The Perinatal Hepatitis B Prevention Program (PHBPP): The National Perspective

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Presentation Outline

- Epidemiology (in brief)
- Program overview
- Program Data Sources
- Trends in PHBPP Outcomes
- Promising Practices
Learning Objectives

- By the end of this presentation, participants will be able to:
  - Describe the structure of the Perinatal Hepatitis B Prevention Program
  - Identify 1-2 activities that awardees are implementing to address program challenges
Hepatitis B virus (HBV) is transmitted through percutaneous or mucosal exposure to infectious blood or body fluids. HBV is highly infectious, can remain viable on environmental surfaces for at least 7 days even in the absence of visible blood. Infection may be acute or chronic. Chronic infection is persistent HBsAg in serum for at least 6 months. Persons with chronic infection remain the main source of HBV transmission.
Perinatal Hepatitis B Case Definition

- **Confirmed**
  - Child born in the United States to a HBV-infected mother and infant is positive for HBsAg at ≥ 1 month of age and ≤ 24 months of age OR positive for HBeAg or HBV DNA ≥9 months of age and ≤ 24 months of age.

- **Probable**
  - Child born in the United States and infant is positive for HBsAg at ≥ 1 month of age and ≤ 24 months of age OR positive for HBeAg or HBV DNA ≥9 months of age and ≤ 24 months of age, but whose mother’s hepatitis B status is unknown (i.e. epidemiologic linkage not present).

Source: CDC. Available at: https://wwwn.cdc.gov/nndss/conditions/hepatitis-b-perinatal-virus-infection/case-definition/2017/
Why Prevention of Perinatal Hepatitis B Transmission is important

- In 2015, an estimated 21,000 infants were born to hepatitis B surface antigen (HBsAg)-positive women in the United States.¹
- Risk of chronic infection increases as age of infection decreases
  - 80%-90% of HBV infected infants will develop chronic HBV infection
  - 30% of children infected before age 6 years will develop chronic HBV infection.²
  - < 1% - 12% of older children or adults will develop chronic HBV infection.
- 25% of those infected as infants or young children that become chronically infected die prematurely from cirrhosis or liver cancer.²
- It is a vaccine-preventable disease (VPD).

1. CDC 2015 expected birth tables
2. MMWR, January 12, 2018, Recommendations and Reports/Vol. 67/No 1
Perinatal Hepatitis B Prevention Program: Overview
Perinatal Hepatitis B Program Overview

- Established in 1990.
- Funded by CDC Immunization Cooperative Agreements (Section 317/PPHF funding).
- Programs in 64 jurisdictions (50 states, 6 cities, 5 territories & 3 freely associated island nations).
- Program works collaboratively with other CDC centers (NCHHSTP).
- Program’s required objectives are based upon selected ACIP recommendations (MMWR, December 23, 2005).
- ACIP approved updated recommendations (October 2016) and published on January 12, 2018.
  - https://www.cdc.gov/mmwr/volumes/67/rr/rr6701a1.htm
Perinatal Hepatitis B Program Overview

- Program Required Objectives (end of funding cycle: June 30, 2019).
  - Identify HBsAg-positive pregnant women and births to HBsAg-positive women
  - Assure infants born to HBsAg-positive women:
    - Obtain timely and appropriate post-exposure prophylaxis at birth
    - Complete hepatitis B vaccine series
    - Obtain post vaccination testing to identify HBsAg & Anti-HBs status of infant

- Program Structure: varies by awardee
  - Awardee Coordinator and Local Health Department (LHD) contracts
  - Awardee staff
  - Contracts to outside agency for program services
Program Data Sources
Three Data Sources

- Annual Report
- Expected Births Table
- Peritable
The Annual Report

- “Annual Assessment of Progress Towards Goals to Prevent Perinatal HBV Transmission”
- Submitted by all 64 Awardees.
- Two Sections
  - Section I Policy (Optional)
  - Section II Outcomes (Required)
- Reports on outcomes of 2 birth cohorts of infants followed by the PHBPPs.
- Each birth cohort is reported on for a total of 36 months.
- Data are used to track program outcomes
The Annual Report: Section II

- Awardees are required to answer all questions in Section II.
- Questions 1-10 focus on outcomes of the younger birth cohort
  - Report Period 1
  - 24 month period
  - Starts on January 1 of birth year-December 31st of the following year
- Question 11 focuses on outcomes of the older birth cohort
  - Report Period 2
  - 12 calendar month period immediately following the end of Report Period 1
Interpreting the Expected Birth Tables: 2015 Birth Cohort

Mother's Origin of Birth (region)

Prevalence level is applied to total births for each subcategory and result is the number of expected births to HBsAg-positive women for this group.
**Total US Births** for CY 2015 (3.9 million) and Total Expected Births to HBsAg-positive women in the US for 2015 (20,598)

Total number of births in Texas and expected number of HBsAg-positive women from Africa & East Asia account for approx. 35% of the expected births to HBsAg-positive women in 2015 in Texas, 48% in Houston and 30% in San Antonio.
How do you find what countries are included in each Region?

Go to the Regions tab on the spreadsheet.
<table>
<thead>
<tr>
<th>Regions</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia</td>
<td>China, Hong Kong, Japan, North Korea, South Korea, Macau, Mongolia, Taiwan, Southern Ryukyu Islands</td>
</tr>
<tr>
<td>South Asia</td>
<td>Bangladesh, Bhutan, Sri Lanka, India, Maldives, Nepal, Pakistan, Sikkim</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>Burma, Brunei, Cambodia, Indonesia, Laos, Malaysia, Paracel Islands, Spratly Islands, Papua New Guinea, Timor, Philippines, Singapore, Thailand, East Timor, Vietnam, North Vietnam, South Vietnam</td>
</tr>
<tr>
<td>West/Central Asia</td>
<td>Afghanistan, Azerbaijan, Armenia, Georgia, Kyrgyzstan, Kazakhstan, Tajikistan, Turkmenistan, Uzbekistan</td>
</tr>
<tr>
<td>Australia/Oceania</td>
<td>Australia, Ashmore and Cartier Islands, Cocos (Keeling) Islands, Coral Sea Islands, Norfolk Island, New Zealand</td>
</tr>
<tr>
<td>Caribbean (except Haiti)</td>
<td>Aruba, Antigua And Barbuda, Anguilla, Barbados, Bermuda, The Bahamas, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Jamaica, Martinique, Montserrat, Netherlands Antilles, Saint Kitts And Nevis, Saint Lucia, Swan Islands, Trinidad And Tobago, Turks And Caicos Islands, Saint Vincent And the Grenadines, British Virgin Islands</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>Belarus, Bulgaria, Czechoslovakia, Estonia, Czech Republic, Hungary, Latvia, Lithuania, Slovakia, Moldova, Poland, Romania, Russia, Ukraine, and Union Of Soviet Socialist Republics</td>
</tr>
<tr>
<td>Southern Europe</td>
<td>Albania, Andorra, Bosnia And Herzegovina, Gibraltar, Greece, Croatia, Italy, F.Y.R.O. Macedonia, Malta, Portugal, Slovenia, San Marino, Spain, Holy See (Vatican City), Yugoslavia</td>
</tr>
</tbody>
</table>
- 4 different tabs.
- Provides a summary of Annual Report Submissions and Total Number of Expected Births for both Point Estimate and Lower Limit.
- Activity from 1st Reporting Period.
- Use to identify program outcome trends.
PHBPP Outcomes: National & Texas Trends
## Expected vs. Identified Births: 2015

<table>
<thead>
<tr>
<th>Awardee</th>
<th>Point Estimate (PE)</th>
<th>Lower Limit (LL)</th>
<th>Births Identified</th>
<th>Percent of PE</th>
<th>Percent of LL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>1194</td>
<td>882</td>
<td>673</td>
<td>56%</td>
<td>76%</td>
</tr>
<tr>
<td>Houston</td>
<td>313</td>
<td>255</td>
<td>148</td>
<td>47%</td>
<td>58%</td>
</tr>
<tr>
<td>San Antonio</td>
<td>67</td>
<td>45</td>
<td>30</td>
<td>45%</td>
<td>67%</td>
</tr>
</tbody>
</table>

National average of identified to expected births:
PE: 55%  LL: 73%
Percent of Infants with ACIP Recommended PEP at Birth: Texas & US average (2014-2016)
Percent of Infants with HBIG & series complete by 12 months of age: Texas & US average (2014-2016)
Percent of Infants with PVST by end of reporting period 1: Texas & US average (2014-2016)

- Texas
  - 2014: 16%
  - 2015: 55%
  - 2016: 75%

- US average
  - 2014: 68%
  - 2015: 72%
  - 2016: 73%

- San Antonio
  - 2014: 55%
  - 2015: 68%
  - 2016: 83%

- Houston
  - 2014: 55%
  - 2015: 72%
  - 2016: 70%

- Texas
  - 2014: 55%
  - 2015: 73%
  - 2016: 64%

- US average
  - 2014: 55%
  - 2015: 64%
  - 2016: 70%
Status of 2010 - 2014 National Birth Cohorts at end of Second Reporting Period

*Provisional Data: Do Not Reference updated 11-29-17. 2014 data includes only 63 awardees
Habits of High Performing Programs
In 2015, semi-structured interviews were conducted with 9 coordinators in Perinatal Hepatitis B Prevention Programs (PHBPP) identified as performing above the national average and 9 coordinators in PHBPPs identified as performing at/near the national average for outcomes measures related to the 4 required program objectives:

- Identification of HBsAg-positive pregnant women
- HBV exposed infants receive post-exposure prophylaxis with hepatitis B vaccine and HBIG at birth
- Assure infants complete the hepatitis B vaccine series according to ACIP recommendations
- Post-vaccination serology

Unpublished data CDC/PHBPP 2015
Practices of High Performing Programs

- All high-performing programs had written PHBPP case management policies/procedures.
- Coordinators had in-depth knowledge of how the case management staff worked with families and providers.
- Coordinators had frequent communications and contact with case management staff.
- Over half of the programs had educational/experiential requirements for case management staff.
- A third of the programs reported a formal Quality Improvement (QI) process for the PHBPP program.
Promising Practices
Structured Contract to Improve Program Outcomes: Minnesota
Minnesota Contracts with Local Public Health

Two counties cover 1/3 of cases each - lump sum payment contract
Performance benchmarks – 10% of contract amount
Quarterly check in to review

Initial contract 2014-2015
Hepatitis B Vaccine #2 – 90% done by 4 months of age
Hepatitis B Vaccine #3 – 80% done by 9 months of age
Post Vaccination Serology Testing – 70% done by 15 months of age

Changes in third year of contract
Hepatitis B Vaccine #2 – 90% done by 3 months of age
Hepatitis B Vaccine #3 – 85% done by 9 months of age
Post Vaccine Serology Testing – 75% done by 15 months of age

Slide adapted from presentation originally presented by Minnesota PHBPP Coordinator Genny Grilli at PHBPP Reverse Site Visit, June 2017.
Minnesota contracts with Local Health Department

- All other counties have contracts to provide case management
  - $500 reimbursement for each case fully completed (Household contact to PVST)
    - Partial payment provided if only some pieces are completed
    - Shifting dollar amounts for partial payments to reflect priorities
  - $250 reimbursement for complete second series (vaccine & PVST)
    - Partial payment provided if only some pieces are completed
- Reimbursement is provided quarterly after case has been completed

Slide adapted from presentation originally presented by Minnesota PHBPP Coordinator, Genny Grilli, at PHBPP Reverse Site Visit, June 2017.
# Minnesota’s Annual Report and Case Management Data

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identified births</td>
<td>398</td>
<td>443</td>
<td>409</td>
<td>427</td>
</tr>
<tr>
<td>Point estimate (2013/2014)</td>
<td>85.4%</td>
<td>91.7%</td>
<td>84.7%</td>
<td>88.4%</td>
</tr>
<tr>
<td>Identified before birth</td>
<td>86.0%</td>
<td>87.0%</td>
<td>93.6%</td>
<td>92.9%</td>
</tr>
<tr>
<td>PEP at birth</td>
<td>99.2%</td>
<td>99.8%</td>
<td>99.3%</td>
<td>99.5%</td>
</tr>
<tr>
<td>Vax by 8 months</td>
<td>85.2%</td>
<td>86.8%</td>
<td>90.6%</td>
<td></td>
</tr>
<tr>
<td>Vax by 12 months</td>
<td>94.0%</td>
<td>94.8%</td>
<td>95.9%</td>
<td></td>
</tr>
<tr>
<td>PVST (any)</td>
<td>74.4%</td>
<td>80.6%</td>
<td>82.7%</td>
<td></td>
</tr>
</tbody>
</table>

*Slide originally presented by Minnesota PHBPP Coordinator, Genny Grilli, at PHBPP Reverse Site Visit, June 2017.*
Identification of HBsAg-positive pregnant women: Philadelphia
Philadelphia’s Capture-Recapture

- Data from:
  - Perinatal Hepatitis B Prevention Program
  - HBV Surveillance Registry
  - Electronic Birth Certificates

- Time period: 2008-2014

- Birth certificate data matched to HBV surveillance and then matched to PHBPP data

- Newly identified if:
  - No PHBPP match
  - >=2 Positive HBV tests indicative of current infection
  - Tests were prior to delivery with >= 6 months apart or 1 positive HBV test result during pregnancy and no subsequent negative HBsAg test results

Philadelphia’s Capture-Recapture ²

- Results
- 1552 births identified to women with HBV positive test results by HBV Surveillance between 2001 to 2015
- 844 (54.4%) had been identified by PHBPP
- 708 newly identified mother-infant pairs
- 358 confirmed as newly identified cases
- 350 were not confirmed as PHBPP cases due subsequent negative tests or inadequate HBV testing

Philadelphia’s Capture-Recapture

- Reasons for missed identification of cases (n=358)
  - Most Common was Internal Administrative Error (n=191, 53.4%)
    - Protocol execution failure
    - Delayed referral to PHBPP from other departments
  - No or inadequate testing during pregnancy (n=81, 22.6%)
  - Mother-infant pairs lost to follow up (n=75, 22.6%)
  - HBV lab results not reported (n=11, 3.1%)
- Addressed internal issues
  - Change in protocol
  - Improving interdepartmental communications

Philadelphia’s Capture-Recapture⁴

- Changes led to a decrease in administrative errors
- Mean cases identified rose from 123 (2004-2007) to 160 per year (2008-2014 (P=.002)
- For 2015 Birth Cohort*:
  - Philadelphia identified 164 cases
  - Philadelphia’s Point Estimate was 166 cases (99% identified)
  - Philadelphia’s Lower Limit was 126 (130% identified)

Utah: Local Case Management Analysis
Utah: Local Case Management Analysis

- Project Goals
  - Improve PHBPP Outcomes in Utah through analysis of individual case manager performance
  - Recognize and reward outstanding case managers
  - Use outstanding case managers’ strategies to develop standardized “best practice” protocols
  - Implement “best practice” protocols statewide

Adapted from slides presented by Carlie Shurtliff “Utah Perinatal Casework Analysis” presented at PHBPP Reverse Site Visit, Atlanta Georgia June 2017.
Utah: Local Case Management Analysis

- Utah’s population is concentrated in specific areas of the state
- Case Management caseload and structure vary by local district
  - Caseloads vary widely by district
- Districts believe that they do a great job but annual state level outcomes don’t entirely support belief
- Individual Case Manager’s outcomes based on two infant dispositions
  - Closed: Completed (Series complete & PVST)
  - Closed: “Unable to Locate”
- District Level outcomes based on same two infant dispositions
- Annual outcome trends

Adapted from slides presented by Carlie Shurtliff “Utah Perinatal Casework Analysis” presented at PHBPP Reverse Site Visit, Atlanta Georgia June 2017.
Utah: Local Case Management Analysis

- Data used were from 2010-spring 2016
- Most effective Case Manager:
  - Highest caseload: 51 cases (range 0-51)
  - Had a 96% cases completed level (series &PVST)
  - Average age at time of program completion: 10.9 months of age
  - 2% unable to locate
  - Average time spent per case- 5 hours
- Awardee will share best practices of this case manager with other case managers around the state by developing practice protocols
- Recognize high performing staff throughout the state

Adapted from slides presented by Carlie Shurtliff “Utah Perinatal Casework Analysis” presented at PHBPP Reverse Site Visit, Atlanta Georgia June 2017.
Utah: Local Case Management Analysis

- Utah acknowledged high performing case managers
  - *Plaques/Certificates to top performers
  - *Gift cards
- *Incentives (plaques & gift cards) were NOT purchased with federal funds.

Adapted from slides presented by Carlie Shurtliff “Utah Perinatal Casework Analysis” presented at PHBPP Reverse Site Visit, Atlanta Georgia June 2017.
Texas “Badge Buddies”
Information

- Instructions
- Click here to submit a program practice
- Bull’s-Eye Award Information
- Questions

https://practices.immunizationmanagers.org/
Where to go from here?

- Examine outcome trends at local level
- Identify strengths and opportunities
- Contact other awardees that are strong in your identified opportunity areas
- Adopt/Adapt promising practices
- Communicate, Communicate, Communicate
- Celebrate success
  - Letters of Recognition to high performing case managers
Resources

Perinatal Hepatitis B Prevention Program
https://www.cdc.gov/vaccines/programs/perinatal-hepb/index.html

ACIP’s Hepatitis B Recommendations

Immunization Action Coalition
http://www.immunize.org/

National Viral Hepatitis Action Plan
Questions?