

# 1 Overview of Viral Hepatitis

## IN THIS CHAPTER

- Introduction
- Purpose of and Audience for the TIP
- Terminology
- The Liver
- What Is Viral Hepatitis?
- Hepatitis A
- Hepatitis B
- Hepatitis C
- Other Types of Viral Hepatitis
- Co-Infection With Different Types of Viral Hepatitis
- Co-Infection With Viral Hepatitis and HIV
- Chapter Summary

*You come in here to stop drinking and using drugs; I don't want to die no more. I don't want to go, to live in a box. I don't want to eat out of the garbage. I don't want to go to jail. I want to change. And 2 weeks, 3 weeks into this thing, I'm just starting to feel right, and I get news that I got hepatitis C.*

— A Client's Perspective (Strauss, Astone, Munoz-Plaza, Hagan, & Des Jarlais, 2005, pp. 1821–1822)

## Introduction

An estimated 3.5–5.3 million people in the United States live with chronic viral hepatitis (Institute of Medicine [IOM], 2010). Viral hepatitis is often a silent disease whose symptoms and signs become evident only after the disease has caused severe liver damage. The symptoms of hepatitis can take decades to manifest, so many people who are infected with hepatitis are unaware that they have the disease and therefore do not seek treatment. As a result, between 2010 and 2020, an estimated 150,000 people in the United States could die of liver cancer or other hepatitis-related liver disease (IOM, 2010). For many of these people, substance use will be a major factor that contributes to or worsens their hepatitis-related outcomes.

All people who use or have used illicit substances are at risk of contracting viral hepatitis. Injection drug use (IDU) is the primary way of contracting hepatitis C, and people who use substances are at risk for contracting other forms of viral hepatitis. Substance use disorders (SUDs) do not cause viral hepatitis, but people can contract or spread some types of viral hepatitis by sharing needles and other drug paraphernalia. In people who have chronic hepatitis, continued use of alcohol contributes to and frequently accelerates liver damage (Bhattacharya & Shuhart, 2003), increasing the likelihood that the individuals will develop cirrhosis or liver cancer.

In 2010, the U.S. Department of Health and Human Services (HHS) convened an interagency working group on viral hepatitis, comprised

of experts throughout HHS to develop a comprehensive strategy for addressing the prevention, screening, and treatment of viral hepatitis, and for improving the coordination of care and treatment of individuals infected with viral hepatitis. The working group broadened the scope of expertise even further by soliciting information from other government agencies, professional organizations, community organizations, and members of the general public. As a result of many months of work by this diverse group of experts, HHS recently released *Combating the Silent Epidemic of Viral Hepatitis: U.S. Department of Health and Human Services Action Plan for the Prevention, Care and Treatment of Viral Hepatitis* (also called the Viral Hepatitis Action Plan) (HHS, 2011). This TIP supports the goals and objectives of the Viral Hepatitis Action Plan by providing information on the prevention and treatment of viral hepatitis and by encouraging behavioral health professionals to recommend hepatitis screening for their clients who might be at risk for hepatitis infection.

Viral hepatitis can be prevented and treated. Counselors, health professionals, and administrators in SUD treatment settings play an important role in promoting the prevention and treatment of viral hepatitis among their clients.

## Purpose of and Audience for the TIP

The main objective of this Treatment Improvement Protocol (TIP) is to improve care for clients with SUDs by increasing knowledge of viral hepatitis among staff in behavioral health programs that provide substance abuse treatment. Some surveys have shown that substance abuse treatment providers are not well informed about viral hepatitis (Strauss et al., 2006). Clients often perceive

that counselors do not have the information they need (Munoz-Plaza, Strauss, Astone, Des Jarlais, & Hagan, 2004). With up-to-date information, counselors, health professionals, and administrators in SUD treatment settings can encourage clients to understand the serious nature of hepatitis, risk factors, the importance of liver wellness, screening, treatment options, and ways to avoid spreading—or contracting—hepatitis.

Other behavioral health treatment providers (e.g., counselors in mental health treatment settings, nurses, mid-level providers) will also find useful information in this TIP. Information is provided in lay terms so that it can be understood by readers who do not have medical training.

## Terminology

Terminology in the medical field may differ from that used in the substance abuse treatment field. This TIP uses terms from both disciplines. Appendix B contains a glossary of terms used in this TIP.

Because the TIP is primarily focused on care for clients with SUDs, *counselor* refers to *substance abuse treatment counselor*. *Client* refers to people seeking services at behavioral health programs providing substance abuse treatment. Occasionally, the TIP refers to people seeking services at a medical facility; in these instances, the term *patient* is used. *People* refers to adults, unless otherwise indicated.

*Treatment program* refers to a behavioral health program providing treatment for SUDs. *Medical care* refers to care for the body (e.g., treatment for hepatitis) as distinct from *behavioral health care*, which is the subset of medical care that addresses mental, emotional, and behavioral issues. *Co-occurring* is used to refer to health conditions (e.g., SUDs, mental

disorders, hepatitis) that appear together in sequence or simultaneously; wherever this term is used, the pertaining conditions are indicated. *Hepatitis* refers to viral hepatitis infection.

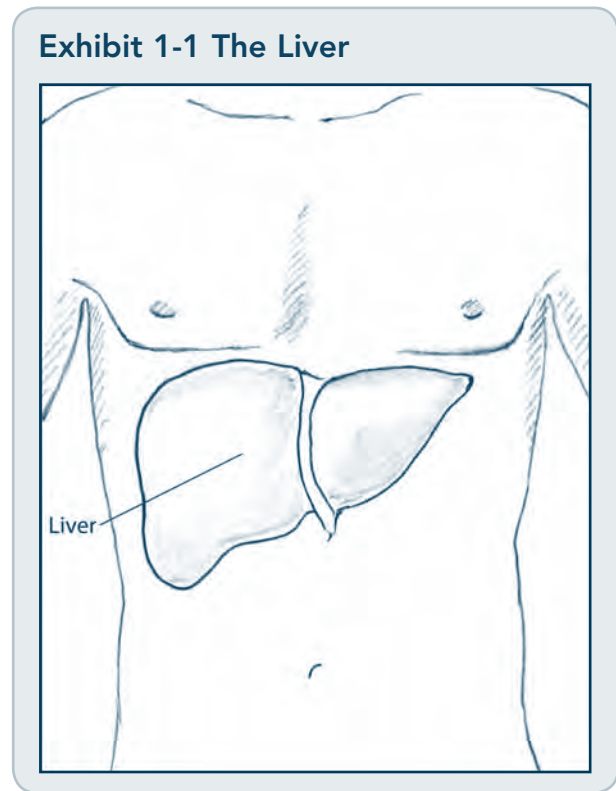
*Relapse*, when used alone, refers to relapse to substance use. Virologists sometimes use relapse to refer to the return of hepatitis after antiviral treatment, which here is referred to as *virologic relapse*.

## The Liver

To appreciate the impact of hepatitis, it is essential to understand the liver—the organ predominantly affected in people with hepatitis. The liver, located on the upper right side of the abdomen just beneath the rib cage (Exhibit 1-1), performs numerous functions essential to human life.

Blood passes from the intestines to the liver. Blood from the intestines contains nearly everything absorbed by the intestines, including nutrients and harmful or toxic substances (*toxins*). The liver breaks down toxins found in the blood and excretes them as harmless byproducts into the bile (a greenish yellow, thick, sticky fluid that aids in digestion) or back into the blood. Bile enters the intestine and leaves the body in stool. Byproducts excreted by the liver into blood are filtered out by the kidneys, then leave the body in urine. The liver also metabolizes drugs, alcohol, and prescription and over-the-counter medications, often making them inactive or easier to excrete from the body. If a person has a severely damaged liver, these substances build up in the body.

The liver manufactures several physiological products necessary for the body to function: cholesterol, bile, and other substances (e.g., clotting factors that are needed to stop



bleeding). The liver also stores sugar, fats, and vitamins for later use. Sugar is stored in the liver as glycogen, transformed into glucose, and released into the bloodstream when needed.

## What Is Viral Hepatitis?

*Hepatitis* is inflammation of the liver. It can be caused by viruses, alcohol or substance use, exposure to toxins, and certain diseases. *Viral hepatitis* refers to liver inflammation caused by one of several types of viruses that attack the liver. In the United States, these are primarily hepatitis A virus (HAV), hepatitis B virus (HBV), and hepatitis C virus (HCV) (Exhibit 1-2), but other types of hepatitis viruses do exist. The body can rid itself of infection in some cases. In others, the body cannot get rid of the infection by itself and the infection becomes chronic (continues indefinitely).

**Exhibit 1-2 Overview of the Most Common Types of Viral Hepatitis**

Category	Hepatitis A	Hepatitis B	Hepatitis C
Transmission route	Fecal–oral route	Blood and body fluids	Blood
Percentage of adults infected who develop chronic infection	0%	6%–10%	75%–85%
Immunity after infection	Yes	Yes	No
Vaccine available	Yes	Yes	No

Hepatitis can be acute, which means that the infection does not last longer than 6 months. If the body’s immune system cannot fight off the virus within 6 months, the disease is considered chronic. In the United States, three to five times more people are living with chronic hepatitis B or C than with human immunodeficiency virus (HIV). Chronic hepatitis can lead to very serious health consequences—even death—because of liver failure or related medical conditions.

Most people who have chronic hepatitis do not know it (IOM, 2010). In most cases, people with infection have no symptoms of the disease, or their symptoms are so mild they do not see a medical care provider about them. Symptoms of hepatitis include the following:

- Fatigue (tiredness)
- General feeling of being unwell (malaise)
- Flu-like symptoms (e.g., headaches, muscle aches, low-grade fever)
- Lack of appetite, weight loss
- Nausea and vomiting, abdominal pain
- Jaundice (new or uncharacteristic yellow tinge to skin and mucus membranes)
- Diarrhea
- Itching of the skin
- Tea- or dark-colored urine
- Pale bowel movements

A person with chronic hepatitis can remain symptom free for decades while the liver is silently damaged. As hepatitis progresses and causes more liver damage, the liver may become scarred, referred to as *fibrosis*. Fibrosis sometimes leads to *cirrhosis*, which is profuse scarring of liver tissue. When cirrhosis develops, changes in the liver’s structure compromise its ability to function. The *spleen* (an organ that fights infections and regulates the flow of blood in the body) may also be affected. Muscle wasting can occur, resulting from lack of appetite and the liver’s inability to produce crucial proteins that build muscles. Sometimes the abdomen and ankles swell because of the body’s increased difficulty with sodium handling and removing fluids and toxins. The person may develop jaundice. When liver damage is this extensive, serious complications are likely, including bleeding from the esophagus (varices) or stomach, abdominal swelling (ascites), and difficulty thinking and making decisions (encephalopathy). By the time these symptoms occur, liver damage is extensive, and the individual is at risk of liver failure or liver cancer—a condition that almost always has a poor prognosis.

### Hepatitis A

Hepatitis A never becomes chronic, and most individuals recover within 6 months. Once recovered, a person is no longer contagious and is immune to reinfection with HAV.

## **Modes of Transmission**

HAV is spread by the oral transmission of fecal matter (stool) of a person who is infected with HAV and it is extremely contagious. Minute amounts of fecal matter containing the virus left on a person's hands can contaminate water, food, or utensils, and a person who ingests this material can develop hepatitis A. HAV can survive outside the body for several days and in water for several months. People are most infectious during the 2 weeks before the onset of symptoms. HAV is not spread through casual contact. The virus is not present in semen.

## **Disease Burden**

An estimated one-third of U.S. residents have had HAV infection (Bell et al., 2005). The number of new HAV cases has declined by 92 percent since a vaccine became available in 1995. Nevertheless, approximately 3,000 new infections were investigated and reported in 2007, representing an estimated 25,000 infections during that year (Daniels, Grytdal, & Wasley, 2009). The primary risk factor in the United States for contracting hepatitis A is traveling to areas where HAV is endemic, followed by contact with someone who is infected with HAV, or having anal intercourse with an infected person. However, many people who contract hepatitis A do not report any risk factors (Klevens et al., 2010; Daniels et al., 2009).

## **Disease Course**

HAV infection is rarely life threatening, although severity and mortality may increase with age and underlying chronic liver disease. Signs and symptoms include fatigue, fever, loss of appetite, dark urine, and jaundice. When symptoms occur, they usually appear suddenly and generally disappear within a month. Hepatitis A can be serious when coupled with other forms of hepatitis or HIV.

## **Hepatitis A and Substance Use**

People who use drugs are at risk for acquiring hepatitis A. Outbreaks occur among people who inject drugs (Daniels et al., 2009; Wells, Fenaughty, Cagle, & Jaffe, 2006) and are associated with poor hygiene and low socioeconomic status (Crowcroft, 2003; Quaglio, Lugoboni, Messelani, Des Jarlais, & Lechi, 2006).

## **Prevention**

Hepatitis A is preventable. The most effective way to prevent HAV infection is through vaccination. The vaccine is given in two doses, 6 months apart. A combined HAV and HBV vaccine is also available.

The Centers for Disease Control and Prevention (CDC, 2010a) recommends hepatitis A vaccination for the following adults:

- People who use injection drugs
- Men who have sex with men (MSM)
- People with chronic liver disease
- People who receive blood clotting-factor concentrates
- People who travel to countries that have high rates of hepatitis A
- People with occupational risks of infection (e.g., workers in daycare centers, laboratories)

Despite recommendations for vaccination, many people are not vaccinated. Vaccination rates in high-risk groups range from 8 percent to 13 percent (Carey & Perlman, 2005; Chen & Cantrell, 2006). Moreover, half of those who had been vaccinated received only one dose instead of the two doses required for full protection. However, hepatitis A vaccination in the United States among children has been increasing since May 2006, when the universal vaccination of children (aged 12–23 months) was recommended. By 2008, coverage was estimated to be 40 percent in young children (CDC, 2010b).

Contraindications to receiving the hepatitis A vaccine include having a severe allergy to vaccine components and being moderately or severely ill at the time the vaccination is offered. All clients, especially pregnant women, should consult their medical care provider to determine whether they should get vaccinated against hepatitis A.

Washing hands frequently—especially after using the bathroom, changing a diaper, and before preparing food—helps prevent the spread of HAV.

## Hepatitis B

Hepatitis B can be acute or chronic. More than 90 percent of infants and 30 percent of children ages 1–5 years who have been exposed to HBV will remain chronically infected with HBV. By contrast, approximately 90 percent of adults with HBV infection alone (i.e., without co-infection) recover completely from HBV infection and do not become chronically infected (CDC, 2010c). For those with chronic infection, compromise of the immune system (e.g., by chemotherapy or HIV co-infection) places the person at risk for reactivation (Luetkemeyer, 2010; CDC, 2009).

### *Modes of Transmission*

HBV is very contagious; it is much more infectious than HIV (World Health Organization, 2009). HBV is spread through infected blood and other body fluids (e.g., semen) and can live outside the body for more than 7 days. Modes of transmission include:

- Sharing IDU equipment (e.g., needles, syringes, cookers, filters).
- Accidental needle sticks or other breaches of the skin, especially among those whose occupations expose them to blood (e.g., medical care workers, dentists).

- Unprotected sex with a partner who is infected with HBV.
- An infected mother passing the virus to her infant during delivery.
- Receipt of a blood transfusion or transplantation surgery from an infectious donor. (This is rare in the United States since mandatory screening was implemented in 1972.)

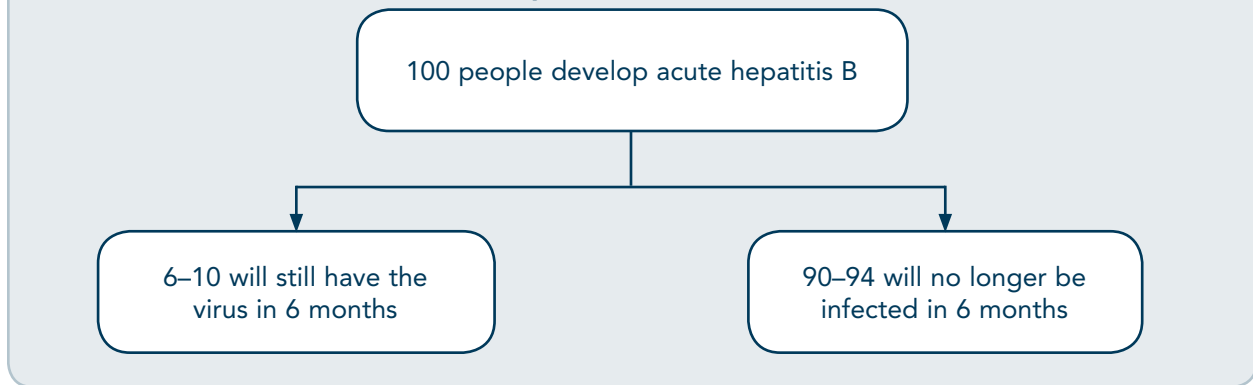
### *Disease Burden*

Hepatitis B is a major cause of liver disease worldwide. In 2007, there were approximately 43,000 new infections in the United States. Between 800,000 and 1.4 million people in the United States live with chronic hepatitis B (Wasley et al., 2010; Daniels et al., 2009). In the United States, Asian and Pacific Islanders and MSM are disproportionately infected with HBV.

### *Disease Course*

Approximately 35 percent of those infected exhibit symptoms. Usually, acute HBV infection alone is not life threatening.

Up to 10 percent of people with acute hepatitis B will develop chronic hepatitis after 6 months (Exhibit 1-3). Most of those with chronic infection remain symptom free, although they can infect other people. Some experience serious illness. HBV infections become chronic more frequently in people with compromised immune systems (e.g., people with HIV infection). Worldwide, hepatitis B is the most likely form of hepatitis to cause liver cancer, particularly hepatocellular carcinoma. Chronic hepatitis B can also result in cirrhosis of the liver, liver failure, and death. Daniels et al. (2009) estimate 3,000 people die in the United States per year from chronic HBV infection.

**Exhibit 1-3 Disease Course of Hepatitis B****Hepatitis B and Substance Use**

Three percent to 11 percent of people who inject drugs have chronic hepatitis B (Weinbaum et al., 2008). One study suggests that rates of asymptomatic HBV infection among clients on methadone maintenance may be as high as 25 percent (Bart et al., 2008). Alcohol use by people with hepatitis B damages the liver, which is already compromised with the hepatitis infection.

**Prevention**

Vaccination is the most effective way to prevent HBV infection. The consensus panel recommends HBV vaccination for the following adults:

- People who are infected with HCV
- People who are sexually active with or who share a household with a person with infectious HBV
- Men who have sex with men (MSM)
- People who inject drugs
- People with occupational exposure to blood (e.g., medical care workers, dentists)
- People who attend or work at institutions for people with developmental disabilities
- Hemodialysis patients or those with end-stage renal disease
- People who are infected with HIV

- Anyone with liver disease
- Anyone who lives in or travels to countries with high rates of HBV
- Adults in correctional settings

The HBV vaccine is given in three doses within a 6-month period. However, the most convenient way to provide immunization is with the combined hepatitis A/hepatitis B vaccine (sold under the brand name, Twinrix). It is administered in three intramuscular injections on a 0-, 1-, and 6-month schedule, or may be given on an accelerated schedule of four doses, given on days 0, 7, and 21–30 with a booster dose at 12 months (FDA, 2010a). Despite the availability of the HBV vaccine, many at-risk individuals have not been vaccinated. A study of people age 30 and younger who inject drugs found that only 22 percent had been vaccinated against HBV (Lum et al., 2008). Contraindications to getting the hepatitis B vaccine include having had a severe allergic reaction to a previous dose or to a component of the vaccine. Clients should discuss the vaccination with a medical care provider.

**Hepatitis C**

Hepatitis C can be acute or chronic, but it starts as an acute infection (that may go unrecognized). Unlike people with hepatitis

A and B, people who have hepatitis C and clear the virus do not develop immunity; they can become reinfected with the virus at a later date.

### **Modes of Transmission**

Hepatitis C is a blood-borne disease. IDU is the most common risk factor for acquiring hepatitis C. The virus can enter the body through any puncture in the skin (e.g., cuts, burns, sores), and travels, via the blood, to the liver. Risks of sexual transmission are unclear but appear to be low, especially compared with sexual transmission rates of HIV or HBV. Nonetheless, HCV infection rates are higher in people who have multiple sex partners. Infections have been reported in individuals with no known risk factors.

### **Disease Burden**

HCV infection is the most prevalent chronic, blood-borne infection in the United States (Alter et al., 1999). Approximately 3.2 million U.S. residents have chronic HCV infection (CDC, 2010c). Forty percent of chronic liver disease—the 10th leading cause of death in the United States—is caused by HCV.

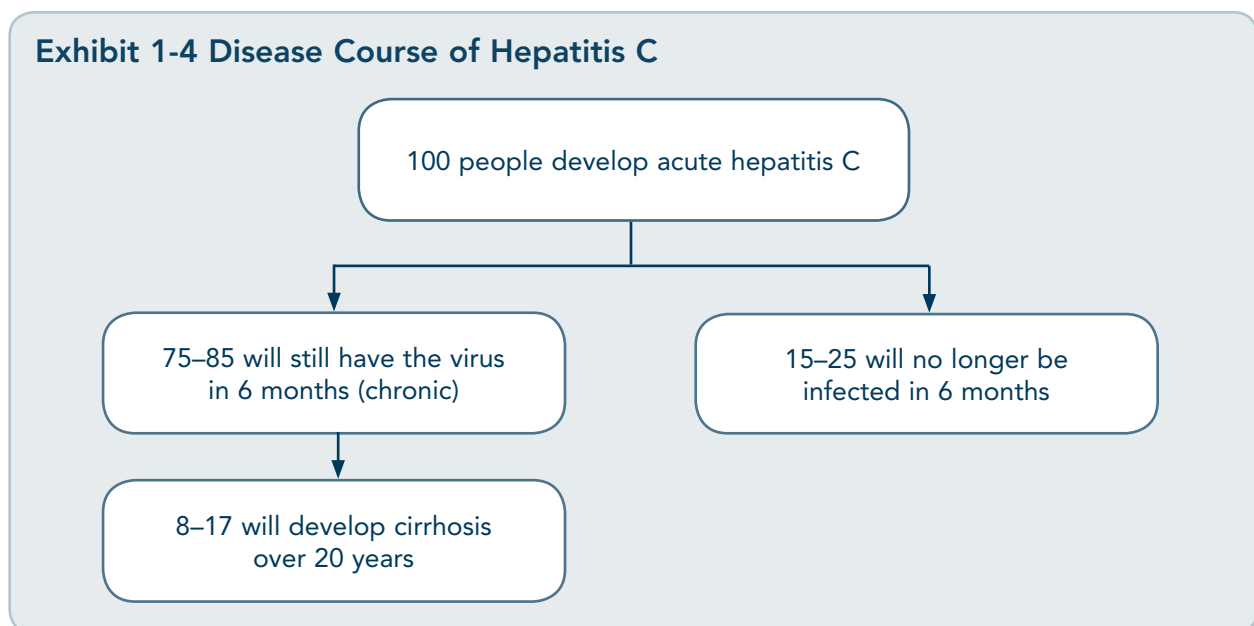
Hepatitis C is most prevalent among people born between 1945 and 1965, the majority of whom were likely infected during the 1970s and 1980s, when infection rates were the highest. CDC (2010c) estimated 17,000 new infections in 2007, and people who inject drugs account for more than half of the new cases.

### **Disease Course**

HCV can be detected in the blood within 1–3 weeks of transmission. However, the majority of people with hepatitis C are asymptomatic.

Of people who contract hepatitis C, 15 percent to 25 percent clear the infection, but 75 percent to 85 percent do not and the infection becomes chronic (CDC, 2010c) (Exhibit 1-4). Chronic HCV is insidious, usually progressing very slowly and with few or no symptoms for the first 20–30 years after infection. Symptoms often do not occur until the liver damage has advanced. As the disease progresses, the liver may develop fibrosis, which can progress to cirrhosis. Approximately 12,000 people die each year from HCV-related liver disease (IOM, 2010).

**Exhibit 1-4 Disease Course of Hepatitis C**





HCV infection appears to progress more quickly in men, people older than 50 at the time of infection, and people with concurrent HBV or HIV (Hézode et al., 2005). Mortality is high in people with HCV/HIV co-infection.

### **Hepatitis C and Substance Use**

HCV is highly contagious; people who inject drugs are more likely to contract hepatitis C than HIV (Garfein, Vlahov, Galai, Doherty, & Nelson, 1996). People who inject drugs are at high risk for becoming infected with HCV from sharing needles and drug use paraphernalia. Up to 91 percent of people who inject

drugs and share needles or other paraphernalia over a prolonged period will eventually acquire HCV infection (Abou-Saleh & Foley, 2008; Macias et al., 2008; Maxwell, Shinderman, Miner, & Bennet, 2002; Tseng et al., 2007). Liver disease progresses more quickly in people who have HCV and abuse alcohol than in people with only one of the conditions (Bhattacharya & Shuhart, 2003; Felsen, Fishbein, & Litwin, 2010).

### **Prevention**

There is no vaccine against hepatitis C. It can be prevented only by avoiding contact with contaminated blood.

#### **HCV—True or False?**

**You can get HCV infection by using the razor of a person who is infected with HCV.**

**True.** HCV is spread through contact with infected blood, such as may be found on a razor or toothbrush.

**You'll probably get HCV infection if you eat food from a plate that wasn't cleaned well.**

**False.** You can only get HCV infection through contact with infected blood.

**Hepatitis C is mostly spread through unprotected sex.**

**False.** The greatest risk factor is IDU. Sexual transmission of HCV is rare, except in people who are infected with HIV. However, some evidence suggests that HCV might be passed through sex, if the sex includes the possibility of blood exposure (Tohme & Holmberg, 2010).

**A vaccine has been developed to protect against HCV.**

**False.** There is no vaccine against HCV.

**Hepatitis C can be spread when people who inject drugs share their rinse water.**

**True.** When people who are infected with HCV use needles, drops of their blood are mixed with the rinse water. Anyone who uses the same rinse water could contract HCV.

**Most people who have HCV infection will become seriously ill and die from liver disease.**

**False.** One to five percent of people who have HCV will die from HCV-related diseases. People who have additional medical or substance use problems are at increased risk of developing serious liver disease, which can be fatal. People who have other types of viral hepatitis or HIV infection are also more likely to get serious liver disease. However, people who adhere to hepatitis C treatment and abstain from alcohol and drugs improve their chances for a healthy life.

Adapted from Strauss et al., 2006.

## Other Types of Viral Hepatitis

Hepatitis D virus (HDV) infects only people who are already infected with hepatitis B. HDV is transmitted the same way as HBV—through blood and other body fluids. Because hepatitis D can occur only in people with hepatitis B, vaccination against HBV infection also prevents HDV infection. When people who have hepatitis B contract hepatitis D, the result can be a *superinfection*, which has a poor prognosis.

Hepatitis E virus (HEV) was first identified in 1980, and little is known about it. Hepatitis E manifests only as an acute infection. It is most often transmitted through the fecal–oral route, with the highest rates in countries with poor sanitation. While vaccines are not available at this time, they are in development.

Hepatitis F virus (HFV) was identified in 1991, and researchers disagree on whether it is a discrete type of viral hepatitis. No diagnostic tests exist for HFV infection.

Little is known about Hepatitis G virus (HGV) infection, which was identified in 1995, but it does not appear to cause significant liver damage.

## Co-Infection with Different Types of Viral Hepatitis

Some people are infected with more than one type of hepatitis. Several studies (Cacopardo, Nunnari, & Nigro, 2008; Crockett & Keeffe, 2005; Wietzke-Braun, Manhardt, Rosenberger, Ramadori, & Mihm, 2007) indicate that when co-infection occurs, one of four scenarios is possible:

- No effect. In some cases, there is no known effect from the concurrent infections.
- More severe disease. In most cases, co-infection worsens the severity of one type of hepatitis.

### Clinical Scenario

- Sarah: "I don't see what the big deal is about hepatitis. I feel fine."
- Counselor: "Hepatitis is a silent disease. You could go for years feeling fine while hepatitis damages your liver."
- Sarah: "So, I get a little liver damage. I know lots of people with hep who just live with it."
- Counselor: "Let's work together during our sessions to better understand what hepatitis is really all about. It's true that some people can live with degrees of liver damage, depending on their overall health, but if your liver gets damaged enough, it won't work anymore. When your liver doesn't work, you become very ill. Your liver performs hundreds of functions that keep you alive. Right now, your liver is removing toxins, storing the nutrients your body needs, producing the materials you need to digest food, and doing many other things. If your liver stops working properly, your quality of life can be seriously lowered. What kind of life do you want for yourself?"
- Sarah: "I want to feel good and to be able to do all the things I like to do. I didn't realize that when a disease is 'silent,' it can actually be doing a lot of damage. I guess I can't just ignore my hepatitis and hope that it will go away."

- Activation of disease. To become an active disease, HDV infection depends on co-infection with HBV.
- Deactivation of disease. In rare cases, co-infection may suppress previously active disease.

## Co-Infection with Viral Hepatitis and HIV

### ***HAV/HIV Co-Infection***

HIV treatment may need to be temporarily suspended if HAV infection is acquired. Most studies suggest that this delay does not affect HIV progression. However, hepatitis A may be more severe and last longer in people who have both infections than in people who do not have HIV (Ida et al., 2002).

### ***HBV/HIV Co-Infection***

As many as 90 percent of people who have HIV infection have been infected with HBV (i.e., with prior resolved infections; Rodriguez-Mendez, Gonzalez-Quintela, Aguilera, & Barrio, 2000; Scharschmidt et al., 1992), and 10 percent to 15 percent of these people will become chronic carriers. Most studies suggest that this co-infection does not significantly change the likelihood that the HIV infection will progress to AIDS. However, the co-infection increases the likelihood that HBV infection will become chronic and progress quickly and that liver damage might be more severe (Alberti, Vario, Ferrari, & Pistis, 2005; Sulkowski, 2008).

### ***HCV/HIV Co-Infection***

HIV infection may increase a person's risk of contracting HCV through sexual contact (Delwaide, Bourgeois, Colle, & Robaey, 2002). Approximately 25 percent to 33 percent of people who are infected with HIV are co-infected with HCV (Alberti et al., 2005; Rockstroh & Spengler, 2004). Some studies (Eyster et al., 1993; Garcia-Samaniego et al., 2001; Lesens, Deschenes, Steben, Belanger, & Tsoukas, 1999; Pol et al., 1998) suggest that people who have HCV/HIV co-infection are more likely to develop cirrhosis, liver cancer, and liver failure than those with hepatitis only. The presence of both infections increases the risk of liver toxicity from HIV medications. However, liver damage slows when HIV medications are taken by preserving or restoring immune function and reducing HIV-related immune activation and inflammation. Therefore, the benefits of HIV medications may outweigh the risks (Panel on Antiretroviral Guidelines for Adults and Adolescents, 2011; Hammer et al., 2008; Sherman, 2007). If untreated, HCV infection progresses more quickly in people who are co-infected with HIV than in those who are infected with HCV alone.

## Chapter Summary

Viral hepatitis is an inflammation of the liver caused by a virus. Over time, inflammation can lead to scarring, which, in turn can lead to cirrhosis and eventually to liver failure.

The most common types of hepatitis in the United States are hepatitis A, B, and C.

### Hepatitis A:

- Is spread through contaminated fecal matter.
- Is never chronic and rarely serious (severity and mortality may increase with age and underlying chronic liver disease).
- Leads to immunity to subsequent HAV infection for individuals who have been infected and cleared the virus.
- Can be prevented through vaccination, abstinence, and safe injection practices.

### Hepatitis B:

- Is spread through blood and other body fluids.
- Can be acute or chronic.
- Is usually spread through IDU or sexual contact.
- Can be prevented through vaccination, abstinence, and safe injection practices.

### Hepatitis C:

- Is the most prevalent blood-borne illness in the United States.
- Is most commonly spread in the United States through IDU.
- Becomes chronic in 75 percent to 85 percent of people who are infected.
- Can take decades to develop symptoms.
- No vaccine is available, but abstinence and safe injection practices can prevent transmission.