Your **Diet &** *Diabetes*

Diabetes is the leading cause of premature deaths and the sixth leading cause of all deaths in the United States. Improperly managed, it can lead to:

- heart disease,
- stroke,
- kidney disease,
- blindness,
- nerve damage,
- leg and foot amputations, and
- DEATH.

Unfortunately, about 7 million people in the United States have diabetes and don't know it. The most common type of diabetes, adult-onset diabetes, usually begins when a person is in his or her mid-50s, but diabetes is not inevitable. Minor changes in your lifestyle can greatly reduce your chances of getting this disease.

WHAT IS DIABETES?

Diabetes is a disorder in which the body does not use the sugars in food in the usual way. Normally, some of the food you digest is changed into glucose (sugar), which your body uses for fuel. Blood carries glucose to the cells where a hormone called insulin allows it to enter the cells.

Diabetics produce too little insulin or none at all, or cannot use insulin properly. Then dangerously high levels of glucose can build up in the blood. This high blood glucose leads to the conditions listed in Table I. If untreated, high blood glucose can lead to the serious complications mentioned above.

TYPES OF DIABETES

Type I diabetes is the most severe form. It usually occurs early in life around age 12 or 13. Type 1 is often called juvenile-onset or insulin-dependent diabetes. In this form of diabetes the pancreas produces no insulin.

Without insulin, the body cannot use glucose as a source of energy. Fat is used instead. The result of using fat alone for energy production is the build up of products called ketones. If untreated, this can result in death.

A Type I diabetic must have daily insulin injections. Treatment also includes regular exercise and development of a meal plan.

Type II diabetes Most diabetics have Type II, adult-onset, non-insulin-dependent diabetes. A Type II diabetic doesn't produce enough insulin or cannot use insulin effectively. In many cases Type II diabetes can be controlled with diet and exercise alone. However, some people may also need oral medications or insulin injections. Most Type II diabetics are older adults, overweight, and have a blood relative who has the disease.

Although there are obese people who do not develop diabetes, obesity is thought to play an important role by reducing the effectiveness of insulin in the body. Keeping weight down and increasing physical activity will help most people delay or prevent Type II diabetes.

There also are slim or lean people who have Type II diabetes. For these people, maintaining their body weight and modifying their diets and eating patterns will help lessen glucose problems.

Gestational diabetes The third type of diabetes, called gestational diabetes, occurs in some pregnant women. Your doctor should monitor this type of diabetes closely. The symptoms and treatment will mimic the Type II diabetic. It usually disappears after childbirth.

NC STATE UNIVERSITY
A&T STATE UNIVERSITY
COOPERATIVE EXTENSION
Helping People Put Knowledge to Work

WHO IS MOST LIKELY TO GET DIABETES?

- People who are overweight
- People with upper-body obesity ("apple" shape)
- Women (50% more often than men)
- People who have a family history of diabetes
- People who are 40 or older
- Blacks, Hispanics, Native Americans

HOW CAN YOU TELL IF YOU HAVE DIABETES?

Do you have any of the signs listed in Table I? If you have any of those problems on a regular basis, you should contact your doctor. You may need to be tested.

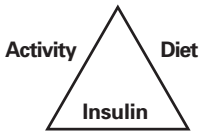
Testing involves having your blood drawn and checked for glucose after a 12-hour fast (not eating for 12 hours). A glucose level of more than 140 mg/dl (milligrams/deciliter) on more than one fasting occasion indicates diabetes.

If diabetes runs in your family, you should have a fasting blood glucose test every year after the age of 20. Some research has shown that diagnosing and treating diabetes early may prevent further damage to the pancreatic cells that make insulin. Changes in both diet and lifestyle may stop the progress of Type II diabetes.

HOW IS DIABETES TREATED?

Each person needs individualized treatment. Type I diabetes always requires insulin, diet, and exercise. Insulin or oral hypoglycemic agents (a medication that helps lower blood sugar) are only prescribed for Type II diabetics if diet and exercise alone fail to lower blood glucose. If you have diabetes, you need to have a medical team (doctor, nutritionist, and health educator or nurse) working with you.

Whichever type of diabetes you have, the key to proper control is balancing the glucose and the insulin in the blood. This means adjusting your diet, activity, and sometimes taking medication.



Stress and illness affect how well insulin works. Good management of diabetes takes both of these factors into account.

Another important consideration is the prevention of heart disease. Diabetics are two to three times more likely to develop heart disease.

KEYS FOR HEALTHY EATING

If you do have diabetes, the American Diabetic Association suggests the following guidelines:

1. EAT A VARIETY OF FOODS. No single food provides all the nutrients needed by the body.

2. MAINTAIN A HEALTHY WEIGHT. Let your medical team help determine a healthy, reasonable weight for you. If you are overweight, start a gradual weight-loss program (less than two pounds per week) approved by your medical team. Weight loss reduces the risk of developing diabetes and returns many Type II diabetics to normal blood-sugar regulation. Losing even as little as 10 extra pounds can make a difference in your blood glucose, cholesterol, and fat levels.

3. CHOOSE A DIET LOW IN FAT, SATURATED FAT, AND CHOLESTEROL. High intakes of fats, saturated fats, and

Table I: Characteristics of Diabetes

	TYPE I	TYPE II
ONSET:	Usually sudden and before the age of 30	Usually gradual and after the age of 40
CAUSE:	Insulin not made	Insulin made but not used or not enough insulin made
WARNING SIGNS:	Abnormal thirst Frequent urination Weakness Excessive hunger Rapid, unexplained weight loss Poor growth Flushed skin Fruity breath Nausea, vomiting	Any of the Type I signs, plus any of the following: Tingling or numbness Itchy skin Frequent infections Slow healing Drowsiness Blurred vision Overweight
TREATMENT:	Diet, Exercise, Insulin therapy	Diet, Exercise, Insulin (sometimes)

cholesterol (found only in animal products) have been linked to increased risk for heart disease and stroke. Fat in your diet should be no more than 30 percent of your total calories, saturated fat less than 10 percent of calories, and cholesterol no more than 300 milligrams per day.

4. INCREASE YOUR INTAKE OF FIBER FOODS. Dietary fiber is found in fruits, vegetables, and whole grains and cereals. A high fiber diet (40 grams per day) may help control or prevent diabetes. Researchers have found that dietary fiber reduces a diabetic's need for insulin, improves blood-glucose control, lowers blood cholesterol and fat levels, and helps with weight loss.

Not all types of fiber help to control diabetes. "Water-soluble" fiber has a stabilizing effect on blood sugar levels while "water-insoluble" fiber does not. A mixture of both is found in plant products. Excellent sources of water-soluble fiber include oat products, peas, beans, pasta, brown rice, falafel, cracked wheat, rye, and fruit.

5. CONTROL SUGAR CONSUMPTION. There has been considerable controversy on the effect of various sources of sugar on blood glucose. More and more evidence has shown that blood glucose values are not always worsened by sugar in the diet. That is why diabetics now are allowed more sugar. Your medical team should be involved in making decisions about how much sugar you should eat.

Non-nutritive sweeteners (like aspartame, acesulfame, saccharin) are preferable to both sucrose (table sugar) and fructose (fruit sugar) in drinks, cereals, puddings, and other foods. This is especially true for overweight diabetics.

6. USE SALT (SODIUM) ONLY IN MODERATION. Most people eat more salt than they need. Salt can raise blood pressure, which increases the chances for heart disease or stroke. You need less than 1,000 milligrams of sodium per 1,000 calories, and should not consume more than 3,000 milligrams of sodium per day.

To cut back on sodium, use less salt when cooking and at the table. One-half teaspoon is equal to about 1,000 milligrams of sodium. Limit foods that are high in sodium, such as processed meats, cheeses, condiments, chips, fast foods, convenience meals, crackers, and salted nuts. Read labels for sodium content

7. IF YOU DRINK ALCOHOL, DO SO IN MODERATION. Alcohol is another source of empty calories. It is probably best to avoid alcohol altogether.

However, if your doctor permits it, alcohol can be included in your meal plan. Be sure that you drink only small amounts slowly during meals. Alcohol on an empty stomach can cause a low blood sugar reaction. Alcohol blocks the production of glucose and enhances the effects of insulin.

HOW CAN YOU CARRY OUT THESE KEYS FOR HEALTHY EATING?

Following a diabetes meal plan and using the exchange lists will help you implement the above guidelines. The first step is to talk with your dietition or health professional, who will help you work out a diet prescription.

A diet prescription is vital in managing diabetes and preventing complications. Your personalized diet prescription does not need to be an expensive or "special" diet. Your basic nutritional needs are the same as those of a non-diabetic. However, you may have specific needs, such as:

- limiting total calories for a healthy body weight,
- chronic health conditions,
- food preferences, and
- age, job, and activity levels that affect food needs.

You must follow your prescribed diet faithfully. This is especially important if you have one of the complications like heart disease, high blood pressure, or kidney disease.

WHAT IS A DIABETIC MEAL PLAN?

A diabetic meal plan matches calories from fat, carbohydrate, and protein with your body activity and insulin levels. It is based on grouping foods into what is called the exchange system. This system translates the prescribed calories into actual foods. There are six different exchange lists or groups of food: milk, vegetable, fruit, bread and starch, meat, and fat.

Each group contains foods that are similar in protein, fat, and carbohydrate content. (Call the American Diabetes Association if you want a copy of the Exchange Lists.) Serving sizes for each food are given so that you can exchange one food for another in the same group. For example, for one fruit exchange you could choose 1/4 cantaloupe, 1 small apple, 1 fresh fig, or 12 grapes. Each of these has 10 grams of carbohydrate and 40 calories. Vary your food choices as often as you desire. It is the number of servings from each list and the correct serving size of each food that needs to be carefully watched.

Your meal plan should be based on your receiving 50 to 60 percent of the daily calories from carbohydrate, 15 percent from protein, and the remainder as fat. A dietition can tell you how many exchanges you can have from each of the six lists and when you should have them. If you take insulin medication, a consistent daily routine is essential. The plan will be set up to balance carbohydrate and insulin peaks. This means that meals should be eaten at the same times each day. The amount and types of food should also be the same.

The non-insulin dependent diabetic does not need the same consistency in daily routine but must strive to achieve and maintain a reasonable weight.

Following the diabetic meal plan is fairly easy. This meal pattern can be used for the entire family. You can

prepare the same foods that would be included in any well-balanced diet. The only difference is that you will choose from six exchange lists instead of the four food groups. For example, an overweight 50-year-old woman with non-insulin-dependent diabetes, a moderate activity level, and high blood pressure, may have a diet prescription for 1,445 calories that includes 210 grams of carbohydrate, 84 grams of protein, and 35 grams of fat. The meal plan could be the following:

Meal Exchanges	Milk	Vegetable	Fruit	Bread	Meat	Fat
Breakfast	1		1	2		1
Lunch	1	1	2	2	2	1
Supper	0.5	2	2	2	3	3
Snack				1		1

Using the exchange lists, this can be translated into a variety of enjoyable meals like the following.

Breakfast: 1/2 cup shredded wheat cereal with 1 cup skim milk
1 piece raisin toast with 1 tablespoon cream cheese
1 fresh peach
black coffee

Lunch:
tuna sandwich (2 pieces whole wheat bread, 2 ounces tuna, canned in water, 1 tablespoon low-calorie mayonnaise, 3 leaves lettuce, 1/2 cup sliced tomato, and 1 dill pickle)
1 1/4 cup fresh strawberries
1 cup skim milk

Supper:
3 ounces lean roasted ham
1 medium potato with 1 teaspoon margarine
1 cup broccoli and cauliflower, mixed with 1 tablespoon salad dressing
3/4 cup mandarin orange slices
1/2 cup lowfat yogurt

Snack:
2 medium-sized oatmeal raisin cookies

EXERCISE

Important benefits of a regular aerobic exercise program in diabetes management include:

- decreased need for insulin,
- decreased risk of obesity, and
- decreased risk for heart disease.

Exercise decreases total cholesterol, improves the ratio of low-density lipoprotein (LDL) to high-density lipoprotein cholesterol (HDL), and reduces blood triglycerides. It may also decrease blood pressure and lower stress levels.

Walking is one of the easiest and healthiest ways to exercise. This is one activity that anyone can do for a lifetime without special equipment and with little risk of injury.

Talk to your doctor about exercise. Supervised activity is best because of the risk of an insulin imbalance. Use the buddy system when you exercise.

There is no cure for diabetes. However, you can manage or delay diabetes through diet, exercise, weight control and, if necessary, medication.

Prepared by
Jacquelyn W. McClelland, Extension Foods and Nutrition Specialist

8,500 copies of this public document were printed at a cost of $742.70, or $.09 per copy.

Published by
NORTH CAROLINA COOPERATIVE EXTENSION SERVICE

5/05—8.5M—JMG (Reprint) FCS-389

E05-44571