Hepatitis B Virus (HBV)

Disease Category: Hepatitis

Timeframe to follow-up: Within 1 working day

Signs and Symptoms[1]	• Dark urine or clay-colored stool • Fatigue (feeling tired) • Fever • Joint pain • Nausea, stomach pain, throwing up • Joint pain • Jaundice (yellow skin or eyes)
Incubation[2]	Usually 45-180 days; average 60-90 days
Case Classification[3,4]	Acute and Chronic Clinical criteria: In absence of a more likely, alternative diagnosis (acute liver disease due to other causes, advanced liver disease due to hepatitis B reactivation, pre-existing chronic hepatitis B infection, other causes like alcohol exposure, other viral hepatitis, hemochromatosis, or conditions known to produce false positive of hepatitis B surface antigen, etc.) acute onset or new detection of at least one of the following: • Jaundice • Total bilirubin ≥ 3.0mg/dL. • Elevated serum alanine aminotransferase (ALT) levels >200 IU/L Acute Confirmed: • Meets Tier 1 confirmatory laboratory evidence of acute HBV infection • Meets clinical criteria AND Tier 2 confirmatory laboratory evidence of acute HBV infection. Chronic Confirmed: • Meets confirmatory laboratory evidence of chronic HBV infection Perinatal Clinical criteria: Perinatal HBV infection in a child ≤ 24 months of age may range from asymptomatic to fulminant hepatitis. Perinatal confirmed: Child born in the US to a HBV-infected mother and positive for hepatitis B surface antigen (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.
Differential Diagnosis[5]	Alcoholic Hepatitis, Autoimmune Hepatitis, Cholangitis, Cirrhosis, Drug-Induced Hepatotoxicity, Hemochromatosis, Hepatitis A, Hepatitis C, Hepatitis D, Hepatitis E, Hepatocellular Carcinoma (HCC), Wilson Disease
Treatment[1]	There is no medication for acute hepatitis B. There are some medications for chronic hepatitis B; they aren't a cure and are only helpful for people with chronic hepatitis B.

Duration[1]	Acute hepatitis B is a short-term illness that occurs within first 6 months after exposure to HBV. Acute hepatitis B can lead to lifelong infection known as chronic hepatitis B.
Exposure[1,6]	• Mother to child at birth (perinatal transmission) • Sex with a partner who has hepatitis B • Sharing contaminated needles, syringes, or drug preparation equipment • Sharing contaminated items such as toothbrushes, razors, or medical equipment (like a glucose monitor) with a person who has hepatitis B • Direct contact with the blood or open sores of a person who has hepatitis B • Exposure to the blood from a person who has hepatitis B through needlesticks or other sharp instruments such as tattooing equipment or piercing instruments • Poor infection control in healthcare facilities
Laboratory Testing	Local Health Authority can arrange testing if an outbreak is suspected OR for contacts: • Nevada State Public Health Laboratory • Southern Nevada Public Health Laboratory
Control of Contacts	Hepatitis B vaccine and hepatitis B immune globulin (HBIG) may be used as postexposure prophylaxis, as indicated.
Key areas of focus during investigation	Sexual history, injection drug use, travel history, medical history (especially with regards to injections and hemodialysis), occupational contact with blood or body fluids
Public Health Actions	Reports of Hepatitis B cases must be made to the Local Health Authority during the regular business hours of the health authority on the first working day following the identification of the case. Local Health Authority to notify Office of State Epidemiology (dpbhepi@health.nv.gov) or call 775-684-5911/775-400-0333 (after hours) if outbreak suspected. For individual confirmed or probable cases: • Confirm diagnosis, if possible • Identify potential exposures • Prepare a case report and submit to the Chief Medical Officer (through OSE) within 7 days after completing the case investigation • Identify potential outbreaks from common sources • Provide education about how to prevent transmission • Check immunization status To the best of the local health authority's ability, each step of the investigation should be completed within one working day or in alignment with NAC 441A.
Key Partner Agencies	• Local Health Authorities (CCHHS, CNHD, NNPH, SNHD) • Nevada State Public Health Lab (NSPHL) • Southern Nevada Public Health Lab (SNPHL)

TABLE OF CONTENTS

HEPATITIS B

I. DISEASE REPORTING

A. Legal Reporting Requirements

A report to the health authority may be made by telephone; telecopy (in the form prescribed by the health authority); or any form of electronic communication identified by the health authority, following the specified format and procedure.[7]

1. Health Care Providers and Health Care Facilities

Health providers and facilities must notify the health authority where provider is located within the first working day after identifying the case.[7–9]

2. *Laboratories*

Laboratories must notify the health authority within the first working day after identifying the case.[7] If the lab is located outside of Nevada, notify the Nevada Chief Medical Officer through the Office of State Epidemiology (OSE) within the same timeframe.[7,10]

3. Local Health Authority (LHA)

LHA's must notify the Office of State Epidemiology (OSE) within 7 days after completing the case investigation.[11]

4. Other Entities[12–15]

The following other entities have a duty to report the results of any medical, clinical, or laboratory tests that produce evidence consistent with the presence of hepatitis B virus (HBV) to the Nevada Chief Medical Officer through the Office of State Epidemiology (OSE):

- Division of Parole and Probation of Department of Public Safety
- School, childcare facility or correctional facility
- Blood banks
- Insurer

II. THE DISEASE AND ITS EPIDEMIOLOGY[1–4,6,16]

A. Background

Hepatitis B virus (HBV) is one of several viruses known to cause hepatitis in humans. Exposure to HBV may result in acute or chronic infections.

The case fatality rate of acute HBV infection is about 1%, although higher in those older than 40 years of age. An estimated 15%-25% of people with chronic HBV infection die prematurely of either cirrhosis or hepatocellular carcinoma (HCC). Roughly 50% of HCC cases globally are attributed to chronic HBV infection.

Risk factors for being infected with HBV include:

- Injection drug use

- Having a history of having more than 1 sexual partner in the previous 6 months
- International travel to areas with intermediate-to-high rates of chronic HBV infection
- Having diabetes and requiring blood glucose monitoring and other chronic conditions requiring frequent injections
- Being a hemodialysis patient
- Being a client and staff of institutions for the developmentally disabled who are bitten by patients
- Health care and public safety workers who perform tasks involving contact with blood or blood-borne contaminated bodily fluids

B. Etiologic Agent

HBV is a hepadnavirus.

C. Description of Illness

Acute hepatitis B virus infection may be asymptomatic or symptomatic and the likelihood of experiencing symptoms increase with age. Symptom onset is usually gradual with loss of appetite, mild abdominal discomfort, nausea, and vomiting, sometimes arthralgias and rash, often progressing to jaundice. Fever may be absent or mild.

After acute HBV infection, the risk of chronic infection varies and is influenced by age at infection. Chronic HBV occurs in about 90% of infants infected at birth, 20%-25% of children infected from ages 1 to 5 years, and 1% to 10% of children and adults who are infected. Chronic HBV infection is also more common in persons with immunodeficiency.

D. Disease Burden in Nevada

HBV is of low endemicity to Nevada. Between 2012 and 2023, Nevada DPBH received reports of 274 acute HBV infections and 878 chronic infections. There is no definite and consistent seasonal pattern that HBV infection follows.

See the Nevada Office of State Epidemiology Communicable Disease Dashboard for Nevada specific data on hepatitis B (Hepatitis section).

E. Reservoirs

Humans are the only reservoirs. Chimpanzees are susceptible, but an animal reservoir in nature has not been recognized.

F. Modes of Transmission

Transmission occurs by percutaneous and mucosal exposure to infected body fluids. Since HBV is stable on environmental surfaces for at least 7 days, indirect inoculation of HBV can occur via inanimate objects. Fecal-oral or vector-borne transmission has not been demonstrated.

Body substances capable of transmitting HBV include blood and blood products; saliva; cerebrospinal fluid; peritoneal, pleural, pericardial, and synovial fluid; amniotic fluid; semen and vaginal secretions; any other body fluid containing blood; and unfixed tissues and organs.

Major modes of HBV transmission include sexual or close household contact with an infected person, perinatal mother-to-infant transmission, and injecting drug use.

G. Incubation Period
The incubation period is usually between 45 and 180 days with an average of 60-90 days.

H. Period of Communicability
A person is infectious as long as hepatitis B surface antigen (HBsAg) or HBV DNA is detectable in the blood.

I. Testing
Depending on indication, may test for HBsAg, antibody to hepatitis B surface antigen (anti-HBs), and/or total antibody to hepatitis B core antigen (total anti-HBc). Details about specimen collection may be found at the Nevada State Public Health Laboratory's website.

J. Treatment
No treatment for unaccompanied acute HBV is infections is recommended. Treatment with a nucleoside or nucleotide analogue is indicated if there is concern for severe infection with acute liver failure.

Provide most current treatment guidelines from Red Book to the healthcare provider or refer case to physician for proper treatment for hepatitis B.

III. EPIDEMIOLOGIC CASE INVESTIGATION
The public health authority should begin investigating the case of hepatitis B, step by step, within one working day of notification or in alignment with NAC 441A.

A. Step 1: Review relevant information about the disease.
1. Review scientific information in Control of Communicable Diseases Manual, most recent edition.

2. Review Hepatitis B, acute and chronic most recent case definition (2024 CDC).

B. Step 2: Begin investigating the case.
1. Contact Reporting Source and/or Reported Case

Upon receiving an initial case report, review lab test results and available clinical details and epidemiologic factors. Please make three attempts to contact the case (text and phone calls) on separate days, at different times of the day (morning, afternoon, late afternoon). Document all attempts to contact a reporting source and/or reported case, preferably in the "Encounters" tab of EpiTrax. Please use case report forms (CRF) to gather accurate information about the case. Focus on the key data elements listed above. Filling out an electronic version of the CRF in EpiTrax (called a Confidential Morbidity Report (CMR) in

EpiTrax) is preferred. If used, the completed PDF version should be attached to the CMR in EpiTrax. The CRF should be completed within 7 days of completing the investigation of the case.[11]

C. Step 3: Identify potential sources of infection

The investigation focuses on exposures in the 60-150 days before onset. Hepatitis B is spread when blood, semen, or other body fluids – even in microscopic amounts — from a person infected with the hepatitis B virus enters the body of someone who is not infected. Ask about any risk factors for infection including but not limited to sexual history, injection drug use/sharing needles, travel, medical history and occupational exposures to blood or body fluids.

D. Step 4: Initiate control measures for case and/or for contacts (see Section IV – Section VI below).

E. Step 5: Provide Education and Prevention messaging to the case and/or contacts (see Section IX below).

IV. CONTROL OF CASE[1,16,17]

All newly diagnosed acute and chronic hepatitis B patients should be advised on how to prevent transmission to others.

1. Management/Exclusions for Specific Groups or Settings

	Symptomatic	Asymptomatic
Sensitive Occupation	N/A	N/A
Childcare/School Attendee	N/A	N/A
Case in a Medical Facility	Blood & body fluid precautions and universal precautions	
General Population	Educate on how to prevent transmission to others. Patients should also be referred for hepatitis B-directed medical care and recommended to receive vaccination against hepatitis A, if indicated.	
Pregnant Woman	Pregnant women must be screened by their healthcare provider for hepatitis B. If positive, a pregnant woman should receive education on how to protect the baby from hepatitis B and be provided medical care as indicated.	

2. Exclusion Notifications

Cases should be contacted by phone to provide information about how to prevent transmission to others. If a case is unable to be contacted by phone, they may be contacted by email or by any other contact method that has been acquired for the case.

V. CONTROL OF CONTACTS[1,2,16]

Contacts may be identified during the case investigation process by asking the case about their pregnancy status, sexual history, injection drug use/sharing needles, medical history and other ways other individuals may have been exposed to their blood or body fluids. If resources allow, contacts should be identified and testing, postexposure prophylaxis, counseling, and linkage to care coordinated, as appropriate. Information regarding hepatitis B vaccination and prophylaxis can be found on the ACIP recommendations: Hepatitis B vaccine. Investigate symptomatic contacts in the same manner as a case.

1. Management/Exclusions for Specific Groups or Settings

	Symptomatic	Asymptomatic
Sensitive Occupation*	Notify the individual of the potential exposure. The individual should report the potential exposure to their employing agency and the agency shall make available to the individual a confidential medical evaluation and follow-up.	
Childcare/School Attendee	N/A	N/A
Contact in a Medical Facility	Blood & body fluid precautions and universal precautions	
General Population	For previously unimmunized persons who were exposed to blood or body fluids from an HBsAg positive source, hepatitis B vaccine should be administered as soon as possible following exposure, ideally within 2 weeks of exposure. Hepatitis B immune globulin (HBIG) should be administered as indicated. For previously immunized persons exposed to an HBsAg positive source, postexposure prophylaxis is not needed in cases with a protective antibody response to immunization) anti-HBs titer of ≥ 10 milli-IUs/mL). For persons whose response to immunization is unknown, hepatitis B vaccine and/pr HBIG should be administered.	
Infants Born to HBsAg Positive Mothers	Should receive a single dose of vaccine within 12 hours of birth and, where available and depending on the epidemiology, HBIG. The first dose of vaccine should be given concurrently with HBIG, but at a separate site; second and third doses of vaccine (without HBIG) 1-2 and 6 months later. The infant should be tested for success or failure of prophylaxis. Infants who are anti-HBs positive and HBsAg negative are protected and do not need further vaccine doses. Infants found to be anti-HBs negative and HBsAg negative should be reimmunized with a complete vaccine series.	

*Firefighter, police officer, or person providing emergency medical services[18]

2. Exclusion Notifications

The health authority shall notify any persons with whom the case having hepatitis B has had sexual relations and any person with whom the case has shared a needed of their potential exposure to the disease. The notification must inform such persons of the modes of transmission of the disease, methods to prevent transmission of the disease, and their potential need for postexposure prophylaxis, immunization, and testing.[17] Contacts should be notified by phone, email, or any other contact information acquired for the contact.

VI. CONTROL OF CARRIERS[16]

Persons can be *asymptomatic* carriers of hepatitis B.

Carriers may be identified through outbreak investigation or healthcare provider testing. Investigate symptomatic carriers in the same manner as a case.

1. Management/Exclusions for Specific Groups or Settings

	Symptomatic	Asymptomatic
Sensitive Occupation	N/A	N/A
Childcare/School Attendee	N/A	N/A
Carrier in a Medical Facility	Blood & body fluid precautions and universal precautions	
General Population	Educate on how to prevent transmission to others. Patients should also be referred for hepatitis B-directed medical care and recommended to receive vaccination against hepatitis A, if indicated.	

2. Exclusion Notifications

Carriers should be notified by phone, email, or any other contact information acquired for the carrier.

VII. MANAGEMENT OF SPECIAL SITUATIONS/OUTBREAK CONTROL

Coordinate with senior epidemiology staff to determine if an outbreak is occurring. If so, notify DPBH Environmental Health, local health authorities, or infection control, as appropriate.

VIII. PREVENTION

The investigator should reference the most recent disease-specific public educational materials from CDC. The Nevada OSE website also provides information about hepatitis B.

- The best way to prevent hepatitis B is by getting vaccinated. Hepatitis B vaccine is safe and effective. You need to get all the shots in the series to be fully protected.

IX. REFERENCES

1. Hepatitis B. Centers for Disease Control and Prevention. January 12, 2024. Accessed April 29, 2025. https://www.cdc.gov/hepatitis-b/index.html

2. Heyman DL. Hepatitis, viral. In: *Control of Communicable Diseases Manual: An Official Report of the American Public Health Association*. 21st ed. American Public Health Association; 2022.

3. Hepatitis B, acute and chronic 2024 case definition. Centers for Disease Control and Prevention. February 28, 2024. Accessed April 29, 2025. https://ndc.services.cdc.gov/case-definitions/hepatitis-b-acute-and-chronic-2024/

4. Hepatitis B, Perinatal Infection 2017 case definition. Centers for Disease Control and Prevention. April 16, 2021. Accessed April 29, 2025. https://ndc.services.cdc.gov/case-definitions/hepatitis-b-perinatal-virus-infection-2017/

5. Pyrsopoulos NT. Hepatitis B differential diagnoses. Diseases & Conditions - Medscape Reference. October 20, 2022. Accessed February 22, 2024. https://emedicine.medscape.com/article/177632-differential?form=fpf

6. Hepatitis B. World Health Organization. Accessed February 22, 2024. https://www.who.int/news-room/fact-sheets/detail/hepatitis-b

7. *REPORTING OF COMMUNICABLE DISEASES - 441A.225*. Vol 441A.225.; 2021:Section 225. Accessed January 19, 2024. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec225

8. *REPORTING OF COMMUNICABLE DISEASES - 441A.230*. Vol 441A.230.; 2021:Section 230. Accessed January 19, 2024. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec230

9. *REPORTING OF COMMUNICABLE DISEASES - 441A.240*. Vol 441A.240.; 2021:Section 240. Accessed January 19, 2024. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec240

10. *REPORTING OF COMMUNICABLE DISEASES - 441A.235*. Vol 441A.235.; 2021:Section 235. Accessed January 19, 2024. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec235

11. *DUTIES AND POWERS RELATING TO THE PRESENCE OF COMMUNICABLE DISEASES - 441A.290*. Vol 441A.290.; 2021:Section 290. Accessed January 19, 2024. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec290

12. *REPORTING OF COMMUNICABLE DISEASES - 441A.243*. Vol 441A.243.; 2011:Section 243. Accessed September 2, 2025. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec243

13. *REPORTING OF COMMUNICABLE DISEASES - 441A.245*. Vol 441A.245.; 2011:Section 245. Accessed September 2, 2025. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec245

14. *REPORTING OF COMMUNICABLE DISEASES - 441A.250*. Vol 441A.250.; 2021:Section 250. Accessed January 19, 2024. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec250

15. *REPORTING OF COMMUNICABLE DISEASES - 441A.252*. Vol 441A.252.; 2011:Section 252. Accessed September 2, 2025. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec252

16. Hepatitis B Surveillance Guidance. Centers for Disease Control and Prevention. March 14, 2024. Accessed April 29, 2025. https://www.cdc.gov/hepatitis/statistics/SurveillanceGuidance/HepatitisB.htm

17. *Miscellaneous Communicable Diseases - 441A.570*. Vol 441A.570.; 2011:Section 570. Accessed September 2, 2025. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec570

18. *DUTIES AND POWERS RELATING TO THE PRESENCE OF COMMUNICABLE DISEASES - 441A.305*. Vol 441A.305.; 1993:Section 305. Accessed September 2, 2025. https://www.leg.state.nv.us/nac/nac-441a.html#NAC441ASec305

X. ACKNOWLEDGEMENTS

This document was developed based on the content and format of the disease investigation guidelines of several state and local health jurisdictions:

- Oregon Health Authority Investigative Guidelines
- Washington State Department of Health Reporting and Surveillance Guidelines
- Washoe County Health District Epidemiology and Communicable Disease Program Investigation of Communicable Disease Manual

The Nevada Office of State Epidemiology would like to acknowledge the work of these great partners.

XI. UPDATE LOG

Ihsan Azzam, Ph.D., M.D.
Chief Medical Officer

9/4/25
Chief Medical Officer Approval Date