

# HEPATITIS B SURVEILLANCE PROTOCOL

## Public Health Action

1. Educate providers about appropriate use of the hepatitis B vaccine, especially in newborns and adolescents.
2. Educate the general public about hepatitis B risk factors, hepatitis B vaccine, and prevention of hepatitis B transmission.
3. Educate health care providers and laboratories to report IgM antibody to hepatitis B core antigen (anti-HBc) or hepatitis B surface antigen (HBsAg) positive patients to the local health department and the HIV/AIDS/STD Program at the West Virginia Bureau for Public Health (WVBPH) within 24 hours.
4. Within 24 hours of receiving a report of a HBsAg or HBcAb IgM positive patient the local health department will perform the following responsibilities:
  - a. Conduct a record search to determine if this patient was previously investigated.
  - b. Contact the physician to determine if the patient meets the case definition for acute hepatitis B.

The following questions will assist in determining the patient's status:

- i. Confirm patient's demographics. e.g. address, phone number, etc.
  - ii. Reason for testing?
  - iii. Is the patient symptomatic? e.g. jaundice, nausea, vomiting, fatigue, dark urine, clay colored stool, etc.
  - iv. Date of onset of illness?
  - v. Is the patient pregnant? If yes, ask when is the EDD (estimated date of delivery) and **notify the Perinatal Hepatitis B Coordinator at the Immunization Program immediately (1-800-642-3634)**.
  - vi. Are there any other lab tests? e. g. hepatitis A & C, liver enzymes, bilirubin
  - vii. Does the patient have a history of IV drug abuse and/or alcohol abuse?
  - viii. Does the patient have a hepatitis B vaccine history?
    - If yes, obtain the dates of vaccination, number of doses, manufacturer name and vaccine lot number
  - ix. Did the physician notify the patient of the positive lab report?
  - x. If the investigation warrants talking to the patient, inform the physician that you will be notifying the patient.
- c. If investigation reveals acute status, interview patient to collect public health and contact information related to the case. e.g. risk factors for disease, sexual partners, household and/or injection drug user (IDU) contacts and their locating information, etc.
  - d. Provide partner notification to IDU contacts within 7 days and sexual and household contacts within 14 days of positive test. Follow up on the contacts as necessary to assure that they receive education on hepatitis B transmission/prevention, Hepatitis B Immune Globulin (HBIG) (as necessary) and vaccine.
  - e. If the patient meets the case definition for **acute hepatitis B infection**, enter data into West Virginia Electronic Disease Surveillance System (WVEDSS) which includes a reportable disease case report card and the CDC Viral Hepatitis Case Report form; include all laboratory studies (hepatitis A virus immunoglobulin M (HAVIgM), alanine transferase (ALT or serum glutamate pyruvate transaminase (SGPT). HBsAg, HBcAb IgM, and hepatitis C

testing results, if available), and submit all data for State Review. *Until WVEDSS is functional, send a paper copy and all appropriate laboratory studies to the West Virginia HIV/AIDS/STD program, as well as submitting it electronically.*

- f. If patient **does not** meet the clinical definition for acute hepatitis B infection but is HBsAg positive or HBeAg positive, provide:
  - i. education on hepatitis B transmission/prevention
  - ii. partner notification to IDU contacts within 7 days and sexual and household contacts within 14 days of positive tests,
  - iii. follow up on the contacts as necessary to assure that they received education on hepatitis B transmission / prevention, HBIG (as necessary) and hepatitis B vaccine
  - iv. enter data into WVEDSS including labs and submit for State Review. *Until WVEDSS is functional, send a paper copy and all appropriate laboratory studies to the West Virginia HIV/AIDS/STD program, as well as submitting it electronically.*
- g. If investigation reveals **chronic status**, (Hepatitis B surface antigen [HBsAg] positive, total anti-HBc positive [if done] and IgM anti-HBc negative, OR HBsAg positive two times at least 6 months apart) provide:
  - i. education on hepatitis B transmission/prevention
  - ii. partner notification to IDU contacts within 7 days and sexual and household contacts within 14 days of positive test,
  - iii. follow up on the contacts as necessary to assure that they received education on hepatitis B transmission / prevention, HBIG (as necessary) and hepatitis B vaccine
  - iv. enter data into WVEDSS including labs and submit for State Review. *Until WVEDSS is functional, send a paper copy and all appropriate laboratory studies to the West Virginia HIV/AIDS/STD program, as well as submitting it electronically.*

The Disease Intervention Specialist (DIS) will perform the following responsibilities on all cases that require patient tracing, partner notification and follow-up as requested and/or assigned by the Local Health Department and or the HIV/AIDS and STD Program:

- a. Interview the patient for all contacts (sexual partners, household and IDU)
- b. Provide partner notification to IDU contacts within 7 days and sexual and household contacts within 14 days of positive test,
- c. Complete Interview Record (73.54) and Field Record (2936) as necessary and submit to HIV/AIDS/STD Program,
- d. Enter data into WVEDSS,
- e. Follow up with the contacts as necessary to assure that they received education on hepatitis B prevention / transmission, HBIG (as necessary) and hepatitis B vaccine.

**If you have any questions or additional assistance is needed in interpreting hepatitis B lab reports, please call the State Hepatitis B Epidemiologist at 1-800-642-8244.**

5. The local health department will assure that all patients who meet the case definition for acute hepatitis B infection or are HBsAg and/or HBcAb IgM positive receive education on hepatitis B prevention/transmission. If a contact receives HBIG and/or hepatitis B vaccine, the local health department will complete the Hepatitis B Vaccine/HBIG Tracking form (see attachment) and submit it to the HIV/AIDS/STD Program.

6. Investigate *forward* (to prevent disease in contacts):
  - a. Identify all **sexual contacts** and determine the date of last contact with the source patient. If the last contact with the patient is within 14 days, and the vaccine or immune status is not known:
    - 1 Submit a blood sample from the contact(s) to the West Virginia Office of Laboratory Services (OLS) for a hepatitis B screen.
      - If the contact is pregnant, indicate the number of weeks on the Serology Laboratory Hepatitis Requisition Form (see attachment).
    - 2 Administer hepatitis B immunoglobulin (HBIG) and the first dose of hepatitis B vaccine to the contact(s). The State Health Department may provide both HBIG and hepatitis B vaccine for contacts of acute hepatitis B patients.
    - 3 If hepatitis serologies are positive, stop the vaccination series and refer the patient for medical care. If serologies are negative, complete the full immunization series.
    - 4 Complete the tracking form and submit it to the HIV/AIDS/STD Program.
  - b. Identify all **needle sharing contacts** and determine the last contact with the source patient. If the date of the last needle sharing event with the source patient is within seven days, and vaccine and immune status are not known:
    - 1 Submit a blood sample from the contact(s) to the OLS for a hepatitis B screen.
      - If the contact is pregnant, indicate the number of weeks on the Serology Laboratory Hepatitis Requisition Form (see attachment).
    - 2 Administer HBIG as well as the first dose of hepatitis B vaccine to the contact(s). The State Health Department may provide both HBIG and hepatitis B vaccine for contacts of acute hepatitis B patients.
    - 3 If hepatitis serologies are positive, stop the vaccination series and refer the patient for medical care. If serologies are negative, complete the full immunization series.
    - 4 Complete the tracking form and submit it to the HIV/AIDS/STD Program.
    - 5 HBIG must be administered within a week after the last needle sharing event with the source patient.
  - c. Identify all **household contacts** and determine if they have had any blood exposure to the source patient (e.g. shared razor, etc.). If a blood exposure is identified within 14 days:
    - 1 Draw a blood sample from the contact(s) and send it to the OLS for a hepatitis B screen.
      - If the contact is pregnant, indicate the number of weeks on the Serology Laboratory Hepatitis Requisition Form (see attachment).
    - 2 Administer HBIG and the first dose of hepatitis B vaccine to the contact(s). The State Health Department may provide both HBIG and hepatitis B vaccine for contacts of acute hepatitis B patients.
    - 3 If hepatitis serologies are positive, stop the vaccination series and refer the patient for medical care. If serologies are negative, complete the full immunization series.
    - 4 Complete the tracking form and submit it to the HIV/AIDS/STD Program.
    - 5 If the household contact is an infant and the mother or primary care giver has acute hepatitis B infection, administer HBIG and hepatitis B vaccine to the infant immediately. Complete the series for the infant. For partially or fully immunized infants, contact Infectious Disease Epidemiology Program (IDEP) for an individualized recommendation.
    - 6 If the source patient is or becomes a hepatitis B carrier, all household contacts should receive the hepatitis B vaccine series.
  - d. If the index patient is **pregnant**, the local health department should assure that all of the following pre-natal and post natal activities occur:

## 1 Prenatal:

- a. Notify the WV Perinatal Hepatitis B Coordinator of the Hepatitis B surface antigen positive, pregnant mother.
- b. Educate the mother regarding hepatitis B disease.
- c. Educate the mother of the infants' need for HBIG and the first dose of hepatitis B vaccine within 12 hours of birth.
- d. Notify the birthing facility of patient and ensure the HBIG and a dose of hepatitis B vaccine are available. If the hospital or health care provider is unable to provide HBIG and the first dose of hepatitis B vaccine for the patient due to financial circumstances (medically indigent clients), inform:
  - (i) The WV Perinatal Hepatitis B Coordinator at 1-800-642-3634 or 304-558-6445 OR
  - (ii) HIV/AIDS and STD Program at 1-800-642-8244 or 304-558-2195 OR
  - (iii) After hours, contact IDEP on call at 1-800-423-1271 or 304-558-5358.

HBIG may be supplied by the state health department after consultation with the infectious disease epidemiologist.

- e. Assure physician's orders are written to administer HBIG and the first dose of hepatitis B vaccine within 12 hours of birth.
- f. Communicate with the birthing facilities infectious disease personnel to ensure notification of:
  - (i) infant's date of birth
  - (ii) date & time of HBIG administration
  - (iii) date & time of hepatitis B vaccination
  - (iv) pediatrician identification.

## 2 Post Natal:

- a. Notify, within 3 days of birth, the WV Perinatal Hepatitis B Coordinator of birth and post natal care status. (This will ensure the administration of HBIG within 7 days.)
  - (i) WV Perinatal Hepatitis B Coordinator 1-800-642-3634 or 304-558-6445.
  - (ii) After hours or if unable to contact WV Perinatal Hepatitis B Coordinator, call IDEP at 1-800-423-1271 or 304-558-5358.
- b. Communicate with the physician to ensure that the following occur:
  - the infant receives the second and third doses of hepatitis B vaccine on schedule and the immunization record is reported to the West Virginia Statewide Immunization Information System (WVSIIS).
  - serological testing is completed at three to nine months after the third dose of hepatitis B vaccine and at 9 to 15 months of age.
  - serological testing includes both HBsAg and HBsAb (check both "perinatal" and "post vaccination" on the form for OLS).
- c. Lab interpretations:
  - If the baby is HBsAg positive, refer for medical evaluation.
  - If HBsAg is negative and anti-HBs antibody is positive, children are considered to be protected.
  - If HBsAb and HBsAg are negative, repeat the series and repeat serologic testing.

- d. Forward clinical information to the Immunization Program Perinatal Hepatitis B Coordinator upon receipt.
- e. **Report to WVEDSS if the patient meets the case definition for Perinatal hepatitis B infection.**
  - Enter data into WVEDSS which includes a reportable disease case report card and the CDC Viral Hepatitis Case Report form; include all laboratory studies available (hepatitis A virus immunoglobulin M (HAVIgM), alanine transferase (ALT), HBsAg, HBcAb IgM, and hepatitis C testing results)
  - Submit all data for State Review.
    - Until WVEDSS is functional, send a paper copy and all appropriate laboratory studies to the West Virginia Immunization Program Perinatal Hepatitis B Coordinator, as well as submitting it electronically.

7. For cases with **acute hepatitis B**, investigate *backward*, as follows:

- a. Using a calendar, determine the incubation period for the case. The incubation period is six weeks to six months prior to the date of onset.
- b. Collect information on all possible risk factors during the incubation period, and record it on the reportable disease case report card and the CDC Viral Hepatitis Case Report form. Discuss any unusual risk factors or clustering of risk factors with the West Virginia HIV/AIDS and STD Program. Risk factors and possible risk factors include:
  - 1 Contact with a person with suspected or confirmed HBV infection;
  - 2 Employment involving contact with human blood;
  - 3 Receipt of blood transfusion or blood products;
  - 4 Dialysis or kidney transplant patient;
  - 5 Injecting drug use;
  - 6 Number of different male sexual partners;
  - 7 Number of different female sexual partners;
  - 8 Hospitalization and/or surgery;
  - 9 Intravenous infusions or injections received in outpatient settings;
  - 10 Residence in a long term care facility (e.g. nursing home);
  - 11 Dental work/oral surgery;
  - 12 Accupuncture/tattooing/body piercing; and
  - 13 Puncture with a needle or other object contaminated with blood.
  - 14 Incarceration.
- c. Investigate vaccination history and record as part of the investigation, including:
  - 1 Number of vaccine doses, dates(s) of vaccination, and post-vaccination test results, if available, and
  - 2 Missed opportunities for hepatitis B vaccination, including:
    - a. Household or sex contact with an HBV-infected person;
    - b. Ever in a correctional facility;
    - c. Ever treated for a sexually transmitted disease; or
    - d. Ever in treatment for injecting drug use.

8. For patients with chronic hepatitis B, record all action taken on the reportable disease case report card and submit it with copies of all lab tests to the HIV/AIDS/STD Program.

9. For patients with acute hepatitis B, record all action taken on the reportable disease case report

card, and submit it with copies of all lab tests and the completed CDC supplemental form to the HIV/AIDS/STD Program.

10. Refer for medical evaluation

- a. Persons with acute hepatitis B should be evaluated for development of chronic infection
- b. Detection of HBsAg >6 months after illness onset indicates the presence of chronic infection.
- c. Evaluate for chronic liver disease, eligibility for treatment.

### **Disease Prevention Objectives**

1. Reduce the incidence of hepatitis B by:
  - a. Assuring full hepatitis B immunization of all infants.
  - b. Assuring “catch-up” hepatitis B immunization of all adolescents at the adolescent visit.
  - c. Assuring full hepatitis B immunization of high-risk individuals to include:
    - i. Sexually active adolescents and adults (including adolescents in STD clinics);
    - ii. Household contacts and sexual partners of HBV carriers;
    - iii. Health care personnel and those who have occupational exposure to blood;
    - iv. Residents and staff of institutions for the developmentally disabled;
    - v. Hemodialysis patients;
    - vi. Recipients of certain blood products;
    - vii. International travelers;
    - viii. Injection drug users; and
    - ix. Inmates in long term correctional facilities.
2. Reduce the incidence of hepatitis B through community education and programs to prevent drug use and sharing of needles.
3. Prevent nosocomial transmission of hepatitis B through effective infection control measures.
4. Prevent transmission of hepatitis B through screening of blood and organ donors.

### **Disease Control Objectives**

1. Identify and investigate community-based and nosocomial outbreaks of hepatitis B in a timely fashion so that appropriate control measures can be applied.
2. Reduce transmission from persons with hepatitis B infection including:
  - a. Perinatal transmission; and
  - b. Transmission to household, sexual, and drug-using partners.

### **Surveillance Objectives**

1. Determine the incidence of acute hepatitis B in West Virginia.
2. Determine the risk factors associated with acute and chronic hepatitis B in West Virginia.
3. Determine the demographic characteristics of persons with acute and chronic hepatitis B.

4. Distinguish between failure to immunize (preventable cases) versus failure of vaccine (non-preventable cases) among the reason(s) for continued occurrence of hepatitis B.
5. Detect outbreaks, clusters, or unusual patterns of transmission of hepatitis B.
6. Estimate the annual number of newly diagnosed chronic cases of hepatitis B.

## **Public Health Significance**

Hepatitis B is a vaccine preventable disease. When the vaccine was first introduced in 1982, it was recommended for high-risk groups (e.g. men who have sex with men, persons with multiple sexual partners or a history of a sexually transmitted disease, injection drug users, health care workers or persons with occupational exposure to blood, etc.). However, the number of cases of hepatitis B continued to increase after the vaccine was introduced. In 1991, universal infant immunization was instituted, followed by a recommendation for catch-up vaccination of adolescents in 1996. At this time, the incidence of hepatitis B is declining.

Chronic hepatitis B virus infection is associated with the development of hepatocellular carcinoma. In Southeast Asia, HBV infection is endemic and hepatocellular carcinoma is a common cause of cancer death. After launching a nationwide vaccination program in Taiwan to control hepatitis B, the HBsAg carrier rate in children declined from about 10% to 1% within 10 years of implementation. Concurrently, the average annual incidence of hepatocellular carcinoma per 100,000 children six to 14 years of age declined from 0.70 between 1981 and 1986; to 0.57 between 1986 and 1990; and to 0.36 between 1990 and 1994. The incidence of hepatocellular carcinoma in children six to nine years of age declined from 0.52 per 100,000 for those born between 1974 and 1984 to 0.13 per 100,000 for those born between 1984 and 1986. This was the first demonstration that mass vaccination could reduce the incidence of a specific cancer in humans.

According to the CDC, one of 20 persons in the U.S. has been infected with hepatitis B virus during their lifetime (about 12.5 million); one of 200 persons has chronic (lifelong) infection with hepatitis B virus (about 1.25 million); and 4,000 to 5,000 persons die each year from hepatitis B-related chronic liver disease (cirrhosis, liver cancer).

In the United States, children become infected with HBV through a variety of means. The risk of perinatal HBV infection among infants born to HBV-infected mothers ranges from 10% to 85% depending on each mother's hepatitis B e antigen (HBeAg) status. Infants who become infected by perinatal transmission have a 90% risk of chronic infection, and up to 25% will die of chronic liver disease as adults. Even when not infected during the perinatal period, children of HBV-infected mothers remain at high risk of acquiring chronic HBV infection by person-to-person horizontal transmission during the first five years of life. More than 90% of these infections can be prevented if HBsAg positive mothers are identified so that their infants can receive hepatitis B vaccine and hepatitis B immune globulin (HBIG) soon after birth.

## **Clinical Description**

### **Signs and Symptoms of Acute Disease**

Typical symptoms include tiredness, headache, loss of appetite, nausea, vomiting, fever, and chills with onset three to 10 days prior to jaundice. Right upper quadrant pain is common. Urine may become dark, and stools may become clay-colored. The hallmark of the disease is jaundice (yellow

color of the skin and sclera). Infants and children are usually asymptomatic, and an estimated 50% of adults with acute HBV are asymptomatic.

Fulminant hepatitis occurs in very few patients and is usually fatal. Duration of illness is usually several weeks, with symptoms occasionally persisting beyond three to four months.

### **Signs and Symptoms of Chronic Infection**

Ninety to ninety-four percent of adults with acute HBV will develop protective antibodies within six months of the infection. A small proportion (6-10%) of adult patients with acute HBV will develop chronic infection. Most persons with chronic infection will not have symptoms but will continue to be infectious. Complications of chronic hepatitis B infection may include cirrhosis and hepatocellular carcinoma.

### **Etiologic Agent**

HBV is a small double-stranded DNA virus. The outer protein coat contains the hepatitis B surface antigen.

### **Reservoir**

This virus is found only in humans. Chimpanzees are susceptible, but an animal reservoir in nature has not been identified.

### **Mode of Transmission**

In the United States, the most common risk factor for transmission of HBV is sexual contact with an infected person; however, the greatest risk for development of chronic infection is through perinatal transmission. The hepatitis B virus is also transmitted by parenteral or mucosal exposure to body fluids containing the virus. Breaks in the skin, such as scratches, abrasions, and burns, may serve as routes for the virus to enter the body.

The virus can be found in blood, body fluids (e.g. wound exudates), semen, cervical fluid, and saliva of persons who are HBsAg positive. Blood and serous fluids have the highest concentration of virus, and saliva the lowest.

Person-to-person transmission may occur in household settings. In these settings, non-sexual transmission occurs predominantly from child to child, and young children are at highest risk. The precise mechanism for child to child transmission is not known; however, frequent personal contact between non-intact skin or mucous membranes with blood containing secretions or, perhaps, saliva, are possible mechanisms. Transmission from sharing inanimate objects may also occur because HBV can survive at ambient temperature for one week or longer.

### **Incubation Period**

The incubation period is usually 45 to 180 days, with an average of 60 to 90 days. Time to detection of HBsAg can be as short as two weeks or as long as six to nine months, depending on inoculum, host factors, and other variables.

### **Infectious Period**

All persons who are HBsAg positive are potentially infectious. The presence of HBeAg is associated with a very high level of infectivity.

## **Case Definition for Acute Hepatitis B**

### **Clinical Description**

An acute illness with: a) discrete onset of symptoms, and b) jaundice or elevated serum aminotransferase levels.

### **Laboratory Criteria for Diagnosis**

- IgM antibody to hepatitis B core antigen (anti-HBc) positive or hepatitis B surface antigen (HbsAg) positive.
- IgM anti-HAV negative (if done).

### **Case Classification**

**Confirmed:** a case that meets the clinical case definition and is laboratory confirmed.

### **Comments**

Persons who have chronic hepatitis or persons identified as HBsAg positive should not be reported as having acute viral hepatitis unless they have evidence of an acute illness compatible with viral hepatitis (with the exception of perinatal hepatitis B infection).

Delta hepatitis is not a nationally notifiable disease.

## **Case Definition for Perinatal HBV Infection**

### **Clinical Description**

Perinatal HBV infection in a newborn can range from asymptomatic to fulminant hepatitis.

### **Laboratory Criterion for Diagnosis**

Hepatitis B surface antigen (HBsAg) positive.

### **Case Classification**

**Confirmed:** HBsAg positivity in any infant >1 month old to 24 months old who was born in the United States or in U.S. territories to an HBsAg-positive mother.

## **Case Definition for Chronic Hepatitis B**

### **Clinical description**

Persons with chronic hepatitis B virus (HBV) infection may be asymptomatic. They may have no evidence of liver disease or may have a spectrum of disease ranging from chronic hepatitis to cirrhosis or liver cancer.

Laboratory criteria

Hepatitis B surface antigen (HBsAg) positive, total anti-HBc positive (if done) and IgM anti-HBc negative, OR  
HBsAg positive two times at least 6 months apart

Case Classification

Confirmed. A case that is laboratory confirmed.

*\*Note: This case definition was approved by CSTE in June 2002.*

Comment:

HBsAg positive test results by enzyme immunoassay (EIA) that are not supported by positive test results for total anti-HBc or IgM anti-HBc should be confirmed by an additional more specific assay (e.g. neutralization assay)

## Laboratory Testing

The table below is adapted from the Centers for Disease Control and Prevention. It is a quick guide to interpretation of hepatitis B serologies. It is important to recognize that unusual or inconsistent serologies are frequently reported. If in doubt about the patient diagnosis based on the laboratory results, it is often useful to repeat the testing.

Tests	Results	Interpretations
HBsAg anti-HBc anti-HBs	negative negative negative	Susceptible
HBsAg anti-HBc anti-HBs	negative positive positive	Immune due to natural infection
HBsAg anti-HBc anti-HBs	negative negative positive	Immune due to hepatitis B vaccination
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive positive negative	Acutely infected
HBsAg anti-HBc IgM anti-HBc anti-HBs	positive positive negative negative	Chronically infected
HBsAg anti-HBc anti-HBs	negative positive negative	* Four interpretations possible

\* Four Interpretations

1. May be recovering from acute HBV infection.
2. May be distantly immune, but the test may not be sensitive enough to detect a very low level of anti-HBs in serum.
3. May be susceptible with a false positive anti-HBc.
4. May be chronically infected and have an undetectable level of HBsAg present in the serum.

### Definitions

- **Hepatitis B Surface Antigen (HBsAg):** A serologic marker on the surface of HBV. It can be detected in high levels in serum during acute or chronic hepatitis. The presence of HBsAg indicates that the person is infectious. The body normally produces antibodies to HBsAg as part of the normal immune response to infection.
- **Hepatitis B Surface Antibody (anti-HBs):** The presence of anti-HBs is generally interpreted as indicating recovery and immunity from HBV infection. Anti-HBs also develops in a person who has been successfully vaccinated against hepatitis B.
- **Total Hepatitis B Core Antibody (anti-HBc):** Appears at the onset of symptoms in acute hepatitis B and persists for life. The presence of anti-HBc indicates previous or ongoing infection with hepatitis B virus (HBV) in an undefined time frame.

- **IgM Antibody to Hepatitis B Core Antigen (IgM anti-HBc):** This antibody appears during acute or recent HBV infection and is present for about 6 months.
- **Antibody to Hepatitis e Antigen (HBeAg):** This is a marker of a high degree of HBV infectivity, and it correlates with a high level of HBV replication. It is primarily used to help determine the clinical management of patients with chronic HBV infection.
- **Antibody to HBe:** This marker may be present in an infected or immune person. In persons with chronic HBV infection, its presence suggest a low viral titer and a low degree of infectivity.

Sources:

CDC Viral Hepatitis B Information

<http://www.cdc.gov/ncidod/diseases/hepatitis/b/Bserology.htm>

Immunization Action Coalition

<http://www.immunize.org/catg.d/p2021b.htm>

To send specimens to the OLS, collect the blood in a red top tube or a red and gray striped tube. Complete the Serology Laboratory Hepatitis Requisition Form (see attachment and/or OLS Serology website) and enclose it with the specimen. OLS offers three choices for testing:

- “Screen” will give HBsAg, HBc Ab total. Other tests will be run if either or both of the screen markers are positive. Other markers possible are: IgM to HBc, antiHBsAg, confirmation of HBsAg.
- “Postvaccine” will give anti-HBsAg or antibody to HBsAg.

To get HBsAg and anti-HBsAg, check Hepatitis B Virus “Screen” and “Post Vaccine.”

OLS Serology website <http://www.wvdhhr.org/labservices/labs/serology/index.cfm>

## **Preventive Interventions**

Hepatitis B vaccine is a very safe and effective vaccine for prevention of hepatitis B, and it is recommended for all babies, for adolescents who have not already had the vaccine, and for people who are at risk for hepatitis B:

- Babies who are born to a mother who is HBsAg positive;
- People who have a job that involves contact with blood and blood products;
- Injection drug users;
- Sexually active persons who have had more than one partner in the last six months or who have a sexually transmitted disease;
- Sexually active men who have sex with men;
- Household contacts and sexual partners of persons who are chronically HBsAg-positive;
- Residents and staff of institutions for developmentally disabled persons;
- Staff of nonresidential child care and school programs for developmentally disabled persons if the program is attended by a known HBsAg-positive person;
- Patients undergoing hemodialysis;
- Patients with bleeding disorders who receive clotting factor concentrates;
- Members of households with adoptees who are HBsAg-positive;
- International travelers to areas in which HBV infection is of high or intermediate endemicity;

- Inmates of juvenile detention and other correctional facilities.

## **Treatment**

Patients should check with their doctor about treatment for chronic hepatitis B. No specific therapy for acute HBV infection is available. In chronically infected adults, interferon alpha has been demonstrated to induce a long-term remission in 25% to 40% of treated patients. The drug has been less effective for chronic infections acquired during early childhood. Lamivudine is also licensed for treatment of chronic HBV infection in adults, but no data are available for use in children.

## **Surveillance Indicators**

- The proportion of acute cases with complete risk factor information.
- The proportion of acute cases with complete demographic data.
- The proportion of pregnant mothers for whom hepatitis B surface antigen status is known.
- The proportion of cases born to an HBsAg positive mothers that received the first hepatitis B vaccine dose <12 hours after birth.
- The proportion of cases that received the third hepatitis B vaccine dose <8 months after birth.
- The proportion of cases that received HBIG <12 hours after birth.
- The proportion of cases that received  $\geq 3$  hepatitis B vaccine doses.
- The proportion of infants born to HBsAg positive mothers who have blood drawn for anti-HBsAg and HBsAg.
- The number of household, sexual contact, and needle sharing contacts identified per case.
- The proportion of contacts of acute and previously unreported chronic cases that have complete information on the hepatitis B immunization status or missed opportunities.