

Solid Organ Transplant Nutrition

Good nutrition plays an important role in your recovery after transplant. You need the right amount of calories and protein for proper wound healing. Some side effects of the antirejection medications can also change the amount of nutrients you need. Your transplant team will tell you how to best meet your dietary needs.


If you have any questions, please talk with your physician.

Protein

Protein is essential for wound healing and recovery from transplant. Protein can also help overcome muscle breakdown that may come with using high-dose steroids. You should follow a **high-protein diet** after transplant unless otherwise instructed by your physician or dietitian.

Examples of protein sources include:

- › Lean meat, poultry and seafood
- › Dairy products
- › Eggs
- › Beans and lentils
- › Seeds
- › Nuts and nut butters
- › High-protein grains such as quinoa
- › Soy products such as seitan, tofu, tempeh and edamame
- › Nutrition supplement drinks such as Ensure® or Boost®



When you eat protein foods, you store some of this protein in your blood. However, you can only store enough for a limited part of the day. It is important to include a protein source with **every** meal and snack to meet your protein needs.

Carbohydrates

Carbohydrates give your body energy. But they also have the biggest impact on your blood glucose (blood sugar). These transplant medications can cause higher blood glucose:

- › Cyclosporine®
- › Tacrolimus®
- › Prednisone®

If you have a history of diabetes or if you have been told your blood glucose levels have been high, follow these diet tips to manage your blood glucose.

- › Do not skip meals.
- › Eat 3 meals per day at regular, evenly spaced times.
- › Try to eat about the same amount of carbohydrates with each balanced meal.

Sources of nutrient-dense carbohydrates to include:

- › Whole grains such as brown rice, oatmeal and whole grain bread
- › Fruits
- › Starchy vegetables such as potatoes, corn and peas

Sources of carbohydrates to limit:

- › Desserts and sweets
- › Regular soft drinks
- › Juice

Sodium

Steroid medications can cause your body to hold on to extra fluid. To help prevent extra fluid, stay within the recommended limit of 2,300 milligrams (mg) of sodium (or salt) per day.

Ways to limit sodium:

- › Read nutrition labels to stay under 2,300 mg of sodium per day.
- › Choose low-sodium options if you eat packaged or processed foods.
- › Prepare food at home more often. More than 70% of the sodium Americans eat comes from packaged, prepared and restaurant foods.

High-sodium foods to limit
<ul style="list-style-type: none">• Canned soups• Processed meats (ham, bacon, sausage, cold cuts, pepperoni, smoked meats)• Canned foods (meat, cheese, vegetables)• Frozen meals• Pickled vegetables• Salted snacks (chips, pretzels, crackers)• Tomato and vegetable juices

Fluids

Make sure you drink enough fluids after your transplant. A general goal is 1 1/2 to 2 liters, or about 8 cups, of water per day depending on your size. Some of the transplant medications can stress your kidneys. Drinking enough water can help protect them. If you have questions about how much you should drink, talk with your clinician.

Calcium

You need calcium to maintain healthy bones. Steroids interfere with your ability to absorb calcium. Eat foods high in calcium.

- › Dairy
- › Beans
- › Leafy greens such as kale and spinach
- › Lentils
- › Sardines

Your clinician may ask you to take calcium supplements after your transplant. Your calcium intake from food and/or supplements should total 1,500 mg per day.

Potassium and phosphorus

After transplant you may have periods of high or low levels of potassium and phosphorus. Your clinician will let you know if you need to have more or less of these nutrients in your diet. As needed, refer to the following food lists (these are just a few examples).

Potassium	
Lower Potassium Foods	Higher Potassium Foods
<p>Certain vegetables (bell peppers, cabbage, carrots, raw celery and onions, green beans, lettuce, cucumber, asparagus, cooked cauliflower)</p> <ul style="list-style-type: none">• Some fruits (apples, pears, peaches, watermelon, berries, grapes, pineapple, lemons, limes)• White rice• White bread• White pasta• Cooked rice and wheat cereals• Rice milk	<ul style="list-style-type: none">• Certain vegetables (potatoes, sweet potatoes, tomatoes, cooked broccoli, spinach, artichoke, Swiss chard, winter squash)• Some fruits (oranges, bananas, plantain, dried fruits (prunes, apricot, raisins), avocado papaya, nectarines, cantaloupe, honeydew)• Legumes (lentils, beans)• Milk, ice cream, yogurt• Nuts, seeds, coconut, bran
Phosphorus	
Lower Phosphorus Foods	Higher Phosphorus Foods
<ul style="list-style-type: none">• Fresh fruits and vegetables• Corn and rice cereals• Rice and almond milk (not enriched)• Breads• Pasta• Rice	<ul style="list-style-type: none">• Liver, bologna, hotdogs, organ meats• Canned salmon or herring, sardines and oysters• Dairy products• Colas• Beans, lentils, nuts• Bran

Medication interactions

Grapefruit, grapefruit juice and pomelo fruit can change the way your body absorbs your transplant medications. This can cause unsafe medication levels in your blood.

Do not eat or drink these foods in any amount.

Other foods can also affect the way your medications work if you eat them in large amounts. These include:

- › Green tea and herbal tea
- › Turmeric
- › Pomegranate/pomegranate juice

Talk with your clinician before starting or changing the way you eat these foods or any supplements that include them.

Food safety

The immunosuppressive medications that you need after your transplant weaken your immune system. This can make it harder to fight infections. It is important to take extra precautions to avoid getting sick. Do not eat foods at a high risk for foodborne illnesses.

High-risk foods to avoid	
Dairy	<ul style="list-style-type: none">• Unpasteurized milk, cheese or other dairy products• Cheeses from the deli (unless contained in a cooked dish)• Moldy cheeses including bleu cheeses such as Roquefort and Gorgonzola, as well as soft-ripened cheeses such as Brie and Camembert
Meat/Fish/Eggs	<ul style="list-style-type: none">• Raw or undercooked meats• Meat or fish that was not cooked with heat including cold smoked fish, lox, pickled fish, sushi and ceviche (unless it is in a cooked dish)• Deli meats, cold cuts, smoked or cured meats, unless heated until steaming• Runny egg yolks and foods that contain raw egg such as homemade Caesar salad dressing, homemade mayonnaise, hollandaise and raw cookie dough

High-risk foods to avoid	
Fruits and Vegetables	<ul style="list-style-type: none"> • Unwashed fruits and vegetables • Raw bean sprouts • Raw fruits and vegetables from restaurants • Precut fruits and vegetables from the store • Unpasteurized fruit and vegetable juices unless made from home using washed produce
Other	<ul style="list-style-type: none"> • Any foods from salad bars, buffets or street vendors • Food at social gatherings that has not been prepared safely or has been sitting out for more than 2 hours • Raw soy products, raw honey, raw and uncooked brewer's yeast, and raw or unpasteurized probiotic drinks such as kombucha or kefir • Any moldy or outdated food

Follow these food safety guidelines:

- › Wash your hands with warm, soapy water for 20 seconds before and after preparing food and before eating. Rinse your hands thoroughly with a clean, dry towel. Disposable paper towels are a good option.
- › When grocery shopping, pick up perishable foods last and go directly home.
- › Keep raw meat, poultry and seafood separate from all other foods. At home, keep raw meat at the bottom of the fridge. Clean counters, cutting boards and utensils thoroughly after contact with these foods.
- › Thaw meat, fish or poultry in the microwave or refrigerator. Do not thaw at room temperature. Use defrosted foods right away and do not refreeze them.
- › Always marinate food in the refrigerator. Do not use sauce that was used to marinate raw meat on cooked foods.
- › Never put cooked food back on the same plate that just held raw food.
- › Wash fruits and vegetables very well under running water before peeling or cutting. Do not wash produce with soap, detergent or chlorine bleach solution. Use a clean vegetable scrubber and replace it often.
- › Keep hot foods hot and cold foods cold. Refrigerate the leftovers within a maximum of 1 to 2 hours. Eat leftovers within 3 to 4 days.
- › Make sure foods are cooked to a safe temperature. Use a food thermometer to check.

Minimum cooking temperatures	
Beef, veal, lamb chops, steaks, roasts	145 degrees F
Ground beef	160 degrees F
Fish	145 degrees F
Pork	145 degrees F
Egg dishes	160 degrees F
Turkey, chicken, duck	165 degrees F

Maintaining a healthy weight and lifestyle

A healthy weight is important both before and after transplant. Often people lose weight right after surgery because their energy needs are much higher. Your dietitian will work with you to prevent this as much as possible.

After recovery, your body may not need the extra calories that you needed before.

Steroids can increase your appetite and weight gain. Monitor your weight after transplant and ask your dietitian if you have any concerns about unintentional weight loss or gain.

Tips to maintain a healthy weight and lifestyle:

- › **Monitor portion sizes.** Start by using a smaller plate. Fill half your plate with colorful vegetables and the rest with whole grains and lean proteins. Stop eating when satisfied, not stuffed.
- › **Choose healthier snacks.** If you are feeling hungry between meals, start by choosing lower calorie foods such as vegetables, fruits and yogurt. Combine low-calorie foods with protein to better manage your blood sugar and to help you feel full longer.
- › **Limit sweets.** Avoid calorie-dense desserts, juices and soda.
- › **Stay active.** Start activity slowly. Ask friends and family to join you.
- › **Choose healthy fats.** Limit unhealthy fat such as fatty meats, cheese, butter and cream. Include healthy fats such as unsalted nuts and seeds, avocados, and vegetable oils. Continue to monitor serving sizes since these healthy fats are still high in calories.