

**DIABETIC EDUCATION
MODULE THREE
DIET AND NUTRITION
And
RECIPE/MEAL PLAN
SUPPLEMENT**

**Second Edition
September 26, 2000**

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Diet and Nutrition

The glucose intolerance or diabetes (high blood sugar) experienced by liver transplant patients is often caused by their medications. If you had high blood sugars before your operation your medications may make your glucose intolerance worse.

BLOOD SUGAR METABOLISM

The food that you eat must be broken down into its simplest form or molecule before it can be absorbed into the blood stream. Most of the food you eat is digested and broken down into glucose before it is absorbed into your blood stream. Once in the blood we call it blood sugar, which is the main source of energy or fuel for your body. As your blood sugar rises it stimulates your pancreas to secrete a hormone called insulin. Blood sugar cannot get into your body's cells to be used as energy, it needs help from insulin. Insulin acts as a key to help transport blood sugar into the cells where it is used as energy by your body to perform its daily functions.

After meals, when there is enough insulin secreted and picked up by the cells your blood sugar drops down to a normal level. When there is a disturbance in the amount of insulin secreted and or absorbed by the cells your blood sugar remains high. Insulin is the key to keep your blood sugar at the right level, but it doesn't work alone. You also need to plan what and when you eat, maintain a good weight, and stay physically active.

General Guidelines

Eat a variety of foods from all four food groups including pasta, whole grain breads and cereals; fruit and vegetables; dairy products; meat, fish and poultry.

Three well balanced meals per day and an evening snack are recommended. If you are still below your optimum weight a mid-morning and mid-afternoon snack may also be recommended (discuss this with your dietitian).

Lose weight if necessary. You can lose weight by decreasing the amounts of foods (portion sizes), using less fats and exercising more.

Eat at regular and evenly spaced times each day. Avoid skipping meals or going without foods for long periods of time.

Healthy Eating Habits

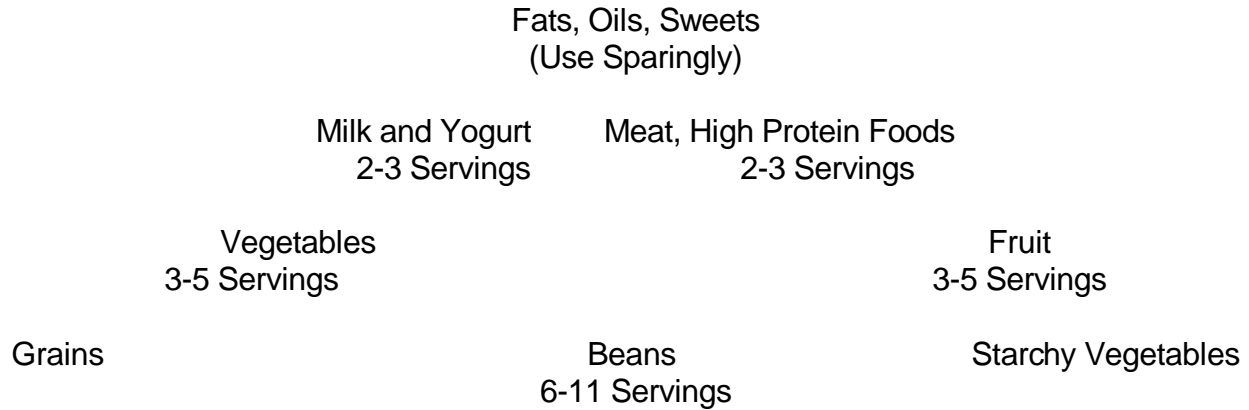
Healthy eating is the first step in taking care of your diabetes or high blood sugar. You can make a difference in your blood sugar control by your food choices and meal times. You do not need special or diet foods. The food that is good for you is good for your whole family. You need to take the following steps:

1. Eat a wide variety of foods every day.
2. Eat high fiber foods, such as fruits, vegetables, grains and beans, (but greatly limit fruit juices).
3. Use less added fat, sugar, and salt.
4. Eat meals and snacks at regular times every day.
5. Eat about the same amount of food each day.
6. Do not skip meals.
7. If you need to lose weight, cut down on your portion sizes and increase your activity level.

Good Weight Control

Staying at a healthy weight is good for all people and especially good for people with high blood sugar. Extra body fat makes it harder for the cells to pick up and use insulin, so the blood sugar remains high. If you are overweight, losing some extra pounds is a great tool for better blood sugar control. Experts working for the United States government have written the following guidelines and have placed them in a visual format called the Food Guide Pyramid. The Food Guide Pyramid shows what foods can be chosen more frequently and what foods should be chosen less frequently. Following these guidelines can help you eat well and maintain a good weight.

THE FOOD GUIDE PYRAMID



NOTE: The number of servings listed above is an average or minimum requirement for a healthy adult. Your requirements may vary depending on your caloric needs. The maximum number of servings is not an absolute requirement, for example it is not necessary for you to eat 5 fruits and 5 vegetables every day. It is necessary to understand what a serving is to understand the food pyramid.

What is a Serving?

One serving from the grains, beans or starchy vegetables group:

- 1 slice of bread
- ½ small bagel, english muffin, pita bread, hamburger bun or hot dog bun
- 1 six inch tortilla
- 4 to 6 crackers
- ½ cup cooked cereal, pasta, bulgar or rice
- 1 small potato
- 1 cup winter squash
- 1/3 sweet potato or yam

Tips: choose whole grain bread or crackers, bran cereal or brown rice. They are more nutritious and higher in fiber.

One serving from the vegetable group:

- 1 cup of raw vegetables
- ½ cup cooked vegetables
- ½ cup tomato or low sodium vegetable juice

Tips: choose fresh or frozen vegetables without added sauces or fats. Choose more dark green and deep yellow vegetables.

One serving from the fruit group:

- 1 small fresh fruit
- ½ cup canned fruit (in its own juice or water)
- ¼ cup dried fruit
- ½ cup fruit juice (no more than one cup per day)

Tips: Choose whole fruits often. They have more fiber than juices. Choose fruits and fruit juices without added sugar or syrups.

One serving from the milk and yogurt group:

- 1 cup milk
- 1 cup yogurt

Tips: Choose nonfat or lowfat products, such as skim, 1% or 2% milk or yogurt. Milk and yogurt have natural sugar in them. One cup contains about the same amount of sugar found in one slice of bread. Yogurt can also have added sugar or artificial sweeteners. You should choose from yogurts with artificial sweeteners that would have much fewer calories than yogurts with added sugars.

One serving from the meat or high protein group:

- 2-3 ounces of cooked lean meat such as poultry or fish
- ½ to ¾ cup of unsalted canned tuna, salmon or cottage cheese; or water packed fish that has been rinsed well before use.
- 2-3 ounces of low sodium, low fat cheese
- 1 egg
- 2 tablespoons of peanut butter

Tips: Choose fish and poultry more often. Remove skin from chicken and turkey. Select lean cuts of beef, veal, pork or wild game. Trim all visible fat from meat before cooking. Bake, roast, broil, grill or boil meat instead of frying or adding fat.

One serving from the fats, oils and sweets group:

- 1 teaspoon of unsalted butter or margarine
- 1 teaspoon of any oil
- 1 tablespoon of mayonaise, low sodium salad dressing, tartar sauce or heavy cream
- 2 tablespoons of sour cream, cream cheese or unsalted gravy
- 1/8 of an avacado
- 10 peanuts
- ½ cup of ice cream
- 1 small cupcake or muffin
- 1 small cookie or piece of cake

Tips: Eat less fat. Eat less saturated fat. Saturated Fat is found in all animal products such as meat, cheese, bacon butter and milk fat. Saturated fat is usually solid at room temperature. Choose sweets infrequently because they are usually high in fat and sugar with limited nutritional value. When you do eat sweets make them part of your meal or as a dessert, not as snacks.

CARBOHYDRATE COUNTING

The type of food and the amount of food that you eat determines how high and how fast your blood sugar level rises. Carbohydrates in foods such as sugars and starches affect your blood sugar the most. Carbohydrate counting is a system that has been developed to allow you greater variety in your diet while maintaining a good or similar blood sugar level. One carbohydrate serving is equal to 15 grams of carbohydrate (sugar) and one serving of carbohydrate is equal to one serving in your grains, beans and starchy vegetables group. When reading labels look for "Total Carbohydrates". Divide the total carbohydrates by 15 and you'll know how many servings of carbohydrates or starchy food that the product contains. For example: If the label reads Total Carbohydrates = 30 grams. Divide 30 by 15. 30 divided by 15 equals 2. Therefore this product contains 2 servings of carbohydrates.

One serving of carbohydrates equals:

- 1 slice of bread
- $\frac{3}{4}$ cup of dry cereal
- $\frac{1}{2}$ cup of cooked cereal
- $\frac{1}{2}$ cup of rice, pasta, potatoes, peas, beans, or corn
- 3 cups of air popped unsalted popcorn
- 1 thin slice of pizza crust
- 1 cup of soup (noodle or rice soup)
- $\frac{1}{2}$ cup of juice
- 8 ounces of milk or yogurt
- 1 small cookie
- 1 small piece of cake
- $\frac{1}{2}$ cup ice cream

If you want to maintain the same blood sugar level that you have been achieving on your daily meal plan you can substitute one of these carbohydrate servings for another without making any change in your blood sugar level. For example: by eliminating $\frac{1}{2}$ cup of pasta or rice from your dinner, you can eat one small piece of cake or $\frac{1}{2}$ cup of ice cream without increasing your blood sugar. Carbohydrate counting allows you occasional variety without having to worry about its effects on your blood sugar level or the need to change your insulin dose.

DINING OUT GUIDELINES

The calorie controlled meal plan can be followed while dining away from home. Especially remember when to eat and how much to eat. The following guidelines and recommended foods listed below assist the meal planner with choosing low calorie, low fat, low sugar foods.

Follow your regular meal plan as to the types of foods and the size and portions you eat on a daily basis. Avoid foods which are breaded, creamed or fried. These items add extra calories not included in most meal plans. If portions are too big, ask for a container and take the left over food home to be consumed with a later meal.

Appetizers: Recommended foods include low sodium consomme, clear broth, unsweetened fruit, low sodium tomato or vegetable juice, raw vegetables. Foods not recommended are creamed soups, chips, crackers or nuts.

Beverages: Recommended foods include iced tea, diet soft drinks, coffee or mineral

water. Foods not recommended are alcoholic beverages and regular soft drinks.

Salads: Recommended foods include raw vegetables or fresh fruit salads with dressing on the side. Use unlimited vinegar and lemon juice. Foods not recommended are salads with dressings added, including coleslaw, potato salad, or gelatin salads.

Meats: Recommended foods include roasted, baked, broiled or charcoal grilled meats, fish or poultry. Trim extra fat, remove skin from poultry; order without gravy. Foods not recommended include any meats that are fried, breaded, sauteed, creamed or have added sauces or gravies.

Eggs: Hard cooked or scrambled eggs are recommended. Fried eggs or omelets are not recommended.

Traveling, Diet and Diabetes

Traveling for people with diabetes requires careful advanced planning. Prepare and carry snacks for unexpected situations in which meals are delayed. Carry a fast acting carbohydrate to eat in case an episode of low blood sugar occurs (e.g.: a container of juice, hard candies or glucose tablets). Carry a slow acting snack consisting of carbohydrate and protein rich foods to be eaten in case of delayed meals (e.g.: peanut butter and crackers or cheese and crackers). If traveling by air or train, contact the travel company and alert them to meal requirements. Special meals for people with diabetes are usually available. If a change in time zones is expected, consult a physician and a dietitian to adjust medication and meal schedules. Know the meal plan and food choice that will be served to you. Ask for descriptions of ingredients in foods ordered and approximate portions. If driving, touring by bus, or traveling by air, plan to eat meals at the regular scheduled times. Be sure to do some walking every two hours as good circulation is important. Upon arrival to your destination adjust food and medications to the type of activity planned. An all day ski trip requires more energy than a bus sight seeing tour. If vigorous prolonged exercise is planned, a carbohydrate and protein rich snack can often prevent low blood sugar. In many parts of south and Central America, Asia and Africa, some foods and beverages should be avoided to prevent bacterial illness. These items include raw unpeeled fruits and vegetables, raw meat and fish, milk and milk products, unboiled water and ice cubes.

Post Test

1. What is required for the sugar in your blood to enter into your body's cells?
2. What are four general nutrition guidelines to good blood sugar control?
3. What are four healthy eating habits?
4. According to the food guide pyramid, how often should you eat fats, oils and sweets.
5. How many carbohydrate servings are contained in a food item containing 60 grams of total carbohydrates?
6. How much of a carbohydrate serving is contained in a small slice of cake?
7. True or False? $\frac{1}{2}$ cup of ice cream is equivalent to 1 cup of orange juice?
8. What two things can you do to loose weight?
9. Name three important factors that help you maintain good blood sugar control.