



# Abnormal Glucose Tolerance

*In people with cystic fibrosis*

People who have cystic fibrosis (CF) may develop diabetes as a result of their cystic fibrosis. This is because people with CF:

- May not produce enough *insulin*, the hormone that controls blood glucose
- May not be able to fully use the insulin they do produce

This handout describes different kinds of diabetes that can occur as a result of CF.

## About Blood Glucose

*Blood glucose* is a sugar our bodies make from the foods we eat. It provides energy to all the cells in our body.

*Abnormal glucose tolerance* is when your body cannot keep your blood glucose from getting too high. It can occur in patients with cystic fibrosis (CF). It may cause weight loss and worsen lung function if it is not treated properly. Blood glucose that is above the normal range is called *hyperglycemia*.

- **Fasting blood glucose** is measured after not eating or drinking anything except water for 8 hours. Normal fasting blood glucose is less than 100 mg/dL (milligrams per deciliter). Fasting blood glucose levels above 100 mg/dL are considered abnormal and may need to be treated.
- **After-meal blood glucose** is measured 2 hours after the start of a meal. A normal result is less than 140 mg/dL.

Abnormal glucose tolerance is often found by a test called an *oral glucose tolerance test* (OGTT).

## Impaired Fasting Glucose and Impaired Glucose Tolerance

Abnormal glucose tolerance is found in *impaired fasting glucose* (IFG) and *impaired glucose tolerance* (IGT). These 2 conditions are similar, but they are not exactly the same.

### *Impaired Fasting Glucose*

People with a fasting blood glucose of 100 to 125 mg/dL have impaired fasting glucose. IFG is rare in people with CF who do not already have diabetes.

### *Impaired Glucose Tolerance*

People with a blood sugar of 140 to 199 mg/dL 2 hours after an OGTT or a meal that is high in carbohydrates have impaired glucose tolerance.

Thirty to 40% of people with CF (30 to 40 out of 100) have IGT. This means that their blood sugar levels may be higher than normal, but not as high as in *cystic fibrosis related diabetes* (see section below).

If you have IGT, you may develop diabetes in the future. IGT can be diagnosed only by an OGTT. If you have IGT, you should have an OGTT every year.

## **Cystic Fibrosis-Related Diabetes**

Diabetes that develops as a result of CF is called cystic fibrosis-related diabetes (CFRD). Different types of CFRD are:

### ***Intermittent (“Now and Then”) Diabetes***

Some people with CF may have diabetes only when they are sick or taking *corticosteroid* medicines (steroids). If this is true for you, you must take insulin when your diabetes symptoms occur. Insulin will keep you from losing too much weight. The insulin may be stopped when you are no longer sick or taking steroids.

Intermittent diabetes, or “now and then” diabetes, can occur even if your fasting blood glucose is not high. Once you have had intermittent diabetes once, you are likely to have it again. Because of this, you will need to have an OGTT every year.

### ***CFRD without High Fasting Blood Glucose***

People with normal fasting blood glucose (less than 100 mg/dL) but with a blood glucose of 200 mg/dL or higher 2 hours after an OGTT or a meal that is high in carbohydrates, have **CFRD without high fasting blood glucose**. This is a mild form of diabetes. Often, these people do not have the classic diabetes symptoms. People with this type of CFRD should give themselves insulin injections and test their blood glucose before meals.

### ***CFRD with High Fasting Blood Glucose***

In **CFRD with high fasting blood glucose**, both the fasting blood glucose and the blood glucose levels after meals are higher than normal. People with this type of CFRD are the most likely to have classic diabetes symptoms. These include being very thirsty, needing to urinate often, and losing weight. People with this type of CFRD should give themselves insulin injections and test their blood glucose before meals and at bedtime.

## Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Diabetes Care Center:  
206-598-4882

Medical Specialties  
Center/Cystic Fibrosis  
Clinic: 206-598-4615

## Diabetes During Pregnancy

If you have CF and become pregnant, you should have an OGTT as soon as you learn you are pregnant. If you have already had an OGTT within 6 months of getting pregnant, you should have another OGTT at the end of your 1st trimester. This is earlier in pregnancy than for women who do not have CF.

### *Gestational Diabetes*

Diabetes that is diagnosed during pregnancy is called *gestational diabetes*. Women with CF who become pregnant are at high risk for gestational diabetes.

If you have CF and develop gestational diabetes, you should eat a high-calorie, healthy CF diet throughout your pregnancy. Good nutrition is a must! Cutting back on food is never a good choice in CF. Nutrition needs are higher when you are pregnant, so it is very important to get all the calories you need to gain the right amount of weight and have a healthy baby.

You should start taking insulin as soon as gestational diabetes is diagnosed. It will help keep both you and your baby healthy. It will also help both you and your baby gain healthy amounts of weight.

### *Existing Diabetes*

If you have CF and have diabetes, talk with your doctor **before** you become pregnant. It is important for your health and your baby's health that you have your blood glucose under control before you even get pregnant. You will need to check your blood sugar more often and take the right amount of insulin. Your insulin needs will increase during pregnancy, especially during your 2nd and 3rd trimesters.

### *Doctors to See During Pregnancy*

- If you have CF and become pregnant, you will need to see a *high-risk obstetrician* during your pregnancy. An obstetrician is a doctor who specializes in the care of women during pregnancy.
- If you have diabetes before getting pregnant or you get gestational diabetes, you should also see an *endocrinologist*. An endocrinologist is a doctor with special training in treating diabetes.

You must work hard during pregnancy to control your blood glucose and eat well. Taking good care of yourself will help you and your baby stay as healthy as possible.

**UW Medicine**

UNIVERSITY OF WASHINGTON  
MEDICAL CENTER

**Diabetes Care Center**

Box 354691

4225 Roosevelt Way N.E., Suite #101

Seattle, WA 98105

206-598-4882