HEPATITIS B AND HEPATITIS C BLOOD EXPOSURE

DISEASE 101 ONLINE CONFERENCE
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VIRAL HEPATITIS, STD, HIV PREVENTION
COORDINATOR
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OBJECTIVES

• Describe the populations that should be screened for hepatitis B and hepatitis C.
• Identify the populations that are disproportionately affected by hepatitis B and hepatitis C in North Dakota.
• Describe the testing algorithm used to diagnose acute, chronic and resolved hepatitis B and C infections.
• Detail recommended steps for postexposure prophylaxis when exposed to blood.

VIRAL HEPATITIS
WHAT IS HEPATITIS?

Hepatitis =
Inflammation of
the Liver

VIRAL HEPATITIS

- Most common types are A, B and C in U.S. and ND; Others include D, E
- Leading cause of liver cancer and most common reason for liver transplantation
- Many do not know that they are infected with hepatitis

HEPATITIS B

- Contagious liver disease that ranges in severity from a mild illness lasting a few weeks to a serious lifelong illness
  
- Can be Acute or Chronic

- In 2010, there were an estimated 38,000 new infections in the U.S.; More than 350 million chronically infected worldwide
HEPATITIS B SYMPTOMOLGY

Reported signs and symptoms can include:

• Jaundice
• Nausea
• Vomiting
• Fever
• Headache
• Skin rashes

At least 50% of infections are asymptomatic

HEPATITIS B TRANSMISSION

• Sexual transmission, either heterosexual or homosexual
• Injection Drug Use- Sharing Needles- Also includes tattoos and piercings
• Infected mother to her baby at birth

HEPATITIS B VIRUS TRANSMISSION

Risk groups:

• People with multiple sex partners or sexually transmitted disease(s)
• Men who have sex with men
• Sex contacts of infected people
• Injection-drug users (IDUs)
• Household contacts of chronically infected people
• Infants born to HBV-infected mothers
• Infants/children born to women from areas with high rates of HBV infection
• Health-care and public safety workers
• Hemodialysis patients
HEPATITIS B

15-25% of chronically infected people die from chronic liver disease
Treatment Available, but no cure

Woman with HBV-related liver cancer

HEPATITIS B TESTING

Hepatitis B Surface Antigen (HBsAg): Positive for Acute or Chronic Infection

Hepatitis B Surface Antibody (anti-HBs): Immune

Total Hepatitis B core Antibody (anti-HBc): Appear early in onset of infection, persist for a lifetime

IgM Antibody to Hepatitis B Core Antigen (IgM anti-HBc): Infection in the last 6 months

HEPATITIS B IN PREGNANCY.

- All women should be tested for hepatitis B during their first prenatal visit.
- Pregnancy in a hepatitis B positive individual is reportable to the NDDoH.
- Infants born to HBV-infected mothers require hepatitis B vaccine and hepatitis B immune globulin (HBIG) within 12 hours of birth to protect them from infection.

HEPATITIS B PREVENTION

- Get vaccinated
- Prevent blood, semen and vaginal fluids from entering body
- Use barriers for sex
- Do not share needles or other equipment that may have blood on them

Source: "Integrating Viral Hepatitis into Client-Centered Counseling"

HEPATITIS C

FACT
People born from 1945-1965 are 5 times more likely to be infected with Hepatitis C.

LEARN MORE
HCV EPIDEMIOLOGY

- Nearly 3% of worldwide population has chronic HCV infection
  - Most common blood-borne infection in United States
- Up to 75% unaware of their HCV infection
- 3.2 million people in the U.S. infected with Hepatitis C
- Infection is most prevalent among those born during 1945-1965

THE NUMBER OF HEPATITIS C CASES HAS ALMOST DOUBLED IN THE LAST FOUR YEARS.

* Includes acute, chronic and resolved infections

YOUNG PERSONS UNDER 30 YEARS ARE MOST AFFECTED BY HEPATITIS C IN ND.

* Includes acute, chronic and resolved infections
HEPATITIS C
Average incubation period – 6-9 weeks
• Range: 2 weeks – 6 months

Acute illness
• 80% of people are asymptomatic

Chronic infection
• 55-85% of infected People

Leading Indication for Liver Transplant in the U.S.

WHAT ARE THE SYMPTOMS OF ACUTE HEPATITIS?
*New infections may be asymptomatic
The symptoms of newly acquired hepatitis A, B and C are the same:

Jaundice  Nausea
Elevated liver enzymes Vomiting
(ALT, AST, Bilirubin)  Diarrhea
Fatigue  Dark urine
Abdominal pain (upper right quadrant)  Fever
Loss of appetite  Joint pain

Light colored stools

NATURAL HISTORY OF HCV INFECTION

Adapted from Alter HJ

Leading Indication for Liver Transplant
HEPATITIS C IS TRANSMITTED IN BLOOD AND IS MOST OFTEN TRANSMITTED THROUGH SHARING OF NEEDLES AND OTHER DRUG WORKS.

Risk groups:
- Injection-drug users
- Recipients of clotting factors made before 1987
- Hemodialysis patients
- Recipients of blood and/or solid organs donated before 1992
- People with undiagnosed liver problems
- Infants born to HCV-infected mothers (after 15-18 months of age)
- People who have sex with multiple partners
- People who have sex with an HCV-infected steady partner

BABY BOOMERS SHOULD BE TESTED FOR HEPATITIS C.

Age Based Screening Recommendation:

- All persons born between 1945 & 1965 should be screened for Hepatitis C without an assessment of risk.
- Approximately 75% of Hepatitis C Cases in the U.S. are Baby Boomers

HEPATITIS C TESTING

- Hepatitis C Antibody Testing: Window Period of 2 to 26 weeks
- Rapid Test Available Since November 2011
- Qualitative and Quantitative Tests to Detect Presence or Absence of Viral
- Qualitative Test Available at NDDoH Division of Laboratory Services for $26
- Hepatitis C Genotyping

Testing Algorithm in the Viral Hepatitis Guide:
www.ndhealth.gov/Disease/Hepatitis/Tools/ToolsMain.htm
HEPATITIS C TEST INTERPRETATION.

<table>
<thead>
<tr>
<th>TEST OUTCOME</th>
<th>INTERPRETATION</th>
<th>FURTHER ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCV antibody negative</td>
<td>No HCV antibody detected. Sample can be retested or referred for HCV antibody, as for the original test.</td>
<td>Further testing is required.</td>
</tr>
<tr>
<td>HCV antibody positive</td>
<td>Positive HCV test.</td>
<td>Confirm HCV infection with a second test.</td>
</tr>
<tr>
<td>HCV RNA detected</td>
<td>Recent HCV infection.</td>
<td>Definition is based on HCV RNA levels and seroconversion.</td>
</tr>
<tr>
<td>HCV RNA not detected</td>
<td>No current HCV infection.</td>
<td>Definition is based on HCV RNA levels and seroconversion.</td>
</tr>
</tbody>
</table>


GENOTYPE 1 NOW HAS CURE RATES ALMOST AT 100%

- **Treatment Goal:** To achieve a sustained virologic response (SVR) and delay or stop progress to more serious liver damage.

- Treatment is very expensive and may come with provisions of being alcohol/drug free for a certain length of time before treatment.

- Treatment can now be as short as 8 weeks.

HEPATITIS C PREVENTION

- Avoid blood exposure:
  - New syringe, cooker, cotton etc.
  - Every time for injection
  - Use barriers and lubricants
  - Cover open cuts/wounds
  - Use universal precautions

- Don’t share personal items that may contain blood (toothbrush/razor)

- Ensure instruments used for tattooing, piercing, acupuncture are new or sterilized.
SUPPORTING A HEALTHY LIVER

- Drink water
- Do not drink alcohol
- Get vaccinated against hepatitis A and B
- Eat a healthy diet with adequate protein
- Exercise
- Reduce stress
- Minimize contact with other toxins
- Check with health provider before starting new medications

EXPOSURE TO BLOOD

POSTEXPOSURE PROPHYLAXIS

Step 1: Treat the Exposure Site
- Use soap and water to wash exposed areas
- Flush exposed mucous membranes with water

Step 2: Report and Document
- Report occupational exposures immediately
- Document exposure
POSTEXPOSURE PROPHYLAXIS

Step 3: Evaluate the Exposure
• Type of body substance involved, the route, and severity of exposure

Step 4: Evaluate the Exposure Source
• Based on whether the source patient is known or unknown
  - Known: Test for HBsAg, HCV Antibody and HIV Antibody
  - Unknown: Evaluate the likelihood of high risk exposure

POSTEXPOSURE PROPHYLAXIS

Step 5: Disease Specific PEP Management

Recommended PEP for exposure to HBV

<table>
<thead>
<tr>
<th>Treatment when source is found to be</th>
<th>Unknown or Not Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed:</td>
<td>HBsAg+ HBsAg- Unknown or Not Tested</td>
</tr>
<tr>
<td>Presumed infected</td>
<td>HBsAg and anti-HBs, complete hepatitis B vaccine series</td>
</tr>
<tr>
<td>If exposure occurs, test for HBsAg, anti-HBs. If HBsAg: treat as HBsAg positive. If anti-HBs: treat as if source were HBsAg positive.</td>
<td></td>
</tr>
<tr>
<td>Presumed uninfected</td>
<td>HBsAg and anti-HBs, complete hepatitis B vaccine series</td>
</tr>
<tr>
<td>If exposure occurs, test for HBsAg, anti-HBs. If HBsAg: treat as HBsAg positive. If anti-HBs, complete hepatitis B vaccine series.</td>
<td></td>
</tr>
<tr>
<td>Presumed non-infected</td>
<td>HBsAg and anti-HBs, complete hepatitis B vaccine series</td>
</tr>
<tr>
<td>If exposure occurs, test for HBsAg, anti-HBs. If HBsAg: treat as HBsAg positive. If anti-HBs: complete hepatitis B vaccine series.</td>
<td></td>
</tr>
</tbody>
</table>

POSTEXPOSURE PROPHYLAXIS

Step 5: Disease Specific PEP Management: HIV Exposures

HIV PEP should be started immediately. If the delay lasts more than 24-36 hours, seek expert consultation. PEP should continue for 28 days.

Typical PEP options:
• A basic 2-drug regimen, appropriate for lower risk exposures.
• An expanded ≥3 drug regimen, for exposures that pose an increased risk for transmission.
POSTEXPOSURE PROPHYLAXIS

Step 5: Disease Specific PEP Management

**HIV PEP for Percutaneous Injuries**

<table>
<thead>
<tr>
<th>Exposure Status</th>
<th>Infection Status of Source</th>
<th>Exposure Type</th>
<th>Source of Unknown Status</th>
<th>Infection Status of Unknown Status</th>
<th>No PEP Warranted</th>
<th>Expanded ≥3-drug PEP</th>
<th>Less Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>HIV-Infected Class I (Asymptomatic HIV infection or known low HIV viral load &lt; 1,500 RNA copies/mL)</td>
<td>Solid Needle</td>
<td>Consider basic 2-drug PEP</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP for source with HIV risk factors</td>
<td>NO PEP warranted</td>
<td>NO PEP warranted</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP in settings where exposure to HIV-infected persons is likely</td>
</tr>
<tr>
<td>Low Risk</td>
<td>HIV-Infected Class I (Asymptomatic HIV infection or known low HIV viral load &lt; 1,500 RNA copies/mL)</td>
<td>Superficial injury</td>
<td>Consider basic 2-drug PEP</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP for source with HIV risk factors</td>
<td>NO PEP warranted</td>
<td>NO PEP warranted</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP in settings where exposure to HIV-infected persons is likely</td>
</tr>
<tr>
<td>High Risk</td>
<td>HIV-Infected Class 2 (Symptomatic HIV infection, AIDS, acute seroconversion, or known high HIV viral load)</td>
<td>Large-bore, hollow needle</td>
<td>Consider basic 2-drug PEP</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP for source with HIV risk factors</td>
<td>NO PEP warranted</td>
<td>NO PEP warranted</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP in settings where exposure to HIV-infected persons is likely</td>
</tr>
<tr>
<td>High Risk</td>
<td>HIV-Infected Class 2 (Symptomatic HIV infection, AIDS, acute seroconversion, or known high HIV viral load)</td>
<td>Large-bore, hollow needle</td>
<td>Consider basic 2-drug PEP</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP for source with HIV risk factors</td>
<td>NO PEP warranted</td>
<td>NO PEP warranted</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP in settings where exposure to HIV-infected persons is likely</td>
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</table>

**HIV PEP for Mucous Membrane and Nonintact Skin Exposures**

<table>
<thead>
<tr>
<th>Exposure Status</th>
<th>Infection Status of Source</th>
<th>Exposure Type</th>
<th>Source of Unknown Status</th>
<th>Infection Status of Unknown Status</th>
<th>No PEP Warranted</th>
<th>Expanded ≥3-drug PEP</th>
<th>Less Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Volume</td>
<td>HIV-Infected Class I (Asymptomatic HIV infection or known low HIV viral load &lt; 1,500 RNA copies/mL)</td>
<td>A few drops</td>
<td>Consider basic 2-day PEP</td>
<td>Generally no PEP warranted</td>
<td>NO PEP warranted</td>
<td>NO PEP warranted</td>
<td>Generally no PEP warranted</td>
</tr>
<tr>
<td>Small Volume</td>
<td>HIV-Infected Class I (Asymptomatic HIV infection or known low HIV viral load &lt; 1,500 RNA copies/mL)</td>
<td>Large Blood Splash</td>
<td>Consider basic 2-drug PEP</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP for source with HIV risk factors</td>
<td>NO PEP warranted</td>
<td>NO PEP warranted</td>
<td>Generally no PEP warranted; Consider basic 2-drug PEP in settings where exposure to HIV-infected persons is likely</td>
</tr>
</tbody>
</table>

**HIV exposure follow-up testing and counseling:**
- Repeat HIV-antibody testing at 6 weeks, 3 months and 6 months post exposure
- If PEP is given, monitor for drug toxicity
- Refrain from donating blood, plasma, organs, tissue or semen and use risk reduction methods such as late barriers during sex and not sharing injection equipment
RESOURCES


• Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis: September 30, 2005 / 54(RR09);1-17 http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm

• Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis, June 29, 2001 / 50(RR11);1-42: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5011a1.htm

• National Clinicians’ Postexposure Prophylaxis Hotline (PEPline): 888-448-4911, www.nccc.ucsf.edu/about_nccc/pepline

• NDDoH Percutaneous/Mucous Membrane Exposure Fact Sheet: www.ndhealth.gov/Disease/Documents/faqs/NeedleStick.pdf

Questions?

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