Healthy Kansans living in safe and sustainable environments.
Kelly Gillespie, MPH

Kansas Perinatal Hepatitis B Prevention

Program Coordinator

Bureau of Epidemiology and Public Health Informatics
Kansas Department of Health and Environment
Hepatitis B Prevalence

Source: HepBnet.org, 2015
Hepatitis B

Infection rates among children may exceed 25% in Senegal, China and Thailand.
Incidence Rate of Hepatitis B in Kansas?

A. 2%
B. 3%
C. 4%
D. 5%
Incidence of New Cases of Hepatitis B per Year, Kansas, 2013-2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Chronic</th>
<th>Acute</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>3.59</td>
<td>0.35</td>
</tr>
<tr>
<td>2014</td>
<td>4.77</td>
<td>0.41</td>
</tr>
<tr>
<td>2015*</td>
<td>4.53</td>
<td>0.62</td>
</tr>
</tbody>
</table>

*based on estimated Kansas population
Number of Chronic Hepatitis B Cases Per Year, Kansas, 2013-2015

Year | Number of Cases
--- | ---
2013 | 2900
2014 | 2950
2015 | 3000
Hepatitis B Virus (HBV)

• Symptoms
  – Abdominal pain
  – Jaundice
  – Vomiting
  – Swollen abdomen
  – Weight loss
  – Fatigue

• Many asymptomatic
HBV Acute vs. Chronic

**Acute**
- Distinct onset of symptoms
- Active infection for < 6 months
- Body is able to clear the virus within 6 months

**Chronic**
- Often asymptomatic
- Complications
  - Liver cancer
    - HBV found in 80% of hepatocellular carcinoma
- Chronic development is dependent on age of infection
  - 90% of infants
Transmission

Heterosexual Sex
Homosexual Sex
Mother to Child
Sharing Needles (and equipment)
Receipt of Blood Products (prior to 1987)
Needlestick Injury

Picture credit: University of Washington
Perinatal Transmission

- Risk of transmission to infants during child birth
  - Up to 90% in women with high viral load
# HBV Testing*

<table>
<thead>
<tr>
<th></th>
<th>HBsAg</th>
<th>HBsAb</th>
<th>IgM anti-HBc</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tests For</strong></td>
<td>Surface Antigen</td>
<td>Surface Antibodies</td>
<td>Immunoglobublin M Antibodies</td>
</tr>
<tr>
<td><strong>Measures</strong></td>
<td>Infection</td>
<td>Immunity</td>
<td>Ongoing Infection</td>
</tr>
<tr>
<td><strong>Interpretation</strong></td>
<td>Active Infection</td>
<td>Immune</td>
<td>Recent Infection</td>
</tr>
</tbody>
</table>

* Other tests include PCR and HBeAg for which measure viral load
HBV Serology

Acute

Acute Hepatitis B Virus Infection with Recovery

Chronic

Chronic HBV Infection with Persistent HBeAg

Department of Health and Environment
Hepatitis B is a Reportable Disease

Health care providers and laboratories are required to notify KDHE regarding patients with suspected or confirmed case of hepatitis B

<table>
<thead>
<tr>
<th>Acute</th>
<th>Chronic</th>
<th>During Pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>WITHIN 7 DAYS</td>
</tr>
</tbody>
</table>

Epidemiology Hotline **877-427-7317**
Perinatal Hepatitis B Prevention Program (PHBPP)

- **Goal**: prevent perinatal transmission of hepatitis B to decrease rates of chronic hepatitis B infection and related chronic liver disease
Case Management

Hepatitis B Positive Woman

- Followed up often to determine pregnancy status

Pregnancy Confirmed

- Ensure delivery facility & provider are aware of hepatitis B status

Child Born

- Followed upwards of 2 years
Identification of Pregnant Women with Hepatitis B Infection

Test ALL pregnant women at prenatal screen
HBV(-) + Risk factors → Re-test

- Risk Factors:
  - >1 sex partner in past 6 months
  - Current treatment for STI
  - IV drug use
  - Sexual partner with HBV infection
Identification of Pregnant Women with Hepatitis B Infection

Check HBV status upon admission
HBV status unknown $\rightarrow$ Test
HBV(-) + Risk factors $\rightarrow$ Re-test

• Risk Factors:
  – >1 sex partner in past 6 months
  – Current treatment for STI
  – IV drug use
  – Sexual partner with HBV infection
What Test is Enough to Suspect HBV Infection?

A. HBsAg
B. IgM Anti-HBc
C. HBsAb
Initial Identification of Women

- Women that have hepatitis B are reported to local health departments or Kansas Department of Health and Environment (KDHE)
  - Electronic Lab Reports (ELR)
  - Physician report forms
  - Hospital report forms

Reporting forms are on KDHE website
http://www.kdheks.gov/immunize/phbpp.htm
1. Look at birth certificates where woman is marked as HBV positive
2. Compare her name with Kansas electronic disease surveillance system
Capture - Recapture

1. Look at **ALL** names of mothers on birth certificate
2. Compare her name with Kansas electronic disease surveillance system
Vaccination Schedule for Infants Born to Hepatitis B Positive Women

94% prevention of infection

- Within 12 hours: 1st Dose + HBIG*
- 1-2 months: 2nd Dose
- ~6 months: 3rd Dose
- 9-18 months: Testing for Immunity & Infection

*Hepatitis B Immunoglobulin
PVST

Post-vaccination serological testing (PVST)

– Ensures infant is not infected AND immunity has been conferred

Hepatitis B Surface Antigen + Hepatitis B Surface Antibodies

Determines Infection Status
Determines Immunity Status

*Not included in Standard Hepatitis Panel*
PHBPP Follow-Up

Identification
- Providers
- Hospitals

Enhanced surveillance

Birth Dose
- HBIG

1st dose of vaccine

Vaccine Completion
- 2nd dose
- 3rd dose

PVST
- HBsAg
- Anti-HBsAb

Department of Health and Environment

26
How many infants in Kansas are followed each year by PHBPP?

1. 1-50
2. 51-150
3. 151-300
4. 1,000,000
Number of Infants Followed Each Year by PHBPP, Kansas 2012-2015
Infants by Birth Cohort Followed by PHBPP, Kansas 2012-2015
2013 Rates ‡
Infants Born to Hepatitis B Positive Mothers

**Kansas**
- Birth Dose* – 95%
- Birth Dose* + Vaccine Series by 12 months – 80%
- Completed PVST – 29%

**National**
- Birth Dose* – 96%
- Birth Dose* + Vaccine Series by 12 months – 84%
- Completed PVST – 65%

‡ CDC
*1st* dose of vaccine + HBIG prior to discharge from hospital
Kansas Rates

2013

• Birth Dose*
  – 95%

• Birth Dose* + Vaccine Series by 12 months
  – 80%

• Completed PVST
  – 29%

2014

• Birth Dose*
  – 91%

• Birth Dose* + Vaccine Series by 12 months
  – 77%

• Completed PVST
  – 51%

*1st dose of vaccine + HBIG prior to discharge from hospital
Challenges / Solutions

• Lost to Follow-Up
  – Military & refugee populations
  – LexisNexis

• Timely Vaccinations
  – WebIZ
  – Kansas Health Information Network (KHIN)
  – Contacting patient / provider

• PVST
  – Electronic Lab Reporting
  – Contacting patient / provider
Steps to Increase Birth Dose

• Immunization Action Coalition (IAC) -2013
  – ≥90% hepatitis B vaccination coverage of newborns
  – Written policies to give all newborns hepatitis B vaccine prior to hospital discharge

• Kansas has 6 hospitals on this honor roll

http://www.immunize.org/honor-roll/birthdose/
Kansas Birth Dose Honorees

- Clay County Medical Center (CCMC)
- Newton Medical Center
- Holton Community Hospital
- Sabetha Community Hospital
- Morris County Hospital
- Wesley Medical Center
Kansas Birth Dose Rates, by Region, 2015

Statewide: 82%

- NW: 84%
- NC: 91%
- NE: 77%
- SW: 70%
- SC: 87%
- SE: 86%
Kansas Birth Dose Rates, by Hospital Size*, 2015

Statewide: 82%

- 1-49: 88%
- 50-149: 84%
- 250-499: 79%
- 500-999: 78%
- 1,000+: 83%

*number of babies born at that hospital
Birth Dose - Hospital Policy Survey

• Study to determine percentage of birthing facilities with policies to prevent perinatal transmission of HBV
  – 25 question survey sent to all birthing facilities
    • Determining HBV status for women policies
    • Birth dose policies

• Response rate: 81%
Birth Dose - Hospital Policy Survey

Policies to Screen Pregnant Women for HBV Status

![Graph showing the percentage of maternal HBsAg status over time from 2007 to 2015. The graph includes lines for Document Maternal HBsAg Status in Child's Chart, Review Maternal HBsAg Status at Admission, Test HBsAg for Unknown Women, and Retest HBsAg for Women with Risk Factors.]
Birth Dose - Hospital Policy Survey

Policies to Provide Birth Dose to Infants

- Give HepB Vax within 12 hrs. if HBsAg+ Mom
- Give HBIG within 12 hrs. if HBsAg+ Mom
- Give HepB Vax within 12 hrs. if HBsAG Unknown
- Give HepB Vax to ALL Babies
# Factors Associated with Vaccine Non-Completion

<table>
<thead>
<tr>
<th>Who is at Risk</th>
<th>Racial Disparity</th>
<th>County Density</th>
<th>Insurance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children of Non-Asian Mothers</td>
<td>Children of Non-Asian Mothers</td>
<td>Residents of Rural Counties</td>
<td>Children without Medical Insurance</td>
</tr>
<tr>
<td>What is the Risk</td>
<td>5x</td>
<td>3x</td>
<td>4x</td>
</tr>
</tbody>
</table>
Factors Associated with PVST Non-Completion

<table>
<thead>
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<th>PVST Non-Completion</th>
<th>Insurance Status</th>
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<tbody>
<tr>
<td>Who is at Risk</td>
<td>Children without Medical Insurance</td>
</tr>
<tr>
<td>What is the Risk</td>
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Factors Associated with Vaccine Non-Completion

<table>
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<tr>
<th>Racial Disparity</th>
<th>County Density</th>
<th>Insurance Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cultural awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Further investigation required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Loss to follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lack of staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Access to care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lack of knowledge of Vaccines for Children (VFC) program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cost of care</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Steps to Increase Vaccine and PVST Completion

• Mothers as Advocates
  – Child more likely to receive all vaccines, HBIG and PVST
  • Education
    – Vaccine schedule
    – HBIG and PVST
  • Resources
    – Public services
Educational Material

- Educational Materials
  - http://www.kdheks.gov/
  - http://cdc.gov/hepatitis/
  - http://immunize.org/

- Available in multiple languages
PVST through Kansas Health and Environmental Laboratories

To arrange testing call Epidemiology Hotline: 877-427-7317
Additional Resources

Letters to Providers

May 19, 2016

Infection Prevention Name
Hospital Name
Street Address
City, State, Zip

Dear Infection Prevention Name

Following is information regarding a woman with hepatitis B infection who plans to deliver at your facility.

Mother’s name
DOB
EDD

Father’s name

Physician’s name

Pediatrician’s name

This infant will need to be administrated the hepatitis B vaccine and hepatitis B immune globulin (HBIG) within 12 hours of birth.

Please notify the Local Health Department of the client’s delivery and fax the Perinatal Hepatitis B Prevention Hospital Report Form documenting HBIG and hepatitis B vaccination dates and times to the Local Health Department at phone number.

If you have any questions, please call Local Health Department or Kansas Perinatal Hepatitis B Prevention Program Coordinator, Kelly Gillespie, at 785-266-1569 or email at kgillespie@kdhks.org.

Thank you for your assistance with this important program.

Phone Number

FAX Number

Provider Fliers

Kansas Perinatal Hepatitis B Prevention Program

Vertical transmission (mother to child) during the perinatal period is one of the most efficient means of transmission for hepatitis B virus (HBV). HBV-positive women have up to a 90% chance of transmitting the virus to their infant, which can result in significant infant morbidity and mortality. However, proper chemoprophylaxis has been shown to be 85-90% effective in preventing an infant from becoming a chronic carrier of HBV.

The Perinatal Hepatitis B Prevention Program (PHPP) aims to prevent hepatitis B transmission from pregnant women to their infants as well as their household and sexual contacts. Prevention of perinatal hepatitis B transmission requires the coordinated efforts of primary care providers, hospitals, laboratories, and the state and local health departments.

Your role in preventing perinatal hepatitis B transmission:

- Test every pregnant woman for hepatitis B surface antigen (HBsAg), during each pregnancy (permitted by U.S. Army 11-139).
- Counsel HIV-infected pregnant women who are at high risk for hepatitis B infection.
  - More than one sexual partner during the previous 6 months, been evaluated or treated for an STD.
  - Recent or current injection drug use.
  - Hepatitis B positive sex partner.
- Report individuals positive for hepatitis B to the Kansas Department of Health and Environment, using the hepatitis B provider report form.
- Provide a copy of the HBsAg test result to the delivery facility. Transfusion of blood products is not recommended due to the presence of hepatitis B virus.

Future PHBPP

• Increase number of Birth Dose Honorees
• Address factors associated with vaccine and PVST completion
  – Mothers as advocates
  – Increase awareness of public services available in Kansas
• Offer providers educational material specific to Kansas
• Decrease loss to follow-up
Centralized Follow-Up

Current

• Local Health Departments
  – Often need designated investigator
  – Must stay up-to-date on latest regulations
  – Well verse in Kansas’ disease surveillance system

Proposed

• KDHE
  – One investigator for the state of Kansas
  • Perform all follow-up
PHBPP in a Nutshell

• Stop perinatal transmission of hepatitis B
  1. Test all pregnant women for HBV
  2. Infants of hepatitis B positive women need extra care
     a) HBIG at birth
     b) PVST at 9 months

• Provide support and resources to patients, providers and local health departments
Questions?