State of Alaska Epidemiology **Bulletin**

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Preventing Perinatal Hepatitis B Transmission from Mothers to Infants

Background

Hepatitis B (HepB) is a vaccine-preventable liver infection caused by the hepatitis B virus (HBV).[1] More testing for HepB is needed because the actual annual incidence is estimated to be at least six times higher than the 20,000 new cases reported nationally each year.[1] HepB is spread when blood, semen, or other body fluids from an infected person enters the body of someone who is not infected (e.g., during the birthing process, sexual activity, or needle sharing).[2]

Infants exposed to HBV during birth can develop a chronic infection leading to cirrhosis and liver cancer. Around 85% of persons infected during infancy develop chronic HepB.[1] Approximately 25% of persons chronically infected during childhood will die prematurely from cirrhosis or liver cancer.[1] The Alaska Perinatal Hepatitis B Prevention Program (PHBPP) strives to reduce transmission of HBV from mothers to infants.

Alaska had 1,151 newly reported chronic HepB cases during 2010–2020, averaging 14.2 cases per 100,000 annually.[2] This was 2.8 times higher than the 2020 national incidence rate (5 cases per 100,000 population).[2] Among Alaska's cases, 579 (50.3%) were female, 336 (58%) of whom were of reproductive age (15–44 years).[2]

Maternal Screening and Antiviral Therapy

Testing for hepatitis B surface antigen (HBsAg) should occur early during each pregnancy, even if the mother was previously tested or vaccinated. All HBsAg-positive pregnant women should be subsequently tested for HBV DNA at 26–28 weeks gestation if they are not on treatment.[2] When admitted to a healthcare facility for labor, they should be tested for HBsAg if there is no record of testing during the pregnancy or if they are at elevated risk for HBV infection.[1]

Antiviral therapy can reduce perinatal HBV transmission when the maternal HBV DNA level is >200,000 IU/mL.[1] Tenofovir is preferred because it is not associated with viral resistance.[1] Prenatal antiviral therapy is started at 28–32 weeks' gestation (and continued until birth) as an adjunct to HepB vaccination and hepatitis B immune globulin (HBIG) administered to exposed infants after delivery; prenatal antiviral therapy has been linked to a lower incidence of HBV transmission.[1]

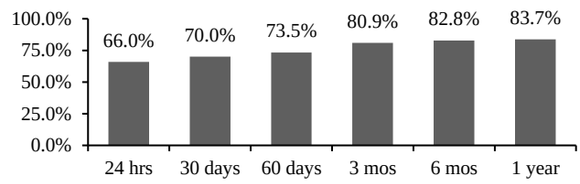
Alaska's Perinatal Hepatitis B Prevention Program

Prevention of perinatal HepB requires coordinated communication between clinicians, laboratories, hospitals, birthing facilities, and local/state health departments. The Immunization Program's PHBPP helps facilitate this collaboration through case management. These efforts have increased the number of infants receiving post-exposure prophylaxis, vaccination, and post-vaccination serologic testing.[3] Providers should report infants born to HBV-infected women using the Perinatal Hepatitis B Case Report Form.

All infants should receive a birth dose of HepB vaccine. For infants born to HBsAg-positive women, HepB vaccination and HBIG are 75% and 71% effective, respectively, in preventing perinatal HBV transmission; when taken together, their efficacy is 94%.[1] In 2022, only 66% of Alaska's infants received a birth dose of single-antigen HepB vaccine within 24 hours of birth (source: VacTrAK). By 1 year of age, 83.7% of infants had received ≥1 dose of HepB vaccine in 2022 (Figure).

Infants born to HBsAg-positive women should be tested for HBsAg and anti-HBs 1–2 months after completion of their HepB vaccine series, but not prior to 9 months of age (a definitive diagnosis of HBV is difficult to establish prior to 9 months of age).[4] HBsAg results may be influenced by passive maternal antibodies, transient positivity following vaccination, or prolonged HBV incubation periods.[1]

Figure. Proportion of Alaska Infants Born in 2022 with ≥1 Dose of Hepatitis B Vaccine, by Age at Administration of First Dose



Recommendations

Prenatal care

1. Screen for HBsAg during each pregnancy; positive HepB cases must be reported to the Section of Epidemiology.[5]
2. If the maternal HBV DNA level is >200,000 IU/mL, start treating with Tenofovir at 28–32 weeks gestation and continue until birth.[1]

Medically stable infants weighing ≥2,000 grams at birth

1. Administer one dose of single-antigen HepB vaccine within 24 hours of birth. If the mother is HBsAg-positive or -unknown, administer vaccine within 12 hours.
2. Administer HBIG within 12 hours of birth (or up to 7 days after birth if HBsAg laboratory result is unavailable at delivery) to infants born to HBsAg-positive women.
3. Look for ways to improve HepB vaccination (and HBIG administration when warranted) among infants born at birthing centers or at home; these infants have the lowest HepB birth dose vaccination rates.

Infants weighing <2,000 grams at birth (LBW)

1. Administer HepB vaccine on the day of hospital discharge or at 1 month of age (even if weight is still <2,000 grams) to infants born to HBsAg-negative women.
2. Administer HBIG within 12 hours of birth (or after physiologic stabilization) to infants born to HBsAg-positive or -unknown women.
3. For infants transferred to a different facility after birth, staff at both facilities should communicate about the infant's HepB vaccination and HBIG receipt status to ensure that administration occurs on-time.

Public Health Follow-up

1. HepB vaccine series should be completed on time. The final dose in the vaccine series should not be administered before age 24 weeks (164 days).[6]
2. LBW infants need an additional 3 doses of HepB vaccine after their birth dose regardless of vaccine formulation.
3. All infants born to HBsAg-positive women should receive post-vaccination serologic testing (PVST) for HBsAg and anti-HBs between 9–12 months of age or 1–2 months after vaccine series completion if the series is delayed.[4]
4. Report all HBIG and HepB doses to VacTrAK and PVST results to Alaska's PHBPP.[7]

References

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