3.6 HEPATITIS B

Hepatitis B
HBsAg: ☐ Neg ☐ Pos AntiHBs: ☐ Neg ☐ Pos

PURPOSE

To reduce the risk of hepatitis B transmission by:

- Identifying persons with hepatitis B infection
- Providing risk reduction education and referring individuals with hepatitis B infection for follow-up care, and
- Identifying and vaccinating susceptible contacts, children through 18 years of age, and high-risk adults

BACKGROUND

The prevalence of hepatitis B virus (HBV) infection and patterns of transmission vary in different parts of the world.[1] Approximately 45% of global population lives in areas in which HBV is highly endemic (>8% prevalence of chronic HBV infection) and 43% lives in regions with intermediate prevalence of chronic HBV infection (2-7% prevalence of chronic HBV). HBV infection is highly or intermediately endemic in much of Eastern Europe, Asia, Africa, the Middle East and the Pacific Islands.[2] In the United States, approximately 0.4% of the general population is infected with HBV.

Persons with chronic HBV infection are at risk for premature death from chronic liver disease (cirrhosis and liver cancer), affecting an estimated 25% of those chronically infected during childhood and 15% of those chronically infected after childhood.[3]

In 2008, CDC published Recommendations for Identification and Public Health Management of Persons with Chronic Hepatitis B Virus Infection.[4]

---

1 Centers for Disease Control and Prevention. Health Information for International Travel. 2008. See http://wwwn.cdc.gov/travel/yellowBookCh4-HepB.aspx

2 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.

3 Recommendations of the Immunization Practices Advisory Committee. Hepatitis B virus: a comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States. *MMWR.* Dec. 8, 2006;55(No. RR-16):1-33. See http://www.cdc.gov/ncidod/diseases/hepatitis/recs/index.htm

4 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.

PROGRAM REQUIREMENTS

In brief, the RHAP requires the following of providers:

1. Test for HBsAg and anti-HBs at the first visit.
   ⇒ Serologies must be drawn before hepatitis B vaccine is administered.
2. Initiate hepatitis B vaccination on the first RHAP visit for all children, and adults from countries of high or intermediate endemnicity or at risk for hepatitis B infection.
3. Continue hepatitis B vaccination series on the second RHAP visit for those individuals whose serologies are negative.
   ⇒ Initiate hepatitis B vaccination for those adults from areas where HBV is highly or intermediately endemic, whose serologies are negative and for whom vaccination was not begun at the first visit.
4. Evaluate family and household members' lab results and immunization status when an individual is diagnosed with hepatitis B infection, as household contacts are at risk of transmission of hepatitis B virus. If family or household member is found to be HBsAg positive and less than 5 years of age, notify the MDPH Perinatal Program (617.983.6849).
5. Document the need for follow-up HBV evaluation of HBV-positive individuals as part of the primary care referral.
6. Report positive HBsAg results to the Massachusetts Department of Public Health (fax lab report to 617.983.6813) or local health department. **Note if the individual is pregnant**. If pregnant, notify the MDPH Perinatal Hepatitis B Program (617.983.6849).

Testing for HBsAg and anti-HBs must be done at the first visit. Testing for IgM anti-HBc is limited for diagnosis of acute HBV infection in persons with clinical evidence of acute hepatitis or an epidemiologic link to a person with HBV infection. Vaccination should be initiated as described later in this section but should not precede the blood draw for serologies.

The laboratories should use an FDA-licensed or FDA-approved HBsAg test and should perform testing according to the manufacturer's labeling, including testing of initially reactive specimens with a licensed, neutralizing confirmatory test.[5]

[5] Ibid.

EVALUATING FINDINGS

Serologic markers of HBV vary depending on whether the patient is infected and the infection is acute or chronic. HBsAg can be detected as early as 1 or 2 weeks and as late as 11 or 12 weeks (usually 30-60 days) after exposure to HBV. In persons who recover, HBsAg is no longer detectable in serum after a period of about 3 months. Anti-HBs IgG becomes detectable during convalescence in patients who do not progress to chronic infection. The presence of anti-HBs antibodies following acute infection generally indicates recovery and immunity from reinfection.[6] Virtually all patients with past HBV infection will have core antibodies (anti HBc) as well, although this does not indicate immunity.

During the second RHAP visit, review the lab results with your patient. Determine if the patient is immune, a [likely] HBV carrier, or susceptible to infection. Although chronic infection is confirmed by additional hepatitis B tests (see below), in the context of RHAP an individual with a positive HBsAg result is considered likely to be a carrier. Proceed to educate, vaccinate, and refer to primary care as appropriate.

When an individual with hepatitis B virus infection is identified, it is important to review other family and household members' lab results and immunization status, as household contacts are at risk of transmission of hepatitis B virus.

RHAP clinicians should note follow-up recommendations for family and household contacts as part of the primary care referral.

REPORTING

Report hepatitis B. **Note if the individual is pregnant or less than 5 years of age and report to the MDPH Perinatal Hepatitis B program (617 983-6849).**

RHAP providers must report certain diseases to either state or local public health officials. Reporting on the RHAP form is NOT sufficient. For more information on reportable conditions, go to the Mass.gov website regarding surveillance requirements. (105 CMR 300.00).

6 Recommendations of the Immunization Practices Advisory Committee. *MMWR*. Dec. 8, 2006;55(No. RR-16):1-33.

INTERPRETING RESULTS

The following charts summarize interpretation of individual and panel hepatitis B serologic tests.

Interpretation of Individual Positive HBV Tests

Serologic Test	Interpretation	Follow-up Needed
HBsAg	*Hepatitis surface antigen positive* Infectious. If positive for more than 6 months, patient is a chronic carrier.	Vaccinate family and/or close contacts. Further serologies and LFT's in follow-up care. Educate re: transmission and refer to physician experienced in management of chronic liver disease.
IgM anti-HBc	*Hepatitis B IgM core antibody positive* Recent infection	Test for IgG anti-HBs Vaccinate contacts
IgG anti-HBs (aka: anti-HBs or HBsAb)	*Hepatitis B surface antibody positive* Immune by past infection or immunization	Finish vaccine series if in process (i.e., 1 or 2 doses received prior to test). Otherwise, no follow-up needed.
IgG anti-HBc (aka: anti-HBc)	*Hepatitis B total core antibody positive* Past infection. Does not necessarily indicate immunity.	Test for IgG anti-HBs
HBeAg	*Hepatitis B e-antigen positive* Highly infectious	Test for clearance, other serologies, LFT's, and IgG anti-HBs

Interpretation of Serologic Test Results

Serologic Marker				Interpretation
HBsAg	Total anti-HBc	IgM anti-HBc	Anti-HBs	
-	**-**	**-**	**-**	Never infected and no evidence of immunization
+	**+**	**-**	**-**	Chronic infection
+	**+**	**+**	**-**	Acute infection
-	**+**	**-**	**+**	Recovered from past infection and immune
-	**+/-**	**-**	**+**	Immune (immunization or natural)

The laboratory criteria for a diagnosis of acute HBV infection are a positive hepatitis B surface antigen result (HBsAg) AND Immunoglobulin M (IgM) antibody to hepatitis B core antigen (IgM anti-HBc) positive (if done).[7] Positive HBeAg correlates with higher titers of HBV and infectiousness.

[7] http://wwwn.cdc.gov/nndss/document/2012_Case%20Definitions.pdf

The laboratory criteria for chronic hepatitis B are:

- Immunoglobulin M (IgM) antibody 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 two times at least 6 months apart (Any combination of these tests performed 6 months apart is acceptable).[8]

A chronic carrier should be considered infectious. In the case of acute hepatitis B, prophylaxis is required for sexual contacts. Hepatitis B immune globulin (HBIG) 0.06 ml/kg IM and hepatitis B vaccine can effectively prevent infection after exposure to the virus.

EDUCATION FOR HEPATITIS B CARRIERS

HBV transmission occurs via percutaneous or mucosal routes; infective blood or body fluids can be introduced transplacentally or at birth, through sexual contact, by contaminated needles, and in some instances by casual household contact. HBV is not transmitted via the fecal-oral route.

Teach your patient about risk reduction measures:

- Cover all cuts and open sores with a bandage.
- Throw away used personal items such as tissues, menstrual pads, or tampons in paper bags.
- Wash hands well after touching blood or body fluids.
- Use condoms to protect non-immune sexual partners.
- Clean up blood spills. Clean the area with a bleach solution (1 part bleach and 9 parts water).
- Do not share toothbrushes, razors, needles for ear piercing, earrings, nail files, clippers, scissors, or anything that may come in contact with blood or body fluids.
- Do not donate blood, plasma, body organs, other tissues, or semen.

Chronic carriers should be advised to have liver tests monitored regularly to determine whether disease is progressing (chronic active hepatitis) or treatment is needed.

[8] Ibid.

As part of the referral to primary care, note the need for follow-up by a physician experienced in the management of chronic liver disease.

If a sexual partner of a HBV carrier is not immune, discuss the use of condoms for sexual contact. HBV carriers should also be encouraged to inform medical and dental care providers about their HBV status both to encourage proper infectious disease precautions and to ensure appropriate follow-up evaluation.

VACCINATION

Current recommendations from MDPH call for the vaccination of all children through age 18 years and high risk adults. The following are some adult high risk categories:

- Refugees from hepatitis B endemic regions, such as Sub-Saharan Africa, Asia, the Middle East, Eastern Europe and Haiti
- Household contacts and sexual partners of HBV carriers
- Sexually active heterosexuals with multiple partners in the past 6 months or past STD
- Sexually active men who have sex with men (MSM)
- Residents of chronic or long-term care facilities

To avoid missed opportunities for vaccination of all children and adult high-risk individuals, these individuals should receive the first dose of HBV vaccine at the first RHAP visit. Serologic testing must precede or be done concurrent to the vaccine dose; i.e., at the same visit as vaccination. If serologies show immunity, no further doses are needed.

It is important to remember that individuals who received one or two doses of vaccine overseas may test positive for anti-HBs antibodies. These individuals should finish the full three-dose vaccine series.

RESOURCES

Massachusetts Immunization Program
Massachusetts Department of Public Health
617-983-6800

Hepatitis B Coalition / Immunization Action Coalition
St Paul, MN 55104
612-647-9009

Hepatitis Branch, CDC
888-443-7232

American Liver Foundation
800-465-4837

Asian Liver Center
Stanford University School of Medicine