HEPATITIS B SURFACE ANTIGEN: PERINATAL

I. DEFINITION:

Hepatitis B infection is caused by the hepatitis B virus (HBV), a virus distinctly different from the viruses that cause hepatitis A, hepatitis C; hepatitis D, or hepatitis E. Perinatal transmission of hepatitis B occurs when a mother who is hepatitis B surface antigen (HBsAg) positive transmits the infection to her newborn infant, usually at delivery or shortly thereafter. Transmission can occur with other household members.

II. ETIOLOGY AND EPIDEMIOLOGY:

A. The risk for chronic infection varies according to the age at infection and is greatest among young children. Approximately 90% of infants and 25%–50% of children aged 1–5 years will remain chronically infected with HBV. By contrast, approximately 95% of adults recover completely from HBV infection and do not become chronically infected.

B. Transmission of HBV from mother to infant during the perinatal period represents one of the most efficient modes of HBV infection and often leads to severe long-term sequelae. For newborn infants whose mother is HBsAg and HBeAg positive, the risk for chronic HBV infections is 70%-90% by age 6 months in the absence of postexposure immunoprophylaxis and 90% of those infected infants will become chronic HBV carriers. Estimates are that 25% of these carriers will die from primary hepatocellular carcinoma (PHC) or cirrhosis of the liver. Prenatal screening of all pregnant women identifies those who are HBsAg-positive and allows treatment of their newborns with hepatitis B immune globulin (HBIG) and hepatitis B vaccine, a regimen that is 85%-95% effective in preventing the development of the HBV chronic carrier state.

C. For additional information related to HBV infection, refer to the Epidemiology Manual.

III. LABORATORY REPORTING PROCEDURES:

A. Several well-defined antigen systems are associated with HBV infection; however, infectivity with HBV is determined by the presence of hepatitis B surface antigen (HBsAg) in the blood.

B. All pregnant women should be tested routinely for HBsAg during an early prenatal visit (e.g. first trimester) in each pregnancy, even if they have been previously vaccinated or tested (see Maternity Manual).

C. Laboratory Test Definitions

1. HBsAg detects the hepatitis B surface antigen. A positive result indicates infectivity. These individuals should be counseled on specific health precautions regarding hepatitis B infection and risk to infant.

2. HBsAb (Anti-HBs) is the antibody to HBsAg. If hepatitis B surface antigen (HBsAg) is negative and HBsAb (anti-HBs) is positive, a person (regardless of whether vaccine induced or disease induced) can be considered immune.

3. HBcAb Total (Anti-HBc) is the antibody to the hepatitis B core antigen. If the HBsAb Total (Anti-HBc) test is positive, the client has come into contact with HBV and may or may not still be infected with the virus. In order to determine if they are immune or a carrier, they would need to undergo further testing at a private physician or lab. If the test is negative, they are regarded as susceptible and should be immunized.

4. "Use of Markers in Hepatitis B Screening" (Appendix 1) will be used solely in the clinic for test interpretations. Not for client use.

D. Laboratory Test Collection Procedures

1. Contact Perinatal Hepatitis B Coordinator at (405) 271-4636 to obtain lab requisition and assistance as needed.

2. Collect blood by venipuncture. Fill one 7 ml. tiger striped serum separator tube, allow to clot and spin.

Note: When performing venipuncture on infants, consult with contract lab for specimen requirements. If venipuncture cannot be obtained at the local county health department, contact the Perinatal Hepatitis B Coordinator for assistance at 405-271-4636.

3. Request the appropriate tests as defined below:

a. HBsAg – requires 2 mls of blood
1) Initial maternity screening (see Maternity manual)
2) Post-vaccination serology of infant at 9-18 months of age and 2 months after the hepatitis B vaccine series completion
3) Screening of infant that did not receive hep B vaccine and HBIG prophylaxis at birth as indicated

b. HBsAb (Anti-HBs) – requires 1 ml of blood
1) To detect immunity from hepatitis B virus or hepatitis B vaccine
2) Post-vaccination serology of infant at 9-18 months of age and 2 months after the hepatitis B vaccine series completion

c. HBcAb Total (Anti-HBc) – requires 1 ml of blood
1) To detect exposure to hepatitis B virus
2) Screening of sexual contact, known blood contact, or household contact of hep B infected person

E. All maternity, household and infant laboratory tests will be sent directly from the local clinic to current processing lab.

F. All lab results (negative and positive) should be reported to the Perinatal Hepatitis B Coordinator at (405) 271-4636. The Coordinator then will assist in the follow-up procedures for maternal, household and infant cases as needed.

IV. MANAGEMENT PLAN:

A. Maternal

1. All OSDH maternity clients will be screened through the maternity clinic for HBsAg as part of their initial prenatal laboratory testing through the OSDH public health lab.

2. If the initial screening HBsAg is positive the confirmatory test will be automatically performed by OSDH.

3. The local communicable disease nurse is responsible for counseling, reporting and making recommendation of prophylaxis for at risk contacts. OSDH Perinatal hepatitis B coordinator will notify the hospital and the medical provider of the provision of HBIG and hepatitis B vaccine for the infant, the recommended vaccine

schedule and appropriate serology testing to be done after the vaccine series is completed.

4. The client (mom) should receive in-depth counseling on the effects of Hepatitis B virus on the individual and the newborn as well as methods to prevent transmission. The client should be informed that HBIG and hepatitis B vaccine must be given to their newborn within 12 hours of birth. Emphasis should be placed on ensuring that the client is empowered to be responsible to make sure her newborn gets the appropriate intervention within 12 hours of birth as well as completing the hepatitis B vaccine series and post vaccine serological testing. The client should be instructed on the importance of proper diet, adequate fluid intake, sufficient rest, and avoidance of hepatotoxic substances (e.g., alcohol, over the counter and prescription medications--unless prescribed by a physician aware of the client's liver disease).

5. HBsAg-positive mothers identified during screening may have HBV-related acute or chronic liver disease. If acute or chronic disease is suspected, the client should be evaluated by a physician.

6. The client's maternity chart (if applicable), should be flagged in orange to denote infectivity with HBV. The test results should be documented in the record.

7. If the test is negative, but the client has a history of recent known exposure to hepatitis B virus or when particularly high risk behavior such as IV drug abuse or history of sexually transmitted disease has occurred during the pregnancy, a repeat HBsAg should be done at or around 36 weeks after consultation with the clinician.

8. The management plan is the same for those women tested through other public and private providers whose HBsAg is reported to the OSDH and then to the appropriate county health department.

B. Household

1. Perinatal Hepatitis B Coordinator will assist with the household contact follow-up with the local designated person (Communicable Disease Nurse or designee). Enter into PHIDDO case the following information:

   a. List of household contacts.

   b. Date blood will be drawn for HBsAb Total (anti-HBc) testing and sent to contracting lab.

   c. Date hepatitis B vaccine administered to susceptible household contacts (if case is still open).

2. Blood for HBcAb Total (Anti-HBc) will be drawn on at risk household contacts.

   NOTE: In situations where the household contacts have no other resources (finances or insurance) the county health department should provide testing and hepatitis B vaccine for the at risk household contacts as outlined in this order.

3. If HBcAb Total (anti-HBc) is negative, the hep B vaccine or combination hep A/B vaccine is administered to the susceptible household contact. Also, if a previously vaccinated child is negative to all hepatitis B serologic tests revaccination with a second 3-dose series and repeat serologic tests should be done 2 months after the final dose of hepatitis B vaccine.

The hepatitis B vaccine will be supplied by the Immunization Service. The vaccine is given in a three dose series over a six month period according to the hepatitis B immunization schedule.

4. If the HBcAb Total (anti-HBc) is positive, the household contact should be counseled that this test result indicates either immunity or chronic infection. The client should be referred to private physician for follow up and HBsAg testing which will confirm chronically infected state versus immunity.

5. The tracking system for the vaccine administration will be coordinated with each site by the Immunization Service.

C. Infant Follow-up

1. The first dose of hepatitis B vaccine and HBIG will be administered by the hospital.

2. All infants born to HBsAg-positive women should receive single-antigen hepatitis B vaccine and HBIG (0.5 mL) $\leq$ 12 hours of birth, administered at different injection sites.

   Note: The timing of the first dose is critical as the efficacy of the treatment falls off markedly after 48 hours of life.

3. After hospital discharge, attempt will be made to contact the mother and discuss importance of scheduling the infant into child health clinic or private physician.

   First visit to child health clinics or private physician will be scheduled during the first month and subsequent visits at 2, 4, 6 and 9-18 months.

4. Administer hep B vaccine (Dose 2) 0.5 mL IM at 1 month of age at child health clinic or private physician and report to HIV/STD Service at OSDH.

5. Administer hep B vaccine (Dose 3) 0.5 mL IM at 6 months of age at child health clinic or private physician and report to HIV/STD Service at OSDH.

6. If a newborn infant does not receive HBIG or hep B vaccine in the hospital, administer HBIG 0.5 mL IM and HB vaccine 0.5 mL IM within 7 days of age. Subsequent doses of hep B vaccine should follow at 1 month and 6 months after the first dose.

7. Postvaccination testing for HBsAg and HBsAb (anti-HBs) should be performed 2 months after completion of the vaccine series, at 9-18 months of age. If HBsAg is negative, and anti-HBs is positive on post-vaccination serology, the child has immunity and is protected. If HBsAg is positive on post-vaccination, it is likely the child is a chronic carrier and should be referred to a private physician. If HBsAg is negative and the HBsAb is negative, the infant should be revaccinated with a second 3-dose series and retested 2 months after the final dose of vaccine.

8. The HIV/STD Service will monitor the tracking of the infant with a telephone call to the appropriate clinic or track in OSIIS and verify that the vaccine was administered.

9. The HIV/STD Service will contact all health care providers for the completion of hepatitis B series and the 9-18 month serology. In the absence of a private physician or resource, the local county health department can obtain the blood and send to contract lab. Testing will be performed for both HBsAg and HBsAb (anti-HBs) to monitor effectiveness of therapy.

D. Chronic Hepatitis Carriers

1. Advise of need for medical follow-up to evaluate chronic hepatitis.

2. Educate client concerning their potential infectivity to others and the availability of a safe and effective vaccine that can prevent the spread of HBV to their newborn infant, household contacts and sexual partners.

3. Advise that household articles such as toothbrushes and razors should not be shared.

4. Cuts or skin lesions should be covered to prevent spread of infectious secretions or blood.

5. Advise that when seeking medical or dental care, the carrier should inform those responsible for their care of their HBsAg status.

6. If the sexual partner is not immune to hepatitis B, the partner should be advised to take precautions.

7. "Safe sex" should be practiced for the prevention of many sexually transmitted diseases, including hepatitis B and HIV.

8. The infected individual should refrain from donating blood, plasma, body organs, or other tissue.

V. CONSULTATION/REFERRAL:

A. Clients should receive information and counseling regarding the disease. Parents should receive information regarding the importance of infant prophylaxis (Hepatitis B immune globulin and Hepatitis B vaccine). Clients should receive information regarding HBV including both acute and chronic aspects of the infection.

B. Make available hepatitis B vaccine or combination hepatitis A/B vaccine for household contacts. The household contact follow-up will be coordinated by the communicable disease nurse or other qualified professional designee.

C. Appropriate family planning counseling should be given. The contraceptive needs of women with previous or current HBV infection should be managed by an Advance Practice Nurse. The advance practice nurse should call the OSDH Women's Health Nurse Consultant regarding the possible need for liver function testing before ordering oral contraceptives.

D. If the infant develops signs or symptoms of acute hepatitis (jaundice, poor feeding, decreased activity, lethargy, etc.), immediately refer the infant to a private physician and report to the Communicable Disease Nurse and the OSDH HIV/STD Service.

REFERENCES:

MMWR, June 10, 1988, Vol. 37, No. 22, pp. 341-351.
MMWR, February 9, 1990, Vol. 39, No. S-2, p. 5 and p. 17.
MMWR, December 23, 2005 / 54(RR16);1-23
"Information About Hepatitis B", OSDH pamphlet.
OSDH Epidemiology Manual

APPENDIX I

USE OF MARKERS IN HEPATITIS B SCREENING

A. To Screen PREGNANT WOMEN

Test for HBsAg during prenatal visit

If HBsAg positive, screen and vaccinate household and sexual contacts

B. To Screen INFANTS (BORN TO HBsAg POSITIVE MOTHERS) WHO HAVE RECEIVED THREE DOSES OF VACCINE

Test for HBsAg and HBsAb (anti-HBs) at age 9-18 months or 2 months after last hepatitis B vaccine.

- If HBsAg negative and HBsAb (anti-HBs) positive: Immune (Successful Intervention)
- If HBsAg positive and HBsAb (anti-HBs) negative: Infant infected
- If HBsAg negative and HBsAb (anti-HBs) negative: Not immune and not infected Repeat 3 dose hepatitis B vaccine series and repeat serology testing 2 months after final dose of vaccine.

C. To Screen HOUSEHOLD/SEXUAL CONTACTS of Hepatitis Infected Persons

- Screen contacts by administering test for HBcAb Total (anti-HBc).
- If screening test is negative, hepatitis B vaccine or combination hep A /B vaccine should be administered.
- If screening test is positive, the person should be referred to his/her private physician for further testing/treatment and evaluation.