Date: August 26, 2013

To: Local Health Departments
    Tribal Health Clinics
    Hospital Infection Preventionists

From: Jeffrey P. Davis, MD, Chief Medical Officer and State Epidemiologist for Communicable Diseases and Emergency Response

Subject: Wisconsin Perinatal Hepatitis B Prevention Program Manual

In Wisconsin and throughout the United States, hepatitis B virus (HBV) infection is a major cause of acute and chronic hepatitis, cirrhosis, and primary hepatocellular carcinoma. The Centers for Disease Control and Prevention (CDC) has identified a national strategy to address this issue which includes the prevention and elimination of perinatal HBV transmission. The CDC Advisory Committee on Immunization Practices (ACIP) recommends the following:

- Universal screening of pregnant women for hepatitis B surface antigen (HBsAg) during each pregnancy
- Case management of HBsAg-positive mothers and their infants
- Provision of immunoprophylaxis to infants born to infected mothers, including hepatitis B vaccine and hepatitis B immune globulin, within 12 hours of birth
- Routine vaccination of all infants with the hepatitis B vaccine series, with the first dose administered at birth

Local and national HBV disease reports demonstrate that to be successful in our efforts to prevent and eliminate perinatal HBV transmission in Wisconsin, we need to follow these guidelines more closely.

The Wisconsin Perinatal Hepatitis B Prevention Program Manual provides more detailed information regarding the Perinatal Hepatitis B Program and includes a reference to the complete ACIP recommendations for protection against perinatal hepatitis B.

To ensure that efforts to follow these guidelines will be successful, local health departments should arrange to meet with representatives from each birthing hospital within their jurisdiction. This meeting could include presentation of the results of the 2011 birthing hospital Policy and Practice Survey and the national guidelines listed above. We hope that local public/private partnerships will be fostered or further developed as a result of this meeting and that all meeting attendees and others involved with these partnerships will better understand their roles in the prevention of perinatal HBV transmission.

We greatly appreciate your cooperation in the prevention and control of hepatitis B. If you have any questions about the Wisconsin Perinatal Hepatitis B Prevention Program, please contact Stephanie Borchardt at 608-266-9923 or Stephanie.Borchardt@wisconsin.gov or Anna Kocharian at 608-266-8621 or Anna.Kocharian@wisconsin.gov.
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## Glossary of Terms and Abbreviations

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<tr>
<td>AAP</td>
<td>American Academy of Pediatrics</td>
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<tr>
<td>AAFP</td>
<td>American Academy of Family Practice</td>
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<tr>
<td>ACIP</td>
<td>Advisory Committee on Immunization Practices</td>
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<tr>
<td>ACOG</td>
<td>American College of Obstetricians and Gynecologists</td>
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<tr>
<td>ALT</td>
<td>alanine aminotransferase</td>
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<tr>
<td>AST</td>
<td>aspartate aminotransferase</td>
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<tr>
<td>Anti-HBe</td>
<td>antibody to hepatitis B e antigen</td>
</tr>
<tr>
<td>Anti-HBs</td>
<td>antibody to hepatitis B surface antigen</td>
</tr>
<tr>
<td>BCDER</td>
<td>Bureau of Communicable Diseases and Emergency Response</td>
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<tr>
<td>DHS</td>
<td>Department of Health Services</td>
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<tr>
<td>DPH</td>
<td>Division of Public Health</td>
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<tr>
<td>EDC</td>
<td>expected date of confinement</td>
</tr>
<tr>
<td>HBeAg</td>
<td>hepatitis B e antigen</td>
</tr>
<tr>
<td>HBIG</td>
<td>hepatitis B immunoglobulin</td>
</tr>
<tr>
<td>HBsAg</td>
<td>hepatitis B surface antigen</td>
</tr>
<tr>
<td>HBV</td>
<td>hepatitis B virus</td>
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<tr>
<td>IP</td>
<td>infection preventionist</td>
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<tr>
<td>IDU</td>
<td>injecting drug use</td>
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<tr>
<td>L&amp;D</td>
<td>labor and delivery</td>
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<tr>
<td>LHD</td>
<td>local health department</td>
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<tr>
<td>NICU</td>
<td>neonatal intensive care unit</td>
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<tr>
<td>PHN</td>
<td>public health nurse</td>
</tr>
<tr>
<td>STAT</td>
<td>medical abbreviation for Latin ‘statim’ meaning immediately</td>
</tr>
<tr>
<td>VFC</td>
<td>Vaccines for Children</td>
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<tr>
<td>VPD</td>
<td>vaccine preventable disease</td>
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<tr>
<td>WEDSS</td>
<td>Wisconsin Electronic Disease Surveillance System</td>
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<tr>
<td>WIR</td>
<td>Wisconsin Immunization Registry</td>
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<tr>
<td>WSLH</td>
<td>Wisconsin State Laboratory of Hygiene</td>
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</table>
Introduction

Hepatitis B is caused by infection with HBV. The range in incubation period from the time of exposure to onset of symptoms is 45 to 180 days (average 60 to 90 days). Clinical signs and symptoms occur more often in adults than in infants or children, who usually have asymptomatic acute courses. However, approximately 50% of adults who have acute infections are asymptomatic. Among those with clinical illness, the onset is usually insidious, with anorexia, vague abdominal discomfort, nausea and vomiting, sometimes with arthralgia and rash. Clinically apparent illness often progresses to jaundice. Most acute infections among adults result in complete recovery; however, approximately 5% of all acute HBV infections progress to chronic infection. Each year 200 to 300 Americans die as a result of fulminant disease (case fatality rate, 63% to 93%). CDC estimates that 800,000 to 1,400,000 persons in the United States are infected with HBV; approximately 38,000 new infections occur annually (1).

Persons with chronic HBV infection are often asymptomatic and may not be aware that they are infected. The risk of chronic infection is inversely related to age at infection. As many as 90% of infants infected at birth and 30% to 50% of children who are infected with HBV when they were aged 1 to 5 years become chronically infected, compared with 2% to 6% of persons infected with HBV when they were adults. Persons with chronic HBV infection have a higher risk of developing cirrhosis and hepatocellular carcinoma (2).

HBV transmission results from percutaneous and mucosal exposure to infective body fluids. Major modes of HBV transmission include sexual or close household contact with an infected person, perinatal mother-to-infant transmission, injecting drug use, and nosocomial exposure. Persons with either acute or chronic HBV infection should be considered infectious whenever HBsAg is present in the blood.

The CDC Division of Viral Hepatitis has described the elimination of perinatal hepatitis B as one of the priority goals in the national strategy for elimination of HBV infection. This strategy is focused on reducing the number of HBV infections each year to make progress toward elimination of chronic HBV infection and liver cancer in the United States. To accomplish these goals, it is imperative for both public and private health care providers in Wisconsin to implement and support practices and policies designed to prevent perinatal transmission of HBV.

The CDC’s strategy to eliminate transmission of HBV infection includes:

- universal screening of pregnant women for HBsAg during each pregnancy.
- provision of immunoprophylaxis to infants born to HBsAg-positive women, including hepatitis B vaccine and HBIG within 12 hours of birth.
- routine vaccination of all infants with the hepatitis B vaccine series, with the first dose administered at birth.
- vaccination of previously unvaccinated children and adolescents through age 18 years.
- vaccination of previously unvaccinated adults at an increased risk for HBV infection.

Refer to the Glossary of Terms and Abbreviations to clarify abbreviations used throughout the manual.
Case Definitions and Classifications

Perinatal Hepatitis B Case Definition and Case Classification:
http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/hepatitisviralcurrent.htm

Clinical Case Definition: Perinatal hepatitis B in the newborn may range from asymptomatic to fulminant hepatitis.

Case Classification: HBsAg positivity in any infant aged >1 to 24 months who was born in the United States or in a U.S territory to a HBsAg-positive mother.

Laboratory criteria for diagnosis: HBsAg positive

Perinatal Transmission of Hepatitis B Virus

Approximately 24,000 women with chronic HBV infection (identified through prenatal HBsAg laboratory testing) give birth in the United States each year (3). Ninety percent of perinatal HBV infections can be prevented by administration of postexposure prophylaxis with hepatitis B vaccine and HBIG to each infant born to a HBsAg-positive woman. Routine vaccination with the hepatitis B vaccine series is recommended to ensure that each infant is protected against HBV infection from an early age.

The following scenarios describe settings and circumstances for acquisition of many of the perinatal HBV infections and should be considered when developing and implementing local protocols and services to prevent HBV infection among infants:

- A pregnant woman is tested for HBsAg early in pregnancy and is found to be negative. She develops HBV infection later in pregnancy, but it is not detected despite the CDC recommendation that pregnant women at high-risk for acquiring HBV in pregnancy be tested again later in the pregnancy. The infection is not clinically detected by her medical care providers, so her infant does not receive hepatitis B vaccine and HBIG at birth.

- A pregnant woman with chronic HBV infection is tested using the wrong laboratory test. The negative test result leads the clinician to believe that the woman is not at risk for transmitting HBV to her infant. The infant does not receive hepatitis B vaccine and HBIG at birth.

- A pregnant woman is not tested during the current pregnancy. Her prenatal care provider believes that she is not at risk for acquiring HBV infection and reports a negative test result for HBsAg screening from a previous pregnancy (though she acquired HBV infection since her previous pregnancy). Her infant does not receive hepatitis B vaccine and HBIG at birth.

- Prenatal HBsAg screening test results are not reported to the birthing hospital; the pregnant woman presenting at the birthing hospital for delivery is not tested for
HBsAg upon admission to L&D. Her infant does not receive hepatitis B vaccine and HBIG at birth.

- A parent is vaccine hesitant and does not think her infant is at risk for HBV infection. She refuses the hepatitis B birth dose prior to hospital discharge and delays hepatitis B vaccination until the child is ready for entrance into kindergarten. Her young child is infected with HBV by an unidentified household or community source.

An additional important scenario that involves infants and young children follows:

- A birth mother is HBsAg-negative, but an infant or young child is infected with HBV by another family member or caregiver. This accounts for the majority of cases of childhood transmissions of HBV to young children.

**Preventing Perinatal Transmission of Hepatitis B Virus**

Preventing perinatal HBV transmission from mother to infant is an integral part of the national strategy to eliminate hepatitis B. National guidelines include the following:

- Universal HBsAg screening of each pregnant woman during each pregnancy.
- Case management of HBsAg-positive women and their infant(s).
- Provision of immunoprophylaxis to infants born to infected women, including hepatitis B vaccine and HBIG within 12 hours of birth.
- Routine vaccination of all infants with the hepatitis B vaccine series, beginning with the first dose administered at birth, prior to hospital discharge (4).

Based on these recommendations, previous ACIP recommendations, and CDC priority strategies for the elimination of HBV infection in the United States, the Wisconsin Perinatal Hepatitis B Prevention Program has identified several gaps that must be closed if we are to meet this goal, including:

- Identify each pregnant woman at risk of transmitting HBV.
- Decrease the number of infants born to HBsAg-positive women who are lost to follow-up.
- Test each pregnant woman for HBsAg during each pregnancy.
- Conduct timely follow-up of each report received on a HBsAg-positive woman of childbearing age (15-44 years old) to determine if she is pregnant.
- Decrease the number of pregnant women who are admitted to birthing hospitals for delivery without a history of prenatal care (~3-5% annually, and increasing in some sub-populations).
- Increase provider reporting of HBsAg positive pregnant women to the local health department.
- Increase birthing hospital support for and implementation of a universal hepatitis B vaccine birth dose policy.
- Appropriately manage persons identified as contacts of a HBsAg-positive pregnant woman and infant(s) born to her (i.e., test and vaccinate).
- Educate providers regarding the racial and ethnic disparities associated with perinatal transmission of HBV and the misperception that the birth mother and her newborn
infant are not at risk of perinatal transmission of HBV (e.g., because she tested HBsAg-negative during a previous pregnancy).
ROLE OF LOCAL HEALTH DEPARTMENTS

Case Management

The purpose of perinatal hepatitis B case management is to ensure that steps have been taken to prevent transmission of HBV from HBsAg-positive mother to infant during and immediately following the birth. In addition, case investigation assures that appropriate steps have been taken by the LHD to prevent further HBV transmission in the household setting.

For each reported HBsAg-positive pregnant woman, the LHD should:
- Open a hepatitis B case investigation.
- Verify the test results with the ordering physician or laboratory.
- Conduct hepatitis B case management to ensure that all household and sexual contacts of the pregnant woman are tested for HBV infection.
- Investigate any additional acute or chronic cases identified as being associated with the index case.
- Ensure vaccination of all susceptible contacts with the hepatitis B vaccine series followed by postvaccination serologic testing.
- Ensure that the birthing hospital, identified as the location for delivery, is notified of the HBsAg-positive status of the pregnant woman.
- Ensure that the birthing hospital is aware of the recommendations to provide hepatitis B vaccine and HBIG to the infant born to a HBsAg-positive woman within 12 hours of birth.
- Provide education and consultation to the pregnant woman and her health care provider(s) to prevent additional transmission of HBV.
- Work with the mother of the infant to assure that the infant completes the hepatitis B vaccine series on schedule, followed by postvaccination serologic testing (at age 9-18 months) to verify immunity.
- Serve as a resource for local prenatal health care providers regarding perinatal hepatitis B prevention.

Protocol for Managing Contacts of HBV-Infected Pregnant Women

The LHD case manager is responsible for working in partnership with local health care providers to ensure that all household and sexual contacts of a HBsAg-positive pregnant woman are identified and tested for HBV infection, susceptible contacts are vaccinated, each infant born to a HBsAg-positive mother receives immunoprophylaxis within 12 hours of birth and completes the hepatitis B vaccine series (Table), and postvaccination serologic testing is conducted to verify HBV immunity.

The LHD case manager will also educate the woman about her infection, the implications for her infant and the importance of following recommended prophylaxis guidelines to prevent HBV transmission. The case manager will also ensure that the mother understands the importance of routine pediatric care for her baby and how to minimize the risk of HBV exposure in the household and community settings. Case managers should also monitor and report completion
of the hepatitis B vaccine series and postvaccination serologic testing for infants born to HBsAg-positive women. Cases are generally open for 9-18 months following birth.

Following is the step-by-step protocol:

1. **Upon receipt of a HBsAg-positive laboratory test result in the pregnant woman,**
   - Open a new incident in WEDSS Case Reporter after verifying that she was not previously reported.
   - Contact the prenatal care provider to confirm the positive HBsAg test result(s) and pregnancy status; if positive, determine if the patient has been notified.
   - If the woman was previously reported in Wisconsin, use the existing WEDSS incident to document case follow up.
   - Initiate contact with the case to provide education on how to avoid transmission to contacts, and identify household and/or sexual contacts.
   - Ensure that the delivery hospital is notified of the HBsAg status of the woman and verify that hepatitis B vaccine and HBIG will be available for immunoprophylaxis of the infant within 12 hours of birth.
   - Note that if you receive a positive HBsAg, HBeAg or HBV DNA test result in a woman of childbearing age (aged 15 to 44 years), pregnancy status should be assessed.

2. **Contact Investigation**
   - Assess immunization and immune status of all household or sexual contacts of the HBsAg-positive woman and offer testing and vaccination, where appropriate.
   - For contacts without a documented history of receiving the hepatitis B vaccine series, collect blood for laboratory testing for HBsAg, anti-HBs and anti-HBc and administer the first dose of hepatitis B vaccine.

If all three tests are negative,
   - Administer the second dose of hepatitis B vaccine at least 1 month after the first dose.
   - Administer the third dose of hepatitis B vaccine at least 6 months after the first dose.
   - Repeat laboratory tests for HBsAg, anti-HBs and anti-HBc 1-2 months after completing the hepatitis B vaccine series to determine if immune.

If positive for HBsAg, the contact is infected,
   - Refer for medical follow-up and evaluation.

If positive for anti-HBs and negative for anti-HBc and HBsAg,
   - The contact is immune as a result of hepatitis B vaccination and does not need additional doses of vaccine.

If positive for anti-HBs and anti-HBc and negative for HBsAg,
   - The contact is immune as a result of natural infection and does not need additional doses of vaccine.

If positive for anti-HBc and negative for anti-HBs and HBsAg,
   - Interpretation is unclear; four possibilities include:
     - Resolved infection (most common)
     - False-positive anti-HBc thus susceptible
     - ‘Low level’ chronic infection
Resolving acute infection.

Persons who do not respond to the first series of hepatitis B vaccine should complete a second three-dose vaccine series.

For interpretation of hepatitis B serologic test results, refer to: http://www.cdc.gov/hepatitis/HBV/PDFs/SerologicChartv8.pdf

3. **Upon the birth of an infant born to a HBsAg positive woman**
   - Enter the infant into WEDSS and initiate perinatal case management of the infant as soon as possible after discharge from the birthing hospital.
   - Provide information on the mother’s HBsAg status to the physician who will provide primary pediatric care for the infant and ensure that an appointment has been made for 1-2 months following birth for the infant to receive the second dose of hepatitis B vaccine.
   - Determine if there are any new or unvaccinated contacts in the infant’s household who may be at risk of transmitting HBV to the infant; use contact investigation protocol above.

4. **Documentation in the WIR and WEDSS**
   - Record all dates of vaccine and HBIG administration in the WIR.
   - Report the dates of administration of hepatitis B vaccine and HBIG, and the date of postvaccination serologic testing and results in WEDSS.
   - Report families lost to follow up in WEDSS.
   - Report to the Perinatal Hepatitis B Prevention Program transfers to another jurisdiction, diagnosis of HBV infection in an infant and death of infant with HBV infection.

5. **Lost to follow up**
   - At least three valid contact attempts should be made by telephone. Valid contact attempts include leaving a voicemail message (when the answering service indicates that the phone number is correct) or speaking to a person answering the telephone who acknowledges that the HBsAg-positive mother and infant live at that address. If a phone number is unavailable or unknown, at least one home visit should be attempted prior to determining that the infant is lost to follow-up.
   - If unable to reach the HBsAg-positive mother by telephone or in person, educational materials and local health department information should be mailed to the mother.
   - If contact attempts are unsuccessful, and 12 months have passed since the infant’s last hepatitis B vaccine dose (if date is known), the mother and infant should be classified as ‘lost to follow up.’
   - If unable to contact the mother, the infant’s physician should be contacted to determine whether postvaccination serologic testing was completed and the test results, if postvaccination serologic testing was done.
Pediatric Hepatitis B Vaccination for Infants Born to HBsAg-Positive Women

There are four hepatitis B-containing vaccines that are used during infancy. The vaccine schedules are as follows:

### Table. Pediatric Hepatitis B Vaccine Schedules

<table>
<thead>
<tr>
<th>Dose</th>
<th>Single Antigen Vaccine</th>
<th>Combination Vaccine</th>
<th>Combination Vaccine</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Engerix B® or</td>
<td>DTaP-HepB-IPV</td>
<td>HepB-Hib</td>
</tr>
<tr>
<td></td>
<td>Recombivax HB®</td>
<td>Pediarix®</td>
<td>Comvax®</td>
</tr>
<tr>
<td>Dose 1</td>
<td>Within 12 hrs of birth</td>
<td>Use only single antigen vaccine for birth dose</td>
<td>Use only single antigen vaccine for birth dose</td>
</tr>
<tr>
<td>Dose 2</td>
<td>1-2 months</td>
<td>2 months</td>
<td>2 months</td>
</tr>
<tr>
<td>Dose 3</td>
<td>6 months</td>
<td>4 months</td>
<td>4 months</td>
</tr>
<tr>
<td>Dose 4</td>
<td>NA</td>
<td>6 months</td>
<td>12-15 months</td>
</tr>
</tbody>
</table>

**Single antigen hepatitis B vaccine:**
- Administer 0.5 mL of single antigen hepatitis B vaccine IM within 12 hours of birth
  - For each infant born to a HBsAg-positive woman, administer HBIG, 0.5 mL IM at birth at a site different from where the vaccine is given (e.g., other thigh).
- Complete the hepatitis B vaccine series with two additional doses of single antigen vaccine administered at 1 and 6 months of age.
- A total of three doses of single antigen vaccine are needed to complete the series.

**Combination hepatitis B vaccines:**
Do not administer combination hepatitis B vaccines at birth; use a dose of single antigen hepatitis B vaccine for the first dose in all infants born to HBsAg-positive women
- Comvax® is licensed for use as a three-dose series beginning at 6 weeks of age and may be used to complete the vaccine series, when neither component of the vaccine is contraindicated. Among infants who have received the single antigen hepatitis B vaccine birth dose (within 12 hours of birth), three doses of Comvax® administered at 2, 4 and 12-15 months of age are needed to complete the vaccine series because of the Hib series requirements.
- Pediarix® is licensed for use as a three-dose series at 2, 4, and 6 months of age when none of the components are contraindicated. Pediarix® may be used to complete the hepatitis B vaccine primary series.

For pre-term infants who weigh <2000 grams at birth and who are born to HBsAg-positive women or women with unknown HBsAg status, administer hepatitis B vaccine and HBIG within 12 hours of birth. The initial dose should not be counted as part of the three-dose hepatitis B vaccine series because pre-term infants with low birth weight have a decreased response to hepatitis B vaccine administered before 1 month of age. Three additional doses of hepatitis B vaccine are needed to complete the vaccine series.
ROLE OF THE PRIVATE PROVIDER

To eliminate perinatal hepatitis B, public and private health care providers must work together to implement and support practices and policies designed to prevent perinatal transmission of HBV.

Role of the Prenatal Care Provider

- Routinely test each pregnant woman in Wisconsin for HBsAg early during each pregnancy (Figure 1).
- Send a copy of the original HBsAg test result for the current pregnancy with prenatal records to the delivery hospital.
- Inform the HBsAg-positive woman of her status and stress the importance of her infant receiving immunoprophylaxis with hepatitis B vaccine and HBIG.
- Retest pregnant women with risk factors for acquiring HBV infection later in the pregnancy. This includes HBsAg-negative pregnant women who have:
  - a HBsAg-positive partner.
  - had more than one sex partner in the last 6 months.
  - a history of injecting drug use (non-prescription).
  - been treated for a sexually transmitted infection.
- Report each HBsAg-positive pregnant woman to the patient’s local public health department of jurisdiction within 72 hours of discovery or diagnosis. The report should be made to the local health department of residence. A Wisconsin Local Public Health Department and Tribal Agency Listing can be found at: http://www.dhs.wisconsin.gov/localhealth
- Refer the HBsAg-positive pregnant woman for appropriate medical management if needed (e.g., a gastroenterologist, infectious disease specialist, or primary care physician with expertise in managing patients with HBV infection).
- On admission to L&D for delivery, verify each patient’s HBsAg status for the current pregnancy.
- Order ‘STAT’ HBsAg testing for any pregnant woman with unknown HBsAg status on admission to L&D.
- Notify the clinician providing medical care for the infant born to a HBsAg-positive woman of the need for administration of HBIG and a dose of single antigen hepatitis B vaccine within 12 hours of birth.

Role of Birthing Hospitals

The following are recommended for all birthing hospitals:

- Universal standing orders for admission to L&D requiring documentation of HBsAg status for the current pregnancy (Figure 2).
  - The universal standing orders should also include an order for HBsAg (‘STAT’) testing, upon admission, for all pregnant women admitted for delivery who have no record of HBsAg prenatal testing for the current pregnancy (Figure 3).
- Documentation of prenatal HBsAg test results in the patient medical record (by the time of admission to L&D) for each pregnant woman for the current pregnancy.
• Universal standing orders (for L&D units) for the administration of hepatitis B immunoprophylaxis with a dose of single antigen hepatitis B vaccine and HBIG to each infant born to a HBsAg-positive mother within 12 hours of birth.
  o Documentation must include the date and time of administration of hepatitis B vaccine and HBIG.
• Universal standing orders (for L&D units) for the administration of a dose of single antigen hepatitis B vaccine within 12 hours of birth to each infant born to a woman with unknown HBsAg status at the time of delivery.
  o If the mother’s HBsAg status remains unknown or is unavailable, HBIG must be administered within 7 days of birth.
• Documentation of the birth mother’s HBsAg status in the infant’s medical record.
• Universal standing orders (for L&D units) for the administration of a dose of single antigen hepatitis B vaccine to each infant prior to hospital discharge.
  o For infants weighing <2000 grams, born to mothers with unknown HBsAg status, give a dose of single antigen hepatitis B vaccine. If the maternal HBsAg status cannot be determined within 12 hours of birth, HBIG should be given as well. These infants will need three additional doses of hepatitis B vaccine to complete the hepatitis B series because of their low birth weight.
  o For infants weighing <2000 grams born to HBsAg-negative mothers, either administer the first dose of hepatitis B vaccine before hospital discharge or delay the first dose of hepatitis B vaccine until 1 month of age. Specific recommendations for infants weighing <2000 grams, titled ‘Hepatitis B Immunization Management of Preterm Infants Weighing <2000g, by Maternal Hepatitis B Surface Antigen (HBsAg) Status’ is available at: http://www.cdc.gov/hepatitis/hbv/pdfs/correctedtable4.pdf

Care of Mothers and Infants in Labor and Delivery (L&D) Units

Upon admission to the birthing hospital L&D unit:
• Review the HBsAg prenatal test result for the current pregnancy and place a copy in the infant medical record after delivery.
  o If the mother is HBsAg-positive, notify the nursery that the infant will need postexposure immunoprophylaxis with hepatitis B vaccine and HBIG within 12 hours of birth.
  o If the mother has risk factors for acquiring HBV infection during pregnancy, repeat HBsAg testing on admission; notify the laboratory to call immediately with results and document them in the maternal and infant medical records.
• For pregnant women without laboratory documentation of HBsAg testing for the current pregnancy
  o Perform HBsAg (‘STAT’) testing; notify the laboratory to call immediately with results and document them in the maternal and infant medical records.
  o If the mother is HBsAg-positive, notify the nursery that the infant will need postexposure immunoprophylaxis with hepatitis B vaccine and HBIG within 12 hours of birth.
If the mother is HBsAg-negative, order administration of a dose of single antigen hepatitis B vaccine for the infant prior to hospital discharge.

If HBsAg laboratory results are not available during delivery, and the baby weighs <2000 g, administer a dose of single antigen hepatitis B vaccine and a dose of HBIG within 12 hours of birth.

If HBsAg laboratory results are not available during delivery, and the baby weighs ≥2000 g, administer a dose of single antigen hepatitis B vaccine within 12 hours of birth and allow the laboratory results to guide administration of HBIG (HBIG must be administered within 7 days of birth).

Role of the Pediatric Care Provider

- Ensure that the maternal HBsAg status is recorded in the infant medical record.
- Ensure that each infant born to a HBsAg-positive mother or mother with unknown HBsAg status receives appropriate immunoprophylaxis and has postvaccination serologic testing at age 9-18 months, after completion of at least three doses of the hepatitis B vaccine series. If a combination vaccine product (i.e., Comvax or Pediarix) was used, the infant will have received more than three doses of hepatitis B-containing vaccine.
- Support birthing hospitals in their development and implementation of standing orders for administration of HBIG and hepatitis B vaccine to infants born to HBsAg-positive mothers within 12 hours of birth.
- Ensure that each infant receives a dose of single antigen hepatitis B vaccine prior to hospital discharge and educate all parents on the importance of on-schedule immunization.
- Ensure that each infant completes the hepatitis B vaccination series.
- Complete postvaccination serologic testing, including HBsAg and anti-HBs, 1-2 months after completion of the hepatitis B vaccine series, at age 9-18 months.
  - If negative for both tests, the child is susceptible and should complete a second hepatitis B vaccine series as soon as possible and then complete postvaccination serologic testing.
  - If positive for anti-HBs and negative for HBsAg, the child is immune and does not need additional doses of vaccine.
  - If positive for HBsAg, the child is infected and should be referred for medical evaluation.
- Enter all vaccine administration dates into the WIR and forward results of postvaccination serologic testing to the LHD.
- Ensure that children aged 0-18 years who were not vaccinated at birth and who are from a country with a high rate of HBV infection are tested and vaccinated as needed.

The following resources are available from the Wisconsin DHS to assist providers who administer vaccines:
• **Vaccines for Children Program (VFC)**
  The Wisconsin Immunization Program participates in the federally funded VFC Program that supplies free childhood vaccines to physicians, clinics and hospitals serving eligible children 0-18 years of age. All childhood vaccines are available through VFC. To enroll in VFC, or for more information on this program, call (608) 267-5148.

• **Wisconsin Immunization Registry (WIR)**
  The WIR is a computerized, web-based application developed and maintained by DHS. It is used to record, store, and monitor vaccination records for Wisconsin residents. All LHDs and many private providers use the WIR to record vaccines administered and to access historical records. Currently over 7 million records are stored in this system. Vaccine inventory and report functions are also available to the enrolled provider. Training, technical assistance and help desk services are also offered to WIR users. To enroll as a WIR user, or for more information, call the WIR at (608) 261-4948.
Wisconsin Perinatal Hepatitis B Prevention Program Key Elements

Presently, 101 Wisconsin hospitals provide inpatient services for women giving birth and infants born to them. During 2010, 66,387 infants were born in Wisconsin. Among these infants, 154 were born to women known to be at risk of transmitting HBV (i.e., had a positive prenatal screen for HBsAg) and were reported to the LHD and followed using case management. The CDC estimates that there were at least 60 additional births in Wisconsin to HBV-infected women who were not identified. Data from the National Immunization Survey regarding infants born in 2010 indicate that 61.4% of the 66,386 infants born in Wisconsin received a dose of hepatitis B vaccine prior to hospital discharge.

The following Key Elements of the Wisconsin Perinatal Hepatitis B Program were adapted from the current recommendations of the ACIP. They were developed in alignment with the Wisconsin State Health Plan: *Healthiest Wisconsin 2020* and Wisconsin state laws applying to Communicable Diseases Chapter 252 and Chapter DHS 145. The purpose of these Key Elements is to prevent perinatal and early childhood HBV transmission.

1. **Universal prenatal HBsAg testing of each pregnant woman during each pregnancy**
   - Test each pregnant woman for HBsAg early during each pregnancy.
   - Re-test women at high risk for infection (e.g., has a HBsAg-positive partner, had more than one sex partner in the last 6 months, has a history of IDU, or has been treated for a sexually transmitted infection).
   - Provide documentation of the prenatal HBsAg status of each pregnant woman for the current pregnancy to the delivery hospital with the pre-admission medical information (submitted by the prenatal care provider).
   - Assure documentation of prenatal HBsAg status upon admission to the hospital/clinic for delivery.
   - Order “STAT” HBsAg testing for each pregnant woman (on admission to the L&D unit), who does not have documentation of prenatal HBsAg testing.
   - Document the prenatal HBsAg status of the mother in the infant medical record upon delivery.

2. **Reporting to LHD of jurisdiction of each HBsAg-positive pregnant woman**
   - Report each pregnant woman who tests HBsAg-positive to the patient’s LHD of jurisdiction.
   
   Wisconsin Communicable Disease Law Chapter 252.05 and Chapter DHS 145.04 (3) (b) requires that any person with a positive laboratory test result for HBV infection be reported to the LHD within 72 hours of diagnosis or identification of a case or suspected case.

   A list of Wisconsin LHDs and tribal agencies is available at: [http://www.dhs.wisconsin.gov/localhealth](http://www.dhs.wisconsin.gov/localhealth).

3. **Administration of hepatitis B immunoprophylaxis within 12 hours of birth to each infant born to a HBsAg-positive woman**
   - Administer HBIG and a dose of single antigen hepatitis B vaccine to each infant born to a HBsAg-positive woman within 12 hours of birth.
4. **Administration of immunoprophylaxis to an infant born to a woman with unknown HBsAg status**
   - If the baby weighs <2000 g, administer HBIG and a dose of single antigen hepatitis B vaccine within 12 hours of birth.
   - If the baby weighs ≥2000 g, administer a dose of single antigen hepatitis B vaccine within 12 hours of birth and allow the results of the ‘STAT’ HBsAg testing of the woman to guide administration of HBIG. Briefly, if the woman is HBsAg negative, do not give HBIG; however, if the woman is positive, administer HBIG as soon as possible (no later than 7 days following birth).

5. **Universal administration of the birth dose of hepatitis B vaccine to each infant prior to hospital discharge**
   - Administer a dose of single antigen hepatitis B vaccine to each infant prior to hospital discharge.
   - Support universal standing orders for hepatitis B birth dose administration at Wisconsin birthing hospitals.

6. **Public health case management of each HBsAg-positive pregnant woman and the infant(s) born to her**
   - Identify, test, vaccinate and counsel household and sexual contacts of each HBsAg-positive pregnant woman.
   - Identify, test, vaccinate and counsel household contacts of each infant born to a HBsAg-positive woman.
   - Monitor and track each infant born to a HBsAg-positive woman to ensure receipt of immune prophylaxis for the prevention of hepatitis B, completion of at least three doses of the hepatitis B vaccine series and postvaccination serologic testing.
Testing for Hepatitis B Virus Infection During Pregnancy
Flowchart for Prenatal Providers

- Routinely test all women in every pregnancy for hepatitis B surface antigen (HBsAg)
- Test in the first trimester, if possible
- Test regardless of past testing status

HBsAg

Maternal HBsAg results

HBsAg

- Report HBsAg positive test results to public health department perinatal hepatitis B coordinator
- Provide a copy of lab report indicating woman's HBsAg status to the hospital where delivery is planned
- Attach alert notice to woman's medical record to remind delivery hospital that newborn needs HepB and HBIG vaccine within 12 hours of birth
- Instruct delivery hospital to place a copy of lab report in infant’s chart
- Notify pediatric provider (if known)

Recommended Follow-up
- Provide woman with a card noting her HBsAg status
- Refer woman to a medical specialist for evaluation of chronic hepatitis B
- Educate woman about need to test all contacts (household, sexual, and/or needle sharing)
- Educate woman about importance of completing infant’s vaccine series

Resources available at www.CDC.gov/hepatitis/perinatalHepB
Procedures to Prevent Perinatal Hepatitis B Virus Transmission at Delivery

Maternal Surface Antigen (HBsAg) Test Results AVAILABLE

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Woman presents for delivery

- **HBsAg**
  - Maternal HBsAg results
  - HBsAg

- **HBsAg**
  - Maternal HBsAg results

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HBV risk factor present?

- Yes
  - Retest HBsAg
  - See perinatal algorithm results for unavailable at birth
- No
  - Place copy of woman’s original HBsAg lab report in:
    - Woman’s labor and delivery chart
    - Infant’s hospital record
  - Alert nursery staff that infant needs HepB and HBIG vaccine within 12 hours of birth
  - Administer HepB and HBIG vaccine to infant within 12 hours of birth or as soon as possible thereafter
  - Alert pediatric provider (if known)
  - Alert public health department perinatal hepatitis B coordinator
  - Report results in Immunization Registry

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Baby weighs less than 2000g

- **Yes**
  - Administer another dose of HepB vaccine one month after birth
  - Follow recommended HepB vaccination schedule
- **No**
  - Follow-up with public health department perinatal hepatitis B coordinator

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Discharge Instructions:

- Provide woman with infant’s immunization record
- Emphasize importance of bringing record to pediatric provider at each visit
- Educate woman about importance of completing infant’s vaccine series

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Resources available at www.CDC.gov/hepatitis/perinatalHepB
Procedures to Prevent Perinatal Hepatitis B Virus Transmission at Delivery

Maternal Surface Antigen (HBsAg) Test Results UNAVAILABLE at admission or from retesting at delivery

Maternal HBsAg status unknown at infant’s birth

- Administer first dose of HepB vaccine and HBIG within 12 hours of birth or as soon as possible thereafter
- Baby weighs less than 2000g

Once Results Available

Maternal HBsAg results

- HBsAg positive
  - Administer another dose of HepB vaccine one month after birth
    Note: Birth dose does not count towards vaccine series
  - Alert pediatric provider (if known)
  - Alert public health department perinatal hepatitis B coordinator
  - Follow recommended HepB vaccination schedule

- HBsAg negative
  - Administer HBIG as soon as possible (no later than 7 days)
  - Record date and time in infant’s medical record
  - Alert pediatric provider (if known)
  - Alert public health department perinatal hepatitis B coordinator
  - Follow recommended HepB vaccination schedule

Place copy of original HBsAg lab report in:
- Woman’s labor and delivery chart
- Infant’s hospital record

Discharge Instructions:
- Provide woman with infant’s immunization record
- Emphasize importance of bringing record to pediatric provider at each visit
- Educate woman about importance of completing infant’s vaccine series

Resources available at www.CDC.gov/hepatitis/perinatalHepB
1. Where can I obtain a copy of the current recommendations of the ACIP for the prevention of perinatal transmission of HBV infection?
   http://www.cdc.gov/mmwr/PDF/rr/rr5416.pdf

2. What blood test should be used to screen a pregnant woman for HBV infection?
   - Test each pregnant woman for HBsAg early during each pregnancy.
   - Pregnant women who are found to be HBsAg positive should be reported to the LHD for enrollment in case management services and should be referred for medical evaluation. (Wisconsin Communicable Disease Law, s. 252, DHS 145 requires reporting of HBsAg-positive pregnant women to the local health department.)
   - Pregnant women, without documentation of HBsAg status for the current pregnancy, who are admitted for delivery, should be tested for HBsAg (‘STAT’) upon admission to L&D.

3. Do women who have been previously vaccinated against HBV infection still need to be screened during pregnancy?
   Yes. Women who have received hepatitis B vaccine should be screened for HBsAg early during each pregnancy.

4. Is it safe to give hepatitis B vaccine to a pregnant woman?
   Yes. Limited data indicate that there is no apparent risk for adverse events in developing fetuses following administration of hepatitis B vaccine to a pregnant woman. Current vaccines contain noninfectious HBsAg and should pose no risk to the fetus. If the mother is at risk for HBV infection (e.g., a person with a sexually transmitted infection, an injecting drug user, has multiple sex partners, is the sex partner of a known HBsAg-positive person), vaccination with hepatitis B vaccine should be initiated as soon as her risk factor is identified. Acquiring HBV infection during pregnancy could result in severe disease for the mother or infant.

5. To whom should the HBsAg-positive pregnant woman be referred?
   Refer each pregnant HBsAg-positive woman to the LHD of jurisdiction for the woman’s residence. A list of Wisconsin Local Public Health Departments can be found at: http://www.dhs.wisconsin.gov/localhealth/counties/LHD%20Report12152010.pdf Each HBsAg-positive pregnant woman reported to the LHD will be contacted and enrolled in hepatitis B case management services.

6. What is hepatitis B case management, and why is it important to refer HBsAg-positive pregnant women to public health?
   Perinatal transmission of HBV from an infected mother to her infant can be very efficient and has lifelong consequences. Perinatal hepatitis B case management is a prevention strategy involving individual case investigation, testing and immunization, health education, and surveillance to prevent transmission of HBV to infants born to HBsAg-positive women.
7. **Is it safe for a HBsAg-positive woman to breastfeed her infant?**
   Yes. Any HBsAg-positive mother who wishes to breastfeed her infant should be encouraged to do so, including immediately following delivery. However, the infant should receive HBIG and a dose of single antigen hepatitis B vaccine within 12 hours of birth. Although HBsAg can be found in breast milk, studies conducted before hepatitis B vaccine was available showed that breastfed infants born to HBsAg-positive mothers did not demonstrate an increased risk for perinatal or early childhood HBV infection. More recent studies have shown that among infants who have received postexposure prophylaxis to prevent perinatal HBV infection, there was no increased risk of infection attributed to breastfeeding.

8. **Are there additional steps that can be taken to prevent perinatal transmission of HBV?**
   Support universal standing orders at each Wisconsin birthing hospital to ensure that:
   - Prenatal HBsAg testing is done for each pregnant woman during each pregnancy and is repeated for those at risk.
   - There are L&D admission orders for HBsAg (‘STAT’) testing for each pregnant woman admitted for delivery without documented HBsAg testing during the current pregnancy.
   - Immunoprophylaxis (including HBIG and hepatitis B vaccine) is ordered for and administered to each infant born to a HBsAg-positive woman within 12 hours of birth.
   - Hepatitis B vaccine is offered to all infants prior to hospital discharge.

9. **What is HBeAg and why is it important?**
   HBeAg is a useful marker associated strongly with the number of infective HBV particles in the serum and a higher risk of infectivity. HBeAg is a marker used to guide treatment for HBV infection.

10. **What is the risk to a newborn for acquiring hepatitis B infection during the birth process?**
    Perinatal transmission of HBV is very efficient and usually occurs from blood exposure during labor and delivery. Studies indicate that in utero transmission is rare and accounts for <2% of perinatal infections. Infants born to HBsAg and HBeAg-positive mothers have a 70%-90% chance of becoming infected in the absence of immunoprophylaxis (with hepatitis B vaccine and HBIG). The risk of perinatal transmission is about 10% if the mother is positive only for HBsAg.
Frequently Asked Questions for
Pediatric Care Providers

1. Where can I obtain a copy of the most current recommendations of the ACIP for the prevention of transmission of HBV infection?
   • The current CDC/ACIP Recommendations and appendices are available at: http://www.cdc.gov/mmwr/PDF/rr/rr5416.pdf
   • The current CDC/ACIP Recommendations for Birth Dose Hepatitis B vaccine for Infants Weighing <2000 g are available at: http://www.cdc.gov/HEPATITIS/HBV/PDFs/CorrectedTable4.pdf

2. Where can I obtain a copy of the most current infant and child immunization schedules?
   The current immunization schedules for persons 0-6 years of age and 7-18 years of age are available at: http://www.cdc.gov/vaccines/schedules/index.html

3. Are there any special procedures to follow when admitting an infant to the newborn nursery or NICU who was born to a HBsAg-positive woman?
   Upon admission to a newborn care unit:
   • Ensure that the birth mother’s HBsAg status is recorded in the infant’s medical record.
   • Ensure that the pediatric care provider responsible for the care of the infant is aware of the HBsAg status of the birth mother.
   • Ensure that hepatitis B immunoprophylaxis with HBIG and a dose of single antigen hepatitis B vaccine have been ordered and administered within 12 hours of delivery.
   • Ensure that doses of HBIG and hepatitis B vaccine administered to the infant are accurately documented in the medical record, including date and time of administration.

4. Is it safe for a HBsAg-positive woman to breastfeed her infant?
   Yes. Any HBsAg-positive mother who wishes to breastfeed her infant should be encouraged to do so, including immediately following delivery. However, the infant should receive HBIG and a dose of single antigen hepatitis B vaccine within 12 hours of birth. Although HBsAg can be found in breast milk, studies conducted before hepatitis B vaccine was available showed that breastfed infants born to HBsAg-positive mothers did not demonstrate an increased risk for perinatal or early childhood HBV infection. More recent studies have shown that among infants who have received postexposure prophylaxis to prevent perinatal HBV infection, there was no increased risk of infection attributed to breastfeeding.

5. What is the risk to a newborn for acquiring hepatitis B infection during the birth process?
   Perinatal transmission of HBV is very efficient and usually occurs from blood exposure during labor and delivery. Studies indicate that in utero transmission is rare and accounts for <2% of perinatal infections. Infants born to HBsAg and HBeAg-positive mothers have a 70%-90% chance of becoming infected in the absence of immunoprophylaxis.
(with hepatitis B vaccine and HBIG). The risk of perinatal transmission is about 10% if the mother is positive only for HBsAg.

6. **What are the recommendations for infants weighing <2000 g at birth?**
   Hepatitis B Immunization Management of Preterm Infants Weighing <2000 g, by Maternal Hepatitis B Surface Antigen (HBsAg) Status
   [http://www.cdc.gov/HEPATITIS/HBV/PDFs/CorrectedTable4.pdf](http://www.cdc.gov/HEPATITIS/HBV/PDFs/CorrectedTable4.pdf)

7. **What is the hepatitis B vaccine recommendation for infants born to HBsAg-negative mothers?**
   Each infant should receive a dose of single antigen hepatitis B vaccine prior to hospital discharge.

8. **Why is it necessary to vaccinate infants without known risk for perinatal HBV transmission prior to hospital discharge?**
   Administration of a dose of single antigen hepatitis B vaccine to all infants prior to hospital discharge is very important in preventing perinatal HBV infection. Although infants who require immunoprophylaxis should be identified through maternal prenatal screening, administration of the birth dose to all infants prior to hospital discharge serves as a safety net to prevent perinatal infection of infants born to women who were misclassified as HBsAg-negative because of errors in maternal prenatal testing or who were born to women with unknown HBsAg status. CDC estimates that as many as 15-20% of perinatal hepatitis B exposures occur in infants born to HBsAg-negative women or to women who did not have prenatal hepatitis B screening.

9. **What is HBeAg and why is it important?**
   HBeAg is a useful marker associated strongly with the number of infective HBV particles in the serum and a higher risk of infectivity. HBeAg is a marker used to guide treatment for HBV infection.
Frequently Asked Questions for Infection Preventionists

1. Where can I get the most current recommendations of the ACIP for the prevention of transmission of HBV infection?
   The current recommendations and appendices are available at:
   [http://www.cdc.gov/mmwr/PDF/rr/rr5416.pdf](http://www.cdc.gov/mmwr/PDF/rr/rr5416.pdf)

2. How stable is HBV in the environment?
   HBV is quite stable in the environment and remains viable for up to 7 days on environmental surfaces at room temperature. All blood spills, including those that have already dried, should be cleaned and disinfected with a mixture of bleach and water (one part household bleach to 10 parts water). Gloves should always be used when cleaning up blood spills.

3. What types of equipment cleaners are virucidal against HBV?
   Any disinfectant with specific label claims for HBV.

4. What are the recommendations for hepatitis B vaccine for health care personnel?
   The Occupational Safety and Health Administration (OSHA) requires that hepatitis B vaccine be offered to health care workers likely to be exposed to blood while at work. Complete recommendations for vaccination of adults for hepatitis B can be found at:

5. What can birthing hospitals do to ensure that infants receive the birth dose?
   Birthing hospitals can develop and implement written policies and procedures for giving a dose of single antigen hepatitis B vaccine to each infant prior to hospital discharge.

6. Our hospital is delaying the institution of a policy for offering the hepatitis B vaccine birth dose. How can I help to convince them that this is the standard of care?
   Administration of a dose of single antigen hepatitis B vaccine to all infants prior to hospital discharge is very important in preventing perinatal HBV infection. Although infants who require immunoprophylaxis should be identified through maternal prenatal screening, administration of the birth dose to all infants prior to hospital discharge serves as a safety net to prevent perinatal infection of infants born to women who were misclassified as HBsAg-negative because of errors in maternal prenatal testing or who were born to women with unknown HBsAg status. CDC estimates that as many as 15-20% of perinatal hepatitis B exposures occur in infants born to HBsAg-negative women or to women who did not have prenatal hepatitis B screening.

7. How does a hospital report an identified case of hepatitis B?
   A report may be entered directly into the Wisconsin Electronic Disease Surveillance System (WEDSS) or by mail or fax using an Acute and Communicable Disease Case Report found at:
A Wisconsin Local Public Health Department and Tribal Agency Listing can be found at: http://www.dhs.wisconsin.gov/localhealth

A report should be submitted within 72 hours upon recognition of a case or suspected case.
References


Resources for Health Professionals

Immunization Schedules
- Child and Adolescent Immunization Schedules
  http://www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html
- Adult Immunization Schedule
  http://www.cdc.gov/vaccines/schedules/hcp/adult.html

Journal Articles
- General Recommendations on Immunization
  http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6002a1.htm?s_cid=rr6002a1
- Sexually Transmitted Diseases Treatment Guidelines, 2010
  http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5912a1.htm?s_cid=rr5912a1
- HIPAA Privacy Rule and Public Health
  http://www.cdc.gov/mmwr/pdf/other/m2e411.pdf
  http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5516a1.htm

Books

Websites
- CDC sources for IG and HBIG
  http://www.cdc.gov/hepatitis/IG-HBIG_Sources.htm#hbig
- Hepatitis B Information for Health Professionals
  http://www.cdc.gov/hepatitis/HBV/PerinatalXmtn.htm
- Prenatal Care Provider Policies and Procedures to Prevent Perinatal Hepatitis B Virus Transmission
  http://www.cdc.gov/hepatitis/HBV/PDFs/PrenatalCareProviderPoliciesAndProcedures.pdf
- Delivery Hospital Policies and Procedures to Prevent Perinatal Hepatitis B Virus Transmission
  http://www.cdc.gov/hepatitis/HBV/PDFs/DeliveryHospitalPreventPerinatalHBVTransmission.pdf
- Admission orders for Labor and Delivery and Newborn Units to Prevent Hepatitis B Virus (HBV) Transmission
• Interpretation of Hepatitis B Serologic Test Results
• Wisconsin Communicable Disease Reporting
  http://legis.wisconsin.gov/statutes/stat0252.pdf
• Wisconsin Local Public Health Department and Tribal Agency Listing
  http://www.dhs.wisconsin.gov/localhealth
• Disease fact sheet: Hepatitis B
  http://www.dhs.wisconsin.gov/immunization/hepb.htm
• National Network for Immunization Information: Hepatitis B
  http://www.immunizationinfo.org/vaccines/hepatitis-b
• Vaccine Information Statements (VIS): http://www.cdc.gov/vaccines/pubs/vis
• Talking with Parents About Vaccines for Infants:
  http://www.cdc.gov/vaccines/spec-grps/hcp/conv-materials.htm
• Give the birth dose…Hepatitis B vaccine at birth saves lives!
• 2010 Births to Wisconsin Residents by County:
  http://www.dhs.wisconsin.gov/births/birthcounts.htm
• CDC Perinatal Hepatitis B Information for Health Professionals, Viral Hepatitis Home Page
  http://www.cdc.gov/hepatitis/HBV/index.htm
• Hepatitis B Information for Health Professionals
  http://www.cdc.gov/hepatitis/HBV/VaccChildren.htm
• American Academy of Family Practice: Hepatitis B
  http://www.aafp.org/afp/2004/0101/p75.html
• Immunization Action Coalition: Hepatitis B 
  http://www.immunize.org/hepatitis-b/
• Wisconsin State Health Plan: Healthiest Wisconsin 2020
  http://www.dhs.wisconsin.gov/hw2020
• What the Physician Can Do to Help the Child with Chronic Hepatitis B Virus Infection
• Sample Text for Admission Orders for Hepatitis B Vaccine Birth Dose in Newborn Nursery:
• Health Care Settings and Viral Hepatitis
  http://www.cdc.gov/hepatitis/Settings/HealthcareSettings.htm
• Healthcare Personnel Vaccination Recommendations
• HBV Postexposure Prophylaxis
  http://www.cdc.gov/hepatitis/HBV/PEP.htm
• Decision to Not Vaccinate My Child form
• Testing and Public Health Management of Persons with Chronic Hepatitis B Virus Infection
  http://www.cdc.gov/hepatitis/HBV/TestingChronic.htm
Resources for Parents and Patients

**Immunization Schedules**
- Child and Adolescent Immunization Schedules
  [http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm](http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm)

**Websites**
- Hepatitis B General Information: Who is at risk?
- Hepatitis B: Questions and Answers, Information About the Disease and Vaccines
- Hepatitis B Information for Asian Americans and Pacific Islanders
- If you, your parents or your children were born in any of these places…
- Hepatitis B, Are you at risk?
- When Someone Close to you has Chronic Hepatitis B
- If you have chronic hepatitis B virus (HBV) infection…
- Questions Frequently Asked About Hepatitis B
- Protect Your Baby for Life, Hepatitis B and Your Baby
  [http://www.cdc.gov/hepatitis/HBV/PDFs/HepBPerinatal-ProtectHepBYourBaby-BW.pdf](http://www.cdc.gov/hepatitis/HBV/PDFs/HepBPerinatal-ProtectHepBYourBaby-BW.pdf)
- Vaccine Information Statements (VIS) – Hepatitis B
- Vaccines and Immunizations, Parents, What you Need to Know
- National Immunization Action Coalition, Hepatitis B: [www.immunize.org/hepb](http://www.immunize.org/hepb)
- Personal belief exemptions for vaccination put people at risk. Examine the evidence for yourself.
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