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THE BIRTH DOSE OF HEPATITIS B VACCINE: WHY IT'S RECOMMENDED

THE PUBLIC-HEALTH STORY of hepatitis B is an odyssey that began in antiquity with Hippocrates' description of epidemic jaundice. It developed slowly but got really exciting with the discovery of the hepatitis B virus (HBV) many centuries later, and perhaps reached its literary climax with one of history's greatest public-health achievements—viz., the development of a safe and highly effective vaccine.

On December 23, 2005, the Advisory Committee on Immunization Practices (ACIP) published updated recommendations to address prevention of perinatal and childhood transmission of HBV. The primary focus is on universal infant vaccination beginning at birth, which provides a "safety net" for prevention of perinatal infections, prevents early childhood infections, facilitates implementation of universal vaccination recommendations, and prevents infections in adolescents and adults.¹ As many of us associate hepatitis B with things like injection drug use and promiscuous sex—activities in which infants aren't participating—you might well ask "why should we vaccinate infants?" This issue of the *CD Summary* reviews the recommendations and their epidemiologic underpinnings.

PERINATAL HEPATITIS B

The stakes for perinatal infections are high: 90% of infected infants will become chronic carriers—i.e., be viremic for life—and approximately 25% of those will succumb to the ravages of cirrhosis or liver cancer. The majority of carriers remain asymptomatic until onset of cirrhosis or

end-stage liver disease.² These chronically infected persons also serve as the main reservoir for continued HBV transmission.

Two complementary strategies are fundamental to preventing perinatal HBV transmission:

- Universal vaccination of infants beginning at birth; and
- Screening of pregnant women for hepatitis B surface antigen (HBsAg) so that prophylaxis of the infant can be undertaken with hepatitis B immune globulin (HBIG) and vaccine.¹

THE RECOMMENDATIONS

Maternal testing. The ACIP recommends that healthcare providers test all pregnant women for HBsAg during each pregnancy, even if they have been previously vaccinated or tested. In Oregon, prenatal testing for hepatitis B is required by law.* All HBsAg-positive pregnant women are then reported to local public health departments for followup.

Pregnant women who were not screened prenatally, those who engage in behaviors that put them at high risk for infection, and those with clinical hepatitis should be tested at the time of admission to the hospital for delivery. When pregnant women are tested in the hospital for HBsAg, a shortened testing protocol may be used to expedite administration of HBIG and vaccine to infants. Counseling and medical management for HBV infection should be provided to

HBsAg-positive women.¹

Vaccination at birth. A birth dose of hepatitis B vaccine is recommended even when pregnant women are screened for HBsAg to: 1) safeguard against maternal hepatitis B testing errors; 2) protect neonates discharged to households in which other persons with chronic HBV infection may reside; and 3) maximize the likelihood that the child will receive the complete vaccine series for protection against hepatitis B later in life.³

WHY SCREEN ALL PREGNANT MOMS?

Identifying risk factors is, at best, an imperfect science. In Oregon, local public health nurses, despite intensive interviewing of cases, found no risk factor in nearly half of the acute hepatitis B cases reported in 2003.

We conducted chart reviews during 1999-2000 and found that 147 mothers (representing 1% of all births at 34 hospitals in Oregon) had been discharged with their HBsAg status still unknown. These mothers were more likely to have no prenatal care and to have been on Medicaid or have no insurance compared with other pregnant women in the state.⁴

In another study, women without prenatal care were found to have a higher prevalence of HBsAg-positivity compared to women who were screened prenatally.⁵

December 2005 ACIP Recommendations for the hepatitis B birth dose¹

1. All medically stable infants weighing $\geq 2,000$ grams at birth and born to HBsAg-negative mothers should be vaccinated before hospital discharge.
2. Each delivery hospital should implement standing orders for administration of hepatitis B vaccination as part of routine medical care of all medically stable infants weighing $\geq 2,000$ grams at birth.



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WHY A BIRTH DOSE FOR EVERY INFANT?

CDC expects 23,000 infants to be born to HBV-infected mothers each year[†]; and approximately 6,000 will develop chronic HBV infection without prophylaxis.⁶

We all know that medical errors happen—some serious—and with some regularity. Because HBV positive test results don't always find their way to the birth hospital, or to the right person, many U.S. children are now chronically infected with HBV and at least one infant has died.⁷

Before hepatitis B vaccination programs became routine in the United States, 18,000 children younger than 10 acquired hepatitis B each year and of these, half were infected after the newborn period through contact with infected people other than the mother.⁸ Overall two-thirds of cases of childhood HBV transmission occur by postnatal family member or caregiver exposure. These children could be protected with a birth dose of hepatitis B vaccine.

It is estimated that >200 infants are born each year in Oregon to women with hepatitis B viremia; however, fewer than 70% of this number are identified, suggesting many Oregon infants may not be getting the recommended HBIG prophylaxis and HBV series. The birth dose of hepatitis B vaccine serves as a "safety net" to prevent

perinatal infection in these infants.

Unfortunately, in 2004, 44% of Oregon birth hospitals had no written policy or standing order in place to offer and administer the birth dose to all newborns before hospital discharge.

FAQS

If the birth dose is given, can I follow up with combination vaccines?

Yes. Since combination vaccines (i.e., Comvax® or Pediarix™) are not licensed for use at <6 weeks of age, monovalent hepatitis B vaccine must be given at birth, and then the hepatitis B series can be completed with three doses of the combination vaccine.

How can I track the birth dose?

The electronic birth certificate is an effective way to record the birth dose. These data are transferred to the ALERT Registry within two weeks and thence made readily available to primary care providers.

Can hospitals afford the cost of giving the birth dose?

The Vaccines for Children (VFC) program is one way to pay for the vaccine for uninsured and other eligible children. In Oregon, approximately 62% of newborns are eligible for VFC.

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Current Flu Strain Resistant

ON JANUARY 14, 2006, the CDC recommended that clinicians not prescribe amantadine or rimantadine to treat or prevent influenza during the 2005-06 season.** CDC tested 120 influenza A (H3N2) virus isolates, the predominant strain currently circulating in the US, and found that 91% exhibit resistance to amantadine and rimantadine. This represents a sharp increase from last year, when only 11% of isolates tested were resistant, and 2 years ago, when 2% of isolates were resistant. Luckily, all influenza viruses tested were susceptible to the neuraminidase inhibitors oseltamivir and zanamivir. Another reason to keep pushing those flu shots in the fall!

**Clinicians can get more information at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm55d117a1.htm>.

[†]CDC unpublished data, 2004.