

Perinatal Hepatitis B (HBV) Elimination Facts

The Importance of Perinatal Hepatitis B Elimination

- Hepatitis B (HBV) is a leading cause of liver cancer in the U.S. HBV can be passed from a mother to her baby during birth (perinatal infection). Infants infected at birth may later experience potentially fatal complications, including cirrhosis, chronic liver disease, and liver cancer.
- Perinatally infected infants have a 90% risk of chronic infection. 25% of chronically infected infants are at risk for premature death due to HBV.ⁱ
- Post-exposure prophylaxis (PEP) is **85%-95% effective** when given within 12 hours of birth to infants born to mothers with HBV. PEP includes hepatitis B immune globulin (HBIG) and the first dose of HBV vaccine.
- According to a 2009 analysis, an estimated 952 perinatal HBV infections occur each year in the U.S.ⁱⁱ
- One of the four goals of the national Viral Hepatitis Action Plan is to eliminate mother-to-child transmission of HBV.

Hepatitis B Prevention Recommendations

Both the U.S. Preventive Services Task Force (USPSTF) and Centers for Disease Control and Prevention (CDC) provide clinical guidelines/recommendations on HBV screening and immunization.^{iii,iv} The USPSTF recommends HBV screening at the first prenatal visit (A Grade). CDC recommends that all pregnant women should be routinely tested in the first trimester, even if they were previously vaccinated or tested. Both recommend:

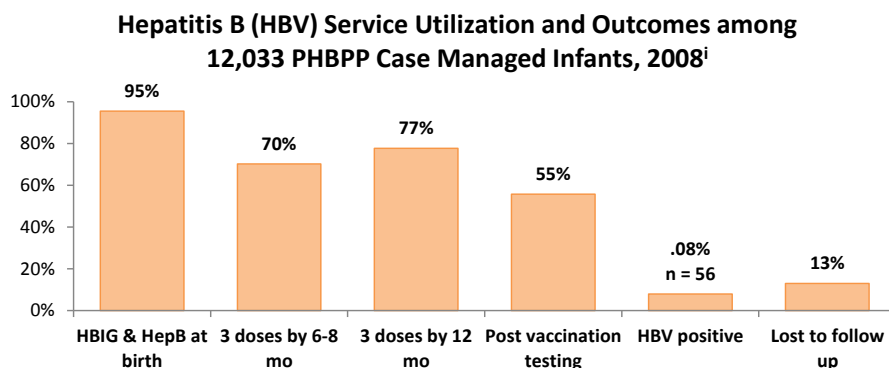
- Screening women with unknown status or at higher risk when admitted for delivery.
- PEP within 12 hours of birth for infants born to mothers who test HBsAg positive (i.e. chronically infected).
- Infants born to mothers with unknown HBV status should receive HBV vaccine within 12 hours of birth. If the mother is determined to have HBV, administer HBIG to the infant as soon as possible (up to 7 days after birth).
- Pregnant women who test HBsAg positive should receive referral to the Perinatal Hepatitis B Prevention Program (PHBPP), counseling and medical management, and information about HBV.

CDC and the Advisory Committee on Immunization Practices recommend 3 doses of HBV vaccination for all infants, the first dose administered within 12 hours of birth (“universal birth dose”). The 2014 National Immunization Survey reported 72% of infants received the birth dose of hepatitis B vaccine within 3 days of life and 92% of children completed the 3 dose series by 35 months of age.^v CDC recommends post-vaccination testing (PVST) at 9 months of age (no earlier) if the HBV series is completed on time.

The CDC Perinatal Hepatitis B Prevention Program

CDC created the National Perinatal Hepatitis B Prevention Program (PHBPP) in 1990 to identify pregnant women with chronic HBV and ensure that their infants complete timely PEP through case management. Elements of the PHBPP include:

- 1) Identify HBsAg positive pregnant women and enroll them in the PHBPP,
- 2) Coordinate care (e.g. ensure delivery hospital is aware of woman’s HBsAg positive status and pediatric provider is aware of newborn exposure and understands how to manage the infant),
- 3) PEP completion,
- 4) HBV vaccination series completion
- 5) Post-vaccination testing, and
- 6) Monitoring and evaluating the program.



According to 2008 estimates, only 47% of more than 25,000 infants expected to be born to HBsAg positive mothers were reported to the PHBPP but 98% of identified infants received case management.ⁱ While nearly all identified infants received case management, only 55% of all case managed infants had post vaccination testing (see graph).ⁱ

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Perinatal Hepatitis B Prevention - Best Practices

Educate and Empower Healthcare Providers to Eliminate Perinatal HBV

- Evidence suggests that the strongest predictor of a newborn receiving HBV vaccine is having a written hospital policy about administering the universal birth dose. However, a 2006 survey indicated that:
 - Only 80.6% of hospitals had an HBV birth dose policy.
 - 37% of delivery hospitals had no policies about HBV testing for women admitted with unknown status.^{vi}
- In 2013, the Immunization Action Coalition launched the Hepatitis B Birth Dose Honor Roll to recognize hospitals and birthing centers that attain a 90% HBV birth dose vaccination rate and have written policies, procedures, and protocols to protect all newborns from HBV virus infection prior to hospital discharge.
- Kaiser Permanente utilized a system of electronic reminders for pediatric providers in advance of the first scheduled check-up and at time post-vaccination tests were due achieving higher than national rates of timely PEP, HBV vaccine completion, and post-vaccination testing.^{vii}

Scale Up Post-Exposure Prophylaxis (PEP)

- Despite timely post-exposure prophylaxis, mother to child transmission occurs in 5%–15% of infants born to HBsAg positive mothers.^{viii} Emerging evidence suggests that HBV treatment of pregnant women in the 3rd trimester is safe and reduces rates of transmission.^{ix} In partnership with the American Congress of Obstetricians and Gynecologists (ACOG), CDC developed a *Screening and Referral Algorithm for Hepatitis B Virus Infection among Pregnant Women*.

Share Data and Collaborate with the PHBPP

- **Laboratories:** Insert the word “PRENATAL” into a pregnant woman’s reported test results in paper/faxed forms or in the OBR-13 results field sent by electronic laboratory reporting (ELR).
- **Clinicians: (1)** Select a test designated as “prenatal” or indicate prenatal/obstetric panel when ordering an HBsAg screening test for a pregnant woman, **(2)** inform the laboratory of a woman’s pregnancy status, and **(3)** include any and all ICD-9/10 diagnosis codes indicating current or recent pregnancy when ordering HBsAg tests.
- **Health Departments: (1)** Be aware of how local laboratories are reporting pregnancy information, **(2)** include prenatal indicators from both paper-based and ELR reports, and **(3)** ensure prenatal indicators are shared with PHBPP Coordinators.

For more information

- **CDC Division of Viral Hepatitis:** <http://www.cdc.gov/hepatitis/hbv/perinatalexmtn.htm>
- **CDC/ACOG Screening Algorithm:** <http://www.cdc.gov/hepatitis/hbv/pdfs/prenatalhbsagtesting.pdf>
- **Hep B Moms:** <http://www.hepbmoms.org/>
- **Immunization Action Coalition Hepatitis B Birth:** www.immunize.org/protect-newborns/

ⁱ Smith, E. A., Jacques-Carroll, L., Walker, T. Y., Sirotkin, B., & Murphy, T. V. (2012). The national Perinatal Hepatitis B Prevention Program, 1994-2008. *Pediatrics*, 129(4), 609-616. doi:10.1542/peds.2011-2866

ⁱⁱ Ko, S. C., Fan, L., Smith, E. A., Fenlon, N., Koneru, E. A., & Murphy, T. V. (2014). Estimated Annual Perinatal Hepatitis B Virus Infections in the United States, 2000–2009. *J Pediatric Infect Dis Soc*, 3(4), 1-8.

ⁱⁱⁱ US Preventive Services Task Force. (2009). Screening for hepatitis B virus infection in pregnancy: U.S. Preventive Services Task Force reaffirmation recommendation statement. *Ann Intern Med*, 150(12), 869-873, W154.

^{iv} Mast, E. E., Margolis, H. S., Fiore, A. E., Brink, E. W., Goldstein, S. T., Wang, S. A. (2005). 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 Recomm Rep*, 54(RR-16), 1-31.

^v US Centers for Disease Control and Prevention. (2014). *National Immunization Survey*. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6433a1.htm?s_cid=mm6433a1_w

^{vi} Willis, B. C., Wortley, P., Wang, S. A., Jacques-Carroll, L., & Zhang, F. (2010). Gaps in hospital policies and practices to prevent perinatal transmission of hepatitis B virus. *Pediatrics*, 125(4), 704-711. doi:10.1542/peds.2009-1831

^{vii} Kubo, A., Shlager, L., Marks, A. R., Lakritz, D., Beaumont, C., Gabellini, K., & Corley, D. A. (2014). Prevention of vertical transmission of hepatitis B: an observational study. *Ann Intern Med*, 160(12), 828-835. doi:10.7326/M13-2529

^{viii} Zhang, H., Pan, C. Q., Pang, Q., Tian, R., Yan, M., & Liu, X. (2014). Telbivudine or lamivudine use in late pregnancy safely reduces perinatal transmission of hepatitis B virus in real-life practice. *Hepatology*. doi:10.1002/hep.27034

^{ix} Wang, L., et al., Safety of tenofovir during pregnancy for the mother and fetus: a systematic review. *Clin Infect Dis*, 2013. 57(12): p. 1773-81.