HEPATITIS B VACCINE BIRTH DOSE

Katelynn Devinney, MPH
City Research Scientist, Perinatal Hepatitis B Prevention Unit
Bureau of Immunization
NYC Department of Health and Mental Hygiene
Outline

• Perinatal Hepatitis B Prevention Unit
• Role of the CIR
• Hepatitis B Vaccine Birth Dose
• 2013 Birth Dose Survey Results
• Assessment of Birth Dose Coverage Levels
• Next Steps
Perinatal Hepatitis B

- Hepatitis B surface antigen (HBsAg) positive infant, less than 24 months of age, born to a hepatitis B virus (HBV) infected mother

- Vaccine preventable disease
  - Post exposure prophylaxis (PEP) within 12 hours of birth
    - Hepatitis B immune globulin (HBIG) and 1st dose of HBV vaccine (birth dose)
  - Timely completion of three dose HBV vaccination series
  - Post vaccination serology testing (PVST) is required to determine immunity/infection status
Public Health Prevention Efforts

- Mandatory prenatal screening of HBsAg and reporting of positive results
  - Approximately 1850 HBsAg positive pregnant women residing in NYC are reported each year
- Perinatal Hepatitis B Prevention (PHBP) Unit responsible for case management
  - Pregnant women: provide health education on hepatitis B and transmission prevention
  - Infants: ensure timely PEP, vaccination, and PVST
  - Contacts: recommend screening, vaccination, and PVST as necessary
# Infant Case Management and Outcomes, 2012

<table>
<thead>
<tr>
<th>Measure</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total infants case managed in 2012*</td>
<td>1839</td>
<td>100</td>
</tr>
<tr>
<td>Completed PEP**</td>
<td>1813</td>
<td>99</td>
</tr>
<tr>
<td>Completed PEP and 2\textsuperscript{nd} dose of HBV vaccine (HBV-2)</td>
<td>1727</td>
<td>94</td>
</tr>
<tr>
<td>Completed PEP and 3\textsuperscript{rd} dose of HBV vaccine (HBV-3)</td>
<td>1479</td>
<td>80</td>
</tr>
<tr>
<td>Completed PEP, HBV-3, and PVST</td>
<td>1127</td>
<td>61</td>
</tr>
<tr>
<td>Immune</td>
<td>1065</td>
<td>94</td>
</tr>
<tr>
<td>Infected</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Susceptible/Indeterminate***</td>
<td>53</td>
<td>5</td>
</tr>
</tbody>
</table>

*Excludes cases transferred to another jurisdiction as of December 31, 2013

**PEP completion is defined as the receipt of HBIG and first dose of HBV vaccine within 1 day of birth

***Infants who tested susceptible or indeterminate require additional follow-up.

\(\text{Data source: Maven, February 2014}\)
Citywide Immunization Registry

- Staff can directly query the CIR, using the Bureau of Immunization surveillance database (Maven)
  - Identify infants born to known cases
  - Timely case management
  - Increased accuracy and efficiency
- 88% and 81% of all reported HBV-2 and HBV-3 vaccinations, respectively, are initially reported to the PHBP Unit by the CIR
- CIR data used to evaluate facility hepatitis B vaccine birth dose coverage levels
Universal Hepatitis B Vaccine Birth Dose

- Recommended by the Advisory Committee on Immunization Practices (ACIP)\(^1\)
- All newborns, regardless of mother’s hepatitis B status, receive the first dose of hepatitis B vaccine prior to hospital discharge
- Reduces risk of transmission
- Provides a safety net
  - Unknown maternal HBsAg status
  - Errors in transcription/interpretation of hepatitis B test results
  - HBV infection during pregnancy
- Birth dose initiative in NYC
  - Promote implementation of policies at the facility level to administer the birth dose
  - Enroll facilities in VFC program to receive hepatitis B vaccine

Birth Dose: Definition

- Lack of consensus on how to define/measure the birth dose

<table>
<thead>
<tr>
<th>Organization</th>
<th>Birth Dose Definition for Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Quality Forum (NQF)</td>
<td>Before facility discharge, or by one month of age, or whichever comes first</td>
</tr>
<tr>
<td>CDC’s National Immunization Survey</td>
<td>By 3 days of life</td>
</tr>
<tr>
<td>World Health Organization (WHO)</td>
<td>Within 24 hours of birth</td>
</tr>
</tbody>
</table>

- Limitations
  - Invalid comparisons of birth dose coverage levels
  - Variable policies and practices among delivery facilities
2013 HBV Vaccine Birth Dose Facility Survey

- Distributed to all 39 NYC delivery facilities, with a 100% response rate
- HBV vaccine birth dose questions
  - Definition and administration
  - Consent and refusal documentation
  - Written policies/standing orders
  - Birth dose coverage levels
## Survey Results – Birth Dose Definition

<table>
<thead>
<tr>
<th>Definition</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before facility discharge (regardless of length of stay)</td>
<td>12</td>
<td>31</td>
</tr>
<tr>
<td>Before facility discharge or by one month of age, or whichever comes first</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>By 3 days of life</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>No Definition</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>
### Survey Results – Birth Dose Practices and Policies

<table>
<thead>
<tr>
<th>Policy/Practice</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administer to all newborns</td>
<td>26</td>
<td>67</td>
</tr>
<tr>
<td>Written policy to administer to all newborns*</td>
<td>28</td>
<td>74</td>
</tr>
<tr>
<td>Procedure to administer to all newborns</td>
<td>32</td>
<td>82</td>
</tr>
<tr>
<td>Require consent to administer</td>
<td>34</td>
<td>87</td>
</tr>
<tr>
<td>Sign declination form if refused</td>
<td>19</td>
<td>49</td>
</tr>
<tr>
<td>Document refusal in medical record</td>
<td>37</td>
<td>95</td>
</tr>
</tbody>
</table>

*1 facility did not respond
## Survey Results – Birth Dose Tracking

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, facility calculates hepatitis B vaccine birth dose coverage</td>
<td>22</td>
<td>56</td>
</tr>
<tr>
<td>The health department provides hepatitis B vaccine birth dose coverage</td>
<td>12</td>
<td>31</td>
</tr>
<tr>
<td>Do not calculate</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

**Facilities selected multiple responses**
NYC Facility Birth Dose Coverage, 2013
Birth Dose Survey

Mean = 72.6%
CIR vs National Immunization Survey (NIS) Birth Dose Coverage*

- NIS birth dose coverage defined as dose received within 3 days of life
- CIR birth dose estimate is either above or within the NIS confidence intervals**
- Supports the CIR as a valid measure of birth dose coverage levels in NYC

*Melissa Mickle-Hope, MPH, Bureau of Immunization
**Compared birth dose coverage levels from the CIR data vs. those calculated by NIS for the same birth cohorts; calculated confidence intervals around the NIS birth dose coverage estimates
CIR vs. Birth Dose Survey Responses, 2012
Birth Dose Coverage

*Facility excludes refusals
**2013 data
Comparison Limitations

- Birth dose definition
  - Not all facilities define the birth dose as the first dose of hepatitis B vaccine given within 3 days of life
  - CIR does not capture discharge date or refusals
- Potential differences in calculation methods
- Underreporting of vaccinations
  - CIR birth dose coverage levels may be an underestimation due to differences in reporting methodologies
  - Facilities may not be reporting all HBV vaccine birth doses to the CIR
Next Steps

- 2013 Hepatitis B Vaccine Birth Dose Survey Feedback
- Universal HBV Birth Dose Promotion
  - Immunization Action Coalition Hepatitis B Birth Dose Honor Roll
  - Facility outreach to recommend universal birth dose policies, standing orders, etc.
- Make facility level birth dose coverage data available on our website
- Reliability Study
  - NQF Measure 0475
    - Hepatitis B Vaccine Coverage Among All Live Newborn Infants Prior to Hospital or Birthing Facility Discharge
Acknowledgements

• NYC DOHMH
  • Jane R. Zucker
  • Jennifer Rosen
  • Julie Lazaroff
  • Vassiliki Papadouka
  • Elyse Mallin
  • Melissa Mickle-Hope
  • Perinatal Hepatitis B Prevention Unit

• CDC
  • Trudy V. Murphy
  • Sarah Schillie
  • Alaya Koneru
  • Nancy Fenlon

• Michigan State Department of Health
  • Patrick Fineis
Thank you!

• Questions?
  • E-mail: kdevinney@health.nyc.gov
  • Phone: 347-396-2666