What is hepatitis C?

Hepatitis C is an infectious virus that predominantly attacks the liver. An estimated 270 to 300 million people worldwide are infected with hepatitis C. Once exposed only about 15% clear the virus. Thus, in 85% of individuals the virus persists and causes inflammation of the liver. After many years this process can lead to progressive scarring of the liver known as fibrosis.

Once advanced scarring occurs, this is called cirrhosis. In some cases, those with cirrhosis will go on to develop liver failure or liver cancer.

Most people with hepatitis C are asymptomatic. On the other hand those with cirrhosis may experience signs and symptoms of liver failure:

- yellowing of the eyes and skin known as jaundice
- fluid retention with a swollen stomach (ascites) or ankles (edema)
- fatigue and weakness
- confusion known as encephalopathy from an accumulation of ammonia
- weight loss and in particular a loss of muscle mass
- a longer than usual amount of time for bleeding to stop

When liver failure occurs a patient should be referred for a liver transplant evaluation. End-stage liver disease has become the leading indication for liver transplant in the United States.

Who is at risk for hepatitis C?

Hepatitis C can be acquired through contact with an infected person’s blood. You could possibly get hepatitis C if you:

- are born to a mother infected with hepatitis C
- had sex with an infected person
- received a tattoo or piercing with unsterilized tools that were used
on an infected person
- had an accidental needle stick with a needle that was used on an infected person
- used an infected person’s razor or toothbrush
- shared drug needles with an infected person

Hepatitis C cannot be spread by:
- shaking hands with an infected person
- hugging an infected person
- sitting next to an infected person

You can avoid getting hepatitis C if you:
- wear gloves if you have to touch another person’s blood
- use a condom during sex
- do not share toothbrushes, razor blades, or nail clipping devices
- make sure any tattoos or body piercings you get are done with sterile tools
- do not share drug needles

What blood tests should be performed to screen for hepatitis C?

Liver Enzymes: Damage to the liver by the hepatitis C virus can cause elevations in liver enzymes. These are markers of inflammation. They do not give any information about scar or fibrosis. The two enzymes commonly measured are alanine transaminase (ALT) and aspartate transaminase (AST). Anyone who is suspected of having hepatitis C should have these enzymes checked.

Serologic Tests—Anti-HCV Antibodies: This is a blood test that detects antibodies to the hepatitis C virus. These antibodies indicate exposure to hepatitis C, but do not determine if there is an ongoing infection present. All persons with anti-HCV antibodies need additional testing for the presence of virus to determine whether a current infection is present (see Virologic Tests).

Virologic Tests: The presence of the virus is detected using methods such as polymerase chain reaction (PCR), transcription mediated amplification (TMA), or branched DNA (b-DNA). These blood tests determine whether the virus is present and can help quantify the amount of virus present in the blood (known as the HCV viral load). The viral load does not give an indication about disease severity (how much fibrosis is present) or disease progression (how quickly or slowly fibrosis is forming). However, it is particularly useful when determining a patient’s response to interferon-based therapy.

Genotype: In people with confirmed HCV infection, genotype testing is generally recommended. This blood test determines the strain of hepatitis C with which one is infected and is used to evaluate the response to and determine the required length of interferon-based therapy. Approximately 70% of Americans are infected with genotype 1a or 1b. Genotype 2 and 3 are other common genotypes seen in the United States. Rarely are people infected with other genotypes.

When should a liver biopsy be performed?

A liver biopsy is performed to determine how much damage the hepatitis C virus is causing and whether treatment should begin. It is usually performed as an outpatient procedure. The most common type of biopsy is with a needle that is passed through the skin (percutaneous needle biopsy).

An ultrasound examination is often performed before the biopsy to pinpoint the safest location for placing the needle. Then a local anesthetic is administered to numb the area around where the needle will be inserted. The biopsy itself is done very quickly, as the needle is passed into and out of the liver in less than a second. The procedure carries a small risk of bleeding, pain, and puncturing of the lung, gallbladder or bowel.

During a percutaneous liver biopsy, a special needle is inserted into the liver to remove tissue for microscopic examination.
What are the stages of liver disease?

There are 4 stages of fibrosis: stages 1-4. Anyone with stage 0 or 1 fibrosis is thought to have mild hepatitis C, and anyone with stage 2 or more disease may be at risk for developing cirrhosis. Those with liver disease at stage 2 or more should be considered for therapy.

Who should be treated? And what is the success of treatment?

Spontaneous clearance of the hepatitis C virus occurs rarely. Thus, the majority of patients with chronic hepatitis C will not clear it without treatment.

The current standard of care treatment is a combination of Pegylated interferon-alpha-2a or Pegylated interferon-alpha-2b (brand names Pegasys® or PEG-Intron®) and the antiviral drug ribavirin for a period of 24 or 48 weeks, depending on hepatitis C virus genotype (24 weeks for genotype 2 and 3 and 48 weeks for genotype 1).

Treatment is generally recommended for patients with proven hepatitis C virus infection, persistently abnormal liver function tests and a liver biopsy that shows significant fibrosis. Sustained clearance of the virus after therapy is completed (known as the sustained viral response or SVR) occurs in 70-80% of those infected with HCV genotypes 2 and 3 and in ~45% of those infected with genotype 1.

If treatment with pegylated interferon plus ribavirin does not produce a 2-log viral load reduction (100-fold) or complete clearance of the virus (termed “early virological response”) after 12 weeks, the chance of treatment success is less than 1% and it is usually recommended that therapy be discontinued in such cases.

Will I need a liver transplant if I’m hepatitis C positive?

It is estimated that only 15% of hepatitis C-infected patients will go on to develop cirrhosis during their lifetime. Thus, the majority will never need a liver transplant.

When is someone at risk for liver cancer if they have hepatitis C?

Liver cancer generally occurs only in those who have advanced fibrosis or cirrhosis. In these patients it is recommended that routine screening for liver cancer with an abdominal ultrasound and AFP (tumor marker tested in the blood) occur every 6 months.
Why Choose Us?

California Pacific’s Liver Disease Management and Transplant Program offers comprehensive specialty care for adult end-stage liver disease. We emphasize ongoing communication with referring physicians and incorporate them into the decision process of their patient’s medical management. We follow up our care with an organized discharge report to the referring physician.

For patients requiring hospitalization, we have a dedicated critical care liver unit, hospitalists who specialize in hepatobiliary and pancreatic disease, physician assistants, on-call anesthesia staff and a specialized O.R. nursing team. At California Pacific, our focus is on providing experienced, personalized care for all patients.

Our hepatologists and hepatobiliary surgeons are members of Sutter Pacific Medical Foundation, a not-for-profit medical organization that provides primary and specialty care, combining the latest in medical technology with a compassionate touch. Sutter Pacific doctors deliver health care services in San Francisco, Marin, Sonoma and Lake Counties, with additional outreach locations throughout Northern California. The relationship between Sutter Pacific physicians and local Sutter Health facilities helps link both doctors and patients with hospital services, enabling the highest quality care delivery. For more information visit www.sutterpacific.org.

Research and Innovation

It is a very exciting time in the study of hepatitis C. Many new antiviral agents that work directly on the virus are in clinical development. These include agents that work to block the protease and polymerase enzymes, and are targeted against genotype 1—a more difficult strain to clear. Early phase studies suggest that these agents will substantially improve the clearance rates of hepatitis C genotype 1 virus.

Our Hepatology Research Center has a comprehensive clinical research program, and we are active in many trials of new antiviral agents. We also have a Liver Immunology Laboratory that serves as a hub for collaborative viral hepatitis research in the Bay Area.

We are seeking patients with hepatitis C to participate in clinical research studies. Working with our hepatologists, the research coordinators meet patients interested in studies and monitor their treatment. If you are interested, please talk to your physician. Study locations are available in San Francisco, Oakland and Sacramento. Clinical trial information is available on the Web at www.cpmc.org/liver.

For more information

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