

General Recommendations for Patients with Advanced Cirrhosis

1. Diet

- Cirrhotic patients have limited capability to store nutrients in the liver. For that reason, you need to eat very frequently in order to preventing use of your own muscle mass as a source of nutrition for vital organs; we recommend you eat at least three meals a day and three to four snacks between meals. Patients who are overweight should be careful to eat low-calorie meals and low-calorie snacks. Patients who are under-nourished should have high-calorie meals and snacks. Bedtime snacks are especially important. Patients with malnutrition and/or loss of muscular mass can improve their nutrition and muscular mass by drinking two cans of Ensure-Plus, or Boost-Plus **at bedtime**, or in case of overweight or diabetes, 2 cans of Glucerna, or Boost Glucose-Control **at bedtime**, or 1 can of Boost VHC **at bedtime**.
- Cirrhotic patients are at increased risk of acquiring food-borne infections; we recommend that all foods that you eat from animal organs should be fully cooked. This is especially true for seafood and poultry. Raw seafood, especially shellfish, should not be eaten. Only pasteurized milk and juices should be consumed.
- Patients with cirrhosis require normal amounts of protein but may poorly tolerate excessive amounts. We recommend that your protein intake be around 1.2gm per kilogram of body weight but divided into meals taken throughout the day and not eaten in a single sitting. Cirrhotics generally have to take in at least 60 gm of protein per day to maintain nitrogen balance and muscle mass. Protein can be taken in the form of animal sources (beef, pork, fish/seafood, poultry, eggs, and milk) and from vegetable sources, such as beans and lentils.
- Patients with cirrhosis tend to retain sodium (salt) and water which causes formation of swelling (edema) and free fluid in the abdomen (ascites). Patients with edema and ascites are at very high risk of developing infections that, in turn, carry a very high risk of death. To avoid formation of edema and ascites, the most important factor is to avoid sodium in your diet. Salt comes with different names, including "Salt, Sea Salt and Light Salt"; is also in high amounts in Soy Sauce, pickles, and olives. The total amount of sodium that a cirrhotic with edema or ascites can take in a day should not exceed 2,000mg per day. Sodium is present in small or moderate amounts in fresh or frozen foods but in large amounts in processed foods and canned foods, including cakes and candy bars that use salt or baking soda to enhance flavor or cause a cake mix to rise. To eat more than 2,000mg of sodium per day will make it extremely difficult for you to control ascites and edema and may force us to use higher doses of water pills that, in the end, may cause kidney failure and death. It is important that you avoid all processed foods and cured meats, such as ham, baloney, bacon, pickles, potato chips, corn chips, and other salty snacks. Milk and cheese should be used only in moderation because they have large amounts of sodium. Canned soups and bouillon cubes should be avoided. Whole meals should be prepared from scratch and not be purchased from restaurants because no restaurant would be able to cook meals using less than 2,000mg of sodium a day (and still stay in business). To enhance the flavor of meals, you can use any natural spice or seasoning like Mrs. Dash. Salt substitutes, like "No-Salt or Light-Salt", that contain potassium should not be used if you are taking spironolactone (Aldactone), triamterene (Dyrenium), or Amiloride (Midamor) because it can cause severe elevations of potassium that can cause your heart to stop, leading to death. The safest commercial seasoning you can use is "Mrs. Dash."
- Using multivitamins and vitamin supplements, overall, is a good idea, with the exception of large amounts of vitamin A which can be very toxic to the liver. If you have excessive iron in your body, taking a large amount of vitamin C may be dangerous. Excessive amounts of iron can also cause worsening of liver disease. We want you to stay in the low-normal range of iron in your body, and you may have to avoid vitamins that contain iron, unless you have some iron deficiency. Use of moderate amounts of vitamin E, which is an antioxidant that helps the liver,

are a good idea, however, high doses may place you at increased risk. Only use herbals or supplements after your doctor has approved their use.

2. Confusion or Hepatic Encephalopathy

Confusion or hepatic encephalopathy occurs because the liver cannot clean toxic substances from the blood. This is even worse if your kidneys do not work well because poorly-working kidneys can increase the formation of toxic substances or they cannot eliminate other toxic substances. People with advanced liver disease cannot process many medications that cause malfunction of the brain, like narcotics (morphine-like pain medications) and sedatives or sleeping pills (for example, Valium, Librium, Ativan, Xanax, Klonopin, etc.) Frequently, the first sign of hepatic encephalopathy is insomnia. Other frequent problems are irritability, personality change, and poor work performance. To take strong sleeping pills can only make this worse because it will lead to more hepatic encephalopathy.

The most effective way to prevent hepatic encephalopathy is to have good nutrition with an early breakfast and very frequent small meals, to keep your kidney function in the best possible condition, to avoid narcotics and sedatives, and to receive medication that facilitates the elimination of toxic substances by making the inside of the intestine a little acidic and increasing the frequency of bowel movements, or by decreasing bacteria inside the intestine. Some foods like Probiotic Yogurt with live-culture decreases low grade hepatic encephalopathy (the Yogurt studied was CC's Jersey Crème taking 6 oz twice a day). The medications used to treat hepatic encephalopathy are some non digestible sugars like Lactulose (Kristalose, Enulose, Cephulac) and sorbitol and some antibiotics. These sugars will ferment inside the intestine and may cause bloating and gas, but they should be taken in high enough doses to give 3-4 soft or slightly liquid bowel movements per day. You should decide how much of this medication you need to take in order to reach the desired number of bowel movements per day. If you have fewer than 3 bowel movements per day, the amount of Lactulose or sorbitol you are taking should be increased. If you have more than four, the amount should be decreased. As mentioned earlier, we do not restrict the amount of protein but we try to avoid excessive amounts of protein intake. Again, generally, protein should be divided throughout the day among the several meals you are taking. Zinc and certain antibiotics are also sometimes used to treat encephalopathy. The best studied antibiotic is Rifaximin which, when taken in addition to Lactulose is able to decrease the frequency of hospitalizations due to hepatic encephalopathy. Patients with encephalopathy are not allowed to drive, due to their slow reaction time and impaired thinking. Patients with encephalopathy should also not operate any heavy machinery.

3. Risk of Bleeding

Patients with cirrhosis frequently have very enlarged veins inside their swallowing tube (esophagus), the stomach and in other areas of the gastrointestinal tract. In addition, the lining of the stomach and bowel can sometimes be very congested. Spontaneous rupture of a vessel (varicose vein) inside the gastrointestinal tract can cause severe, life-threatening bleeding. Prolonged oozing of blood from the lining of the stomach or bowel can also cause gastrointestinal bleeding. The medical treatment to decrease the risk of this bleeding is the use of non-selective beta blockers. The ones proven to be effective are Inderal (propranolol), Corgard (nadolol), and Coreg (carvedilol) which are usually used to treat high blood pressure. We usually give enough of these medications to keep your pulse relatively slow, ideally within 55-60 beats per minute. We measure the effectiveness of these medications by trying to keep your pulse between 55 and 60 beats per minute. This may make you feel more tired and decrease your exercise tolerance.

Patients with cirrhosis usually run very low blood pressure but the addition of medications like nadolol or propranolol do not usually worsen blood pressures significantly. Unless the patient has problems with severe dizziness due to the use of this medication, they should not be discontinued. Sudden discontinuation of propranolol or nadolol can cause abrupt, life-threatening bleeding.

Some male patients with cirrhosis may also have problems with enlarged prostates that make it difficult to urinate. Physicians often prescribe medications called “alpha blockers” to improve urine flow. Examples of these medications are Hytrin (terazosin), Flomax (tamsulosin), Uroxatral (alfuzosin), Minipress (prazosin) and Cardura (doxazosin). These medications should be avoided, however, because they decrease the effectiveness of nadolol and propranolol.

4. Leg Cramps

Leg cramps are very common in patients with cirrhosis. They are frequently due to decreased amounts of minerals in the body, such as calcium, magnesium and zinc. If you have leg cramps, we would prefer that you take these kinds of mineral supplements and avoid taking medications like quinine. Quinine can cause a further drop in your platelet count and place you at higher risk of bleeding.

5. Increased Risk of Complications from Infections

Patients with cirrhosis do not tolerate additional liver damage (hepatitis) or other infections. If you are not already immune, we strongly recommend that you receive vaccinations against hepatitis A and hepatitis B. We also recommend that you get an influenza vaccine each year (unless there is another contraindication) as well as the pneumonia vaccine (Pneumovax) every five to 10 years.

6. Overweight

To have clinical obesity increases the stress on your liver and accelerates liver damage. We recommend that patients with obesity should follow a diet for weight reduction with moderate decreases in caloric intake, following the American Diabetic Association diet guidelines. This situation is particularly important for patients who have diabetes mellitus or who have abnormal lipids (cholesterol or triglycerides) in their blood. Excellent control of glucose level, as well as cholesterol and triglycerides, will help slow down progression of liver damage.

7. Fatigue

Fatigue is very common in advanced liver disease. There is evidence that decreased physical activity will worsen the fatigue. We recommend that patients with cirrhosis get some regular exercise, such as having a brisk walk. The exercise should ideally be from 30-45 minutes per day. Because of severe fatigue, it may be better to divide the exercise through several periods during the day. To obtain benefits from exercise, it is not necessary to do it all at once. If you are tired, you may want to take a brisk walk 10 minutes three times a day. As you get better, you may be able to increase it to 15 minutes three times per day. If you have varicose veins in the esophagus or stomach, we do NOT recommend you to do exercises that make you lift heavy weights because that may increase the pressure on your vessels and make them burst.

8. Use of Tobacco, Alcohol and Drugs of Abuse

There is evidence that smoking accelerates scarring of the liver. In addition, the use of tobacco products increases the risk of lung cancer, cancer of the mouth, and cancer of the swallowing tube (esophagus). Smokers who have surgery are at increased risk of death. We strongly recommend that you not smoke and that you avoid all tobacco products.

Alcohol accelerates liver damage and often makes it impossible to eliminate viral infections of the liver. In addition, alcohol tremendously increases the risk of liver cancer. Patients with liver disease should not drink alcohol.

Use of other substances of abuse, such as cocaine, crack, heroin, ecstasy, marijuana, methamphetamine, etc., increase the risk of further liver damage and sometimes cause severe hepatitis. In a cirrhotic patient, this is likely to cause death. Substances of abuse should not be used.

9. Pain Medications

Patients with advanced liver disease are at very high risk of serious complications from the use of pain medications. Medications such as aspirin, ibuprofen, Motrin, Midol, Aleve, Advil, Naproxen, sulindac, ketoprofen, Indocin, Celebrex, Alka-Seltzer, Diclofenac (Cataflam), Oxaprozin (Daypro), Feldene (piroxicam), Mobic (meloxicam), Nabumetone (relafen), Bextra (valdecoxib), and others, can cause severe kidney failure in patients with cirrhosis. In addition, they are likely to increase the retention of sodium and water. They should not be used by cirrhotic patients at all. Narcotics such as morphine, codeine, hydrocodone, fentanyl, demerol, etc., can cause severe confusion/hepatic encephalopathy in patients with advanced liver disease. They should be avoided, if at all possible. If there is no other choice, these medications should be used at the lowest possible dose. Larger amounts of acetaminophen (Tylenol) can cause severe liver damage. This is particularly true if the patient has not been eating regularly. In patients who have been eating regularly, a moderate amount of acetaminophen (Tylenol) is the best choice for pain control. For severe pain, we recommend that you not exceed 4gm (eight 500mg tablets of Tylenol) per day for no more than two days. For moderate pain, 2gm (four 500mg tablets) per day is acceptable.

10. Other Medications

Many drugs can be very toxic to the liver. Be sure that you discuss your liver disease with your physician before you start any new medications. There are medications that predictably will cause liver damage if they are taken in high enough doses or for long enough time. These types of medications should be avoided completely. There are other medications that very rarely can cause liver damage but cannot be predicted (idiosyncratic reaction). These drugs are not more likely to cause liver damage in patients with liver disease than in patients without liver disease, however if liver damage occurs in someone with advanced liver disease, the consequences are much more serious. If the estimated benefit of using these medications is high, then they can be used because the risk of injury to the liver is lower than the expected benefit. Again, please discuss this with your physician before you start any new medications.