1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Hepatitis C virus (HCV) is an RNA virus. Many genotypes and subtypes exist.

B. Description of IllnesS

- ***General facts:*** HCV can cause chronic infection with potentially serious consequences including cirrhosis, liver failure, and hepatocellular carcinoma. Initial infection may be asymptomatic, and between 50-80% will develop chronic infection. Of chronically infected persons, 10-20% will eventually develop cirrhosis and 1-5%, liver cancer. Chronic infection may persist for up to 20 years before onset of cirrhosis or liver cancer.
- ***Occurrence:*** It is estimated that 50,000 Connecticut residents are chronically infected. In the United States, it is estimated that 3.2 million persons are chronically infected.
- ***Incubation period:*** Ranges from 2 weeks - 6 months, usually within 2 months. The time from exposure to viremia generally is 1 - 2 weeks.
- ***Common symptoms:*** Similar to other viral hepatitis infections: fatigue, abdominal pain, loss of appetite, nausea, and joint pain. Jaundice or dark urine may also be observed. It is estimated that 75% of persons with initial infection do not have any signs or symptoms.
- ***Treatment:*** No specific therapy for acute HCV infection is available. Medications for treatment of chronic HCV are available. Treatment outcome is highly variable depending on viral genotype and patient factors. Patients should be referred to specialized care for evaluation of treatment options.

C. Reservoir

Humans are the only known reservoir for HCV.

D. Modes of Transmission

- The highest risk is for persons with parenteral (by injection) exposure to blood such as individuals sharing contaminated needles or “works” (equipment or materials used in preparing drugs for injection).
- Sexual and mother-to-child transmission have been documented but are far less efficient or frequent than the parenteral route. Approximately 5% of cases are due to perinatal transmission.
- Recipients of clotting factors made before 1987 and recipients of blood transfusions before 1992 are also at risk.
- Hepatitis C is <u>not</u> transmitted through food or water, sharing eating utensils, breastfeeding, hugging, kissing, hand holding, coughing, or sneezing. There is no exclusion of food handlers.

E. Period of Communicability

From one or more weeks before the onset of first symptoms. All persons with HCV antibodies (anti-HCV+) or HCV-RNA (PCR+) in their blood should be considered infectious.

2) ACTIONS REQUIRED/CONTROL MEASURES

A. Reporting Requirements

Acute HCV infection is physician reportable by mail within 12 hours of recognition or strong suspicion to both DPH and the local health department (LHD). The director of any clinical laboratory must also report laboratory evidence of HCV infection to both DPH and LHD.

- Anti-HCV+ is laboratory reportable. Confirmatory test results, including signal-to-cutoff ratio, if available, RIBA+ and PCR+, are also reportable.
- Values for signal-to-cutoff assays predictive of a true positive can be found at http://www.cdc.gov/hepatitis/HCV/LabTesting.htm - section1

B. Case Classification:

- **Confirmed Acute Case:** Acute cases must meet both clinical and laboratory criteria.
  - Clinical criteria include:
    - Discrete onset of symptoms consistent with viral hepatitis infection (fatigue, abdominal pain, loss of appetite, flu like symptoms); AND,
    - Jaundice; OR, elevated liver enzymes (ALT) >400 IU/L.
  - Laboratory criteria include:
    - Anti-HCV-positive with a signal-to-cutoff ratio predictive of a true positive as determined for the particular assay as defined by CDC, OR positive for one of the following: HCV RIBA, HCV RNA nucleic acid testing, or HCV genotype.
    - AND IgM anti-HAV negative AND IgM anti-HBc negative.
  - Notes about acute HCV:
    - Serologic tests for anti-HCV do not distinguish between acute and chronic or past infection. Thus, other causes of acute hepatitis should be excluded for anti-HCV+ patients who have acute illness compatible with hepatitis.
    - The diagnosis of HCV can be made by detecting HCV RNA using gene amplification techniques (PCR). However, a negative PCR test does not exclude the possibility of HCV infection as a person may have intermittent viremia.

- **Confirmed Chronic/resolved (Past/Present) Case:** A case that is laboratory confirmed that does not meet the case definition for acute HCV.
  - Laboratory criteria
    - Positive by a specific assay such as one of the following: HCV RIBA , HCV RNA nucleic acid testing, HCV genotype, anti-HCV with a signal-to-cutoff ratio predictive of a true positive as determined for the particular assay (e.g., ≥3.8 for the enzyme immunoassays).

C. Case Investigation

- **DPH Responsibility:**
  - DPH maintains a statewide HCV registry. The DPH database registers new reports of HCV. DPH does not monitor changes in patient residence from one local health jurisdiction to another.

- DPH conducts statewide follow-up on all newly reported HCV with the ordering physician. The purpose of follow-up is to ascertain acute versus chronic case status, reasons for testing, and risk factors.
- DPH investigates all cases that meet the acute HCV case definition with the attending physician to determine if the patient is aware of their diagnosis. DPH will interview the case to provide education and determine risk factors.
- DPH provides line lists to LHDs so that education letters can be sent to newly reported confirmed cases.
- DPH consults with LHDs about HCV follow-up [(860) 509-7900].

- **Local Health Department Responsibility:**
  - Control measures, described below.
  - Staff conducting follow-up should be familiar with CDC HCV recommendations.

D. Control Measures

Working in conjunction with DPH, the following HCV control measures are recommended:

1. *HCV registry*
   - DPH does not recommend that LHDs maintain a registry of cases unless this is identified as a priority of the LHD and staffing resources are sufficient to keep the registry updated.

   - DPH will provide a line list of newly reported acute and chronic cases from the DPH registry. After an initial confirmed report of an acute or chronic case, DPH does not track changes in residence. LHDs should use line list information to evaluate ongoing need and to conduct activities in 2, below.

2. *Follow-up of chronic HCV patients*
   - Based on the monthly line listings received from DPH, confirmed chronic HCV patients should receive follow-up that includes a fact sheet or brochure and a list of medical resources available in the local health jurisdiction.

   - DPH can provide a sample cover letter, one-page fact sheet, and information about how to obtain free CDC brochures.

   - Follow-up activities. LHDs should provide services that include the following:
     - Education: Inform patients about the implications of HCV infection. Avoidance of alcohol and the need to discuss medications (even over-the-counter medications) with his/her physician. LHDs should maintain a list of locally available medical care providers where patients can be referred for ongoing evaluation and additional testing.
     - Prevention counseling: Cautions about not sharing needles, limiting blood exposure to household contacts, and low but measurable risk of sexual transmission. Offer to send a fact sheet (available from DPH).
     - Additional testing: Persons in risk groups for HIV or HBV should be referred for testing.
     - Vaccination: Against HAV and HBV, as appropriate.

Fact Sheet

What is hepatitis C?
Hepatitis C is a liver disease caused by the hepatitis C virus. Acute hepatitis C is a newly acquired infection that causes inflammation of the liver for six months or less. Chronic hepatitis C is inflammation of the liver for greater than six months.

How is hepatitis C spread?
Transmission occurs when blood or body fluids from an infected person enters the body of an uninfected person. This may happen through sharing of needles or "works" when "shooting" drugs, through accidental needle sticks, or from an infected mother to baby during birth. Sexual transmission can occur but is much less efficient than transmission through blood exposure. Hepatitis C is not spread through kissing, hugging, breastfeeding, sharing eating utensils or drinking glasses, coughing, sneezing, food, water, or casual contact.

What are the symptoms of hepatitis C?
Most people (80%) do not experience any symptoms. Some people experience abdominal pain, loss of appetite, fatigue, nausea and vomiting, dark urine, or jaundice (yellowing of skin and eyes).

How soon do symptoms appear?
Symptoms may occur from 2 weeks to 6 months after infection but usually within 2 months.

What are the long-term effects of hepatitis C?
Most infected persons (75-85%) develop a chronic infection. With chronic infection, the virus is not cleared from the body and can lead to liver disease in about 70% of persons.

How long is a person able to spread hepatitis C?
Hepatitis C appears in the blood one or more weeks prior to symptoms. Chronically infected persons carry the virus indefinitely, and therefore may transmit it to others if prevention methods are not undertaken.

Can you get hepatitis C more than once?
Yes. Hepatitis C antibodies are not protective, unlike some other infectious diseases. Therefore, it is important not to expose yourself to the blood of others.

How is hepatitis C diagnosed?
Only a clinician can diagnose hepatitis C. Diagnosis is based on a laboratory test for hepatitis C.

What is the treatment and medical management for hepatitis C?
People with hepatitis C should be evaluated by their doctor for liver disease. Treatment options are complex and not everyone needs treatment. Interferon and ribavirin are two drugs licensed for the treatment of persons with chronic hepatitis C. Combination therapy using interferon and ribavirin is currently the most popular treatment choice. Combination therapy can clear the virus in up to 5 out of 10 people with genotype 1 and in up to 8 out 10 people for genotype 2 and 3.

How can the risk of chronic liver disease be reduced among people chronically infected with hepatitis C?

See your doctor regularly. Additional tests may be needed to check to see if you have liver damage. Do not drink alcohol. Check with your doctor before taking any medications, even over-the-counter and herbal medicines may be toxic to your liver. You may need to get vaccinated against hepatitis A and B.

How can hepatitis C be prevented?

- People with hepatitis C should be aware that their blood and possibly other body fluids contain the virus.
- Do not shoot drugs. If you do, never share needles or works.
- Do not share toothbrushes, razors, needles, or other personal care items.
- If you are a health care worker, use standard barrier precautions.
- Hepatitis C can be transmitted though sexual contact, but it is rare. Use of condoms may help reduce the chance of hepatitis C transmission.
- Persons with hepatitis C should not donate blood, tissues, or organs.
- There is no vaccine to prevent hepatitis C infection.

This fact sheet is for information only and is not meant to be used for self-diagnosis or as a substitute for consultation with a health care provider. If you have any questions about the disease described above or think that you may have this infection, consult a health care provider.

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