

# Nutrition and Advanced Liver Disease (Cirrhosis)

This resource is for people with advanced liver disease (cirrhosis), who are experiencing complications of cirrhosis and are losing weight without trying. This resource may not be appropriate if your cirrhosis is well-controlled, and you have been recommended to lose weight by your doctor.

## What is cirrhosis?

Cirrhosis is severe scarring of the liver, causing damage that cannot be reversed. Many different conditions can lead to cirrhosis, such as Non-Alcoholic Fatty Liver Disease or Hepatitis. In cirrhosis, the scarring means that the liver cells cannot work properly and the liver is no longer able to perform its usual roles.

## Why is nutrition important in cirrhosis?

The liver has many roles in the digestion of proteins, fats, and sugars from the food we eat. After a meal, one of the roles of the liver is to remove sugar (glucose) from the blood and store it as glycogen. When blood sugar levels are low overnight or between meals, the liver converts the glycogen back to glucose and releases it into the blood to be used as an energy source. This constant supply of glucose is needed for our body to function normally, especially to fuel our brain.

In cirrhosis, the liver cannot use all of the nutrients from the food we eat and cannot store as much glycogen as a healthy liver. This means that overnight and between meals there is not much glycogen reserve for energy, and it is used up quickly. To get more glucose needed to keep our body alive, the liver breaks down muscle tissues. This can lead to loss of muscle mass, muscle strength, and body weight in someone with cirrhosis. To keep a constant supply energy and prevent muscle wasting, it is important for someone with cirrhosis to make changes to the way they eat.

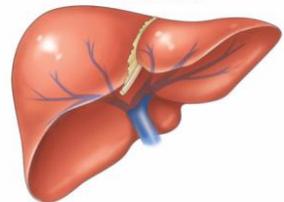
## Malnutrition and cirrhosis

As liver disease progresses, it can lead to complications that make it difficult to eat as much as usual. Excess fluid can build up around the stomach (ascites) making you fill up quickly on small amounts of food. Confusion (encephalopathy) can affect your memory and concentration, making it difficult to do usual daily activities such as preparing meals.

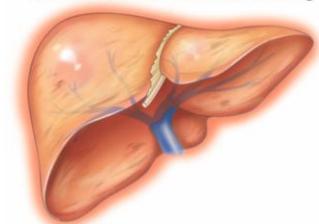
Other symptoms can include:

- Reduced energy to prepare meals
- Forgetting to eat due to confusion

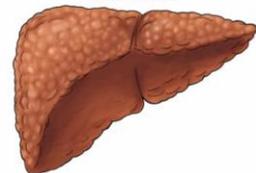
Normal Liver



Chronic Inflammation & Scarring



Cirrhosis



- Feeling full after eating small amounts of food
- Experiencing nausea, vomiting, or stomach discomfort
- Experiencing taste or smell changes making it difficult to eat

If you have cirrhosis and are experiencing these symptoms then you may be at risk of developing malnutrition. Malnutrition is diagnosed by a Registered Dietitian or doctor. They will also consider if you have lost weight without trying to and have lost muscle mass as part of this diagnosis.

It is important to try to prevent and manage malnutrition by changing the types of foods you eat and how often you eat. This is because if you have cirrhosis and are malnourished, you are more likely to have severe liver disease and are at higher risk of being unwell and require admission to hospital.

### Dietary recommendations for cirrhosis

#### 1. Eat 6-8 small meals per day, rather than 2-3 larger ones

- Small, frequent meals throughout the day will help to keep your muscles strong and prevent malnutrition. If you are experiencing symptoms that make it difficult to eat as much as usual, then it can also be easier to eat more food by having 6-8 small amounts each day instead of 2-3 larger ones.
- We recommend eating at least 6 times per day at breakfast, morning tea, lunch, afternoon tea, dinner, and a pre-bed snack.



#### 2. Include a protein-rich food with each meal or snack

- The body needs protein for building and maintaining muscle, healing tissues, and supporting the immune system. In cirrhosis, the body needs more protein than usual to help it work properly.
- Protein-rich foods include chicken, fish/seafood, lean red meats, eggs, dairy foods (milk, yoghurt, cheese), legumes/pulses (beans, chickpeas, lentils), nuts/seeds, tofu/tempeh, as well as protein supplement drinks. We recommend including a protein-rich food with every meal or snack.

#### 3. Reduce your salt intake in by avoiding processed foods

- In cirrhosis, too much salt (sodium) can make fluid problems worse. For example, it can make it more painful and difficult to manage fluid around the stomach (ascites) or the feet and legs (oedema).
- We recommend not adding any salt in cooking or at the table. However, most salt in our diet comes from processed and packaged foods such as crisps, biscuits, processed meats, and tinned foods. It is important to remove these processed foods from your diet to reduce your salt intake.
- It can be helpful to flavour your food using other ingredients such as pepper, garlic, chilli, ginger, lemon, vinegar, and other herbs and spices.

## High Protein Foods

### Lower in Salt (Include)

- Milk, milk powder, soy milk
- Cheese: Swiss, ricotta, cottage, bocconcini
- Yoghurt, custard
- Chicken, red meat, fresh fish, eggs
- Tinned fish in spring water or oil
- Dried legumes/pulses (beans, lentils, chickpeas, soup mixes)
- Unsalted nuts and seed



### Higher in Salt (Avoid)

- Cheese: cheddar, feta, brie, camembert, processed varieties
- Cured or preserved meats (ham, bacon, salami, deli meats, sausages, hot dogs, jerky)
- Tinned fish in brine or flavoured
- Tinned legumes/pulses (beans, lentils, chickpeas)
- Salted nuts and seeds



## High Energy Foods

### Lower in Salt (Include)

- Rolled oats, wheat bran
- Pasta, rice, noodles, other grains
- Multigrain bread
- Potato, yam/sweet potato, corn
- Fats/oils: avocado, extra virgin olive oil, canola oil, sesame oil, peanut oil, sunflower oil



### Higher in Salt (Avoid)

- Processed breads and pastries
- Packet rice, pasta and instant noodles with flavouring
- Cakes, biscuits, savoury crackers
- Potato crisps, pretzels, corn chips
- Most takeaway and fast foods
- Bottled sauces, stocks, flavourings



#### **4. Eat a snack before bed (and a snack overnight if you are awake!)**

- A snack before bed, and also overnight, is important to reduce the amount of time your liver is fasting. This will also help to keep your muscles strong and prevent malnutrition.
- We recommend having a pre-bed snack that includes complex sugars, such as 2 slices of toast with low-salt peanut butter, Greek style yoghurt with fruit and nuts, or a high protein nutritional supplement drink.

#### **5. Include high protein nutritional supplement drinks**

- If you are struggling to eat enough, high protein nutritional supplement drinks can be a helpful way to get more nutrition. Milk is a great base for these drinks and can be added to high protein nutritional supplement powders that are available at your local pharmacy. Or you can drink pre-made bottles or tetra packs, such as Ensure, Resource, or Boost.
- We recommend drinking these as a snack between your meals 1-2 times per day or as directed by your doctor or Registered Dietitian. Please ask your healthcare team for more information.

#### **6. Avoid alcohol**

- No alcohol is safe in cirrhosis and any alcohol you drink will make your liver disease worse. If you have cirrhosis, we recommend avoiding all alcohol.

### **Vitamins and minerals**

Vitamin and mineral deficiencies can be common in cirrhosis. This is because a cirrhotic liver cannot absorb vitamins and minerals as efficiently as a healthy liver. Eating a variety of foods can help to avoid deficiencies. However, your doctor may also recommend a vitamin supplement if required. It is important to only take supplements prescribed by your doctor, as some supplements and herbal remedies can be harmful to the liver.

### **Exercise**

Regular exercise in combination with the right nutrition can help to preserve your muscle mass, muscle strength, and body weight. If you have cirrhosis you should try to walk at least 5000 steps per day.

For other exercise it is best to speak with your doctor to decide what is safe for you. If safe, you can include 3 days per week of moderate physical activity. An exercise specialist or physiotherapist can design a program that is right for you. You can find some helpful exercises at <https://wellnesstoolbox.ca/cirrhosis/>

### **Ontario special diet allowance**

If you have cirrhosis, unintended weight loss, diabetes, high blood pressure or high blood cholesterol you may be eligible for the Ontario special diet allowance. This allowance can assist with the cost of a special diet for a medical condition. An approved health care professional must confirm your medical condition and the amount of the allowance is determined by consulting the Special Diets Schedule.

For information on applying, please visit: <https://www.ontario.ca/page/government-ontario> and search “special diet allowance”.

## Suggested meal plan

<u>Breakfast</u>	1/2 cup rolled oats or ½ cup high fibre cereal Milk or Greek yoghurt 1 piece fresh fruit, unsalted nuts & seeds, honey  OR 2 slices multigrain bread (salt-reduced if possible) 2 eggs (add pepper, lemon, herbs for flavour) Grilled vegetables (tomato, mushrooms, spinach), avocado
<u>Morning Tea</u>	Handful unsalted nuts OR milk-based drink (e.g. milkshake/smoothie, high protein nutritional supplement drink)
<u>Lunch</u>	2 slices multigrain bread (salt-reduced if possible) Chicken/tuna/salmon/lean red meat/eggs/ricotta cheese Salad vegetables/avocado  OR Tinned tuna/salmon (in olive oil) Rice or pasta Salad vegetables (rocket, cherry tomatoes, onion)
<u>Afternoon Tea</u>	Salt-reduced multigrain crackers with cottage cheese/avocado OR milk-based drink/ high protein nutritional supplement drink OR Greek yoghurt with fruit
<u>Dinner</u>	100-120g lean meat, chicken or fish 1 cup cooked pasta/noodles/rice or 2 medium baked potatoes Vegetables (roasted or sautéed with olive oil)
<u>Snacks</u>	Greek yoghurt with fruit and nuts OR custard OR milk-based drink/high protein nutritional supplement drink OR 2 slices of toast with low-salt peanut butter