HIV and Your Liver

The liver is one of the largest and most important organs in the human body. It's also one of the hardest working and can even re-grow its own tissue. It is located behind the lower right section of your ribs, and the things that you eat, drink, breathe and take in through your skin all get filtered through it. It also helps to maintain your body heat, and it breaks down many drugs into forms that are easier for your body to use.

These are just a few of the liver's many functions:

- Storing important nutrients from the food that you eat
- Building necessary chemicals that your body needs to stay healthy
- Breaking down harmful substances, like alcohol and other toxic chemicals
- Removing waste products from your blood.

For HIV-positive people, liver health is of major importance, as it is responsible for making new proteins needed by the immune system and helps the body to resist infections. Alcohol, street drugs, smoke, toxic fumes, some herbs and even some prescription and non-prescription drugs can harm your liver, and in turn, can hurt almost all of your body's other systems.

A healthy liver is essential to a healthy life. You can do many everyday things to keep your liver healthy. Not putting yourself at risk for liver disease can help. Simple changes in your diet can go a long way in helping your liver to work well and recover from illness. Consult your doctor when starting or changing your diet, exercise routine, medicines or supplements.

How do HIV drugs cause liver damage?

Even though HIV drugs are intended to do your health good, the liver recognizes them as toxic compounds. After all, they are not naturally produced by the body and can contain chemicals that could damage your body. Working with the kidneys and other organs, the liver processes these drugs to render them safer. In the process, the liver can become "overworked," which can lead to liver damage. There are two ways that this can happen:
1. Direct damage to liver cells:

If liver cells are working too hard to remove chemicals from the blood, or if they are harmed by other infections (hepatitis C, etc.), abnormal chemical reactions can damage these cells.

- Taking a very high dose of a drug. If you were to take a higher than prescribed dose of an HIV or other medication, this can cause immediate and sometimes severe damage to liver cells.
- Taking medication over a long period. If you regularly take medications over time, there is also a risk of damage to liver cells. This can occur after years of taking certain medications.
- An allergic reaction. If you are allergic to a particular drug, your immune system can cause your liver to become inflamed as a result of interactions between key liver proteins and the drug. If the drug is not stopped, the inflammation can worsen and can seriously damage the liver.

Although two HIV drugs can cause severe allergic reactions in HIV-positive people—Ziagen (abacavir) and Viramune (nevirapine)—we know how to greatly lower this risk.

- Non-allergic liver damage. Some drugs can cause liver damage without an allergic reaction or high doses. Two HIV drugs that can cause serious liver damage, though in relatively small numbers of people, are Aptivus (tipranavir) and Prezista (darunavir).

2. Lactic Acidosis:

 Although HIV drugs called NRTIs (nucleoside reverse transcriptase inhibitors) are not processed by the liver, they can still damage “mitochondria”—tiny structures inside cells that convert nutrients into energy. If this happens, it can cause higher levels of lactate, a cellular waste product. In turn, a condition called lactic acidosis can occur that can result in liver problems, including liver inflammation and a buildup of fat in and around the liver.

How do I find out if my HIV meds are causing liver damage?

The best way to know this is to check the liver enzymes that circulate in the blood. The most important ones are AST (aspartate aminotransferase), ALT (alanine aminotransferase), alkaline phosphatase and bilirubin. These four enzymes are normally checked as a part of a “chem screen,” a panel of tests that your doctor probably orders every time you have blood drawn to check your CD4 cells and viral load.

If you or your doctor has any reason to suspect that a drug you are taking is harming the liver, then a blood test should be done. It is always best to detect this in its early stages so that steps can be taken to prevent it from getting worse and to allow the liver to heal.

Most of the time, drug-related liver damage is slow to develop. Mild increases in either AST or ALT
may occur. Generally speaking, if your AST or ALT levels increase but are no higher than five times the normal range (e.g., AST 43–215 IU/L, ALT 60–300 IU/L), then you have mild-to-moderate liver toxicity. If your AST is higher than 215 IU/L or ALT is above 300 IU/L, then it’s more severe toxicity, which can lead to more serious medical problems.

Fortunately, most doctors regularly order chem screens (every 3 to 6 months) and are usually able to catch mild-to-moderate conditions (which are often reversible) before they progress to more severe conditions. However, blood tests should be done every 2 weeks after starting Ziagen or Viramune, as previously described.

You may not have any physical symptoms when your liver enzymes are elevated. Thus, it is very important that you and your doctor regularly monitor your liver enzymes. However, symptoms can occur in people with severe drug-related liver damage, and these symptoms are very similar to those associated with viral hepatitis, such as:

- loss of appetite
- feeling unwell
- nausea
- vomiting
- itchy skin
- changes in color of urine or stools
- unusual tiredness/weakness
- stomach or abdominal pain
- jaundice (yellowing of the skin or eyes)
- loss of taste for cigarettes

If you experience any of these symptoms, speak to your doctor about them.

What other factors increase the risk of liver damage?

- Being over 50 years of age
- Co-infection with hepatitis B and/or C
- Taking other medications that can cause liver damage
- Alcohol or drug abuse
- Obesity
Can I take HIV meds if I have hepatitis B or C?

Yes. Although chronic hepatitis B and hepatitis C can inflame and damage the liver, you can take HIV medications. However, greater care should be taken to make sure that safe and effective treatment plans are made for HIV whether or not the hepatitis B or C are also treated. Many studies have been done in people co-infected with these viruses, so it is very possible to safely treat them while ensuring continued liver health.

During these treatment periods, it’s more important to monitor liver enzymes more often, including when starting Viramune or using Aptivus or Prezista (especially if they currently have at least moderate liver damage). To learn more about hepatitis C and its treatments, click here.

It is also important to monitor your liver carefully while taking HIV medications. You’ll want to find out the levels of your liver enzymes before you begin taking them. Even if they are higher than normal because of either hepatitis B or C, you can then monitor your levels closely while on treatment.

Are there ways to reverse or prevent drug-related liver damage?

If your HIV meds are causing liver damage, you and your doctor should figure out which drug or drugs are causing your liver enzymes to increase. In this case, you may stop the offending drug(s) and possibly switch to new medications that are less likely to harm the liver.

What else can I do to protect my liver?

Limit alcohol intake. If you drink alcohol, it is important that you discuss this with your doctor so you can assess how this may impact your liver health. Heavier alcohol use (more than 5 drinks a day) can cause liver damage. Heavy alcohol use can also worsen liver disease in people with hepatitis B and C. It’s less clear how light or moderate drinking (1 to 2 drinks a day) may or may not harm to the liver. However, this depends upon your current liver health, presence of viral hepatitis or other conditions, and the use of prescription or street drugs. In contrast, the American Liver Association recommends no more than one drink a day. Some medications such as Flagyl should not be taken with alcohol, and most experts advise staying away from alcohol completely if you have hepatitis.

Maintain a well-balance diet. The liver must process and detoxify the liquids and foods we drink and eat. In fact, 85–90% of the blood that leaves the stomach and intestines contains nutrients that we consume for further processing by the liver. A well-balanced diet is a terrific way to help
take stress off the liver and help it remain healthy.

- Eat plentiful amounts of fruits and vegetables, especially dark green leafy vegetables and orange and red colored fruits and vegetables. Eating smaller meals more often can aid your liver to work less.

- Cut down on fats that can stress the liver, such as dairy products, processed vegetable oils (hydrogenated fats), deep-fried foods, preserved meats and fatty meats. Further, being overweight or having diabetes can put you more at risk for a serious liver disease called non-alcoholic steatohepatitis, or NASH.

- Concentrate on eating “good fats” that contain essential fatty acids. These are found in cold pressed vegetable and seed oils, avocados, fish, flaxseed, raw nuts and seeds (must be fresh) and legumes. Not only are good fats believed to be easier for the liver to process, they can help build healthy cell membranes around the liver cells.

- Avoid toxic fumes and liquids such as cleaning products, insecticides, pesticides, artificial sweeteners (especially aspartame), and preservatives.

- Consume a diverse range of proteins from grains, raw nuts, seeds, legumes, eggs, seafood, and if desired, poultry and lean meats. If you are a vegetarian, you may want to consider supplements such as vitamin B12, taurine, and carnitine to avoid poor metabolism and fatigue.

- Drink at least eight glasses of water a day, especially if you’re taking HIV medications.

- Be wary of raw fish (sushi) or shellfish like oysters, shrimp and clams. Sushi can harbor bacteria that may harm the liver, and shellfish can contain the hepatitis A virus that can cause serious liver problems. Also, many types of wild mushrooms contain toxins that can seriously damage the liver.

- Be cautious of iron, a mineral found in meat and fortified cereals. Iron can be toxic to the liver, especially in people with existing liver damage. Foods and cooking equipment, such as iron
skillets high in iron, should be used sparingly. Also, avoid high doses of vitamins A, D, E and K.

- Avoid smoking. Smoking can increase the risk of liver cancer.

- Clean or don’t share your works. Liver damage is common in people who inject drugs. This can pass viruses and bacteria from person to person. Street drugs also often have other substances in them than can cause serious harm.

- Get vaccinated. Two of the most common infections of the liver are hepatitis A and B. Both are preventable. Your doctor can test you to see if you’ve been exposed to them before. If you haven’t, getting vaccinated can prevent a good deal of unnecessary liver disease.

- Drink coffee. More recent study has shown that drinking 2-3 cups of caffeinated coffee a day can slow down liver disease and improve responses to hepatitis C treatments.

A number of vitamins and minerals have been shown to be healthful to the liver, and many nutrition experts recommend that people at risk for liver toxicity seek out these foods. These include:

- Vitamin K. Green leafy vegetables and alfalfa sprouts are a great source of this vitamin.

- When the liver has a difficult time processing protein, it can cause ammonia levels to increase in the blood. Arginine—which is found in beans, peas, lentils, and seeds—can help detoxify ammonia.

- Antioxidants work by neutralizing destructive compounds called free radicals, which are produced by highly active organs. Foods high in antioxidants include vegetables and fruits like carrots, celery, beets, dandelion, apples, pears, and citrus. Selenium, a powerful antioxidant, can be found in Brazil nuts, Brewer’s yeast, kelp, brown rice, liver, molasses, seafood, wheatgerm, whole-grains, garlic and onions.

- A detoxifying agent found in beans, peas, lentils, eggs, fish, garlic, onions, seeds, and meat.

What about nutritional supplements and herbs?

Very few well-done studies have proven which herbs help the liver. One supplement, N-acetyl-cysteine (NAC), is often used to treat liver toxicity from overdoses of acetaminophen (Tylenol).
However, there are no conclusive studies of NAC in treating other types of liver damage.

The herbal supplement called milk thistle (Silybum marianum) has been studied, but the National Center for Complementary and Alternative Medicine at the National Institutes of Health states that there’s not enough evidence to recommend it for treating hepatitis C or other types of liver damage. Further, milk thistle could alter the blood levels of HIV drugs because it uses a liver protein called p450 which is also used by many HIV meds. Another common herb, St. John’s Wort, greatly lowers the blood levels of some HIV meds and it’s recommended that it not be used with an HIV regimen.

It is important to remember that simply because complementary therapies can be purchased without a prescription, this does not mean that they are always safe to take. Tell your doctor, pharmacist or trained nutritionist about all of the supplements you take. Include vitamins, herbal teas and remedies, nutrition supplements, over-the-counter items and other products you take. Many of these can have side effects and interact with each other and many medicines, which could end up hurting your liver.

Some herbs that have been associated with liver damage, and that the HCV Advocate recommends avoiding, include: Blue-green algae, borage (Borago officianalis), bupleurum, chaparral (Larrea tridentata), comfrey (Symphytum officinale and S. uplandicum), Dong Quai (Angelica polymorpha), germander (Eucrium chamaedrys), Jin Bu Huan (lycopodium serratum), kava, mistletoe (Phoradendron leucarpum and viscum album), pennyroyal (Mentha pulegium), sassafras (Sassafras albidum), shark cartilage, skullcap (Scutellaria lateriflora), and valerian. This list does not include every herb with known or suspected liver toxicities.

Last Reviewed: September 14, 2018