MPH FIELD EXPERIENCE:
WHY HAVE HEPATITIS B BIRTH DOSE RATES DECREASED IN JOHNSON COUNTY? A PRELIMINARY QUALITY IMPROVEMENT PROJECT

Kealan Schroeder
OVERVIEW

- Field Experience
- Hepatitis B Birth Dose Quality Improvement Project
- Conclusion
FIELD EXPERIENCE

- Johnson County Department of Health and Environment
JCDHE - HEALTH

- Olathe, KS clinic
Mission, KS clinic
DIVISIONS

- Environment
  - Air Quality
  - Hazardous Materials
  - On-Site Sewage Treatment
  - Rabies Testing
  - Recycling and Waste Reduction
  - Solid Waste Management
  - Swimming Pool and Spa Inspection
DIVISIONS

- **Health**
  - WIC
  - Child Care Licensing
  - Immunizations
  - Walk-in Services
  - Pregnancy Services
  - Disease Reporting
  - Other Services (Community Health Assessment and Improvement Plan, Emergency Preparedness, Continuing Nurse Education, etc.)
MEETINGS

- Disease Reporting
- Immunize Kansas Kids (IKK) Grant
- Quality Improvement Committee
- Strategic Planning
Disease Investigators

- Read laboratory reports sent in for positive cases
- Make action plans
- Contact attending physicians/nurses for more information
- Close cases by submitting in EpiTrax
DISEASE REPORTING

- Reportable Diseases in Kansas - 80+
  - Campylobacteriosis, Rickettsiosis, Lyme’s disease, Tuberculosis
  - Influenza is not reportable, but hospitals and clinics report anyway
    - JCDHE releases a weekly influenza report during the “season”
Acquired Immune Deficiency Syndrome (AIDS)

Amebiasis

Anthrax

Arboviral disease (including West Nile virus, Western Equine encephalitis (WEE) and St. Louis encephalitis (SLE)) - indicate virus whenever possible

Brucellosis

Campylobacter infections

Chancroid

Chlamydia trachomatis genital infection

Cholera

Cryptosporidiosis

Cyclospora infection

Diphtheria

Esophagus/colitis

Hepatitis A

Herpes zoster

Hepatitis B during pregnancy

Human Immunodeficiency Virus (HIV) (includes Viral Load Tests)

Influenza: deaths in children <18 years of age

Legionellosis

Leptospirosis

Leprosy (Hansen's disease)

Listeriosis

Lyme disease

Malaria

In addition laboratories must report:

- Viral load results of reportable diseases
- ALL blood levels, as at 12,000/µL
- <500/µL CD4+ T-lymphocytes count or CD4+ T-lymphocytes <25% of total lymphocytes

Outbreaks, unusual occurrence of any disease, exotic or newly recognized diseases, and suspect acts of terrorism should be reported within 4 hours by telephone to the Epidemiology Hotline: 877-427-7317

Mail or fax reports to your local health department and/or:

KDHE Office of Surveillance and Epidemiology, 1000 SW Jackson, Suite 210, Topeka, KS 66612-1274
Fax: 877-427-7317 (toll-free)
DISEASE REPORTING PROJECT

- JCDHE created the Disease Reporting Quality Improvement Project
- Currently working with IT to develop a webpage for reporting diseases
- More efficient, less time-consuming means of data collection
Developed my own questionnaires for different reportable diseases

- Campylobacteriosis
- Hepatitis B
- Hepatitis C
- Measles
- Mumps
- Pertussis
Hepatitis C Case Report

General:

Last Name  First Name  Age  Telephone

Address

Demographics:

Gender:  M  F  Ethnicity:  Hispanic  Non-Hispanic
Race:  Caucasian  African American/Black  Hispanic/Latino  Asian

Other:

Died:  Yes  No  Pregnant:  Yes  No
Importance of DRQIP

- Not all health care providers are aware of reportable diseases
- Inform laboratories and health care providers about new system
- User-friendly
Created a revised list of reported diseases in Johnson County

Shows average of months from 2010 to 2012 as compared to monthly reports in 2013

Easy to read and compare
## JCDHE All Diseases Reported

<table>
<thead>
<tr>
<th>Disease</th>
<th>February 2010-2012 Average</th>
<th>February 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amebiasis (<em>Entamoeba histolytica</em>)</td>
<td>1</td>
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<tr>
<td>Anaplasmosis (<em>Anaplasma phagocytophilium</em>)</td>
<td>0.33</td>
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<tr>
<td>Animal Bite, potential rabies exposure</td>
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<tr>
<td>Anthrax (<em>Bacillus anthracis</em>)</td>
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<tr>
<td>Babesiosis (<em>Babesia microti</em>)</td>
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<tr>
<td>Blood Lead Poisoning</td>
<td>2.67</td>
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<tr>
<td>Botulism, wound (<em>Clostridium botulinum</em>)</td>
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<tr>
<td>Brucellosis (<em>Brucella spp.</em>)</td>
<td>0.33</td>
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<tr>
<td>Calicivirus/Norwalk-like virus (<em>Norovirus</em>)</td>
<td>1.33</td>
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<tr>
<td>Campylobacteriosis (<em>Campylobacter spp.</em>)</td>
<td>16.33</td>
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<tr>
<td>Coccidioidomycosis (<em>Coccidioides, spp.</em>)</td>
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<tr>
<td>Cryptosporidiosis (<em>Cryptosporidium parvum</em>)</td>
<td>5.33</td>
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<tr>
<td>Dengue</td>
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<tr>
<td>Dengue Hemorrhagic Fever</td>
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<tr>
<td>Diphtheria (<em>Corynebacterium diphtheriae</em>)</td>
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<tr>
<td>Ehrlichiosis/Anaplasmosis Undetermined</td>
<td>0.33</td>
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<tr>
<td>Ehrlichiosis (<em>Ehrlichia chaffeensis</em>)</td>
<td>0.33</td>
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<tr>
<td>Ehrlichiosis (<em>Ehrlichia ewingii</em>)</td>
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<tr>
<td>Enterohemorrhagic <em>Escherichia coli</em> O157 (EHEC)</td>
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<tr>
<td>Foodborne Illness</td>
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<tr>
<td>Giardiasis (<em>Giardia lamblia</em>)</td>
<td>5.33</td>
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<tr>
<td><em>Haemophilus influenza</em> (invasive)</td>
<td>0.33</td>
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</tbody>
</table>
State of Kansas requires children entering school to be immunized for the following diseases:

- Diphtheria, tetanus, and pertussis (DTap5)
- Polio (Polio4)
- Measles, mumps, and rubella (MMR2)
- Varicella (Var2)
- Hepatitis B (HepB3)

Other vaccines recommended:

- *Haemophilus influenzae* (Hib3)
- Hepatitis A (HepA2)
- Pneumococcal conjugate vaccine (PCV3)
Government program sets science based goals for healthier Americans

10 year timeframe

Collaboration among communities

Empower individuals towards health conscious decisions
Johnson County was part of this statewide survey that was performed by the KDHE.

Estimates immunization coverage rates of children at school entry.

By comparing the immunization rates for these years with Healthy People 2020 goals, the JCDHE can see where it needs improvement.
IMMUNIZATION COMPARISON

Johnson County Department of Health and Environment
2009-2012 Immunization Coverage

- DTaP
- MMR2
- Hib3
- Polio4
- Var2
- HepA2
- HepB3
- 5-4-2-2-3
- PCV2

Healthy People 2020

References:
Goals to be met/maintained in Healthy People 2020

- DTap5 - 95% coverage
- MMR2 - 95% coverage
- Hib3 - 100% coverage
- Polio4 - 95% coverage
- Var2 - 95% coverage
- HepA - 85% coverage
- HepB - 95% coverage
- PCV2 - 90% coverage
These results conclude that 4 out of the 8 required and/or recommended vaccinations will not achieve the Healthy People 2020 goals at this rate.

Further work is needed to increase coverage.
FINAL PROJECT - HEPATITIS B BIRTH DOSE QUALITY IMPROVEMENT PROJECT
Hepatitis B
- Double-stranded DNA virus

Modes of Transmission
- Vertical
- Horizontal
- Sexual contact
- Intravenous drug use
HBV INFECTION

- Liver infection
- Cirrhosis
- Hepatic decompensation
- Hepatocellular carcinoma (HCC)
HBV INFECTION RATES

- 350 million HBV chronically infected people - global
- 1.25 million HBV chronically infected people - United States
- 1/3 of the chronically infected people in the United States acquired HBV infection through perinatal/early childhood exposures
Early 1980s, United States released the first Hepatitis B vaccine
1991, Universal Vaccination Policy put in place to eliminate Hepatitis B virus
Advisory Committee on Immunization Practices (ACIP) recommends that all infants before discharged from hospital receive the first Hepatitis B vaccine
World Health Organization (WHO) adopted the 1991 policy on a global scale
Hospitals and healthcare providers are recommended to screen pregnant women for HBV.

If a mother is positive, the infant has >90% chance of developing chronic Hepatitis B infection.

Screening allows for proper PEP for infants born to HBV positive mothers.
CDC has recommended protocol for birthing units to follow:

Guidance for Developing Admission Orders in Labor & Delivery and Newborn Units to Prevent Hepatitis B Virus Transmission

The guidelines in this document were developed to help hospitals establish policies and standing orders in their labor and delivery (L&D) and newborn units.

During 2005, the Centers for Disease Control and Prevention (CDC) published updated recommendations of the Advisory Committee on Immunization Practices (ACIP) for prevention of hepatitis B virus (HBV) infections in children which includes the recommendation to administer hepatitis B vaccine to all newborns before hospital discharge. The American Academy of Pediatrics, American Academy of Family Physicians, and American College of Obstetricians and Gynecologists have all endorsed the birth dose recommendation. To obtain a copy, go to www.cdc.gov/mmwr/PDF/rr/rr5416.pdf.

To protect infants from HBV infection, CDC recommends that all delivery hospitals institute standing orders or admission orders, and protocols to ensure healthcare professionals do the following:

1. Administer hepatitis B vaccine to all newborns before they are discharged from the hospital.
2. Identify all infants born to mothers who are hepatitis B surface

of an original HBsAg laboratory report from the current pregnancy included in their prenatal record.

2. Instruct the lab to call L&D and the nursery units with the newly obtained HBsAg test result ASAP.

Admission orders and procedures for newborns

Hospital procedures to follow for ALL newborns

1. Review a copy of the mother’s original HBsAg lab report to ensure that the correct serologic test was ordered and that it was ordered during this pregnancy.

2. Determine if the newborn needs immediate postexposure prophylaxis within 12 hours of birth. To do this you must know the mother’s HBsAg status and the newborn’s birth weight. If the newborn weighs less than 2 kg (4.4 lb), see the descriptions below and footnotes 2, 5, 6.
## ACIP Recommended Vaccination Schedule for Persons Aged 0 Through 18 Years

<table>
<thead>
<tr>
<th>Vaccines</th>
<th>Birth</th>
<th>1 mo</th>
<th>2 mos</th>
<th>4 mos</th>
<th>6 mos</th>
<th>9 mos</th>
<th>12 mos</th>
<th>15 mos</th>
<th>18 mos</th>
<th>19-23 mos</th>
<th>2-3 yrs</th>
<th>4-6 yrs</th>
<th>7-10 yrs</th>
<th>11-12 yrs</th>
<th>13-15 yrs</th>
<th>16-18 yrs</th>
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<td>Hepatitis B (HepB)</td>
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<td>Rotavirus (RV)</td>
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<td>Diphtheria, tetanus, &amp; acellular pertussis</td>
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<td>Haemophilus influenzae type b (Hib)</td>
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<td>Pneumococcal conjugate (PCV13)</td>
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<td>Pneumococcal polysaccharide (PPSV23)</td>
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<td>Inactivated poliovirus (IPV) (&lt;18 years)</td>
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<td>Measles, mumps, rubella (MMR)</td>
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<td>Varicella (VAR)</td>
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<tr>
<td>Hepatitis A (HepA)</td>
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<tr>
<td>Human papillomavirus (HPV2: females only; HPV4: males and females)</td>
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<td>Meningococcal (Hib-MenCY ≥ 6 wks; MCV4-CRM ≥ 2 yrs)</td>
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</table>

- **Range of recommended ages for all children**
- **Range of recommended ages for catch-up immunization**
- **Range of recommended ages for certain high-risk groups**
- **Range of recommended ages during which catch-up is encouraged and for certain high-risk groups**
- **Not routinely recommended**
Parents aren’t receiving the information they need

Some barriers to not vaccinating for Hepatitis B include:

- Lack of vaccine education - negative beliefs
- Lack of reimbursement from insurance companies
- Unwillingness to vaccinate at early age
- Low socio-economic status
- Low parental education
- Young maternal age
- Large family size
- Fearful of vaccine side effects
GETTING INFORMATION TO THE PEOPLE

- Health care facilities
- Schools
- Churches
- Immunization cards
- Fellow community members
OTHER INFORMATION METHODS

- Focus groups
- Semi-structured interviews
- Surveys
- Educational programs
- School-based immunization programs
HEALTHY PEOPLE 2020 AND HEPATITIS B BIRTH DOSE IN JOHNSON COUNTY

- Hepatitis B birth dose rates in Johnson County, KS have declined
  - 92.2% coverage in 2005
  - 69.9% coverage in 2010

- Healthy People 2020 goal for newborns receiving Hepatitis B birth dose is 85%
  - Johnson County is nearly 15 percentage points below this goal
Why has the Hepatitis B birth dose immunization coverage rate declined so dramatically over this time period?

What can the JCDHE do to improve these rates?

Quality Improvement tools, surveys, and interviews will help in answering these questions.
Quality Improvement

CDC definition:

“Quality Improvement in public health is the use of a deliberate and defined process, such as Plan-Do-Study-Act, which is focused on activities that are responsive to community needs and improving population health. It refers to a continuous and ongoing effort to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality services or processes which achieve equity and improve the health of the community.”

It is widely used in accreditation for Health Departments to maximize potential and minimize wasted time and work effort.
QUALITY IMPROVEMENT TOOLS

- Fishbone diagram

Hepatitis B Birth Dose administration in Johnson County has decreased by ~25%
Rib 1: Perinatal Hepatitis B Testing is Not Enforced

Perinatal Hep B testing not enforced

- Noncompliance by birthing center?
- Not aware of protocol recommended by CDC?
  - Aware of risks for infant?
  - No Post-Exposure Prophylaxis for babies born to HBsAg+ mothers?
  - Mothers not aware of perinatal testing?
  - Doctors are not enforcing screening?
Rib 2: Hepatitis B birth dose rates low among uninsured.

- Cost?
- Do they know the Hepatitis B birth dose is free?
- Where are they getting prenatal care?
- Age of parents?
RIB 3: HEPATITIS B BIRTH DOSE RATE LOWEST AMONG HISPANIC POPULATION

lowest among Hispanic population (Braka, 2012)

- Lack of Information
- Language barrier?
- Are staff fluent in Spanish?
- Cost?
- Do they know the Hepatitis B birth dose is free?
- Where are they getting prenatal care?
RIB 4: MEDICAL STAFF

Understaffed?

Are they vaccinated?

Referring positive mothers on to a specialist? (Apuzzio, et. al. 2012)

Lack of expertise?

Aware of the WHO’s policy of universal Hepatitis B vaccination? (Zanetti, 2008)

Medical Staff
RIB 5: What are the general perceptions of the Hepatitis B vaccine?
RIB 6: ARE HEALTHCARE PROVIDERS INFORMING PARENTS ABOUT HEPATITIS B BIRTH DOSE?

Think there is not a high rate of Hepatitis B in Johnson County?

Nurses are replacing doctors to relay information?

Physicians don’t know the rates are low?

Don’t push the vaccine?

Limited amount of time with physician to go over information?

Physicians have huge sway on parents’ judgment (Willis, 2010)

Physicians’ views on Hepatitis B birth dose?

Are physicians empowering parents to opt out?

Are healthcare providers informing parents about Hepatitis B birth dose? (Gowda, 2012)
Plan-Do-Study-Act
Survey internal sources
  - Sent a survey to JCDHE immunization nurses

Plan for interview to get additional input
  - Hospital staff
  - Pregnant women
SURVEY FOR HOSPITAL STAFF

Hepatitis B Birth Dose Survey

Instructions

➢ To complete the survey online, go to (insert website)
➢ This survey should take approximately 15 to 20 minutes.
➢ These are open-ended questions. Please elaborate your answers. Longer is better than shorter.

1) Why do you think the Hepatitis B birth dose administration rate declined between 2005 and 2010 in Johnson County?
2) Is there a standing order to give the Hepatitis B birth dose prior to patient discharge?
3) If your patients are not receiving the Hepatitis B birth dose prior to discharge, what are the reasons for this? What is your opinion on why this happens?
4) In the occurrence of a complicated birth, how are decisions made to provide the Hepatitis B birth dose?
5) How are birth certificates completed? Is the Hepatitis B birth dose recorded on all birth certificates?
6) Why do you think Hepatitis B birth dose administration is low among Hispanics?
7) How do you or your staff communicate with non-English speaking patients?
8) How many Spanish speaking employees do you have on staff?
9) Why do you think Hepatitis B birth dose administration is low among the uninsured?
10) Do you provide information about the Vaccines for Children program? If so, what?
11) Would you be willing to work with the Johnson County Department of Health and Environment on this issue? If so, please provide your contact information.
MEDIUM SEMI-STRUCTURED INTERVIEW

MODERATOR FOCUS QUESTIONS (NOT TO BE ASKED TO PARTICIPANTS):

1) Why are infants not getting vaccinated for Hepatitis B?
2) What would change a parents' mind to vaccinate their child?

Semi-Structured Interview Moderator Guide

Introduction:

Hi, my name is [say your name]. I represent the Johnson County Department of Health & Environment. We are interested in learning what women think about vaccinating infants for Hepatitis B. This interview is "safe". Nothing you say here will be shared with anyone else. We will never link your name with any of your answers. Please be as open and honest with us as you can. When the session has ended, we will hand out a gift card.

Date: ___________________________  Time: ______________________________  Location: _______________________________

Question 1: What are your thoughts about having your child vaccinated?

    Probe 1: Do you plan on having your child vaccinated? Why or why not?

    Probe 2: Do you think your child is too young to be vaccinated at birth? Why or why not?

Question 2: What kind of information have you received from your healthcare provider regarding the Hepatitis B infant birth dose vaccine?

    Probe 1: What did he/she tell you?

Question 3: When you have a question about your health, where do you get your information?

Question 4: What are your family & friends views about vaccinations?

    Probe 1: How does this affect your views on vaccines?

Question 5: What do you know about Hepatitis?

Question 6: Read the following statements:

    Probe 1: If you were told that your child had a good chance of contracting Hepatitis B, would that change your opinion about vaccination? Why?

    Probe 2: If you were told that vaccines were free, would you be more inclined to get your child vaccinated? Why?

    Probe 3: If you were told that the vaccine was 100% safe, would you be more inclined to get your child vaccinated? Why?

Question 7: Do you have any other feelings about childhood vaccines?

Question 8: Ask respondent the following questions:

    Age: ___________________________  Race: ______________________________  Religion: ______________________________

    Marital Status (Circle): Married / Single  Number of Children: ______________________________

This concludes our interview. Thank you so much for participating. Do you have any questions?

Hand out gift card, and help them find the exit.
Since my project was to utilize Quality Improvement tools to structure surveys and questionnaires, there is no conclusion.

The surveys and questionnaires other than the internal survey have not been applied.

My work will be used to answer the questions about why the Hepatitis B Birth Dose rates have decreased in Johnson County, KS.
CONCLUSION

- What I did not know before...
  - Public Health includes a wide variety of branches
  - Quality Improvement plays a huge role in Public Health
  - The LARGE list of reportable diseases
  - Vaccination rates in Kansas
  - Hepatitis B and the harm it causes
THANK YOU!!!
REFERENCES


CDC. (2008, November 21). CDC MMWR. www.cdc.gov/mmwr/preview/mmwrhtml/mm5746a1.htm


