Viral Hepatitis in West Virginia
2023 Surveillance Summary

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West Virginia Department of HEALTH

Division of STD, HIV, Hepatitis, and Tuberculosis
Office of Epidemiology and Prevention Services
350 Capitol Street, Room 125
Charleston, West Virginia 25301

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2023 Surveillance Summary

Patrick Morrisey
Governor

Arvin Singh, EdD, MBA, MPH, MS, FACHDM, FACHE
Secretary of Health
West Virginia Department of Health

Justin Davis
Acting Commissioner, Bureau for Public Health
West Virginia Department of Health

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Office of Epidemiology and Prevention Services

Authors
Steven Boston
Mamoon Yousaf, MPH
Kady Pack, MPH

Editors
Birgit Shanholtzer, MA, CPH
Mikaela Earl PharmD, BSA
Jared Boote
Misty Workman

Contributors
Laura Casto
Grant Fisher
Neal Kerley, CTR
Clarissa Smallridge
Lindsey Mason, MPH
Rosemary Levenson, BSN, RN
Lara Sitler

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Viral Hepatitis Surveillance Overview

Hepatitis is an inflammation of the liver, most often caused by a virus. In the United States, the most common types of viral hepatitis are hepatitis A, hepatitis B, and hepatitis C. While they can produce similar symptoms, each hepatitis virus affects the liver differently and has different routes of transmission and infection. Fortunately, effective vaccines are available to help prevent hepatitis A and hepatitis B. Although no vaccine is available for hepatitis C, life-saving treatment can cure the virus.

Viral hepatitis infections are reportable in West Virginia. The reporting process for hepatitis A, hepatitis B, and hepatitis C is required by West Virginia State Code under the West Virginia Reportable Disease Legislative Rule (64CSR7). The rule establishes procedures for reporting certain diseases and conditions, unusual health events, and clusters or outbreaks of diseases to the Bureau for Public Health. It also establishes the responsibility of various individuals and facilities in controlling communicable diseases. Disease information is captured in the West Virginia Electronic Disease Surveillance System (WVEDSS) through laboratory reports, provider reports, and case-patient interviews.

Several limitations should be noted regarding the data summarized in this report. Viral hepatitis reports, both laboratory and provider-generated, must be sent to the appropriate receiving entity to be captured in WVEDSS and managed for follow-up public health action. If providers or laboratories are unaware or do not comply with reporting requirements for hepatitis conditions, cases may be missed for investigation and surveillance classification. In addition to disease reports from laboratories and providers, information captured in the disease case investigation relies on the local health department successfully contacting the case-patient and performing an

interview-style investigation. The information collected in disease investigations relies on self-reporting by the case-patient. This can make the completion of case investigations difficult and/or inaccurate if the case-patient has issues with recall, does not wish to complete the interview, or provides false information. Furthermore, the statewide COVID-19 response in West Virginia began in March 2020, necessitating that most public health professionals redirect their resources to detect, investigate, and mitigate the spread of COVID-19. This response impacted the completeness of reports for acute hepatitis A, acute and chronic hepatitis B, and acute hepatitis C.

The data presented in this report are provisional, as the information captured in WVEDSS is continuously reviewed for quality assurance purposes and is subject to change as duplicate profiles are merged and additional laboratory and/or clinical information is received.

Hepatitis A Virus

Disease Overview

Hepatitis A is a highly contagious infection caused by the hepatitis A virus (HAV). The most effective way to prevent HAV infection is through vaccination. Hepatitis A is transmitted person-to-person through contact with the stool of an infected person or by the consumption of contaminated food and water. Symptoms of HAV can include jaundice, fever, fatigue, nausea, vomiting, loss of appetite, abdominal pain, dark urine, and clay-colored stools. Infected people generally experience symptom resolution within two months of disease onset, though more severe cases may require hospitalization.

HAV in West Virginia

In March 2018 (Figure 1.1), West Virginia identified an increase in HAV cases that were later linked to a multistate HAV outbreak. The increase occurred primarily among those who used drugs, were unstably housed, or were recently incarcerated. In 2020, the statewide outbreak, which had included 2,732 cases, ended as case counts returned to baseline.

The majority of reported HAV cases in 2023 were male (Figure 1.2); all reported their race as White and their ethnicity as non-Hispanic or Latino (Table 1.1 and Table 1.2). All cases were observed among adults aged 60 and older (Table 1.3). No risk factors were identified through investigation and medical record review among the confirmed cases of HAV in 2023 (Figure 1.4). Education was provided on how to prevent the spread of the disease.

Figure 1.1. Acute HAV Incidence Rates in West Virginia, 2017-2023

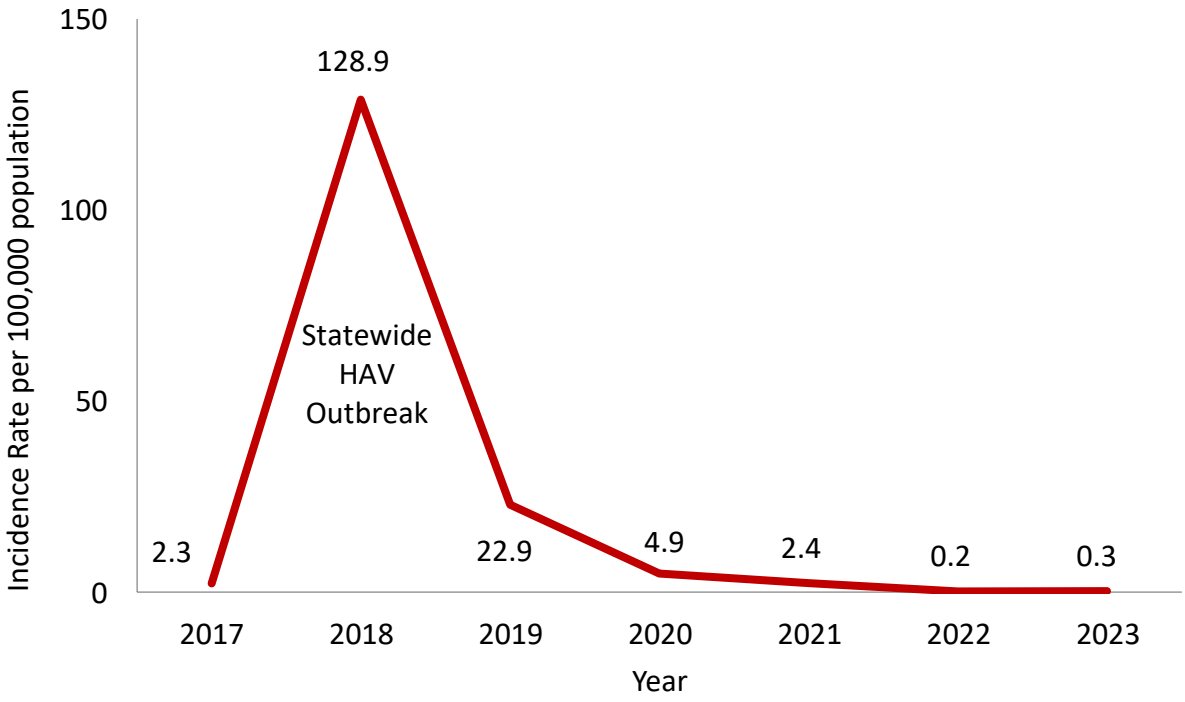


Figure 1.2. Acute HAV Cases by Sex in West Virginia, 2023 (N=5)

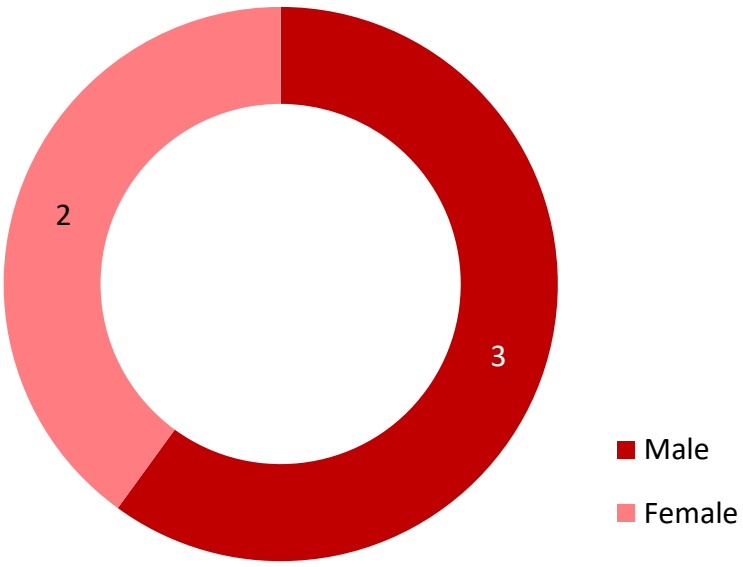


Table 1.1. Acute HAV Cases by-Race in West Virginia, 2023

Race	Count	Percent
White	5	100%
Black	0	0%
Multi-race	0	0%
Other	0	0%
Unknown	0	0%
Total	5	100%

Table 1.2. Acute HAV Cases by Ethnicity in West Virginia, 2023

Ethnicity	Count	Percent
Not Hispanic or Latino	5	100%
Hispanic or Latino	0	0%
Unknown	0	0%
Total	5	100%

Table 1.3. Acute HAV Cases by Age Group in West Virginia, 2023

Age Group (years)	Counts	Percent
0-19	0	0%
20-29	0	0%
30-39	0	0%
40-49	0	0%
50-59	0	0%
60+	5	100%
Total	5	100%

Table 1.4. Reported Risk Behaviors or Exposures Among Acute HAV Cases in West Virginia, 2023

Risk Factor*	Yes	No	Unknown
Injection Drug Use	0%	100%	0%
Non-Injection Drug Use	0%	100%	0%
Contact of a Known Case	0%	100%	0%
Unhoused	0%	100%	0%

*Cases may report more than one risk behavior/exposure

Hepatitis B Virus

Disease Overview

Hepatitis B is a vaccine-preventable liver disease. It is caused by the hepatitis B virus (HBV) and can be transmitted through direct contact with contaminated blood, semen, or other bodily fluids. Transmission of HBV can occur through sexual contact, sharing needles, syringes, or other drug use equipment, or perinatally from mother to baby at birth. Hepatitis B can be short-term (acute) or long-term (chronic), affecting some for a few months and others for years. The long-term effects of chronic hepatitis B can include cirrhosis of the liver, liver cancer, and even death. Although there is no cure, those who are chronically infected with HBV can be treated to reduce the risk of developing more serious liver diseases. The most effective way to prevent HBV infection is to receive the vaccine. Chronic infections of hepatitis B may be managed with appropriate treatment, but there is currently no cure.

HBV in West Virginia

For several years, West Virginia reported one of the highest incidence rates of acute hepatitis B in the nation. The rate in West Virginia has steadily declined, to two cases per 100,000 population in 2023 (Figure 2.1); however, the rates from 2020 to 2022 may be artificially low due to the increased demand for public health responses to the COVID-19 outbreak and fewer HBV case-patients being contacted for interviews. Most acute hepatitis B cases were male (Figure 2.2), and they reported their race as White. (Table 2.1). Most acute hepatitis B cases were between the ages of 40-49 and over the age of 60 (Table 2.3). Frequently reported risk factors for acute hepatitis B cases in 2023 were injection and non-injection drug use (Table 2.4).

A similar demographic profile was found among chronic hepatitis B cases with the exception of age.

Figure 2.1. Acute HBV Incidence Rates, West Virginia, 2017-2023

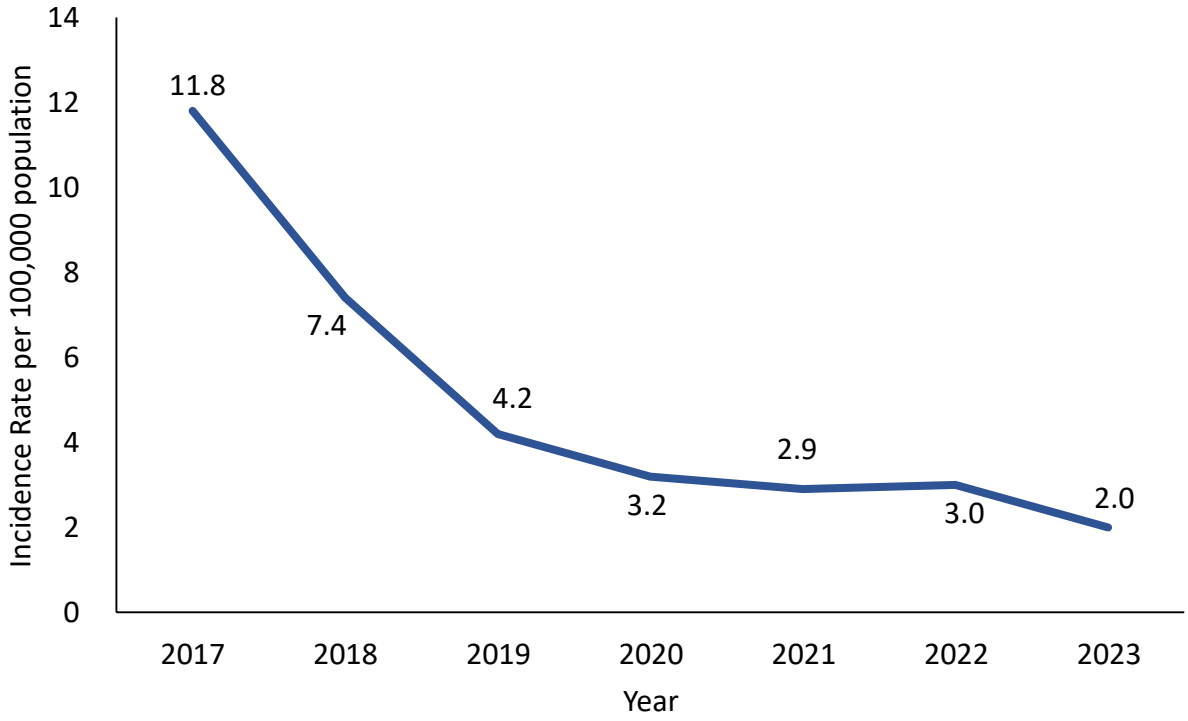


Figure 2.2. Acute HBV Cases by Sex in West Virginia, 2023 (N=35)

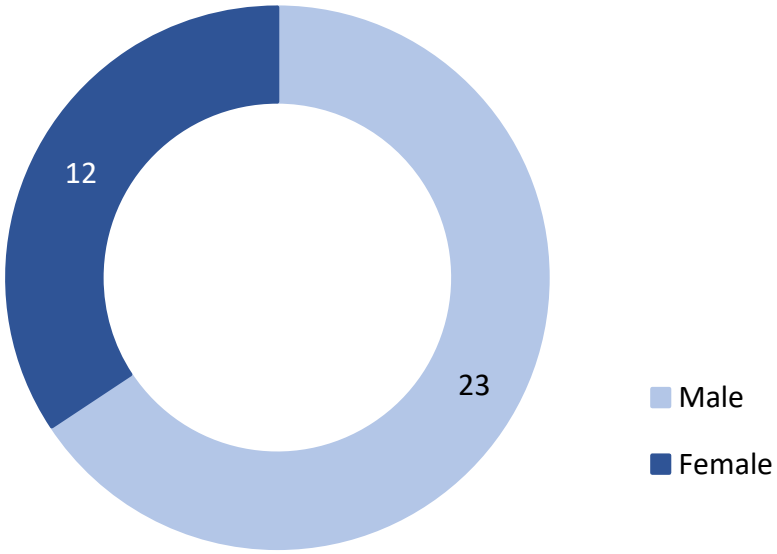


Table 2.1. Acute HBV Cases by Race in West Virginia, 2023

Race	Count	Percent
White	30	85.7%
Black	3	8.6%
Multi-race	2	5.7%
Total	35	100%

Table 2.2. Acute HBV Cases by Ethnicity in West Virginia, 2023

Ethnicity	Count	Percent
Not Hispanic or Latino	35	100%
Hispanic or Latino	0	0%
Total	35	100%

Table 2.3. Acute HBV Cases by Age Group in West Virginia, 2023

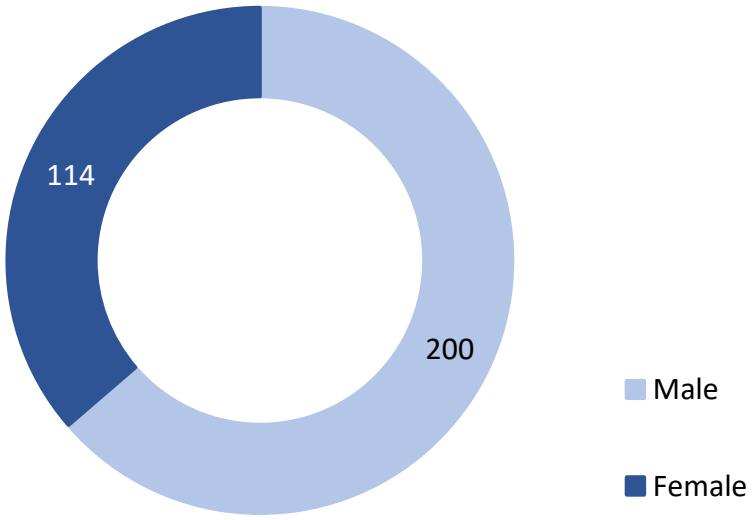
Age Group (years)	Count	Percent
0-19	0	0.0%
20-29	3	8.6%
30-39	7	20.0%
40-49	9	25.7%
50-59	7	20.0%
60+	9	25.7%
Total	35	100%

Table 2.4. Reported Risk Behaviors or Exposures Among Acute HBV Cases in West Virginia, 2023

Risk Factor*	Yes	No	Unknown
Injection Drug Use	22.9%	71.4%	5.7%
Non-Injection Drug Use	37.1%	54.3%	8.6%
Contact of a Case	20.0%	34.3%	45.7%
Recent Tattoo	20.0%	51.4%	28.6%

*Cases may report more than one risk behavior/exposure

Figure 2.3. Chronic HBV Cases by Sex in West Virginia, 2023 (N=314)



Note: Includes 155 confirmed and 159 probable chronic HBV cases

Table 2.5. Chronic HBV Cases by Race in West Virginia, 2023

Race	Count*	Percent
White	239	76.1%
Black	15	4.8%
Multi-race	30	9.6%
Other	23	7.3%
Unknown	7	2.2%
Total	314	100%

*Includes 155 confirmed and 159 probable cases

Table 2.6. Chronic HBV Cases by Ethnicity in West Virginia, 2023

Ethnicity	Count*	Percent
Not Hispanic or Latino	287	91.4%
Hispanic or Latino	5	1.6%
Unknown	22	7.0%
Total	314	100%

*Includes 155 confirmed and 159 probable cases

Table 2.7. Chronic HBV Cases by Age Group in West Virginia, 2023

Age Group (years)	Count*	Percent
0-19	6	1.9%
20-29	22	7.0%
30-39	66	21.0%
40-49	90	28.7%
50-59	65	20.7%
60+	65	20.7%
Total	314	100%

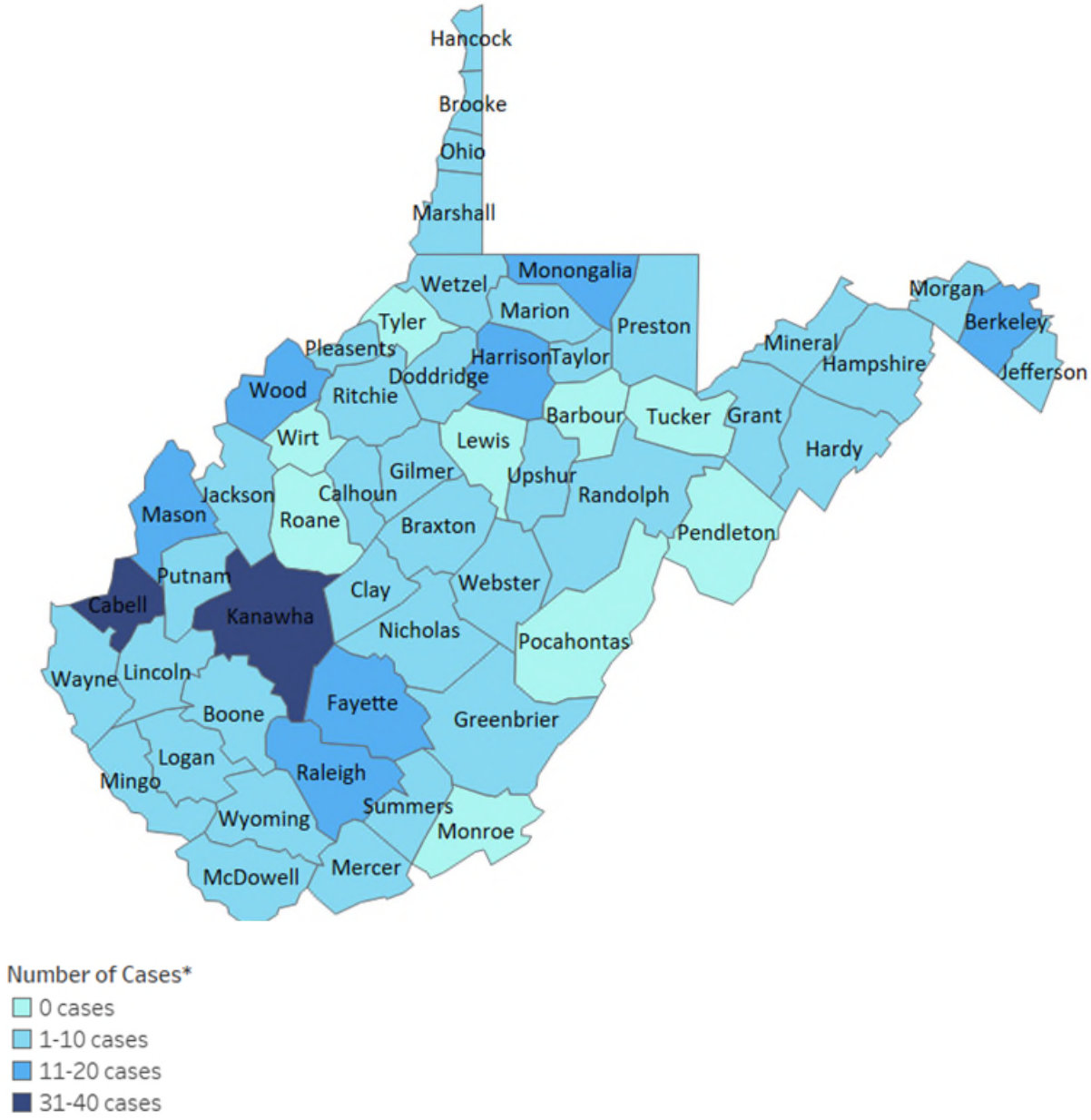
*Includes 155 confirmed and 159 probable cases

Table 2.8. Chronic HBV Case Counts in West Virginia by County, 2023

County	Population*	Count**	County	Population*	Count**
Barbour	15,443	0	Mineral	26,806	2
Berkeley	132,851	20	Mingo	22,025	4
Boone	20,600	7	Monongalia	107,749	18
Braxton	12,139	2	Monroe	12,376	0
Brooke	21,438	1	Morgan	17,580	4
Cabell	92,036	34	Nicholas	24,104	4
Calhoun	5,945	2	Ohio	41,221	5
Clay	7,740	2	Pendleton	5,998	0
Doddridge	7,685	1	Pleasants	7,420	1
Fayette	39,079	12	Pocahontas	7,739	0
Gilmer	7,221	1	Preston	34,050	5
Grant	10,985	1	Putnam	56,942	3
Greenbrier	32,123	4	Raleigh	72,526	18
Hampshire	23,632	3	Randolph	27,359	6
Hancock	28,191	1	Ritchie	8,187	1
Hardy	14,293	1	Roane	13,678	0
Harrison	64,513	13	Summers	11,581	1
Jackson	27,668	2	Taylor	16,385	4
Jefferson	59,744	7	Tucker	6,618	0
Kanawha	174,602	36	Tyler	7,894	0
Lewis	16,605	0	Upshur	23,566	3
Lincoln	19,699	3	Wayne	37,779	9
Logan	30,910	6	Webster	8,025	3
Marion	55,805	6	Wetzel	13,972	5
Marshall	29,517	6	Wirt	4,994	0
Mason	24,815	16	Wood	82,947	15
McDowell	17,425	5	Wyoming	20,262	4
Mercer	58,008	7	West Virginia	1,770,495	314

*Population estimates obtained from the U.S. Census Bureau, year: 2023
**Includes 155 confirmed and 159 probable cases

Figure 2.4. Chronic HBV Case Counts* in West Virginia by County, 2023



*Includes confirmed and probable cases

Perinatal Hepatitis B in West Virginia

Hepatitis B may also be spread from mother to infant via vertical or perinatal transmission. Infants born to HBV positive mothers face serious health risks if appropriate post exposure prophylaxis (PEP) is not administered within the recommended timeframe. Unlike adults who are infected with HBV, the chronicity rate of perinatally transmitted HBV is much higher, around 90%. If hepatitis B infections are not prevented these children may experience severe, lifelong health impacts such as cirrhosis and liver cancer.

The Perinatal Hepatitis B Prevention Program (PHBPP) was created in 1990 by the CDC and later adopted by WV in the mid-2000s. The goal of this program is to prevent transmission of hepatitis B from infected mothers to their infants through identification of positive mothers and case management efforts to ensure their infants receive proper PEP at delivery through post vaccination serological testing.

Despite having the highest rate of acute HBV infections in the US, WV has reported only one perinatal hepatitis B infection since 2017. This can be attributed to the implementation and on-going adherence to the universal hepatitis B vaccine birth dose, diligent hospital delivery personnel, and local and state public health partners working together to ensure the goal of hepatitis elimination.

Figure 2.5 Mothers Enrolled in PHBPP and Perinatal HBV Cases in West Virginia, 2017-2024

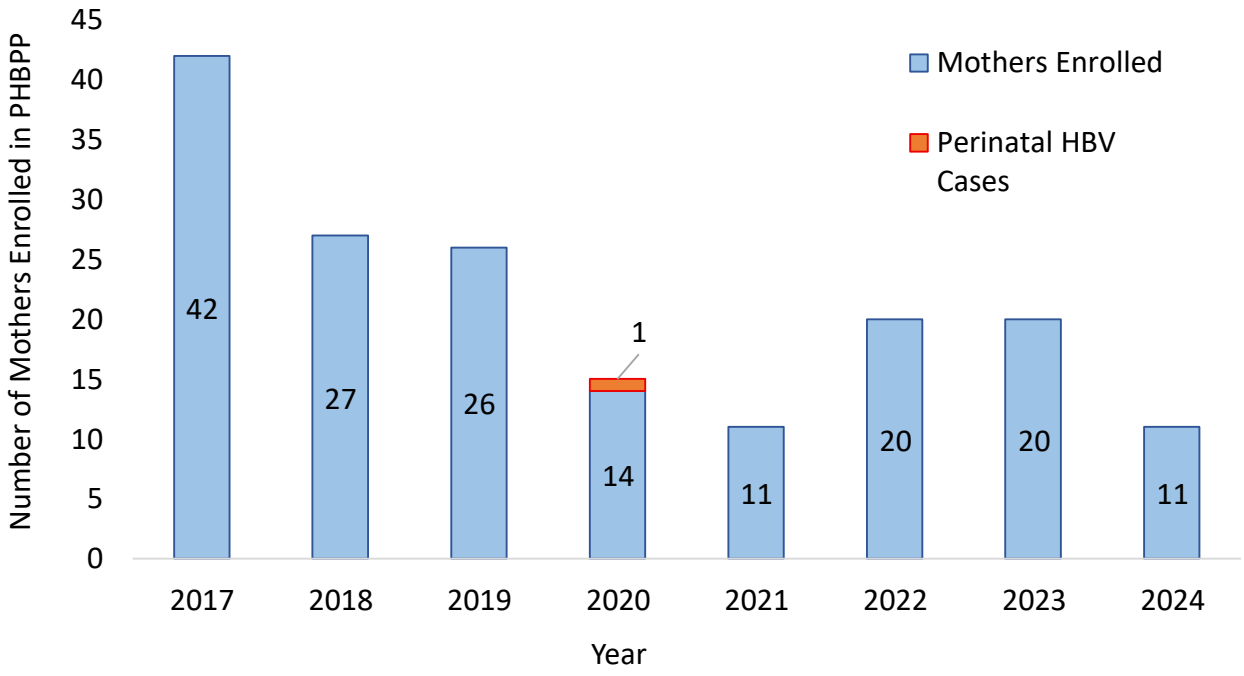


Table 2.9. Race of Mothers Enrolled in the PHBPP in West Virginia, 2023

Race	Count	Percent
White	12	60.0%
Asian	2	10.0%
Black	3	15.0%
Multi-Race	3	15.0%
Total	20	100%

Table. 2.10 Ethnicity of Mothers Enrolled in the PHBPP in West Virginia, 2023

Ethnicity	Count	Percent
Not Hispanic or Latino	20	100%
Hispanic or Latino	0	0%
Total	20	100%

Table 2.11 Age Range of Mothers Enrolled in the PHBPP in West Virginia, 2023

Age Group (years)	Count	Percent
0-19	0	0%
20-29	8	40%
30-39	11	55%
40-49	1	5%
50+	0	0%
Total	20	100%

Hepatitis C Virus

Disease Overview

Hepatitis C is a liver infection caused by the hepatitis C virus (HCV). It is spread through contact with blood from an infected person. Hepatitis C infection may be an acute, short-term illness; however, for more than half of the people who become infected with HCV, it develops into a long-term, chronic infection. Chronic hepatitis C can result in serious health issues like cirrhosis and liver cancer. Most new infections with the HCV are the result of sharing needles to inject drugs. There is no HCV vaccine; however, getting tested for HCV is vital because it is curable, and treatments exist that can clear the infection in eight to 12 weeks for most. The best way to prevent hepatitis C is by avoiding behaviors that can spread the virus.

HCV in West Virginia

West Virginia has one of the highest incidence rates of acute HCV infection in the nation. The incidence of acute HCV infection steadily increased from 2017 to 2018, followed by a decrease in 2019 (Figure 3.1). The incidence rate increased again in 2020, followed by a drop in 2021, and continued to rise through 2023. In 2023, the majority of acute Hepatitis C cases in West Virginia were reported in males (Figure 3.2) and identified as White (Table 3.1). Of the 128 acute cases reported in 2023, 37.5% were between the ages of 30-39 years (Table 3.3). Drug use, either injection or non-injection, was the most frequently reported risk factor (Table 3.4).

The local health department does not individually investigate cases of chronic HCV. Information included in the case is obtained through the laboratory report or provider case report form and does not often include risk factor information. Like acute HCV, more than half of the reported

chronic cases of HCV were among males (Figure 3.2). Of the 3,124 cases of chronic HCV, 32.1% were between the ages of 30-39 years (Table 3.7).

Figure 3.1. Acute HCV Incidence Rates, West Virginia, 2017-2023

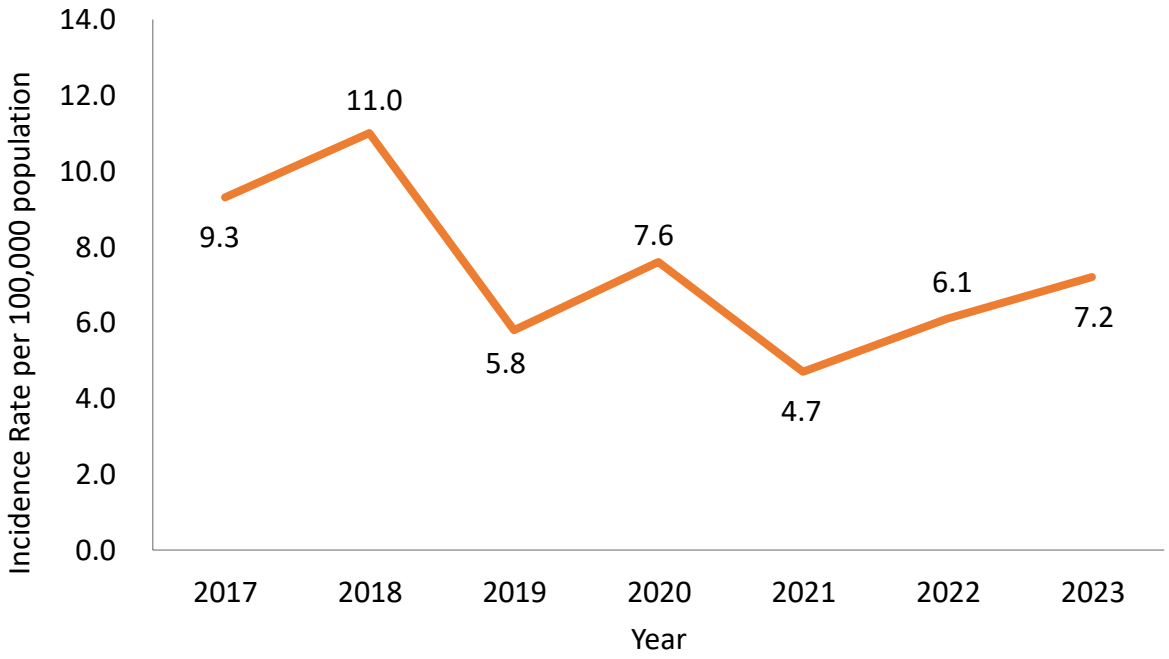
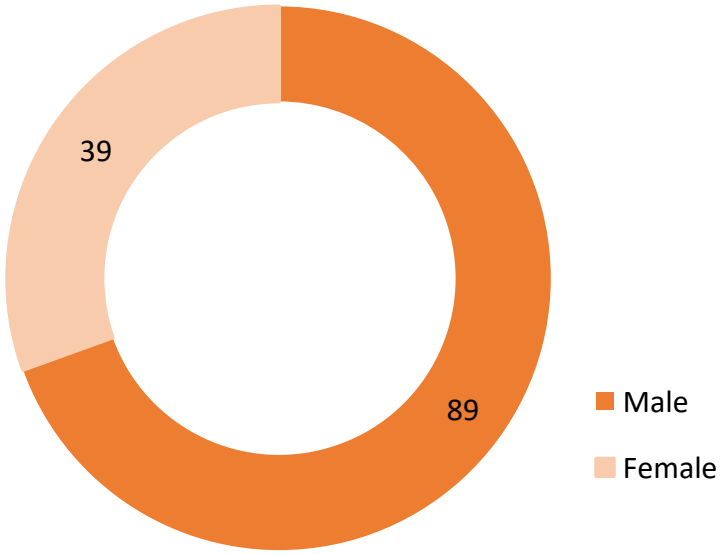


Figure 3.2. Acute HCV Cases by Sex in West Virginia, 2023 (N=128)



Note: Includes 114 confirmed and 14 probable cases

Table 3.1. Acute HCV Cases by Race in West Virginia, 2023

Race	Count*	Percent**
White	117	91.4%
Black	2	1.6%
Multi-race	8	6.3%
Other	0	0%
Unknown	1	0.8%
Total	128	100%

*Includes 114 confirmed and 14 probable cases
**Percent may not add to 100% due to rounding

Table 3.2. Acute HCV Cases by Ethnicity in West Virginia, 2023

Ethnicity	Count*	Percent
Not Hispanic or Latino	127	99.2%
Hispanic or Latino	0	0%
Unknown	1	0.8%
Total	128	100%

*Includes 114 confirmed and 14 probable cases

Table 3.3. Acute HCV Cases by Age Group in West Virginia, 2023

Age Group (years)	Count*	Percent**
0-19	1	0.8%
20-29	38	29.7%
30-39	48	37.5%
40-49	22	17.2%
50-59	7	5.5%
60+	12	9.4%
Total	128	100%

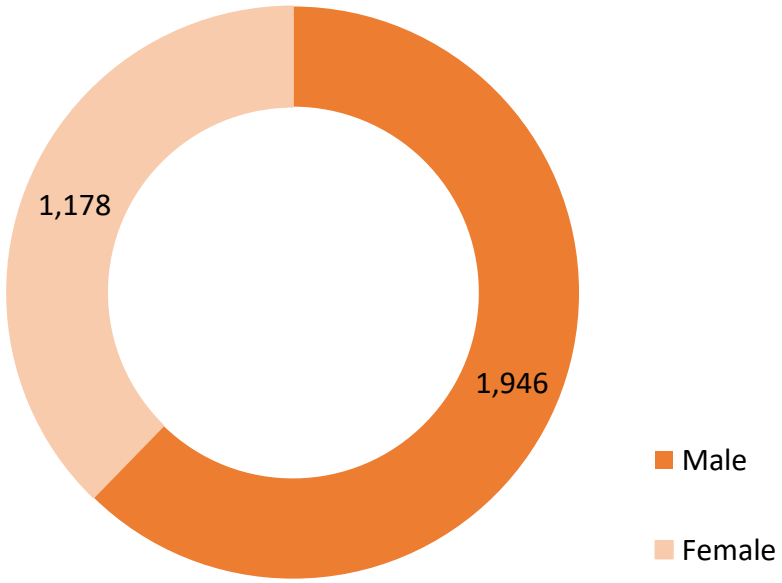
*Includes 114 confirmed and 14 probable cases
**Percent may not add to 100 due to rounding

Table 3.4. Reported Risk Behaviors or Exposures Among Acute HCV Cases in West Virginia, 2023

Risk Factor*	Yes	No	Unknown
Non-injection Drug Use	43.0%	17.2%	39.8%
Injection Drug Use	42.2%	20.3%	37.5%
Tattoos	15.6%	19.5%	64.8%
Contact of a Known Case	7.0%	17.2%	75.8%

*Cases may report more than one risk behavior/exposure

Figure 3.3. Chronic HCV Cases by Sex in West Virginia, 2023 (N=3,124)



Note: Includes 1,984 confirmed and 1,140 probable cases

Table 3.5. Chronic HCV Cases by Race in West Virginia, 2023

Race	Count*	Percent
Asian	4	0.1%
Black	84	2.7%
Multi-race	271	8.7%
Other	119	3.8%
Unknown	410	13.1%
White	2,236	71.6%
Total	3,124	100%

*Includes 1,984 confirmed and 1,140 probable cases

Table 3.6. Chronic HCV Cases by Ethnicity in West Virginia, 2023

Ethnicity	Count*	Percent
Not Hispanic or Latino	1,985	63.5%
Hispanic or Latino	30	1.0%
Unknown	1,109	35.5%
Total	3,124	100%

*Includes 1,984 confirmed and 1,140 probable cases

Table 3.7. Chronic HCV Cases by Age Group in West Virginia, 2023

Age Group (years)	Count*	Percent**
0-19	33	1.1%
20-29	426	13.6%
30-39	1,004	32.1%
40-49	798	25.5%
50-59	428	13.7%
60+	435	13.9%
Total	3,124	100%

*Includes 1,984 confirmed and 1,140 probable cases
**Percent may not add to 100% due to rounding

Table 3.8. Chronic HCV Case Counts in West Virginia by County, 2023

County	Population*	Count**	County	Population*	Count**
Barbour	15,443	16	Mineral	26,806	29
Berkeley	132,851	216	Mingo	22,025	44
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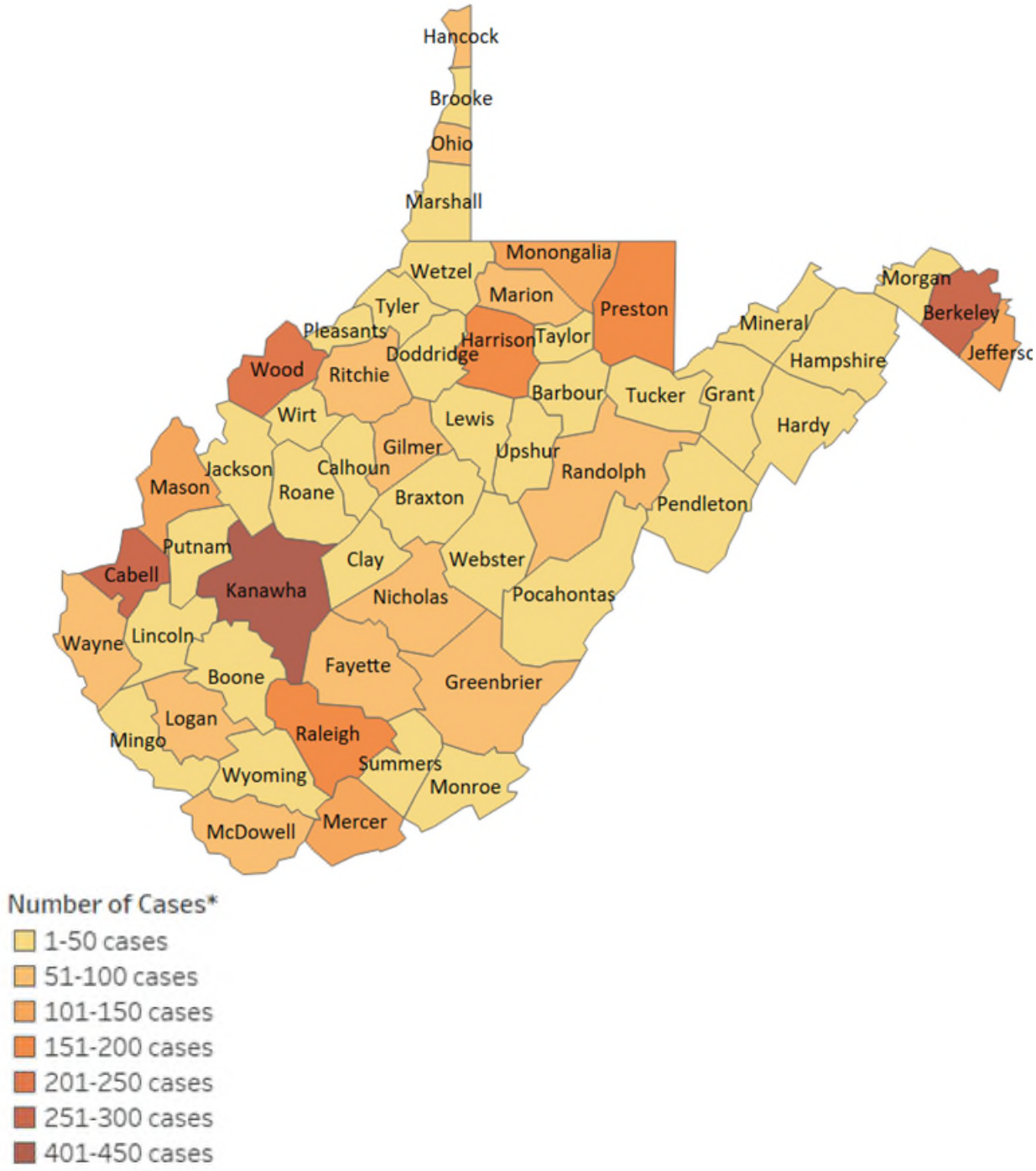
Braxton	12,139	39	Monroe	12,376	11
Brooke	21,438	26	Morgan	17,580	31
Cabell	92,036	222	Nicholas	24,104	38
Calhoun	5,945	3	Ohio	41,221	69
Clay	7,740	19	Pendleton	5,998	9
Doddridge	7,685	8	Pleasants	7,420	20
Fayette	39,079	50	Pocahontas	7,739	11
Gilmer	7,221	40	Preston	34,050	96
Grant	10,985	10	Putnam	56,942	34
Greenbrier	32,123	52	Raleigh	72,526	161
Hampshire	23,632	57	Randolph	27,359	61
Hancock	28,191	39	Ritchie	8,187	35
Hardy	14,293	16	Roane	13,678	14
Harrison	64,513	156	Summers	11,581	11
Jackson	27,668	36	Taylor	16,385	46
Jefferson	59,744	77	Tucker	6,618	2
Kanawha	174,602	296	Tyler	7,894	9
Lewis	16,605	12	Upshur	23,566	24
Lincoln	19,699	35	Wayne	37,779	78
Logan	30,910	72	Webster	8,025	4
Marion	55,805	58	Wetzel	13,972	28
Marshall	29,517	56	Wirt	4,994	6
Mason	24,815	64	Wood	82,947	197
McDowell	17,425	89	Wyoming	20,262	28
Mercer	58,008	116	West Virginia	1,770,495	3,124

*Population estimates obtained from the U.S. Census Bureau, year: 2023

**Includes 1,984 confirmed and 1,140 probable cases

Figure 3.4. Chronic HCV Case Counts* in West Virginia by County, 2023



*Includes confirmed and probable

Perinatal Hepatitis C Infections

Perinatal hepatitis C infections occur when hepatitis C passes from mother to infant in utero or during childbirth. This is known as vertical transmission and can lead to significant illness in pediatric populations. As West Virginia has the highest rate of acute HCV infection in the United States, especially among women of childbearing age, children born to hepatitis C-positive mothers must be tested and treated if they are infected. Perinatal HCV infection became reportable in West Virginia in 2022 and has been nationally reportable since 2018. Surveillance for perinatal hepatitis C infection relies on the receipt of positive hepatitis C test results for perinatally exposed infants and provider reports. In 2023, perinatal hepatitis C cases in West Virginia were evenly split between male and female children (Figure 3.5), with all cases reported as White (Table 3.9). Four cases ethnicity reported Not Hispanic or Latino, one Hispanic or Latino, and one unknown (Table 3.10).

Figure 3.5. Perinatal HCV Cases by Sex in West Virginia, 2023 (N=6)

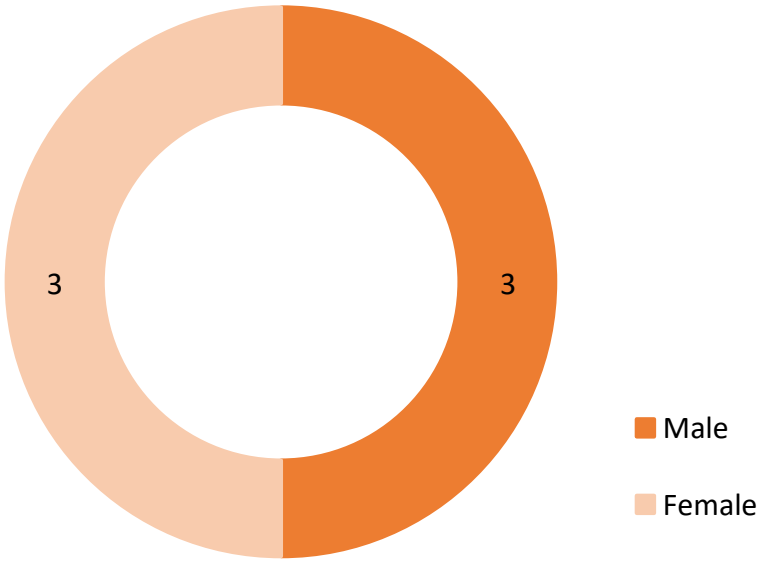


Table 3.9. Perinatal HCV Cases by Race in West Virginia, 2023

Race	Count*	Percent
White	6	100%
Black	0	0%
Multi-race	0	0%
Other	0	0%
Unknown	0	0%
Total	6	100%

*Includes 6 confirmed cases

Table 3.10. Perinatal HCV Cases by Ethnicity in West Virginia, 2023

Ethnicity	Count*	Percent**
Not Hispanic or Latino	4	66.7%
Hispanic or Latino	1	16.7%
Unknown	1	16.7%
Total	6	100%

*Includes 6 confirmed cases

**Percent may not add to 100 due to rounding

Summary

Viral hepatitis infections can lead to serious health impacts, especially for those who develop chronic infections, including liver cancer and death. It is imperative to prevent or detect these infections to reduce disease transmission and improve health outcomes. West Virginia has some of the highest rates of acute hepatitis B and C infections in the nation. This presents a significant challenge for health professionals to adequately screen and treat these conditions. Public health surveillance can support these efforts by receiving hepatitis laboratory reports and collaborating with local health departments to ensure case-patients who test positive for hepatitis are educated, their close contacts at risk for exposure are identified, and connected to care.

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Surveillance Case Definitions

Acute HAV 2019 Case Definition

Clinical Criteria

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, abdominal pain, or dark urine)

AND

a) jaundice or elevated total bilirubin levels ≥ 3.0 mg/dL, OR b) elevated serum alanine aminotransferase (ALT) levels >200 IU/L,

AND

c) the absence of a more likely diagnosis

Laboratory Criteria for Diagnosis

Confirmatory laboratory evidence:

- Immunoglobulin M (IgM) antibody to hepatitis A virus (anti-HAV) positive,

OR

- Nucleic acid amplification test (NAAT, such as Polymerase Chain Reaction [PCR] or genotyping) for hepatitis A virus RNA positive

Epidemiologic Linkage

Contact (e.g., household or sexual) with a laboratory-confirmed hepatitis A case 15-50 days prior to onset of symptoms.

Criteria to Distinguish a New Case from an Existing Case

Hepatitis A is typically self-limiting and does not lead to chronic infection. However, up to 10% of people with hepatitis A may experience a relapse during the six months after acute illness. Cases of relapsing hepatitis A should not be enumerated as new cases. In addition, a case should not be counted as a hepatitis A case if there is an alternate, more likely diagnosis.

Case Classification

Confirmed

- A case that meets the clinical criteria and is IgM anti-HAV positive[§], **OR**
- A case that has hepatitis A virus RNA detected by NAAT (such as PCR or genotyping), **OR**
- A case that meets the clinical criteria and occurs in a person who had contact (e.g., household or sexual) with a laboratory-confirmed hepatitis A case 15-50 days prior to onset of symptoms.

§ And not otherwise ruled out by IgM anti-HAV or NAAT for hepatitis A virus testing performed in a public health laboratory.

CDC Link: https://ndc.services.cdc.gov/case-definitions/hepatitis-a-acute-2019/

Acute HBV 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, 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 before a positive test (either HBsAg, hepatitis B "e" antigen (HBeAg), or HBV 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.

CDC Link: https://ndc.services.cdc.gov/case-definitions/hepatitis-b-acute-2012/

Chronic HBV 2012 Case Definition

Clinical Description

No symptoms are required. People with chronic hepatitis B 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 six 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.

CDC Link: https://ndc.services.cdc.gov/case-definitions/hepatitis-b-chronic-2012/

HBV Perinatal 2017 Case Definition

Clinical Criteria

Perinatal HBV infection in a child ≤ 24 months of age 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 four weeks after last dose of Hep B vaccine
- positive hepatitis B e antigen (HBeAg) test
- detectable HBV DNA

Epidemiologic Linkage

Born to a HBV-infected mother.

Case Classification

Probable

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

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

Acute HCV 2020 Case Definition

Clinical Criteria:

All hepatitis C cases in each classification category should be 36 months of age or older, unless it is known that they were 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 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 the presence of hepatitis C viral antigen(s) (HCV antigen)

Presumptive laboratory evidence:

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

Epidemiologic Linkage

No epidemiologic linkage is required for case classification.

Criteria to Distinguish a New Case from an Existing Case

A new acute case is an incident case that is over the age of 36 months and has not previously been reported meeting case criteria for chronic hepatitis C, or for whom there is laboratory evidence of re-infection. Cases under the age of 36 months should be classified under the Perinatal HCV Position Statement (17-ID-08) unless the exposure mode is not perinatal (e.g., healthcare-acquired).

All jurisdictions are encouraged to track negative HCV viral detection tests to document both spontaneous clearance of infection and sustained viral response to HCV treatment. Cases that have evidence of having cleared the infection at the time of the initial report or are considered false positives should not be reported to the CDC.

Acute cases determined via anti-HCV test conversion do not require a positive HCV viral detection test to be reported to be considered confirmed acute cases.

A new probable acute case may be reclassified as confirmed acute if a positive HCV viral detection test is reported in the same reporting year (e.g., before CDC closes reporting for the calendar year).

Collection of risk history data is recommended for probable and confirmed cases of acute HCV. Timing of risk history data collection ranges from two weeks to 12 months before symptom onset or diagnosis. The time frame to employ depends on the method of classification (e.g., if a case meets clinical criteria and has a positive HCV detection test, a risk history time frame of two weeks to six months before onset should be used; for a case classified via anti-HCV test conversion or HCV RNA test conversion, two weeks to 12 months before onset should be considered).

Suppose evidence indicating resolution of infection is received after a confirmed acute case has been reported to the CDC. In that case, the case report does not need to be modified as it was a confirmed case at the time of the initial report. However, negative HCV viral detection test results received on confirmed acute cases, after an initial positive result, should be appended to case reports, as feasible, and considered for data analysis by each jurisdiction.

For probable acute cases, the presence of a negative HCV viral detection test result, in the absence of criteria that would allow for confirmation, indicates that a case should not be classified as probable acute and should not be reported to CDC.

A confirmed acute case may be classified as a confirmed chronic case if a positive HCV viral detection test is reported one year or longer after the onset of the acute case. A confirmed acute case may not be reported as a probable chronic case (i.e., HCV antibody positive, but with an unknown HCV viral detection test). For incidence and prevalence calculations, confirmed cases of acute and chronic HCV should be counted.

Case Classification

<u>Probable</u>

- 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,

<u>Confirmed</u>

- 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.

CDC Link: https://ndc.services.cdc.gov/case-definitions/hepatitis-c-acute-2020/

Chronic HCV 2020 Case Definition

Clinical Criteria

All hepatitis C virus cases in each classification category should be 36 months of age or older, unless it is known that they were 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 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 the presence of hepatitis C viral antigen(s) (HCV antigen)

Presumptive laboratory evidence:

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

Epidemiologic Linkage

No epidemiologic linkage is required for case classification.

Criteria to Distinguish a New Case from an Existing Case

All jurisdictions are encouraged to track negative HCV viral detection tests to document both spontaneous clearance of infection or sustained viral response to HCV treatment. Cases that have evidence of having cleared the infection at the time of the initial report or are considered false positives should not be reported to the CDC.

Suppose evidence indicating resolution of infection is received after a confirmed chronic case has been reported to the CDC. In that case, the case report does not need to be modified as it was a confirmed case at the time of the initial report. However, negative HCV viral detection test results

received for confirmed chronic cases, following an initial positive result, should be appended to case reports, as feasible, and considered for data analysis purposes by each jurisdiction.

Evidence for re-infection may include a case of confirmed chronic HCV infection that has at least two sequential negative HCV viral detection tests reported, indicative of treatment initiation and sustained virologic response, followed by a positive HCV viral detection test. According to current treatment recommendations, the two negative tests should be at least three months apart; however, the timing may change as the standard of care for HCV treatment evolves. Other evidence of reinfection should be considered, including a report of a new genotype in a case that has previously cleared a different genotype. Jurisdictions are encouraged to ensure that cases of HCV treatment failure are not classified as new cases of HCV infection to the extent possible. Jurisdictions tracking reinfection should also consider collecting data on prior treatment completion (when relevant and possible to document), treatment failure, changes in reported genotype (if applicable), and the known timeframe for reinfection.

For probable chronic cases, the presence of a negative HCV viral detection test result, in the absence of criteria that would allow for confirmation, indicates that a case should not be classified as probable chronic and should not be reported to the CDC.

A new chronic case is a newly reported case that does not have evidence of being an acute case of HCV infection. A confirmed acute case may be classified as a confirmed chronic case if a positive HCV viral detection test is reported one year or longer after the onset of the acute case. A confirmed acute case may not be reported as a probable chronic case (i.e., HCV antibody positive, but with an unknown HCV viral detection test). For purposes of incidence and prevalence calculations, confirmed chronic HCV cases should be counted.

Jurisdictions are also encouraged to track and classify possible re-infection cases that may have been previously submitted to the CDC as a confirmed or probable chronic HCV infection case. Jurisdictions tracking reinfection should also consider collecting data on prior treatment completion (when relevant and possible to document), treatment failure, changes in reported genotype (if applicable), and the known timeframe for reinfection.

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.

CDC Link: https://ndc.services.cdc.gov/case-definitions/hepatitis-c-chronic-2020/

HCV Perinatal 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 two and 36 months of age; **OR**
- HCV genotype test results for infants between two and 36 months of age or older; **OR**
- HCV antigen test results for infants between two and 36 months of age or older.

Epidemiologic Linkage

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

Criteria to Distinguish a New Case from an Existing Case

Test results obtained before two months of age should not be used for classification purposes. Test results after 36 months of age should be reported under the 2015 Acute and Chronic HCV Infection case classification and not as perinatal HCV infection. Cases in the specified age range that are known to have been exposed to HCV via healthcare and not perinatally should be reported under the 2015 position statement. The event date should be based on the earliest relevant laboratory test date within the two–36-month window.

Case Classification

Confirmed

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

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