2
Chapter

What should I eat and what to avoid?

This section includes common calculations for:

- ➞ Ideal body weight if you are overweight or obese
- ➞ Estimated dry weight if you are retaining fluids (ascites and/or edema)
- ➞ Daily calorie and protein intakes

In this chapter, we have included detailed explanations and graphs for each of the common calculations (for those of you who would like to understand where these originate from).

In order to make the calculations easier (and for those of you who don't like math), we have developed an online calculator at www.wellnesstoolbox.ca. We recommend that you access this tool to determine these values. Please check all calculations with your health care practitioner. Certain patients may have special requirements.

	Patients with Compensated Cirrhosis	Patients with Decompensated Cirrhosis
Liver Health	Have few or no liver-related complications	Have liver-related complications like ascites and hepatic encephalopathy
Diet	Need to: - Eat healthy, well-balanced meals - Eat high-protein, low-sodium foods - Avoid alcohol	Need to: - Eat healthy, well-balanced meals - Eat high-protein, low-sodium foods - Avoid alcohol - Patients with higher metabolic rates need to eat more food
When to eat?	Need to: - Eat 3 balanced meals each day - Eat snacks between meals if hungry	Need to: - Eat every 2-4 hours when awake - Have a late evening snack before bed - Eat a snack in the middle of the night if awake!

Energy

In decompensated cirrhosis, the body may need more calories than it has in the past.

This means increasing the quantity of food eaten and how often one eats.

Two main nutrition goals in cirrhosis are:

- ➞ **Avoid weight loss** (unless directed by a physician)
- ➞ **Maintain muscle mass through exercise and eating well**

If overweight or obese, ask for a referral to a dietitian and an exercise therapist to assist in meeting weight loss goals.

See Chapter 6 in this Guide for recommendations specific to obesity and cirrhosis.

How much do I weigh?

Unexpected changes in body weight are an important sign of malnutrition.

If you are not retaining fluids, your body weight will be equal to the weight shown on the scale (also known as a bathroom scale or body weight scale).

If you are retaining fluid (leg swelling and/or ascites), your weight shown on the scale needs to be adjusted by subtracting the extra water weight. This is called your "Estimated Dry Weight".

Your "Estimated Dry Weight" can be estimated in two ways:
1. After a paracentesis using the weight shown on the scale
2. By using your body weight before retaining fluids and needing paracentesis

I don't have excess body fluid. My scale weight is:

I am retaining excess fluid. My "Estimated Dry Weight" is:

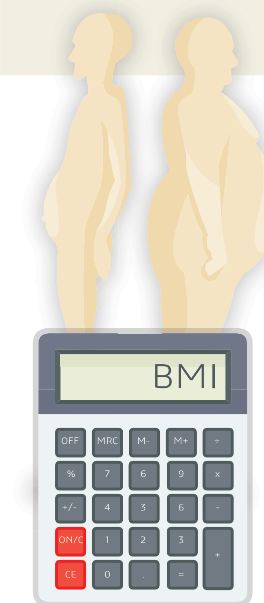
Paracentesis

A bedside procedure to remove excess fluid (ascites) from the belly using a needle and drainage bag.

"par-a-cen-tee-sis"

What is BMI?

The "Body Mass Index" or BMI is a ratio between height and weight or height and estimated dry weight. BMI is used to determine an individual's daily caloric intake.



What is **my BMI**?

My BMI is:

Option 1: Ask a healthcare practitioner for assistance

Option 2: Use an online calculator to make these calculations easier -- this can be found at www.wellnesstoolbox.ca. Check this with your healthcare practitioner.

How many calories should I eat each day to maintain my weight and prevent unwanted weight loss?

My daily calorie intake range is:

The number of calories needed for weight maintenance is based on your BMI.

See the next page to estimate the daily caloric intake for your healthy weight.

Patients who are obese and trying to lose weight need to consult their healthcare practitioner to determine the best way to achieve weight loss.

There are online tools and apps for calorie tracking!

My Fitness Pal **www.myfitnesspal.com**

Nutrient values of some common foods (for manual tracking)
http://www.hc-sc.gc.ca/fn-an/alt_formats/pdf/nutrition/fiche-nutri-data/nvscf-vnqau-eng.pdf

There are many free apps and tools to use.

I can share my progress with my healthcare practitioner!

Calories come in the form of:
- ➞ Proteins
- ➞ Fats
- ➞ Sugars (Carbohydrates)

Daily calorie intake

Patients with cirrhosis should weigh themselves each week and record their weight at least once a month. Doing so will identify trends in weight gain, loss, or maintenance and help determine how many calories to eat each day.

This activity provides an **ESTIMATE** of your daily calorie needs. This is useful to do every 3 months between appointments with your practitioner.

Ask your healthcare practitioner for assistance with this activity.

Your practitioner may need to adjust your daily calorie intake depending upon your specific health status.

Determining your daily calorie intake

If your BMI is 25 or less, continue on this page.

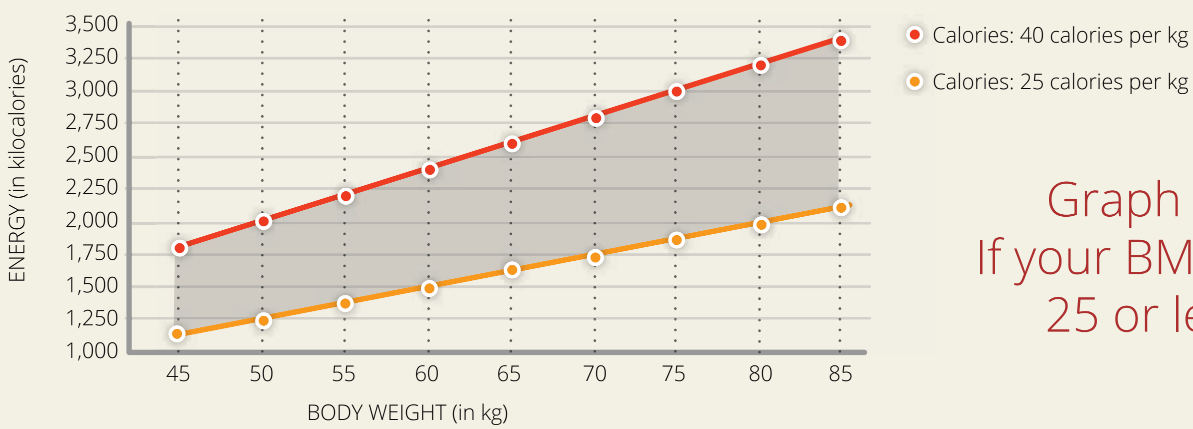
If your BMI is greater than 25, move on to the next page.

Step 1: Using Graph #1 below, find your Body Weight in kilograms along the bottom and place your finger on the amount.

Step 2: Now, move your finger directly up in a straight line. The area between the red and yellow lines is the target calorie range to eat every day.

Activity

My daily calorie intake range is :



Graph #1
If your BMI is 25 or less

Tips to manage your weight

- If you have lost weight recently, are malnourished, or your BMI is less than 20, you likely need to eat **MORE** calories.
  Set your goal closer to the upper red line (40 calories per kg).

- If your weight has been stable for several months and your BMI is close to 25, set your daily goal closer to the bottom yellow line (25 calories per kg).
  This may help prevent unwanted weight gain.

Tip:

The first time you do this, ask your health-care practitioner for assistance.

Your practitioner may need to adust your daily calorie intake depending upon your specific health status.

If your BMI is greater than 25, continue on this page.

Step 1: Determine your "Ideal Body Weight" by completing the following:

25 x ________ **x** ________ **=** ________ **kg**

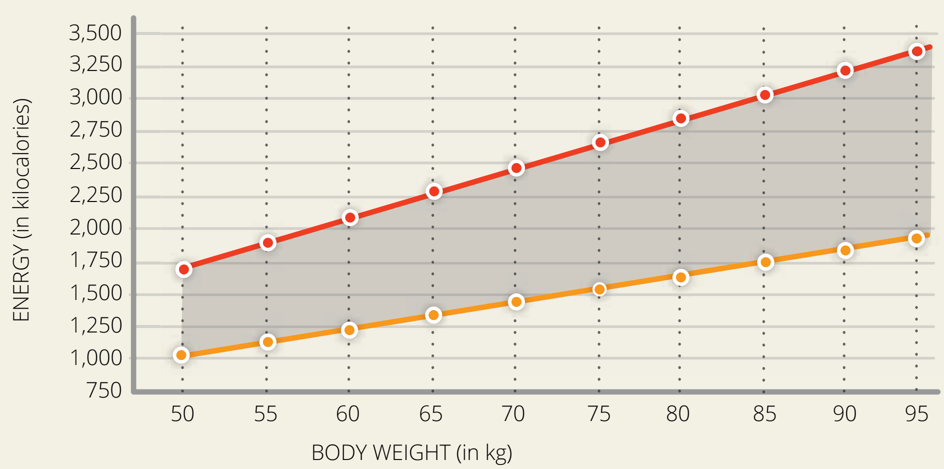
My height in metres | My height in metres | My "Ideal Body Weight"

Step 2: Using Graph #2 below, find your "Ideal Body Weight" along the bottom and place your finger on the number.

Step 3: Now, move your finger directly up in a straight line. The area between the red and yellow lines is the target calorie range to eat every day.

Activity

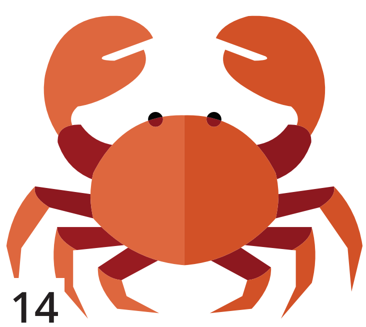
My daily calorie intake range is : ________



Calories: 35 calories per kg

Calories: 20 calories per kg

Graph #2 If your BMI is greater than 25



The skinny on "fat cells" (if your BMI is greater than 25)

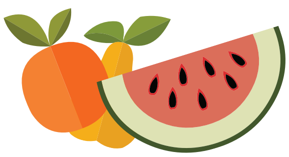
Cells that store body fat are called "fat cells".
Fat cells do not need energy to survive.
The weight from fat cells should not be used to calculate calorie needs.
Instead, use the Ideal Body Weight to estimate the daily calorie needs.
This will prevent unwanted weight gain.

Meal and snack timing

Small, frequent, and protein rich meals evenly distributed throughout the day will help preserve muscle mass. This means having 6 small meals every day, or eating every 2-4 hours while awake.

A late evening snack is recommended about 1-2 hours before bedtime and should contain at least 50 g of complex sugars, such as:

- **1 bottle (235 ml) of high calorie nutritional meal supplement**
- **Peanut butter on 2 slices of toast and 1 cup of milk mixed with 1 tbsp whey protein powder**
- **3/4 cup greek style yogurt, 1 cup strawberries, 2 tbsp hemp seeds, 1 tsp honey drizzled on top**
- **Chocolate peanut butter smoothie with 1 banana, 1 cup skim milk, 1 tbsp cocoa, 1 tbsp peanut butter and 1 tbsp whey protein OR 1/2 cup vanilla greek yogurt**



Label Reading Rules

When grocery shopping, pay attention to the Nutrition Facts Table to make the best choices for eating well.

1 Serving size. Start at the top of the label. Compare this to the amount you eat. This amount will tell you the size of a single serving and the total number of servings per package.

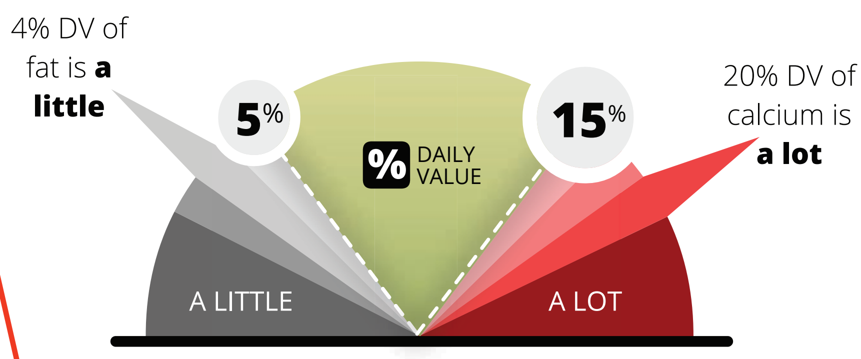
2 Amount of Calories. Next, check total calories per serving. The calories listed are for one serving of the food.

3 Protein. Protein is a building block of muscle, and is important for many bodily functions. People with liver disease need more protein than everyone else. Look for food products with more protein.

4 Saturated Fat. Eating too much saturated fat increases the risk of high cholesterol and heart disease. Try to eat less than 10 g per day as recommended by nutrition guidelines.

5 Sodium. Prepackaged foods often contain a high amount of sodium because it is used to flavour and preserve foods. Sodium can make symptoms of liver disease worse and should be limited as much as possible. Choose products with less than 10% DV sodium in each serving. As a rule, the closer to 0% DV, the better!

6 Calcium. Calcium is shown at the bottom of food labels as a % DV. This percentage is based on 1,100 mg calcium per day. In liver disease you need more calcium compared to the general population. Choose products that are high in calcium.



Nutrition Facts
Serving Size ¾ cup (55g)
Servings Per Container 5

Amount Per Serving	
Calories 250	Calories from Fat 50
	% Daily Value*
Total Fat 6g	**9%**
Saturated Fat 0.5g	**3%**
Cholesterol <5mg	**<2%**
Sodium 200mg	**8%**
Total Carbohydrate 40g	**13%**
Dietary Fibre 4g	**16%**
Sugars 18g	
Protein 9g	**18%**

Vitamin A 25% • Vitamin C 50% • Calcium 30% • Iron 25%
*Percent Daily Values based on a 2,000 Calorie diet.

% Daily Value (DV): This tells you how the nutrients in one serving contribute to your total daily diet. The % DV indicates if an item has "a little" or "a lot" of a nutrient.

You should have LESS:

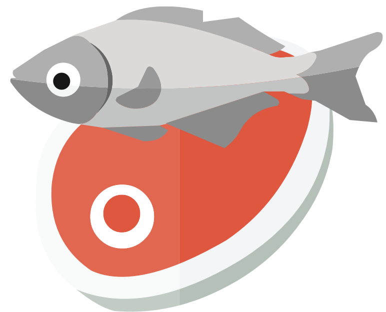
Saturated Fat
Sodium

You should have MORE:

Calcium
Protein
Fibre

Protein

The body needs protein for many functions of the body, such as building and maintaining muscle, healing tissues, and supporting the immune system. Patients with cirrhosis need more protein than what is recommended in Canada's Food Guide.



Understanding how much protein you need

The goal in cirrhosis is to eat 1.2-1.5 g/kg of protein each day.

Proceed to the Protein Graph below if your BMI is 30 or less.

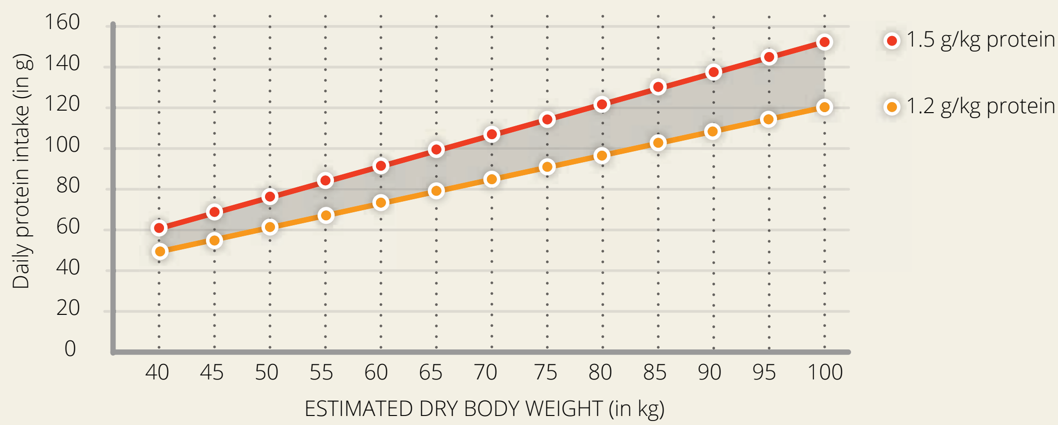
If your BMI is more than 30, complete the "Activity" at the bottom of the page then use the Protein Graph.

Protein Graph

Find your dry weight along the bottom axis marked ESTIMATED DRY BODY WEIGHT (see Chapter 2).

Then move up to find the range of protein (gray zone between the red and yellow lines) to eat.

The range indicates the amount of protein in grams to eat every day.



How to meet your protein goal:

Include a variety of protein-rich foods at every meal and snack (see examples on next page).

Eating multiple sources of protein-rich foods will reduce the chance of repetition and food boredom.

Concern:

In cirrhosis, some protein-rich foods, such as red meats, may no longer be appealing.

Solution:

Try eating other protein-rich foods, like meal supplements, protein powders, dairy products, and vegetable proteins (beans, peas, lentils).

What about calcium?

In cirrhosis, it is necessary to increase the intake of calcium to prevent brittle bones that can easily fracture or break.

Activity:

An online calculator to determine this is available at: www.wellnesstoolbox.ca

You can do this with your healthcare practitioner!

If your BMI is more than 30, use what is called your "Ideal Body Weight." This weight is based on a BMI of 25. To figure out your "ideal body weight" follow these steps:

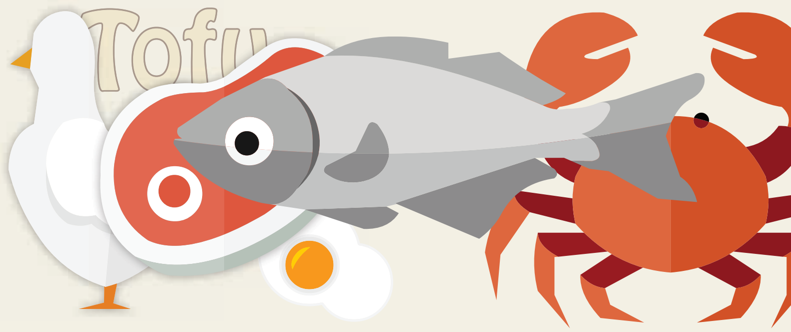
25 x height (metres) x height (metres)

My Ideal Body Weight is:

25 x _____metres x _____metres =

[   ] kg

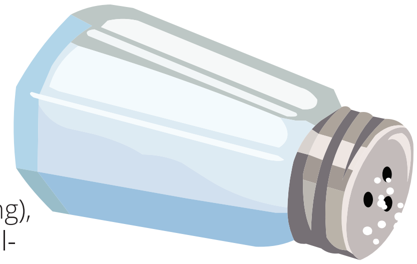
Protein



2.5 oz of meat is:
the size of a deck of cards

Food Item	Measure	Equivalents	Weight (g)	Protein (g)	Sodium (mg)
Meat and Meat Alternatives					
Beef, Pork, cooked	2.5 oz	deck of cards	75	25	45
Chicken, Turkey, cooked	2.5 oz	"	75	20	50
Fish, baked/fried/steamed	2.5 oz	"	75	18	40
Canned fish in water, low sodium	75 g (1/3 cup)		75	18	50-70
Egg	1 large		50	6	65
Shrimp, boiled/steamed	6 small		30	6	67
Chick Peas, Beans, Lentils, canned (rinse first) /boiled	¾ cup	tennis ball	175 ml	11	30
Peanut Butter (commercial)	2 tbsp		30 ml	8	149
Peanut Butter (natural)	2 tbsp	golf ball	30 ml	7	2
Peanuts, Almonds (unsalted)	½ cup	2 golf balls	37	8	2
Tofu (regular, firm, extra firm)	150 g	hockey puck	150	21	26
Dairy Products and Supplements					
Milk, skim, 1%, 2%, whole	1 cup		258	9	105
Milk, 1% chocolate	1 cup		258	9	152
Soy beverage, unsweetened	1 cup		257	7	95
Skim milk powder	~ 1/3 cup		25	9	120
Yogurt, Greek, plain, flavoured	¾ cup	tennis ball	180	16	65
Yogurt, plain, flavoured	¾ cup	tennis ball	180	9	115
Cheddar Cheese (from block)	1.5 oz	9-volt battery	50	12	300
Mozzarella Cheese (from block)	1.5 oz	"	50	10	186
Swiss Cheese	1.5 oz	"	50	13	96
Meal Supplement Drinks, high protein plus calories	1 bottle		235 ml	12-15	200-290
Whey Protein Powder	2 tbsp	golf ball	28	20	120
Grains and Starches					
Bread, whole wheat	1 slice		35	5	165
Bread, pita, whole wheat (16.5cm) diameter	1 each		64	7	372
Bagel, plain	1 bagel		71	7	318
Pasta, enriched spaghetti, cooked	1 cup	fist	140	8	1
Special K® Protein cereal, Kellogg's®	1 cup	fist	50	10	125
Vector® Cereal, Kellogg's®	1¼ cup	fist & 2 golf balls	55	5.5	220
Edge® Cereal, General Mills®	1 cup	fist	58	11	290
Granola Bar, Natural Valley® Protein	1 bar		40	10	180
Vector® Protein Bar, Kellogg's®	1 bar		40	11	190
Clif Builder's® Bar	1 bar		68	20	200

Sodium



The body needs some sodium to function.

In cirrhosis, too much sodium can worsen ascites (belly swelling), edema (swelling in feet and legs), and esophageal varices (swollen veins in the food pipe). A diet high in sodium can also cause kidney problems.

To maintain health, it is important for a patient with cirrhosis to restrict salt intake.

Fact:

The average Canadian consumes greater than 3,400 mg of sodium per day, more than 3/4 comes from prepackaged, processed, and restaurant foods.

Fact:

1 teaspoon (6 g) of salt (table salt, sea salt, iodized salt) contains 2,300 mg of sodium

Fact:

Patients with advanced liver disease should consume **LESS THAN 2,000 mg of sodium per day**

Tip:

The words salt and sodium are not exactly the same thing, BUT:

- ➞ Salt in most foods is found in the form "sodium chloride" or "sodium iodide".
- ➞ Salt is salt, whether it's Himalayan, Kosher, Rock, Sea, or Table Salt. All of these contain the same amount of sodium.

This Guide uses the word "sodium" to advise a sodium restricted diet. Your doctor may also call this a "low-salt diet".

What does this mean?

Following a low-sodium diet is not as simple as getting rid of the salt shaker. In addition to **not adding salt** to food, it is important to cook and eat foods with low sodium contents.

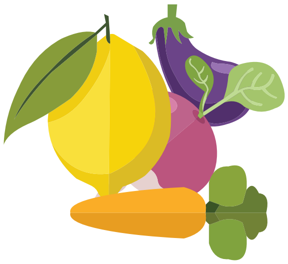
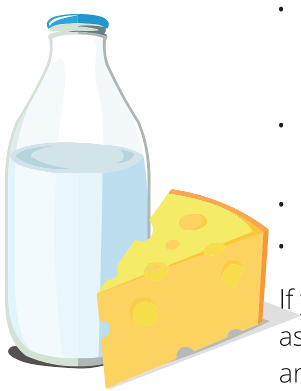
Low sodium cooking: tips and tricks!

Herbs, spices, and marinades add to or enhance the flavour of food without increasing sodium. In 2-3 weeks, tastes adjust to the new flavour combinations and salt cravings become a thing of the past!

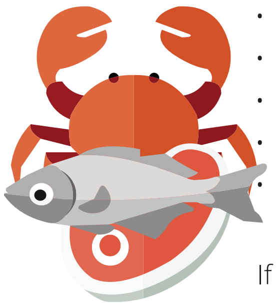
Cooking tips:
- Boil potatoes, rices, pasta, and hot cereals with herbs instead of adding salt to add flavour
- Use 3x more fresh herbs than dry herbs to get the same flavour intensity
- For hot foods, add crushed herbs or spices near the end of cooking to get the most flavour
- For cold dishes (e.g., dressings, salads), add the flavourants at the beginning of the preparation

If you like ...	Try one or more of these....	Add to.....
HOT	Cayenne pepper, chili (fresh, oils, powder), hot dry mustard, horse radish, white or black pepper, red pepper flakes, wasabi	Beans, lentils, tofu, beef, chicken, turkey, anything!
CITRUS/SOUR	Lemon, lime, tamarind, vinegars	Asparagus, green beans, tofu, chicken
SWEET	Allspice, anise, caraway, cardamom, cinnamon, cloves, fennel, honey, molasses, nutmeg, poppy seeds, sesame seeds, star anise	Apples, beans, potatoes, salads, squash, yams, rice, chicken
HERBACEOUS	Basil, dill, mint, oregano, parsley, rosemary, sage, tarragon, thyme	Asparagus, peas, potatoes, tomatoes, rice, pasta, beef, chicken, fish, eggs
SULFURY	Chives, garlic, onion (green, red, white)	Potatoes, tomatoes, rice, pasta, beef, chicken, fish, eggs

Overview of some low versus high sodium foods

	Choose	Limit or avoid
Vegetables and Fruit 	• Fresh vegetables • Vegetables canned with no added salt • Tomatoes canned with no added salt • 100% fruit juices If you are on a low-potassium diet, ask your dietitian which of these foods are recommended.	• French fries, hash browns, and potato chips, salted • Sauerkraut • Potatoes from a mix • Tomato juice, vegetable juice, and vegetable cocktail • Tomato sauce, pasta sauce, and salsa • Vegetables canned with salt Vegetables frozen, with cream, or tomato sauce
Grain Products 	Choose foods with the lowest sodium amounts for the following: • Baked goods (homemade) like muffins, pancakes, or waffles made without added salt • Breads, buns, bagels, pitas, English muffins • Barley, bulgur, millet, oats, quinoa, rye • Rice cakes, crackers, and cookies (unsalted) • Cold cereals and hot cereals (not instant) • Pasta, couscous • Rice, brown rice If you follow a low-phosphorus diet, ask your dietitian which of these foods are right for you.	• Baked goods from dry mixes • Baked goods (from a restaurant or store-bought) • Rice cakes and crackers (salted, or seasoned) • Hot cereals (instant) with higher than 15% Daily Value for sodium • Pasta, rice, or noodles that are canned, instant, or from a mix • Stuffing mixes
Milk and Alternatives 	Choose brands with the lowest sodium amounts for the following: • Milk (skim, 1%, 2%) or soy beverages • Cheeses: small amounts of hard cheeses such as cheddar, mozzarella, marble, Swiss • Cheeses (soft) such as cream cheese, brie, and ricotta • Cottage cheese, no salt added • Yogurt or kefir If you need to follow a low-phosphorus diet, ask your dietitian how much of these foods are right for you.	• Cheese slices or cheese spreads, (processed) • Cheeses having high sodium contents: blue, feta, and Parmesan • Cottage cheese, regular • Pudding or custard, instant mixes • Buttermilk

	Choose	Limit or avoid

Meat and Alternatives

	• Beans, peas, and lentils (dried), cooked without salt. Rinse canned products.
	• Eggs
	• Meat, poultry, fish (fresh)
	• Nuts and nut butter (unsalted)
	• Tofu
	• Tuna or salmon (canned), no salt added
	
	If you follow a low-phosphorus diet, ask your dietitian how much of these foods are right for you.
		• Meat, poultry, fish (canned) with salt
		• Meat, poultry, fish (breaded or seasoned)
		• Nuts (salted)
		• Processed meats, such as:
		  ◦ bacon
		  ◦ bologna
		  ◦ corned beef
		  ◦ deli meat (chicken, turkey, and roast beef)
		  ◦ ham
		  ◦ hot dogs/wieners
		  ◦ pepperoni
		  ◦ sardines
		  ◦ salami
		  ◦ sausages
		  ◦ smokies

Spices, seasonings, and condiments
 	
	• Gravies, sauces and dips (homemade) without salt
	• Herbs and spices with no salt added such as:
	  ◦ basil
	  ◦ black pepper
	  ◦ cardamom
	  ◦ cayenne pepper
	  ◦ chili oil
	  ◦ cinnamon
	  ◦ cumin
	  ◦ dry mustard
	  ◦ garlic (fresh or powder)
	  ◦ ginger
	  ◦ mint
	  ◦ onion (fresh or powder)
	  ◦ parsley
	  ◦ paprika
	  ◦ rosemary
	  ◦ tarragon
	  ◦ thyme
	  ◦ turmeric
	• Lemon or lime juice, vinegar
	• "No added salt" seasonings
	• Sauces with less than 5% Daily Value for sodium
		• Sea salt, table salt
		• Spices or seasoning mixes that have salt or sodium, such as seasoning salt, garlic salt, onion salt, celery salt, lemon pepper, channa masala, chaat masala, meat masala, tandoori masala.
		• Pre-made, packaged gravies, sauces, and dips
		• Bacon fat
		• Canned or packaged broth, bouillon cubes, or consommé
		• Condiments such as mustard, ketchup, relish, tartar sauce, salad dressings, and mayonnaise (limit to 1 Tbsp (15 mL) per day)
		• Salsa, pickles, olives
		• Sauces such as steak sauce, BBQ sauce, marinating sauces, soy, teriyaki, hoisin, black bean, or fish sauce
		• Breading and coating mixes

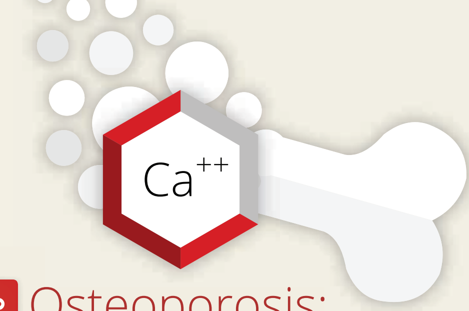
Other foods 	• Non-hydrogenated margarine (unsalted) and vegetable oils. Use small amounts. • Soups, homemade (limit the amount of sodium/salt added) • Check the sodium content on labels of unsalted snacks such as pretzels, tortilla chips, rice cakes, some microwave popcorn, and air popped popcorn. They may contain salt!	• Fast foods and restaurant foods • Snack foods such as salted chips, nachos, pretzels, popcorn, bhujia, and crackers • Soups (canned or dried) such as, oriental noodle mixes or soup cups • Casserole mixes • Frozen, deli, or take-out foods

Calcium

Osteoporosis (bone loss causing weak bones) occurs more often in cirrhosis partially from not eating enough calcium.

Because bone loss is common, it is necessary to increase the intake of foods or supplements that provide calcium.

Calcium is a mineral that helps build and maintain strong bones and teeth as well as helping the muscles and heart work properly.



Osteoporosis:

The loss of bone mass to the point where bones become brittle and fragile; they can fracture and break easily.

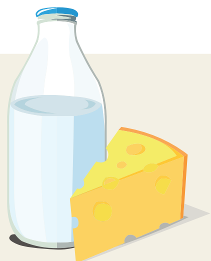
A list of common foods that contain 1 serving of calcium

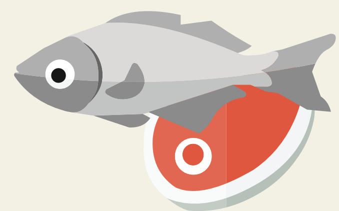
Each of the foods listed below have 300 mg of calcium in the portions recommended = 1 serving

A daily calcium goal – Have **4 servings of calcium-rich foods every day.**

How much calcium do you need when you have cirrhosis?

1,200-1,500 mg/day from a combination of food sources and supplements is recommended





Milk and Alternatives

- Cow's milk – all varieties (1 cup)
- Soy, rice, or almond beverage, fortified with calcium (1 cup)
- Cheese: Swiss, cheddar, mozzarella, marble (1.5 oz)
- Yogurt: plain, flavored, Greek, regular (175 ml or ¾ cup)
- Ricotta cheese, partly skimmed (½ cup)
- Kefir (1 cup)
- Nutrition Supplement Drinks (1 cup)

Fruits and Vegetables

- Spinach, boiled, steamed or sautéed (1 cup)
- Turnip greens, cooked (steamed or sautéed) (1 cup)
- Rhubarb, cooked (1 cup)
- Orange juice, fortified with calcium (250 ml)

Meat and Alternatives

- Sardines – canned in water with no salt added, with bones (100 -120 g/ 3-4 oz)
- Salmon, canned, unsalted with bones (120 g/ 4 oz)
- Tofu, prepared with calcium sulfate (175 g which is ~¾ cup)
- Beans (white, navy) canned or cooked (1½ cups)

Activity:

Using the table above, how many servings of high calcium foods are you currently having every day?

Dairy = _____ Fruits/Vegetables = _____ Meat/Alternatives = _____

Total =

Vitamins

Patients with cirrhosis can be low in the following vitamins and minerals:

Vitamins - A, D, E, K, folic acid, B1, B2, B6, B12

Minerals - zinc, iron, selenium, and calcium

To get enough of these vitamins and minerals, take a **no iron** containing multivitamin or multi-mineral on a daily basis.

Too much copper, manganese, or iron can be harmful in cirrhosis.

Some patients will need to take iron depending on their specific situation.

A doctor or dietitian can help make sure you pick the safest option.

Exercise

Muscle mass loss is very common in patients with cirrhosis. This makes daily activities more difficult and causes tiredness.

A program of exercise in combination with the right nutrition may help to maintain and even increase muscle mass.

It is helpful to get a pedometer to track your activity level.

If you have cirrhosis, you should try to reach 5,000 steps or more each day.

Your health care practitioner will look for veins in your food pipe (called varices). Once they have ruled these out (or adequately treated them), ask your health care practitioner if you can include 3 days per week of moderate physical activity, such as walking or cycling for up to 30 minutes and 2 days per week of light weights. You can find exercises at www.wellnesstoolbox.ca.

Talk to your doctor about the exercise program that may be best for you. An exercise specialist or physiotherapist can help design an appropriate exercise program.

My favourite snack is:

Is it low in sodium and high in protein? ○ Yes ○ No

How can it be adjusted to help my liver?

My favourite meal is:

Is it low in sodium and high in protein? ○ Yes ○ No

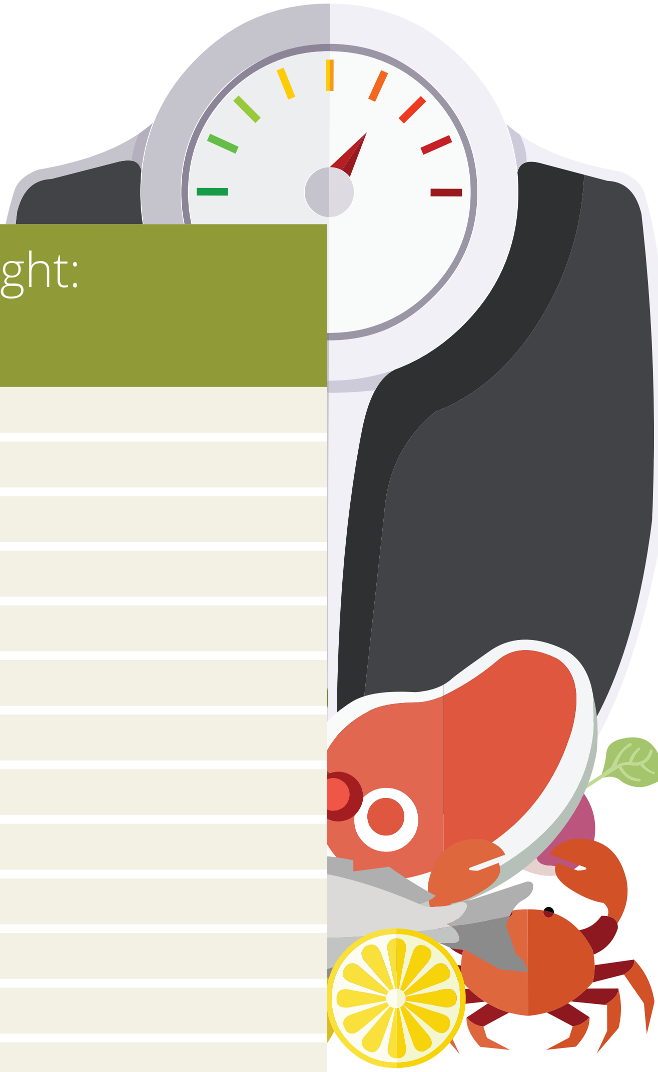
How can it be adjusted to help my liver?

Notes and Goals:

Use this space to set nutrition goals that you would like to work on. For example, "My goal over the next month is to meet my protein target by eating 1.2-1.5 grams/kilogram per day. For me, this means eating 80 grams of protein per day". Seek assistance from your doctor or dietitian to help set these goals!

Tracking my body weight

Indicate if you are retaining fluids around the belly, legs, or joints when you measure your weight!



Date:	Body Weight: