**Assessment of Perinatal Hepatitis B Virus Prevention Policies and Practices in NJ Birthing Hospitals, 2011**

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**BACKGROUND**

- Chronic hepatitis B virus (HBV) infection causes ongoing liver damage and can lead to cirrhosis, liver failure and liver cancer (Figure 1)
- 90% of infants infected with HBV develop chronic infection3
- Infants are at risk for HBV infection via:
  - Perinatal transmission: infected mother to newborn
  - Horizontal transmission: infected household member to newborn
- Approximately 400 infants/year in NJ identified with perinatal exposure to HBV4
- Vaccination against HBV for infants is effective in preventing HBV infection1
- An estimated 27.2% of infants born in NJ in 2010 received birth dose of HBV vaccine within 1 day compared to US national coverage of 56.2%1
- 90.1% of NJ children aged 19-35 months in 2010 completed the HBV vaccine series with 3 or more doses5
- Birthing hospitals act as a critical safety net to implement HBV prevention strategies6,7

**STRATEGIES TO PREVENT HBV INFECTION IN INFANTS6,7**

- Universal screening of pregnant women for hepatitis B surface antigen (HBsAg) during each pregnancy
- Vaccination of all infants with HBV series starting with the universal HBV birth dose given at birth before hospital discharge (Figure 2)
- For infants born to HBsAg (+) (positive) women: administration of immunoprophylaxis, which includes hepatitis B immunoglobulin (HBIG) and HBV birth dose within 12 hours of birth, followed by completion of HBV vaccine series

**METHODS**

**PERINATAL HBV INFECTION PREVENTION SURVEY**

- Distributed electronically and completed by infection preventionists and maternal & child health staff at 49 of 53 NJ birthing hospitals in 2011
- Assessed the prevalence of:
  - 4 written policies and 2 pre-printed/standing orders for HBsAg screening of pregnant women on admission
  - 4 written policies and 4 pre-printed/standing orders for immunoprophylaxis of infants

**MEDICAL RECORD REVIEW**

- Selected 10 high-volume birthing hospitals in NJ stratified by North, Central, and South regions
- Sampled 25-30 paired maternal and infant medical records (520 total records) via simple random sample per hospital among births from April 1, 2010 to March 31, 2011 (timeframe overlapping survey)
- Reviewed records using Medical Record Abstraction Form from Perinatal Hepatitis B Coordinator Resource Center at CDC (Figure 3)
- Collected information on demographics, documenting of HBsAg screening of pregnant women and immunoprophylaxis of infants
- Compared HBV policies in survey with practices found in medical record review

**RESULTS**

**PERINATAL HBV SURVEY**

- Hospital-reported policy prevalence for perinatal HBV prevention policies surveyed were above 80% (Table 1), except for:
  - Policy for repeat HBsAg test for high risk HBsAg (+) women at 22%
  - Policy universal HBV birth dose vaccine before hospital discharge at 61%
- Hospital-reported standing orders prevalence ranged 43-61% for the 6 perinatal HBV prevention standing orders surveyed

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| | HBsAg testing at hospital admission documented | Vacinated in hospital with universal HBV policy | *(2 infants vaccinated at hospital with unknown presence of universal HBV birth dose policy)

**DISCUSSION**

**UNIVERSAL HBV BIRTH DOSE**

- Vaccination protects not only infants born to HBsAg (+) mothers, but also protects infants born to women who are classified as HBsAg (-) and all infants from HBV horizontal transmission
- Infants are more likely to receive HBV birth dose in hospitals with policies for universal HBV birth dose administration8

**HBsAg SCREENING**

- Unknown/undocumented in 3 maternal records and 14 infant records and discordant maternal HBsAg status found in medical record review
- NJ Hospital Licensing Standards - 8.43G-19.2 mandates HBsAg screening at time of admission to labor and delivery for pregnant women with HBsAg unknown status

Need for not only strong and specific hospital HBV prevention policies and pre-printed/standing orders but also consistent implementation by hospital staff

**LIMITATIONS**

- Survey respondents self-reported, variation on type of personnel answering survey
- Medical record review:
  - Sampling size of only 25-30 births per hospital
  - Lower birthing volume hospitals not sampled; patient demographics, hospital practices and policies may differ from high birthing volume hospitals sampled
  - Potential misclassification for the documentation of HBsAg status and HBV birth dose by hospital and also during record review

**SURVEY & RECORD REVIEW**

- Universal HBV birth dose vaccination rate was 57% (147/260) (Figure 4) among infant records reviewed at 10 hospitals and prevalence of related written policy and standing orders was 61% (30/49) among surveyed hospitals (Table 1)
- Infants born in hospitals reporting written policy for universal HBV birth dose more likely vaccinated (Odds ratio =2.8, confidence interval=1.6-4.9, p-value <0.001)
- Prenatal screening rates high at 96% (249/260) and prevalence of related standing orders lower at 43-51%
- 95% (246/260) of infant records reviewed had documentation of maternal HBsAg results and prevalence of related written policy was 80% (39/49)

**FUTURE DIRECTIONS**

- Share results with birthing hospitals and provide recommendations for hospital HBV prevention policies
- Investigate potential barriers for the administration of universal HBV birth dose by focusing conduit groups with medical community
- Evaluate state surveillance system for identification and case management of HBsAg positive pregnant women and their infants
- Explore the utilization of NJ guidelines to support HBV prevention policies in birthing hospitals

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**REFERENCES**


**Figure 4: Documentation of perinatal HBV characteristics from medical record review of 10 hospitals**

- Maternal HBsAg status documented 520 total
- Maternal HBsAg status NOT documented 29
- Prenatal HBsAg test results documented 260
- NO Maternal HBsAg test results documented 11
- Universal HBV birth dose documented 147*
- NO Universal HBV birth dose documented 163
- HBsAg testing at hospital admission documented 7
- NO HBsAg testing at hospital admission documented 70
- Vaccinated in hospital with universal HBV policy 106
- Vaccinated in hospital WITHOUT universal HBV policy 39
- *2 infants vaccinated at hospital with unknown presence of universal HBV birth dose policy

**Table 1: Assessment of perinatal HBV hospital policies (n=49)**

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**Figure 3: Medical record abstraction form**

- Interpreted: □, Unclear: △, Readable: □
- □: Readable
- △: Unclear
- □: Interpretable

**Figure 2: Infant receiving vaccination**

- Image 1: Section of liver damaged by HBV Virus

**Figure 1: Section of liver damaged by HBV Virus**