

Hepatitis C: Let's Talk About It



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Causes of Hepatitis

any swelling, inflammation, or irritation of the liver

- Autoimmune disease
- Alcohol
- Toxins
- Fatty liver
- Virus(es)

Acute Hepatitis

- “Acute” denotes length of infection, not severity
- New onset of infection
- Symptomatic vs asymptomatic
- Adequate immune response to virus
- Generally resolves within 6 months

Symptoms of Acute Infection

- Nausea, vomiting
- Abdominal pain
- Loss of appetite
- Fever
- Diarrhea
- Clay-colored stools
- Joint pain
- *Jaundice*
- *Dark urine*

Chronic Hepatitis

- Inadequate immune response
- Infection is life-long
- May/may not have symptoms
- Most unaware of their infection
- End stage liver disease, liver cancer
- Treatment available

Hepatitis C (HCV)

- RNA virus: does not incorporate into host
- 10X more infectious than HIV
- Blood to blood transmission
- 55-85% develop chronic infection
- “Silent epidemic”

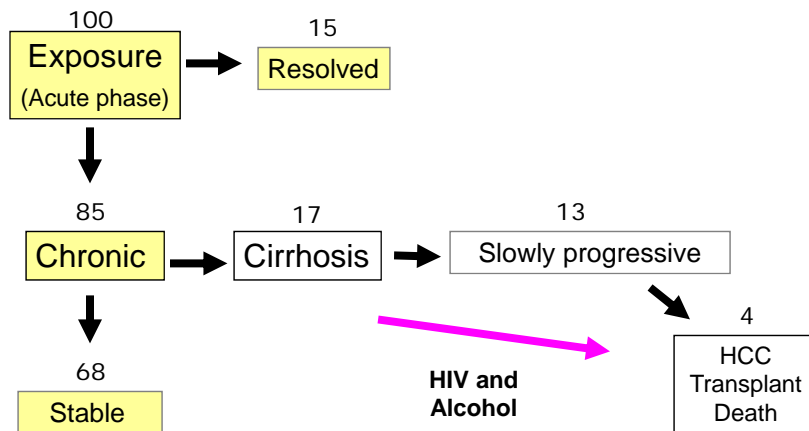
Source: CDC

Clinical Features

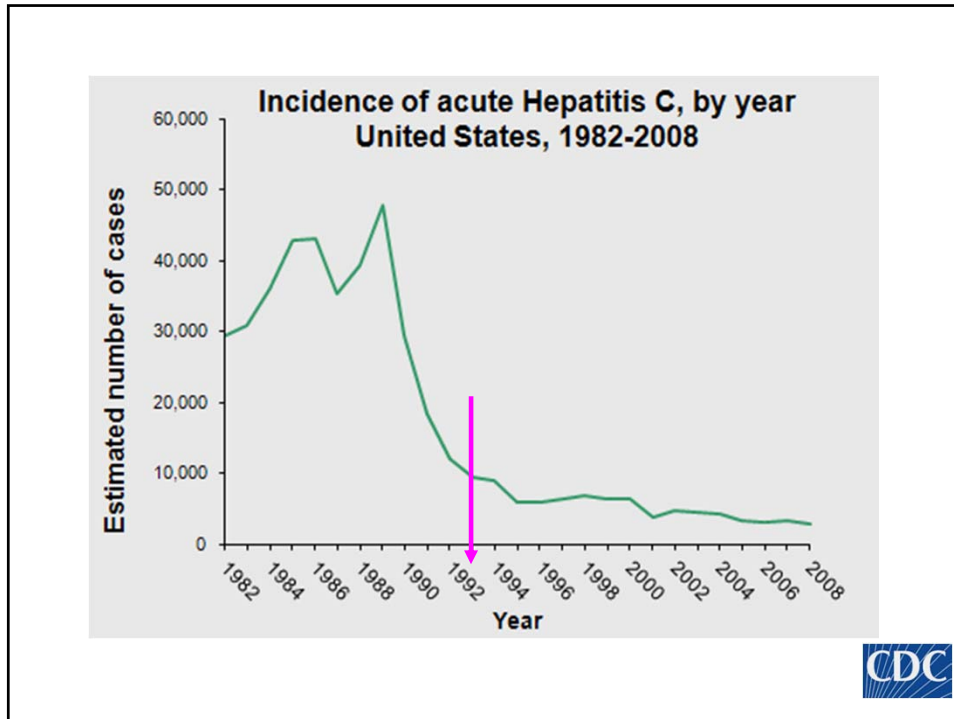
Incubation period	Mean 4-12 weeks Range 2-24 weeks
Acute infection	Largely asymptomatic
Symptomatic	20-30 %
Resolution/no progression	15-25%
Chronic infection	75-85%
Disease progression	Gradual over 20-30 years

Source: CDC

Natural History of HCV Infection



Source: CDC



Chronic HCV

- 1.6 % of US population
- 2-4 million in US
- 3-5 times more frequent than HIV
- 75% unaware of infection
- Now recognized as serious public health problem

Source: IOM Report, 2010

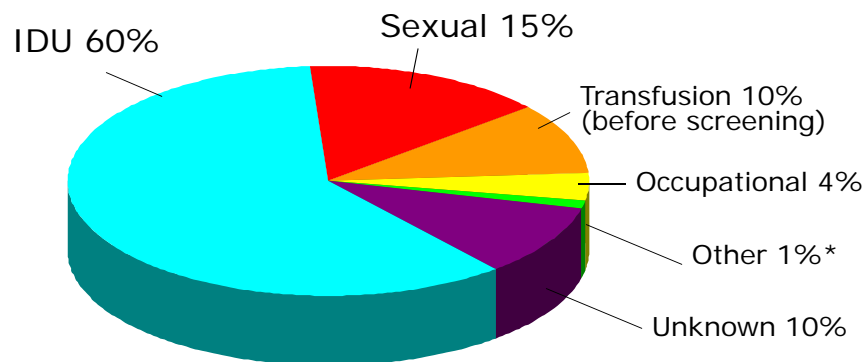
Baby Boomers

(1946-1964)

- 1 in 33 infected with chronic HCV
- 75% unaware of infection
- CDC recommends one time testing for all Baby Boomers
- Born in 1950's = highest prevalence

Source: CDC

Sources of Infection



* Nosocomial; iatrogenic; perinatal



Other possible routes

- Tattoos and piercing
- Personal care salons
- Shared household (hygiene) items
- Coke straws and crack pipes

Sexual Transmission

Risk is generally low, but increases in the presence of high risk sexual behaviors

To reduce risk

- Limit number of partners
- Use latex condoms
- Get vaccinated against hepatitis B
- Get vaccinated if at risk for hepatitis A (MSM)

Perinatal Transmission

- Risk of transmission about 4-5%
- Risk increases in the presence of HIV co-infection
- No need to avoid pregnancy or breastfeeding
- Test infants born to HCV-positive women (not before 18 months)

Source: CDC

Who Should be Tested?

- Any history of injection drug use (even once)
- Blood transfusion or solid organ transplant before July 1992
- Long-term dialysis
- Children born to HCV positive women
- People with signs of liver disease
- Anyone who is HIV+
- Occupational risk

National Hepatitis C Prevention Strategy, 2001

HCV Prevention

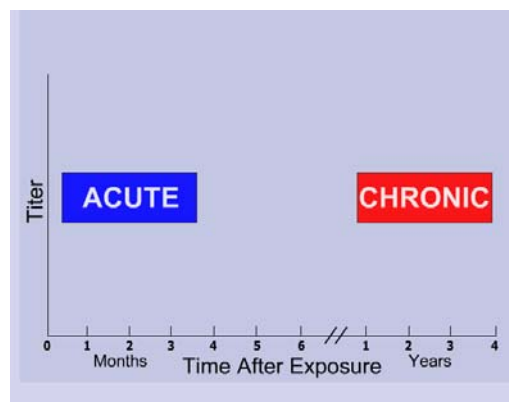
- *No Vaccine !*
- Avoid sharing needles (“works”)
- Avoid mixing drugs, alcohol with sexual activities
- Use standard precautions to avoid occupational exposures
- Practice safe sex - use a condom

HCV Serology

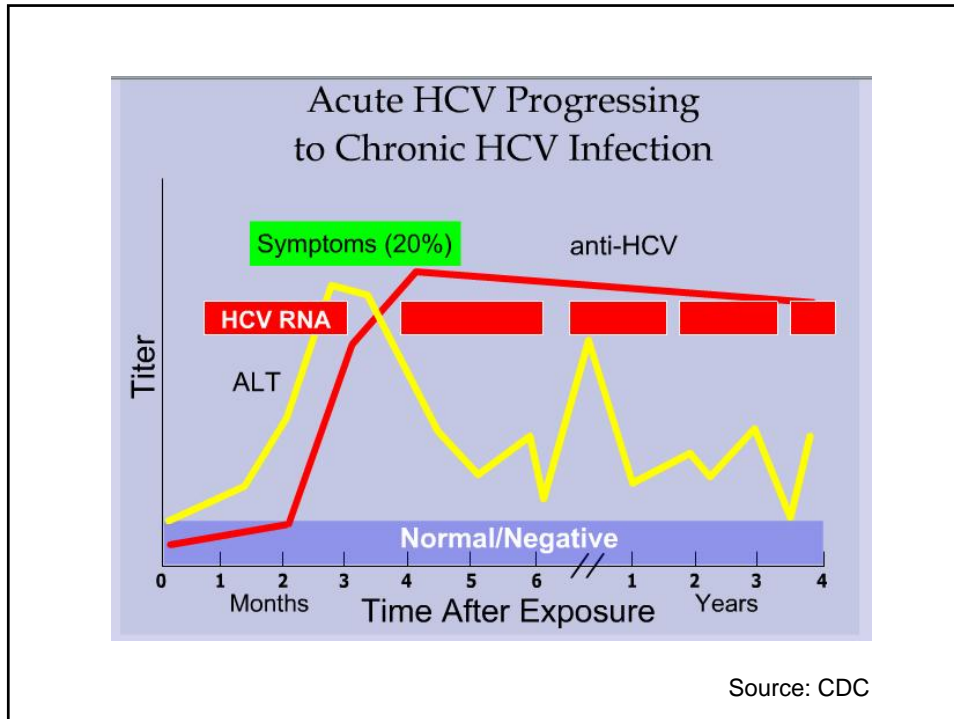
What the #!@*

- Meaning of antibody +
- Active vs resolved infection
- Acute vs chronic infection
- ALT levels fluctuate
- Intermittently viremic

Hepatitis C Serology



Source: CDC



Laboratory Tests - HCV

- **Hepatitis C antibody**
(screening test)
- **RIBA-2** (confirmatory test)
- **HCV RNA**
 - ~ Qualitative
 - ~ Quantitative

Currently there is no reliable serological assay to accurately distinguish acute from chronic infection

Understanding Results

- HCV Ab Ser QI EIA || Hepatitis C virus Ab: EIA, Positive, s/co ratio >11.0
- HCV RNA XXX QI PCR || Hepatitis C virus RNA: Probe.amp.tar, Positive
- HCV RNA SerPI PCR DL=50-aCnc || Hepatitis C virus RNA: Probe.amp.tar detection limit = 50 IU/mL, Positive

Other tests/indicators

- **Liver enzymes** (ALT)
- **Liver biopsy**... diagnostic gold standard
- **Genotype**...different viral strains of HCV
 - ~ Genotype 1
 - ~ Genotype 2
 - ~ Genotype 3

HCV Treatment

Goals of Treatment

- Clear virus (Sustained Viral Response)
- Improve inflammation
- Improve liver health–scarring
- Slow disease progression
- Improve symptoms and quality of life

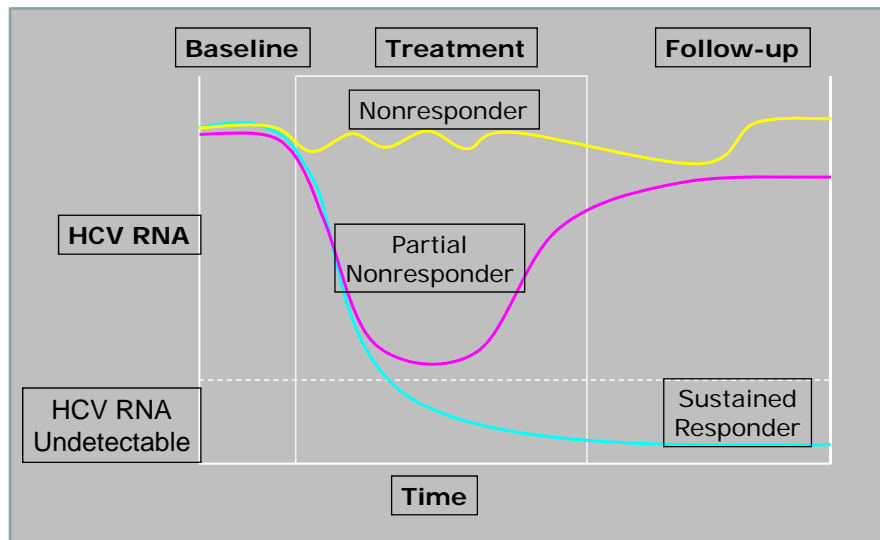
HCV Genotypes

- Six Major Genotypes (plus sub-types)
 - 1, 2, 3, 4, 5, 6 (1a, 1b, etc)
- **Genotype 1** most common in U.S.
 - Genotype 1 –70% of US population;
 - Genotype 2 & 3 – 30% of US population

➡ Strong predictor of treatment response

Source: CDC

Treatment Response



Dr. Michael Fried, UNC

Standard Protocol

- **Pegylated interferon** (injected once weekly)
- **Ribavirin** (pill or capsule – twice a day)

Genotype 1 – 48 weeks
Response rate = 40-50%

Genotype 2,3 – 24 weeks
Response rate = 70-80%

Cost per year- \$ 20,000-\$60,000

Source: CDC

Medication Side Effects

INTERFERON

- fatigue
- loss of appetite
- mood dysfunction-
depression
- flu-like symptoms
- insomnia
- skin rashes, itching
- thrombocytopenia

RIBAVIRIN

- anemia
- shortness of breath
- insomnia
- loss of appetite
- rash, itching
- throat irritation/cough
- birth defects

HCV Protease Inhibitors

- Only approved for use with genotype 1
- Not approved for use in HIV/HCV co-infected patients
- Not approved for use in post-transplant recurrent HCV
- Not approved for use in children
- Treatment schedules are complex
- Threat of resistance

Source: TAG, 2011

New HCV Medication

Incivek (telaprevir)

- Taken in conjunction with interferon and ribavirin for 12 weeks
- Two pills taken 3 times a day with food (20 gms fat)
- With early response, treat for 24 weeks
- Response rate is 74%
- Side effects include rash, anemia, itching, anal/rectal irritation

Source: TAG, 2011

New HCV Medication

Victrelis (boceprevir)

- 4 week lead in with interferon and ribavirin, then add boceprevir for 24 weeks
- 4 capsules taken three times a day with food
- Duration of treatment depends on response
- Response rate is 65%
- Side effects include anemia, metallic taste in mouth, headache

Source: TAG, 2011

Surveillance and Reporting

- Only **Acute HCV** cases that meet CDC clinical case definition are reportable by physicians in North Carolina. There is no “probable” status.
- Past or Present (non-acute or chronic) HCV cases are not currently reportable in NC.

Case Investigation

Always ask the following:

- Was the patient symptomatic?
- Why were tests done?
- What tests were done? Verify the results!

Hepatitis C Case Definition

- Acute
- Contains both clinical and lab criteria
- Symptomatic, ALT, jaundice
- Serology results
- Use algorithm

HCV Control Measures

- 10A NCAC 41A .0214
- Infected person shall...
- Attending physician shall...
- Exposures
- Effective date - April 1, 2012

Preventing Transmission

Individuals who test positive for HCV should take every precaution to make sure that no one has direct exposure to their blood.

CDC recommends:

- Covering cuts and sores on the skin
- Never sharing items that might have blood on them
 - * personal care (razors, toothbrushes)
 - * home therapy (needles)
- Never donating blood, body organs, other tissue

Important messages...

- HCV is not spread by:
 - sneezing ,hugging, coughing, sharing eating utensils or drinking glasses, or casual contact
- HCV + persons should *not* be excluded from: work, school, play, child-care or other settings on the basis of their HCV status.
- HCV+ persons are not required to disclose their status to employers

Staying healthy

- *No alcohol or reduce intake as much as possible*
- Safe sex
- If PWID, don't share equipment
- Don't share personal items that could have blood on them
- Know your status...get tested
- Get vaccinated against hepatitis A and B if at risk

Take Home Points

- Slowly progressive, silent
- 2-4 million in US infected with chronic HCV
- No reliable serological test to accurately distinguish acute from chronic infection
- Treatment is expensive
- Control measures exist

Hepatitis Rules to Live By

- When investigating, always ask:
 - ~ Why was testing done?
 - ~ Was patient symptomatic?
 - ~ Are there other lab results?
- Have case definitions handy
- Ensure control measures are issued
- **Never** merge Hepatitis B events in NC EDSS

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