

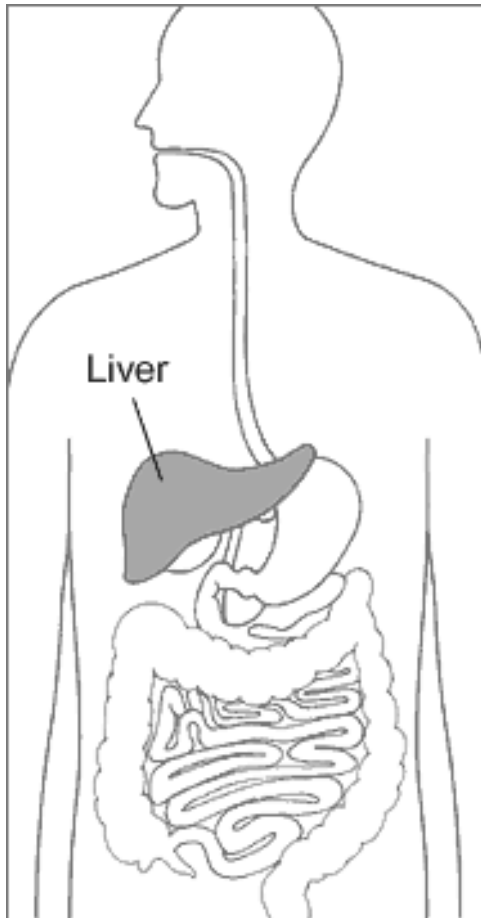
**TRAINING MANUAL FOR
TREATMENT ADVOCATES**

**HEPATITIS C VIRUS
& COINFECTION
WITH HIV**

SECTION 2: ABOUT THE LIVER

- The liver is the largest organ inside the body that has many critical functions
- When the liver becomes very damaged (such as by chronic viral hepatitis), it cannot work properly
- Serious liver scarring is called ***cirrhosis***
- Cirrhosis can lead to life-threatening complications such as liver cancer and liver failure

The Liver Performs Many Important Functions



- The biggest organ inside the human body
- On the right side, underneath the rib cage
- Works as a filter and processing plant
- Anything you eat, drink, and inhale passes through the liver
- Also breaks down herbal remedies, vitamins, and drugs

Each day, your liver

- Filters waste from the blood;
- Stores vitamins, minerals, and iron;
- Changes food into energy;
- Makes bile (a liquid that your body uses to digest fat);
- Helps balance sugar and hormone levels;
- Makes cholesterol; and
- Creates the hormone that helps to produce platelets, which stop bleeding by clotting blood.

Immune Response to Viral Hepatitis Infection Causes Liver Damage

- The immune system tries to get rid of infected liver cells by surrounding them and walling them off
- Over time, this creates scarring in the liver
- Although the liver grows new cells, cells that are already scarred cannot become unscarred
- As the scarring worsens, the liver hardens, making it more difficult for blood and other important fluids to pass through it
- These fluids, which are usually filtered by the liver, can build up to toxic levels in the bloodstream when the liver is too damaged to function

Liver Damage from HCV Happens Slowly, Usually over Decades

- It can take from 15 to 50 years for an HIV-negative person who has chronic hepatitis C to develop cirrhosis
- Having chronic HCV does not always mean that you will have serious liver damage, or that you need treatment
- Some people live with hepatitis C for many years and will never have liver damage

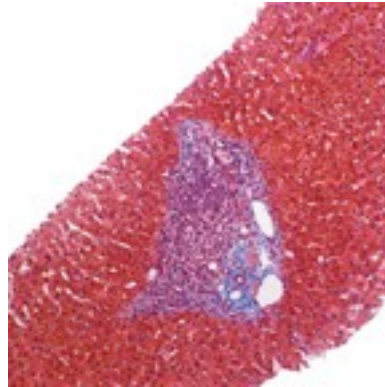
Some Things Cause Faster Liver Damage from Viral Hepatitis

- Being HIV---positive—especially if you got HCV after HIV
- Being coinfectd with HBV and HCV
- Drinking alcohol, especially heavily
- Age over 40
- Having fat in your liver (a condition called *steatosis*), usually in overweight people, heavy drinkers, or people with metabolic disorders
- Being male (but researchers don't understand why)
- The amount of time you have had hepatitis C—the longer you've been infected, the more likely you are to develop liver damage

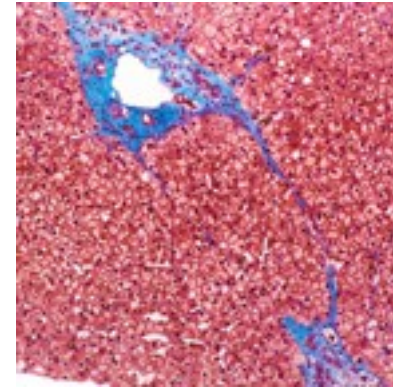
Stages of Liver Damage



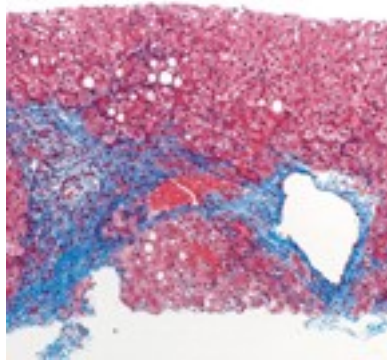
No Fibrosis (F0)



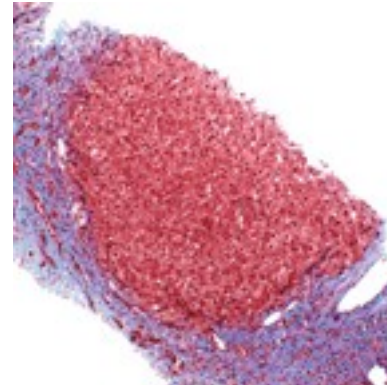
Mild Fibrosis (F1)



Mild–Moderate Fibrosis (F2)



Moderate–Severe Fibrosis (F3)



Cirrhosis (F4)

Stages of Liver Damage

- Some people develop mild liver scarring, called ***fibrosis***
- Having HCV and being overweight can cause fat to build up in the liver, a condition called ***steatosis***
 - People with steatosis are at higher risk for liver damage
- ***Compensated cirrhosis*** means the liver is still able to function even though it is scarred
 - People with compensated cirrhosis are at risk for liver failure, liver cancer, and other serious complications

Stages of Liver Damage

- Liver failure, also called ***decompensated cirrhosis, or end-stage liver disease*** (ESLD), means that the liver can no longer do its job, and that a liver transplant is necessary
- Liver cancer, also called ***hepatocellular carcinoma*** (HCC), is very serious
 - It is very difficult to treat, especially if it is not caught early
 - Although there is not a standard test for liver cancer, doctors use a combination of tests to screen for liver cancer
 - Researchers are working to develop better methods for early detection of liver cancer

Preventing Liver Disease

- **Preventing development or progression of liver disease by getting rid of HCV is the primary goal of HCV treatment**
- It is important for people to find out if they have HCV, because treatment doesn't work as well in people who already have cirrhosis
- People with cirrhosis remain at risk for liver cancer even after they have been cured of HCV, and should be screened regularly

Alcohol: Harmful to the Liver

- Alcohol is hard for the liver to break down, even in people who don't have hepatitis C
- In people with HCV, alcohol hurts the liver by increasing inflammation and scarring, which leads to cirrhosis
- Heavy drinking increases the risk for cirrhosis in people with all types of viral hepatitis, including HCV
- Even though experts have not agreed on a safe amount of alcohol, many recommend complete abstinence from alcohol, or limiting it to a small amount on special occasions

Alcohol: Harmful to the Liver

- Some studies found that
 - **men** who drink 50 milliliters of alcohol (**4 to 5 servings** of mixed drinks, shots, glasses of wine, or small bottles of beer) a day or more, and
 - **women** who drink 30 milliliters of alcohol (**2 to 3 servings**) a day or more are at higher risk for liver damage than people who drink less or not at all
- **Quitting or cutting down on drinking can be very difficult, but drinking less—or not at all—may be the most important thing a person with hepatitis C can do to prevent liver damage**

Street Drugs

- People who regularly use heroin, cocaine, and crystal methamphetamine may not be getting enough sleep or eating well, and may be under a great deal of stress
- People who don't have access to clean injection equipment are at risk for infections such as HIV, HBV, and HCV (including reinfection after being cured of the virus)
- For these reasons, using street drugs (*illicit drugs*)—especially on a daily basis—can have a negative overall impact on a person's health

Street Drugs and the Liver

- **There is very little research or information on whether or not street drugs cause or worsen liver damage in people with chronic hepatitis**
- Most research on street drugs has been done *in vitro* (in a test tube), not *in vivo* (in the human body). What happens inside the human body is often very different from what happens in a test tube, so it is hard to know how the results from an in vitro study relate to what actually happens in a person's body
- The purity of street drugs varies. The other substances that are added to street drugs may be harmful to the liver, although the drug itself may not be
- This makes it more difficult to know the impact of street drug use on chronic hepatitis

Street Drugs and the Liver

- **Occasional use of marijuana has not been found to be harmful**
- One study done in the pegylated interferon-era found that smoking marijuana during HCV treatment helped people to deal with side effects and complete their treatment
- Some researchers have found that daily marijuana use (one joint or more per day over several years) reduced risk of ***nonalcoholic fatty liver disease***, or a build-up of fat in the liver, in HIV/HCV coinfecting people
- Some researchers have found that daily marijuana use can cause fibrosis faster in people with chronic HCV
- But other studies have not reported a link between liver scarring and marijuana use

Prescription Drug Use

- Some people use prescription drugs, including prescription opioids like oxycodone and hydromorphone, to get high
- This can be risky because they may interact with other medications, causing lowered or increased drug levels in a person's body
- If drug levels are too low, medications may stop working
- In some cases—such as with HIV medications and antibiotics—drug resistance can develop because there is not enough drug in a person's system to stop viruses and bacteria from reproducing
- Drug levels that are too high can also be dangerous, since they can increase drug toxicity and side effects, or cause an overdose

Prescription Drug Use

- **For example, benzodiazepines as midazolam interact with**
 - alcohol
 - caffeine
 - sleeping pills
 - some antidepressants and anti-anxiety drugs
 - some antibiotics
 - hormonal contraception (birth control pills)
 - some of the drugs used to treat TB, fungal infections, high blood pressure, and heart problems
 - and even cold medications (among others)

Drug Overdose

- The risk of overdosing on anti-anxiety and pain medications may be higher in people with hepatitis—induced cirrhosis, since they are broken down by the liver
- Include benzodiazepines, opioids, and anesthetics (alprazolam, diazepam, midazolam, triazolam, fentanyl, and lidocaine)
- People who have recently completed detox programs or were released from incarceration are also at increased risk of overdose due to reduced tolerance to their drugs of choice.

Overdose Prevention

- Overdose from prescription and street opioids can be prevented with **naloxone**, which reverses an opioid overdose by blocking the effects in the body.
 - Nasal spray or muscle injection
 - Does not work for overdoses of benzodiazepines, cocaine, or amphetamines without opioids
- An overdose is a medical emergency and the person should receive medical care as soon as possible
- Along with opioid substitution therapy, also known as ***medically assisted treatment***, naloxone can prevent and reduce overdose deaths

Other Medicines and Supplements

- Some antibiotics, traditional medicines, herbs (St. John's wort), and food supplements can be hard on the liver
- Some medications should not be taken at the same time as certain HCV drugs or will need to have their doses adjusted
- It is very important that your health care provider and pharmacist know about all of the medications and supplements you are taking, with or without a prescription, to help prevent serious drug interactions

ADVOCACY EXERCISE

Discussion Questions:

1. Do you know someone who has died from liver cancer? Can serious illness and deaths from liver disease be prevented?
2. In places where HCV treatment is not available, what can people do to improve their liver health?

Action Steps:

1. Do you know where people in your community can get testing and treatment for liver disease? If not, how can you find out?
2. Where can people find support and harm reduction services if they want to stop or decrease alcohol or drug use?