Hepatitis B Quicksheet

March 2024

Clinical Symptoms

Hepatitis B virus (HBV) infection may be asymptomatic, or patients may present with subacute illness (anorexia, nausea, malaise), clinical hepatitis with jaundice, or fulminant hepatitis. Development of clinical symptoms is highly age-dependent, with asymptomatic infection most common in young children.

Age at time of infection is the primary determinant of the risk of progression to chronic infection; 90% of perinatally infected infants develop chronic HBV infection, whereas only 5% to 10% of acutely infected adults progress to chronic HBV infection.[1]

Mode of Transmission

HBV may be transmitted by parenteral or mucosal exposure to the body fluids, particularly blood and serous fluids, of an infected person.

Incubation Period

45 to 160 days (average: 90 days) from exposure to jaundice onset.

Period of Communicability

An individual infected with HBV should be considered infectious any time hepatitis B surface antigen (HBsAg) is present in the blood. HBsAg can be found in the blood and body fluids of infected persons 1 to 2 months before and any time after the onset of symptoms.

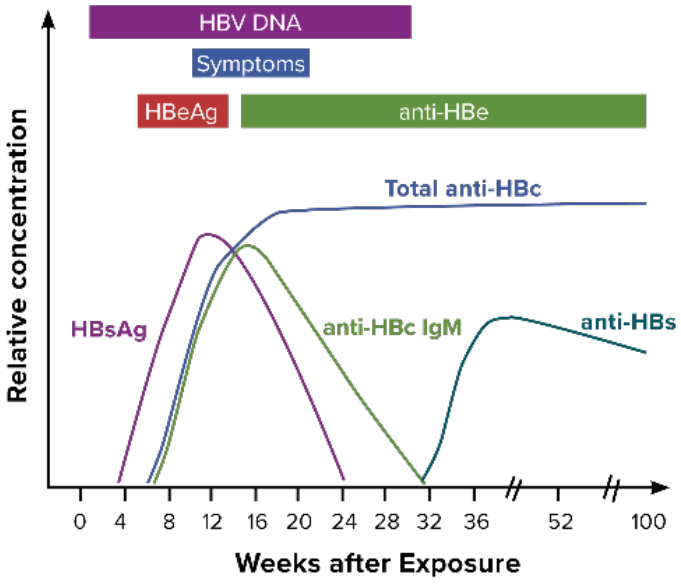
Serology and Laboratory Testing

Anti-HBs positive test results indicate immunity to HBV due to immunization or recovery from prior HBV infection.

HBsAg, HBV DNA, and HBeAg positive test results indicate current HBV infection. During recovery, these markers may become undetectable. Persistence of these markers for six months or more indicates progression to chronic infection. Presence of HBeAg and high levels of HBV DNA also indicate increased infectivity.

IgM anti-HBc positive test results generally indicate acute HBV infection. This marker will typically become undetectable by six months after infection. Positive IgM anti-HBc results can also sometimes occur during exacerbations of chronic infection.

Acute Hepatitis B Infection with Recovery



[1] Centers for Disease Control. Prevention of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices. MMWR Recomm Rep. 2018; 67(No.RR-1): 1-31.

Total anti-HBc positive test results indicate current or prior infection. Total anti-HBc may remain detectable for years after infection.

Acute Hepatitis B Case Definition

Clinical Criteria:

In the absence of a more likely, alternative diagnosis*, acute onset or new detection of at least one of the following:

- Jaundice **OR**
- Total bilirubin > 3.0 mg/dL **OR**
- Elevated serum alanine aminotransferase (ALT) levels > 200 IU/L

*Alternative diagnoses may include evidence of acute liver disease due to other causes or liver disease due to hepatitis B reactivation or pre-existing chronic HBV infection, other causes of hepatitis including alcohol exposure, other viral hepatitis, hemochromatosis, or conditions known to produce false positives of hepatitis B surface antigen, etc.

Confirmatory Laboratory Evidence:

Tier 1

- Detection of IgM anti-HBc **AND** detection of either HBsAg† or HBeAg or HBV DNA†† **OR**
- Detection of either HBsAg† or HBeAg or HBV DNA†† within 12 months (365 days) of a negative HBsAg test result (i.e., HBsAg seroconversion).

Tier 2

- IgM anti-HBc test not done or result not available, **AND** detection of either HBsAg† or HBV DNA††

Presumptive Laboratory Evidence:

- Detection of IgM anti-HBc **AND** HBsAg†, HBeAg, and HBV DNA†† is negative or not done.

***Confirmed*:**

- Meets Tier 1 confirmatory laboratory evidence of acute HBV infection **OR**
- Meets clinical criteria **AND** Tier 2 confirmatory laboratory evidence of acute HBV infection.

***Probable*:**

- Meets clinical criteria **AND** presumptive laboratory evidence of acute HBV infection.

Chronic Hepatitis B Case Definition

Clinical Criteria: None. No symptoms are required to meet the chronic hepatitis B case definition.

Confirmatory Laboratory Evidence:

- Detection of HBsAg† in two clinical specimens taken ≥ 6 months apart **OR**
- Detection of HBeAg in two clinical specimens taken ≥ 6 months apart **OR**
- Detection of either HBsAg† **OR** HBeAg, **AND** total anti-HBc, **OR**
- Detection of HBsAg† **AND** HBeAg, **OR**
- Detection of HBV DNA.

Presumptive Laboratory Evidence:

- Detection of HBsAg† **OR** HBeAg, **AND** IgM anti-HBc test is negative, not done, or not available.

Confirmed:
- Meets confirmatory laboratory evidence of chronic HBV infection.

Probable:
- Meets presumptive laboratory evidence of chronic HBV infection.

† If information on HBsAg test method is available and HBsAg confirmatory neutralization was performed, as is recommended, then HBsAg is considered positive if the confirmatory neutralization is positive.
†† DNA detection by nucleic acid test, including qualitative, quantitative, or genotype testing

Comment: Multiple laboratory tests indicative of chronic HBV infection may be performed simultaneously on the same patient specimen as part of a "hepatitis panel." Testing performed in this manner may lead to seemingly discordant results. For example, occult hepatitis B infection may be present when a patient is HBsAg-negative and HBV DNA-positive. For the purposes of the chronic hepatitis B case definition, a positive HBsAg, HBeAg or HBV DNA result is sufficient evidence of infection, regardless of other testing results.

Perinatal Hepatitis B Case Definition

Confirmed:
- Child born in the US to an HBV-infected birthing parent who tests positive for HBsAg between 1 and 24 months of age **OR** positive for HBeAg or HBV DNA between 9 and 24 months of age.

***Probable*:**
- Child born in the US and positive for HBsAg between 1 and 24 months of age **OR** positive for HBeAg or HBV DNA between 9 and 24 months of age, but whose birthing parent's hepatitis B status is unknown.

Recommendations for Vaccination
The HBV vaccine series is recommended for all children beginning at birth, **all adults 19-59 years of age**, and adults 60 years of age and older with risk factors for hepatitis B.[2]

A detailed discussion of these new hepatitis B vaccination recommendations for adults can be found in ACIP's Universal Hepatitis B Recommendations.

Recommended Postexposure Prophylaxis
Following exposure to an HBsAg-positive source patient, healthcare workers (HCWs) who have not completed the hepatitis B vaccine series should receive one dose of vaccine and Hepatitis B Immune Globulin (HBIG) as soon as possible. HCWs who have completed the vaccine series and do not have a documented anti-HBs result ≥10 mIU/mL should receive anti-HBs testing as soon as possible to determine if vaccination or HBIG are needed. For HCWs who have completed the hepatitis B vaccine series and have documented anti-HBs ≥10 mIU/mL, no further management is needed. Further information on preventing transmission in HCWs can be found in the ACIP Recommendations for Prevention of Hepatitis B Virus Infection.

Management of persons who are not healthcare providers and who have a discrete, identifiable percutaneous

[2] Weng MK, Doshani M, Khan MA, et al. Universal Hepatitis B Vaccination in Adults Aged 19–59 Years: Updated Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. MMWR Morb Mortal Wkly Rep 2022;71:477–483.

or mucosal exposure to blood or other potentially infectious materials (e.g., needlestick, laceration, bite, sexual exposure, shared razor or toothbrush, etc.) includes consideration of the HBsAg status of the source of the exposure and the HBV immunization and immune status of the exposed person. If the source is HBsAg-positive, unimmunized or partially immunized exposed people should receive HBIG and HBV vaccine as soon as possible after exposure, preferably within 24 hours. The effectiveness of HBIG diminishes the longer after exposure it is initiated and is unlikely to be effective more than 7 days after exposure. Additional information on the management of non-occupational exposure to hepatitis B can be found in the ACIP Recommendations for Prevention of Hepatitis B Virus Infection.

Perinatal exposure: All infants born to an HBsAg-positive birthing parent, regardless of birthweight, should receive a dose of single-antigen HBV vaccine and HBIG (0.5 mL) in separate anatomical sites within 12 hours of birth. These infants are also recommended to complete the vaccine series and receive postvaccination serologic testing for HBsAg and anti-HBs. Recommendations for managing perinatal hepatitis B exposure can be found on the CDPH Perinatal Hepatitis B Prevention Program website or in the ACIP Recommendations for the Prevention of Hepatitis B Virus Infection.

Investigation and Reporting Guidelines

Acute Hepatitis B: Investigation and case classification of acute HBV cases is accomplished with a combination of laboratory result review, medical record review, and case interview. If capacity is limited, the following prioritization of cases for public health follow-up may be considered:

- *Priority 1*. Cases with detection of anti-HBc IgM and detection of either HBsAg, HBeAg, or HBV DNA. These cases can be confirmed based on laboratory results alone but are a priority for interview and any associated public health follow up.
- *Priority 2*. Cases with detection of anti-HBc IgM and HBsAg, HBeAg, and HBV DNA are negative/not done.
- *Priority 3*. Cases with detection of either HBsAg or HBV DNA and anti-HBc IgM not done or result not available.

For further guidance on conducting Hepatitis B investigations, please refer to Acute Hepatitis B and C Investigation Quicksheet.

Chronic Hepatitis B: Due to the high volume of HBV-positive reports, many local health jurisdictions may be unable to investigate all reported chronic HBV cases. Priority should be given to identifying and reporting HBsAg-positive pregnant persons to the Perinatal Hepatitis Prevention Program. Consideration should also be given to investigating patients in the other priority groups outlined in CDC's Hepatitis B Surveillance Guidance for Acute Hepatitis B. For more information on conducting chronic hepatitis B surveillance, please view CDC's Hepatitis B Surveillance Guidance for Chronic Hepatitis B.

Perinatal Hepatitis B: In addition to the case report form, perinatal hepatitis B cases should also be reported to the CDPH Perinatal Hepatitis B Prevention Program using the Perinatal Hepatitis B Case Report Form in CalREDIE. More information on the Perinatal Hepatitis B Prevention Program can be found on the Perinatal Hepatitis B Program webpage.

For additional questions or assistance, contact:

CDPH Immunization Branch at 510-620-3767 or vpdreport@cdph.ca.gov for questions about hepatitis B case