Review of The Advisory Committee (ACIP) on Immunization Practices Recommendations to Prevent Perinatal Hepatitis B (PHB)

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The speaker has disclosed that there are NO financial interests related to the content of this presentation (see evaluation form)
Objectives

At the end of this activity, participants will be able to describe:

- Four hepatitis B prevention laws
- Two roles of the LAC PHB Prevention Program
- Risk of liver cancer in the foreign born Asian population
- ACIP recommendations to prevent PHB
- Hepatitis B vaccine universal vaccination (HBUV)
- Hepatitis B Vaccine (HBV) barriers
Who is Responsible?

A. Health Care Providers
B. Laboratories
C. Hospitals
CHSC 120250 & Title 17, California Code of Regulations (CCR): Report Positive Hepatitis B Surface Antigen (HBsAg)

<table>
<thead>
<tr>
<th>Visit 1</th>
<th>Visit 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reported</strong></td>
<td><strong>Not Reported</strong></td>
</tr>
<tr>
<td>108 (88%)</td>
<td>116 (96%)</td>
</tr>
<tr>
<td>15 (12%)</td>
<td>5 (4%)</td>
</tr>
</tbody>
</table>

n = 123 

n = 121
Effective July 2011, laboratories must:
- Report to public health within 1 working day from the time the healthcare provider or authorized person is notified of diagnosis
- Specify gender
Perinatal Hepatitis B Prevention Unit (PHBPU)

- Case Management
- Consultation/Education
- HBUV Promotion
- Quality Assurance Reviews
- Laboratory Surveys & Audits
## 2010 PHBPU Crude Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B Surface Antigen (HBsAg)(+) Mothers</td>
<td>650</td>
</tr>
<tr>
<td>Infants Born to HBsAg+ Mothers</td>
<td>671</td>
</tr>
<tr>
<td>HBsAg+ Infants</td>
<td>2</td>
</tr>
<tr>
<td>Incidence of Exposure(^a) LAC</td>
<td>5.6</td>
</tr>
<tr>
<td>Maternal Age at Diagnosis</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>31.9 years</td>
</tr>
<tr>
<td>Range</td>
<td>17-44 years</td>
</tr>
<tr>
<td>Infant Age at Diagnosis</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>12 months</td>
</tr>
<tr>
<td>Range</td>
<td>11-13 months</td>
</tr>
</tbody>
</table>

\(^a\) Number of infants born to HBsAg positive mothers per 1000 live births in 2010
Hepatitis B Virus (HB)

- Silent, but deadly!
- 50–100 times more infectious than HIV
- Causes chronic hepatitis
  - 15-25% develop liver disease\(^1\)
  - liver cirrhosis, failure, cancer
  - Third leading cause of cancer deaths in the world
  - Kidney disease\(^2\)

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1. CDC.gov/HBV/PDFs/HepBGeneralFactSheet.pdf
Chronic HB Case Definition 2011

Clinical Evidence

Laboratory Criteria (1)

Laboratory Criteria (2)

Classification

http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/hepatitisbcurrent.htm
Clinical Evidence

- No symptoms
- Liver Disease
- Cirrhosis
- Liver Cancer
Laboratory Criteria (1)

Negative IgM antibodies to hepatitis B core antigen (IgM anti-HBc)

+  

Positive on one of the following tests:
1. HBsAg
2. Hepatitis Be Antigen (HBeAg)
3. Hepatitis B virus (HBV) DNA
Laboratory Criteria (2)

Positive at least 2 times, 6 months apart on any combination of the following tests:
1. HBsAg
2. HBeAg
3. HBV DNA
Case Classification

Confirmed
Meets either laboratory criteria

Probable-Positive Result x 1
- HBsAg
- HBV DNA
- HBeAg
- Does not meet the case definition for acute hepatitis B
HB Transmission

- Birth
- Body Fluids
- Sharps
- Unprotected Sex
Risk of Chronic HB

100%
50%
0%

Infant
90%

Adult
5%
### Healthcare-Associated HB Outbreaks in California

<table>
<thead>
<tr>
<th>Setting</th>
<th>Year</th>
<th>Persons Notified for Screening</th>
<th>Outbreak-Associated Infections</th>
<th>Known or suspected mode of transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skilled Nursing Facility</td>
<td>2008</td>
<td>143</td>
<td>9</td>
<td>Contaminated podiatry equipment</td>
</tr>
<tr>
<td>Assisted living facility</td>
<td>2010</td>
<td>28</td>
<td>3</td>
<td>Blood glucose monitoring</td>
</tr>
<tr>
<td></td>
<td>2011</td>
<td>14</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Pain remediation clinic</td>
<td>2010</td>
<td>2293</td>
<td>HB:1 HC:1</td>
<td>Syringe reuse contaminating medication vials</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2478</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

* [http://www.cdc.gov/hepatitis/Statistics/HealthcareOutbreakTable.htm](http://www.cdc.gov/hepatitis/Statistics/HealthcareOutbreakTable.htm)*
## HB Disease Burden in the U.S

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Infections</td>
<td>40,000/year</td>
</tr>
<tr>
<td>Current Carriers</td>
<td>800,000-1.4 million</td>
</tr>
<tr>
<td>Deaths</td>
<td>3,000/year</td>
</tr>
</tbody>
</table>

Source: CDC.gov/HBV/PDFs/HepBGeneralFactSheet.pdf
HB Endemicity

Worldwide Rates of Chronic Hepatitis B

Alaska, Greenland, Canada, Guatemala, Honduras, Panama, Columbia, Peru, Brazil, Madagascar, Saudi Arabia, Morocco, Russia, China, Mongolia, Philippines, New Guinea, Africa, Spain, Kazakhstan, India.
Deaths in China

- **TB**: 40%
- **HB**: 52%
- **HIV/AIDS**: 8%

<table>
<thead>
<tr>
<th>Infection</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>HB</td>
<td>263,000-300,000</td>
</tr>
<tr>
<td>TB</td>
<td>200,000</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>39,000</td>
</tr>
</tbody>
</table>

2. MMWR 2007; 56(18):441
Chronic HB Infection: A Silent Killer Among Asians & Pacific Islanders (APIs)

• < 5% of United States population
  – > 50% have chronic HB
  – 2/3 are unaware of diagnosis

• 1 in 12 foreign born are infected
  – Compared with 1:1000 Caucasians

• Highest incidence of HB related liver cancer
  • Death rate is 7 times the Caucasian rate

http://www.cdc.gov/hepatitis/Populations/api.htm
Barriers to Hepatitis B Screenings

- **Knowledge**: Disease misperceptions

- **Cultural Stigma**: Fear of the positive Hepatitis B

- **Language**: Avoid or delay visits to healthcare providers due to limited English

- **System-level**: Lack of health insurance & discomfort with the western medical system

http://www.cdc.gov/hepatitis/Populations/api.htm
There is A Global Campaign!

The 63rd World Health Assembly resolution passed to cover HB:

- Testing
- Treatment
- Education
- Advocacy
- Vaccinations
- Research & support to help countries formulate their own national responses
- Effective May 2010

## Hepatitis B Vaccine (HBV) Infant Schedule

<table>
<thead>
<tr>
<th>Dose</th>
<th>Usual Age</th>
<th>Minimum Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Birth</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1-2 months</td>
<td>4 weeks</td>
</tr>
<tr>
<td>3</td>
<td>6 months</td>
<td>8 weeks</td>
</tr>
</tbody>
</table>
Vaccine Information Statement (VIS)

- **Standardized Objective Information**
  - Disease
  - Who Should/Should Not Receive
  - Vaccine Safety
  - Adverse Reactions

[Links]
- [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines)
VIS Federal Law:
National Childhood Vaccine Injury Act of 1986

- Required Prior to Vaccination
- Private & Public
- Never Alter
Documenting Vaccines

- Vaccine administration date
- Lot number & manufacturer
- Title & signature or initials of vaccinator
- Anatomic site of administration
- Provider’s address where the record is kept
- VIS publication date
- Date VIS is given to the patient
Advisory Committee on Immunization Practices (ACIP) Recommendations

- 1st dose of HBV
  - Before hospital discharge
    - Referred to as universal vaccination
    - Infants of HBsAg (-) women
    - All medically stable newborns
    - Weigh ≥ 2,000 grams (4.4 lbs)
ACIP Recommendations for Preterm Infants

- **1st dose of HBV**
  - Receive 1 month after birth or at hospital discharge
  - Infants of HBsAg (-) women
  - Weigh <2,000 grams (4.4 lbs)
HBUV Policy

Visit 1

- HBUV Policy: 7 (80%)
- No HBUV Policy: 2 (20%)

Visit 2

- No HBUV Policy: 9 (100%)

n = 9 hospitals
ACIP Recommendations: Infants Born to HBsAg+ Women

- Within 12 hours of birth administer:
  - HBIG (0.5ml, IM)
  - Single-antigen HBV
    - This initial HBV does not count as part of the vaccine series for premature infants weighing <2,000 grams
    - Premature infants weighing <2,000 grams will need 3 additional doses starting at 1-2 months of age
ACIP Recommendations: Infants Born to Unknown Women

- Within 12 hours of birth administer:
  - Single-antigen HBV
- Drawn mother’s HBsAg as soon as possible
- Record the date & time of HBV administration on infant’s medication administration record & immunization record
- If the mother is found to be HBsAg positive:
  - Administer HBIG to the infant within 7 days of birth
  - Notify the infant’s pediatric health care provider (HCP) to follow up
  - Alert the infant’s pediatric HCP if infant is discharged before mother’s HBsAg test result is available.
ACIP Recommendations: Premature Infants Born to Unknown Women

- Within 12 hours of birth administer:
  - HBIG (0.5ml, IM)
  - Single-antigen HBV
    - The initial HBV does not count as part of the vaccine series for premature infants weighing <2,000 grams
    - Premature infants weighing <2,000 grams will need 3 additional doses starting at 1-2 months of age
Why Immunize Prior to Hospital Discharge?

- Multiple HBsAg errors
  - Screening
  - Reporting
  - Diagnosing

- Hospitals are a safety net
California Health & Safety Codes (CHSCs) 125080-125085: Screen All Pregnant Women For HBsAg

Visit 1
- Screened: 262 (19%)
- Not Screened: 1149 (81%)
- Total: n = 1411

Visit 2
- Screened: 1593 (99%)
- Not Screened: 23 (1%)
- Total: n = 1616
HBsAg Lab Reports (n=3051) By Visit

% of Maternal Medical Records With a Laboratory Report

Visit 1
Visit 2
Birth Dose Barriers (n= 65 Nurses)

% of Nurse Responses

- None: 32% (Visit 1), 41% (Visit 2)
- Parent Fears: 19% (Visit 1), 27% (Visit 2)
- No Vaccine: 2% (Visit 1), 13% (Visit 2)
- 1st Office Visit: 24% (Visit 1), 24% (Visit 2)
- No Education: 10% (Visit 1), 10% (Visit 2)
- Sick Mom: 10% (Visit 1), 10% (Visit 2)
- Other: 27% (Visit 1), 27% (Visit 2)
Mandates healthcare providers engaged in the labor, delivery or post-partum care of the woman ensure the woman receives information & counseling as appropriate to explain the results & implications for the mother’s & infant’s health, including any follow-up testing and care that are indicated.
Mothers may breastfeed without delay
- HBIG & HBV administration should eliminate risk

Complete the full HBV series on schedule

Infant will need a HBsAg test & an antibody to HBsAg (anti-HBs) test after vaccine series completion at age 9-18 months to ensure the effectiveness of the vaccine

Modes of hepatitis B virus transmission

Vaccinate susceptible household, sexual & needle-sharing contacts

Medical evaluation for mother for chronic hepatitis B, including an assessment of whether she is eligible for antiviral treatment.
Case Scenario 1

A 33 year-old woman whose HBsAg is unknown delivered a pre-term baby (less than 2000 grams) at your hospital. To prevent PHB transmission, how would you vaccinate the baby?

1. Give 1\textsuperscript{st} dose of HBV within 12 hrs of birth.
2. Give 1\textsuperscript{st} dose of HBV + HBIG within 12 hrs of birth.
3. Give 1\textsuperscript{st} dose of HBV + HBIG on the day the infant is discharged.
Case Scenario 1

Answer

2. Give 1\textsuperscript{st} doses of HBV + HBIG within 12 hrs of birth.
Case Scenario 2

Which of the following is INAPPROPRIATE education to provide to HBsAg positive mothers?

1. Preterm infants (< 2000 grams) will require 4 doses of hepatitis B vaccine, since the first dose is not counted as part of the series.

2. Infants should complete the full series (3-4 doses) of hepatitis B vaccine to ensure protection against hepatitis B.

3. Infants weighing less than 4 pounds (<2000 grams) should wait until discharge to receive hepatitis B vaccine.

4. Post-vaccination serology (HBsAg & an antibody to HBsAg [anti-HBs]) testing should be done after completion of the vaccine series at 9-18 months of age to ensure the effectiveness of the vaccine.

5. Susceptible household, sexual & needle-sharing contacts of mother will need vaccination.

6. Mother will need a medical evaluation for chronic hepatitis B, that includes an assessment of whether she is eligible for antiviral treatment.
3. Infants weighing less than 4 pounds (<2000 grams) should wait until discharge to receive hepatitis B vaccine.
Conclusion

- Test
- Report
- Treat
- Educate
Available at Immunization Program
Perinatal Hepatitis B
http://lapublichealth.org/ip/perinatalhepB/index.htm
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References


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