatitis C cases in 2020.

Figure 17: Rates of newly reported acute and chronic hepatitis C cases*, by ethnicity – Indiana, 2010-2020



*Cases include suspect, probable, and confirmed classifications. IDOC and FCI cases are also included.

In 2020, the first reported hepatitis C infection in Indiana among non-Hispanic females on average was 39.3 years old. In contrast, Hispanic females had an average age of 44.4 years old for their first reported hepatitis C test. This five-year average difference highlights the need to make sure screening needs to happen early before liver disease progresses.

RISK FACTORS

Risk factor information is collected by local health departments and public health investigators during HCV case investigations after positive HCV test results are received through the Department of Health's surveillance system. Disease reports and positive labs reports are sent to the local health departments for follow-up and completion of case investigations. Due to case volume, collecting risk factor information during HCV case investigations can be challenging for local health departments. In 2020, the COVID-19 pandemic also hindered many local health departments and public health investigators from conducting many investigations.

People who inject drugs (PWID), particularly those who share syringes and other drug equipment, are the leading risk factor reported among both acute and chronic HCV cases in Indiana; 77.6% of newly reported acute and chronic HCV cases had a risk factor of a history of injection drug use. The next highest reported risk factor was experiencing incarceration (75.3%). This is followed by a history of non-injection drug use (67.0%) and having a close

contact (sexual or non-sexual) with someone living with HCV (55.6%). Of all newly reported acute and chronic HCV cases in 2020, 56.8% of the cases had unknown or missing information for the risk factors reported above. See *Table 13* for the percentage of risk behaviors in 2020 newly reported HCV cases.

Table 13 – Table 13: Percentage of responses* of newly reported acute and chronic hepatitis C cases, by reported risk behavior - Indiana, 2020**

Risk Behavior	Percentage of cases that reported the risk factor as 'Yes' out of cases that answered 'Yes' or 'No'	Percentage of 'Unknown' Responses of Total Newly Reported Cases†
History of injection drug use	77.6%	71.9%
History of non-injection drug use	67.0%	54.0%
Ever experienced incarceration	75.3%	65.8%
Had a close contact (sexual or non-sexual) with someone who is living with HCV	55.6%	90.9%

*It is possible to report multiple risk behaviors within one investigation. These answers are not mutually exclusive.

**Cases include probable and confirmed classifications. IDOC and FCI cases are also included.

†Excludes missing data.

PERINATAL VIRAL HEPATITIS

PERINATAL HEPATITIS B

The Indiana Perinatal Hepatitis B Prevention Program (PHBPP) is a resource for the surveillance and management of perinatal hepatitis B virus (HBV) infection cases. The primary goal of the PHBPP is to prevent perinatal transmission of HBV by identifying hepatitis B surface antigen (HBsAg) positive pregnant people and providing case management to their newborns to ensure initiation of post-exposure prophylaxis (PEP) for hepatitis B, completion of the hepatitis B vaccine series, and post-vaccination serologic testing (PVST). The risk of vertical transmission, or transmission of HBV from gestational parent to infant, is 70%-90% among HBsAg-positive and HBeAg-positive gestational parents without administration of prophylaxis.⁴²

In 2019, 17 cases of perinatal hepatitis B were reported nationally to CDC.¹⁶ During 2020, 10 newly reported confirmed cases of perinatal hepatitis B were reported to CDC.¹⁶ Indiana had one case of perinatal hepatitis B that matched classification criteria in 2020.

PERINATAL HEPATITIS C

As of April 2020, CDC recommends that prenatal care providers should screen all pregnant persons for hepatitis C as it is possible for hepatitis C to be transmitted from the gestational parent to the infant.⁴³ People who are pregnant and living with hepatitis C transmit their infection to their infant in about 5.8% of pregnancies but the risk of transmission is higher if the parent is also co-infected with HIV.⁴³ Testing can connect both the gestational parent and baby to care. Hepatitis C curative treatment is not currently approved for use during pregnancy, but the gestational parent can be treated once they have given birth. Treatment is approved for children as young as 3 years old.⁴³

Since 2018, perinatal hepatitis C has been nationally notifiable and the case definition has not changed classifications since it was introduced.⁶ During 2020, the CDC received 165 reported cases of perinatal hepatitis C from 25 states.¹⁶ Ohio (n=38) had the highest reported number of cases followed by Pennsylvania (n=17) and Indiana (n=16).¹⁶ The number of reported perinatal hepatitis C cases had a 24% decrease from 2019 (n=217) to 2020 (n=165).¹⁶ However, some jurisdictions do not have capacity to conduct perinatal hepatitis C surveillance, case management, and follow-up.

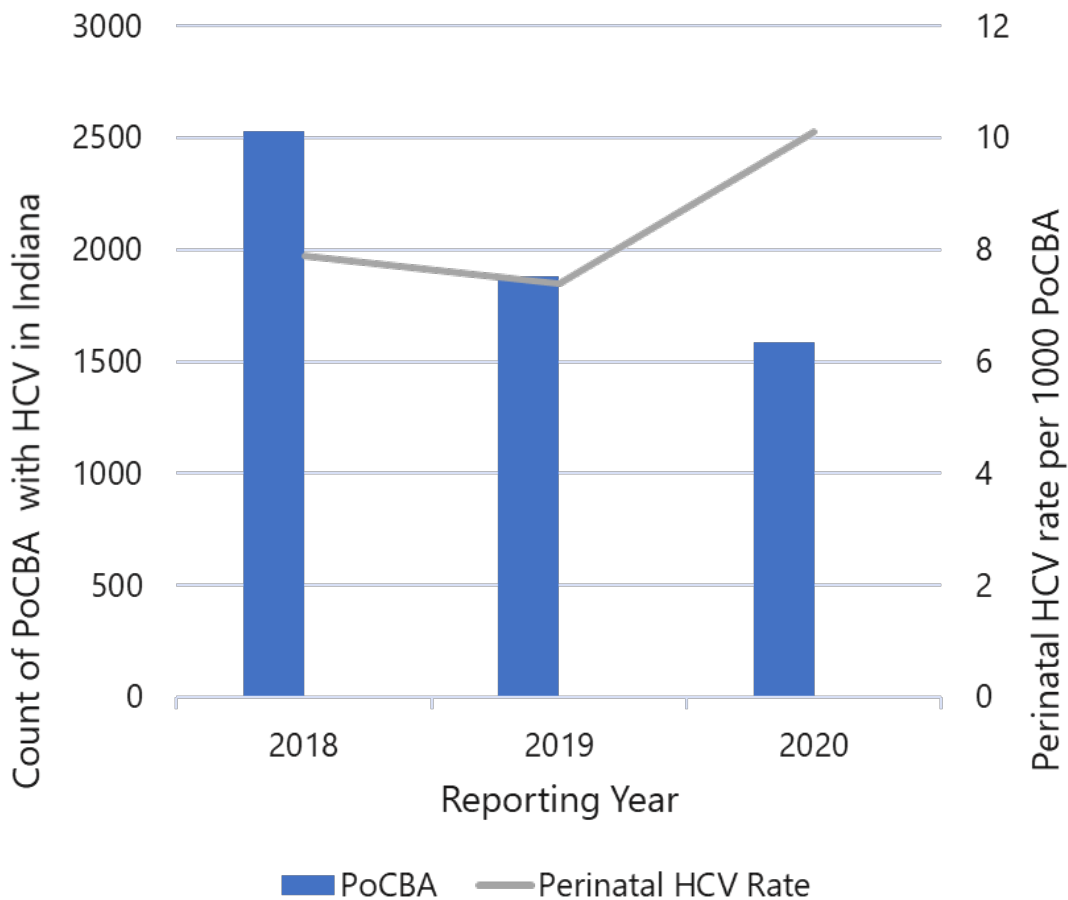
PERINATAL HEPATITIS C IN INDIANA, 2020

In 2020, there were 71 cases of potential perinatal hepatitis C exposures. Of those, only 16 were confirmed cases of perinatal HCV and an additional 16 cases reported exposure but

did not have confirmatory, or RNA testing, results reported to the Department of Health at the time of closeout.

In 2020 for Indiana, there were 1,587 cases of women of childbearing age (10-50 years) with newly reported acute or chronic HCV cases. As shown in *figure 18*, while the number of persons of childbearing age has decreased since 2018, the rate of perinatal HCV among this population has increased during this same period.

Figure 18: Persons of childbearing age (PoCBA) (10-50 years) with newly reported acute and chronic hepatitis C cases* and rates of perinatal hepatitis C – Indiana, 2018-2020



*Cases include probable and confirmed classifications. IDOC and FCI cases are also included.

CO-INFECTIONS

VIRAL HEPATITIS AND HIV CO-INFECTIONS, 2020

According to CDC, it was estimated in 2009 that 21% of persons living with HIV are coinfecting with HCV, and that this prevalence can change according to various risk groups (e.g., men who have sex with men [MSM], high-risk heterosexuals, and people who inject drugs).⁴⁴ It is estimated that approximately 10% of people who are living with HIV worldwide are also co-infected with HBV.⁴⁵ Viral hepatitis progresses more quickly and causes more liver-related health problems among individuals living with HIV than among those who do not have HIV. Additionally, coinfection with viral hepatitis impacts the course and management of HIV infection. To ascertain coinfection of HIV, HCV, and HBV in Indiana, people who are living with HIV or AIDS diagnosis in Indiana were cross-checked for reported person's HBV or HCV case investigation (including acute, chronic, and perinatal).

As of Dec. 31, 2020, an estimated 12,593 persons were living with HIV in Indiana. Of these, 1,506 (11.9%) were found to be living with HBV (2.9%), HCV (8.4%), or HCV and HBV co-infections (0.6%). Of these 1,506 people, 368 were living with a HIV and HBV co-infection (25.4%), 1,062 people were living with a HIV and HCV coinfection (70.5%), and 77 people were living with a HIV, HBV, and HCV coinfection (5.1%).

VIRAL HEPATITIS AND SYPHILIS CO-INFECTIONS, 2020

Syphilis is an STD caused by the bacterium *Treponema pallidum*. The infection develops in stages and each stage has different signs and symptoms (present or absent) and time periods. Syphilis is most infectious during the primary and secondary stages and is transmitted through vaginal, anal, or oral sex without a condom with a partner who has syphilis. Regular testing is recommended for gay or bisexual men and people who are living with HIV, are taking pre-exposure prophylaxis (PrEP), or have a partner(s) who tested positive for syphilis. Without treatment, syphilis can spread to the brain and nervous system (neurosyphilis), the eye (ocular syphilis), or the ear (otosyphilis), and this can occur during any stage.⁴⁶ Due to similarities in certain transmission routes and people who are at increased risk for viral hepatitis or syphilis infections, co-infections were analyzed through looking at primary and secondary cases of syphilis reported in 2020 and identifying those with newly reported viral hepatitis cases in 2020.

In 2020, a total of 1,340 cases of adult syphilis were reported in Indiana. Of those 1,340 cases, 522 (39%) were primary and secondary syphilis cases. Of these 522 cases, four were identified to be co-infected with newly reported acute or chronic hepatitis B and 6 were co-infected with newly reported acute or chronic hepatitis C.

EVALUATION

Thank you for viewing the 2020 Viral Hepatitis Epidemiologic Profile. Please consider taking the evaluation survey below for feedback and suggestions for the next profile.

<https://redcap.isdh.in.gov/surveys/?s=FHN97M473HLWR9HJ>

USEFUL WEBSITES

Below are some websites that may be useful in learning more about viral hepatitis and various related topics.

AMERICAN LIVER FOUNDATION: SUPPORT FOR PATIENTS WITH HEPATITIS C

<https://liverfoundation.org/liver-diseases/viral-hepatitis/hepatitis-c/support-for-patients-with-hepatitis-c/>

CDC DIVISION OF VIRAL HEPATITIS

<https://www.cdc.gov/hepatitis/>

CDC VIRAL HEPATITIS SURVEILLANCE AND CASE MANAGEMENT

<https://www.cdc.gov/hepatitis/statistics/surveillanceguidance/index.htm>

HARM REDUCTION COALITION

<https://harmreduction.org/>

HEPATITIS B FOUNDATION: PATIENT ASSISTANCE PROGRAMS IN THE U.S.

<https://www.hepb.org/treatment-and-management/patient-assistance-programs-in-the-u-s/>

IDOH HARM REDUCTION AND SYRINGE SERVICE PROGRAMS

<https://www.in.gov/health/hiv-std-viral-hepatitis/harm-reduction-and-syringe-service-programs/>

IDOH NALOXONE TRAINING OPPORTUNITIES

<https://www.in.gov/health/overdose-prevention/naloxone/naloxone-training-opportunities/>

IDOH STATS EXPLORER

https://gis.in.gov/apps/isdh/meta/stats_layers.htm

IDOH VIRAL HEPATITIS SERVICES PROGRAM: CARE COORDINATORS

<https://www.in.gov/health/hiv-std-viral-hepatitis/hiv-services/vh-services/>

IDOH ZERO IS POSSIBLE: INDIANA'S PLAN TO END HIV AND HEPATITIS C

<https://www.zipindiana.org/>

CSTE CASE DEFINITIONS

Below are the CSTE Case Definitions used to classify surveillance investigations.

HEPATITIS B, ACUTE

2012 CASE DEFINITION

Clinical Description

An acute illness with a discrete onset of any sign or symptom* consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain), and either a) jaundice, or b) elevated serum alanine aminotransferase (ALT) levels > 100 IU/L.

*A documented negative hepatitis B surface antigen (HBsAg) laboratory test result within 6 months prior to a positive test (either HBsAg, hepatitis B "e" antigen (HBeAg), or hepatitis B virus nucleic acid testing (HBV NAT) including genotype) result does not require an acute clinical presentation to meet the surveillance case definition.

Laboratory Criteria for Diagnosis

- HBsAg positive, **AND**
- Immunoglobulin M (IgM) antibody to hepatitis B core antigen (IgM anti-HBc) positive (if done)

Case Classification

Confirmed

A case that meets the clinical case definition, is laboratory confirmed, and is not known to have chronic hepatitis B.

<https://ndc.services.cdc.gov/case-definitions/hepatitis-b-acute-2012/>

HEPATITIS B, CHRONIC

2012 Case Definition

Clinical Description

No symptoms are required. Persons with chronic hepatitis B virus (HBV) infection may have no evidence of liver disease or may have a spectrum of disease ranging from chronic hepatitis to cirrhosis or liver cancer.

Laboratory Criteria For Diagnosis

- Immunoglobulin M (IgM) antibodies to hepatitis B core antigen (IgM anti-HBc) negative **AND** a positive result on one of the following tests: hepatitis B surface antigen (HBsAg), hepatitis B e antigen (HBeAg), or nucleic acid test for hepatitis B virus DNA (including qualitative, quantitative and genotype testing), **OR**
- HBsAg positive or nucleic acid test for HBV DNA positive (including qualitative, quantitative and genotype testing) or HBeAg positive two times at least 6 months apart (Any combination of these tests performed 6 months apart is acceptable)

CASE CLASSIFICATION

Probable

A person with a single HBsAg positive or HBV DNA positive (including qualitative, quantitative and genotype testing) or HBeAg positive lab result and does not meet the case definition for acute hepatitis B.

Confirmed

A person who meets either of the above laboratory criteria for diagnosis.

COMMENTS

Multiple laboratory tests indicative of chronic HBV infection may be performed simultaneously on the same patient specimen as part of a "hepatitis panel." Testing performed in this manner may lead to seemingly discordant results, e.g., HBsAg-negative **AND** HBV DNA-positive. For the purposes of this case definition, any positive result among the three laboratory tests mentioned above is acceptable, regardless of other testing results. Negative HBeAg results and HBV DNA levels below positive cutoff level do not confirm the absence of HBV infection.

<https://ndc.services.cdc.gov/case-definitions/hepatitis-b-chronic-2012/>

HEPATITIS B, PERINATAL INFECTION

2017 CASE DEFINITION

Clinical Criteria

Perinatal HBV infection in a child \leq 24 months old may range from asymptomatic to fulminant hepatitis.

Laboratory Criteria for Diagnosis

Laboratory evidence of HBV infection in an infant consists of one or more of the following:

- Positive hepatitis B surface antigen (HBsAg) test (only if at least 4 weeks after last dose of Hep B vaccine)
- Positive hepatitis B e antigen (HBeAg) test
- Detectable HBV DNA

Epidemiologic Linkage

Born to an HBV-infected mother.

CASE CLASSIFICATION

Probable

Child born in the US and positive for HBsAg at \geq 1 month of age and \leq 24 months of age **OR** positive for HBeAg or HBV DNA \geq 9 months of age and \leq 24 months of age, but whose mother's hepatitis B status is unknown (i.e. epidemiologic linkage not present).

Confirmed

Child born in the US to HBV-infected mother and positive for HBsAg at ≥ 1 month of age and ≤ 24 months of age **OR** positive for HBeAg or HBV DNA ≥ 9 months of age and ≤ 24 months of age.

COMMENTS

Infants born to HBV-infected mothers should receive HBIG and the first dose of HepB vaccine within 12 hours of birth, followed by the second and third doses of HepB vaccine at 1 and 6 months of age, respectively. PVST for HBsAg and anti-HBsAg is recommended one to two months following completion of the vaccine series, but not earlier than 9 months of age.

If the mother is known not to be infected with HBV, refer to the case definition for acute hepatitis B.

<https://ndc.services.cdc.gov/case-definitions/hepatitis-b-perinatal-virus-infection-2017/>

HEPATITIS C, ACUTE

CLINICAL CRITERIA

All hepatitis C virus cases in each classification category should be > 36 months of age, unless known to have been exposed non-perinatally.

One or more of the following:

- Jaundice, **OR**
- Peak elevated total bilirubin levels ≥ 3.0 mg/dL, **OR**
- Peak elevated serum alanine aminotransferase (ALT) levels > 200 IU/L,

AND

The absence of a more likely diagnosis (which may include evidence of acute liver disease due to other causes or advanced liver disease due to pre-existing chronic hepatitis C virus (HCV) infection or other causes, such as alcohol exposure, other viral hepatitis, hemochromatosis, etc.)

Laboratory Criteria

Confirmatory laboratory evidence:

- Positive hepatitis C virus detection test: Nucleic acid test (NAT) for HCV RNA positive (including qualitative, quantitative, or genotype testing), **OR**
- A positive test indicating presence of hepatitis C viral antigen(s) (HCV antigen)

Presumptive laboratory evidence:

- A positive test for antibodies to hepatitis C virus (anti-HCV)

Case Classification

Probable

- A case that meets clinical criteria and has presumptive laboratory evidence, **AND**
- Does not have a hepatitis C virus detection test reported, **AND**
- Has no documentation of anti-HCV or HCV RNA test conversion within 12 months,

Confirmed

- A case that meets clinical criteria and has confirmatory laboratory evidence, **OR**
- A documented negative HCV antibody followed within 12 months by a positive HCV antibody test (anti-HCV test conversion) in the absence of a more likely diagnosis, **OR**
- A documented negative HCV antibody **OR** negative hepatitis C virus detection test (in someone without a prior diagnosis of HCV infection) followed within 12 months by a positive hepatitis C virus detection test (HCV RNA test conversion) in the absence of a more likely diagnosis.

<https://ndc.services.cdc.gov/case-definitions/hepatitis-c-acute-2020/>

HEPATITIS C, CHRONIC 2020 CASE DEFINITION

Clinical Criteria

All hepatitis C virus cases in each classification category should be > 36 months of age, unless known to have been exposed non-perinatally.

One or more of the following:

- Jaundice, **OR**
- Peak elevated total bilirubin levels ≥ 3.0 mg/dL, **OR**
- Peak elevated serum alanine aminotransferase (ALT) levels >200 IU/L

AND

The absence of a more likely diagnosis (which may include evidence of acute liver disease due to other causes or advanced liver disease due to pre-existing chronic Hepatitis C virus (HCV) infection or other causes, such as alcohol exposure, other viral hepatitis, hemochromatosis, etc.)

Laboratory Criteria

Confirmatory laboratory evidence:

- Positive hepatitis C virus detection test: Nucleic acid test (NAT) for HCV RNA positive (including qualitative, quantitative, or genotype testing), **OR**
- A positive test indicating presence of hepatitis C viral antigen(s) (HCV antigen)
- Presumptive laboratory evidence:
- A positive test for antibodies to hepatitis C virus (anti-HCV)

Case Classification

Probable

- A case that does not meet **OR** has no report of clinical criteria, **AND**

- Has presumptive laboratory evidence, **AND**
- Has no documentation of anti-HCV or RNA test conversion within 12 months, **AND**
- Does not have an HCV RNA detection test reported.

Confirmed

- A case that does not meet **OR** has no report of clinical criteria, **AND**
- Has confirmatory laboratory evidence, **AND**
- Has no documentation of anti-HCV or HCV RNA test conversion within 12 months.

<https://ndc.services.cdc.gov/case-definitions/hepatitis-c-chronic-2020/>

HEPATITIS C, PERINATAL INFECTION

2018 CASE DEFINITION

Clinical Criteria

Perinatal hepatitis C in pediatric patients may range from asymptomatic to fulminant hepatitis.

Laboratory Criteria For Diagnosis

- HCV RNA positive test results for infants between 2 to 36 months of age; **OR**
- HCV genotype test results for infants between 2 to 36 months of age or greater; **OR**
- HCV antigen test results for infants between 2 to 36 months of age or greater.

Epidemiologic Linkage

Maternal infection with HCV of any duration, if known. Not known to have been exposed to HCV via a mechanism other than perinatal (e.g. not acquired via healthcare).

Case Classification

Confirmed

Infant who has a positive test for HCV RNA nucleic acid amplification test (NAAT), HCV antigen, or detectable HCV genotype at ≥ 2 months and ≤ 36 months of age and is not known to have been exposed to HCV via a mechanism other than perinatal.


<https://ndc.services.cdc.gov/case-definitions/hepatitis-c-perinatal-infection-2018/>

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