Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

Nutrition Guidelines for People With Short Bowel Syndrome

This information will help you maintain your nutrition after your bowel surgery. It has guidelines and sample menus you can use after surgery.

About your bowels

Your bowels are your small intestine and large intestine (colon). They help your body absorb nutrients from the foods you eat and liquids you drink.

Your small intestine absorbs carbohydrates, proteins, fats, vitamins, and minerals. It's about 15 to 20 feet long and is divided into 3 sections. The first section is the duodenum, the second is the jejunum, and last section is the ileum. Each section has a specific role in how your body digests and absorbs nutrients.

Your colon absorbs water and minerals. It's about 5 feet long.

Your bowels after surgery

When a part of your bowel is removed, the part that's left can adapt. It does this by absorbing the nutrients and liquids that would've normally been absorbed by the part that was removed. This means your doctor can remove parts of your bowel without having a major impact on your nutritional health.

At first, your body may not absorb nutrients, liquids, vitamins, and minerals as well as it did before your surgery. It takes time for your remaining bowel to adapt after your surgery. This usually takes a few months, but everyone's body heals differently. Recovery time can be different from person to person.

Short bowel syndrome

Short bowel syndrome is a set of symptoms that happen while your remaining bowel adapts after your surgery. You can reduce these symptoms by following the guidelines in this resource. People with short bowel syndrome may have:

- Gas
- Cramps
- Diarrhea (loose or watery stools)
- Fluid Loss
- Weight loss

Dietary guidelines

Follow these guidelines while your bowel recovers. You can also use the sample menus at the end of this resource.

Eat 6 to 8 small meals a day

Eat small, frequent meals to put less stress on your shortened bowel. Small meals help control your symptoms and are easier for your body to digest and absorb. Eat slowly and chew your food well. Once your bowel has adapted, you can go back to having 3 meals a day.

Chew foods well

Chew foods well to help break down food. This makes it easier for your body to absorb. It will also help stop foods from causing a blockage as they pass through your intestine.

Only drink ½ cup (4 ounces) of liquids during each meal

Drink large amounts of liquids with meals. This helps push your food through your bowel more quickly. This means that you may not digest or absorb enough nutrients. Drink most of your liquids between meals, at least 1 hour before or after a meal.

Include enough nutrients in your meals to help you heal.

Your meals should be:

- **High in proteins.** Examples of protein-rich foods include:
  - Fish
  - Eggs
  - Tofu
  - Poultry, such as chicken and turkey
  - Meat, such asbeef, pork, and lamb
  - Dairy products, such as milk, cheese, and yogurt
  - Smooth peanut butter and other nut butters, such as almond butter
- **High in refined or low-fiber complex carbohydrates (starches).** Examples include:
  - White bread
  - Cereals such as Rice Krispies® and corn flakes
  - Potatoes without skin
  - White rice
  - White pastas
- **Moderate in fats.** Examples of fatty foods are:
  - Oils
  - Butter
  - Margarine
  - Mayonnaise
  - Gravies
  - Cream sauces
  - Gravies
  - Cream sauces
  - Regular salad dressings

  For example, it’s okay to have butter on toast or mayonnaise on a sandwich. But, it’s better to avoid very high-fat foods, such as deep fried foods.

  If a large section of your ileum was removed, you may tolerate fats better at breakfast than later in the day.

- **Low in sugary foods.** Examples of sugary foods are:
    - Sugar (cookies, cakes, candies, chocolate, soda, instant teas, fruit drinks)
    - Corn syrup
    - Molasses
    - Honey
    - Pancake syrup

  You can use artificial sweeteners like Splenda® or Sweet N' Low®. However, limit your intake of sugar-free candies or cough drops that contain sugar alcohols. Sugar alcohols include sorbitol, xylitol, mannitol, and isomalt. Having large amounts of these may have a laxative effect (make you have a bowel movement).

Include enough liquids in your diet

- Drink at least 8 (8-ounce) glasses of liquids each day.
- Avoid very hot or vey cold drinks.
- Choose drinks that don't have a lot of sugar. This will keep you from getting dehydrated. Examples include water, coffee, tea, milk, or juices diluted with water. Be careful, coffee may have a laxative effect on some people.

If you're lactose intolerant, follow a low-lactose diet

Lactose is a sugar that's found in dairy products. It can cause symptoms such as gas, cramps, and diarrhea. These symptoms usually start within the first 30 minutes of eating or drinking dairy.

Sometimes, having part of your bowel removed can make you lactose intolerant. To see if you can tolerate lactose, drink one half cup (4 ounces) of milk. If you have any symptoms, try lactose-free dairy products, such as Lactaid® milk or almond, rice, or soy milk. You can also use Lactaid® tablets or Lactaid® drops before you eat dairy items to help you digest them.

Some foods have less lactose than others. If you can't drink dairy milk, try cultured yogurt and aged cheeses. These include hard cheeses such as cheddar and Swiss. If you can eat those, try soft cheeses, such as cream cheese and cottage cheese.

If you still have symptoms, try to avoid all dairy products for 1 to 2 months before trying them again.

Limit high oxalate foods

If you had your ileum removed and have an intact colon, you may need to limit high oxalate foods in your diet. Oxalate is a substance found in many foods and can cause kidney stones. If instructed by your healthcare provider or dietitian, limit foods and drinks that are high in oxalates, such as:

- Tea
- Coffee
- Cola drinks
- Chocolate
- Carob
- Nuts
- Soy products
- Beans
- Dark leafy greens
- Sweet potatoes
- Beets
- Celery
- Berries
- Kiwi
- Dried figs
- Rhubarb
- Whole wheat flour
- Wheat germ
- Wheat bran

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

Fiber

After your surgery, you may find that fiber, especially insoluble fiber, is hard to digest.

Insoluble fiber is found mainly in whole-grain and bran products. It doesn't break down in water and your body can't break it down, so it makes stool (poop) more bulky.

Soluble fiber breaks down in water and can be broken down by your body. It also helps slow digestion. This usually makes it easier to tolerate. Foods with soluble fiber include:

- Oatmeal
- Oat bran
- Barley
- Soy
- Nut butters
- Fruit
- Fruit Pectin
- Legumes, such as chickpeas, lima beans, kidney beans, and lentils
- Psyllium (fiber supplement). **Check with your doctor before taking any fiber supplements.**

Many foods have a mixture of both soluble and insoluble fibers. Use the list below as a guide.

Foods to Include	
Foods with soluble fiber, such as: • Canned fruit. • Fresh fruit without skins, peels, membranes, or seeds. • Smooth peanut butter and other nut butters. • Oatmeal and other oat products. • Barley. • Legumes, such as chickpeas, lima beans, kidney beans, and lentils. Be careful; legumes may cause gas. Start by trying small, ¼-cup servings.	Foods with low fiber, such as: • Puffed wheat, puffed rice, corn flakes, Special K®, and other cereals containing 1 gram or less of fiber per serving. • Cream of wheat or rice. • Farina. • White rice. • White bread, matzoh, and Italian bread without seeds. • Regular pasta (not whole wheat). • Baked or mashed potatoes without skin.

Foods to Avoid	
Foods with insoluble fiber, such as: • Whole-wheat and whole-grain breads, crackers, cereals, and other products. • Wheat bran.	Foods that are hard to digest, such as: • Whole nuts, seeds, and coconut. • Fruit skins, peels, and seeds. • Dried fruits.

Vegetables

You will probably have trouble digesting raw vegetables after your surgery. Start by eating small amounts (one half cup) of well-cooked vegetables. You can find examples in the “Usually Well-Tolerated” column in the table below. Be sure to chew them well. If you can tolerate the cooked vegetables, you can try small amounts of them raw.

Avoid vegetables that cause gas or discomfort.

Usually Well-Tolerated	May Cause Gas or Discomfort
• Carrots • Green beans • Spinach • Beets • Potatoes without skin • Asparagus tips • Lettuce • Cucumbers without skin or seeds • Tomato sauce and tomatoes without skin or seeds • Squash without skin or seeds	• Onions • Cauliflower • Broccoli • Cabbage • Brussels sprouts • Legumes, such as lentils, chickpeas, lima beans, and kidney beans • Corn • Kale • Peas

Vitamin and mineral supplements

You’re probably not eating some of the foods you did before your surgery. You may choose to take one multivitamin each day. This can help you get all of the vitamins and minerals you need. The multivitamin should have the recommended daily allowance (RDA) for vitamins and minerals.

You may also need more of certain vitamins or minerals. Ask your doctor or clinical dietitian-nutritionist what to take. Examples include:

- **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 was removed.
- **Vitamin B12.** If the last part of your ileum was removed, you'll need vitamin B12 injections (shots) every 1 to 3 months.
- **Calcium.** You may need extra calcium, especially if most of your colon is intact but most of your ileum was removed.
- **Potassium.** If you're having a lot of diarrhea, your potassium levels may go down. Ask your doctor or clinical dietitian-nutritionist if you should eat foods that are high in potassium. These include oranges, potatoes, tomatoes, and bananas. Don't take potassium supplements without talking to your doctor first. They can affect your heart rate, which can be dangerous.
- **Zinc.** If you're having a lot of diarrhea, ask your doctor or clinical dietitian-nutritionist if you should take a zinc supplement.se bowel movement), ask your doctor if you should take a zinc supplement.

Oral rehydration solution

If you're having a lot of diarrhea, your doctor or clinical dietitian-nutritionist may recommend you drink an oral rehydration solution. This will give you back the liquid, sodium, and potassium lost with your bowel movements.

You can buy an oral rehydration solution, such as Hydralyte®, from your local pharmacy. This isn't the same as sports drinks, such as Gatorade®, which don't have the same amount of nutrients. You do not need a prescription for an oral rehydration solution. You can also make your own at home using the recipes below.

Oral rehydration solution recipes (World Health Organization)

- Mix 6 teaspoons of sugar and ½ teaspoon of salt with 1 liter water.
- Mix 2 cups of Gatorade and 2 cups water with ½ teaspoon salt.
- Mix 3 cups of water and 1 cup of orange juice with 3/4 teaspoon salt and ½ teaspoon baking soda.
- Mix ½ cup of grape juice or cranberry juice and 3 ½ cups of water with ½ teaspoon of salt.
- Mix 1 cup apple juice and 3 cups water with ½ teaspoon salt.

Liquid nutritional supplements

If you're losing weight, a high-calorie liquid nutritional supplement may be helpful. However, depending on your surgery, some supplements may not be right for you. This is mainly because they have a high sugar content. Here are a few options to try:

- Premier Protein: 160 calories, 30 grams of protein, 1 gram of sugar in 11 ounces
- Muscle Milk: 160 calories, 25 grams of protein, 0 grams of sugar in 11 ounces
- Ensure High Protein: 160 calories, 16 grams of protein, 4 grams of sugar in 8 ounces

Your doctor or clinical dietitian-nutritionist may recommend a special supplement for you. These supplements are low in sugar and has ingredients that are "pre-digested." This makes them easier to absorb.

They may also recommend medium chain triglycerides (MCT). This is a type of fat that's easy to digest for extra calories. Always ask your doctor or clinical dietitian-nutritionist before taking a supplement.

Fortified milk recipe

If you can eat or drink dairy products, this recipe can add calories and protein to your diet.

1. Mix 1 quart (4 cups) of milk with 1⅓ cup of instant powdered milk (usually 1 envelope). You can use any kind of milk (such as whole, 2%, 1%, skim, or Lactaid® milk).
2. Blend the ingredients well.
3. Keep refrigerated.

This makes about 4 (8-ounce) servings of fortified milk.

Nutritional value for every 8-ounce serving if mixed with:

- Whole milk: 230 calories, 16 grams of protein
- 2% milk: 200 calories, 16 grams of protein
- 1% milk: 180 calories, 16 grams of protein
- Skim milk: 160 calories, 16 grams of protein

Food diary guidelines

Keeping a food diary is a helpful way to find out what foods are best for you. Keep a food diary with the following information:

- The time you ate the meal, snack, or drink.
- The name of the food item or drink.
- The amount of the food or drink you had.
- Any symptoms you had.

If you have an ileostomy or colostomy, it’s also helpful to record your output from your stoma. Measure the amount of stool in your bag for 1 week. Measure it each time you change or empty the bag. Then, if it’s about the same each day, measure it once a month for 1 or 2 days. Write down the amount of output and bring this information with you to your appointments.

If the consistency (texture) of your stool changes, measure it more often and tell your doctor.

Contact information for nutrition services at MSK

Any MSK patient can meet with one of our clinical dietitian-nutritionists for medical nutrition therapy. Our clinical dietitian-nutritionists have locations within Manhattan and the following regional site locations:

Basking Ridge
136 Mountain View Blvd.
Basking Ridge, NJ 07920

Bergen
225 Summit Ave.
Montvale, NJ 07645

Commack Nonna's Garden Foundation Center
650 Commack Rd.
Commack, NY 11725

Monmouth
480 Red Hill Rd.
Middletown, NJ 07748

Nassau
1101 Hempstead Tpk.
Uniondale, NY 11553

Westchester
500 Westchester Ave.
West Harrison, NY 10604

Contact our nutrition scheduling office at 212-639-7312 to schedule an appointment with one of MSK's clinical dietitian-nutritionists.

Sample Menu 1

Breakfast: 7 a.m.	Liquid break: 8:30 a.m.
• 1 hard-boiled egg • 1 slice of white toast • 1 pat (about 1 teaspoon) of butter • 1 teaspoon of sugar-free fruit spread • ¼ cup of orange juice mixed with ¼ cup of water	• 1 cup of fortified milk (see the recipe above)

Mid-morning snack: 10 a.m.	Liquid break: 11:30 a.m.
• 1 ounce of cheddar cheese • 6 saltine crackers • ½ cup of fortified milk	• ½ cup of juice mixed with ½ cup of water

Lunch: 1 p.m.	Liquid break: 2:30 p.m.
• 2 ounces of turkey on ½ a white roll • 2 teaspoons of mayonnaise • ½ cup of tomato juice	• 1 cup of water

Mid-afternoon snack: 4 p.m.	Liquid break: 5:30 p.m.
• 8 ounces of light or sugar-free yogurt	• 1 cup of fortified milk

Dinner: 7 p.m.	Liquid break: 8:30 p.m.
• 2 ounces of grilled chicken • ½ cup of mashed potatoes • ½ cup of cooked green beans • 2 teaspoons of butter • ½ cup of water	• ½ cup of juice mixed with ½ cup of water

Evening snack: 10 p.m.
• 2 melba toasts with 1 tablespoon of peanut butter • ½ cup of fortified milk

Sample Menu 2

Breakfast: 7 a.m.	Liquid break: 8:30 a.m.
• 1 cup oatmeal • 1 banana • 1 cup milk • ¼ cup of apple juice mixed with ¼ cup of water	• 1 cup of high protein nutrition supplement (see above supplement section for recommendations)

Mid-morning snack: 10 a.m.	Liquid break: 11:30 a.m.
• 2 tablespoons of smooth peanut butter • 6 saltine crackers • ½ cup of fortified milk	• ½ cup of juice mixed with ½ cup of water

Lunch: 1 p.m.	Liquid break: 2:30 p.m.
• 2 ounces of tuna fish on ½ a white roll • 2 teaspoons of mayonnaise • ½ cup mandarin oranges, packed in juice, drained • ½ cup of tomato juice	• 1 cup of water

Mid-afternoon snack: 4 p.m.	Liquid break: 5:30 p.m.
• 8 ounces of cottage cheese	• 1 cup of fortified milk

Dinner: 7 p.m.	Liquid break: 8:30 p.m.
• 2 ounces of grilled salmon • ½ cup of white rice • ½ cup of cooked asparagus tips • 2 teaspoons of butter • ½ cup of water	• ½ cup of juice mixed with ½ cup of water

Evening snack: 10 p.m.
• 4 graham crackers • ½ cup of canned peaches, packed in juice, drained • ½ cup of fortified milk

For more resources, visit www.mskcc.org/pe to search our virtual library.

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