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Fact Sheet	Hazard Evaluation System and Information Service
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Workplace Exposure to Hepatitis C

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What Is Hepatitis C?

Hepatitis C virus (HCV) is a virus carried in blood. HCV infection causes liver inflammation and can lead to cirrhosis, liver cancer, and death. Infection occurs when infected blood enters another person's bloodstream through broken skin (such as a needlestick) or through mucous membranes (the lining of the eyes, nose, and mouth).

A person newly infected with HCV is said to have "acute hepatitis C infection." Only 25-30% of all new cases of hepatitis C are diagnosed. About 60-70% of newly infected people do not have any symptoms, so most acutely infected people do not know they are infected and do not get medical treatment. About 20-30% of acutely infected people develop jaundice, in which liver damage causes yellowing of the skin and eyes. About 10-20% of acutely infected people have only non-specific symptoms such as loss of appetite, abdominal pain, and malaise (a general feeling of illness). Very rarely, acute infection can become "fulminant hepatitis," with sudden liver failure and a high risk of death.

Symptoms of acute hepatitis generally disappear within several months. About 15-25% of people infected with HCV completely eliminate the virus from their bodies during this time. The other 75-85% continue to carry the virus in the blood even if their symptoms disappear. This is called "chronic hepatitis C infection."

Chronic hepatitis C infection usually progresses slowly. Whether or not the person had symptoms during the acute infection, there may be no further signs or symptoms for the next 20 years or more. The first chronic symptom may be malaise. In some cases chronic hepatitis C causes only mild symptoms. However, 10-20% of chronic HCV patients develop cirrhosis of the liver within 30 years, and 1-5% develop liver cancer. Cirrhosis greatly increases the risk of developing liver cancer.

As long as the virus is still in the blood, it can be spread to others.

How Can I Tell If I Have Hepatitis C?

HCV in the bloodstream causes the body to produce antibody ("anti-HCV") that can be measured to determine whether a person has been infected. Antibody tests are sensitive, detecting anti-HCV in 97% of infected people, but they often give "false positives," so a positive test should be followed up with a more specific test such as recombinant immunoblot assay to confirm infection. Neither of these tests tells whether an infection is new or old, or whether virus remains in the bloodstream. Viral RNA can be measured in the blood, but even those tests are not fully dependable and are not approved by the Food and Drug Administration. A rise in liver cell enzyme levels in blood may indicate the onset of acute HCV.

How Common Is Hepatitis C?

In the United States, nearly four million people (about 1.5% of the population) are believed to be infected with HCV. HCV causes about 8-10,000 deaths each year (0.5% of all deaths). It is the leading cause of liver transplants. Although HCV accounts for fewer than 10% of all cases of acute viral hepatitis, it is the major cause of chronic hepatitis.

The number of new infections has dropped dramatically, from an estimated average of 230,000 per year in the 1980s to 30,000 in 1997. Identification of the virus has largely prevented its spread through transfusions, and increased awareness of bloodborne pathogens has reduced its spread through injection drug use, unprotected sexual activity, and workplace exposure incidents.

However, the majority of people infected with HCV are now aged 30-49. Thus, even though the number of new cases has plummeted, the number of deaths due to HCV-related chronic liver disease could double or triple during the next 10-20 years as these people reach ages at which complications of chronic liver disease are more likely. After that point, the number of deaths should drop dramatically, in line with the recent drop in new infections.

How Is Hepatitis C Spread?

HCV is spread only in blood, not through casual contact. In the U.S. nowadays, at least 60% of new cases are transmitted through injection drug use, even though transmission by this route has declined dramatically. Nasal cocaine use may pose some risk, possibly through sharing straws, but few HCV patients report cocaine use without injection drug use.

Before HCV was clearly identified in 1989, many cases were caused by blood transfusions or use of contaminated blood products. Today, HCV is almost never spread that way, because screening tests can exclude infected blood donors. The risk of infection through transfusion is now only about 0.001% per unit transfused, or about 0.075% per recipient.

About 15-20% of acute HCV patients have a history of exposure to an infected sex partner or to multiple recent sex partners, without reporting any other known risk factor. However, there is considerable evidence that sexual activity poses little risk; therefore, some other risk factor, such as injection drug use, may account for much of the apparent risk of sexual activity. At most, sexual activity may be responsible for less than 20% of new cases.

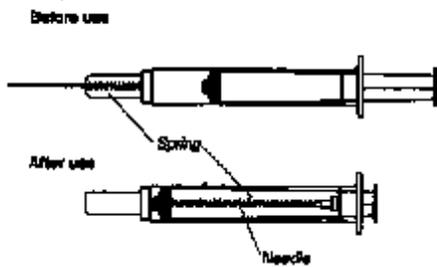
Health care workers face a significant risk of HCV infection. About 5% of all new cases, or about 1500 cases per year, are related to health care work. Although the prevalence of HCV infection is no greater among health care workers than among the entire U.S. population, it is higher than the rate among all people who do not inject illegal drugs.

The only workplace risk factor clearly associated with HCV infection is needlestick injury, mainly from hollow-bore needles. The risk of HCV infection after a single HCV-positive needlestick averages 1.8%, but may vary up to 1 in 10 (10%). Blood splashed into the eye can cause HCV infection, rarely. Health care workers can also transmit the virus to patients, but that appears to be very rare.

Several other risk factors account for a small fraction of HCV transmission. The rate of infection among infants born to infected mothers is 5-6% for those without HIV, and 14-17% among those with HIV. HCV does not appear to be transmitted through breast milk. Non-sexual household contact with an infected person may pose a small risk from either direct or inapparent exposure to blood, such as from sharing toothbrushes. In other countries, HCV infection has been associated with folk medicine practices, tattooing, body piercing, and commercial barbering, but there has been no evidence for transmission through these exposures in the U.S. In about 10% of cases, no risk factor can be found.

Figure 1

Spring-Loaded Needle-Syringe



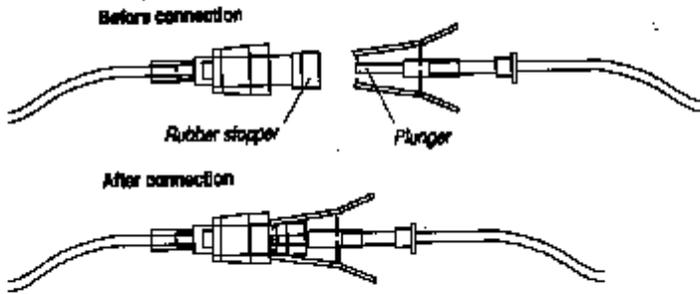
How Can the Spread of Hepatitis C in the Workplace Be Prevented?

Hepatitis C is a bloodborne pathogen, so all requirements of Cal/OSHA's Bloodborne Pathogens standard (California Code of Regulations, Title 8, Section 5193) apply. The Bloodborne Pathogens standard requires engineering controls, administrative controls, and personal protective equipment that suit the specific task and workplace. The standard will probably be revised in 1999 to specifically address HCV infection and safer needle devices.

Engineering controls include the use of equipment to isolate or contain a hazard, such as needle devices designed to prevent needlestick injuries (Figures 1 through 3), puncture-resistant containers for disposal of used sharps, and biological cabinets for certain procedures in medical labs. Safer needle devices are already in use in some health care settings. At least two studies show that safer devices can reduce the risk among health care workers. Blunt suture needles (Figure 3) reduced needlesticks during gynecologic surgery by 86%. Safer blood-drawing needles reduced needlesticks by 27-76% without reducing the quality of patient care.

Figure 2

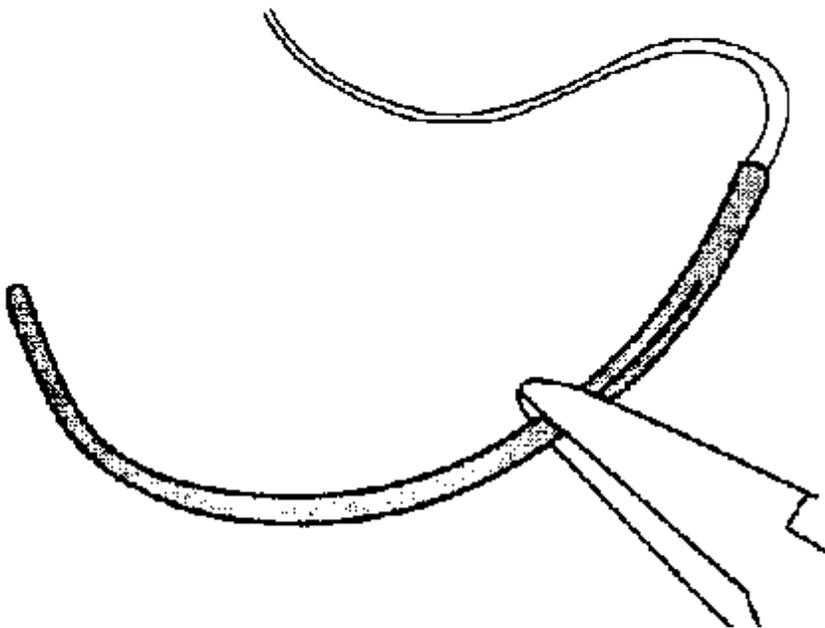
Needleless I.V. Connector



Administrative controls include safe work practices and training. The key safe work practice is to follow universal precautions procedures. Universal precautions involves treating all blood, and any body fluid that may contain blood, as if it is infectious. Employers must train workers in the use of safer devices, or they may not be used properly and any safety benefits may be lost.

Figure 3

Blunted Suture Needle





Personal protective equipment includes gloves, masks, eye protection, and impervious gowns and aprons. These all provide a barrier to blood and other infectious body fluids. Double gloving has been suggested to reduce the severity of needlestick and sharps injuries.

Also, the employer should ensure that there is adequate staffing so that health care workers have enough time and appropriate assistance to perform their duties safely.

What Should I Do If I Think I May Have Been Exposed to HCV at Work?

Report to your supervisor any incident that involves exposure to blood or other potentially infectious body fluids. Then go to the employee health center or your own physician for an exam, with as much information on the source patient as possible. The CDC recommends that workers who have been exposed to HCV-contaminated blood be tested for antibodies right away, and again six months later. The first test is to determine whether there had been any previous exposure. A positive antibody test should be confirmed with another test.

If you may have been exposed to HIV as well as HCV, see a clinician immediately to consider whether post-exposure HIV prophylaxis may be needed. Such treatment is most effective if started as soon as possible after exposure, preferably within 8 hours.

You have grounds to file a workers' compensation claim if your post-exposure blood test is HCV-positive and the infection can be linked to a workplace exposure. A previous positive test does not necessarily prevent a successful claim. In California, a claim must be filed within one year of when you first learn that you have an illness caused by your work.

Workers' compensation benefits include payments for medical expenses, lost wages, and retraining costs (if a job change is needed). Because chronic HCV symptoms do not appear until years after the exposure, it is important to keep the medical claim open, because you may have large future medical costs and disabilities. This kind of claim can be legally complex, and we recommend getting help from a workers' compensation attorney. We also recommend that you seek a referral to a hepatologist (a doctor specializing in liver disease) who is familiar with the most current therapies for hepatitis C, especially early treatment procedures.

Can Hepatitis C Be Treated?

Unlike hepatitis B, no vaccine is available for hepatitis C. There is also no specific treatment for people with acute HCV. Doctors commonly recommend that patients limit their activity, avoid high-protein diets, and do not drink alcohol. Patients should also avoid exposure to solvents and other chemicals that can stress or harm the liver.

Chronic hepatitis C can require lifelong medical attention. The only drug approved for people with chronic HCV is alpha interferon. Interferon has significant side effects. Also, about half of chronic HCV patients do not respond to interferon. Only 10-20% of people treated with interferon have shown lasting improvement. Another 30-40% show improvement and then relapse. The combined use of interferon and ribavirin produces lasting improvements in almost half of those patients; however, ribavirin can have serious side effects. Iron reduction therapy is also being investigated to improve the efficacy of interferon.

How Long Does It Take for Hepatitis C to Develop?

The incubation period for hepatitis C (the time between first exposure and onset of acute disease) ranges from 15 to 150 days, averaging about 50 days. The length of the incubation period depends on the amount of the virus to which a person is exposed; a large dose of virus results in a shorter incubation period. Chronic symptoms may not show up for 10 to 20 years after first exposure to the virus.

Where Can I Get More Information on Hepatitis C?

Resources for workers may include your county health office, your supervisor, your union, your employer's health and safety staff, your doctor, or your employer's doctor. You can also contact the American Liver Association at

1-800-GO-LIVER (465-4837)

or <http://www.liverfoundation.org>.

Workers who need information about workplace health and safety regulations or want to file a complaint can contact the nearest compliance office of Cal/OSHA. Look in the government section near the front of your phone book under "State of California, Industrial Relations, Occupational Safety and Health, Enforcement."

Employers who want free non-enforcement assistance to determine compliance with workplace health and safety regulations and to evaluate and improve workplace health and safety can contact the nearest office of the Cal/OSHA Consultation Service. Look in the government section near the front of your phone book under "State of California, Industrial Relations, Occupational Safety and Health, Consultation." Cal/OSHA Consultation Service offers a useful booklet called the Bloodborne Pathogens Resource Package. It includes interpretations of the standard in question-and-answer form.

California workers, employers, and health professionals with questions about workplace hazards can contact HESIS at (866) 282-5516.

Some Questions and Answers About Hepatitis C

Q: Can I get hepatitis C from casual contact with my co-workers?

A: No. Hepatitis C is a bloodborne disease and is not spread by casual contact.

Q: Can a health care professional with chronic HCV still work with patients?

A: Yes. There are no work restrictions at this time. Of course, good aseptic technique is especially important. The risk of transmission of HCV from a health care worker to patients appears to be very low, but at least one instance has been reported.

Q: Is it easy to test for HCV infection?

A: Enzyme immunoassays (EIAs) are sensitive and inexpensive, so they are suitable for initial screening. However, false positives are not uncommon, so a more specific test such as the recombinant immunoblot assay (RIBA) is recommended for confirmation of positive EIA results.

Q: Can you get hepatitis C more than once?

A: Yes. There appears to be no cross-immunity for the six or so genetically different hepatitis C viruses.

Q: Should I be vaccinated for hepatitis A and B?

A: Yes. CDC recommends hepatitis A and B vaccination for all patients with chronic HCV infection.

Q: Is there any test that can predict whether someone will get better or worse?

A: No. It is not yet known why certain people can eliminate the virus while others cannot, or why some develop serious chronic symptoms while others do not. However, infection with hepatitis A or B, drinking alcohol, or exposure to other solvents that affect the liver increases the risk of chronic symptoms.

Q: Is interferon therapy expensive?

A: Yes. A interferon alone costs at least \$700/month, and \$1440/month for combined therapy.