



DIABETES EDUCATION

PATIENT INSTRUCTION PACKET

Introduction:

Core Care Technologies, Inc. appreciates the opportunity to serve you for your diabetic supply needs. Our goal is to ensure your complete confidence with use of a Glucometer. Please read this packet as well as the manufacturers recommendations for use of a new Glucometer. It is important that you follow your Doctors orders including but not limited to; frequency of blood sugar testing, diet regiment and medications (if any).

Definitions:

Diabetes Mellitus – Chronic systemic disorder of glucose metabolism. The world health organization (1999) described the condition as a metabolic disorder of multiple etiology characterized by hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from deficits in insulin secretion, insulin action or both. (World Health Organization 1999)

Type 1 diabetes occurs when the body's own immune system destroys the insulin-producing cells of the pancreas (called beta cells).

Normally, the body's immune system fights off foreign invaders like viruses or bacteria. But for unknown reasons, in people with type 1 diabetes, the immune system attacks various cells in the body. This results in a complete deficiency of the insulin hormone.

Some people develop a type of diabetes – called secondary diabetes -- which is similar to type 1 diabetes, but the beta cells are not destroyed by the immune system but by some other factor, such as cystic fibrosis or pancreatic surgery.

Type II- Type 2 diabetes, often called non-insulin dependant diabetes, is the most common form of diabetes, affecting 90% - 95% of the 18.2 million people with diabetes.

Unlike people with type 1 diabetes, people with type 2 diabetes produce insulin; however, the insulin their pancreas secretes is either not enough or the body is unable to recognize the insulin and use it properly. This is called insulin-resistance. When there isn't enough insulin or the insulin is not used as it should be, glucose (sugar) can't get into the body's cells. When glucose builds up in the blood instead of going into cells, the body's cells are not able to function properly. Other problems associated with the build up of glucose in the blood include:

Type III – Gestational Diabetes is a condition characterized by high blood glucose (sugar) levels that is first recognized during pregnancy. The condition occurs in approximately 4% of all pregnancies

Diabetes:

How to Test Your Blood Glucose

Everyone with diabetes should test their blood glucose levels regularly. Knowing your blood glucose levels allows you to alter your diabetes management strategy if your levels aren't near your target blood glucose.

Also, regular testing of your blood glucose levels can help reduce your risk of having long-term complications from diabetes. Based on studies of people with type 1 diabetes (Diabetes Control and Complications Trial [DCCT]) and type 2 diabetes (United Kingdom Prevention of Diabetes [UKPDS]), maintaining near normal blood glucose and HbA1c levels significantly reduces the risks of complications arising from diabetes.

Ways to Test Your Blood Glucose

- **Traditional Home Blood Glucose Monitoring.** The traditional method of testing your blood glucose involves pricking your finger with a lancet (a small, sharp needle), putting a drop of blood on a test strip and then placing the strip into a meter that displays your blood sugar (glucose) level. Meters vary in features, readability (with larger displays or spoken instructions for the visually impaired), portability, speed, size and cost. Current devices provide results in less than 15 seconds and can store this information for future use. These meters can also calculate an average blood glucose level over a period of time. Some meters also feature software kits that retrieve information from the meter and display graphs and charts of your past test results. Blood glucose meters and strips are available at your local pharmacy.
- **Meters That Test Alternative Sites.** Newer meters allow you to test sites other than your fingertip; these alternative testing sites include upper arm, forearm, base of the thumb and thigh. However, testing at alternative sites may give you results that are different from the blood glucose levels obtained from the fingertip. Blood

glucose levels in the fingertips show changes more quickly than those in alternative testing sites. This is especially true when your blood glucose is rapidly changing, like after a meal or after exercise. It is also important to know that if you are checking your sugar at an alternative site while you are experiencing symptoms of hypoglycemia, you should not rely on these test results.

- **Lasers to draw blood.** In 1998, a laser to draw blood was approved. The laser device produces a precise beam of light that penetrates the skin on the finger instead of pricking it, reducing pain and discomfort.
- **MiniMed Continuous Glucose Monitoring System.** This device involves a small plastic catheter (very small tube) that is inserted just under the skin. It collects small amounts of fluid and measures the glucose content over 72 hours.
- **GlucoWatch.** In 2001, the FDA approved the GlucoWatch, a watch-like device that helps people with diabetes measure their blood glucose via tiny electric currents. It draws small amounts of fluid from the skin and measures blood glucose levels three times per hour for up to 12 hours. The GlucoWatch is considered a first step toward noninvasive, continuous glucose monitoring, but it does have some shortfalls.

According to the FDA, these newer devices should not replace the traditional daily finger pricks.

When Should I Test My Blood Glucose?

Blood glucose testing is usually recommended before meals and at bedtime. Daily blood glucose checks are especially important for people on insulin or the sulfonylureas class of antidiabetes drugs.

Frequency and timing of blood glucose measurements should be individualized. Your health care provider will tell you when and how often you should check your blood glucose.

Note: Acute or chronic illnesses or changes in medications may affect your glucose level. You may need to test your blood glucose more frequently when you are ill.

Conditions That Affect Your Blood Glucose

Certain conditions may interfere with an accurate reading of the blood glucose, and include:

- Anemia
- Gout
- High air temperature
- Humidity
- Altitude

If you are consistently seeing abnormal results, recalibrate your meter and check the strips.

The chart below gives you an idea of where your blood glucose level should be throughout the day. Your ideal blood glucose range may be different from another person's and will change throughout the day.

Time of Test	Ideal for Adults With Diabetes
Before meals	90-130 mg/dL
Before bedtime snack	Less than 180 mg/dL
*Source: American Diabetes Association, 2005	

Home Blood Glucose Monitoring and HbA1c

Monitoring your HbA1c level is also important for diabetes control. Many home glucose monitors have the capacity to display an average blood glucose reading, which correlates with the HbA1c.

Average Blood Glucose Level (mg/dL)	HbA1c (%)
124mg/ dL	6.3
147mg/ dL	7
180mg/ dL	8
214mg/ dL	9
247mg/ dL	10
280mg/ dL	11

When Should I Call My Doctor?

In most cases, a fasting blood glucose level more than 180 mg/dL is too high and a blood glucose level less than 70 mg/dL is too low. If you are having symptoms of low blood sugar, or if your blood glucose is less than 70 mg/dL and you have more than one unexplained low blood glucose reaction a week, call your health care provider.

If you are having symptoms of high blood sugar, or if your blood glucose is greater than 180 mg/dL for more than a week, or if you have two consecutive readings greater than 300 mg/dL, call your health care provider. In most cases, your doctor will suggest changes in your diabetes management plan.

How Do I Record My Test Results?

Keep good records of any blood, urine, or ketone tests you do. Your records can help alert you to any problems. Also, these test records help your health care provider make any needed changes in your meal plan, medicine, or exercise program. Bring these records with you every time you visit your health care provider.

Reviewed by physicians in the Department of Endocrinology at The Cleveland Clinic (2005).

Edited by Cynthia Haines, MD, WebMD, September 2005.

Source: The Diabetes Toolbox. The Food and Drug Administration.

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