

# Preventing Chronic Hepatitis B in Children

## Guidelines for Pediatric Providers

May 2022



### BACKGROUND

As many as 2.2 million Americans are chronically infected with hepatitis B virus (HBV), but up to 60% may be unaware of their infection.<sup>1</sup> Chronic HBV infection has a disproportionate impact on some populations, specifically Asians and Pacific Islanders (API), who have the highest rate of chronic hepatitis B in the United States.<sup>2</sup> HBV infection acquired via mother to child transmission at birth is associated with a 90% risk for chronic infection if post-exposure prophylaxis is not given.<sup>3</sup> In addition, 25-50% of 1–5 year-old children who are not infected at birth but are infected by a household contact will progress to chronic infection, compared to 5-10% of adults who become infected.<sup>3</sup> Chronic HBV infection carries a 25% risk of death from liver failure or hepatocellular carcinoma (HCC).<sup>3</sup> Pediatric providers should be aware of at-risk children because chronic HBV infection in children is typically asymptomatic and blood tests for liver enzymes may be normal. Appropriate screening, postexposure prophylaxis and vaccination are the keys to prevention.

### OBTAINING MEDICAL HISTORY

- **Obstetric providers are mandated to test pregnant women for hepatitis B surface antigen (HBsAg)**
- A copy of the laboratory report documenting the woman’s HBsAg status should be available at the birth hospital, and maternal HBsAg results should be reviewed at the time of the infant’s birth.

### ENSURE POST-EXPOSURE PROPHYLAXIS AT BIRTH FOR AT-RISK INFANTS

- **For infants of HBsAg-positive mothers:** Administer hepatitis B vaccine and HBIG <12 hours of birth at different injection sites (e.g., separate limbs).
- **For infants of mothers whose HBsAg status is unknown:**
  - For infants weighing <2 kg – administer hepatitis B vaccine and HBIG <12 hours of birth.
  - For infants weighing ≥2 kg – administer hepatitis B vaccine <12 hours of birth. If mother is found to be HBsAg-positive, administer HBIG as soon as possible and no later than 7 days after birth; discharged infants should be recalled and given HBIG.
- **For infants of HBsAg-negative mothers:** Administer hepatitis B vaccine <24 hours of birth to all infants weighing ≥2 kg. If the infant weighs <2kg at birth, administer hepatitis B vaccine at chronological age 1 month or hospital discharge (whichever is earlier, even if weight is still <2kg).
- **For additional information:** please visit the [CDC Perinatal Hepatitis B Prevention Program](#) or the [CDPH Perinatal Hepatitis B Prevention Program](#) websites.

<sup>1</sup> Schillie S, Vellozzi C, Reingold A, et al. Prevention of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices. *MMWR Recomm Rep* 2018;67(No. RR-1):1–31. DOI: <http://dx.doi.org/10.15585/mmwr.rr6701a1>

<sup>2</sup> Centers for Disease Control and Prevention. *Viral Hepatitis Surveillance Report – United States, 2019*. <https://www.cdc.gov/hepatitis/statistics/2019surveillance/index.htm>. Published May 2021.

<sup>3</sup> Centers for Disease Control and Prevention. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. Hall E., Wodi A.P., Hamborsky J., et al., eds. 14th ed. Washington, D.C. Public Health Foundation, 2021.

### FOLLOW-UP OF INFANTS BORN TO HBsAg-POSITIVE MOTHERS

- Contact the [local health department](#) to ensure that these infants are followed by a case management program.
- **Make sure that the infant completes the hepatitis B vaccine series on schedule**
  - For additional information, please see the [current MMWR Recommendations](#).
- **Document vaccine administration and provide the Hepatitis B Vaccine Information Statement**
  - Providers are encouraged to enter all vaccine doses in the California Immunization Registry.
- **Educate HBsAg-positive mothers that their test results** indicate that they have chronic HBV infection and that they should follow up with their primary care provider or a liver specialist.
- **Advise HBsAg-positive women that breastfeeding is safe** once their infant has received HBIG and hepatitis B vaccine at birth.
- **Ask about household contacts and siblings.** Refer close contacts and family members for HBsAg and anti-HBs testing to determine if they are chronically infected with HBV or are unprotected against HBV infection and should be vaccinated.
- **Perform post-vaccination serologic testing**
  - HBsAg and anti-HBs testing should be performed 1-2 months after completion of the vaccine series, but not before 9 months of age.
  - If the vaccine series has been completed on schedule, testing should occur at 9-12 months of age. Testing performed at 13-18 months of age is still valid, but there may be a higher occurrence of falsely negative anti-HBs results.
  - Testing should not be performed before age 9 months to avoid detection of passive anti-HBs from HBIG administered at birth and to maximize the likelihood of detecting late HBV infection. If testing is done before age 9 months, it will need to be repeated.

### INTERPRETING POST-VACCINATION SEROLOGIC TESTING RESULTS

- HBsAg-negative and anti-HBs positive (anti-HBs $\geq$ 10 mIU/mL): These infants are not infected and are immune to hepatitis B and protected against future exposures. Results should be reported to the local health department
- HBsAg-negative and anti-HBs negative (anti-HBs <10 mIU/mL): These infants are not infected and not immune to (protected against) hepatitis B. Administer an additional dose of hepatitis B vaccine and repeat post vaccination serologic testing 1-2 months after the dose of vaccine. If the infant remains susceptible (anti-HBs <10 mIU/mL), administer the remaining doses of the second three dose vaccine series and retest 1-2 months after the third dose of vaccine.
- HBsAg-positive and anti-HBs negative (anti-HBs <10 mIU/mL): These infants may be infected with hepatitis B and are not immune or protected against hepatitis B. Ensure that HBsAg-positive infants are referred to appropriate medical follow-up and are reported to their local health department as a perinatal hepatitis B case.

### FOLLOW-UP OF INFANTS BORN TO WOMEN WITH UNKNOWN HBsAg STATUS

- If it is not possible to determine the mother's HBsAg status (e.g., when a parent or person with lawful custody safely surrenders an infant confidentially after birth), the vaccine series should be completed according to a recommended schedule for infants born to HBsAg-positive mothers.

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- These infants should also receive post-vaccination serologic testing at age 9–12 months according to the testing recommendations outlined for infants born to HBsAg-positive mothers.

### GENERAL HEPATITIS B SCREENING

- All persons born in geographic areas with an HBsAg prevalence of  $\geq 2\%$  (such as Asia, Africa, the Pacific Islands, and parts of South America) should receive a one-time test for HBsAg to identify chronic infection or the need for vaccination.<sup>1</sup>
- All children born to immigrant parents from very high prevalence areas ( $\geq 8\%$ ) should also be screened regardless of immunization history.<sup>1</sup>
- All children living in a household with a known HBsAg-positive person should be screened.
- Starting in 2022, California requires that adult patients receiving primary care services in any primary care setting to be offered a screening test for hepatitis B, to the extent that the services are covered under the patient's insurance, under specified circumstances. This requirement is based on the [U.S. Preventive Services Task Force \(USPSTF\) recommendations](#).

### MANAGEMENT OF CHILDREN WITH CHRONIC HEPATITIS B

- Perform a yearly physical exam on all children chronically infected with HBV (HBsAg remains positive after 6 months).
- Determine if there is a family history of hepatocellular carcinoma or liver disease.
- Refer to a pediatric gastroenterologist for baseline tests and long-term monitoring.
  - Baseline labs include ALT, CBC, HBeAg, Anti-HBe, Anti-HBc, HBV DNA by PCR, AFP; and
  - Baseline abdominal ultrasound.
- Long-term monitoring:
  - ALT and AFP every 6-12 months;
  - Abdominal ultrasound (usually every 1-2 yrs, but sooner if there is a family history of HCC, if ALT or AFP are elevated, or if cirrhosis is present).
- Treatment with antiviral medication may be initiated under guidance of a pediatric gastroenterologist.

### DEFINITIONS

- HBsAg (hepatitis B surface antigen) = Detection of acutely or chronically infected people.
- Anti-HBs (hepatitis B surface antibody) = For persons who test negative for HBsAg, anti-HBs levels over 10 mIU/mL indicates immunity to hepatitis B either from prior vaccination or resolved infection.
- HBeAg (hepatitis B e antigen) = Identification of infected people at increased risk of transmitting HBV.