

## Diet Tips for Short Bowel Syndrome

Your small and large intestine make up your bowel. Your bowel is the part of your digestive tract that digests and absorbs food. After bowel surgery, it may be hard to absorb enough calories, protein, fluid, vitamins and minerals.

Your symptoms will depend on the length and health of your remaining bowel after surgery. Another factor is whether you have your colon removed or not. The colon absorbs fluid and can adapt to help absorb more calories after surgery. Your bowel will adapt to absorb more nutrients over time. This may take up to 2 years.

The chart below describes the nutrients absorbed by each part of your bowel

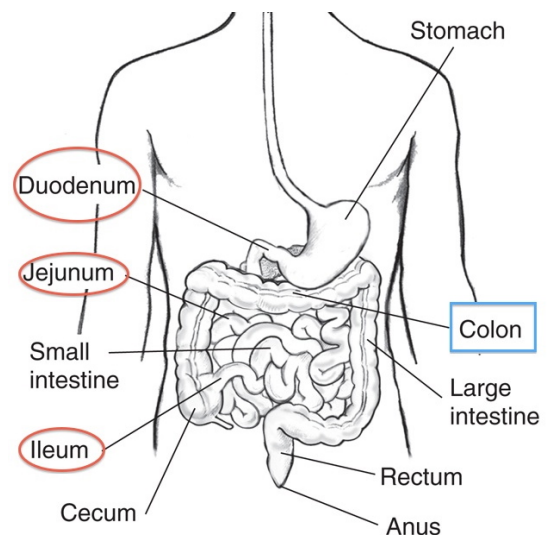
Part of the bowel	Is it the small or large intestine?	What it absorbs
Duodenum	Small intestine	Carbohydrate, protein, fat, and iron
Jejunum	Small intestine	Carbohydrate, protein, and fat Most vitamins and minerals
Ileum	Small intestine	Fat soluble vitamins A, D, E, and K Vitamin B12 Bile acids and bile salts, which help absorb fat
Colon	Large intestine	Fluids Electrolytes: potassium and sodium

### Symptoms you may have after bowel surgery:

- Diarrhea and poor absorption of fats
- Poor absorption of vitamins and minerals
- Dehydration
- Kidney stones

### General symptom management

- You may need to eat 5-6 smaller meals each day to make sure you take in enough calories.
- Choose foods that are **low in simple sugars**. Simple sugars are found in candy, desserts, juice, pastries, and regular soda.
- Do not add sugar, honey, or syrup to your food.
- **Chew foods well** to make it easier for your stomach and bowel to digest and absorb them.



During meals, limit fluids to ½ cup as fluids may push food through your system too quickly and decrease absorption. Drink liquids at room temperature. Limit caffeine from coffee, hot chocolate, energy drinks, soda, and tea, as caffeine may cause diarrhea.

### **Diarrhea and poor absorption of fats**

Diarrhea is one of the most common symptoms after having a large section of your bowel removed. Diarrhea can occur when certain substances, such as simple sugars like sweets and soda, pull too much water into your bowel. Too much undigested plant fiber or too much fat also can cause diarrhea.

### **To help control diarrhea:**

- Eat small frequent meals at least 6 times a day.
- Include bland foods such as fish, meat, non-spicy soups, white rice, pasta, potatoes, poultry, and refined breads and crackers.
- Limit sweets such as cakes, candy, chocolate, cookies, donuts, icings, pastries, sweet rolls, and syrups.
- Limit sugary drinks such as fruit juices, sports drinks, and regular soda.
- Avoid foods that cause gas, such as beans, raw broccoli and cauliflower.
- Room temperature foods may be better tolerated than hot or cold foods.
- Drink plenty of fluids between meals to prevent dehydration.
- Some people may have trouble digesting lactose, the sugar in milk. If this happens to you, try lactose-free milk or unsweetened almond milk. Most hard cheeses and cultured yogurts are lower in lactose and may be tolerated.
- Limit carbonated beverages and drinking through a straw, as these can allow too much air into your bowel and may cause gas and cramping.
- Avoid sugar alcohols often found in “sugar-free” products. These are listed on the food label under the carbohydrate section. The names of many common sugar alcohols end in -ol such as sorbitol and mannitol.
- Your doctor may prescribe medications to slow down the movement of food through your bowel or to thicken your stool.

### **Fat Intake**

Foods that contain fat are a good source of calories. However, if part or all of your ileum has been removed, you may have a decreased ability to absorb fat. To help improve tolerance, avoid high fat foods such as butter, salad dressings, and cream-based soups and sauces. Avoid fatty cuts of meat, fried foods, gravies, pastries, rich desserts, and whole-fat dairy products. Large portions of these foods can lead to increased diarrhea.

### **Residue and Fiber**

You may be prescribed a low residue diet or a low fiber diet if you are having diarrhea or high stool output. This diet limits foods high in insoluble fiber, also known as roughage, a type of

carbohydrate found in plants that cannot be digested. Residue is the undigested part of food that makes up stool.

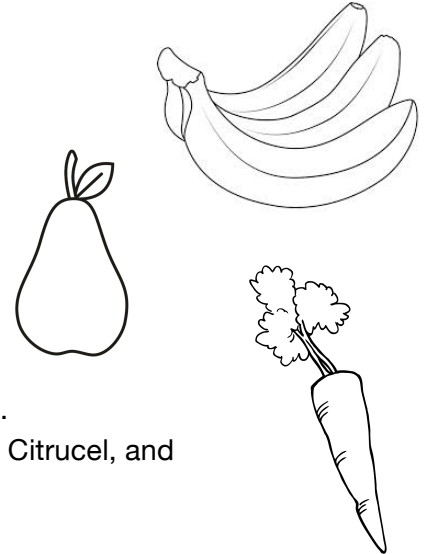
	<b>Recommended</b>	<b>May cause distress</b>
Milk products and dairy alternatives	Lactose-free milk Soy, rice, or almond milk (unsweetened) Yogurt (plain)	Chocolate milk Cream, half and half Ice cream Sweetened yogurt or kefir
Fruits	Avocado Ripe bananas Unsweetened canned fruit: applesauce, cherries, mandarin oranges, peaches, pears, plums	Prunes and prune juice Raw fruits and blended raw fruits (especially those with skin and seeds)
Vegetables	Vegetable juice without pulp Cooked: asparagus, beets, eggplant, green beans, leafy greens, peppers, spinach, seedless tomatoes, squash, zucchini	Raw vegetables: broccoli, Brussels sprouts, cabbage, cauliflower, kale, onions
Breads, Cereals, Starches	Bread: bagels, biscuits, cornbread, naan, pita, white bread Cereals: Cheerios, Corn Flakes, Rice Krispies Cream of wheat or rice Instant oatmeal Pasta, refined Potatoes, sweet potatoes Snacks: corn chips, crackers, graham crackers, pretzels, wafers Tortillas White rice, rice cakes	Baked goods with nuts and seeds Bran products Brown rice Corn Granola bars with dried fruit, nuts, seeds, or coconut Popcorn Whole grain breads
Protein	Cheese Edamame Eggs Ground or well-cooked meats Smooth nut and seed butters, tahini Tofu	Legumes and dried beans: black, garbanzo, kidney, lentils, navy, pinto, and split peas Tough fibrous meats Dried meats: beef jerky Nuts and seeds

### Soluble Fiber

Once you are tolerating a low residue diet, you should slowly increase the amount of soluble fiber you eat. Soluble fiber dissolves in water, absorbs water during digestion and helps to slow food's transit time.

#### Good food sources of soluble fiber include:

- Fruit: peeled fruits including apples, apricots, bananas, mangos, peaches, pears, and plums. You may also have grapefruits and oranges without the white membrane.
- Well-cooked vegetables: asparagus tips, broccoli florets, carrots, potatoes, sweet potatoes.
- Smooth peanut butter and other nut butters.
- Soft grains including oatmeal and white rice.
- Cereals and breads made from corn meal, refined wheat, and rye.
- Supplements that contain 100% soluble fiber such as: Benefiber, Citrucel, and FiberChoice.



### Poor absorption of vitamins and minerals

**Fat-soluble vitamins A, D, E, and K:** If part of your ileum has been removed, you may not be able to absorb fat-soluble vitamins. You can take a water-soluble version of these vitamins, such as an AquADEK.

**Calcium:** If you have had your ileum removed you should choose calcium fortified foods such as almond milk, rice milk, soymilk, and calcium fortified breads and cold cereals. Foods that are naturally good sources of calcium include barley, broccoli (well-cooked to reduce gas), clams, oysters, sardines, tofu and yogurt. A calcium supplement may be prescribed for you.

**Vitamin B12:** Loss of your ileum will decrease vitamin B12 absorption. Your doctor may recommend a daily sublingual B12 tablet or a monthly B12 injection.

**Magnesium:** Deficiency is common if the colon is removed. Choose foods high in magnesium such as nut butters, avocado, and fish.

**Zinc and selenium:** If you have frequent diarrhea, you lose these minerals in the stool. Good food sources of zinc include beef, chicken, fortified breakfast cereals, oysters, and turkey. Good sources of selenium include cottage cheese, sardines, shrimp, tuna, and Brazil nuts.

**Sodium:** If you have diarrhea or high stool output, you may need to increase salt intake. Salt your meals and choose salty snacks such as pretzels and crackers.

**Choose a chewable or liquid multivitamin and mineral supplement to improve absorption.**

**Kidney Stones: a concern for those with a colon**

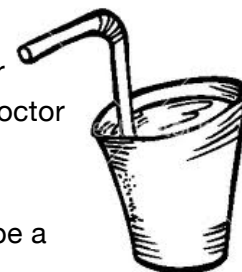
Removing all or some of the ileum may result in poor absorption of fat. Undigested fat may combine with minerals such as calcium in the gut. These fat – calcium combinations allow food compounds called oxalates to be absorbed into the bloodstream. Oxalates may cause painful kidney stones to form. Dehydration further increases this risk. You may need to restrict foods that are high in oxalates, which are shown in the table below. Most of these are healthy foods with good nutrients, so talk to your dietitian about how much you should limit them and how you can replace them.

**High Oxalate Foods**

Vegetables	Fruits	Protein	Grains	Other
Beets	Cranberries	Beans	Bran cereal	Beer (dark)
Carrots	Currants	Nuts	Buckwheat	Chocolate
Celery	Figs	Peanut butter	Wheat	Coffee
Leafy greens	Grapes	Sesame seeds		Cola
Leeks	Kiwi	Soy products		Tea
Okra	Plums			Tomato juice
Parsley	Strawberries			
Rhubarb	Tangerines			
Spinach				
Sweet potatoes				

**Tips to help prevent kidney stones:**

- Drink plenty of fluids, enough so that your urine is light yellow or clear. If you have kidney, heart, or liver disease, talk with your doctor before you increase the amount of fluids you drink.
- Limit colas and fruit juices.
- Oral rehydration solutions, such as DripDrop or CeraLyte, may be a good choice for those without a colon.
- Do not take more than the recommended daily dose of vitamin C.
- Make sure you consume enough calcium or take a calcium citrate supplement. Most adults require at least 1,000 – 1,500 mg of calcium daily. Calcium helps reduce the amount of oxalate absorbed.



<b>Summary Table</b>		
<b>Food type</b>	<b>If your colon is present</b>	<b>If your colon is absent</b>
Fluids	Oral rehydration solutions	Oral rehydration solutions
Soluble fiber	Eat as tolerated	Eat as tolerated
Insoluble fiber (roughage)	Small amounts as tolerated	Eat less
Oxalates	Limit	No restriction
Salt	Increase if diarrhea	Use liberally
Lactose in milk	Limit to a total of 2 cups per day, spread out	Limit to a total of 2 cups per day, spread out

Your specific symptoms and length of remaining bowel will determine your fluid and nutrient needs, whether you require oral rehydration solutions, and which foods you may need to restrict. If you have questions, please ask your dietitian or health care provider.