

Acute Hepatitis B

Signs and Symptoms	Often asymptomatic; about 20–30% of newly infected persons meet the acute surveillance case definition with fatigue, abdominal pain, poor appetite or jaundice
Incubation	Typically 60-90 days, range 45-180 days.
Case classification	<p>Confirmed: Meets clinical case definition, is laboratory confirmed and is not known to have chronic hepatitis B</p> <p>Clinical criteria: 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.</p> <p>Laboratory criteria: HBsAg positive, AND IgM anti-HBc positive (if done)</p> <p>*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.</p>
Differential diagnosis	Hepatitis A or C, chemical hepatitis (e.g., alcoholism, medications, natural remedy), autoimmune hepatitis, biliary disease, malignancy, metabolic disease (e.g., Wilson's)
Treatment	Supportive
Duration	Acute illness asymptomatic or lasting several weeks
Exposure	Blood (shared drug paraphernalia, rarely medical device or procedure), sexual fluids, birth; acute case communicable before symptom onset until resolved, chronic case communicable lifelong
Laboratory testing	<p>Local Health Jurisdiction (LHJ) and Communicable Disease Epidemiology (CDE) arrange testing if suspected cluster.</p> <ul style="list-style-type: none"> Washington State Public Health Laboratories (PHL) will hold specimen or forward to CDC. Best specimen: Acute serum, spun down, separated, and frozen immediately. See: https://www.cdc.gov/hepatitis/hdv/pdfs/cdc_50.34_specimensubmission.pdf <p><i>Specimen shipping (Section 4):</i></p> <ul style="list-style-type: none"> Hospital to keep all specimens frozen, ship with dry ice and Serology form https://www.doh.wa.gov/Portals/1/Documents/5230/302-017-SerVirHIV.pdf
Public health actions	<ul style="list-style-type: none"> Interview case for exposures including potential bloodborne and health care exposures If suspected health care-associated case report to CDE at 206-418-5500 or 877-539-4344. <i>Infection control:</i> Standard precautions in healthcare setting Facilitate collection and freezing of serum if possible health care exposure, test if cluster Identify susceptible contacts and recommend HBIG/vaccine as appropriate Educate acute case to avoid alcohol; obtain hepatitis A vaccine if needed; get evaluated for hepatitis C if needed; and avoid transmission to others: use barrier methods during sex, don't share drug paraphernalia, blood testing equipment, razor, toothbrush, or nail clippers. Retest adult in 6+ months to establish if infection cleared May need to recommend special precautions to healthcare provider with acute infection Enter case into WDRS

Chronic and Perinatal Hepatitis B

Signs and Symptoms	<ul style="list-style-type: none"> • Chronic HBV: typically asymptomatic, often diagnosed due to screening or liver damage • Perinatal HBV: typically (but not always) asymptomatic
Case classification	<p>Chronic HBV, Confirmed: IgM anti-HBc negative and any confirming positive test OR two confirming positive tests within 6 months</p> <p>Chronic HBV, Probable: single positive: HBsAg, HBeAg or nucleic acid testing (qual, quant, or genotype) and is not clinically consistent with acute infection</p> <p>Clinical criteria: no symptoms required.</p> <p>Laboratory criteria: IgM anti-HBc negative AND a positive result on one of the following tests: HBsAg, 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</p> <p>Pregnancy in woman who is positive for HBsAg: positive HBsAg test in pregnant woman</p> <p>Perinatal HBV, Confirmed: Child born in the US to a HBV-infected mother and positive for HBsAg at ≥ 1 month of age and ≤ 24 months of age OR positive for HBeAg or HBV DNA ≥ 9 months of age and ≤ 24 months of age.</p> <p>Perinatal HBV, Probable: Child born in the US and positive for HBsAg at ≥ 1 month of age and ≤ 24 months of age OR positive for HBeAg or HBV DNA ≥ 9 months of age and ≤ 24 months of age, but whose mother's hepatitis B status is unknown.</p>
Differential diagnosis	Hepatitis A or C, chemical hepatitis (e.g., alcoholism, medications, natural remedy), autoimmune hepatitis, biliary disease, malignancy, metabolic disease (e.g., Wilson's)
Treatment	Consult GI specialist for antiviral protocols
Duration	Chronic infection lifelong
Exposure	Blood (shared drug paraphernalia, rarely medical device or procedure), sexual fluids, birth; acute case communicable before symptom onset until resolved, chronic case communicable lifelong
Laboratory testing	<p>Local Health Jurisdiction (LHJ) and Communicable Disease Epidemiology (CDE) arrange testing if suspected cluster.</p> <ul style="list-style-type: none"> • Washington State Public Health Laboratories (PHL) will hold specimen or forward to CDC. • Best specimen: Acute serum, spun down, separated, and frozen immediately. See: https://www.cdc.gov/hepatitis/hdv/pdfs/cdc_50.34_specimensubmission.pdf <p><i>Specimen shipping (Section 4):</i></p> <ul style="list-style-type: none"> • Hospital to keep all specimens frozen, ship with dry ice and Serology form https://www.doh.wa.gov/Portals/1/Documents/5230/302-017-SerVirHIV.pdf
Public health actions	<ul style="list-style-type: none"> • Interview case for exposures including potential bloodborne and health care exposures • If suspected health care-associated case report to CDE at 206-418-5500 or 877-539-4344. • <i>Infection control:</i> Standard precautions in healthcare setting • Facilitate collection and freezing of serum if possible health care exposure, test if cluster • Identify susceptible contacts and recommend HBIG/vaccine as appropriate • Educate case to avoid alcohol; obtain hepatitis A vaccine if needed; get evaluated for hepatitis C if needed; and avoid transmission to others: use barrier methods during sex, don't share drug paraphernalia, blood testing equipment, razor, toothbrush, or nail clippers. • Infants born to HBV-infected mothers should receive HBIG and the first dose of HepB vaccine within 12 hours of birth, followed by the second and third doses of HepB vaccine at 1 and 6 months of age, respectively. Post-vaccination serologic testing for HBsAg and anti-HBsAg is recommended 1 to 2 months following completion of the vaccine series, but not earlier than 9 months of age. • Enter case into WDRS

Hepatitis B

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To identify sources of infection and prevent further transmission from such sources.
2. To identify new groups at risk and reduce further cases.
3. To inform cases about treatment options.
4. To educate cases about hepatitis B and how to reduce the risk of transmission.
5. To identify contacts and recommend appropriate preventive measures.
6. To better understand the epidemiology of hepatitis B virus infection and the burden of morbidity from chronic infection.

B. Legal Reporting Requirements (See Appendix A)

1. Acute Hepatitis B

- a. Health care providers: notifiable to local health jurisdiction within 24 hours
- b. Health care facilities: notifiable to local health jurisdiction within 24 hours
- c. Laboratories: hepatitis B virus (acute) by IgM positivity notifiable within 24 hours. Specimen submission is on request only in outbreak settings.
- d. Local health jurisdictions: notifiable to Washington State Department of Health (DOH) Communicable Disease Epidemiology (CDE) (206-418-5500) within 7 days of case investigation completion or summary information required within 21 days

2. Chronic Hepatitis B (initial diagnosis and previously unreported prevalent cases)

- a. Health care providers: notifiable to local health jurisdiction within one month
- b. Health care facilities: notifiable to local health jurisdiction within one month
- c. Laboratories: all hepatitis B virus by HBsAg (surface antigen), HBeAg (e antigen), or HBV DNA notifiable to local health jurisdiction of patient residence (or ordering health care provider, if patient residence is unknown) on a monthly basis
- d. Local health jurisdictions: notifiable to DOH CDE within 7 days of case investigation completion, or summary information required within 21 days of initial notification to local health authorities.

3. Hepatitis B Surface Antigen Positive (HBsAg+) Pregnant Women (each pregnancy)

- a. Health care providers: notifiable to local health jurisdiction within 3 business days
- b. Health care facilities: notifiable to local health jurisdiction within 3 business days
- c. Laboratories: all hepatitis B virus by HBsAg (surface antigen), HBeAg (e antigen), or HBV DNA notifiable on a monthly basis.

- d. Local health jurisdictions: notifiable to DOH Office of Immunization and Child Profile (OICP) (360-236-3595) Perinatal Hepatitis B Prevention Program within 7 days of case investigation completion, or summary information required within 21 days of initial notification to local health authorities.

4. Perinatal Hepatitis B

- a. Health care providers: notifiable (as acute hepatitis B) to local health jurisdiction within 3 business days of receiving confirming test result.
- b. Health care facilities: notifiable (as acute hepatitis B) to local health jurisdiction within 3 business days of receiving confirming test result.
- c. Laboratories: all hepatitis B virus by HBsAg (surface antigen), HBeAg (e antigen), or HBV DNA notifiable on a monthly basis.
- d. Local health jurisdictions: notifiable to CDE (206-418-5500) 7 days of case investigation completion.

C. Local Health Jurisdiction Investigation Responsibilities

Determine if the person was previously reported as an acute or chronic hepatitis B case.

1. Acute hepatitis B

- a. Begin follow-up investigation within one working day.
- b. Recommend hepatitis B immune globulin (HBIG) and/or vaccine as indicated for susceptible contacts.
- c. Attempt to determine the source of infection, particularly medical or dental exposures including diabetes blood testing in residence facilities.
- d. Educate the case about hepatitis B and how to reduce the risk of transmission.
- e. Educate the case about minimizing disease progression and emphasize the importance of vaccination for hepatitis A. If applicable, recommend measures such as not sharing injection drug equipment to prevent possible future infection with bloodborne agents.
- f. Report all *confirmed* acute hepatitis B cases to CDE. Complete the case report form (<https://www.doh.wa.gov/Portals/1/Documents/5100/210-031-ReportForm-HepB-Acute.pdf>) and enter the data into the Washington Disease Reporting System (WDRS) as an acute hepatitis B case.

2. Chronic hepatitis B

Local health jurisdiction investigation responsibilities relate to all *confirmed* and *probable* cases of chronic hepatitis B. Check WDRS to determine if case is newly-reported or previously-reported.

For previously-reported cases, if case is already confirmed, no further action is required. If the case classification was previously probable, enter laboratory results into WDRS and ensure case classification updates to confirmed.

For newly-reported cases, collect basic case reporting information including laboratory test results, demographics and risk factor information. Within 7 days of completing an investigation, enter data into WDRS. The surveillance data collection form is available at:

(<https://www.doh.wa.gov/Portals/1/Documents/5100/420-225-ReportForm-HepB-ChronicSurveillance.pdf>). The patient interview form is available at: (<https://www.doh.wa.gov/Portals/1/Documents/5100/210-078-ReportForm-HepB-ChronicInterview.pdf>).

3. Ensure each pregnancy in a HBsAg positive woman is reported to the local Perinatal Hepatitis B Coordinator who will enroll the woman in the Perinatal Hepatitis B Prevention Program (PHBPP), and report to the DOH Office of Immunization and Child Profile (OICP) Perinatal Hepatitis B Prevention Coordinator by entering information into the Perinatal Hepatitis B Module (PHBM). Investigate if the report is an initial diagnosis of chronic (or less likely acute) infection (see above). The local Perinatal Hepatitis B Prevention Coordinator will track the pregnancy, ensure the infant is appropriately treated starting at birth, and recommend testing for the infant at the appropriate time.
4. Report all infants who meet the case definition for perinatal hepatitis B virus infection to CDE. Enter the report in WDRS as new case of perinatal hepatitis B. Note that discrete onset of symptoms is **not** required for perinatal hepatitis B cases.
5. Local health jurisdiction priorities in conducting chronic hepatitis B case investigations should include follow-up of cases among women of child-bearing age (reported from sources other than an obstetrician), as well as cases for whom age or other risk factor(s) suggests new transmission (see Section 5 for more guidance). Whenever possible, these cases and all other persons with chronic hepatitis B should receive messaging regarding ways to protect and promote liver health, and to prevent transmission to others. Key messages include avoiding liver toxins (particularly alcohol), the importance of both hepatitis-related and routine primary care, as well as recommendation for hepatitis C and HIV screening as necessary, along with hepatitis A vaccination as indicated. All persons should be provided or otherwise directed to resources promoting patient education, access to care and self-management. Sources include the Hepatitis Education Project (<http://hepeducation.org/>) and CDC ([CDC DVH - Hepatitis B - Patient Education Resources](#)). See Section 6 below for further messaging details.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Hepatitis B virus (HBV) is a DNA virus in the Hepadnaviridae family. It is one of several viruses known to cause hepatitis in humans. Hepatitis B virus is completely unrelated to the viruses that cause hepatitis A, hepatitis C, hepatitis D, and hepatitis E.

B. Clinical Manifestations

Hepatitis B virus infection may be transient or chronic, and either may be asymptomatic. If acute symptoms occur, onset is usually insidious with loss of appetite, right upper quadrant abdominal discomfort, nausea and vomiting, fatigue, and sometimes arthralgia or rash, with illness often progressing to jaundice. Liver enzyme levels may be markedly elevated. Fever may be absent or mild. Rarely, acute infections result in fulminant liver necrosis and death. Hepatitis B cannot be reliably distinguished clinically from hepatitis A, hepatitis C, or other viral hepatitis. Asymptomatic infections are the rule in infants or young children, and are not uncommon even among adults. For this reason many people have serologic evidence of previous infection but do not recall a consistent illness.

Chronic hepatitis B infection carries a risk of severe sequelae (e.g., chronic active hepatitis, cirrhosis, or hepatic cancer) decades later. The likelihood of chronic infection occurring is highest for younger ages. Around 5-10% of acute infections in adults become chronic, compared with as many as 90% of perinatal infections. As a result, perinatal hepatitis B has a high health burden globally, particularly in areas with high prevalence.

C. Hepatitis B in Washington

In recent years, Department of Health received approximately 35–80 reports of acute hepatitis B with one death due to fulminant disease and 1100–1200 reports of chronic hepatitis B per year. The Office of Immunization’s Perinatal Hepatitis B Prevention Program follows about 380 reported hepatitis B surface antigen-positive pregnant women per year with reports of 0 up to 7 cases of perinatal hepatitis B virus infections per year.

D. Reservoir

Infected humans. Chronic cases are probably the most important sources of hepatitis B virus transmission because they are infectious for many years, compared to the few weeks that resolved acute hepatitis B are infectious. Efforts to identify persons with chronic infections and to offer prophylaxis to their contacts are thus at least as important as follow-up directed towards acute cases. Infected pregnant women particularly need follow-up so post-exposure prophylaxis can be given to prevent hepatitis B in the newborn, which would carry a high risk of developing chronic infection. About 10% of perinatal hepatitis B infection will eventually result in cirrhosis or liver cancer.

E. Modes of Transmission

Hepatitis B virus is usually transmitted by contact with the blood, semen or vaginal secretions of an infected (HBV DNA-positive or HBsAg-positive) person. The virus is introduced through mucous membranes or broken skin. HBV may also be found at low levels in saliva and other body fluids; breast feeding is *not* a significant route of transmission, however. Infection can occur with minor blood contact, such as within a household, and often a specific exposure event cannot be determined.

Known hepatitis B transmission modes include sharing blood-contaminated object (e.g., drug paraphernalia, razor blade), sexual; less commonly blood or sexual fluid into mucosa or broken skin (e.g., blood splash in an eye), receipt of blood product or organ, or exposure to blood-contaminated medical equipment (e.g., endoscope, shared diabetes testing device) or drug vial. Nosocomial transmission was significant in the past but outbreaks still occur. In utero transmission is rare, but perinatal transmission occurs in about a third of deliveries to infected women unless the infant receives prompt post-exposure prophylaxis with hepatitis B immune globulin and hepatitis B vaccine series initiation. Under some conditions, hepatitis B virus remains viable on environmental surfaces for over a week (e.g., dried blood) but the contribution to transmission is unknown.

While the US has a low prevalence of hepatitis B virus infection (<2%), there is a higher prevalence in many areas of the world. Estimations of worldwide prevalence of chronic hepatitis B infection are available:

<https://wwwnc.cdc.gov/travel/yellowbook/2018/infectious-diseases-related-to-travel/hepatitis-b>

F. Incubation Period

For hepatitis B varies from 45 to 180 days—usually between 60 and 90 days.

G. Period of Communicability

A person is communicable while HBsAg, HBV DNA is present in the blood, regardless of symptoms. If symptoms occur, viremia begins several weeks before onset and lasts several months if the infection resolves, or indefinitely in chronic infections.

H. Treatment

Antiviral drugs are available for the treatment of chronic hepatitis B based on appropriate medical evaluation by a specialist. See: <https://www.aasld.org/publications/practice-guidelines-0>

3. CASE DEFINITIONS

A. Acute Hepatitis B (2012)

1. Clinical case definition: 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 result (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.

2. Laboratory criteria for diagnosis:
 - HBsAg positive, AND
 - Immunoglobulin M (IgM) antibody to hepatitis B core antigen (IgM anti-HBc) positive (if done)
3. Case classification

Confirmed:

a case that meets the clinical case definition, is laboratory confirmed, and is not known to have chronic hepatitis B, **OR**

a case with documented seroconversion regardless of symptoms

B. Chronic Hepatitis B (2012)

1. Clinical description: No symptoms are required. Persons with chronic 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.
2. Laboratory criteria for diagnosis
 - 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 result 2 times tested at least 6 months apart. (Any combination of 2 positive tests performed 6 months apart is acceptable.)
3. Case classification

Confirmed: a case that meets either laboratory criterion for diagnosis

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

C. Hepatitis B Surface Antigen Positive Pregnant Women

1. Case classification

Confirmed: Any pregnant woman who tests positive for hepatitis B surface antigen

Comment: Infants born to HBV-infected mothers should receive HBIG and the first dose of HepB vaccine within 12 hours of birth, followed by the second and third doses of HepB vaccine at 1 and 6 months of age, respectively. Post-vaccination serologic testing for HBsAg and anti-HBsAg is recommended 1 to 2 months following completion of the vaccine series, but not earlier than 9 months of age.

D. Perinatal Hepatitis B (2017)

1. Clinical case definition: Perinatal hepatitis B in the newborn may range from asymptomatic to fulminant hepatitis
2. Laboratory criteria for diagnosis:
 - positive hepatitis B surface antigen (HBsAg) test (only if at least 4 weeks after last dose of Hep B vaccine)
 - positive hepatitis B e antigen (HBeAg) test
 - detectable HBV DNA
3. Epidemiologic linkage: Born to an HBV-infected mother.
4. Case classification

Probable: Child born in the US and positive for HBsAg at ≥ 1 month of age and ≤ 24 months of age **OR** positive for HBeAg or HBV DNA ≥ 9 months of age and ≤ 24 months of age, 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 \geq 1 month of age and \leq 24 months of age **OR** positive for HBeAg or HBV DNA \geq 9 months of age and \leq 24 months of age.

Comment: Perinatal hepatitis B cases are reported to CDC by infant's year of diagnosis.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Laboratory Diagnosis

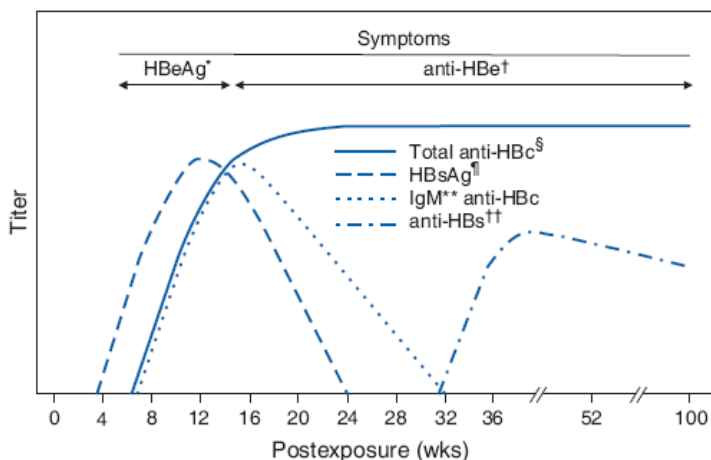
Acute and chronic hepatitis B infections are most commonly diagnosed by identifying specific antigens or antibodies in the blood. The most common serologic markers and the interpretations are shown in Table 1. An explanation of the antigens/antibodies tested can be found in Appendix B. Recently, newer molecular tests have been developed to detect HBV DNA in serum. These tests are primarily used for patients with chronic hepatitis B to determine candidacy for and response to antiviral therapies.

Table 1. Typical interpretation of test results for hepatitis B virus infection

HBsAg	Total anti-HBc	IgM anti-HBc	Anti-HBs	HBV DNA	Interpretation
-	-	-	-	-	Never infected
+	-	-	-	+ or -	Early acute infection; transient (up to 18 days) after vaccination
+	+	+	-	+	Acute infection
-	+	+	+ or -	+ or -	Acute resolving infection
-	+	-	+	-	Recovered from past infection and immune
+	+	-	-	+	Chronic infection
-	+	-	-	+ or -	False-positive (i.e., susceptible); past infection; "low-level" chronic infection; or passive transfer of anti-HBc to infant born to HBsAg+ mother
-	-	-	+	-	Immune if anti-HBs concentration is \geq 10 mIU/mL after vaccine series completion; passive transfer after HBIG administration

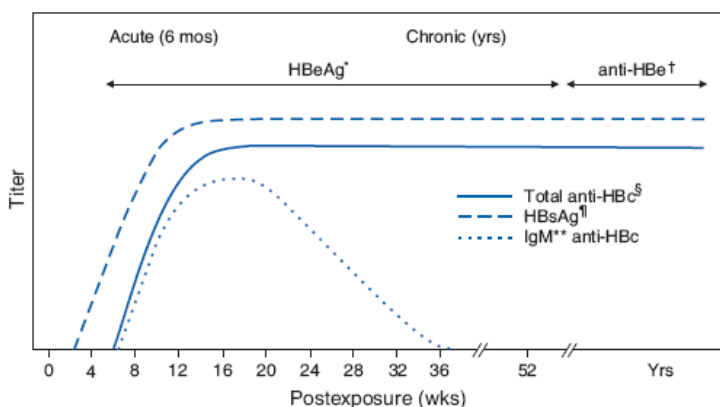
A typical serologic course of acute hepatitis B with recovery or with progression to chronic infection is shown in Figures 1 and 2. Occasionally, a person will have neither HBsAg nor anti-HBs detectable during late acute illness but may still be infectious for 1–2 weeks. During this “window phase,” the only positive serological test may be core antibodies (anti-HBc).

FIGURE 1. Typical serologic course of acute hepatitis B virus infection with recovery



* Hepatitis B e antigen.
 † Antibody to HBeAg.
 § Antibody to hepatitis B core antigen
 ¶ Hepatitis B surface antigen.
 ** Immunoglobulin M.

FIGURE 2. Typical serologic course of acute hepatitis B virus (HBV) infection with progression to chronic HBV infection



* Hepatitis B e antigen.
 † Antibody to HBeAg.
 § Antibody to hepatitis B core antigen
 ¶ Hepatitis B surface antigen.
 ** Immunoglobulin M.

Source: Centers for Disease Control and Prevention. Recommendations for Identification and Public Health Management of Persons with Chronic Hepatitis B Virus Infection. MMWR 2008;57(No. RR-8):1–20.

In occult HBV infection HBV DNA is detected but not HBsAg. An occult HBV infection may reactivate if the person develops immunosuppression due to disease or therapeutics such as during treatment for malignancy.

Rare hepatitis B virus “escape mutants” with altered HBsAg have been reported. Serology of an infected person shows HBeAg and anti-HBs, and there will also be detectable HBV DNA. Vaccine and HBIG are not effective against escape mutant viruses, which can be responsible for vaccine failures. Other mutant forms of hepatitis B viruses have been found after liver transplant.

B. Tests Available at the Washington State Public Health Laboratories (PHL)

Tests for hepatitis B are widely available at commercial laboratories. In certain cluster investigations, Communicable Disease Epidemiology (CDE) may request a specimen from a case for molecular sequencing at the Centers for Disease Control and Prevention.

See: https://www.cdc.gov/hepatitis/hdv/pdfs/cdc_50.34_specimensubmission.pdf. CDE will complete the special CDC hepatitis submission form (HRL manifest).

Note that PHL require all clinical specimens have two patient identifiers, a name **and** a second identifier (e.g., date of birth) both on the specimen label and on the submission form. Due to laboratory accreditation standards, specimens will be rejected for testing if not properly identified. Also include specimen source and collection date.

C. Specimen Collection

Anti-HBV serology can be done from onset of symptoms to 4–6 months after onset. Virus is detectable lifelong in chronic cases. Obtain a serum or EDTA tube, spin promptly, separate the serum into a shipping tube, and promptly ship cold with PHL Virology form: <https://www.doh.wa.gov/Portals/1/Documents/5230/302-017-SerVirHIV.pdf>

5. ROUTINE CASE INVESTIGATION

A. Evaluate the Diagnosis

Review laboratory tests to distinguish between acute and chronic cases of hepatitis B virus infections. Check WDRS and follow up a newly diagnosed acute or chronic case.

1. Health Care Provider or Health Care Facility Report of Acute Case or Laboratory Evidence of Acute Infection (i.e., IgM anti-HBc positive):
 - Obtain information from the health care provider, hospital infection control staff, or patient to determine if the patient meets the acute hepatitis B case definition.
 - If the patient meets the acute hepatitis B case definition, proceed to Section 5B.
 - Local health jurisdictions are encouraged to provide education (see Section 6) to patients who meet the chronic hepatitis B case definition, focusing efforts on those likely to have a new diagnosis or potential nosocomial exposure.
2. Laboratory Reports Only (including reports from hospital laboratories):
 - Determine if the patient has been previously reported as a case.
 - If hepatitis B infection has not been previously reported for this patient, proceed with case investigation activities as described above in Local Health Jurisdiction Investigation Responsibilities (Section 1C). Priority in investigations should also be given to any case likely to be associated with a healthcare facility or medical device (e.g. dialysis).
 - Persons who meet the acute hepatitis B case definition should be investigated as described in Section 5B. An acute hepatitis B event should be created for the person in WDRS.
 - If the patient was previously reported as an acute hepatitis B case, and new laboratory evidence indicates chronic infection, report a new chronic hepatitis B event for this person including the case classification (probable or confirmed) indicated by the newly reported laboratory data.

- If the patient was previously reported as a confirmed chronic case, no further active investigation is needed. Update the existing case report as necessary with any descriptive (e.g. demographic) data newly reported in the current lab report.
- If the patient was previously reported as a probable chronic case, and the new laboratory evidence suggests confirmed infection (i.e. IgM anti-HBc negative and HBsAg positive, OR HBsAg or HBV DNA positive 6 months or more following an initial positive), update the case classification to confirmed, enter any new laboratory test result data, and update the case record with any newly reported information.
- Local health jurisdiction priorities in conducting chronic hepatitis B case investigation should include at a minimum determining if the report involves a pregnant woman and identifying reports in which suggests a new transmission is suggested by risk factors or age under 40 years for example.
- If the report involves a pregnant woman see Section 7E and F.
At every opportunity, local health jurisdictions are encouraged to provide patient education messaging, materials and resources see Section 1.C. and Section 6.

B. Identify the Source of Infection

For acute infections and those suspected to have been infected through medical, dental or commercial procedures, collect information about possible exposures, including high risk behaviors, during the period 45–180 days before the onset of illness. Particular emphasis should be placed on the 60–90 days before onset. However, detailed investigation of earlier exposures may be appropriate for a person with documented negative hepatitis status prior to a specific event such as a medical procedure with subsequent positive test.

Exposure information should include:

- Parenteral drug use.
- Close contact with any household member, sexual partner or acquaintance with recent hepatitis or known chronic infection (obtain names, phone numbers, and addresses).
- Occupational or other needlestick injuries.
- Receipt of blood transfusion, other blood products, tissues, or organs.
- Potential medical or dental exposures within the 6 months prior to onset of current illness, including organ or tissue transplant, dialysis, dental or surgical care, and diabetes blood testing in a long term residential facility.
- Other parenteral exposures within the 6 months prior to onset of current illness, including tattooing, piercing, or acupuncture.
- Accidental exposure of skin, eyes, mucous membranes, or a wound to blood of another person.
- Work in occupational settings with elevated risk of exposure (e.g., medical, dental, or clinical laboratory setting, or facilities for mentally disabled persons).
- Sexual contact (homosexual or heterosexual) with multiple sex partners or a sex partner with a risk for hepatitis B virus infection.

Identifying a specific source of infection for recently identified chronically infected persons may be difficult, if not impossible. Possible sources should be pursued if there is a good chance of identifying additional chronic hepatitis B infections or a preventable source. For example, if the newly diagnosed case is a child, it would be reasonable to screen parents and other household members for evidence of infection. Likely health or dental care associated exposures should also be investigated.

C. Identify Potentially Exposed Persons

1. Identify persons potentially exposed to the case during the communicable period. These include household members, sexual contacts, drug paraphernalia sharing contacts, and others potentially exposed to blood or sexual fluids. See Section 6 below for additional information regarding contact management.
2. If the case is a dentist, surgeon, or other health care worker, evaluate the potential for exposing patients (see Section 7A).
3. Determine if case has donated blood or plasma in the 6 months prior to onset or any time thereafter. If so, notify the blood bank or plasma center with particulars (date, etc.)
4. If the patient is pregnant, see Section 7E.

D. Environmental Evaluation

Usually none, unless exposure and/or transmission may have occurred in a child care center, dialysis center, or health care facility by means of environmental surfaces or inanimate objects.

6. CONTROLLING FURTHER SPREAD

A. Infection Control Recommendations/Case Management

1. Hospitalized patients should be cared for using standard precautions. All health care providers with risk for blood exposure should complete the hepatitis B vaccine series.
2. Residential or child care restrictions: The risk of transmission of hepatitis B virus in the residential or child care setting is usually low, and can be reduced through sound infection control procedures and environmental cleanliness. Personal items that could be contaminated with blood or saliva should not be shared. Contaminated objects or surfaces should be cleaned and disinfected as soon as possible. The risk is greatest for an individual with HBeAg-positive chronic infection, open skin lesions, demonstrated aggressive scratching or biting behavior, a bleeding disorder, or manifesting frank breaches of personal hygiene. Immunization is recommended for staff and patients in residential care settings with developmentally disabled patients. The health jurisdiction should carefully evaluate situations involving a child care facility to determine whether exclusion of the child from child care or vaccination of classroom contacts is indicated.
3. Health care work restrictions: If the case is a health care worker with potential for exposing patients, see Section 7A.
4. Persons who are HBV DNA-positive or HBsAg-positive should be instructed that their blood and other body fluids (particularly semen or vaginal secretions) are infectious to others, and should be educated about ways to reduce the spread of infection to others.

- Susceptible household and sexual contacts should be advised to obtain a full hepatitis B vaccination series.
 - Surfaces contaminated with saliva and blood should be cleaned and properly disinfected.
 - Cuts and skin lesions should be kept covered.
 - Infected persons should not share items potentially contaminated with blood (e.g., needles, syringes, drug works, blood glucose testing equipment, razors, toothbrushes) with other people. Disposable needles should be used only once. As a last resort, undiluted household bleach can be used to clean syringes and needles. Direct active injection drug users to needle exchange programs and drug rehabilitation services.
 - Infected persons should be educated to practice abstinence, use barrier methods, or otherwise practice “safer” sex with potentially susceptible partners. Susceptible partners should be vaccinated against hepatitis B.
 - Infected persons should not donate blood, plasma, tissue, organs or semen.
 - Infected pregnant women and their healthcare providers should make sure prompt preventive treatment is given to the newborn.
 - HBsAg-positive persons who seek medical or dental care should notify involved personnel of their hepatitis B status.
5. Persons with acute hepatitis B should have a repeat test for HBV DNA or HBsAg six months after the first test to determine the clearance or continued presence of viremia. Those who continue to be HBV DNA-positive or HBsAg-positive are considered confirmed chronic infections, and should be counseled accordingly.
6. Persons with chronic hepatitis B or hepatitis D virus infection should be educated to avoid further harm to the liver. Recommendations should include:
- See a provider with experience managing chronic hepatitis B infections and treatment.
 - Ask their provider about use of over-the-counter drugs (e.g., acetaminophen) that can damage the liver.
 - Stop behaviors that could result in transmission of hepatitis B or hepatitis D virus.
 - Not drink alcohol.
 - Get vaccinated against hepatitis A if susceptible.
 - Get tested for hepatitis C infection.
7. Pregnant or sexually active women who could become pregnant should be told about the risk of hepatitis B infection for newborns of infected mothers, and of the importance of prophylaxis for such newborns. If the woman is pregnant, see Section 7E.

B. Contact Management

1. Postexposure Prophylaxis

Passive immunization with HBIG and active vaccination with hepatitis B vaccine together can prevent infection in contacts of acute case and those newly exposed to a chronic hepatitis case (e.g., needle stick injury in a health care provider or new sexual partner). For greatest effectiveness, give prophylaxis as soon as possible after exposure. Consider the exposed person's prior history of hepatitis B infection, vaccination, and vaccine response status (if known), but treatment should not be unduly delayed while awaiting test results.

Postexposure prophylaxis is appropriate in the following situations:

- Perinatal exposure to HBV DNA-positive or HBsAg-positive mother (see Section 7F).
- Nonoccupational exposure to a HBV DNA-positive or HBsAg-positive individual through sexual contact or percutaneous/per mucosal exposure to blood. For greatest effectiveness, prophylaxis should be given as soon as possible after exposure. There are no data to indicate that HBIG is of any value more than 7 days after a percutaneous exposure or 14 days after a sexual exposure. See Table 2.
- Occupational exposure to a HBV DNA-positive or HBsAg-positive or potentially infected individual. For greatest effectiveness, prophylaxis should be given as soon as possible after exposure. There are no data to indicate that HBIG is of any value more than 7 days after a percutaneous exposure. See Table 3.
- Household exposure of an infant < 12 months old to a primary care giver with acute hepatitis B.

Table 2: Guidelines for postexposure prophylaxis* of persons with non-occupational exposure to blood or infected body fluids of a HBV DNA or HBsAg-positive individual

Vaccination status of exposed person	Treatment
Unvaccinated	HBIG [§] x 1 and initiate HB vaccine
Incomplete vaccine series	HBIG [§] x 1 and complete vaccine series
Written documentation of a completed series but antibody response unknown	Single vaccine booster dose

* When indicated, immunoprophylaxis should be initiated as soon as possible, preferably within 24 hours. Studies are limited on the maximum interval after exposure during which postexposure prophylaxis is effective, but the interval is unlikely to exceed 7 days for percutaneous exposures or 14 days for sexual exposures. The hepatitis B vaccine series should be completed once initiated.

[§] Hepatitis B immunoglobulin; dose is 0.06 ml/kg administered IM

Adapted from: MMWR 2006;55(RR-16):30.

Table 3: Recommended postexposure prophylaxis for occupational exposure to HBV

Healthcare personnel status*		Intervention	
		Source HBsAg Positive or Unknown	Source HBsAg Negative
Unvaccinated or incompletely vaccinated		Test baseline total anti-HBs. HBIG [§] x 1 and initiate HB vaccine series. Retest HBsAg and total anti-HBs at 6 months.	Initiate HB vaccine series.. Test anti-HBs 1-2 months after vaccination. Completed
Vaccinated	Documented nonresponder after 6 doses ^{††}	HBIG [§] x 2 separated by 1 month Test baseline total anti-HBs and retest HBsAg and total anti-HBs at 6 months.	No action needed.
	Antibody response unknown after 3 doses	Test anti-HBs. If anti-HBs \geq 10mIU/mL no action needed. If $<$ 10mIU/mL HBIG [§] x 1 and initiate revaccination. Retest HBsAg and total anti-HBs at 6 months.	Test anti-HBs. If $<$ 10mIU/mL initiate revaccination. Retest anti-HBs 1-2 months after vaccination completed.
	Documented responder after \geq 3 doses ^{**}	No action needed.	No action needed.

*Persons documented as previously infected with HBV do not require postexposure prophylaxis

[§] Hepatitis B immunoglobulin; dose is 0.06 ml/kg administered IM

^{**} Responder: person with adequate levels of antibody to HBsAg (anti-HBs \geq 10mIU/mL after \geq 3 doses)

^{††} Nonresponder: person with inadequate response to vaccination (anti-HBs $<$ 10mIU/mL)

^{§§} The option of giving one doses of HBIG and reinitiating the vaccine series is preferred for nonresponders who have not completed a second 3-dose vaccine series. For persons who previously completed a second series but failed to respond, two doses of HBIG are preferred.

Adapted from: MMWR 2013;62 (RR-10):14

https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6210a1.htm?s_cid=rr6210a1_w

2. Contacts of Persons with Chronic Hepatitis B

Long-term sexual contacts and persons who have had direct (percutaneous or mucosal) exposure to blood (e.g., needle-sharing partners) should be educated about transmission of hepatitis and tested for HBsAg and HBsAb if they are not known to be immune or infected. Vaccination can be started when testing is initiated if the contact is unlikely to return for results. If susceptible, the contact should complete the hepatitis B vaccine series and if susceptible the hepatitis A vaccine series. Contacts found to be HBsAg-positive should be evaluated as cases.

Active injection drug users should be directed to needle exchange programs and drug rehabilitation services.

C. Environmental Measures

Ensure that surfaces and objects contaminated with blood are properly disinfected using gloves and appropriate disinfectant solutions

7. MANAGING SPECIAL SITUATIONS

A. Needle sticks and Similar Exposures

The risk of hepatitis B virus (HBV) transmission following unintentional parenteral exposure is 6-20%. See Section 6B for post-exposure prophylaxis.

B. Case is a Health Care Worker

If the case is a dentist, physician, nurse, or other health care worker with potential for exposing patients by blood or other body fluids:

1. The person should be discouraged from working until the acute clinical illness has resolved.
2. Upon return to work, special precautions should be practiced until the worker is no longer infectious, including:
 - Wearing gloves for all procedures during which the hands will be in contact with the patients' mucosal surfaces or broken skin;
 - Avoiding situations involving sharps that could lead to exposures of susceptible persons to blood or objects contaminated with blood of the case;
 - Careful and frequent hand washing.
3. Chronically infected health care workers, particularly those who may be HBeAg-positive, should be encouraged to voluntarily seek confidential counseling from employee health services regarding risk reduction strategies, which evaluation would include a review of their practice by an expert panel.

C. Case is a Suspected Iatrogenic or Healthcare Associated Infection

If two or more possible iatrogenic cases occur in patients of the same dental or healthcare provider, and the cases have no other identified plausible source of infection, or other circumstances suggesting the possibility of iatrogenic infection, notify Communicable Disease Epidemiology. If available, hold frozen serum or EDTA tube (at -70° C) on the cases for potential future laboratory work.

If one case underwent a medical or dental procedure and has no other identified plausible source of infection, contact the dental or health care provider and review infection control procedures. Consider storing serum or EDTA tube (if available) at -70° C for genotyping in the event an additional case is identified with a potential shared exposure. Contact Communicable Disease Epidemiology for instructions.

D. Case Is a Recent Blood Donor or Recipient

The blood bank should be notified so that any unused product can be recalled and other persons be tested as appropriate (e.g., other recipient or donor for case).

E. Testing Pregnant Women for Hepatitis B

All women should be tested during each pregnancy for HBsAg. It is particularly important to screen women born in high prevalence regions or whose mothers were born in such regions (e.g., Africa, Southeast Asia including China, most of the Middle East, South and Western Pacific islands, the interior Amazon River basin, and certain parts of

the Caribbean). High-risk women who are HBsAg negative early in pregnancy should be retested late in pregnancy so that results are available at the time of delivery. Women who test positive for HBsAg should have a complete hepatitis panel, receive education about hepatitis B, and be enrolled in the Perinatal Hepatitis B Prevention Program.

F. Perinatal Hepatitis B Prevention Program (PHBPP)

Health care providers are required to report each pregnancy in a woman with hepatitis B to her local health jurisdiction (LHJ) of residence. Every LHJ in Washington has a Perinatal Hepatitis B Prevention Program (PHBPP) coordinator or has identified a designee to follow up on such reports to assure that the woman is enrolled in the PHBPP which is focused on preventing the spread of hepatitis B virus from infected mothers to newborns.

The goal of a PHBPP is to reduce the incidence of hepatitis B in infants born to infected mothers by establishing an effective follow-up system to assure that each infant born to a woman infected with hepatitis B receives appropriate post-exposure prophylaxis.

Information about this program can be found at

<https://www.doh.wa.gov/ForPublicHealthandHealthcareProviders/PublicHealthSystemResourcesandServices/Immunization/PerinatalHepatitisBPreventionProgram>.

Women that have tested positive for HBV DNA or HBsAg should be enrolled in the program during each pregnancy. The LHJ PHBPP Coordinator should follow up to assure that hepatitis B immunoglobulin (HBIG) and vaccine doses have been given to an infant on a timely basis, that the remaining recommended doses are received and that post-testing for the infant is done. PHBPP guidance for local coordinators (including information on the management of premature infants) is available in the DOH PHBPP Program Manual which can be found at: [Perinatal Hepatitis B Prevention Program Guidelines](#). It can also be obtained by contacting the DOH Office of Immunization and Child Profile (OICP) at 360-236-3595.

The key steps of the program are briefly summarized below:

- 1. Maternal hepatitis B surface antigen testing recommendations:**

All pregnant women should be tested for HBsAg once during each pregnancy and upon admittance for delivery.

- 2. Report and track HBsAg-positive pregnant women:**

All pregnant women that are infected with hepatitis B must be reported to the local perinatal hepatitis B prevention program. Contacts for local health are found at: [PerinatalHepatitisBCoordinatorsList.pdf](#)

- 3. Treat Infants at Birth with HBIG and Hepatitis B Vaccine**

As soon as possible, but always within 12 hours of birth, infants born to mothers infected with hepatitis B (including preterm and low birth weight infants) should be given hepatitis B immune globulin (HBIG) (0.5 ml IM) and, like all other newborns, the first dose of hepatitis B vaccine (0.5 ml IM). HBIG and vaccine can be given simultaneously, but should be given at different body sites.

4. Complete Hepatitis B Vaccine Series

Full-term infants should receive the second and third vaccine doses at ages one to two months and six months. The local health jurisdiction should encourage providers to adhere to this schedule to the extent possible. In addition to receiving the vaccine dose they received at birth, infants with a birth weight <2 kg should receive a full three-dose hepatitis B vaccination series initiated at age one month (i.e., they should receive a total of four vaccine doses).

5. Test Infants

Perinatally-exposed infants should be tested for both anti-HBs and HBsAg 3-6 months following the final dose of vaccine in the series (usually at ~9-12 months of age).

- The local PHBPP coordinator should also notify the DOH PHBPP coordinator of all PHBPP post-immunization serologic test results.
- The presence of anti-HBs indicates immunity to hepatitis B.
- Hepatitis B-immunized children who do not show serologic evidence of immunity after the initial series should repeat the three-dose series.
- Children who fail to respond to the receipt of six doses of vaccine and test positive for HBsAg should be reported through the LHJ communicable disease investigators to DOH Communicable Disease Epidemiology as perinatal hepatitis B cases.
- A HBsAg+ test result obtained on any child under age 2 years whose mother was not enrolled in the PHBPP should be reported to the LHJ communicable disease investigators as a suspected case of perinatal hepatitis B.
- Perinatal hepatitis B is a nationally notifiable condition and will be reported to CDC.

A DOH PHBPP Coordinator is available to work with LHJ PHBPP Coordinators to support patient education and the use of the PHBPP tracking module of the Washington Immunization Information System (WIIS) for case enrollment and management. The DOH PHBPP Coordinator can be reached through the OICP main number: 360-236-3595.

8. ROUTINE PREVENTION

A. Immunization Recommendations

Hepatitis B vaccination is recommended for all infants and children ages 0–18 years old not previously vaccinated or infected. For infants the usual vaccine schedule includes a series of 3 vaccine doses administered at birth, 1–2 months, and 6–18 months.

Hepatitis B vaccination is also indicated for anyone at higher risk of infection due to medical history, lifestyle, occupation, or ongoing close contact with a chronically infected case. Routine vaccination is recommended for the following persons, if susceptible:

- Persons at risk for infection by sexual exposure, particularly those with a sexually transmitted disease, those with more than one partner in the previous 6 months, men who have sex with men, and sexual contacts of infected persons
- Injection-drug users
- Household contacts of persons with chronic hepatitis B infection
- Developmentally disabled persons and staff in long-term and nonresidential child care facilities
- Persons at risk for occupational bloodborne exposure, particularly healthcare workers
- Hemodialysis patients and staff
- Persons with chronic liver disease including hepatitis C infection
- Adults younger than age 60 years with diabetes (when diagnosed); consider for adults 60 years and older with diabetes based on likely need for assisted blood glucose monitoring, risk of infection, and likelihood of immune response to vaccination
- Inmates of correctional facilities
- Travelers to HBV-endemic areas
- Hepatitis C-infected persons
- HIV-infected persons
- Infants/children of immigrants from areas with high rates of HBV infection
- All other persons seeking protection from HBV infection (regardless of risk factors)

Some of these groups should also receive hepatitis A vaccine routinely. For additional information regarding vaccine scheduling, dosing, contraindications, and testing for seroconversion, please see:

Centers for Disease Control and Prevention. Prevention of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices. MMWR 2018; 67(1):1–31. Available at: <https://www.cdc.gov/mmwr/volumes/67/rr/rr6701a1.htm>

Centers for Disease Control and Prevention. Recommendations of the Advisory Committee on Immunization Practices for Use of a Hepatitis B Vaccine with a Novel Adjuvant. MMWR 2018; 67(15):455–458. Available at <https://www.cdc.gov/mmwr/volumes/67/wr/mm6715a5.htm>

Centers for Disease Control and Prevention. Use of Hepatitis B Vaccination for Adults with Diabetes Mellitus: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2011;60:1109–11. <https://www.cdc.gov/mmwr/pdf/wk/mm6050.pdf#page=05>

B. Routine Prevention (Source: <https://www.cdc.gov/hepatitis/index.htm>)

Provide the following information to persons at risk of infection:

- Hepatitis B vaccine is the best protection. Everybody should be vaccinated.
- If you are having sex, but not with one steady partner, use barrier methods correctly and every time you have sex. The efficacy of barrier methods in preventing infection with hepatitis B virus is unknown, but their proper use might reduce transmission.

- If you are pregnant, you should get a blood test for hepatitis B infection. Infants born to hepatitis B-infected mothers should be given HBIG (hepatitis B immune globulin) and vaccine within 12 hours after birth.
- Persons born in countries of high and intermediate hepatitis B virus endemicity (HBsAg prevalence $\geq 2\%$) should be tested.
- U.S.-born persons not vaccinated as infants whose parents were born in countries with high HBV endemicity ($\geq 8\%$) should be tested.
- Do not shoot drugs; if you shoot drugs, stop and get into a treatment program; if you can't stop, never share drugs, needles, syringes, water, cleaning material, or "works", and also get vaccinated against hepatitis A infection.
- Do not share personal care items that might have blood on them (razors, toothbrushes).
- Consider the risks if you are thinking about getting a tattoo or body piercing. You might get infected if the tools have someone else's blood on them or if the artist or piercer does not follow good infection control practices.
- If you have or had hepatitis B, do not donate blood, organs, or tissue.
- If you are a healthcare or public safety worker, get vaccinated against hepatitis B, and always follow routine barrier precautions and safely handle needles and other sharps.

C. Persons recommended to receive serologic testing for hepatitis B

Many persons with chronic HBV infection are unaware of their infection and therefore will not receive education for routine prevention. HBV testing should be offered to:

- Pregnant women
- Infants born to HBsAg-positive mothers
- Household, sexual, or need contacts of hepatitis B surface antigen positive persons
- Persons who are the source of blood or body fluid exposures that might warrant postexposure prophylaxis (e.g., needlestick injury to a healthcare worker)
- HIV-positive persons
- Persons with elevated ALT/AST of unknown etiology
- Hemodialysis patients
- Men who have sex with men
- Past or current persons who inject drugs
- Persons born in countries of high and intermediate HBV endemicity (HBsAg prevalence of $\geq 2\%$)
- US-born persons not vaccinated as infants whose parents were born in countries with high HBV endemicity ($\geq 8\%$)
- Persons needing immunosuppressive therapy, including chemotherapy, immunosuppression related to organ transplantation, and immunosuppression for rheumatologic or gastroenterologic disorders
- Donors of blood, plasma, organs, tissues, or semen

For specifics see: <https://www.cdc.gov/mmwr/volumes/67/rr/rr6701a1.htm>

ACKNOWLEDGEMENTS

This document is a revision of the Washington State Guidelines for Notifiable Condition Reporting and Surveillance published in 2002 which were originally based on the Control of Communicable Diseases Manual (CCDM), 17th Edition; James Chin, Ed. APHA 2000. We would like to acknowledge the Oregon Department of Human Services for developing the format and select content of this document.

UPDATES

January 2011:

The Legal Reporting Requirements section has been revised to reflect the 2011 Notifiable Conditions Rule revision. Criteria were specified for prioritizing investigations of cases likely to be new diagnoses (Section 5).

February 2012:

In Section 3 case definition updated with the required aminotransferase level going from 200 to 100 IU/L. Laboratory criteria include any hepatitis B virus nucleic acid testing including genotype. Documented asymptomatic seroconversion is a confirmed case.

In Section 8, routine vaccination is now recommended for adults with diabetes under 60 years of age.

May 2014: Chronic hepatitis investigations transitioned to sampling framework for enhanced surveillance.

August 2016: Front page added, minor wording changes.

February 2017: Perinatal hepatitis B case definition updated.

April 2018: Perinatal hepatitis B case definition updated. WDRS language updated. References to enhanced surveillance follow-up framework removed.

Appendix A: Hepatitis B Reporting Requirements

**HEPATITIS B
REPORTING REQUIREMENTS
Washington State**

	Health Care Providers	Health Care Facilities	Laboratories	Department of Corrections	Local Health Jurisdictions
	Report to Local Health Jurisdiction	Report to Local Health Jurisdiction	Report to Local Health Jurisdiction	Report to DOH - locations listed below within 7 days of completing case investigation summary information within 21 days	Report to DOH - locations listed below within 7 days of completing case investigation summary information within 21 days
Acute	Within 3 working days	Within 3 working days	Within 1 month	Communicable Disease Epidemiology	Communicable Disease Epidemiology
Pregnancy in HBV surface antigen + women, <i>each</i> pregnancy	Within 3 working days	Within 3 working days	Within 1 month	Immunization Program	Immunization Program
Perinatal Hepatitis B *	Within 3 working days of receiving test result	Within 3 working days of receiving test result	Within 1 month	Communicable Disease Epidemiology	Communicable Disease Epidemiology & Office of Immunization and Child Profile
Chronic	Within 1 month	Within 1 month	Within 1 month	Communicable Disease Epidemiology	To DOH through WDRS

* Perinatal Hepatitis B is defined as a child:

- 1) ≤ 24 months of age
- 2) born to a hepatitis B surface antigen positive (HBsAg+) or HBV DNA positive mother
- 3) testing positive for HBsAg

Most perinatal cases have no symptoms

DOH Communicable Disease Epidemiology
1610 NE 150th Street
Shoreline, WA 98155
206-418-5500
877-539-4344 (24 hr)

DOH Office of Immunization and Child Profile
PO Box 47843
Olympia, WA 98504-7843
360-236-3595

Appendix B: Glossary of Terms

ALT/AST: these are both liver enzymes classified as serum aminotransferases or transaminases and are useful indicators of liver damage. Alanine aminotransferase is usually abbreviated as ALT (or SGOT) and is particularly sensitive for assessing liver damage secondary to HCV. Aspartate aminotransferase is referred to as AST (or SGPT). In acute hepatitis A or B, an elevation in either one is required to meet the case definition, while the hepatitis C case definition requires an elevation in the ALT to over 400 IU/L.

Hepatitis A Testing

IgM anti-HAV: IgM antibody to HAV. Indicates acute infection with HAV.

Anti-HAV total: combined antibody to HAV including IgM with acute infection and IgG with long term protection.

Hepatitis B Testing

HBsAg: hepatitis B surface antigen, a marker of replicating virus. It occurs as part of acute infection and persists in chronic infection. Its presence indicates that the patient is considered to be infectious.

Anti-HBs: hepatitis B surface antibody. It demonstrates immunity through infection or vaccination.

IgM Anti-HBc: IgM antibody to hepatitis B core antigen, indicative of recent infection with hepatitis B virus. Antibody to core antigen only occurs following infection, not immunization.

Anti-HBc: total antibody to hepatitis B core antigen. This marker becomes positive at the onset of symptoms in acute hepatitis B then persists for life. Therefore, it does not distinguish between recent, past, or chronic infection.

HBeAg: hepatitis B e antigen, a core protein exported from infected liver cells and a marker of high levels of infectivity. Similar to HBsAg, it occurs (albeit transiently) as part of acute infection and may persist in chronic infections.

HBeAb: hepatitis B e antibody is produced by the immune system temporarily during acute HBV infection and may persist in chronic infections. Spontaneous conversion from e antigen to e antibody is a predictor of long-term clearance of HBV in patients undergoing antiviral therapy and indicates lower levels of HBV. Chronic hepatitis B surface antigen carriers can be positive for either HBeAg or anti-HBe, but are less infectious when anti-HBe is present.

Hepatitis B virus DNA: signifies active replication of the virus and indicates that the patient is infectious. It is usually measured to test for chronic infection, and the viral load may be used to decide whether treatment is warranted.

Hepatitis C

Anti-HCV EIA: enzyme immunoassay to measure HCV antibody. Indicates presence of antibody only and cannot be used to distinguish between recent and past infection. Additional testing is required to determine if the individual is chronically infected.

Signal-cutoff ratio: can be used to help determine the likelihood that a positive anti-HCV EIA represents a true positive. Each assay has a cut-off value that is considered a “positive” result; the signal-cutoff ratio can be calculated by dividing the optical density (OD) value of the sample

being tested (e.g., the client's test result) by that particular assay's cut-off value. Each test kit or assay has a signal-cutoff ratio above which the client has a 95% probability of being HCV-positive and should be reported as a case.

PCR: polymerase chain reaction, used to measure HCV RNA and indicates active replication of the virus (e.g., the chronic infection state). The qualitative PCR is more sensitive than the quantitative assay and is preferred for the initial test. The quantitative PCR is often used to guide initial treatment decisions and to follow the progress of individuals undergoing treatment.

HCV genotype: HCV can be divided into at least 6 different genotypes. Genotype 1 is the most common in the United States, accounting for 70–75% of infections. A positive genotype indicates the presence of HCV RNA.