

## Risk Factors and Screening For Hepatitis C

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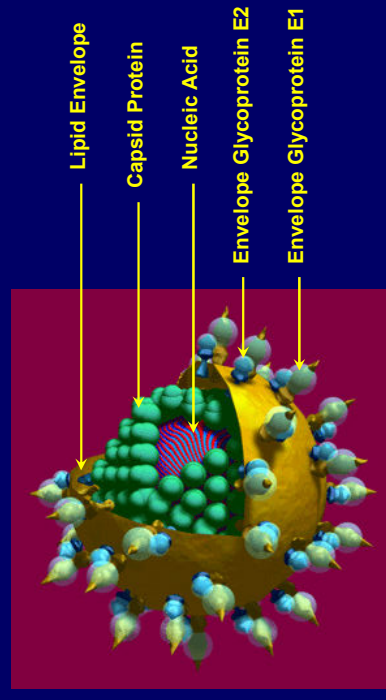
## Background on Hepatitis C

- Virus that infects liver cells
- Spread primarily through blood, less commonly by sex
- 60-85% of persons who become infected remain chronically infected
- Approximately 5 million persons in the US have chronic hepatitis C
- Can cause liver damage over years

## Background on Hepatitis C

- Makes 1 trillion new virus particles per day
- Makes a lot of errors when replicating
  - Individual patients are infected by large numbers of closely related strains of the virus
- High rate of chronic infection
- Makes HCV difficult to treat
- Makes it difficult to develop a vaccine

## Model of Human Hepatitis C Virus



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## Risk Factors for Hepatitis C

- Injection (intranasal) drug use
- Blood transfusion or transplant before 1992
  - Clotting factors before 1987
- Long term hemodialysis
- Mother with HCV
- Occupational exposure to HCV positive blood
- Sexual partner with HCV

## Sexual Transmission

- Relatively low risk
- Disclose to and test sexual partner
- Multiple partners
  - Barrier precautions
- Long-term monogamous relationship
  - Reassurance
  - Some couples might decide to use barrier precautions to further reduce limited risk

## Mother-to-Infant Transmission

- No need to avoid pregnancy/breastfeeding
  - Exceptions
    - During treatment for HCV
    - Cracked nipples may warrant switch from breast to bottle
- Test infants born to HCV-positive women
  - >15 - 18 months of age
  - Test all children born since mother infected

## Tattoos, Manicures, Piercings

- No clinical trials have evaluated these variables as independent risk factors for HCV
- Caution: non-regulated practices may not employ universal precautions



## Casual Contact

- No risk with casual contact, such as
  - Kissing, hugging, sneezing, coughing, food or water, sharing eating utensils
- Do NOT exclude from work, school, play, child-care

## Screening Recommendations



- Persons who received a blood transfusion or organ transplant before July 1992
- Received blood from a donor who later tested HCV positive
- Persons who have EVER injected or snorted illegal drugs



## Screening Recommendations

- Infants born to HCV-positive women
- Healthcare, emergency medical, public safety workers following
  - Needlesticks, sharps, or mucosal exposures
- Partners of HCV positive patients

## Diagnosis and Testing Alanine Aminotransferase (ALT)

- Liver enzyme measured in the blood
  - Marker for inflammation in the liver
- Elevated ALT level often the clue to the presence of HCV infection
  - Persistently normal in 1/3 of persons with HCV
- When elevated, ALT level does not correlate well with disease severity in an individual patient

## Diagnosis and Testing

### Antibody Testing (EIA)

- Initial test for HCV infection
- Highly sensitive in persons with risk factors for HCV and elevated liver enzymes
- Negative antibody test generally excludes HCV infection
  - Exceptions
    - Acute infection
    - Immune compromised persons

## Diagnosis and Testing

### Virologic Testing: Quantitative Tests

- Measure amount of virus in the blood
- Provide a baseline virus level before treatment
- Predictor of response to therapy
- Repeat at week 12 of treatment to determine whether to continue (genotype 1)

## Diagnosis and Testing

### HCV Genotype

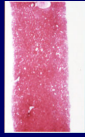
- 6 major categories of HCV
- Genotype 1 accounts for 75% of infections in the US
- Genotype is the strongest predictor of response to treatment
  - Patients with genotype 1 have the lowest response rates
- Genotype guides duration of treatment and ribavirin dose

## Diagnosis and Testing

### Liver Biopsy

- Most accurate way to stage liver disease
- Best indicator of risk of developing cirrhosis
- Can identify other processes that might impact on treatment plan
  - Co-existing autoimmune hepatitis
  - Excessive fat in the liver
  - Increased iron in the liver
- Provides a way to monitor disease progression
  - Compare two biopsies over 3-5 years

## Liver Biopsies: Fibrosis Stage



No Fibrosis



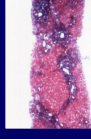
Stage 1—Fibrous expansion of some portal areas



Stage 3—Fibrous expansion of most portal areas with occasional portal to portal bridging



Stage 4—Fibrous expansion of portal areas with marked bridging (portal to portal and portal to central)



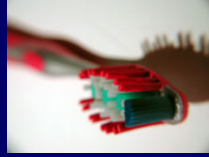
Stage 6—Cirrhosis probable or defined

## How Do We Diagnose and Characterize HCV Infection?

- Antibody test
- Measure virus level in the blood
- Genotype
- Liver biopsy
  - Assess degree of inflammation and scarring

## Measures to Avoid HCV Transmission

- Do NOT donate blood, body organs\*, other tissue or semen
- Do NOT share items that may have blood on them
  - Personal care (eg, razor, toothbrush)
  - Home therapy (eg, needles)
- DO cover cuts and sores on skin



\*Organs may be donated for transplantation in patients who are HCV positive

## The University of Illinois at Chicago

