

Nutrition after transplant

Your Guide to Eating Healthy after Your Heart Transplant

The diet guidelines in this handout are meant to help you to optimize your new heart and prevent problems. The diet guidelines include: food safety, optimizing calorie 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.

WHY DO I NEED TO PRACTICE FOOD SAFETY?

Food safety is especially important after transplant surgery because you are at higher risk for food-borne illness while you are taking immune suppression drugs. Safe food storage and preparation will help to protect you from bacteria and other harmful organisms that can be found in some food and drinks. You can find more specific guidelines on pages 2-3.

HOW AND WHAT SHOULD I EAT AFTER MY TRANSPLANT?

Your body will require extra calories and protein during the first few weeks after your transplant. It is important to meet your nutrition needs to help with healing. Even if your appetite is not good, it is important to eat. It may help to eat small, more frequent meals or to add a nutrition supplement (like Boost, Ensure, Carnation Instant Breakfast or similar supplements) if you are not

eating enough. Your dietitian will help you find a supplement you like if one is needed.

Some patients will experience high blood sugars after transplant for short-term or long-term. This may be because of the stress of the surgery, from some of the medications you are taking, or if you are already diabetic. It is important to keep your blood sugars under good control to help decrease stress on your new heart and help healing and recover faster. You may need an assessment of your diet for the types and amounts of carbohydrates you may be eating based on your diabetes management discharge plan.

FOLLOW YOUR DIET TO THE "T". THE DIET IS ACTUALLY PRETTY EASY TO STICK TO. THE TIPS THE NUTRITIONISTS GAVE WERE VERY HELPFUL TO MAKE FOOD TASTE BETTER.

– Nebraska Medicine patient

Nutrition, continued

It is important to follow a heart-healthy diet long-term. You are at high risk of developing coronary artery disease in your new heart, so making smart food choices is especially important. After your transplant, many people may try to help by giving nutrition advice. It is important to be cautious of fad diets and the use of supplements. Fad diets often make promises that are untrue and unsafe. For more specific heart-healthy diet guidelines refer to pages 3-8.

WHAT IF I NEED TO WATCH CERTAIN ELECTROLYTES IN MY DIET?

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. Information on these foods can be found on pages 15–16.

Food Safety After a Heart Transplant

Food safety in the kitchen

- *Maintain temperatures*
 - Refrigerator 34 - 40°F
 - Freezer below 5°F
- *Place raw meat on the bottom shelf of the refrigerator*
- *Keep foods out of the Temperature Danger Zone*
 - Cook hot foods to be a minimum internal temperature of 165°F and keep cold foods below 40°F.
- *Cook meats until well done.*
 - Beef above 160°F
 - Poultry above 165°F
 - Fish above 145°F
 - Eggs above 160°F
- *DO NOT leave frozen foods out on the counter to thaw. Defrost by placing in the refrigerator or microwave. Use defrosted foods right away, don't refreeze.*
- *Never leave perishable foods out of the refrigerator for over two hours. Put food away right after serving to help reduce the risk of bacterial growth.*
- *Consume leftovers within 2 to 3 days and reheat to 165°F. Wash fruits and vegetables thoroughly under running water before peeling or cutting; cut away bruised areas.*
- *Wash tops of canned foods before opening and wash the can opener after each use.*
- *Keep soap readily available for hand washing. Wash hands for at least 30 seconds with warm soapy water, before and after food preparation and consumption.*
- *Wash hands frequently and use paper towels for drying hands versus a community towel.*
- *Keep appliances free from food particles.*
- *Use separate cutting boards for raw and cooked foods.*
- *Keep counter and kitchen surfaces clean*
- *Replace dish cloths daily. DO NOT use sponges.*

Nutrition, continued

Food safety when dining out once your doctor has given you approval to eat at restaurants

- Go early to avoid crowds.
- DO NOT eat at buffets or potluck events (until okayed by doctor).
- Select restaurants with a reputation for cleanliness.
- Request single-serve condiment packages; avoid self-serve bulk condiment containers.
- Avoid high-risk sources: garnishes, salad bars, delicatessens, etc.

Food Safety When Shopping

- Shop backwards! Start with non-perishable foods first; shop for perishable foods last. This will help to reduce the time the food is out of refrigeration.
- Check all “sell by”, “use by”, and packaging dates on foods.
- Only use pasteurized dairy products.
- DO NOT purchase damaged, swollen, rusted, or deeply dented cans. Check boxed/package foods for proper seals.
- Avoid delicatessen foods.
- Avoid cream or custard-containing desserts that are not refrigerated.
- Avoid foods from bulk-containers.
- Avoid tasting free samples at the grocery store.
- Store groceries promptly when you get home.

Eating to Help Control your Blood Sugars

It is important to be consistent with your intake of carbohydrates to help control your blood sugars. The best way to know how much carbohydrate is in the food you eat is to look at the food label on the package.

*The amount of carbohydrates you can eat is based on the amounts or portion of food you eat. There are numerous information sources for determining carbohydrate amounts, including:

- Nutrition Fact labels (see page N10)
- Web-based programs
- Books and pamphlets

A carbohydrate choice is the amount of food which provides around 15 grams of carbohydrates. The amount of carbohydrates recommended for you can be discussed with your dietitian or diabetes educator.

Below is a conversion guide to help you to convert grams of carbohydrates to number of choices:

Grams of Carbohydrates	# of Carbohydrate Choices
15	1
30	2
45	3
60	4
75	5
90	6
105	7

Nutrition, continued

Follow your food plan to help control your blood sugars.

YOUR MEAL PLAN

Breakfast: _____ carbs

Morning Snack: _____ carbs

Lunch: _____ carbs

Afternoon Snack: _____ carbs

Supper: _____ carbs

Bedtime Snack: _____ carbs

NOTES

Nutrition, continued

Examples of carbohydrates in the diet

BREADS: 15G CARB

- 1 slice bread
(rye, white, whole wheat – 1 oz. slice)
- 6 small breadsticks (4" long)
- 1/2 English muffin, hot dog or hamburger bun
- 1 small croissant*
- 1 matzo ball
- 1 small muffin* (1 oz.)
- 15" pancake/waffle*
- 1/2 pita (6")
- 1 small plain roll (1 oz.)
- 1 slice fruit breads, 1/4" thick (i.e., banana bread*)
- 1 tortilla (6")
- 1/3 c. stuffing*
- 2" x 2" cornbread or biscuit

CEREAL: 15G CARB

- 1/2 c. bran cereal
- 1/4 c. granola*
- 1/2 c. cooked cereal
- 3/4 c. other dry cereals
- 1/2 c. sugar frosted cereal
- 1 1/2 c. puffed cereal

CRACKERS/SNACK FOOD: 15G CARB

- 6-7 animal crackers
- 3 graham crackers
- 3 c. popcorn
- 4-6 round crackers*
- 3/4 oz. pretzels (15 mini twists)
- 1 oz. snack chips* (10-15)
- 6 saltine type crackers

POTATOES/VEGETABLES/BEANS: 15G CARB

- 1/3 c. beans (kidney, pinto), cooked
- 1/4 c. baked beans, canned
- 1/2 c. corn, hominy, peas
- 1 small white or sweet potato (3 oz.)
- 10-15 french fries*
- 1/2 c. hash brown, au gratin*
- 1 c. winter squash
- 1 c. marinara or pasta sauce
- 1/2 c. mashed potatoes

FRUITS: 15G CARB

- 1 small apple, orange, tangerine, pear, peach
- 1/2 c. applesauce, unsweetened
- 4 apricots, medium, fresh
- 7 apricot halves, dried
- 1/2 banana
- 2 tbsp. dried fruit
- 1/3 c. cantaloupe
- 1 c. melon cubes
(cantaloupe, watermelon or honeydew)
- 1/2 c. cherries
- 2 figs, plums
- 1/2 c. canned fruit (unsweetened)
- 1/2 grapefruit
- 15 grapes
- 1/2 c. juice, unsweetened (grapefruit/orange)
- 1 large kiwi
- 3/4 c. pineapple, fresh
- 1/2 mango, papaya
- 3 medium prunes
- 2 tbsp. raisins or raisins
- 1 c. strawberries, blueberries, raspberries

Nutrition, continued

PASTA/GRAINS: 15G CARB

1/2 c. chow mein noodles*
1/3 c. pasta, other grains (cooked)
1/3 c. brown/white rice (cooked)
1/2 c. fried rice*

MILK/YOGURT: 15G CARB

1 c. skim, 2%*, whole*, buttermilk
1/2 c. evaporated skim milk
1/3 c. nonfat dry milk powder
1 c. plain yogurt
3/4 -1 c. artificially sweetened yogurt

VEGETABLES: 5G CARB

(count if eating more than 3 servings or 15g carb)
1/2 c. cooked vegetables (asparagus, green beans, bean sprouts, broccoli, cabbage, carrots, cauliflower, eggplant, spinach, tomato, turnips, water chestnuts, zucchini)
1 c. raw vegetable
1/2 c. tomato/vegetable juice
1/4 c. tomato puree

SWEETS: 15G CARB

2" brownie (unfrosted)*
2" square piece of cake (no icing)*
2 small fat-free cookies
1/2 c. custard*
1/3 c. frozen fat-free fruit yogurt
1 small granola bar*
1/2 c. ice cream* /ice milk
1/2 twin popsicle/1 fudgesicle
1/2 c. sugar-free pudding
5 vanilla wafers
2 tbsp. light maple syrup
1 tbsp. all fruit jelly/jam
3" cookie (1)

SOUPS: 15G CARB

1 c. broth base (chicken/beef noodle)
1/2 c. bean, split pea
1 c. cream soup*

COMBINATION FOODS: 30G CARB

1 c. beef stew*
1 meat burrito*
2 stuffed cannelloni*
12 chicken nuggets*
1.5 c. chili w/beans*
1 small beef enchilada*
1 3"x4" piece lasagna*
2/3 c. macaroni & cheese*/pasta salad*
1 pot pie* (7oz)
1 c. ravioli*
2 soft tacos*
1 tostada with beans*
1 c. casserole/hot dish
6 breaded fish sticks*
1/4 c. ketchup
1 slice frozen pizza thick crust*
2 slices frozen pizza thin crust*
1/2 c. tomato/marinara canned sauce

Nutrition, continued

SWEETS: 30G CARB

- 2" square piece of cake with icing
- 1 frosted cupcake*
- 1 plain donut*
- 1/8 pumpkin/custard pie*
- 1/2 c. regular pudding*
- 1 c. chocolate milk*
- 1 small soft serve cone*
- 1/2 large bagel (2 oz.)

SWEETS: 45G CARB

- 1/6 pc. two crust pie*
- 1/6 pc. Stir N' Frost carrot cake*
- 1/6 pc. chocolate cheese cake*
- 1 small sweet roll or Danish*
- 1 c. low fat yogurt with fruit
- 2 tbsp. regular maple syrup

*CONTAINS FAT

Nutrition, continued

Heart Healthy Eating

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.

What do these terms mean?

Saturated Fats: These fats are usually solid at room temperature. They are the “bad” fats that raise cholesterol. Some sources are: high-fat dairy products, high-fat meat products, butter, lard, palm and tropical oils.

- *A low saturated fat item will have only 1 gram/serving*
- *A saturated fat-free item will have less than 0.5 gram/serving*
- *Aim for <5-6% of total calories from saturated fat*

Trans Fats: A process called hydrogenation turns liquid (unsaturated) fats (or oils) into solid fats. This type of fat, like saturated fat, can raise your cholesterol levels. You should avoid this type of fat. Some sources of trans fat include: some margarines, vegetable shortenings, peanut butter, crackers, cookies, etc. Recommended <1% of total calories from trans fat.

Omega-3 Fatty Acids: This is a type of polyunsaturated fat that may help to prevent blood clots and help your blood vessels dilate (or get bigger). This can make your blood flow more smoothly. They are the “good” types of fat. Adding this type of fat to your diet is recommended.

- *Sources include: Fatty fish (salmon, mackerel, tuna, halibut, lake trout, sardines, etc.), canola oil, flaxseed and nuts (1 1/2 oz/day)*
- *Consumption of fish two to three times a week is recommended*

Sodium: Sodium is in most foods naturally. Processed foods are usually high in sodium. Many food items have low-sodium varieties. Sodium can cause you to retain fluid and/or increase your blood pressure. No more than 1500 mg sodium (new guidelines) a day is recommended.

- *Try to use other herbs/seasonings instead of salt (use salt substitutes only with a doctor's permission)*
- *A low sodium item will have 140 mg of sodium or less/serving*
- *A very low sodium item will have 35 mg of sodium or less/serving*

Nutrition, continued

Fiber: Fiber occurs naturally in some foods. There are two types of fiber: soluble and insoluble. Studies have shown that fiber can help to lower cholesterol levels. The recommended amount of fiber per day is 25-35 grams. Slowly add fiber into your diet if you do not eat it regularly. Adding a lot of fiber at once can cause stomach cramping and/or gas.

Soluble Fiber: Found in oats, barley, legumes, vegetables and fruits.

Insoluble Fiber: Found in skins of fruits and vegetables, wheat and grains.

- *An excellent source of fiber will have 5 grams or more per serving*
- *A good source of fiber has 3 grams or more per serving*

How much fat can I have in a day?

The American Heart Association (AHA) recommends no more than **30 percent** of your total calories to come from fat. The recommendation is different for each person. It is based on how many calories you need everyday. You can visit the website www.mypyramid.gov to find a meal plan for you.

Nutrition, continued

How do I read the food label?

Nutrition labels are found on almost all packaged and processed food items. Some fresh fruits and vegetables, raw fish, meat and poultry also have a food label. Compare labels of similar products to find the best choice for your needs. Here is an example of a food label.

The Nutrition Facts Label information is based on ONE serving but many packages contain more.

Look at serving size to see how many servings you're actually consuming.

A low fat item will have 3 grams or less per serving. **My daily fat total should not exceed: _____ grams.**

Limit Saturated Fat to no more than 10-15 grams per day.

Avoid Trans Fat.

A low sodium item will have 140 mg or less per serving. A very low sodium item will have 35 mg or less per serving. **My daily sodium total should not exceed: _____ mg total/day.**

An excellent source of fiber will have 5 grams or more per serving. A good source of fiber will have 3 grams or more per serving. **My daily fiber goal: 25-35 grams total/day.**

Nutrition Facts			
Serving Size 1 Cup (228g)			
Servings per container 2			
Amount Per Serving			
Calories 250		Calories from Fat 110	
		% Daily Value	
Total Fat 12g			18%
Saturated Fat 3g			15%
Trans Fat 0g			0%
Cholesterol 30mg			10%
Sodium 470mg			20%
Total Carbohydrate 31g			10%
Dietary Fiber 0g			0%
Sugars 5g			
Protein 5g			
Vitamin A 4%		Vitamin C 2%	
Calcium 20%		Iron 4%	
Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:			
	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	80g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Nutrition, continued

Heart healthy diet guide

MEAT, POULTRY & FISH

(five to six oz. per day)

BEEF:	extra lean, select or choice grades, sirloin, rump roast
FISH:	any fresh or frozen
LAMB:	shank
POULTRY:	without skin, white meat, not fried
PORK:	tenderloin, loin chops, center cut ham*
SHELLFISH:	higher in cholesterol than fresh-water fish
WILD GAME:	venison, rabbit, squirrel, duck and pheasant

(Consider trying soy protein meat substitutes)

DAIRY PRODUCTS

(About three cups per day)

MILK:	skim, 1 %, evaporated skim, nonfat powdered
YOGURT:	nonfat/low fat varieties (limit one serving each week)
CHEESE:	cottage cheese* (skim-2%), low fat/nonfat varieties of cheese*, low fat/nonfat cream cheese and sour cream

EGGS

(in moderation ... less
than two to four egg
yolks each week)

Egg whites
Egg substitutes

Nutrition, continued

BREAD, CEREAL, PASTA, RICE, BEANS

(six to 11 ounces per day)

- BREAD:** whole wheat, white, rye*, pumpernickel*, pita, bagels, low-fat muffins, low-fat rolls, etc. – whole grains are best!
- CRACKERS:** low-fat varieties
- CEREALS:** oatmeal, bran cereals, most cold cereals*
- PASTA:** any whole grains are the best choice
- RICE:** any grain rice, box mixes*
- BEANS:** dried or canned* navy, kidney, lintels, soy, peas

FRUITS & VEGETABLES

(five or more servings daily)

- FRUITS:** all fresh, frozen, canned, juices
- VEGETABLES:** low sodium canned, all fresh, all frozen
- SERVING SIZE:** 1/2 cup cooked vegetable/fruit
1 cup raw
1 medium sized fruit
1/2 cup fruit juice

FATS & OILS

(sparingly)

- OILS:** liquid vegetable oils—olive and canola oil are best, Enova® oil
- BUTTER/MARGARINE:** Soft tub margarine, liquid/spray varieties. Liquid oil should be the first ingredient; Smart Balance®, Take Control®
- DRESSINGS:** low-fat and nonfat varieties*

BEVERAGES

- OTHER:** Diet sodas, coffee, tea – caffeine in moderation, also see “Dairy”
- ALCOHOL:** No more than two drinks per day for men and one drink per day for women*

SWEETS & SNACKS

(sparingly)

- BAKED GOODS:** angel food cake, fig bars, low-fat cookies, graham crackers, vanilla wafers, etc.
- FROZEN DESSERTS:** low-fat/nonfat ice cream, frozen yogurt, sorbet, sherbet
- CANDY:** sugar-free candy, hard candy
- CHIPS/CRACKERS:** Plain popcorn with spray butter, unsalted pretzels, baked chips, low-fat/fat free chips* and crackers*

Nutrition, continued

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 websites:

- www.heart.org (AHA website)
- www.deliciousdecisions.org
- www.diabetes.org

Nutrition, continued

Potassium rich foods

VEGETABLES

Low Potassium (0-100mg)

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

Medium Potassium (100-200mg)

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

High Potassium (200-350mg)

- Beans, canned with pork
- Beet greens
- Chinese cabbage
- Kohlrabi: fresh, cooked
- Potatoes, boiled, mashed
- Rutabagas
- Sweet potatoes/yams
- Tomato or vegetable juice (low sodium)
- Winter squash, acorn & butternut
- Beets
- Brussel sprouts
- French fried potatoes
- Okra
- Pumpkin, canned
- Spinach, cooked
- Tomato, 1 medium

Very High Potassium (>350mg)

- Avocado
- Potato, baked
- Tomato sauce/paste
- Beet greens
- Spaghetti sauce

FRUITS AND JUICES

Low Potassium (0-100mg)

- Applesauce
- Blueberries
- Cranberry juice
- Cranberry sauce
- Grape juice
- Peach nectar
- Pear nectar
- Pears, canned
- Lemon

Medium Potassium (100-200mg)

- Apple
- Apricot nectar
- Blackberries
- Cherries
- Figs, canned
- Fruit cocktail
- Grapefruit (1/2)
- Peach, fresh
- Pineapple, juice
- Plums
- Raspberries
- Tangerine
- Apple juice
- Gooseberries
- Grapes (15 small)
- Papaya
- Mango
- Lemon juice
- Grapefruit juice
- Pineapple, canned
- Plums, canned
- Raisins (2 tbsp)
- Rhubarb
- Watermelon (1c.)

High Potassium (200-300mg)

- Apricots, canned or dried
- Cantaloupe (1/8 small)
- Figs, 2 whole
- Honey dew melon (1/8 small)
- Nectarines
- Orange, juice
- Prune juice
- Banana (1/2)
- Dates (1/4 c.)
- Kiwi (medium)
- Orange, fresh
- Pears
- Prunes

Nutrition, continued

Magnesium rich foods

VEGETABLES

Low Magnesium (below 40 mg)

- Chestnuts, 1 oz.
- Kidney beans, all types, cooked, 1/2 c.
- Purslane, cooked, 1/2 c.
- Broadbeans, cooked, 1/2 c.
- Split peas, cooked, 1/2 c.

Medium Magnesium (40-69 mg)

- Tomato paste, canned, 1/2 c.
- Small white beans, cooked, 1/2 c.
- Sweet potato, canned, mashed, 1/2 c.
- Black beans, cooked, 1/2 c.
- Dock, (sorrel), cooked, 1/2 c.
- Nuts & seeds, all types, 1 oz.
- White beans, cooked, 1/2 c.
- Baked beans, 1/2 c.
- Navy beans, cooked, 1/2 c.
- Succotash, cooked, 1/2 c.
- Beet greens, cooked, 1/2 c.
- Lima beans, baby, cooked, 1/2 c.
- Refried beans, canned, 1/2 c.
- Mung beans, cooked, 1/2 c.
- Artichoke, cooked, 1 medium
- Whole grain cereals, ready-to-eat, 1 oz.
- Blackeyed peas, dried, cooked, 1/2 c.
- Okra, cooked, 1/2 c.
- Great northern beans, 1/2 c.
- Squash, acorn, baked, 1/2 c. cubed
- Lima beans, large, cooked, 1/2 c.

High Magnesium (70mg and above)

- Spinach, cooked, 1/2 c.
- Chard, Swiss, cooked, 1/2 c.
- Soybeans, cooked, 1/2 c.
- Pumpkin seeds, 1 oz.
- Broccoli, cooked, 2 large stalks
- Peanuts, all types, raw, 1/2 c.
- Tofu, raw, regular, 1/2 c.
- Peanuts, all types, roasted, 1/2 c.

DAIRY PRODUCTS

Low Magnesium (below 40 mg)

- Yogurt, low fat varieties 1 c. (8 oz.)
- Mild, fluid, all types 1 c. (8 oz.) = 35mg average

MEAT PRODUCTS

Medium Magnesium (40-69 mg)

- Simulated meat products, meat extender 1 oz.