In Honor and Memory of

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“I have always had a passion for public health. By preventing disease you stop outbreaks that can negatively impact lives in New Jersey. I love the challenge the position presents and working to solve complicated health issues.”
BEST PRACTICES FOR PREVENTING PERINATAL HEPATITIS B VIRUS AND RUBELLA TRANSMISSION

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October 29, 2012
Hepatitis B overview
Screening of pregnant women for HBV
Procedures at Delivery Hospitals to prevent perinatal transmission
  - Management of mothers and infants
Importance of universal birth dose and timely completion of HBV vaccine series
Screening and vaccination of women for rubella to prevent congenital rubella syndrome
Hepatitis B, countries or areas at risk

The risk of infection is based on the estimated prevalence rate of antigen to hepatitis B virus surface antigen (HBsAg) – a marker of chronic HBV infection – among population. This marker is based on limited data and may not reflect current prevalence.

Countries or areas with moderate to high risk

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization/CDC
Map Production: Public Health Information and Geographic Information Systems (GIS)
World Health Organization

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Globally 350 million chronic infections
- 620,000 deaths each year

U.S.
- Estimated 800K to 1.4 million with chronic HBV infection
- Estimated 38,000 new cases (2010 CDC)
- Reported 3,350 new cases in 2010
  - M > F
  - Highest rates: 30-39 year old; non-Hispanic Blacks
  - Lowest rates: ≤19 years; APIs and Hispanics

http://www.cdc.gov/hepatitis/HBV/StatisticsHBV.htm
Figure 3.1. Reported number of acute hepatitis B cases — United States, 2000–2010

*Adjusted for underreporting.
Source: National Notifiable Diseases Surveillance System (NNDSS)
HBV Transmission

- Via body fluids – blood, semen, vaginal fluid, saliva
- Sex with infected person
  - Multiple partners, MSM, STDs
- Birth to infected mother
- Sharing needles, syringes, IV drug equipment, razors, toothbrushes
- Exposure to blood, open sores
  - Job, hemodialysis, needle sticks/sharp instruments
Perinatal Transmission

- In utero transmission < 2%
- Blood exposure during labor & delivery

Risk of infant acquiring infection
- 70-90% if mother HBsAg + / HBeAg +
- 5-20% if mother HBsAg + / HBeAg -

2012 AAP Red Book
Hepatitis B Disease

- Incubation period: 90 days (60-150 days)
- Likelihood of developing symptoms is age related
  - 1% of infants
  - 5-15% of children 1-5 years
  - 30-50% of > 5 year olds
  - 50-70% of adults
- Anorexia, nausea, malaise, fever, vomiting, abdominal pain, dark urine, jaundice
- Extrahepatic: joint, macular rashes, low platelets, polyarteritis nodosa, glomerulonephritis, papular acrodermatitis

AAP 2012 Red Book
Chronic HBV infection

- Risk of progression determined by age at time of infection
  - 90% perinatally acquired or 1st year of life
  - 25-50% of 1-5 year old
  - 5-10% of older children and adults
  - Immunosuppressed or chronic illness

- Hepatocellular carcinoma or cirrhosis
  - 25% of untreated infants/children
  - 15% of adults die prematurely
Hepatitis B vaccination

- DNA recombinant vaccine (single Ag or combo)
- 90-95% efficacy
- Preexposure and postexposure
- Long term protection
- Recommended for all infants, children, and adolescents through 18 years of age
  - Usually 3 dose (0, 1, 6 months)
  - 11-15 years: 2 dose (0, 4-6 months) schedule
Hepatitis B Immunoglobulin (HBIG)

- From hyperimmunized donors whose plasma has high concentration anti-HBs
- Negative for HIV/HCV serologies/viremia
- Manufacturing process inactivates HBV, HIV, HCV
- Short term protection (3-6 months)
- Postexposure only- specific indications
Prevention of perinatal transmission

- Prenatal providers screen mothers
- Delivery Hospitals:
  - Manage + mothers
  - Immunoprophylaxis for their infants
  - Admission orders
  - Universal birth dose
- Pediatricians
  - Finishing vaccine series
- Department of Health
  - Perinatal Hepatitis B Prevention Project
  - Following HBV exposed infants
Overview

- Hepatitis B overview
- **Screening of pregnant women for HBV**
- Procedures at Delivery Hospitals to prevent perinatal transmission
  - Management of mothers and infants
- Importance of universal birth dose and timely completion of HBV vaccine series
- Screening and vaccination of women for rubella to prevent congenital rubella syndrome
Screening of pregnant women

- 1988: ACIP recommendations
- 1990: ACOG recommendations
- **Routinely** test **ALL** women
- In **EVERY** pregnancy for HBsAg

- Test in **FIRST** trimester
- Regardless of past testing or vaccination status
What to do with results?
Maternal HBsAg negative (without risk factors)

- Copy of original lab report to
  - Delivery hospital
  - Newborn’s health care provider
- Educate mother about rationale and importance of vaccine for all infants (birth dose)
Maternal HBsAg negative (with risk factors)

- Risk factors for infection during pregnancy
  - > 1 sex partner in previous 6 months
  - STD
  - HBsAg + partner
  - Injection drug use
- Start vaccination series
- Repeat HBsAg testing prior to delivery (at least 30 days after last vaccine dose) or upon admission to L&D
  - OR clinical hepatitis since last testing
About 400 pregnant women/year in NJ

Report result to Health Department
- per N.J.A.C. 8:57-1, Reporting Requirements for Communicable Diseases

Copy of original lab report to
- Delivery hospital
- Newborn’s chart/ health care provider
- Attach alert notice/sticker to chart: infant will need vaccine + HBIG within 12 hours of birth
Educate infected mothers

- Educate mother about need for immunoprophylaxis for infant at birth and completing vaccination series
  - Obtain consent for immunoprophylaxis before delivery
Advise mother that all household, sexual, needle-sharing contacts should be tested and vaccinated if susceptible

HBV information to mother:
- Transmission
- Prenatal concerns (breastfeeding)
- Evaluation and possible treatment of chronic Hep B
- Substance abuse treatment

Refer mother to specialist for further evaluation of chronic hepatitis B
Testing for Hepatitis B Virus Infection During Pregnancy
Flowchart for Prenatal Providers

- Routinely test all women in every pregnancy for hepatitis B surface antigen (HBsAg)
- Test in the first trimester, if possible
- Test regardless of past testing status

HBsAg

Maternal HBsAg results

HBsAg

- Report HBsAg positive test results to public health department perinatal hepatitis B coordinator
- Provide a copy of lab report indicating woman’s HBsAg status to the hospital where delivery is planned
- Attach alert notice to woman’s medical record to remind delivery hospital that newborn needs HepB and HBIG vaccine within 12 hours of birth
- Instruct delivery hospital to place a copy of lab report in infant’s chart
- Notify pediatric provider (if known)

Recommended Follow-up
- Provide woman with a card noting her HBsAg status
- Refer woman to a medical specialist for evaluation of chronic hepatitis B
- Educate woman about need to test all contacts (household, sexual, and/or needle sharing)
- Educate woman about importance of completing infant’s vaccine series

No

HBV risk factor present?
Risk Factors:
- ≥ 2 sex partners in previous 6 months
- STD
- Injection drug use
- HBsAg + partner
- Clinical hepatitis

Yes

Start HepB vaccine series
- Retest for HBsAg prior to delivery at least 30 days after most recent vaccine dose
  (Per ACP recommendations)

HBsAg

Maternal HBsAg results

HBsAg

- Provide a copy of lab report indicating woman’s HBsAg status to hospital where delivery is planned
- Educate pregnant woman about importance of vaccine birth dose

Resources available at www.CDC.gov/hepatitis/perinatalHBsAg
Overview

- Hepatitis B overview
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“All pregnant women admitted to the hospital with unknown or undocumented hepatitis-B surface antigen (HBsAg) assay results shall be immediately screened for the hepatitis-B virus using the HBsAg test or other standardized hepatitis-B tests. Test results should be available within 24 hours but no later than 48 hours. All positive HBsAg test results shall be reported on a designated reporting form within five working days of determination to the New Jersey Department of Health and Senior Services, Immunization Program. “
At time of admission for delivery

- Review HBsAg status of all pregnant women
  - Copy of original lab report
- Record results in mother’s L&D chart and infant’s delivery summary
- Perform HBsAg ASAP if
  - No documented test result
  - Risk factors for infection during pregnancy
  - Had clinical hepatitis since previous testing
If HBsAg results available

**POSITIVE**
- Place copy of original lab report in:
  - Woman’s L&D chart
  - Infant’s hospital chart
- Alert pediatrician and nursery staff for need of immunoprophylaxis
- Alert DOH perinatal Hep B coordinator
- Report results in Immunization Registry

**NEGATIVE**
- Place copy of original lab result in:
  - Woman’s L&D chart
  - Infant’s hospital chart
Infants of HBsAg NEGATIVE mothers

- ≥ 2000 grams: 1<sup>st</sup> dose of Hep B vaccine (single antigen 0.5 mL IM) prior leaving hospital

- < 2000 grams: 1<sup>st</sup> dose of Hep B vaccine (single antigen 0.5 mL IM) at discharge or 1 month of after birth (whichever is first)

- Continue vaccine schedule
  - Single antigen vaccine: 3 doses total
  - Combination vaccine: 4 doses total
Infants of HBsAg POSITIVE mothers

- Administer
  **Hep B vaccine** (single antigen 0.5 mL IM) + **HBIG** (0.5mL IM) ≤ 12 hours after birth
    - 95% effective

- Record date and time these are given in infant’s medical record

- Continue vaccine series
  - If < 2000 g restart vaccine series at 1-2 months (birth dose does NOT count)
Infants of HBsAg POSITIVE mothers

Educate mothers:
- May breastfeed infants
- Critical to finish vaccine series
- Infant will have blood drawn at 9-18 months
- HBV transmission
- Need to vaccinate contacts (household, sexual, needle-sharing)
- Substance abuse treatment if needed
- Need for further evaluation and possible treatment of infection
Procedures to Prevent Perinatal Hepatitis B Virus Transmission at Delivery
Maternal Surface Antigen (HBsAg) Test Results AVAILABLE

Woman presents for delivery

- Place copy of woman’s original HBsAg lab report in:
  - Woman’s labor and delivery chart
  - Infant’s hospital record
- Alert nursery staff that infant needs HepB and HBIG vaccine within 12 hours of birth
- Administer HepB and HBIG vaccine to infant within 12 hours of birth or as soon as possible thereafter
- Alert pediatric provider (if known)
- Alert public health department perinatal hepatitis B coordinator
- Report results in Immunization Registry

HBsAg

Maternal HBsAg results

Retest HBsAg

Yes

HBV risk factor present?

Risk Factors:
- > 2 sex partners in previous 6 months
- STD
- Injection drug use
- HBsAg+ partner
- Clinical hepatitis

No

See perinatal algorithm results for unavailable at birth

HBsAg

Maternal HBsAg results

Yes

Place copy of woman’s original HBsAg lab report in:
- Woman’s labor and delivery chart
- Infant’s hospital record

No

Baby weighs less than 2000g

Administer another dose of HepB vaccine one month after birth
Note: Birth dose does not count toward vaccine series

Follow-up with public health department perinatal hepatitis B coordinator

Follow recommended HepB vaccination schedule

Discharge Instructions:
- Provide woman with infant’s immunization record
- Emphasize importance of bringing record to pediatric provider at each visit
- Educate woman about importance of completing infant’s vaccine series

Baby weighs less than 2000g

No

Administer first dose of HepB vaccine at hospital discharge or one month after birth

Administer first dose of HepB vaccine before infant leaves hospital
At delivery
If HBsAg results NOT available

Maternal HBsAg status unknown at infant’s birth

Administer first dose of HepB vaccine and HBIG within 12 hours of birth or as soon as possible thereafter

Yes

Baby weighs less than 2000g

No

Administer first dose of HepB vaccine within 12 hours of birth or as soon as possible thereafter

Single antigen Hep B vaccine (0.5 mL IM)
HBIG (0.5 mL IM)
Maternal HBsAg negative

- Follow recommended vaccine schedule
  - < 2000 grams: birth dose does NOT count - need 3 more doses of vaccine

- Place copy of original lab report in:
  - Woman’s L&D chart
  - Infant’s hospital chart
Maternal HBsAg positive and infant < 2000 g
- Received Hep B vaccine + HBIG
- Restart Hep B vaccine series at 1-2 month (birth dose does not count) – give 3 more doses

- Place copy of original lab report in:
  - Woman’s L&D chart
  - Infant’s hospital chart
Maternal HBsAg positive and infant ≥ 2000 g

- Received **Hep B vaccine**

- Administer HBIG ASAP – no later than 7 days
  - Record date & time
  - Alert pediatrician/HD perinatal Hep B coordinator

- Follow vaccine schedule

- Place copy of original lab report in:
  - Woman’s L&D chart
  - Infant’s hospital chart
Procedures to Prevent Perinatal Hepatitis B Virus Transmission at Delivery

Maternal Surface Antigen (HBsAg) Test Results **UNAVAILABLE** at admission or from retesting at delivery

Maternal HBsAg status unknown at infant's birth

- **Administer first dose of HepB vaccine and HBIG within 12 hours of birth or as soon as possible thereafter**
  - **Yes**
    - Baby weighs less than 2000g
      - **Administer first dose of HepB vaccine within 12 hours of birth or as soon as possible thereafter**
  - **No**

**Once Results Available**

**HBsAg**

- **Positive**
  - **Administer another dose of HepB vaccine one month after birth**
    - *Note: Birth dose does not count towards vaccine series*
  - **Alert pediatric provider (if known)**
  - **Alert public health department perinatal hepatitis B coordinator**

- **Follow recommended HepB vaccination schedule**

**HBsAg**

- **Negative**
  - **Follow recommended HepB vaccination schedule**

**Place copy of original HBsAg lab report in:**
- Woman's labor and delivery chart
- Infant's hospital record

**Discharge instructions:**
- Provide woman with infant's immunization record
- Emphasize importance of bringing record to pediatric provider at each visit
- Educate woman about importance of completing infant's vaccine series
Discharge instructions

- Provide women with infant’s immunization record
- Emphasize importance of bringing record to pediatrician
- Educate woman about importance of completing series
Delivery hospitals should institute standing/admission orders and protocols to ensure:

- **Hepatitis B vaccine is given to all newborns before they are discharged from the hospital**
- **All infants born to mothers who are (HBsAg) positive or unknown are identified and given appropriate immunoprophylaxis**

**Labor & Delivery and Newborn Unit**
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1992: ACIP, CDC and AAP recommend universal Hep B immunization of all infants

2005: universal birth dose recommended

2012 AAP Red Book: Administration of Hep B birth dose should be part of routine care of all medically stable infants weighing 2000 g or more at birth, unless there is:

- a physician's order to defer immunization AND
- a report of the negative serologic status of the mother is in the infant's medical record
Importance of birth dose

- Safety net for infants born to infected mothers, but not identified
- Early protection to infants at risk for infection after perinatal period (horizontal transmission)
- NO COMBINATION VACCINES for birth dose
April 2, 2012

National Quality Forum (NQF)
- Fully endorsed CDC recommendations

Measure #0475 “Hepatitis B Vaccine Coverage Among All Live Newborn Infants Prior to Hospital or Birthing Facility Discharge”

Requires each birthing facility to measure birth dose for a specific time period

Hospitals required to assess infants whose parents refused vaccination for exclusion from the coverage estimate
Routine postimmunization testing for anti-HBs not necessary

Infants born to HBsAg-positive mothers:
- HBsAg and anti-HBs
- after series finished
- at 9 to 18 months of age
How are we doing in NJ?

- 37% of newborns receive a birth dose within 3 days of life (National Immunization Survey 2010 data)
  - 27% within 1st day
- VT 21%, MN 46%, ND 79%

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Virus transmitted person-to-person contact or droplets from respiratory secretions

Asymptomatic

Symptoms: fever, rash, arthritis, lymphadenopathy, or conjunctivitis

Since mid-1990s most cases in:
- Adults
- Foreign born
- Hispanic (72%)

MMWR 2001;50(No. RR-12)
Rubella in pregnancy

- Infection in 1st trimester
- Miscarriages
- Fetal death/stillbirth
- Congenital rubella syndrome (CRS)
  - cataracts, heart defects, and hearing impairment

- Estimated >100,000 infants with CRS born annually worldwide (CDC)
Rubella

- Sept 2010: PAHO announcement: endemic rubella eliminated in Americas
  - Last case of endemic rubella and CRS in 2009
  - US eliminated in 2004
- Still endemic in many parts of the world
- Imported cases are likely
  - International travel
  - Countries without routine vaccination
Healthcare providers should routinely assess women of childbearing age for presumptive evidence of rubella immunity
- Documented receipt of ≥1 vaccine on or after 1st birthday
- Laboratory evidence of immunity (+ rubella-specific IgG) or laboratory confirmation of disease
- Born before 1957

Vaccinate (1 dose MMR) those without immunity who are not pregnant

Routine prenatal screening → vaccinate non-immune pregnant women immediately postpartum

CDC and AAP
All pregnant women need screening for HBsAg
Infants born to infected mothers need immunoprophylaxis and completion of vaccine series
Birth dose does NOT count for infants < 2000 g
Infants born to uninfected women need to start Hep B vaccination series at birth
Screen women of child-bearing age for rubella and vaccinate to prevent sequelae in infants
Resources

- Centers for Disease Control and Prevention (CDC) Hepatitis B Information for Health Professionals
  www.CDC.gov/hepatitis/HBV

- American Academy of Pediatrics (AAP) 2012 Red Book
  http://aapredbook.aappublications.org/

- NJ Department of Health
  http://nj.gov/health/cd/hepatitisb_perinatal
Thank You