

# Oregon Perinatal Hepatitis B Prevention Program

## 1. BACKGROUND

The following document is a compilation of the recommendations of the Advisory Committee on Immunization Practices (ACIP) for a comprehensive strategy to eliminate transmission of Hepatitis B virus (HBV)<sup>1</sup> and the chapters on hepatitis B from the American Academy of Pediatrics (AAP) Red Book 2006<sup>2</sup> and the 9<sup>th</sup> Edition of CDC's Epidemiology and Prevention of Vaccine-Preventable Disease<sup>3</sup>.

The intent of these guidelines is to provide communicable disease nurses and perinatal hepatitis B case management coordinators with reference material and specific instructions for HBV antigen testing, management, and reporting of pregnant women, their household and sexual contacts, and HBV-exposed infants during the perinatal period (Box 1). The Oregon Perinatal Hepatitis B Prevention Program includes case management, follow-up, and reporting of pregnant women positive for hepatitis B surface antigen (HBsAg), infants exposed perinatally to mothers positive for HBsAg, and HBV-exposed household and sexual contacts of the mother-infant pair.

### Box 1. Summary of perinatal hepatitis B vaccination recommendations.

- **Pregnant women**
  - All pregnant women shall be tested routinely for hepatitis B surface antigen (HBsAg) in each pregnancy.
  - Susceptible pregnant women who are identified as being at risk for HBV infection during pregnancy should be vaccinated.
- **Infants**
  - **At birth**
    - Infants born to HBsAg-positive mothers should receive hepatitis B vaccine and hepatitis B immune globulin (HBIG) within 12 hours of birth.
    - Infants born to mothers with an unknown HBsAg status should receive hepatitis B vaccine within 12 hours of birth. The mother should be tested to determine her HBsAg status as soon as possible (ASAP). If the mother is HBsAg-positive, the infant should receive HBIG ASAP, but no later than 7 days of age.
    - Full-term infants who are medically stable and weigh  $\geq 2000$  g born to HBsAg-negative mothers should receive the single-antigen hepatitis B vaccine before hospital discharge.
    - Preterm infants who weigh  $< 2000$  g born to HBsAg-negative mothers should receive the first dose of vaccine at hospital discharge or 1 month after birth.
  - **After birth**
    - All infants should complete the hepatitis B vaccine series with either single-antigen or combination vaccine, according to a recommended vaccination schedule (see Tables 2 and 3).
    - After completion of the hepatitis B vaccine series, infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg (anti-HBs) at age 9-18 months.
- **Household and sexual contacts**
  - All household contacts and sex partners of HBsAg-positive mothers identified during screening of the mother shall be tracked and should receive testing and post-exposure prophylaxis as appropriate.

## 2. STANDARD OF CARE FOR ALL PREGNANT WOMEN

### A. Testing pregnant women for HBsAg

**All pregnant women** shall be **tested routinely for HBsAg**, a marker for infectiousness, during an early prenatal visit (e.g., first trimester) **in each pregnancy**, even **if they have been previously vaccinated or tested**. As of January 1, 2006, Oregon requires routine HBsAg testing of pregnant women unless a woman specifically refuses the test.<sup>4</sup> HBsAg testing may be conducted at the same time other routine prenatal laboratory testing is done.<sup>1,2</sup>

**Pregnant women** who

- **were not screened prenatally**, or
- **engage in behaviors that put them at high risk** for infection, or
- **present with clinical hepatitis**

should be tested at the time of admission to the hospital for delivery.

**Behaviors** that place women at **high risk for infection** include

- personal injection drug use OR
- having had
  - more than one sex partner in the previous 6 months, or
  - an HBsAg-positive sex partner, or
  - a partner who has been evaluated or treated for a sexually transmitted disease (STD), or
  - a partner who is a recent or current injection drug user.

When pregnant women are tested for HBsAg at the time of admission for delivery, shortened testing protocols should be used and initially reactive results should be immediately reported to the attending physician to expedite administration of immunoprophylaxis to infants.

### B. Case-management of HBsAg-positive women

**Women who are HBsAg-positive should be identified to ensure that their infants receive timely post-exposure prophylaxis and follow-up.** The woman's health-care provider should send a copy of the **original laboratory report, if available, indicating the pregnant woman's HBsAg status to the hospital where delivery is planned.**

**Women who are HBsAg-positive should be provided with appropriate counseling and medical management.** HBsAg-positive pregnant women should receive information concerning HBV that discusses:

- Medical evaluation and possible treatment of chronic HBV,
- Modes of transmission,
- Perinatal transmission risk and consequences of perinatal transmission,
- Prevention of HBV transmission to contacts,
- Importance of post-exposure prophylaxis, and
- Substance abuse treatment, if appropriate.

### C. Reporting of HBsAg-positive women

HBsAg-positive individuals are reportable in the State of Oregon, regardless of whether the HBV infection is acute or chronic. A pregnant woman who is HBsAg-positive must be reported to Acute and Communicable Disease Prevention (ACDP) and with each pregnancy to the Immunization Program of the Oregon Public Health Division. If you are unsure if an HBsAg-positive individual has

been previously reported in Oregon, please contact the Perinatal Hepatitis B Prevention Program Coordinator.

#### D. Vaccinating pregnant women at risk for HBV infection

**Susceptible pregnant women at risk for HBV infection during pregnancy** should be vaccinated. See Section 2.A. for risk factors. Table 1 provides a summary of the recommended doses by age group and vaccine type for the currently licensed hepatitis B vaccine formulations.

<b>Table 1. Recommended doses of currently licensed formulations of hepatitis B vaccine by age group and vaccine type.</b>										
Age group	Single-antigen vaccine				Combination vaccine					
	Recombivax HB		Engerix-B		Comvax <sup>1</sup>		Pediatrix <sup>2</sup>		Twinrix <sup>3</sup>	
	Dose (µg) <sup>4</sup>	Volume (mL)	Dose (µg) <sup>4</sup>	Volume (mL)	Dose (µg) <sup>4</sup>	Volume (mL)	Dose (µg) <sup>4</sup>	Volume (mL)	Dose (µg) <sup>4</sup>	Volume (mL)
Infants (<1 years)	5	0.5	10	0.5	5	0.5	10	0.5	NA	NA
Children (1-10 years)	5	0.5	10	0.5	5 <sup>1</sup>	0.5	10 <sup>2</sup>	0.5	NA	NA
Adolescents (11-19 years)	5 <sup>5</sup>	0.5	10	0.5	NA	NA	NA	NA	NA <sup>3</sup>	NA
Adults (≥20 years)	10	1.0	20	1.0	NA	NA	NA	NA	20 <sup>3</sup>	1.0
<b>Immunocompromised persons &amp; hemodialysis patients</b>										
<20 years <sup>6</sup>	5	0.5	10	0.5	NA	NA	NA	NA	NA	NA
≥20 years	40 <sup>7</sup>	1.0	40 <sup>8</sup>	2.0	NA	NA	NA	NA	NA	NA

<sup>1</sup> Combined hepatitis B-*Haemophilus influenzae* type b conjugate vaccine. This vaccine cannot be administered at birth, before 6 weeks of age, or after 71 months (≥6 years) of age.  
<sup>2</sup> Combined hepatitis B-diphtheria, tetanus, and acellular pertussis-inactivated poliovirus vaccine. This vaccine cannot be administered at birth, before 6 weeks of age, or after 83 months (≥7 years) of age.  
<sup>3</sup> Combined hepatitis A and hepatitis B vaccine. This vaccine is recommended for persons ≥18 years of age who are at increased risk for both hepatitis B virus and hepatitis A virus infections.  
<sup>4</sup> Recombinant hepatitis B surface antigen protein dose.  
<sup>5</sup> If an adult formulation of Recombivax HB is used (i.e., 10 µg dose, 1.0 mL volume), the vaccine is administered on a 2-dose schedule.  
<sup>6</sup> Higher doses might be more immunogenic, but no specific recommendations have been made.  
<sup>7</sup> Dialysis formulation administered on a 3-dose schedule at 0, 1, and 6 months.  
<sup>8</sup> Two 1.0-mL doses administered at one site, on a 4-dose schedule at 0, 1, 2, and 6 months.  
 NA = Not Applicable.

### 3. INFANT MANAGEMENT

#### A. Management of infants weighing ≥2000 g at birth

##### 1. Infants (≥2000 g) born to HBsAg-positive women

**All infants born to HBsAg-positive women should receive single antigen hepatitis B vaccine and hepatitis B immune globulin (HBIG) within 12 hours of birth.** The hepatitis B vaccine and HBIG should be administered concurrently, by intramuscular injection, and at different injection sites. The vaccine series should be completed according to the recommended schedule for infants born to HBsAg-positive women (Table 2). The final dose in the vaccine series should not be administered before the infant is 24 weeks (164 days) of age. Post-vaccination testing for anti-HBs and HBsAg should be performed after completion of the vaccine series, at 9-18 months of age (see section 3.C.).

<b>Table 2. Hepatitis B vaccine schedules for newborn infants by maternal hepatitis B surface antigen (HBsAg) status*.</b>				
<b>Maternal HBsAg status</b>	<b>Single-antigen vaccine</b>		<b>Single antigen + combination vaccine</b>	
	<b>Dose</b>	<b>Age</b>	<b>Dose</b>	<b>Age</b>
<b>Positive</b>	1†	Birth (within 12 hours)	1†	Birth (within 12 hours)
	HBIG§	Birth (within 12 hours)	HBIG	Birth (within 12 hours)
	2	1-2 months	2	2 months
	3¶	6 months	3	4 months
			4¶	6 months (Pediatrix) or 12-15 months (Comvax)
<b>Unknown**</b>	1†	Birth (within 12 hours)	1†	Birth (within 12 hours)
	2	1-2 months	2	2 months
	3¶	6 months	3	4 months
			4¶	6 months (Pediatrix) or 12-15 months (Comvax)
<b>Negative</b>	1†, ††	Birth (before discharge)	1†, ††	Birth (before discharge)
	2	1-2 months	2	2 months
	3¶	6-18 months	3	4 months
			4¶	6 months (Pediatrix) or 12-15 months (Comvax)

\* See Table 3 for vaccine schedules for preterm infants weighing <2000 g.  
† Recombivax HB or Engerix-B should be used for the birth dose. Comvax and Pediatrix cannot be administered at birth or before age 6 weeks.  
§ Hepatitis B immune globulin (0.5 mL) administered intramuscularly in a separate site from vaccine.  
¶ The final dose in the vaccine series should not be administered before age 24 weeks (164 days).  
\*\* Mothers should have blood drawn and tested for HBsAg as soon as possible after admission for delivery; if the mother is found to be HBsAg-positive, the infant should receive HBIG as soon as possible but no later than age 7 days.  
†† On a case-by-case basis and only in rare circumstances, the first dose may be delayed until after hospital discharge for an infant who weighs ≥2000 g and whose mother is HBsAg negative, but only if a physician's order to withhold the birth dose and a copy of the mother's original HBsAg-negative laboratory report are documented in the infant's medical record.

*Note.* Oregon Public Health Division does not provide HBIG to hospitals or health departments at this time. Hospitals should purchase HBIG directly from the manufacturer or from the distributor of their choice.

## **2. Infants (≥2000 g) born to women of unknown HBsAg status**

**Women admitted for delivery without documentation of HBsAg test results should have blood drawn and tested as soon as possible after admission.**

**While test results are pending, all infants born to women without documentation of HBsAg test results should receive the first dose of single antigen hepatitis B vaccine within 12 hours of birth.**

- **If the mother is determined to be HBsAg-positive**, her infant should receive the additional protection of HBIG as soon as possible but no later than 7 days of age. The efficacy of HBIG administered after 48 hours of age, however, is not known. The hepatitis B vaccine and HBIG should be administered by intramuscular injection and at different injection sites. The vaccine series should be completed according to the recommended schedule for infants born to HBsAg-positive women (Table 2). The final dose in the vaccine series should not be administered before the infant is 24 weeks (164 days) of age. Post-vaccination testing for anti-HBs and HBsAg should be performed after completion of the vaccine series, at 9-18 months of age (see Section 3.C.).

- **If the mother is determined to be HBsAg-negative**, the vaccine series should be completed according to a recommended schedule for infants born to HBsAg-negative women (Table 2). The vaccine should be administered by intramuscular injection. The final dose in the **vaccine series should not be administered before the infant is 24 weeks (164 days) of age**.
- **If the mother has never been tested to determine her HBsAg status, the vaccine series should be completed according to the recommended schedule for infants born to HBsAg-positive women** (Table 2). The vaccine should be administered by intramuscular injection. The final dose in the vaccine series should not be administered before the infant is 24 weeks (164 days) of age. Post-vaccination testing for anti-HBs and HBsAg should be performed after completion of the vaccine series, at 9-18 months of age (see Section 3.C.).

## B. Management of infants weighing <2000 g at birth

### 1. Infants (<2000 g) born to HBsAg-positive women

Preterm infants weighing <2000 g born to HBsAg-positive women should receive single antigen hepatitis B vaccine and hepatitis B immune globulin (HBIG) within 12 hours of birth. The hepatitis B vaccine and HBIG should be administered concurrently, by intramuscular injection, and at different injection sites. However, the initial vaccine (birth dose) should not be counted as part of the vaccine series because of the potentially reduced immunogenicity of hepatitis B vaccine in these infants. The vaccine series (3 additional doses) should be completed beginning when the infant reaches 1 month of age in accordance with the recommended schedule for infants born to HBsAg-positive women (Table 3). The final dose (4<sup>th</sup> dose) in the vaccine series should not be administered before the infant is 24 weeks (164 days) of age. Post-vaccination testing for anti-HBs and HBsAg should be performed after completion of the vaccine series, at 9-18 months of age (see Section 3.C.).

<b>Table 3. Hepatitis B immunization management of preterm infants weighing &lt;2000 g by maternal hepatitis B surface antigen (HBsAg) status.</b>		
<b>Maternal HBsAg status</b>	<b>Recommendation</b>	<b>Age</b>
<b>Positive</b>	<ul style="list-style-type: none"> <li>• HBIG* AND hepatitis B vaccine</li> <li>• Continue vaccine series according to recommended schedule for infants born to HBsAg-positive mothers (see Table 2)</li> <li>• Do not count birth dose as part of the vaccine series</li> <li>• Test for HBsAg and HBs<sup>†</sup> after completion of the vaccine series</li> </ul>	<ul style="list-style-type: none"> <li>• within 12 hours of birth</li> <li>• Begin at age 1-2 months</li> <li>• 9-18 months of age</li> </ul>
<b>Unknown</b>	<ul style="list-style-type: none"> <li>• HBIG AND hepatitis B vaccine</li> <li>• Test mother for HBsAg</li> <li>• Continue vaccine series according to recommended schedule based on mother's HBsAg status (see Table 2)</li> <li>• Do not count birth dose as part of the vaccine series</li> <li>• Test for HBsAg and anti-HBs<sup>†</sup> after completion of the vaccine series, if necessary</li> </ul>	<ul style="list-style-type: none"> <li>• within 12 hours of birth</li> <li>• Begin at age 1-2 months</li> <li>• 9-18 months of age</li> </ul>
<b>Negative</b>	<ul style="list-style-type: none"> <li>• May delay first dose of hepatitis B vaccine</li> <li>• Complete vaccine series (see Table 2)</li> </ul>	<ul style="list-style-type: none"> <li>• At hospital discharge or begin at 1 month of age</li> </ul>
* Hepatitis B immune globulin. † Antibody to HBsAg.		

*Note.* Oregon Public Health Division does not provide HBIG to hospitals or health departments at this time. Hospitals should purchase HBIG directly from the manufacturer or from the distributor of their choice.

## **2. Infants (<2000 g) born to women of unknown HBsAg status**

Because of potentially decreased immunogenicity of vaccine in preterm infants weighing <2000 g, **these infants born to women without documentation of HBsAg test results should receive BOTH single antigen hepatitis B vaccine and HBIG if the mother's HBsAg status cannot be determined within 12 hours of birth.** The hepatitis B vaccine and HBIG should be administered concurrently, by intramuscular injection, and at different injection sites. However, the initial vaccine (birth dose) should not be counted as part of the vaccine series. The vaccine series (3 additional doses) should be completed beginning when the infant reaches 1 month of age in accordance with the recommended schedule for infants born to HBsAg-positive women or HBsAg-negative women, based on the woman's test results (Table 3). The **final dose (4<sup>th</sup> dose) in the vaccine series should not be administered before the infant is 24 weeks (164 days) of age.**

If the infant was born to an HBsAg-positive woman, post-vaccination testing for anti-HBs and HBsAg should be performed on the infant after completion of the vaccine series, at 9-18 months of age (see Section 3.C.).

### **C. Post-vaccination serology**

**Infants born to HBsAg-positive mothers should be tested for both HBsAg and anti-HBs after completion of the hepatitis B vaccine series at 9-18 months of age. Post-vaccination testing includes serological screening for two different markers, each for a specific reason:**

- HBsAg -- to determine whether they have become infected with the hepatitis B virus; AND
- Anti-HBs -- to determine whether the vaccine was effective in mounting an immune response in the recipient.

For a table of hepatitis B markers and interpretation of serologic test results, see Table 4.

- **Testing should not be performed before age 9 months to avoid detection of anti-HBs from HBIG administered during infancy and to maximize the likelihood of detecting late HBV infection.**
- **Anti-HBc testing of infants if NOT recommended** because passively acquired maternal anti-HBc might be detected in infants born to HBV-infected mothers to age 24 months.
- **HBsAg-negative infants with anti-HBs levels  $\geq 10$  mIU/mL** are protected and need no further medical management.
- **HBsAg-negative infants with anti-HBs levels  $< 10$  mIU/mL** should be revaccinated with a second 3-dose series and retested 1-2 months after the final dose of vaccine. Infants who are HBsAg-positive should receive appropriate follow-up. *Note.* In a study of infants born to HBsAg-mothers who did not respond to a primary vaccine series indicated that all those not infected with HBV responded satisfactorily to a repeat 3-dose revaccination series.<sup>5</sup> Data suggests that children who have no detectable antibody after 6 doses of vaccine would NOT benefit from additional hepatitis B vaccine doses.

Table 4. Typical interpretation of serologic test results for hepatitis B virus infection.				
Serologic Marker				Interpretation
HBsAg <sup>1</sup>	Total anti-HBc <sup>2</sup>	IgM <sup>3</sup> anti-HBc	Anti-HBs <sup>4</sup>	
NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE	Never infected
POSITIVE <sup>5</sup>	NEGATIVE	NEGATIVE	NEGATIVE	Early acute infection; transient (up to 18 days) after vaccination
POSITIVE	POSITIVE	POSITIVE	NEGATIVE	Acute infection
NEGATIVE	POSITIVE	POSITIVE	NEGATIVE	Acute resolving infection
NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	Recovered from past infection and immune
POSITIVE	POSITIVE	NEGATIVE	NEGATIVE	Chronic infection
NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	False positive (i.e., susceptible); past infection; "low-level" chronic infection; <sup>6</sup> passive transfer to infant born to HBsAg-positive mother
NEGATIVE	NEGATIVE	NEGATIVE	POSITIVE	Immune if concentration is $\geq 10$ mIU/mL, <sup>7</sup> passive transfer after hepatitis B immune globulin administration

<sup>1</sup> Hepatitis B surface antigen. <sup>2</sup> Antibody to hepatitis B core antigen. <sup>3</sup> Immunoglobulin M. <sup>4</sup> Antibody to HBsAg.  
<sup>5</sup> To ensure that an HBsAg-positive test result is not a false positive, samples with repeatedly reactive HBsAg results should be tested with a licensed (and, if appropriate, neutralizing confirmatory) test.  
<sup>6</sup> Persons positive for only anti-HBc are unlikely to be infectious except under circumstances in which they are the source for direct percutaneous exposure of susceptible recipients to large quantities of virus (e.g., blood transfusion or organ transplant).  
<sup>7</sup> Milli-International Units per milliliter.

*Note.* Testing is available free to local health departments through the Oregon State Public Health Laboratory (see the OSPHL's "Guide to Services" manual). There is a small charge for testing ordered by private providers.

#### D. Reporting and follow-up of HBsAg-exposed infants

**The Perinatal Hepatitis B Prevention Program requires the identification and management of infants born to HBsAg-positive women and to women without HBsAg test results.** Case management involves coordinated, consistent communication among local health departments, the pregnant woman's health care provider(s), the newborn's health care provider(s), the birthing hospitals and birthing centers, testing laboratories, and the Oregon Public Health Division. The Oregon Perinatal Hepatitis B Prevention Program recommends the following ACIP guidelines. Contact information for the Immunization Program is provided at the end of this document.

- **Initiation of vaccine series**
  - Identification and management of infants born to HBsAg-positive women
    - Delivery hospitals and birthing centers should implement policies and procedures to ensure identification and initiation of post-exposure immunization of infants born to HBsAg-positive women.
    - Delivery hospitals and birthing centers should document the date and time of birth and the date and time of administration of hepatitis B vaccine and HBIG for all infants born to HBsAg-positive women.
  - Identification and management of infants born to women without HBsAg test results
    - Delivery hospitals and birthing centers should implement policies and procedures to ensure identification and initiation of post-exposure immunization of infants born to women with unknown HBsAg status at the time of delivery.

- Delivery hospitals and birthing centers should document the date and time of birth, the date and time of administration of hepatitis B vaccine, and maternal HBsAg test results for all infants born to women with unknown HBsAg status at the time of delivery.
  - Dose 1 / Birth Dose: Complete the Infant's information on the "Perinatal Hepatitis B Prevention Program — Case Management Report" as soon as the infant receives HBIG and the first dose of the hepatitis B vaccine. Fax or photocopy the form and send the copy to the Immunization Program. If the local health department utilizes the electronic case management system and uploads data to the state, the appropriate information concerning administration of HBIG and the first dose of the hepatitis B vaccine should be documented in the system. Data should be uploaded biweekly to the state.
- **Completion of vaccine series**
  - Health-care providers should document the dates of administration of all doses of the hepatitis B vaccine series of all infants born to HBsAg-positive women.
  - Dose 2: Complete the Infant's information on the "Perinatal Hepatitis B Prevention Program — Case Management Report" as soon as the infant receives the second dose of the hepatitis B vaccine. Fax or photocopy the form and send the copy to the Immunization Program.
  - Dose 3: Complete the Infant's information on the "Perinatal Hepatitis B Prevention Program — Case Management Report" as soon as the infant receives the third dose of the hepatitis B vaccine. Fax or photocopy the form and send the copy to the Immunization Program.
  - Dose 4: Complete the Infant's information on the "Perinatal Hepatitis B Prevention Program — Case Management Report" as soon as the infant receives the fourth dose of the hepatitis B vaccine if the vaccination schedule calls for administration in 4 doses. Fax or photocopy the form and send the copy to the Immunization Program.
  - If the local health department utilizes the electronic case management system and uploads data to the state, the appropriate information concerning administration of the second / third / fourth dose (if applicable) of the hepatitis B vaccine should be documented in the system. Data should be uploaded biweekly to the state.
- **Completion of post-vaccination testing**
  - Health-care providers should document the results of testing for HBsAg and anti-HBs after completion of the hepatitis B vaccine series for all infants born to HBsAg-positive women
  - Post-vaccination Serology and Reimbursement: Complete the sections Infant's information on the "Perinatal Hepatitis B Prevention Program — Case Management Report" after the child has completed the 3-dose series and the post-vaccination serology test results have been received. Fax or photocopy the form and send the copy to the Immunization Program. The reimbursement for a completed case investigation of a mother-infant pair is \$70.00. Partial reimbursement is also given based on how much follow-up is completed. Reimbursement is paid annually in August for the previous 12 months (August–July).
  - Should the child not complete the 3-dose series of vaccine and/or the post-vaccination serology within a reasonable amount of time, complete the lost to follow-up and reimbursement sections. Fax or photocopy the form and send the copy to the Immunization Program.
  - If the local health department utilizes the electronic case management system and uploads data to the state, the appropriate information concerning post-vaccination testing should be documented in the system. Data should be uploaded biweekly to the state.

## 4. HOUSEHOLD CONTACTS AND SEX PARTNERS OF HBsAg-POSITIVE WOMEN

**Household contacts, sex partners, and needle-sharing contacts of HBsAg-positive women** identified through prenatal screening should be contacted and referred to the local health department for:

- Testing for HBV infection,
- Administration of the first dose of hepatitis B vaccine immediately after collection of a blood sample for serologic testing, and
- Appropriate counseling on methods to prevent or reduce the risk of HBV transmission.

Complete the vaccine series using an age-appropriate vaccine dose and schedule (see Table 1). Incompletely vaccinated persons should complete the vaccine series. Sex partners of HBsAg-positive individuals and HBsAg-positive individuals should be counseled on methods to prevent or reduce the risk of HBV transmission.

### A. Prevacination serologic testing for susceptibility

Prevaccination testing is recommended for unvaccinated household, sexual, and needle-sharing contacts of HBsAg-positive individuals. Testing is not usually indicated for infants, children, and adolescents born in the United States. **Anti-HBc is the test of choice for prevaccination testing.**

- Individuals who are **anti-HBc-negative** are **susceptible** and should complete the vaccine series.
- Individuals who are **anti-HBc-positive** should be tested for HBsAg.
- **HBsAg testing may be performed on the same specimen collected for anti-HBc testing.**

### B. Post-vaccination testing for serologic response

Testing after vaccination is recommended only for certain individuals whose subsequent clinical management depends on knowledge of their immune status. This includes the sex partners of HBsAg-positive individuals in order to determine the need for revaccination and for counseling on methods to prevent or reduce the risk of hepatitis B transmission.

- Testing should be performed 1-2 months after administration of the last dose of the vaccine series by using a method that allows determination of a protective level of anti-HBs ( $\geq 10$  mIU/mL).
- Persons found to have anti-HBs levels of  $< 10$  mIU/mL after the primary vaccine series should be revaccinated.
- Persons who do not respond to revaccination should be tested for HBsAg.
- HBsAg-positive individuals should receive appropriate management and any household, sexual, or needle-sharing contacts should be identified, tested, and vaccinated.
- HBsAg-negative individuals should be considered susceptible and should be counseled on methods to prevent or reduce the risk of hepatitis B transmission as well as the need to obtain HBIG post-exposure prophylaxis for any known or likely parenteral exposure to HBsAg-positive blood.

### C. Reporting of contacts

1. Dose 1: Complete the contact's information on the "Perinatal Hepatitis B Prevention Program – Case Management Report" as soon as the contact receives first dose of the hepatitis B vaccine and HBIG if indicated. Fax or photocopy the form and send the copy to the Immunization Program.

2. Dose 2: Complete the contact's information on the "Perinatal Hepatitis B Prevention Program – Case Management Report" as soon as the contact receives the second dose of the hepatitis B vaccine. Fax or photocopy the form and send the copy to the Immunization Program.
3. Dose 3: Complete the contact's information on the "Perinatal Hepatitis B Prevention Program – Case Management Report" as soon as the contact receives the third dose of the hepatitis B vaccine. Fax or photocopy the form and send the copy to the Immunization Program.
4. Post-vaccination Serology and Reimbursement: Complete the appropriate sections of the "Perinatal Hepatitis B Prevention Program – Case Management Report" after the contact has completed the 3-dose series and the post-vaccination serology test results have been received. Fax or photocopy the form and send the copy to the Immunization Program. The reimbursement for a completed case investigation of a household contact is \$50.00. Partial reimbursement is also given based on how much follow-up is completed. Reimbursement is paid annually in August for the previous 12 months (August–July).
5. If the local health department utilizes the electronic case management system and uploads data to the state, the appropriate information concerning administration of the hepatitis B vaccine doses should be documented in the system. Data should be uploaded biweekly to the state.

## REFERENCES

1. Centers for Disease Control and Prevention. A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP), Part 1: Immunization of Infants, Children, and Adolescents. *MMWR* 2005; 54(No. RR-16):1-34.
2. Hepatitis B. In: 2006 Red Book: Report of the Committee on Infectious Diseases. Pickering LK, ed., 26th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2006.
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4. Oregon Administrative Rule 333-019-0036.
5. Tan KL, Goh KT, Oon CJ, Chan SH. Immunogenicity of recombinant yeast-derived hepatitis B vaccine in nonresponders to perinatal immunization. *JAMA* 1994; 271:859-61.

## CONTACT INFORMATION

Perinatal Hepatitis B Prevention Program Coordinator	(971) 673-0300
Immunization Program Fax Line	(971) 673-0278
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