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Diabetes, Pre-Diabetes & Insulin Resistance Self-Management

What is diabetes?

Diabetes is a disease in which the body fails to make insulin (Type 1) or the body does not effectively use what is produced or does not produce enough insulin (Type 2) to keep blood glucose (sugar) within normal limits. A woman may develop diabetes or high glucose levels during pregnancy. This is called gestational diabetes. Blood glucose levels usually return to normal after giving birth, but there is an increased risk of diabetes occurring later on. See the table below for definitions of diabetes and other terms. The pancreas makes insulin and releases it into the blood to help move digested carbohydrates, protein and fat in the blood into body cells. The cells use the food for energy or other body functions.

Symptoms of high glucose levels

Symptoms of high glucose levels include feeling tired, thirsty, frequent urination and blurry vision. Serious health problems can occur to the kidneys, eyes, blood vessels and nerves when glucose levels are too high. Following an individualized meal plan, exercising and taking medication if necessary, can control glucose levels. A dietitian can help you develop a meal program.

What is pre-diabetes?

"Pre-diabetes" is when blood glucose levels are higher than normal but not yet in the range to be called diabetes. Doctors sometimes call this condition impaired fasting glucose (IFG) or impaired glucose tolerance (IGT), depending on the test used to diagnose it.

What is insulin resistance?

Insulin resistance is a state in which increased amounts of insulin are required to produce its normal effects in the body. Insulin resistance is common among

- people taking HIV medications, particularly some of the protease inhibitors
- as a result of lipodystrophy
- those individuals who are overweight or obese

Pre-Diabetes

Impaired Fasting Glucose
Fasting glucose 100-125 mg/dL

Impaired Glucose Tolerance
2-hour post load glucose of 140-199 mg/dL during oral glucose tolerance test (OGTT)

Diabetes Mellitus

Fasting glucose ≥126 mg/dL
or
2-hour post load glucose ≥≥200 mg/dL during OGTT
or
Symptoms of diabetes with random glucose of ≥ 200 mg/dL

American Diabetic Association Definitions of Pre-Diabetes and Diabetes.

What is the concern of insulin resistance and pre-diabetes?

There is evidence that insulin resistance and/or pre-diabetes are associated with increased risk for heart disease.

What is the connection between high glucose levels and HIV?

Most people with diabetes have one or more of the common risk factors which include family history, obesity, inactivity and older age. People with HIV infection may or may not have any of these risk factors. They may develop diabetes because of

- the HIV medications, particularly some of the protease inhibitors
- as a result of lipodystrophy

What is self-management of diabetes?

Self-management begins with you being responsible for the day to day care of living with diabetes. Self-management includes following a meal plan, exercising regularly, checking glucose levels and taking diabetes medication if necessary. It usually involves changing and/or creating new behaviors. How well diabetes is controlled will determine long-term health outcomes. Regular visits to the dentist, eye doctor and dietitian will need to be part of your medical care. Talk with your doctor about making the necessary referrals.

What is a diabetic diet?

This is a meal plan that promotes good glucose control which will decrease the risk for diabetes complications. Everyone needs to have a meal plan individualized to fit their needs and food preferences. Protein, fat and carbohydrate needs depend on many factors including height, weight, blood fat levels and exercise habits. Learning about portion sizes when following a diabetes meal plan is key to good glucose control and weight management. People with diabetes often have high blood pressure. If this is the case for you, reducing salt intake may be required. A Registered Dietitian can assist you in developing a meal plan. Until then, follow the suggestions below.

What should I eat?

People with diabetes can eat any food if they follow some basic rules. For a healthy diet, eat foods from all food groups every day. This includes vegetables, fruits, starches, lean protein, low-fat dairy and healthy fats such as nuts, oils, seeds and avocado. It is important not to eat too many carbohydrates at one time because the body converts carbohydrates into glucose. Carbohydrate foods include starches, fruits, vegetables and lactose, the natural sugar found in milk and yogurt. Usually 1 cup of starch or 2 slices of bread or 2 small tortillas, one medium size piece of fruit (tennis ball size or 1/2 banana) and one 8 ounce serving of low-fat dairy or plain yogurt per meal along with protein and vegetables is a good place to start. Bake or broil foods instead of frying. Use heart healthy oils like canola or olive oil. Avoid the sugars in candy, cakes, cookies, juices and beverages until you learn how to count carbohydrates, become more familiar with portion sizes or gain control of your blood glucose levels. This is something the dietitian will teach you.

When should I eat?

Eat on a regular schedule and do not skip meals. This will assist in better control and make needed adjustments easier. Eating something every 3-4 hours is reasonable. Try to eat breakfast, lunch, dinner and at least one snack to keep your energy level up and to prevent wide swings in blood glucose. If you are not a breakfast eater, plan on eating lunch, a mid-afternoon snack, dinner and an evening snack. You may need to time your medications to match this eating schedule. Ask your doctor or dietitian for assistance.

How much should I eat?

Daily food needs depends on your height, weight and activity level. A dietitian will determine your calorie needs and develop a meal plan with a specified number of food servings from each food group. Following a meal plan that distributes carbohydrates evenly throughout the day helps prevent periods of high blood glucose. You will learn to measure serving sizes and count carbohydrates. The following is a way to gauge serving sizes when measuring tools are not available.

- 1 teaspoon of margarine is about the size of the tip of your thumb
- 1 tablespoon of peanut butter is about the size of a walnut
- 2 tablespoons of raisins is about the size of a ping pong ball
- 1/2 cup cooked cereal is about the size of a hockey puck or tennis ball
- 1/2 cup of juice is about the size of a pudding snack pack
- 1 small baked potato is about the size of a small computer mouse
- 3 ounces of fish, chicken or lean meat is about the size of a deck of cards
- 1 cup of cubed cantaloupe is about the size of a baseball

Exercise

Healthy diet and exercise go hand in hand. Exercise helps to lower your blood glucose level, strengthen muscles, trains body cells to use insulin better and help lower blood pressure. Try to achieve 30 minutes every day.

Sample meal plan

The meal plan below is balanced in carbohydrates, proteins and fats. It provides 1800 calories. Remember, your calorie goal may be different.

Breakfast

1 English muffin
1 cup sugar free yogurt
1/2 banana

Lunch

2 slices whole wheat bread
3 oz. lean roast beef
1 teaspoon mustard
1/2 cup cabbage salad
1 cup of watermelon
1 cup 1% milk

Dinner

3 oz. grilled chicken breast
1 cup grilled zucchini, peppers and onions
1/2 corn on the cob
1 cup pasta salad (1/3 cup pasta, 2/3 cup fresh vegetables, olive oil dressing)
1 cup strawberries/diet sugar
1 small slice Angel food cake

Snack

1/2 cup snack mix made with wheat squares cereal, raisins, nuts and pretzels
1 cup 1% milk