Hepatitis B
What You Need to Know

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PAT FINEIS
Michigan Department of Health and Human Services (MDHHS)
Division of Immunization
Perinatal Hepatitis B Coordinator
fineisp@michigan.gov
517-335-9443
Outline

- Hepatitis overview
  - Symptoms
- Hepatitis B virus (HBV)
  - Transmission
  - Infection/Outcomes
  - Occupational exposures
  - Prevention/Treatment
    - Vaccination programs
Hepatitis

- Inflammation of the liver
- You can get hepatitis:
  - Alcohol
  - Drugs
  - Viruses
- HAV=hepatitis A virus
- HBV=hepatitis B virus
- HCV=hepatitis C virus
- HDV=hepatitis D virus
- HEV=hepatitis E virus
Symptoms

- Fever
- Aching muscles and joints/Fatigue
- Loss of appetite
- Stomach pain
- Nausea
- Vomiting
- Dark urine, pale stools, or diarrhea
- Jaundice
Hepatitis B Virus (HBV) Transmission

- **Bloodborne**
  - Toothbrushes, razors, nail clippers
  - Unsterile tattooing and body piercing equipment
  - Infectious - up to one week
- **Sexual**
- **Perinatal**
- **Occupational** – needle sticks, blood/body fluid exposures, not following universal precautions
- **Virus found in body fluids of infected persons**
  - Blood
  - Semen
  - Vaginal secretions
Hepatitis B Demographics (U.S.)

- Highest rate of disease by age
  - 24 – 49 year olds
- Highest rate of disease by risk group
  - 39% heterosexual transmission
  - 24% male to male
  - 16% IDU
  - 16% unknown
  - 5% household, occupational and travel
Rate of HBV Infection

- **U.S.**
  - Late 1980s to early 1990s
    - 150,000 to 320,000 new infections annually
  - 1990 to 2004 – (vaccination programs)
    - Overall incidence - declined (75%)
    - Children and adolescents - declined (94%)
- **2018**
  - 19,000 new infections annually
HBV Infection - Outcome

- **Acute infection**
  - Having HBV for less than 6 months
  - May never have any symptoms
  - May become fulminate
    - Quick onset of disease
    - 200 - 300 deaths/year in U.S.
  - Recovery within 6 months, or

- **Chronic infection**
  - Having HBV for more than 6 months
  - May never show symptoms
  - 350 million people worldwide
  - 800,000 to 2.2 million people in U.S.
  - Cirrhosis (scarring of the liver)
    - 3,000 – 4,000 deaths/year
  - Liver cancer
    - 1,000 – 1,500 deaths/year
### Symptomatic/Chronic HBV by Age at Infection

<table>
<thead>
<tr>
<th>Age at infection</th>
<th>Symptomatic HBV Infection</th>
<th>Chronic HBV</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year</td>
<td>&lt; 1 %</td>
<td>90%</td>
</tr>
<tr>
<td>1 – 5 years</td>
<td>5 – 15%</td>
<td>25 - 50%</td>
</tr>
<tr>
<td>&gt;5 years</td>
<td>20 – 50%</td>
<td>6 – 10%</td>
</tr>
</tbody>
</table>
## Acute/Chronic HBV Reported Cases

**MI data**

<table>
<thead>
<tr>
<th>Year</th>
<th>Acute</th>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>61</td>
<td>1,076</td>
</tr>
<tr>
<td>2016</td>
<td>47</td>
<td>1,268</td>
</tr>
<tr>
<td>2017</td>
<td>64</td>
<td>1,237</td>
</tr>
<tr>
<td>2018</td>
<td>74</td>
<td>1,056</td>
</tr>
</tbody>
</table>
Chronic Hepatitis B Cases per 100,000 Population by Gender, MI, 2012-2017

Number of Cases

2012 2013 2014 2015 2016 2017

Male Female
## Occupational Exposure – Risk of Infection

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Percutaneous</th>
<th>Mucocutaneous</th>
<th>Non-Intact Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBV</td>
<td>1 in 30</td>
<td>1 in 70</td>
<td>&lt;1 in 70</td>
</tr>
<tr>
<td>HIV</td>
<td>1 in 300</td>
<td>1 in 1000</td>
<td>&lt;1 in 1000</td>
</tr>
<tr>
<td>HCV</td>
<td>1 in 500</td>
<td>Rare</td>
<td>Rare</td>
</tr>
</tbody>
</table>
2008 - 2017 HBV Reported Outbreaks

- **Historically** – there were many reports of infected healthcare workers prior to implementing Universal Precautions/bloodborne pathogens

- **24** healthcare-associated outbreaks
  - **179** associated cases (infected)
  - More than **10,935** people notified for screening
    - **6 outbreaks** (free dental clinic - school gymnasium, outpatient oncology clinic, hospital surgery service and 2 pain clinics)
      - Hygiene lapses
    - **18 outbreaks** in long-term care facilities (including home care)
      - Improper use of blood glucose monitors
      - Sharing single finger stick devices (single use devices)
  - None were identified in MI

www.cdc.gov/hepatitis/outbreaks/healthcarehepoutbreaktable.htm
10 studies with 33,201 participants (11 different countries)
- Ages 14 – 64
- Included street youth, general community, blood donors and students
- Excluded those who had other risk factors (IDUs, prisoners, had a recent blood transfusion, sex workers and others who were high-risk)

Found – a larger number of students/younger population were infected with hepB after a piercing in countries with less regulated facilities and who lacked quality health care services

Found - larger cities with better health services lead to safer body piercing procedures
- Believe it had to do with licensing/supervision – integrating bloodborne pathogen standards
- Having health services that included hepB vaccination programs

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5058954/
Preventing Occupational - HBV Transmission

- Practice universal precautions and routine barrier precautions
- Ensure you/staff get hepatitis B (hepB) vaccine and have follow-up testing
  - Protects your clients
  - Protects you
  - Exposures due to
    - Blood
    - Infectious body fluids
Currently Recommended HepB Vaccines

- Monovalent (single antigen) formulations (all ages)
  - Engerix-B® or Recombivax HB®
    - 3 doses (0, 1 and 6 months apart)
- Adult combination formulations
  - Twinrix® (≥18 yrs) – Hepatitis A, Hepatitis B
    - 3 doses (0, 1, and 6 months apart)
  - Heplisav-B (≥18 yrs.)
    - 2 doses (0 and 1 month apart)
Who Else Should get Hepatitis B (HepB) Vaccine?

- **ANYONE** who wants to be PROTECTED from getting HBV
- All infants and children
- All adults:
  - At risk for infection by sexual exposure (e.g., sex partner of a HBV-infected person, multiple sex partners, MSM, people evaluated or treated for a STI)
  - At risk for infection by percutaneous or mucosal exposure to blood (e.g., household contacts of HBV-infected persons, IDUs, healthcare, or public safety workers, people with end-stage renal disease, are dialysis patients, or have diabetes)
  - Others (e.g., international travel to regions with high/intermediate HBV endemicity, persons with chronic liver disease, HCV, or HIV, and incarcerated persons)
Vaccination Programs

- **Universal Hepatitis B for Newborns**
  - Free hepB vaccine to all birthing facilities for all babies born in MI
  - Encourages immunization of all newborns with birth dose of hepB vaccine

- **Vaccines for Children (VFC)**
  - For all children 0-18 years of age
    - Medicaid – eligible or enrolled
    - Uninsured
    - American Indian or Alaskan Native
    - Underinsured (may have insurance but does not include vaccine)

- **Perinatal HepB Prevention Program (PHBPP)**
  - To prevent perinatal transmission of HBV to infants exposed at birth
  - We **IDENTIFY** and **TEST** all pregnant women for hepatitis B surface antigen (HBsAg)
  - **TEST and TREAT** her infant(s), household and sexual contacts
    - Free testing
    - Free hepB vaccine
    - Case management

www.michigan.gov/hepatitisB
High-Risk Hep A and B
- To protect adolescents and adults at increased risk for hep A/hepB infection regardless of insurance
- Seen in STD clinics, teen health centers and family planning clinics (even those in LHDs)
- With risk factors
  - Household, sexual contact; sexually active; STIs, MSM, IDU, liver disease, diabetes, HCV, HIV, renal disease, dialysis

MI – Adult Vaccine Replacement (MI-AVP) Program
- Uninsured and underinsured adults 19 and older
- With risk factors for hepB
- Seen in LHDs, Federally Qualified Health Centers (FQHCs), Migrant Health Centers (MHCs), Tribal Health Centers (THCs)

http://www.michigan.gov/mdhhs/0,5885,7-339-73971_4911_4914_6385-446468--,00.html
Get Tested - Understanding HepB Labs

- **HBsAg** = hepatitis B surface antigen – marker for **infection**
  - Positive = infected
- **Anti-HBs** = hepatitis B surface antibody – marker to show **protection/immunity**
  - Positive = protected
- **HBcAb IgM** = hepatitis B core antibody IgM – marker to show if **recent exposure** (less than 6 months)
  - Positive = recently infected
- **HBcAb IgG/IgM** = hepatitis B core antibody total – maker to show if **ever been exposed**
  - Positive = came in contact with the virus sometime in their lifetime
HBV Treatment

- **Discuss treatment with a specialist!**

- Treatment for HBV reduces replication of the virus (slows it down), but rarely resolves it

- Most people will have HBV for the rest of their lives
  - So get hepB vaccine and a blood test to make sure you are protected from getting HBV
Hepatitis can happen to anyone...
Questions??