



HEPATITIS TYPE B (HBV)

(Serum hepatitis; Australia antigen hepatitis [both terms are obsolete]. See also **HEPATITIS TYPE B, PERINATAL**)

1. **Agent:** Hepatitis B virus (HBV), several subtypes.
2. **Identification:**
 - a. **Symptoms:** Onset is often insidious. Symptoms include fever, headache, malaise, anorexia, nausea, vomiting, diarrhea and abdominal pain. Many cases are asymptomatic.
 - b. **Differential Diagnosis:** Other causes of viral and non-viral hepatitis.
 - c. **Diagnosis**

Acute: HBsAg positive and HBc IgM positive (if done) *and* evidence of illness with (1) discreet onset of symptoms *and* (2) jaundice *or* elevated aminotransferase levels >100.

Chronic/Carrier: No symptoms are required with chronic hepatitis B virus infection. HBc IgM negative AND a positive result on one of the following tests: HBsAg, HBeAg, or HBV DNA positive or HBsAg or HBV DNA, or HBeAg positive 2 times at least 6 months apart.
3. **Incubation:** From 45-180 days; usually 60-90 days.
4. **Reservoir:** Human.
5. **Source:** Primarily blood to blood and sexual contact.
6. **Transmission:** By parenteral inoculation or mucosal membrane exposure to human blood or blood products. Susceptible sexual partners of infected persons are at risk. Perinatal transmission is likely to unprotected (no HBIG or vaccine) infants of HBsAg-positive mothers.
7. **Communicability:** Blood is potentially infective before and after onset of symptoms.

Approximately 2-10 percent of acute adult cases become carriers. Ninety percent of infected infants become carriers.

8. **Specific Treatment:** None for acute stage. Antiviral medications may be beneficial for chronic disease.
9. **Immunity:** Lifelong

REPORTING PROCEDURES

1. Reportable, *California Code of Regulations*, Section 2500 and 2505.

2. **Report Form:**
VIRAL HEPATITIS B or C CASE REPORT¹

In addition, for the rare case associated with administration of blood or blood products during the 6-month period prior to onset, use Supplemental Data Sheet, **TRANSFUSION-ASSOCIATED HEPATITIS CASE RECORD (CDPH 8376)**.²

3. **Epidemiologic Data:**

- a. Record results of laboratory tests: HBsAg, IgM anti-HBc, HAV IgM, anti-HCV, ALT levels etc.
- b. Reason for medical visit leading to diagnosis. This may be helpful in determining if case is acute or chronic hepatitis B.
- c. Contact with confirmed or suspected acute or chronic hepatitis B infection.
- d. Patient was treated for a sexually transmitted disease.
- e. Patient or employee of a renal dialysis unit.
- f. Resident of a long-term care facility (e.g. nursing home).

¹ <http://publichealth.lacounty.gov/ACD/Diseases/EpiForms/HepatitisBCRep.pdf>

² <http://publichealth.lacounty.gov/ACD/Diseases/EpiForms/TransfusionHepatitisCase-CDPH8376.pdf>



- g. Receive finger-sticks.
- h. Contact with or injection of contaminated blood; accidental inoculation by needle (laboratory), accidental splash into the eye.
- i. Transfusions of blood or blood products: places, dates, lot numbers, and manufacturer.
- j. Patient has received any IV infusions and/or injections in the outpatient setting.
- k. Medical or dental treatment within past 6 months, including types of injections, surgical procedures performed, or any diagnostic medical procedure.
- l. Occupational history, especially medical-dental personnel, workers or public safety worker (law enforcement/correctional officer) and those involved in handling blood or blood products.
- m. Blood donation, date and location of last donation.
- n. Patient has undergone acupuncture.
- o. Percutaneous exposure: self-injections (admitted or suspected), tattooing, ear piercing, acupuncture, electrolysis, skin-piercing procedures, etc.
- p. Use of injection or non-injection street drugs.
- q. For infant or child case, status of mother and other sibling should be evaluated. If pertinent, testing of mother's long-term sexual partner may be considered at the discretion of the mother's physician and child's mother.
- r. Number of sexual partners of either gender.

Investigate acute cases within 3 days. The **VIRAL HEPATITIS B or C CASE REPORT**³ is for acute cases only. For chronic carriers submit a CMR only.

CASE:

No restrictions.

CONTACTS:

Persons exposed to blood of an infected person, regular sexual partners and household contacts.

No restrictions.

Hepatitis B immune globulin (HBIG) is recommended for post-exposure prophylaxis (PEP) to hepatitis B virus (HBV) by percutaneous, mucosal, sexual, household or perinatal exposure. HBIG should be given as soon as possible, preferably within 12 hours for perinatal exposure and within 24 hours for percutaneous or mucosal exposure. PEP is unlikely to be beneficial if initiated 7 days after percutaneous exposure or 14 days after sexual exposure. For specific details, refer to *Prevention of Hepatitis B Virus Infection in the United States*⁴.

Also refer to B-71, *Recommendations for Use and Storage of Common Immunobiologics and Other Prophylactic Agents (B-71)*⁵ for HBIG and vaccination prophylaxis details.

Hepatitis B vaccine is part of routine childhood vaccination series. Hepatitis B vaccine is recommended for people in high-risk situations and occupations. Refer to B-71, *Recommendations for Use and Storage of Common Immunobiologics and Other Prophylactic Agents*⁶, for details.

CHRONIC/CARRIERS:

Defined as any person HBsAg or HBV DNA, or HBeAg positive 2 times at least 6 months apart.

- 1. Pregnant women who test positive for HBsAg should be referred to Perinatal Hepatitis B Prevention Unit.

CONTROL OF CASE, CONTACTS & CARRIERS

³ <http://publichealth.lacounty.gov/ACD/Diseases/EpiForms/HepatitisBCRep.pdf>

⁴ https://www.cdc.gov/mmwr/volumes/67/rr/rr6701a1.htm?s_cid=rr6701a1_e

⁵ <http://publichealth.lacounty.gov/ip/providers/B71/VHBIG.pdf>

⁶ http://publichealth.lacounty.gov/ip/providers_resources.htm



2. No restrictions. Carriers are not to be excluded from work or school solely on the basis of a positive HBsAg (including health care work).
3. A carrier of HBsAg may or may not be symptomatic.
4. Those with a positive HBsAg test should be informed, evaluated for the presence of liver disease and followed to determine persistence of antigen.
5. Stress routine precautions, such as those applying to prevention of transmission via percutaneous and sexual routes.
6. Recommend evaluation of contacts for immunity and vaccination if needed.

PREVENTION-EDUCATION

1. Advise that disease may be transmitted by shared articles that become contaminated with blood (needles, syringes, razors, toothbrushes).
2. Advise that regular sexual partners may be at increased risk for hepatitis B. Advise of need for HBIG and/or vaccine. Use of condoms may reduce the risk to sexual partners.
3. If high risk contacts to acute hepatitis B cases do not have access to the hepatitis B vaccine through their primary care provider or are uninsured, a county sponsored vaccine program will provide hepatitis B vaccine.

High Risk Contacts Include:

- Sex partners and household contacts of HBsAg-positive persons,
- Residents and staff of facilities of developmentally disabled persons who have potential blood or blood contaminated body fluids contact with the case,
- Healthcare and public safety workers with reasonable anticipated risk of exposure to blood or blood-contaminated body fluids

4. For recommended vaccine doses, refer to: [B-71, Recommendations for Use and Storage](#)

[of Common Immunobiologics and Other Prophylactic Agents](#)⁷,

5. Advise high risk hepatitis B contacts (sex partners and household contacts) that a serum for HBsAg should be obtained at the same time as administration of the 1st hepatitis B vaccine. This can be obtained through CHS clinic, if a primary medical care provider is not available.
6. Individuals at continued risk for acquiring hepatitis B infection (occupation, MSM) should be recommended to receive hepatitis B vaccine if not immune. [See Recommendations for Use and Storage of Common Immunobiologics and Other Prophylactic Agents \(B-71\)](#)⁸.
7. Usage of HBIG based on exposure (type and time) and susceptibility.
8. Instruct on sanitary disposal of blood and other body secretions.
9. Advise patient that persons with a history of viral hepatitis are excluded from blood donor programs.
10. Advise case that HBsAg test should be repeated at 3 and 6 months. If still positive after 6 months, then the patient is considered a carrier and should be evaluated for the possibility of active liver disease.

DIAGNOSTIC PROCEDURES

Clinical and epidemiological history required to aid laboratory in test selection.

Serology:

Container: Serum separator tube (SST, a red-gray top vacutainer tube) and test request form.

Laboratory Form: [TEST REQUISITION FORM \(H-3021\)](#)⁹

Examination Requested: Hepatitis B (indicate if previously positive). Note that PHL only performs anti-HBc IgM upon special request.

⁷ http://publichealth.lacounty.gov/ip/providers_resources.htm

⁸ http://publichealth.lacounty.gov/ip/providers_resources.htm

⁹ <http://www.publichealth.lacounty.gov/lab/docs/H-3021%20Test%20Request%20Form.pdf>



Material: Whole clotted blood.

Amount 8-10 ml.

Storage: Refrigerate.



Interpretation of Hepatitis B Serologic Test Results

HBsAg Anti-HBc Total Anti-HBs	negative negative negative	Susceptible
HBsAg Anti-HBc Total Anti-HBs	negative positive positive	Immune due to natural infection
HBsAg Anti-HBc Total Anti-HBs	Negative Negative positive	Immune due to hepatitis B vaccination
HBsAg Anti-HBc Total Anti-HBc IgM Anti-HBs	positive positive positive negative	Acutely infected
HBsAg Anti-HBc Total Anti-HBc IgM Anti-HBs	positive positive negative negative	Chronically infected
HBsAg Anti-HBc Anti-HBs	Negative Positive negative	Interpretation unclear; four possibilities: <ol style="list-style-type: none"> 1. Resolved infection (most common) 2. False-positive anti-HBc, thus susceptible 3. "Low level" chronic infection 4. Resolving acute infection



Hepatitis B Acute Case Investigation Algorithm

