VIRAL HEPATITIS IN WEST VIRGINIA

2021 Surveillance Summary

September 2023

WEST VIRGINIA Department of Health & Human Resources
BUREAU FOR PUBLIC HEALTH

Division of STD, HIV, Hepatitis and Tuberculosis
Office of Epidemiology and Prevention Services
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Viral Hepatitis in West Virginia

2021 Surveillance Summary

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West Virginia Viral Hepatitis 2021 Surveillance Summary
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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 conditions in West Virginia. Reporting of hepatitis A, hepatitis B, and hepatitis C is required under the *Reportable Diseases, Events and Conditions* rule (64CSR7). This state law establishes procedures governing the reporting of certain diseases and conditions, unusual health events, and clusters or outbreaks of diseases to the West Virginia Department of Health and Human Resources, 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.

There are several limitations that should be noted about the data summarized in this report. In addition to the laboratory and/or provider reported viral hepatitis results, 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 case investigation completion difficult and/or inaccurate if the case-patient has issues with recall, does not wish to complete the interview, or provides false information. Further, the statewide COVID-

19 response began in West Virginia in March 2020, requiring most public health professionals to direct their resources to detect, investigate, and attempt to reduce the spread of COVID-19. This response impacted the completeness of acute hepatitis A, acute and chronic hepatitis B, and acute hepatitis C reports.

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

Hepatitis A Virus (HAV)

Disease Overview

Hepatitis A is a self-limiting, vaccine-preventable liver disease caused by the hepatitis A virus (HAV). The best way to prevent HAV infection is through vaccination. It is transmitted person-to-person through contact with the stool of an infected person or the consumption of contaminated food and water. Symptoms of HAV can include fever, fatigue, nausea, vomiting, loss of appetite, abdominal pain, dark urine, and clay-colored stools. Infected persons generally experience symptom resolution within two months of 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 who were recently incarcerated. In 2020, the statewide outbreak, which included 2,732 cases, was closed.

The majority of the reported HAV cases in 2021 were male (Figure 1.2) and reported their race as White and their ethnicity as not Hispanic or Latino (Table 1.1 and Table 1.2). Cases were observed among adult age categories, with the highest counts observed among the 30-39 and 40-49 age groups (Table 1.3). Drug use, either injection or non-injection, was the most reported risk factor (Figure 1.4).

Figure 1.1. Acute HAV Incidence Rates in West Virginia, 2017-2021

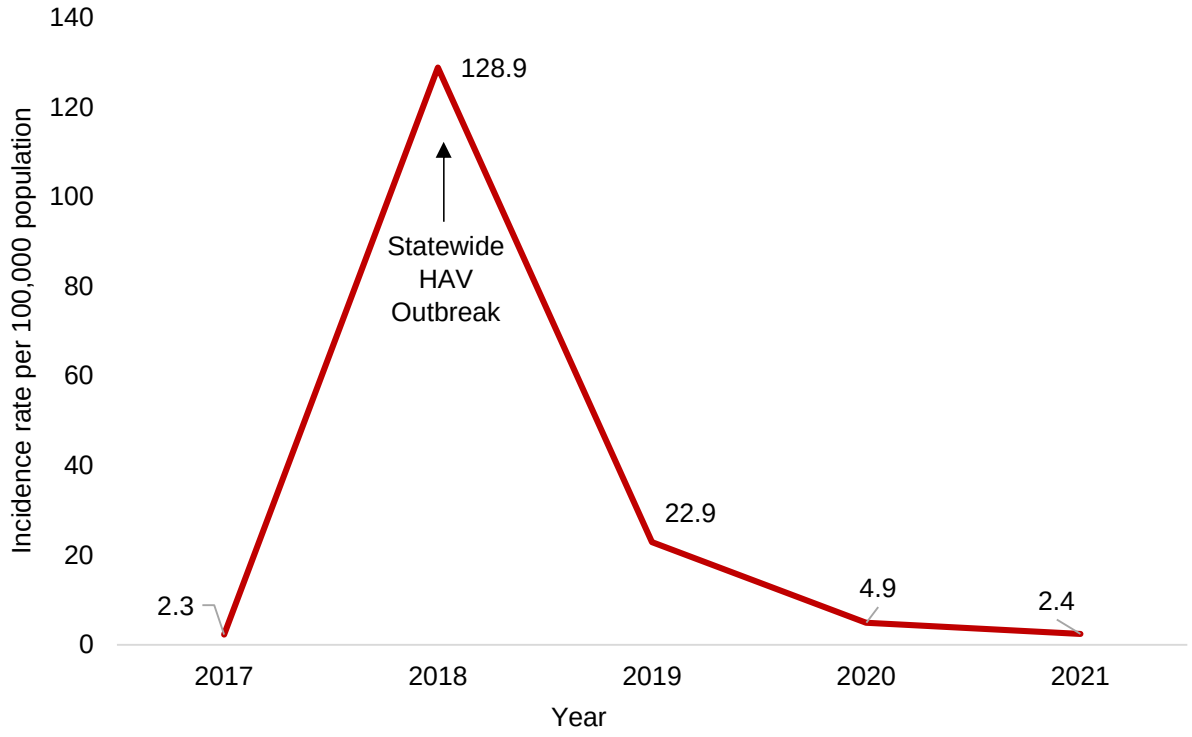


Figure 1.2. Acute HAV Cases by Sex in West Virginia, 2021 (N=43)

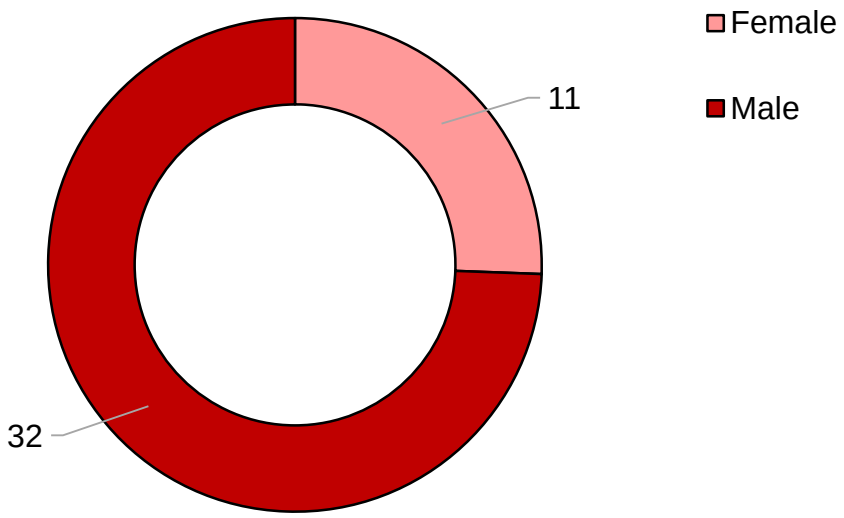


Table 1.1. Acute HAV Cases by Race in West Virginia, 2021

Race	Count	Percent
White	41	95.3%
Black	2	4.7%
Multi-race	0	0.0%
Other	0	0.0%
Unknown	0	0.0%
Total	43	100%

Table 1.2. Acute HAV Cases by Ethnicity in West Virginia, 2021

Ethnicity	Count	Percent
Not Hispanic or Latino	39	90.7%
Hispanic or Latino	0	0.0%
Unknown	4	9.3%
Total	43	100%

Table 1.3. Acute HAV Cases by Age Group in West Virginia, 2021

Age Group (years)	Counts	Percent*
0-19	0	0.0%
20-29	4	9.3%
30-39	13	30.2%
40-49	12	27.9%
50-59	5	11.6%
60+	9	20.9%
Total	43	100%

*Percent does not add to 100 due to rounding.

Table 1.4. Reported Risk Behaviors or Exposures Among Acute HAV Cases in West Virginia, 2021

Risk Factor*	Yes	No	Unknown
Injection Drug Use**	39.5%	39.5%	20.9%
Non-Injection Drug Use	46.5%	32.6%	20.9%
Contact of a known Case	25.6%	16.3%	58.1%
Unhoused	16.3%	67.4%	16.3%

*Cases may report more than one risk behavior/exposure. **Percent does not add to 100 due to rounding.

Hepatitis B Virus (HBV)

Disease Overview

Like hepatitis A, 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 the HBV can occur through sexual contact, sharing needles, syringes, or other drug use equipment, or perinatally from mother to baby at birth. Unlike hepatitis A, 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 the HBV can be treated to reduce the risk of developing more serious liver disease. The best way to prevent HBV infection is to be vaccinated.

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 declined steadily since 2017, falling to 2.9 cases per 100,000 population in 2021 (Figure 2.1); however, the rates in 2020 and 2021 could be artificially low due to the increased demand for public health response to the COVID-19 outbreak and fewer case-patients being contacted for interview. Most acute hepatitis B cases were male (Figure 2.2), reported their race as White (Table 2.1), and were between the ages of 30-49 (Table 2.3). The most frequently reported risk factors for acute hepatitis B cases in 2021 were injection and non-injection drug use (Table 2.4). A similar demographic profile was found among chronic hepatitis B cases.

Figure 2.1. Acute HBV Incidence Rates, West Virginia, 2017-2021

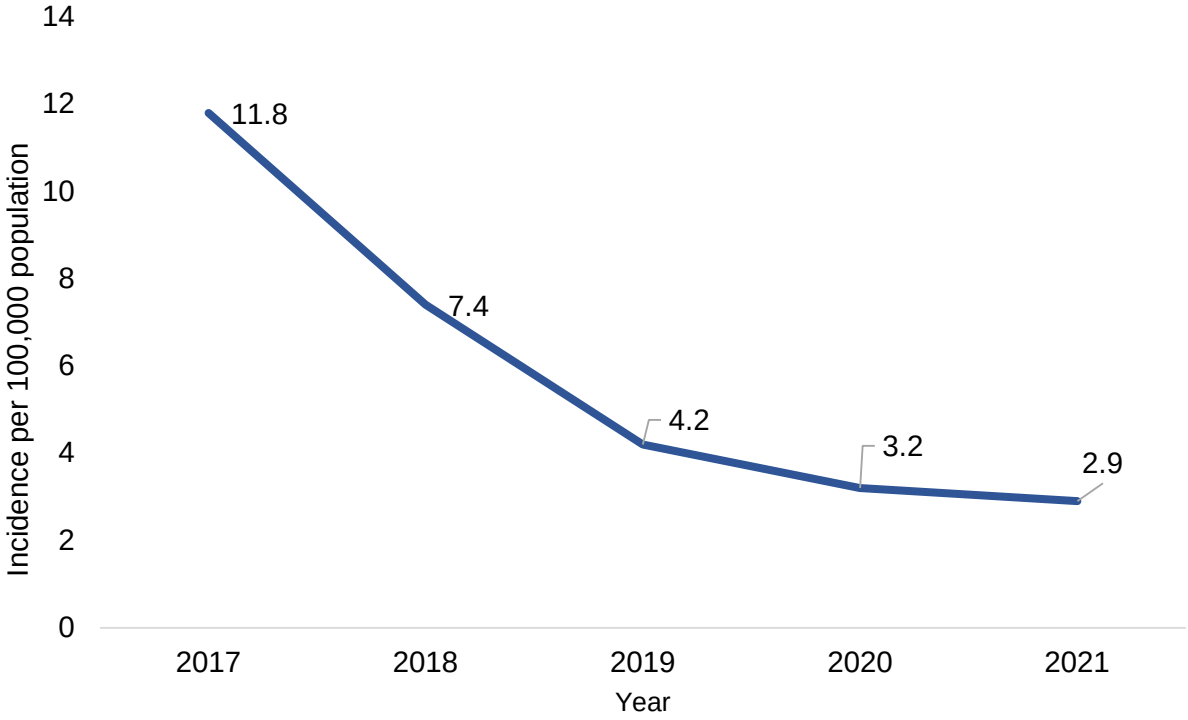


Figure 2.2. Acute HBV Cases by Sex in West Virginia, 2021 (N=53)

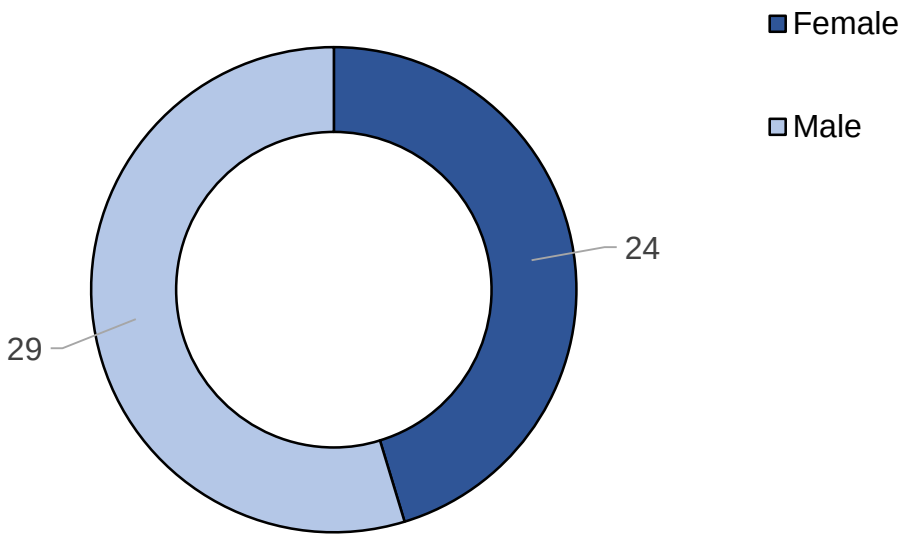


Table 2.1. Acute HBV Cases by Race in West Virginia, 2021

Race	Count	Percent
White	53	100.0%
Black	0	0.0%
Other	0	0.0%
Unknown	0	0.0%
Total	53	100%

Table 2.2. Acute HBV Cases by Ethnicity in West Virginia, 2021

Ethnicity	Count	Percent
Not Hispanic or Latino	43	81.0%
Hispanic or Latino	0	0.0%
Unknown	10	19.0%
Total	53	100%

Table 2.3. Acute HBV Cases by Age Group in West Virginia, 2021

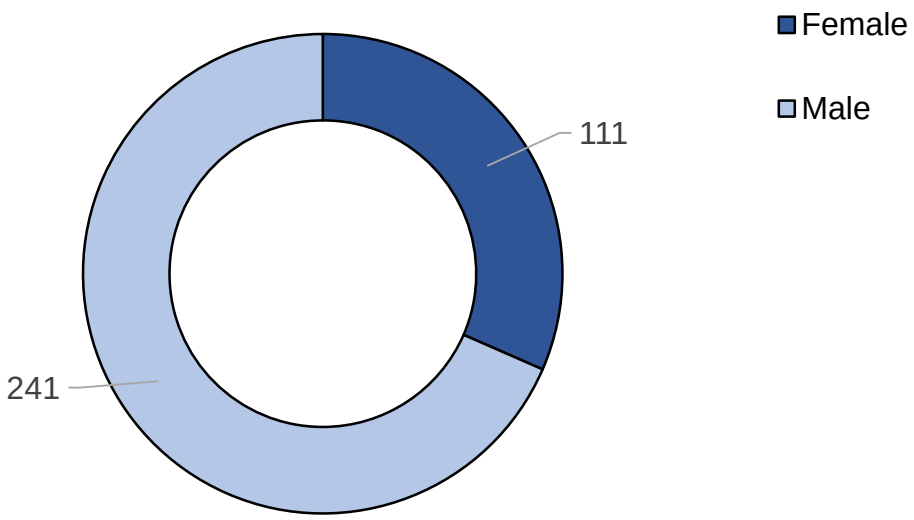
Age Group (years)	Counts	Percent
0-19	0	0.0%
20-29	6	11.3%
30-39	16	30.2%
40-49	24	45.3%
50-59	2	3.8%
60+	5	9.4%
Total	53	100%

Table 2.4. Reported Risk Behaviors or Exposures Among Acute HBV Cases in West Virginia, 2021

Risk Factor*	Yes	No	Unknown
Injection Drug Use	45.3%	30.2%	24.5%
Non-Injection Drug Use**	41.5%	24.5%	33.9%
Contact of a Case	9.4%	20.8%	69.8%
Tattoo	7.6%	37.7%	54.7%

*Cases may report more than one risk behavior/exposure. **Percent does not add to 100 due to rounding.

Figure 2.3. Chronic HBV Cases by Sex in West Virginia, 2021 (N=352)



Note: Includes 156 confirmed and 196 probable chronic HBV cases.

Table 2.5. Chronic HBV Cases by Race in West Virginia, 2021

Race	Count*	Percent
White	247	70.2%
Black	22	6.3%
Multi-race	0	0.0%
Other	29	8.2%
Unknown	54	15.3%
Total	352	100%

*Includes 156 confirmed and 196 probable cases.

Table 2.6. Chronic HBV Cases by Ethnicity in West Virginia, 2021

Ethnicity	Count*	Percent
Not Hispanic or Latino	212	60.2%
Hispanic or Latino	2	0.6%
Unknown	138	39.2%
Total	352	100%

*Includes 156 confirmed and 196 probable cases.

Table 2.7. Chronic HBV Cases by Age Group in West Virginia, 2021

Age Group (years)	Count*	Percent**
0-19	3	0.9%
20-29	26	7.4%
30-39	92	26.1%
40-49	101	28.7%
50-59	66	18.8%
60+	64	18.2%
Total	352	100%

*Includes 156 confirmed and 196 probable cases.

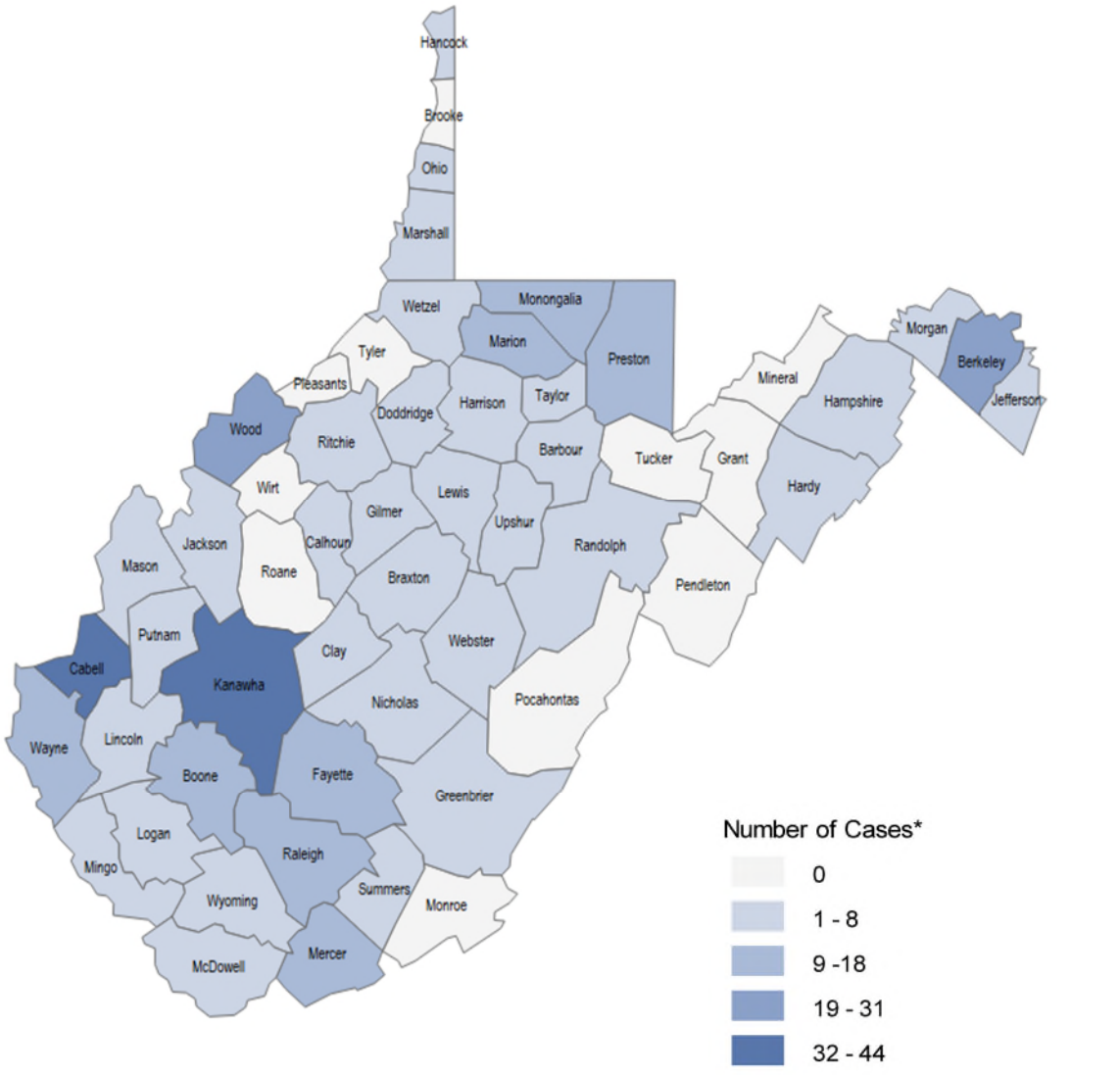
**Percent does not add to 100 due to rounding.

Table 2.8. Chronic HBV Case Counts in West Virginia by County, 2021

County	Population*	Count**	County	Population*	Count**
Barbour	15,445	2	Mineral	26,866	0
Berkeley	126,194	19	Mingo	23,094	6
Boone	21,367	12	Monongalia	106,487	16
Braxton	12,293	1	Monroe	12,383	0
Brooke	22,109	0	Morgan	17,280	1
Cabell	93,494	36	Nicholas	24,415	4
Calhoun	6,165	2	Ohio	41,878	8
Clay	7,895	2	Pendleton	6,078	0
Doddridge	7,739	1	Pleasants	7,612	0
Fayette	40,083	13	Pocahontas	7,890	0
Gilmer	7,389	6	Preston	34,270	11
Grant	11,009	0	Putnam	57,355	6
Greenbrier	32,698	4	Raleigh	73,801	16
Hampshire	23,374	2	Randolph	27,891	6
Hancock	28,591	2	Ritchie	8,388	1
Hardy	14,155	4	Roane	13,912	0
Harrison	65,436	7	Summers	11,892	5
Jackson	27,761	1	Taylor	16,483	4
Jefferson	58,520	8	Tucker	6,675	0
Kanawha	177,993	44	Tyler	8,243	0
Lewis	16,897	2	Upshur	23,820	2
Lincoln	20,191	7	Wayne	38,533	15
Logan	31,917	9	Webster	8,286	1
Marion	18,413	12	Wetzel	14,195	4
Marshall	56,117	5	Wirt	5,059	0
Mason	30,208	9	Wood	83,791	21
McDowell	25,290	2	Wyoming	20,991	1
Mercer	59,215	12	West Virginia	1,785,526	352

*Population estimates obtained from the U.S. Census Bureau, year: 2021. **Includes 156 confirmed and 196 probable cases.

Figure 2.4. Chronic HBV Case Counts in West Virginia by County, 2021 (N=352)



*includes confirmed and probable cases

Hepatitis C Virus (HCV)

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. For some people, hepatitis C is a short-term illness, but for more than half of people who become infected with the HCV, it becomes 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 the HCV is important, because treatments exist that can cure most people in 8 to 12 weeks. 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 and then experienced a decrease in 2019 (Figure 3.1). In 2021, most acute HCV cases in West Virginia were male (Figure 3.2) and reported their race as White (Table 3.1). Of the 83 cases reported in 2021, 34.9% were between the ages of 30-39 years (Table 3.3). Drug use, either injection or non-injection drug use, was the most reported risk factor (Table 3.4).

Cases of chronic HCV are not individually investigated by the local health department. In most cases the demographic information is automatically populated by the laboratory report, and risk factor information is not obtained. Like acute HCV, more than half of the reported chronic cases of HCV were among males (Figure 3.2.). Of the 4,793 cases of chronic HCV, 33.6% were between the ages of 30-39 years (Table 3.7).

Figure 3.1. Acute HCV Incidence Rates, West Virginia, 2017-2021

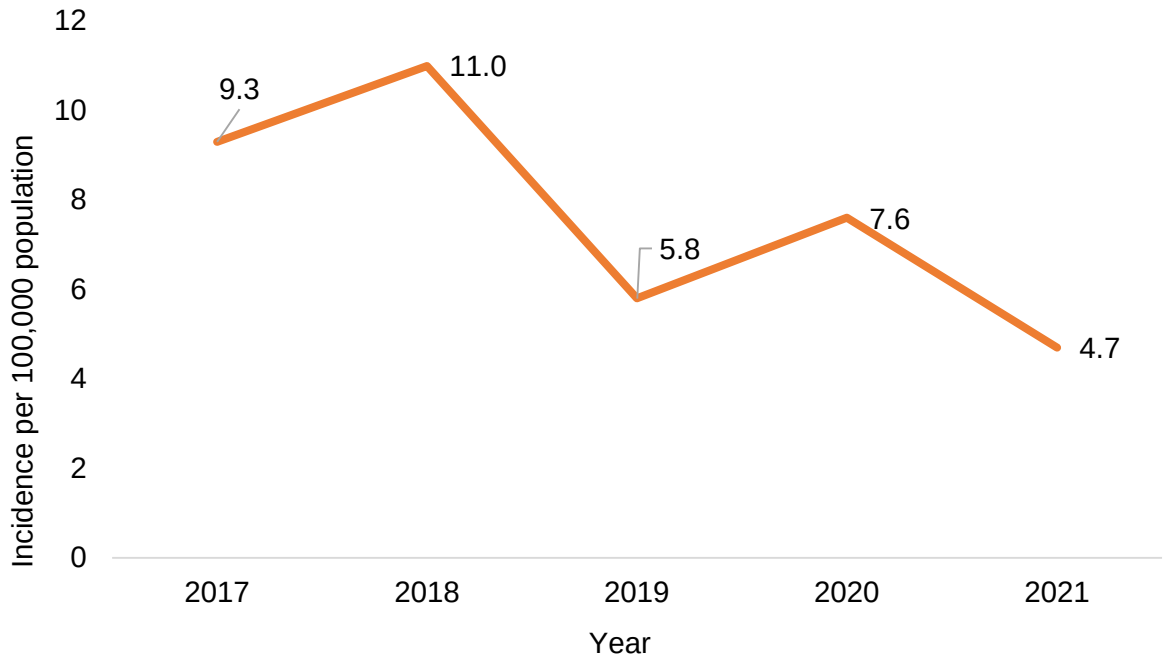
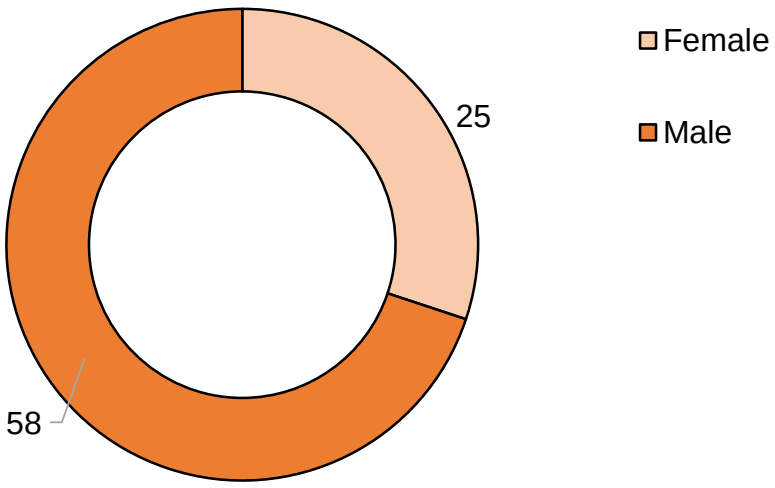


Figure 3.2. Acute HCV Cases by Sex in West Virginia, 2021 (N=83)



Note: Includes 70 confirmed and 13 probable cases.

Table 3.1. Acute HCV Cases by Race in West Virginia, 2021

Race	Count*	Percent
White	57	68.7%
Black	0	0.0%
Multi-race	2	2.4%
Other	1	1.2%
Unknown	23	27.7%
Total	83	100%

*Includes 70 confirmed and 13 probable cases.

Table 3.2. Acute HCV Cases by Ethnicity in West Virginia, 2021

Ethnicity	Count*	Percent
Not Hispanic or Latino	37	44.6%
Hispanic or Latino	0	0.0%
Unknown	46	55.4%
Total	83	100%

*Includes 70 confirmed and 13 probable cases.

Table 3.3. Acute HCV Cases by Age Group in West Virginia, 2021

Age Group (years)	Count*	Percent**
0-19	2	2.4%
20-29	20	24.1%
30-39	29	34.9%
40-49	18	21.7%
50-59	12	14.5%
60+	2	2.4%
Total	83	100%

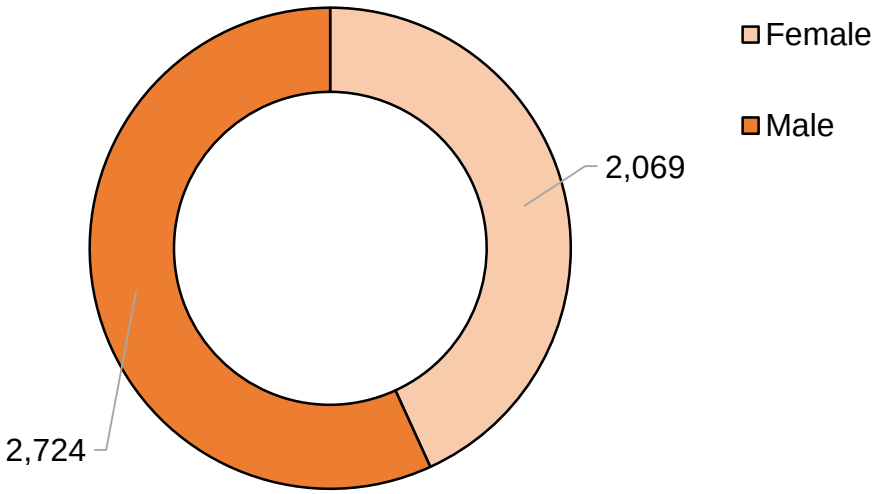
*Includes 70 confirmed and 13 probable cases. **Percent does not add to 100 due to rounding.

Table 3.4. Reported Risk Behaviors or Exposures Among Acute HCV Cases in West Virginia, 2021

Risk Factor*	Yes	No	Unknown
Non-injection Drug Use	18.1%	10.8%	71.1%
Injection Drug Use	15.7%	12.0%	72.3%
Tattoos	7.2%	14.5%	78.3%
Contact of a Known Case	4.8%	6.0%	89.2%

*Cases may report more than one risk behavior/exposure.

Figure 3.3. Chronic HCV Cases by Sex in West Virginia, 2021 (N=4,793)



Note: Includes 2,718 confirmed and 2,075 probable cases.

Table 3.5. Chronic HCV Cases by Race in West Virginia, 2021

Race	Count*	Percent
Asian	4	0.1%
Black	137	2.9%
Multi-race	251	5.2%
Other	212	4.4%
Unknown	1488	31.0%
White	2701	56.4%
Total	4,793	100%

*Includes 2,718 confirmed and 2,075 probable cases.

Table 3.6. Chronic HCV Cases by Ethnicity in West Virginia, 2021

Ethnicity	Count*	Percent
Not Hispanic or Latino	2044	42.7%
Hispanic or Latino	20	0.4%
Unknown	2729	56.9%
Total	4,793	100%

*Includes 2,718 confirmed and 2,075 probable cases.

Table 3.7. Chronic HCV Cases by Age Group in West Virginia, 2021

Age Group (years)	Count*	Percent
0-19	56	1.2%
20-29	868	18.1%
30-39	1611	33.6%
40-49	997	20.8%
50-59	589	12.3%
60+	672	14.0%
Total	4,793	100%

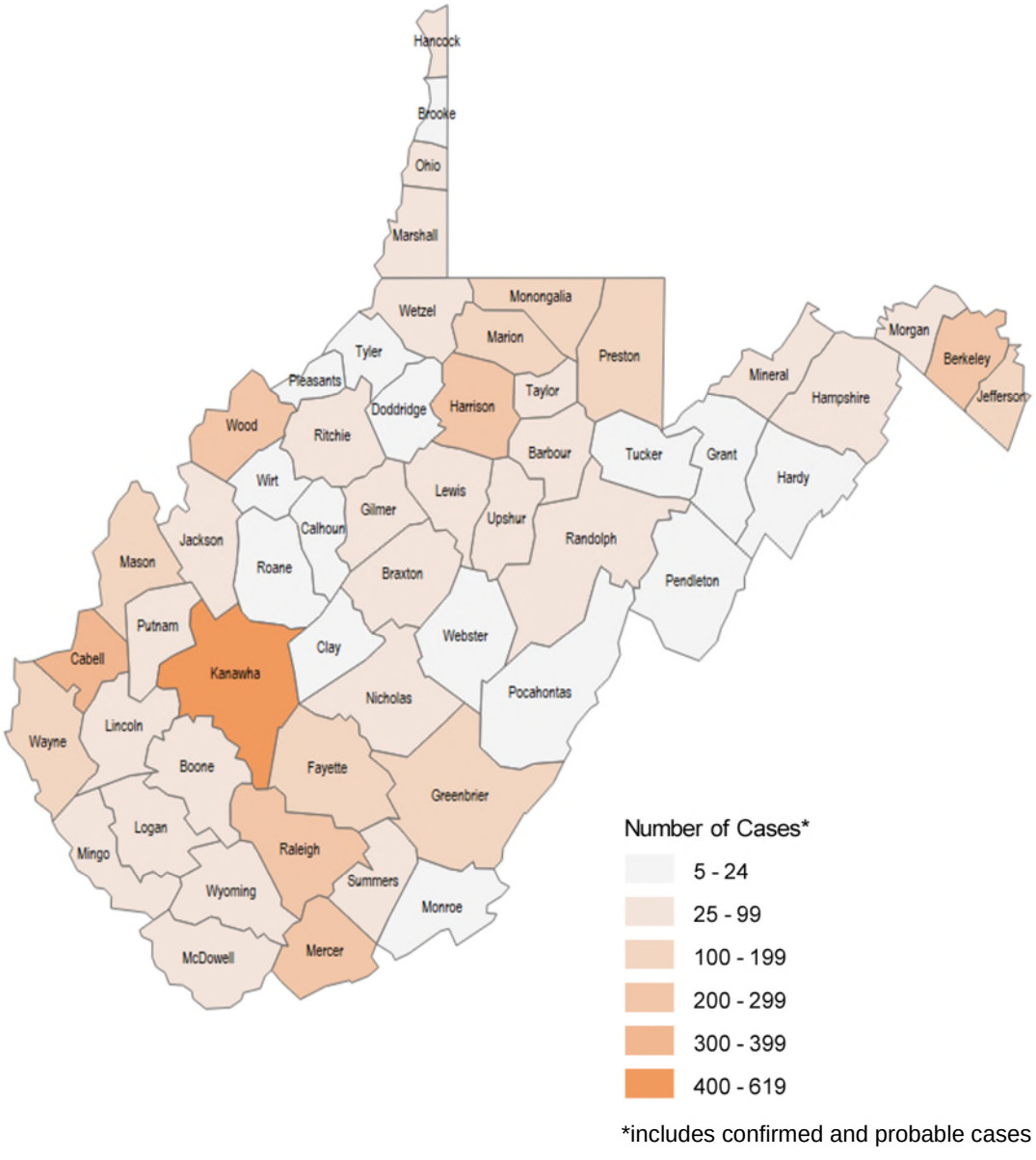
*Includes 2,718 confirmed and 2,075 probable cases.

Table 3.8. Chronic HCV Case Counts in West Virginia by County, 2021

County	Population*	Count**	County	Population*	Count**
Barbour	15,445	45	Mineral	26,866	44
Berkeley	126,194	282	Mingo	23,094	69
Boone	21,367	76	Monongalia	106,487	181
Braxton	12,293	54	Monroe	12,383	13
Brooke	22,109	13	Morgan	17,280	37
Cabell	93,494	336	Nicholas	24,415	48
Calhoun	6,165	5	Ohio	41,878	75
Clay	7,895	20	Pendleton	6,078	6
Doddridge	7,739	6	Pleasants	7,612	9
Fayette	40,083	120	Pocahontas	7,890	22
Gilmer	7,389	38	Preston	34,270	149
Grant	11,009	12	Putnam	57,355	63
Greenbrier	32,698	100	Raleigh	73,801	246
Hampshire	23,374	59	Randolph	27,891	74
Hancock	28,591	61	Ritchie	8,388	50
Hardy	14,155	20	Roane	13,912	19
Harrison	65,436	207	Summers	11,892	33
Jackson	27,761	51	Taylor	16,483	34
Jefferson	58,520	110	Tucker	6,675	7
Kanawha	177,993	619	Tyler	8,243	12
Lewis	16,897	69	Upshur	23,820	43
Lincoln	20,191	47	Wayne	38,533	122
Logan	31,917	91	Webster	8,286	16
Marion	18,413	109	Wetzel	14,195	31
Marshall	56,117	76	Wirt	5,059	13
Mason	30,208	128	Wood	83,791	220
McDowell	25,290	93	Wyoming	20,991	57
Mercer	59,215	253	West Virginia	1,785,526	4,793

*Population estimates obtained from the U.S. Census Bureau, year: 2021. **Includes 2,718 confirmed and 2,075 probable cases.

Figure 3.4. Chronic HCV Case Counts in West Virginia by County, 2021 (N=4,793)



References

1. U.S. Census Bureau at https://www.census.gov/data/tables/time-series/demo/popest/2020s-counties-total.html#v2021 accessed 03/20/2023.

2. Centers for Disease Control and Prevention. Viral Hepatitis Surveillance Report, US, 2019 at https://www.cdc.gov/hepatitis/statistics/2019surveillance/index.htm accessed 03/20/2023.

3. Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report (MMWR) Notes from the Field: Hepatitis A Outbreak Associated with Drug Use and Homelessness - West Virginia, 2018 at https://www.cdc.gov/mmwr/volumes/68/wr/mm6814a4.htm accessed: 01/26/2023.

4. WV Hepatitis A Surveillance and Investigation Protocol at https://oeps.wv.gov/hav/Documents/lhd/Hep_A_protocol.pdf accessed 01/26/2023.

5. WV Hepatitis B Surveillance and Investigation Protocol at https://oeps.wv.gov/hbv/documents/lhd/hep_B_Protocol.pdf accessed 01/26/2023.

6. WV Hepatitis C Surveillance and Investigation Protocol at http://dhhr.wv.gov/oeps/disease/viral-hepatitis/Pages/HepC.aspx accessed 01/26/2023.

Surveillance Case Definitions

Acute Hepatitis A Virus 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 usually self-limiting and does not result in chronic infection. However, up to 10% of persons with hepatitis A may experience a relapse during the 6 months after acute illnesses. 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.

Acute Hepatitis B Virus 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.

Chronic Hepatitis B Virus 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.

Acute Hepatitis C Virus 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)

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 or sustained viral response to HCV treatment. Cases that have evidence of having cleared the infection at time of initial report or are considered false positive should not be reported to CDC.

Acute cases determined via anti-HCV test conversion do not need to have a positive HCV viral detection test 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. prior to CDC closing reporting for the calendar year).

Collection of risk history data is recommended for probable and confirmed acute HCV cases. Timing of risk history data to collect ranges from 2 weeks to 12 months prior to 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 2 weeks to 6 months prior to onset should be used; for a case classified via anti-HCV test conversion or HCV RNA test conversion, 2 weeks to 12 months prior to onset should be considered).

If evidence indicating resolution of infection is received after a confirmed acute case has been reported to CDC, the case report does not need to be modified as it was a confirmed case at the time of initial report. However, negative HCV viral detection test results received on confirmed acute case, subsequent to an initial positive result, should be appended to case reports, as feasible, and considered for the purpose of 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 acute case onset. 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 acute and chronic HCV cases 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.

Chronic Hepatitis C Virus 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)

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 time of initial report or are considered false positive should not be reported to CDC.

If evidence indicating resolution of infection is received after a confirmed chronic case has been reported to CDC, the case report does not need to be modified as it was a confirmed case at the time of initial report. However, negative HCV viral detection test results received on confirmed chronic cases, subsequent to an initial positive result, should be appended to case reports, as feasible, and considered for the purpose of data analysis 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. Under current treatment recommendations, those two negative tests should be at least three months apart, however, the timing may change as standard of care for HCV treatment evolves. Other evidence of reinfection should be considered, including a report of a new genotype on 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 that it can be determined. Jurisdictions tracking re-infection should also consider collecting data on prior treatment completion (when relevant and possible to document), treatment failure, change in reported genotype if that applies, and the known time frame 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 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 acute case onset. 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 CDC as a confirmed or probable chronic HCV infection case. Jurisdictions tracking re-infection should also consider collecting data on prior treatment completion (when relevant and possible to document), treatment failure, change in reported genotype if that applies, and the known time frame 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.