Chronic Hepatitis C
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Disclosures
• None

Objectives
• Describe appropriate patient populations for screening for Chronic Hepatitis C.
• Describe benefits of treatment for Chronic Hepatitis C.
• Appropriately refer patients for treatment of Chronic Hepatitis C.
Hepatitis C

- Liver infection caused by the Hepatitis C Virus (HCV)
- Blood borne
- Acute vs. Chronic infection
- Initially, chronic infection is usually asymptomatic.
- No vaccine to protect against HCV
- No pre-exposure or post exposure prophylaxis

HCV Incidence

- Between 2.7-3.9 million individuals in the US with chronic HCV

Who is at risk?
- Current or former injection drug users
- Recipients of clotting factor concentrates before 1987
- Recipients of blood transfusions/organ transplants before 1992
- Chronic hemodialysis patients

Risk Factors

- People with HIV
- Children of HCV-positive mothers
- Persons with known exposure such as health care workers with needle sticks from a HCV-positive donor.
- Recipients of blood/organ from a donor who tested HCV positive.
- Persons born from 1945 through 1965 (BABY BOOMERS)
Less common risks of transmission

- Sex with an HCV-infected person
- Sharing personal items contaminated with infectious blood
- Razors or toothbrushes
- Intranasal cocaine
- HCV may stay infectious for 6 weeks on surfaces, such as needles.
  - Survival up to 63 days in syringes documented.

HCV in New Mexico

- 45,000 New Mexicans estimated to have HCV

Long Term Effects

Increasing rate of HCV-related complications with a peak morbidity and mortality between the years 2030 and 2035.

- >36,000 deaths
- >38,000 new cases of end-stage liver disease
- >3,200 referrals for transplant
Chronic vs. Acute
- 15-25% of acutely infected individuals will clear the infection
- Spontaneous clearance—female gender, ↓ age at infection onset, symptomatic acute infection, co-infection with HBV.

Outcomes of Chronic Infection
- Of every 100 persons infected with HCV:
  - 75–85 develop chronic infection
  - 20–30 develop cirrhosis over a period of 20–30 years
  - 2–7 will die from the consequences of chronic infection

New Mexico Fibrosis Stage Data
(through 10/31/2015)

Distribution of Fibrosis Stage
US (NHANES data) vs. New Mexico (NHID data 2014–2015 YTD)
Screening

- Risk-based strategies fail to identify > 50% of cases
- 1945-1965 Birth Cohort (3/4 of all infections). 5X higher prevalence than other persons.
- 68% of persons with HCV identified through a birth cohort testing strategy, whereas only 27% screened with the risk-based approach.

Screening

- Screening tests for antibody to HCV (anti-HCV)
- Qualitative tests to detect presence or absence of virus (HCV RNA polymerase chain reaction [PCR])
- Quantitative tests to detect amount (titer) of virus (HCV RNA PCR)

Interpretation of results

<table>
<thead>
<tr>
<th>TEST OUTCOME</th>
<th>INTERPRETATION</th>
<th>FURTHER ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCV antibody negative</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>HCV antibody positive</td>
<td>Presumed HCV infection</td>
<td>Further tests required to confirm HCV infection</td>
</tr>
<tr>
<td>HCV antibody negative, HCV RNA positive</td>
<td>Current HCV infection</td>
<td>Further action required based on transmission risk</td>
</tr>
<tr>
<td>HCV antibody positive, HCV RNA positive</td>
<td>Documented HCV infection</td>
<td>Further action required based on transmission risk</td>
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<tr>
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Interpretation of Results of Tests for Hepatitis C Virus (HCV) Infection and Further Actions
Diagnosis

- Anti-HCV can be detected 4–10 weeks after infection.
- + in >97% of persons by 6 months after exposure.
- HCV RNA can be detected as early as 2–3 weeks after infection.
- False-Positive
- False-Negative

Not just the liver

- Many HCV patients may have extrahepatic manifestations.
  - Glomerulonephritis—40%
  - Essential mixed cryoglobulinemia-
  - Porphyria cutanea tarda
  - Non-Hodgkins lymphoma
  - Fatigue: may be debilitating.

Glucose Intolerance

- Incidence of diabetes in patients with HCV is 28%
Pregnancy

- Transmission risk during birth
- Breastfeeding advice
- When to test infant.

What happens long-term?

- Cirrhosis: Mean is about 30 years.
- Decompensation: Ascites, variceal bleeding, encephalopathy
- Hepatocellular Carcinoma:
  - Up to 3% of individuals with cirrhosis will develop.
  - 15-20x higher risk compared to non-infected persons.
- 4.6 deaths per 100,000 persons compared to 4.2 deaths per 100,000 persons for HIV.

Host Factors

- Gender: Males have faster fibrosis progression
- HIV co-infection increases rate of fibrosis.
- HBV co-infection results in more severe liver disease
- Age: acquisition after age 40 is associated with more rapid liver injury
- Diabetes/Obesity: both contribute to liver steatosis which increases risk of fibrosis.
Behavioral Factors
- Alcohol has an obvious negative effect
- Coffee
- Marijuana
- Cholesterol
- Statins
- Vitamin D

General Management of Chronic HCV Patients
- Psychosocial: screen for ongoing drug use and depression.
- Transmission Risk:
  - Toothbrushes, dental, or shaving equipment.
  - Cover wounds
  - Cannot donate blood
  - Clean contaminated surfaces with bleach water (1 part bleach: 9 parts water)
  - Don't share drug paraphernalia

Vaccination
- Hepatitis A
- Hepatitis B
- Pneumonia Vaccine
- Influenza
Imaging

- Ultrasound:
  - Well tolerated, inexpensive
  - Surface nodularity
  - Increased echogenicity with irregular appearance
  - Hypertrophy of left lobes
  - Also used to screen for HCC and portal HTN

- Liver Biopsy: uncommon, risky, expensive.

- CT/MRI
  - Not as commonly used

- Elastography (Fibroscan)
  - Testing stiffness of tissue

Hepatocellular Carcinoma Screening

- Screen cirrhotics every 6 months with abdominal ultrasound or CT.
- May check alpha-fetoprotein tumor marker

Treatment

- Goal of treatment is eradication of HCV RNA.
- Cure defined as undetectable RNA level 12 weeks post treatment
- Success rate usually 97-100%
- Decreases all-cause mortality, liver-related death, liver transplants, HCC, and liver-related complications.
- All patients with HCV RNA + should be considered for treatment.
- All-oral therapies
Barriers to Treatment

- Cost
- Insurance
- Stigma
- Lack of provider awareness
- Lack of access to treatment
- Adherence

Medications

- Ledipasvir/Sofosbuvir
- Sofosbuvir/Velpatasvir
- Elbasvir/Grazoprevir
- Ombitasvir/Paritaprevir/Ritonavir/Dasabuvir
  - Mild side effect profile (headache, fatigue, insomnia)
  - 8-24 week treatment duration
- Ribavirin
  - Hemolysis, requires monitoring of H&H

Ledipasvir/Sofosbuvir
Project ECHO

Project ECHO® was created to effectively treat hepatitis C throughout New Mexico and to monitor outcomes. Once a combination of patient information is presented to the Hepatitis C Community TeleECHO Clinic, the community clinician is given a plan for treatment by the specialist. After hepatitis C treatment protocol is established, frequent follow-ups are conducted to present the patient’s treatment status, to relay issues that may impede treatment, and to alter the treatment plan as needed to maximize the patient’s chance for a cure. Through the use of technology, best-practice protocols, and ongoing case-based learning, rural primary care clinicians deliver hepatitis C care that is as safe and effective as that given in a university clinic.

case.und.edu

Case Study

- You are seeing a 57 year-old male for a new patient visit. He reports good health and does not have any current chronic illnesses. He does not take any prescriptions.
- He is overweight with a BMI of 35.5. BP 135/82. Reports some daily fatigue. Depression screening is negative.
- He reports in the past he used IV drugs but hasn’t used any in 20 years. He used to smoke tobacco but quit 8 years ago. Denies blood transfusions, tattoos. Drinks 2 beers/day.

Case continued

- You decide to check a hepatitis panel and HIV testing given IVDU history.
- HIV: non-reactive
- Hepatitis A/B: non-reactive
- Hepatitis C: reactive
**Case Study**

- CBC: normal with platelets 225
- AST/ALT: 46/87
- INR: 1.0
- HCV RNA: 7,890,467
- HCV Genotype: 1a
- Vitamin D: 7
- Hepatitis A IgG: nonreactive
- Hep B Surface Antibody Titer: <3
- Hepatitis B Surface Antigen: non-reactive
- Hemoglobin A1c: 6.3

**Assessment Statement:**

57 year-old male with chronic hepatitis C, Genotype 1a, treatment naïve without cirrhosis.

Patient agrees to treatment with Ledipasvir/Sofosbuvir for 12 weeks. You see him at week 0, 2, 4, 8, 12. He tolerates treatment w/o any problems. His viral level is undetectable at week 4 and thereafter: Liver enzymes normalize.

12 weeks after treatment you check a viral level which is undetected, confirming SVR. A1c lowers to 5.8.
Case
55 year old Hispanic male with history of HCV.
Was imprisoned in the 1980s, reused tattoo needles with other inmates.
No IVDU. Quit drinking 11 years ago.

Labs
Sofosbuvir/Velpatasvir X 12 weeks
Labs

**Abnormalities:**
- AST/ALT above normal limits

**Benefits of Treatment:**
- Negative HCV RNA for life
- Platelets ↑
- Reduction in portal vein diameter in portal HTN
- Improvement in splenomegaly
- ↓ risk of progression to cirrhosis
- ↓ esophageal varices
Benefits continued
- ↓ risk of decompensated liver disease
- Elimination of risk of transmission
- ↑ quality of life
- ↓ psychological impact
- ↓ personal/family stigma
- ↓ cost of long-term health care costs
- Extra-hepatic manifestations (glucose intolerance)
- ↑ long-term survival

Fibrosis Regression

The Benefits of Earlier Treatment

APRI Calculator: http://www.hepatitis.uw.edu/page/clinical-calculators/apri

CDC: http://www.cdc.gov/hepatitis/hcv/


Hep C Drugs: http://www.hepatitis.uw.edu/page/treatment/drugs


