

# Nutrition Guidelines for Patients with Short Bowel Syndrome

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## Introduction

To fully grasp the term *short bowel*, it is helpful to understand normal bowel function. The bowels consist of the small and large intestines. The small intestine absorbs foods and fluids. It is about 15 - 20 feet long and is divided into three sections. These are called the duodenum, the jejunum, and the ileum. Each section has a specific role in the digestion and absorption of nutrients. The large intestine (also called the colon) is about five feet long. It plays a part in the absorption of minerals and water. When a portion of your bowel is removed, the wall of the remaining bowel adapts to this change. This helps the remaining bowel absorb nutrients and water that would normally be handled by the missing bowel. Therefore, portions of the bowel can be removed without having a major impact on your nutritional status. It does take time though, for your remaining bowel to adapt. How much time depends on how much bowel was removed.

Your remaining bowel begins to adapt shortly after your surgery. During this time you may have:

- Gas
- Cramps
- Diarrhea
- Fluid loss
- Weight loss

Nutrients, water, vitamins, and minerals may not be absorbed as well as before your surgery. These symptoms are what is called *short bowel syndrome*. You can help your bowel adapt by following the guidelines in this booklet. The guidelines may also help to ease the symptoms that may occur. Call your doctor or nurse if you have questions about managing your symptoms.

## Dietary Guidelines

- Eat small, frequent meals

Six to eight small meals a day will put less stress on your shortened bowel. Small meals help control your symptoms, and will result in better digestion and absorption. Eat slowly and chew your food well. Once your bowel has adapted, you can resume having three meals a day.

- Limit fluid intake during your meals

It is best to limit fluids during a meal to ½ cup (4 ounces). Large amounts of fluids taken with meals push food through the bowel at a faster rate. This may result in inadequate digestion and absorption of nutrients. You can slow down this process by drinking the majority of your fluids between meals, at least one hour before or after a meal.

- Include the following nutrients in your meals

Your meals should be:

– High in protein

- Fish
- Poultry
- Meat
- Eggs
- Tofu
- Dairy products
- Smooth peanut butter

– High in refined or low-fiber complex carbohydrates

- White bread
- Cereals such as Rice Krispies® and corn flakes
- Potatoes without skin
- White rice
- Pasta

– Moderate in fat. If you have had a large section of your ileum removed, you may tolerate larger amounts of fat at breakfast time better than later in the day.

- Oils
- Butter
- Margarine
- Mayonnaise
- Gravies
- Cream sauces

– Low in concentrated sweets

- Sugar (cookies, cakes, candies, chocolate, soda, instant teas, fruit drinks)
- Corn syrup
- Molasses
- Honey
- Pancake syrup

- Include beverages in your diet

Drink enough fluids to prevent dehydration. Try to drink at least eight full glasses of fluids each day. Avoid very hot or cold drinks. It may be better to stick with drinks that do not have a high sugar content. Plain drinks include water, coffee, tea, milk, or juices diluted with water.

- Follow a low-lactose diet if you are lactose intolerant

Lactose is milk sugar. Lactose can cause gas, cramps, and diarrhea in some people. These symptoms usually begin within the first half hour of taking a dairy product. Start with ½ cup of milk. If you have any symptoms, try lactose-free dairy products, such as Lactaid® milk. You may also use Lactaid tablets or Lactaid drops to help you digest dairy foods. Some dairy items have high amounts of lactose. Others have less. Start with cultured yogurt

and aged cheeses (e.g., hard cheeses such as cheddar and Swiss). If you can eat those, try soft cheeses (e.g., cream cheese and cottage cheese). If symptoms still occur with these items, you may wish to avoid milk and milk products for a month or two and then retry them. Sometimes lactose intolerance is temporary. If you are lactose intolerant, speak to your dietitian about alternatives.

- Follow a low-oxalate diet

Patients who have had their ileum removed and have an intact colon may need a low oxalate diet. The ileum is the last section of the small intestine. This diet prevents kidney stones from forming. Foods that are high in oxalates are:

- Tea
- Coffee
- Cola drinks
- Chocolate
- Nuts
- Soy products
- Green leafy vegetables
- Sweet potatoes
- Celery
- Berries
- Tangerines

Your doctor or dietitian will discuss this diet with you, if it is necessary.

- Follow a low-fiber diet

Avoid the high fiber fruits, vegetables, and grains listed below. Meat, poultry, fish, eggs, dairy, and fats do not contain fiber. A high fiber diet helps promote regular bowel movements and is part of a healthy diet. However, because of your bowel surgery, you may have trouble with fiber while you recover. A low fiber diet may help to prevent symptoms. The goal is to keep your fiber intake to less than 15 grams daily. Check food labels and avoid products that contain more than 2 grams of fiber per serving. Your doctor will tell you when you can increase the amount of fiber in your diet again.

Low-fiber foods to include in your diet and high-fiber foods to avoid are listed below.

<b>Include These Low-Fiber Foods</b>	<b>Avoid These High-Fiber Foods</b>
Canned fruit	Fruit and vegetable skins, peels, membranes, and seeds
Fresh fruit without skins, peels, membranes, or seeds	Coconut
Fruit and vegetable juices without pulp	Dried fruit
Cream of wheat, e.g., Farina® Puffed wheat	Nuts, sunflower or other seeds, and products containing them
Oatmeal or toasted oat cereal	Whole grain breads, cereals, and baked goods
White rice	Bran cereals or products
	Brown rice

- Other sources of fiber

### Vegetables

You are likely to find raw vegetables difficult to digest at this time. Have small amounts (½ -cup) of well-cooked vegetables. Avoid those which cause gas or discomfort. If you can tolerate the cooked vegetables, try small amounts of the raw vegetables listed below. Use the following as a guide:

Usually Well-Tolerated	May Cause Gas or Discomfort
Carrots	Onions
Green beans	Cauliflower
Spinach	Broccoli
Beets	Cabbage
Potatoes without skin	Brussels sprouts
Asparagus tips Lettuce	Legumes, such as lentils, chick peas, lima beans, and kidney beans.
Cucumber without skin or seeds	Corn
Tomatoes without skin or seeds	Kale
Squash without skin or seeds	Peas

- Vitamin and mineral supplements

You are probably not eating some of the foods you did before surgery. It may be a good idea to take one multivitamin each day. It should have the recommended daily allowance (RDA) for vitamins and minerals. You may also need more of specific vitamins or minerals. Ask your doctor or dietitian what you should take.

### Vitamins A, D, and E

You may need water-soluble forms of vitamins A, D, and E. This is rare and happens only if a large portion of your ileum has been removed.

### Vitamin B<sub>12</sub>

If the last part of your ileum has been removed, you will require injections of B<sub>12</sub> every one to three months.

### Calcium

You may need extra calcium. You can need it if much of your ileum has been removed and the majority of your colon is left intact.

### Potassium

If you have frequent diarrhea, your potassium levels may decrease. Ask your doctor whether you should eat foods that are high in potassium. These are oranges, potatoes, tomatoes, and bananas.

Do **not** take potassium supplements without talking to your doctor first. They can be dangerous.

### Zinc

If you have frequent diarrhea, ask your doctor if you need a zinc supplement.

## Oral rehydration solution

If you are having a lot of diarrhea, your doctor may recommend that you drink an oral rehydration solution. This will give you back the fluid, sodium, and potassium that is lost with your bowel movements.

- Nutritional supplements

If you are losing weight, a high-calorie supplement drink may be helpful. However, depending on the extent of your surgery, “standard” supplements may not be right for you. This is because they have high sugar content. Your doctor or dietitian may recommend a special supplement for you. Always ask them before taking a supplement. If you can take dairy products, try the fortified milk recipe below. It increases the amount of calories and protein in your diet.

## Fortified Milk Recipe

1 quart of whole, 2% low fat, 1% low fat, skim, or Lactaid milk

1 1/3 cup of instant powdered milk (usually one envelope)

Blend the above ingredients well. Keep refrigerated.

Nutritional value for every 8 oz serving:

If mixed with:	- whole milk	230 calories, 16 grams (g) of protein
	- 2% milk	200 calories, 16 g of protein
	- 1% milk	180 calories, 16 g of protein
	- skim milk	160 calories, 16 g of protein

## Food Diary Guidelines

A food diary is helpful to identify your food tolerances. Keep a food diary with the following information:

1. The time you ate the meal, snack, or beverage.
2. The name of the food item or beverage.
3. The amount of the food you ate or the beverage you drank.
4. Any symptoms you had.
5. If you have an ileostomy or colostomy, it is also helpful to record your fluid output. Measure the amount of stool in your bag for one week. Measure it each time you change or empty the bag. Then, if it is about the same each day, measure it once a month for a day or two. If you see a change in the consistency of the stool, measure it more often and let your doctor know.

## Conclusion

Your dietitian is a trained specialist in diet and nutrition. He or she is part of the healthcare team that includes your doctor and nurse. Your dietitian consults with your doctor to insure that your prescribed diet is right for you. He or she will suggest ways to adjust your daily food habits to meet your health needs. If you have any questions or concerns, please leave a message at 1-212-639-7312. A dietitian will return your call. If you would like a consultation with the outpatient dietitian, call 1-212-639-7071 for an appointment.

## Sample Menu

Remember to try Lactaid milk, tablets, or drops to help you digest dairy products (such as milk, cheese, and yogurt), if you are lactose intolerant.

<b>7:00 AM Breakfast</b>	<b>8:30 AM Fluid Break</b>
1 hard-cooked egg 1 slice white toast 1 pat of butter 1 teaspoon of jelly ¼ cup of orange juice diluted with ¼ cup of water	1 cup of fortified milk (See page 7 for the recipe.)

<b>10:00 AM Mid Morning Snack</b>	<b>11:30 AM Fluid Break</b>
1 ounce of cheddar cheese 6 saltine crackers ½ cup of fortified milk	½ cup of juice diluted with ½ cup of water

<b>1:00 PM Lunch</b>	<b>2:30 PM Fluid Break</b>
2 oz of turkey on ½ of a white roll 2 teaspoons of mayonnaise ½ cup of tomato juice	1 cup of water

<b>4:00 PM Mid Afternoon Snack</b>	<b>5:30 PM Fluid Break</b>
8 oz yogurt	1 cup of fortified milk

<b>7:00 PM Dinner</b>	<b>8:30 PM Fluid Break</b>
1 cup of water 2 oz of grilled chicken ½ cup of mashed potato ½ cup of cooked green beans 2 tsp of butter ¼ cup of apple juice diluted with ¼ cup of water	½ cup of juice diluted with ½ cup of water

<b>10:00 PM Evening Snack</b>	
½ of a banana ½ cup of fortified milk	