

Nutrition/Dehydration

Your Guide To Eating Healthy After Your Kidney and/or Pancreas Transplant

These diet guidelines are meant to help you to optimize your new kidney and/or pancreas and prevent problems. The diet guidelines include: food safety, optimizing caloric and protein intake for healing (while preventing weight gain), monitoring carbohydrate intake to prevent high blood sugars, following an overall heart-healthy diet and adjusting the electrolytes in your diet if necessary.

Short-Term (Recovery) Goals

- Caloric and protein requirements immediately after transplant are increased due to the stress of the surgery and wound-healing needs. Adequate oral intake is important to provide the building blocks for healing and to help prevent infection and muscle loss. Depending on the level of kidney and/or pancreas function, an appropriate diet will be prescribed – typically a general diet! If the new kidney and/or pancreas has delayed function, you temporarily may need sodium, potassium or fluid restrictions along with a diabetic diet.
- During the first few weeks of recovery, be sure to include nutritious foods at meal and snack times. For example: lean beef and pork, chicken, turkey and fish; low fat milk, cheese and yogurt; eggs; nuts; whole grain breads and cereal; and fruits and vegetables will provide the protein, vitamins and minerals

you need rather than empty caloric foods like chips and sweets.

- If you experience poor appetite or unintentional weight loss, contact the transplant dietitian.
- It is important to drink 1-2 liters of fluid (8 full 8-ounce glasses of fluid) per day, **minimum**. Some people may be instructed to drink 2-3 liters of fluid. Make sure you understand what your fluid needs are. It is best to avoid fluids that have caffeine or limit your caffeine drinks to 1-2/day. Alcohol beverages are permitted; however, strict moderation is necessary. Alcohol has the potential to affect the way the liver breaks down the anti-rejection medications and may cause you to reject.
- Maintain blood glucose control after transplant if you are diabetic. Prednisone (an anti-rejection medication) and Prograf can elevate blood sugars and cause medication-induced diabetes in non-diabetics. If this occurs after transplant, you will be seen by a diabetes educator for instructions.

Long-Term Goals

- **Maintain a desirable weight.** Weight gain after a transplant can be problematic and is common due to improved appetite and fewer diet restrictions. Weight gain also can occur from side effects of anti-rejection medications. Weight gain after transplant increases your risk for high blood pressure, diabetes, heart disease, joint or bone disease and may shorten the life of your new organ. We want you to be as healthy as possible to enjoy the life of your

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new organ for as long as possible. To control your weight, limit caloric intake in food and in drinks. Fat adds the most calories to your diet, so try low-fat ways to prepare your meals and trim added fats from your diet to save calories. Limit/avoid fast food. Have low-calorie snacks, fruits, vegetables and low-fat dairy products on hand for snacking. Read labels and pay attention to portion sizes. To keep your mind off of food, try to stay busy with your favorite hobbies and activities (reading, gardening or yard work, housework, dancing, crafts, etc.). Keep moving daily with exercise and activities you enjoy to burn more calories. Make a plan and stick with it. If you struggle to control your weight, contact the transplant dietitian – what do you have to lose besides weight?!

- **Cholesterol Control.** Genetics, diet and lifestyle, obesity, diabetes and the side effects of some anti-rejection medications affect cholesterol levels. High cholesterol and triglyceride (blood fat) levels increase your risk of heart disease, vascular disease and the risk of chronic rejection of your new organ. Ideally, cholesterol levels should be less than 200, HDL (good cholesterol) should be above 50, LDL (bad cholesterol) should be less than 100 and triglycerides should be less than 150.
- **Cholesterol and LDL (Bad Cholesterol).** If you experience a high total cholesterol level (greater than 200) or a high LDL (bad cholesterol level greater than 100), limit your diet in saturated fat. Saturated fat is the fat that is solid at room temperature

(butter, whole fat milk and cheeses; meat fats and drippings; coconut and palm kernel oil; lard). In addition, portion sizes of all animal products (lean meats, poultry, fish, eggs, low-fat dairy) will need to be limited because these foods naturally are sources of animal cholesterol. Your diet should consist of extra-lean cuts of beef or pork, skinless white meat chicken and turkey and fish. Meats should not be fried. Low-fat dairy products such as 1 percent or skim milk, cheese, cottage cheese and yogurt are allowed. Soft tub margarines or sprays, low-fat dressings, olive or canola oil are preferred oils. The majority of your diet should consist of fruits, vegetables, whole grain breads, cereals, pastas and rice.

- **Triglycerides.** If you experience a high triglyceride level (greater than 150), make sure you are at a desirable weight (lose weight if needed) and exercising regularly. Alcohol should be avoided. Also, it is recommended to limit intake of carbohydrates. Simple sugars from sugary drinks, sweets, desserts, candies, pastries and sugary cereals can easily be stored as triglycerides. Substitute sugar-free products in their place. Excessive intake or large portions of white bread products, white rice or pastas can also lead to elevated triglyceride levels. Your diet should consist of lean meats and low-fat dairy (as above) and include a variety of vegetables, fruits, nuts, beans and whole grains (with emphasis on portion control of whole grains). Eating fish (salmon, tuna and halibut) at least twice a week and moderate use of olive oil may be helpful.

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- **HDL or Good Cholesterol.** In order to maintain/increase your HDL cholesterol (good cholesterol greater than 50), it is important to follow the above low-fat guidelines with a diet high in fruits, vegetables and whole grains. Avoid smoking. Exercise (get your heart rate up) regularly.

A heart-healthy diet is meant to help lower cholesterol levels and blood pressure. It may help to decrease the risk of heart disease. It includes eating a variety of foods that are low in fat, especially saturated fat and trans fats. The diet is also low in cholesterol and low in sodium. Adding fiber and Omega-3 fatty acids to your diet are recommended.

Tips In Preparing Heart-Healthy Foods

- Use nonstick cookware or a fat-free nonstick spray (like Pam, etc.).
- Bake, boil, broil, grill, microwave, poach or roast instead of frying foods.
- Trim any fat and skin from meat before cooking it.
- Place meat on a rack so the fat can drain; discard meat drippings.
- Use herbs and spices to add flavor to the food instead of butter and/or salt.
- Try using marinades to flavor and tenderize meats. Anything that contains acid will work as a marinade (like seasoned vinegars, lemon or lime juices, fruit or fruit juices, etc.).

- Buy lean cuts of meat (90 percent lean or leaner).
- Cook soups, stews, chili, spaghetti sauces and gravies the day before and refrigerate. Skim off any solid fat before reheating.
- Steam vegetables in water or low-sodium broth instead of fat.
- Have fruit for dessert.

For more information on heart-healthy eating or for recipe ideas, you can visit these web sites:

- www.americanheart.org
- www.deliciousdecisions.org
- www.diabetes.org
- **Bone Health.** Anti-rejection medications can have negative side effects on bone strength. In addition, any poor bone health that was present before transplant may make bone disease after transplant even more likely. Eat calcium-rich foods (low-fat dairy and cheese). Take calcium supplements and medicines as prescribed. Exercise to keep your bones strong. Avoid smoking.
- **Electrolytes.** Your medications may affect the levels of certain electrolytes in your body, especially potassium and magnesium. You may need to decrease or increase your intake of foods high in these electrolytes.

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Blood Sugar

The goal of a successful pancreas transplant is normal blood sugars. We do not routinely require that you check your blood sugars at home; however, we do ask you to be fasting prior to having your lab work completed so we can monitor your blood sugars with each lab draw. If we are concerned about your blood sugars done with your labs, we will contact you with a plan to check your blood sugars at home. You should not need to follow a diabetic diet with a functioning pancreas transplant.

Occasionally, a transplanted pancreas may have delayed function. You may need to supplement with insulin until the pancreas is fully working. It is possible that a transplanted pancreas does not produce enough insulin, and you may regularly need to take insulin.

The insulin requirements are considerably less than before your pancreas transplant. You may not experience insulin reactions because the transplanted pancreas is producing enough insulin to provide regulation of your blood sugars.

It is possible, over time, for a pancreas transplant recipient to develop “insulin resistance” and require oral blood sugar medications to help control the blood sugars. If this occurs, you will also need to follow a diabetic diet and do regular blood sugar checks.

A transplant endocrinologist (a doctor who specializes in diabetes) will see you in the transplant clinic. The endocrinologist will monitor your pancreas transplant function after transplantation and determine if you are experiencing any problems with your blood sugar control.

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Potassium

Potassium Rich Foods

Vegetables

Low Potassium (0-100 mg)

- Cucumbers
- Green Beans
- Green Peppers
- Lettuce: all varieties
- Wax Beans: canned (low sodium or rinsed)

Medium Potassium (100-200 mg)

- Asparagus: fresh, cooked
- Broccoli
- Cabbage
- Carrots
- Cauliflower
- Celery
- Collard, mustard or turnip greens
- Corn
- Eggplant
- Mushrooms: canned, fresh
- Onions
- Peas
- Radishes
- Spinach: fresh

- Turnips
- Summer Squash; Zucchini

High Potassium (200-350 mg)

- Beans, canned with pork
- Beets
- Beet Greens
- Brussel Sprouts
- Chinese Cabbage
- French Fried Potatoes
- Kohlrabi: fresh, cooked
- Okra
- Potatoes: boiled, mashed
- Pumpkin: canned
- Rutabagas
- Spinach: cooked
- Sweet Potatoes/Yams
- Tomato: 1 medium
- Tomato or Vegetable Juice: (low sodium)
- Winter Squash: acorn and butternut

Very High Potassium (>350 mg)

- Avocado
- Beet Greens
- Potato: baked
- Spaghetti Sauce
- Tomato Sauce/Paste

Fruits And Juices

Low Potassium (0-100 mg)

- Applesauce
- Peach Nectar
- Blueberries
- Pear Nectar
- Cranberry Juice
- Pears: canned
- Cranberry Sauce
- Lemon
- Grape Juice

Medium Potassium (100-200 mg)

- Apple
- Apple Juice
- Apricot Nectar
- Gooseberries
- Blackberries
- Grapes: (15 small)
- Cherries
- Papaya
- Figs: canned
- Mango
- Fruit Cocktail
- Lemon Juice
- Peach: fresh
- Pineapple: canned
- Pineapple Juice

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- Plums: canned
- Plums
- Raisins: (2 tbsp)
- Raspberries
- Rhubarb
- Tangerine
- Watermelon: (1 cup)

High Potassium (200-300 mg)

- Apricots: canned or dried
- Banana: (1/2)
- Cantaloupe: (1/8 small)
- Dates: (1/4 cup)
- Figs: 2 whole
- Kiwi: (medium)
- Nectarines
- Orange: fresh
- Orange Juice
- Pears
- Prune Juice
- Prunes
- Honey Dew Melon: (1/8 small)

Magnesium

Magnesium Rich Foods

Vegetables

Low Magnesium (below 40 mg)

- Chestnuts: 1 ounce
- Kidney Beans: all types, cooked, 1/2 cup
- Purslane: cooked, 1/2 cup
- Broadbeans: cooked, 1/2 cup
- Split Peas: cooked, 1/2 cup

Medium Magnesium (40-69 mg)

- Tomato Paste: canned, 1/2 cup
- Small White Beans: cooked, 1/2 cup
- Sweet Potato: canned, mashed, 1/2 cup
- Black Beans: cooked, 1/2 cup
- Dock: (sorrel), cooked, 1/2 cup
- Nuts & Seeds: all types, 1 ounce
- White Beans: cooked, 1/2 cup
- Baked Beans: 1/2 cup
- Navy Beans: cooked, 1/2 cup
- Succotash: cooked, 1/2 cup
- Beet Greens: cooked, 1/2 cup
- Lima Beans: baby, cooked, 1/2 cup
- Refried Beans: canned, 1/2 cup

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- Mung Beans: cooked, 1/2 cup
- Artichoke: cooked, 1 medium
- Whole Grain Cereals: ready-to-eat, 1 ounce
- Blackeyed Peas: dried, cooked, 1/2 cup
- Okra: cooked, 1/2 cup
- Great Northern Beans: 1/2 cup
- Acorn Squash: baked, 1/2 cup cubed
- Lima Beans: large, cooked, 1/2 cup

High Magnesium (70 mg and above)

- Spinach: cooked, 1/2 cup
- Swiss Chard: cooked, 1/2 cup
- Soybeans: cooked, 1/2 cup
- Pumpkin Seeds: 1 ounce
- Broccoli: cooked, 2 large stalks
- Peanuts: all types, raw, 1/2 cup
- Tofu: raw, regular, 1/2 cup
- Peanuts: all types, roasted, 1/2 cup

Dairy Products

Low Magnesium (below 40 mg)

- Yogurt: low-fat varieties, 1 cup (8 ounces)
- Milk: all types, 1 cup (8 ounces) = 35 mg

Meat Products

Medium Magnesium (40-69 mg)

- Vegetarian meat products, made of soy, 1 ounce

It is best to direct all of your nutrition-related questions to a Registered Dietitian (RD). An RD has had specific training and can provide you with the best information regarding the foods you eat and any diet restrictions you may need. Your transplant team has a RD available for you. Please contact:

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Dehydration

Symptoms of rejection and infection are covered in previous sections of this manual. Symptoms of dehydration are also important for you to know because dehydration is often a cause for an increase in BUN and creatinine levels. Dehydration (and low blood pressure) can also cause acute tubular necrosis (ATN) in which the kidney can temporarily shut down, causing a rise in creatinine and BUN.

Dehydration is more common after a pancreas transplant, with or without a kidney transplant. It is also more common with a bladder-drained pancreas than a bowel-drained pancreas. Dehydration is most likely to occur in the first few months after transplant. It may be necessary to treat dehydration with IV (intravenous) fluids the first few weeks after transplant.

Ongoing dehydration several months after a bladder-drained pancreas transplant may require consideration of converting the pancreas from being bladder drained to being bowel drained. If you have ongoing dehydration problems, you

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will need to discuss this option with a transplant surgeon to see if it would be in your best interest to undergo this operation.

Signs Of Dehydration

- Low blood pressure (especially when standing up)
- Dizziness when standing up
- Rapid pulse rate
- Weight loss
- Fatigue, loss of strength, confusion
- Dry mouth
- Certain lab values may increase, such as your BUN, creatinine and hematocrit
- Low urine output
- Constipation/abdominal pain

Drink two to three liters of fluids (8 full glasses) per day **minimum**.