

HEPATITIS B AND HEPATITIS C BLOOD EXPOSURE

DISEASE 101 ONLINE CONFERENCE
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DECEMBER 3, 2015



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.

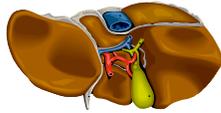


VIRAL HEPATITIS



WHAT IS HEPATITIS?

**Hepatitis =
Inflammation of
the Liver**



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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

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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

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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

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



Hepatitis B Surface Antigen (HBsAg)	HBsAg	negative	Susceptible
	anti-HBc anti-HBs	negative negative	
Hepatitis B Surface Antibody (anti-HBs)	HBsAg	negative	Immune due to natural infection
	anti-HBc anti-HBs	positive positive	
Total Core Hepatitis B Antibody (anti-HBc)	HBsAg	negative	Immune due to hepatitis B vaccination
	anti-HBc anti-HBs	negative positive	
IgM Antibody to Hepatitis B Core Antigen (IgM anti-HBc)	HBsAg	positive	Acutely infected
	anti-HBc IgM anti-HBc anti-HBs	positive positive negative	
IgM Antibody to Hepatitis B Core Antigen (IgM anti-HBc)	HBsAg	positive	Chronically infected
	anti-HBc IgM anti-HBc anti-HBs	positive negative negative	



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

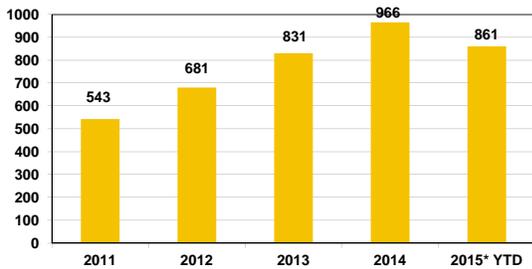


HCV EPIDEMIOLOGY

- 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.

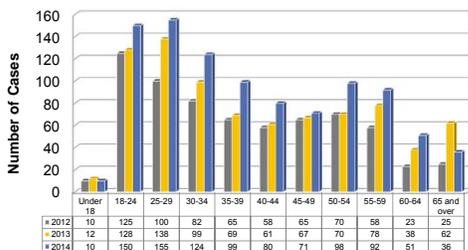


* Includes acute, chronic and resolved infections

*2015 - 1/1/15 - 11/4/15 (Preliminary)



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.



Healthy



Cirrhosis



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:

<p>Jaundice</p> <p>Elevated liver enzymes (ALT, AST, Bilirubin)</p> <p>Fatigue</p> <p>Abdominal pain (upper right quadrant)</p> <p>Loss of appetite</p>	<p>Nausea</p> <p>Vomiting</p> <p>Diarrhea</p> <p>Dark urine</p> <p>Fever</p> <p>Joint pain</p> <p>Light colored stools</p>
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NATURAL HISTORY OF HCV INFECTION

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graph TD
    A[100 People] -- "15% - 45% Resolve (15)" --> B[Chronic (85)]
    A -- "55% - 85% Chronic (85)" --> B
    B -- "80% Stable (68)" --> C[Stable (13)]
    B -- "20% Cirrhosis (17)" --> D[Mortality (4)]
    C -- "75% Stable (13)" --> C
    D -- "25% Mortality (4)" --> D
    
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Leading Indication for Liver Transplant

Adapted from Alter HJ



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.

TEST OUTCOME	INTERPRETATION	FURTHER ACTIONS
HCV antibody nonreactive	No HCV antibody detected	Sample can be reported as nonreactive for HCV antibody. No further action required. If recent exposure in person tested is suspected, test for HCV RNA.*
HCV antibody reactive	Presumptive HCV infection	A repeatedly reactive result is consistent with current HCV infection, or past HCV infection that has resolved, or biologic false positivity for HCV antibody. Test for HCV RNA to identify current infection.
HCV antibody reactive, HCV RNA detected	Current HCV infection	Provide person tested with appropriate counseling and link person tested to care and treatment.†
HCV antibody reactive, HCV RNA not detected	No current HCV infection	No further action required in most cases. If distinction between true positivity and biologic false positivity for HCV antibody is desired, and if sample is repeatedly reactive in the initial test, test with another HCV antibody assay. In certain situations,† follow up with HCV RNA testing and appropriate counseling.

http://www.cdc.gov/hepatitis/hcv/pdfs/hcv_graph.pdf



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
At this point, there are no recommendations for HCV PEP.

Recommended PEP for exposure to HBV

Treatment when source is found to be:				
Exposed Persons		HBsAg +	HBsAg-	Unknown or Not Tested
Unvaccinated		Administer one dose of HBIG and complete hepatitis B vaccine series	May initiate hepatitis B vaccine series	Initiate hepatitis B vaccine
Previously vaccinated	Known Responder (anti-HBs is adequate)	Test exposed person for anti-HBs 1. If adequate, no treatment. 2. If inadequate, administer a booster dose of hepatitis B vaccine.	No treatment	No treatment
	Known Non-Responder (anti-HBs inadequate)	Administer one dose of HBIG in addition to completing the hepatitis B vaccine series	No treatment	If known high-risk source, may treat as if source were HBsAg positive
	Response Unknown	Test exposed person for anti-HBs 1. If adequate, no treatment. 2. If inadequate, complete hepatitis B vaccine series.	No treatment	Test exposed person for anti-HBs 1. If adequate, no treatment. 2. If inadequate, hepatitis B vaccine booster dose



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.

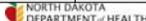


POSTEXPOSURE PROPHYLAXIS

Step 5: Disease Specific PEP Management

HIV PEP for Percutaneous Injuries

Infection Status of Source					
Exposure Type	HIV-Infected Class 1 (Asymptomatic HIV infection or known low HIV viral load (< 1,500 RNA copies/mL))	HIV-Infected Class 2 (Symptomatic HIV infection, AIDS, acute seroconversion, or know high HIV viral load)	Source of Unknown Status	Unknown Source	HIV-Negative
Less Severe • Solid Needle • Superficial injury	Recommend basic 2-day PEP	Recommend expanded ≥ 3-drug PEP	Generally no PEP warranted; Consider basic 2-drug PEP for source with HIV risk factors	Generally no PEP warranted; Consider basic 2-drug PEP in settings where exposure to HIV-infected persons is likely	NO PEP warranted
More Severe • Large-bore, hollow needle • Deep Puncture • Visible blood on device • Needle used in artery or vein	Recommend expanded ≥ 3-drug PEP	Recommend expanded ≥ 3-drug PEP	Generally no PEP warranted; Consider basic 2-drug PEP for source with HIV risk factors	Generally no PEP warranted; Consider basic 2-drug PEP in settings where exposure to HIV-infected persons is likely	NO PEP warranted

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POSTEXPOSURE PROPHYLAXIS

Step 5: Disease Specific PEP Management

HIV PEP for Mucous Membrane and Nonintact Skin Exposures

Infection Status of Source					
Exposure Type	HIV-Infected Class 1 (Asymptomatic HIV infection or known low HIV viral load (< 1,500 RNA copies/mL))	HIV-Infected Class 2 (Symptomatic HIV infection, AIDS, acute seroconversion, or know high HIV viral load)	Source of Unknown Status	Unknown Source	HIV-Negative
Small Volume • A few drops	Consider basic 2-day PEP	Recommend basic 2-drug PEP	Generally no PEP warranted	Generally no PEP warranted	NO PEP warranted
Large Volume • Large Blood • Splash	Recommend basic 2-drug PEP	Recommend expanded ≥ 3-drug PEP	Generally no PEP warranted; Consider basic 2-drug PEP for source with HIV risk factors	Generally no PEP warranted; Consider basic 2-drug PEP in settings where exposure to HIV-infected persons is likely	NO PEP warranted

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POSTEXPOSURE PROPHYLAXIS

Step 6: Follow-Up

HBV exposure follow-up testing and counseling

- Test for anti-HBs 1-2 months after last dose of vaccine
- 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

HCV exposure follow-up testing and counseling:

- Repeat test for anti-HCV at least 4-6 months post exposure
- Refrain from donating blood, plasma, organs, tissue or semen

HIV exposure follow-up testing:

- 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

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RESOURCES

- A Quick Guide to Postexposure Prophylaxis in the Health Care Setting:
<http://www.mpaetc.org/scripts/prodView.asp?idproduct=129>.
- 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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