Hepatitis C: The Silent Epidemic

Course Description

It is estimated that 4.5 million people in the United States are infected with the hepatitis C virus.[1] However, signs and symptoms of the disease will develop in only approximately 20% of these people. Moreover, signs and symptoms may take any time from years to decades to surface. Of those infected with the virus, only 30% are aware of their infection. These are some of the alarming facts that have prompted experts to dub hepatitis C, “the silent epidemic.” To effectively battle this epidemic, a variety of initiatives needs immediate attention. For example, health education and public awareness must be directed at healthcare professionals, policy makers, infected individuals, and the general public. Primary care physicians and specialists should discuss risk factors with patients to identify, test, and initiate appropriate measures for infected individuals. In addition, information should be disseminated to dispel myths about the disease and educate people about new developments in treatment and prevention. Healthcare personnel can take advantage of a number of resources to assist in the development of public awareness in their workplace and community. Without proactive efforts, loss of life from hepatitis C will surely surpass that of HIV infection.

Learning Objectives

After reading this article, participants should be able to:

- Describe hepatitis
- Distinguish hepatitis C from other types of hepatitis
- Compare the population of HIV sufferers to the hepatitis C population
- List the symptoms of hepatitis C
- Discuss how healthcare workers can prevent infection in their workplace
- List the treatment for hepatitis C and patient groups that ma not be eligible for treatment
- Plan a simple education and awareness program for high risk groups
- Use the resources to learn more about hepatitis C

Review article

HEPATITIS C: THE SILENT EPIDEMIC

ABSTRACT

It is estimated that 4.5 million people in the United States are infected with the hepatitis C virus.[1] However, signs and symptoms of the disease will develop in only approximately 20% of these people. Moreover, signs and symptoms may take any time from years to decades to surface. Of those infected with the virus, only 30% are aware of their infection. These are some of the alarming facts that have prompted experts to dub hepatitis C, “the silent epidemic.” To effectively battle this epidemic, a variety of initiatives needs immediate attention. For example, health education and public awareness must be directed at healthcare professionals, policy makers, infected individuals, and the general public. Primary care physicians and specialists should discuss risk factors with patients to identify, test, and initiate appropriate measures for infected individuals. In addition, information should be disseminated to dispel myths about the disease and educate people about new developments in treatment and prevention. Healthcare personnel can take advantage of a number of resources to assist in the development of public awareness in their workplace and community. Without proactive efforts, loss of life from hepatitis C will surely surpass that of HIV infection.

Hepatitis C: The Silent Epidemic

Each year, a barrage of new and old threats to our health is thrust on the public by the mainstream media. In many cases, the widespread concern caused by these media salvos is disproportionate to the actual or potential harm associated with the news reports. As a result, we are sometimes distracted from diseases that clearly threaten our health. Among the more serious public health problems, hepatitis C remains overlooked. It is even referred to by many as "the silent epidemic."[1]

Consider that 4.1 million people in the United States are infected with hepatitis C; yet, 80% of these people have no signs or symptoms of the disease.[2] Many people in the United States are more familiar with hepatitis A and B, 2 types of viral hepatitis that have been extensively studied and publicized through public health programs. However, hepatitis C is significantly different from these other 2 diseases. Hepatitis C is a deadlier disease, and because it is a relatively newer medical discovery, much less is known about the disease.[3]

It is important for radiographers to continuously learn and utilize current information and precautions regarding hepatitis C virus. Radiographers have been taught to utilize universal precautions when working with bodily secretions. These precautions have been in place for the past 20 years or so, corresponding to the AIDS epidemic. Certainly whether or not radiographers don gloves and other protective articles, must become habit, rather than choice. However, in reading about Hepatitis C, this critical choice could become the difference between routine safety and a lifetime of chronic liver disease or worse. Therefore, it is important that healthcare personnel working with patients realize the risks involved when precautions are not taken to prevent hepatitis C infection.

In the following article, many aspects of hepatitis C will be discussed, with a focus on the severity, prevention, and treatment of the disease. The discussion will also include information that can be helpful in planning simple education awareness programs for healthcare professionals, patient groups with high-risk behaviors, and the general public. The discussion will begin with an overview of hepatitis and a detailed description of hepatitis C.

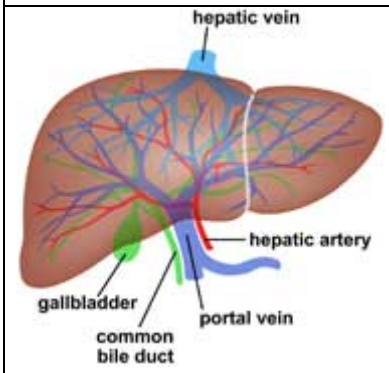
Hepatitis

Hepatitis is an inflammation or swelling of the liver that can develop from a variety of causes. These causes include viruses, alcohol, drugs (including prescription medications),

poisons, autoimmune disease, and opportunistic infections such as Mycobacterium avium or Cytomegalovirus. Hepatitis can lead to cirrhosis, liver cancer, and liver failure—which can all be fatal (See Table 1 for more information on the liver). Presently, at least 6 different types of hepatitis virus have been identified: hepatitis A, B, C, D, E, and G. The majority of hepatitis cases are caused by hepatitis A, B, and C. In fact, some of the other varieties of hepatitis virus only exist in the presence of hepatitis A, B, or C.[1,4]

Hepatitis C is caused by exposure to the hepatitis C virus. Viruses are small micro-organisms that primarily consist of DNA or RNA. A virus works by attaching to a cell and inserting its genetic material (DNA or RNA) into this cell. The virus causes the infected cell to manufacture more virus copies. Eventually, the infected cell dies and the virus copies are released to infect multiple surrounding cells, which are eventually killed. This process leads to a state of disease characterized by tissue damage and tissue death. In many cases, this process can be fatal.[1]

Table 1. Basics Primer on Liver Anatomy and Function[1,5]



Source: http://www.cincinnatichildrens.org/svc/alpha/l/liver/liver-anatomy.htm

The liver is the largest single internal organ in the human body. The main cellular unit of the liver is the hepatocyte.

This is a normal healthy appearing liver. The surface is smooth and uninform.

The surface of this liver is very nodular and deformed from severe cirrhosis.

Source:

http://www.gihealth.com/newsletter/34/cirrhosis.html

Basic functions of the liver include:

- detoxifies the blood by filtering out or breaking down waste products from metabolism and toxins (such as alcohol, prescription and nonprescription drugs, and pollutants from food or water)
- synthesizes proteins
- produces immune molecules
- produces bile for digestion
- maintains glucose levels by storing or releasing glucose, as needed
- controls the production and excretion of cholesterol

Hepatitis A virus is found in the feces of persons with hepatitis A and is usually transmitted person-to-person by placing items in the mouth (usually food or water) that have been contaminated by virus-containing feces. Hepatitis A is a short-term infection, typically resolving within 6 months without serious health problems.[6] According to the Centers for Disease Control and Prevention (CDC), there are approximately 150 000 new infections each year in the United States. There are 2 approved vaccines available in the United States for protection against hepatitis A.[1] Both vaccines are made from inactivated whole virus and require two vaccinations for complete immunization (VAQTA 2006; Havrix 2005).

The hepatitis B virus is found in infected blood and other body fluids. It is predominantly transmitted through sexual contact. This disease is much more infectious and prevalent than HIV, with an estimated 1.2 million chronic carriers in the United States.[7] Chronic carriers are those individuals who have had the virus in their system for more than 6 months. Without treatment, the risk of developing cirrhosis and liver cancer is greatly increased. Between 5% and 10% of newly infected people may develop chronic hepatitis or become carriers. A noninfectious recombinant vaccine is available to prevent hepatitis B, and requires multiple vaccinations for complete immunization (Engerix-B 2005).

Hepatitis C

Hepatitis C was initially known as “non-A, non-B hepatitis.” Research later found that the hepatitis C virus was actually an entirely different type of virus, known as an RNA virus.[8] The viruses that cause hepatitis A and B are DNA viruses.[1] The hepatitis C virus, sometimes referred to as the “stealth virus,” is special because of its capacity to continuously mutate. This ability allows it to cleverly evade the body’s immune system. At present, there are 6 genotypes and more than 50 subtypes of the hepatitis C virus.[3]

What Makes Hepatitis C Special?

Several attributes of hepatitis C make this disease a special public health concern. Whereas hepatitis A and B cause a brief, intense infection, hepatitis C causes chronic infection.[1] In fact, 80% to 90% of people infected with the hepatitis C virus will have the disease for years—many

of them for decades. It is the propensity of the virus to mutate that leads to high rates of chronic infection. When individuals become infected with the hepatitis C virus, the body begins the process of producing antibodies directed against the virus. However, by the time the antibodies are fully developed and ready to attack the original virus, the antibodies ultimately fail because the virus has already mutated to a new version. Because of this high mutation rate, chronic infection is able to develop in 55% to 85% of infected persons. This is significant because chronic liver disease will develop in 70% of chronically infected persons. In fact, hepatitis C virus is one of the leading known causes of liver disease in the United States and throughout the world.[8]

Chronic liver disease is currently the 10th leading cause of death among adults in the United States. Viral hepatitis plays a significant role in chronic liver disease because it is estimated that hepatitis C is responsible for 40% to 60% of chronic liver disease, whereas another 10% to 15% of chronic liver disease is caused by chronic hepatitis B.[9] Of those persons infected with the hepatitis C virus, 1% to 5% are likely to die from chronic liver disease. Consequently, liver disease caused by hepatitis C infection is currently the main indication for liver transplantation in the United States.[9]

In addition to liver disease, a small percentage of patients suffer from liver cancer. Scientists have demonstrated a strong association between hepatitis C and liver cancer.[3] Chronic hepatitis C virus infection can also have autoimmune, dermatological, hematological, neurological, ocular, pulmonary, and renal disease manifestations.[8] Because the virus is capable of continuously mutating, research to develop a vaccine is extremely difficult. At present, there is no vaccine to prevent hepatitis C. This is especially significant, given that hepatitis C is the most common, chronic, blood-borne viral infection in the United States.[9]

The Silent Epidemic

Hepatitis C has been referred to as the silent epidemic for many reasons. Most notably, only 20% of people with hepatitis C develop signs or symptoms of the disease (See Table 2 for list of symptoms).[2] Moreover, chronic liver disease caused by hepatitis C typically progresses at a slow rate during the first 2 or more decades after infection, without signs or symptoms. Because most people infected with the disease are thought to have been infected within the past 15 to 20 years, the true burden of infection may not become apparent for many years.[1]

Due to the insidious nature of this disease, routine testing of individuals at high risk for infection is of paramount importance. Healthcare personnel are on the front line of the battle and should become familiar with the risk factors and risk groups associated with hepatitis C infection.[9]

Table 2. Hepatitis C Symptoms*

- Fatigue
- Mild fever
- Muscle/joint aches
- Nausea
- Vomiting
- Abdominal pain

*80% of patients experience no signs or symptoms.

Adapted with permission from Hepatitis C Fact Sheet. Centers for Disease Control and Prevention Web site. Available at: http://www.cdc.gov/ncidod/diseases/hepatitis/c/fact.htm. Accessed August 28, 2006.[2]

Risk Factors and Risk Groups

The hepatitis C virus is transmitted primarily through percutaneous exposure to contaminated blood. Groups at highest risk for hepatitis C infection include low-income individuals, healthcare workers, military veterans, intravenous drug users, alcoholics, sexually active persons who have multiple partners, people in prisons, and homeless people.[1] Risk factors for hepatitis C virus infection include the following:

- Injection and other illicit drug use — Approximately 60% of new hepatitis C infections are associated with injection drug use. In addition, intranasal cocaine use has also been associated with infection.[8]
- Transfusion and organ transplantation — In 1992, hepatitis C virus antibody testing began to make this route of transmission rare. However, recipients of blood

transfusions and organ transplants before this date remain at considerable risk.[8]

- Correctional facility — Incidence rates (new infections) among prisoners are extremely high. Some prisons have reported rates between 80% and 100%.[1]
- Low-income groups — Inner-city hospitals have reported prevalence rates of approximately 20%.[1]
- Racial and ethnic groups — In the United States, the highest incidence rates (new infections) are among African Americans, followed by Native Americans, Hispanics, and Caucasians. [1]
- Hemodialysis — The prevalence of antibodies against the hepatitis C virus is approximately 8% among hemodialysis patients. Inadequate infection control practices are the likely cause of infection.[8]
- Healthcare workers — Needlestick injury has led to hepatitis C infection in approximately 3% to 4% of workers having such an episode; hepatitis C transmission has also been reported as a result of blood splash to the conjunctiva.[8] Radiographers work in a variety of settings with individuals from all walks of life. Handling bloody items could be a routine part of the job, especially in an emergency room. In addition, requirements for patient confidentiality may prevent radiographers from having all the information regarding patient diagnosis. For these reasons, radiographers must always assume patients and their bodily fluids are infectious and vigilantly follow universal precautions to protect themselves.
- Sexual activity — Sexual transmission reportedly occurs in the United States at a frequency of 2.7% among heterosexual couples in monogamous relationships.[8]
- Tattooing/body piercing — Contaminated equipment or supplies have been implicated in the transmission of the hepatitis C virus.[8]
- Mother/fetus transmission — The incidence of hepatitis C virus infection is 5% to 6% among infants born to women infected with the hepatitis C virus. However, the incidence is as high as 20% among children born to mothers coinfected with HIV and the hepatitis C virus.[8]
- Other — There is no evidence that casual contact causes hepatitis C infection. However, sharing household items that may be contaminated with blood should be avoided.[8]

Routine Hepatitis C Testing

Individuals at high risk of hepatitis C infection should be identified and provided appropriate testing and counseling. Table 3 contains guidelines for testing that are based on recommendations by the CDC. Testing is required to identify infected persons at risk for chronic liver disease and for identifying infected persons to prevent them from transmitting hepatitis C to others. Individuals who test positive for hepatitis C infection should receive a medical referral to evaluate the extent of any liver disease, counseling to facilitate antiretroviral treatment, and drug or alcohol abuse treatment, if appropriate. Additionally, immunizations against hepatitis A and B (people infected with hepatitis C virus can still become infected with hepatitis A or B virus), influenza, and pneumococcal virus should be considered. Individuals testing negative should receive counseling to reduce risky behavior, facilitate drug or alcohol abuse treatment, and coordinate appropriate immunizations.[9]

Table 3. Recommendations for Testing Based on Risk for Hepatitis C Virus Infection

Persons	Risk of Infection	Test Recommended?
Injection drug users (even if it was only once)	High	Yes
Recipients of clotting factors made before 1987	High	Yes
Hemodialysis patients	Intermediate	Yes
Recipients of blood and/or solid organs before 1992	Intermediate	Yes
People with undiagnosed liver problems	Intermediate	Yes
Infants born to infected mothers	Intermediate	After 12–18 months old
Healthcare/public safety workers	Low	Only after known exposure to hepatitis C positive blood by needlestick, sharps, or mucosal exposure

People having sex with multiple partners	Low	No**
People having sex with an infected steady partner	Low	No**

*Persons at risk for hepatitis C virus infection might also be at risk for infection with hepatitis B or HIV.

**Anyone who wants to be tested should ask his or her doctor.

Reprinted with permission from Hepatitis C Fact Sheet. Centers for Disease Control and Prevention Web site. Available at: http://www.cdc.gov/ncidod/diseases/hepatitis/c/fact.htm. Accessed August 28, 2006.[2]

Hepatitis C testing involves several different types of tests with a variety of purposes. Table 4 provides a brief overview of these tests. Although many tests have been recently developed to better assist clinicians with the diagnosis and treatment of hepatitis C, the first test was developed only 13 years ago, in 1993. Because of the recency of research developments on hepatitis C, a significant lag exists in the application of new knowledge and technology. In fact, a recent study has underscored this gap. Blood banks, most hospitals, and many private diagnostic laboratories have the capacity for testing for the hepatitis C antibody. However, a survey showed that less than 50% of state and local public health laboratories are able to perform any type of hepatitis C testing. This finding is yet another example of the challenges faced by public health officials.[9]

Table 4. Hepatitis C Testing

Type	Purpose

Anti-HCV tests	Detects the presence of antibodies to the virus. Does not determine if viral infection is active; only determines that there was exposure to the virus in the past. The CDC suggests that weakly positive tests be confirmed with the HCV RIBA test.
HCV RIBA test	This is an additional test to confirm the presence of antibodies to the virus. Does not determine if viral infection is active; only determines that there was exposure to the virus in the past.
HCV RNA test	Identifies whether the actual virus is in the blood, indicating an active infection with hepatitis C virus.
Viral Load or Quantitative HCV Tests	Measures the amount of virus in the blood and is often used before and during treatment to help determine the success of treatment.
Viral Genotyping Test	Determines the genotype of the virus. There are 6 major genotypes of HCV. Some genotypes are less responsive to treatment or require longer periods of treatment. It is often used before treatment is started to indicate the likelihood of treatment success and how long treatment may be needed.

HCV = hepatitis C virus; CDC = Centers for Disease Control and Prevention; RIBA = radioimmunoblot assay.

Reprinted with permission from Hepatitis C: Lab Tests Online. American Association for Clinical Chemistry Web site. Available at:

http://www.labtestsonline.org/understanding/analytes/hepatitis_c/test.html. Accessed August 30, 2006.[10]

HIV or Hepatitis C Virus: Which is worse?

HIV and hepatitis C virus represent 2 of the most significant public health challenges of our times. However, the public health threat from the hepatitis C epidemic continues to be grossly underestimated by a majority of people, politicians, and healthcare personnel in the United States. Hepatitis C is extremely deadly and is already an epidemic of unprecedented terms. For example, without rapid intervention to contain the spread of the disease, the death rate from hepatitis C will soon surpass that from AIDS.[1] Hepatitis C infection is already 4 times more prevalent than HIV infection in United States.[11] The current prevalence of hepatitis C is estimated to be 4.5 million Americans.[1] The worldwide prevalence is estimated to be 200 million, making hepatitis C one of the greatest public health threats faced in this century, and perhaps the next century.[1]

In addition to loss of life, hepatitis C is responsible for significant healthcare costs and economic losses from lost work.[1] The CDC has estimated that each year, hepatitis C causes $600 million in medical expenses and work-loss costs as a result of acute and chronic liver disease.[12] However, when calculating the total lifetime costs for the current 4.5 million Americans who are believed to be infected with hepatitis C virus, the cost is estimated to be as high as $9 billion/year.[1]

The hepatitis C and HIV viruses not only pose threats as individual infections, but public health experts have also discovered a deadly interaction between the 2 viruses. In fact, coinfection with hepatitis C, HIV, and/or hepatitis B is now recognized as a significant problem and is indicative of the need for integrating prevention strategies.[9]

Treatment of Hepatitis C

The current standard of therapy that is most effective for treatment of hepatitis C is a combination of alpha-interferon and ribavirin. This combination therapy provides sustained elimination of hepatitis C viral infection for more than 6 months in 30% to 40% of patients. Although significant side effects cause 10% to 20% of treated patients to stop treatment before completion of therapy, newer treatments that have entered the market are more tolerable and

have fewer side effects.[9] In addition, serious side effects do not occur in all patients.[3]

Although all patients with chronic hepatitis C are potential candidates for antiretroviral therapy, treatment is recommended for patients with increased risk of developing cirrhosis. In some patient populations, treatment decisions should be made on an individual basis because the risks and benefits of therapy are less clear. Many patients with chronic hepatitis C have been ineligible for clinical trials because of injection drug use, alcohol abuse, or comorbid medical and neuropsychiatric conditions.[3]

Treatment of hepatitis C in African Americans has presented significant difficulties. Research has found that the current standard of therapy is not as effective in certain patients with the genotype 1 virus. Studies have shown that because this type of virus is more prevalent in African Americans, the percentage of African Americans who respond to treatment is less than Caucasians. However, it is important to remember that treatment is still equally effective in many African Americans. In addition, newer treatments are showing encouraging results and some clinical trials have been designed to test elevated doses of new drugs in African Americans.[13]

Past or current alcohol abuse has significant negative ramifications for all patients receiving antiviral or interferon treatment.[9] Alcohol is an important cofactor in the progression of hepatitis C liver disease to cirrhosis and liver cancer.[3] Abstinence from alcohol is recommended for all patients with hepatitis C infection.[9]

Protect Yourself and Others from Hepatitis C

Healthcare professionals should protect themselves from hepatitis C by taking the following proactive steps[1]:

- Always wear gloves when wiping up blood, handling personal items (eg, tissues and tampons), or touching other sources of contaminated blood.
- Immediately clean up spilled blood with a strong disinfectant and keep skin injuries bandaged.
- Do not share razors, toothbrushes, pierced earrings, or other personal items with anyone.
- Use condoms if you have multiple sex partners or have sex with infected persons.
- Properly sterilize needles or other sharp implements for drugs, ear piercing, manicuring, or tattooing.

- Avoid using blood products outside the United States and Europe because testing for hepatitis C is not standard in many non-Western countries.
- Do not prechew food for a baby.
- Do not share gum that has already been chewed.

Health Education and Public Awareness

Hepatitis C is also known as the silent epidemic because it remains relatively unknown to the general public and measures to prevent the disease are still only slowly becoming standard practice among healthcare personnel. A recent survey commissioned by the American Gastroenterological Association (AGA) found that there are significant misperceptions about the disease among many, including physicians, the general public, and patients with hepatitis C. For example, 20% of the general population and 15% of patients with hepatitis C incorrectly believe that a vaccine for the disease exists. Another surprising finding was that only 55% of primary care physicians in the survey routinely asked their patients about risk factors, and only 30% of these primary care physicians tested for hepatitis C as part of a routine checkup.[11] Table 5 lists a number of myths that are currently hindering prevention and treatment of this disease.

Table 5. Some Common Myths and Facts about Hepatitis C Infection

Myth	Fact
Hepatitis C is not as common as HIV.	Hepatitis C virus now infects more than 4 times more Americans than HIV.[11]
Only people who use drugs on a long-term basis are at high risk for hepatitis C.	IV drug use, even used once or a few times many years ago, is a major risk factor for hepatitis C.[2]
Because hepatitis C is a long-term condition, treatment will still be as effective if I wait until later to start.	Patients treated earlier in the infection may respond better to hepatitis C treatment.[9]
Treatment does not work for African American patients.	New treatments have shown encouraging response rates in patients of African American descent.[13]

If hepatitis C were really damaging my health, I would have symptoms.	Symptoms of hepatitis C are often mild or absent altogether and 80% of people with hepatitis C have no signs or symptoms of disease. However, liver damage can occur with or without signs or symptoms of disease.[12]
The side effects of treatment are worse than the disease itself. **NO NEED TO GET PERMISSION FOR TABLE – I CREATED.**	Although side effects of treatment can be harsh, many patients find them manageable. Serious side effects do not occur in all patients.[9]

As indicated by the AGA survey, proper education of healthcare professionals remains an unmet need. Because hepatitis C was only recently identified in 1988, healthcare professionals are often unaware of current information concerning diagnosis, medical management, and prevention of this disease.[9] Vigilant levels of awareness are needed among healthcare professionals to maximize the identification of individuals infected with the hepatitis C virus. To increase awareness, coordinated education and communication efforts must be directed at healthcare and public health professionals, people at risk for infection, and the general public. This need to educate healthcare professionals certainly includes radiographers.

Although patient education is not the primary job of the radiographer, these healthcare personnel are certain to come in contact with more and more infected patients. Radiographers help provide physicians with important information for the diagnosis and treatment of hepatitis C. Although radiographers may not play a direct role in diagnosis and treatment, radiographers should be prepared to provide accurate information to patients or other interested individuals. By no means, should a radiographer initiate a dialogue about a patient's diagnosis or risk factors. However, in the event that the patient expresses a concern or question about the diagnosis or treatment of hepatitis C, radiographers should be prepared to respond with accurate, informative information, and encourage patients to seek specific information from their physician.

Education of healthcare professionals requires further development of continuing medical education programs; creation and dissemination of materials to assist healthcare professionals in identifying persons at risk for hepatitis C infection; and periodic updates of guidelines for the diagnosis, treatment, and prevention of hepatitis C. In addition, educational messages must be developed and distributed in communities with high prevalence rates of hepatitis C infection. In many cases, creating public awareness in these communities requires the development of culturally sensitive materials that account for language and literacy barriers.[9]

Summary

Hepatitis C is indeed a silent epidemic. Without a preponderance of signs or symptoms among the millions of individuals infected with the hepatitis C virus, this silent epidemic is poised to grow without challenge. This is especially true, given the difficulties in developing an effective vaccine. However, scientists have made significant strides in the development of hepatitis C tests and treatments. In addition, public awareness is beginning to exert pressure on policy makers. More citizens are asking for budget increases to provide adequate testing, counseling, and programs for public awareness.

The hepatitis C battle will require efforts at the global, national, state, local, and individual levels. Many resources are available to help in the dissemination of information. It is critical that healthcare professionals start getting more involved in the workplace and community so that hepatitis C no longer remains a silent epidemic.

Hepatitis C Resources

The National Centers for Disease Control

Hepatitis Branch

www.cdc.gov

(888) 443-7232

National Institute of Health

www.nlm.nih.gov/medlineplus/hepatitisc.html

Hepatitis C: An Epidemic for Everyone (Hosted by Dr. Everett Koop)

www.epidemic.org

The Hepatitis Health Line

(800) 700-8700

Hep C Connection Help Line

www.hepc-connection.org/

(800) 390-1202

Hepatitis Foundation International

www.hepfi.org/

(800) 891-0707

The American Liver Foundation

http://www.liverfoundation.org/

800.GO.Liver (465-4837) toll-free or

888.4HEP.USA (443-7872) toll-free

New References

ENGERIX-B [Hepatitis B Vaccine (Recombinant)] Prescribing Information: GlaxoSmithKline; 2005.

HAVRIX (Hepatitis A Vaccine, Inactivated) Prescribing Information: GlaxoSmithKline; 2005.

VAQTA (Hepatitis A Vaccine, Inactivated) Prescribing Information. Whitehouse Station, NJ: Merck & Co., Inc.; 2006.

CME Test

1. In the United States, HIV infection is more common than hepatitis C infection.

A. True

B. False

Answer: B

2. Hepatitis C is caused by a:

A. bacteria

B. virus

C. toxin

D. hepatocyte

Answer: B

3. In the United States, the number of people infected with hepatitis C is approximately:

A. 45 000

B. 450 000

C. 4.5 million

D. 45 million

Answer: C

4. Scientists have developed vaccines to prevent the following diseases:

A. Hepatitis A and B

B. Hepatitis B and C

C. Hepatitis C and D

D. Hepatitis A and C

Answer: A

5. _____ of people with hepatitis C have no signs or symptoms of disease.

A. 10%

B. 50%

C. 60%

D. 80%

Answer: D

6. Hepatitis C virus is primarily transmitted by exposure to contaminated:

A. water

B. food

C. blood

D. feces

Answer: C

7. The liver is the _____single internal organ in the human body.

A. largest

B. 2nd largest

C. 3rd largest

D. 4th largest

Answer: A

8. Which racial/ethnic group has the highest incidence rate of new hepatitis C infections in the United States?

A. African Americans

B. Hispanics

C. Native Americans

D. Haitians

Answer: A

9. According to a recent survey, less than _____ of public health laboratories are capable of performing routine hepatitis C testing.

A. 10%

B. 30%

C. 40%

D. 50%

Answer: D

10. In a recent survey, _____ of primary care physicians said they asked their patients about risk factors for hepatitis C infection.

A. 20%

B. 55%

C. 65%

A. 80%

Answer: B

11. Hepatitis C has been referred to as the silent epidemic because:

A. A majority of patients do not experience signs or symptoms.

B. A majority of patients experience temporary loss of speech from infection of the vocal cords.

C. A majority of patients experience total remission within 2 years of infection.

D. A majority of patients experience some significant loss of hearing.

Answer: A

12. The worldwide prevalence of hepatitis C is estimated to be:

A. 20 million

B. 120 million

C. 200 million

D. 1.2 billion

Answer: C

13. Chronic liver disease is currently the _____ leading cause of death among adults in the United States.

A. 1st

B. 2nd

C. 5th

D. 10th

Answer: D

14. Which group is at an increased risk for infection with hepatitis C virus?

A. People who routinely handle raw shellfish

B. People in correctional institutions

C. People who routinely handle raw meat

D. People who routinely work with raw sewage

Answer: B

15. Patients with hepatitis C are encouraged to completely abstain from the following activity:

A. Sex

B. Drinking alcohol

C. Eating raw fish

D. Receiving blood transfusions or blood products

Answer: B

16. Needlestick injury has led to hepatitis C infection in _____ of healthcare workers having such an episode.

A. 1% to 2%

B. 3% to 4%

C. 5% to 6%

D. 7% to 8%

Answer: B

17. Chronic liver disease develops in_____ of persons chronically infected with hepatitis C.

A. 7%

B. 17%

C. 50%

D. 70%

Answer: D

18. Scientists have not been able to establish a link between hepatitis C infection and liver cancer.

A. True

B. False

Answer: B

19. In what year was the first test for hepatitis C developed?

A. 1983

B. 1989

C. 1993

D. 1999

Answer: C

20. Approximately 60% of new hepatitis C infections are associated with:

A. hemodialysis

B. injection drug use

C. sexual activity

D. blood transfusions

Answer: B