Glucose and Triglycerides: Why do they matter?

GLUCOSE:

Diabetes mellitus refers to a group of diseases that affect how your body uses blood sugar (glucose). Glucose is vital to your health because it's an important source of energy for the cells that make up your muscles and tissues. It's also your brain's main source of fuel.

If you have diabetes, no matter what type, it means you have too much glucose in your blood, although the causes may differ. Too much glucose can lead to serious health problems.

Chronic diabetes conditions include type 1 diabetes and type 2 diabetes. Potentially reversible diabetes conditions include prediabetes — when your blood sugar levels are higher than normal, but not high enough to be classified as diabetes.

Diabetes symptoms vary depending on how much your blood sugar is elevated. Some people, especially those with prediabetes or type 2 diabetes, may not experience symptoms initially. In type 1 diabetes, symptoms tend to come on quickly and be more severe.

Some of the signs and symptoms of type 1 and type 2 diabetes are:

- Increased thirst
- Frequent urination
- Extreme hunger
- Unexplained weight loss
- Presence of ketones in the urine (ketones are a byproduct of the breakdown of muscle and fat that happens when there's not enough available insulin)

- Fatigue
- Irritability
- Blurred vision
- Slow-healing sores
- Frequent infections, such as gums or skin infections and vaginal infections

Although type 1 diabetes can develop at any age, it typically appears during childhood or adolescence. Type 2 diabetes, the more common type, can develop at any age, though it's more common in people older than 40.

The role of glucose

Glucose — a sugar — is a source of energy for the cells that make up muscles and other tissues.

- Glucose comes from two major sources: food and your liver.
- Sugar is absorbed into the bloodstream, where it enters cells with the help of insulin.
- Your liver stores and makes glucose.
- When your glucose levels are low, such as when you haven't eaten in a while, the liver breaks down stored glycogen into glucose to keep your glucose level within a normal range.

In prediabetes — which can lead to type 2 diabetes — and in type 2 diabetes, your cells become resistant to the action of insulin, and your pancreas is unable to make enough insulin to overcome this resistance. Instead of moving glucose into your cells where it's needed for energy, sugar builds up in your bloodstream.

Exactly why this happens is uncertain, although it's believed that genetic and environmental factors play a role in the development of type 2 diabetes. Being overweight is strongly linked to the development of type 2 diabetes, but not everyone with type 2 is overweight.

Risk factors for prediabetes and Type 2 diabetes:

Researchers don't fully understand why some people develop prediabetes and type 2 diabetes and others don't. It's clear that certain factors increase the risk, however, including:

- **Weight.** The more fatty tissue you have, the more resistant your cells become to insulin.
- **Inactivity.** The less active you are, the greater your risk. Physical activity helps you control your weight, uses up glucose as energy and makes your cells more sensitive to insulin.
- **Family history.** Your risk increases if a parent or sibling has type 2 diabetes.
- **Race.** Although it's unclear why, people of certain races — including blacks, Hispanics, American Indians and Asian-Americans — are at higher risk.
- **Age.** Your risk increases as you get older. This may be because you tend to exercise less, lose muscle mass and gain weight as you age. But type 2 diabetes is also increasing dramatically among children, adolescents and younger adults.
- **Gestational diabetes.** If you developed gestational diabetes when you were pregnant, your risk of developing prediabetes and type 2 diabetes later increases. If you gave birth to a baby weighing more than 9 pounds (4 kilograms), you're also at risk of type 2 diabetes.
- **Polycystic ovary syndrome.** For women, having polycystic ovary syndrome — a common condition characterized by irregular menstrual periods, excess hair growth and obesity — increases the risk of diabetes.
- **High blood pressure.** Having blood pressure over 140/90 millimeters of mercury (mm Hg) is linked to an increased risk of type 2 diabetes.
- **Abnormal cholesterol and triglyceride levels.** If you have low levels of high-density lipoprotein (HDL), or "good," cholesterol, your risk of type 2 diabetes is higher. Triglycerides are another type of fat carried in the blood. People with high levels of triglycerides have an increased risk of type 2 diabetes. Your doctor can let you know what your cholesterol and triglyceride levels are.

Screenings:

The ADA (American Diabetes Association) recommends that the following people be screened for diabetes:

- **Anyone with a body mass index higher than 25, regardless of age,** who has additional risk factors, such as high blood pressure, a sedentary lifestyle, a history of polycystic ovary syndrome, having delivered a baby who weighed more than 9 pounds, a history of diabetes in pregnancy, high cholesterol levels, a history of heart disease, and having a close relative with diabetes.
- **Anyone older than age 45** is advised to receive an initial blood sugar screening, and then, if the results are normal, to be screened every three years thereafter.

A simple, cost-effective means of screening for Diabetes is the blood glucose test. The blood glucose test may be used to:

- Detect high blood glucose (hyperglycemia) and low blood glucose (hypoglycemia)
- Screen for diabetes in people who are at risk before signs and symptoms are apparent; in some cases, there may be no early signs or symptoms of diabetes. Screening can therefore be useful in helping to identify it and allowing for treatment before the condition worsens or complications arise.
- Help diagnose diabetes, prediabetes and gestational diabetes
- Monitor glucose levels in people diagnosed with diabetes

A blood glucose screening test may be administered in a fasting (8 hours) or non-fasting (2 hours) state. The results for the screening are categorized below.

Category	Fasting	Non-Fasting
Normal	70-99	Less than 140
Pre Diabetes	100-125	140-200
Diabetes	Over 126	Over 200

TRIGLYCERIDES:

Triglycerides are an important measure of heart health. If you've been keeping an eye on your blood pressure and cholesterol levels, there's something else you might need to monitor: your triglycerides. Having a high level of triglycerides, a type of fat (lipid) in your blood, can increase your risk of heart disease.

However, the same lifestyle choices that promote overall health can help lower your triglycerides, too.

Triglycerides are a type of fat (lipid) found in your blood. When you eat, your body converts any calories it doesn't need to use right away into triglycerides. The triglycerides are stored in your fat cells. Later, hormones release triglycerides for energy between meals. If you regularly eat more calories than you burn, particularly "easy" calories like carbohydrates and fats, you may have high triglycerides (hypertriglyceridemia).

A simple blood test can reveal whether your triglycerides fall into a healthy range.

Category	Triglyceride level
Normal	Less than 150 mg/dL
Borderline High	150 – 199 mg/dL
High	Over 200 mg/dL

Triglycerides and cholesterol are separate types of lipids that circulate in your blood. Triglycerides store unused calories and provide your body with energy, and cholesterol is used to build cells and certain hormones. Because triglycerides and cholesterol can't dissolve in blood, they circulate throughout your body with the help of proteins that transport the lipids (lipoproteins).

High triglycerides are often a sign of other conditions that increase the risk of heart disease and stroke as well, including obesity and metabolic syndrome — a cluster of conditions that includes too much fat around the waist, high blood pressure, high triglycerides, high blood sugar and abnormal cholesterol levels.

Sometimes high triglycerides are a sign of poorly controlled type 2 diabetes, low levels of thyroid hormones (hypothyroidism), liver or kidney disease, or rare genetic conditions that affect how your body converts fat to energy. High triglycerides could also be a side effect of taking medications such as beta blockers, birth control pills, diuretics or steroids.

Ways to improve glucose and triglyceride levels:

Healthy lifestyle choices are key for maintenance or improvement.

- **Lose weight.** If you're overweight, losing 5 to 10 pounds can help lower your triglycerides. Motivate yourself by focusing on the benefits of losing weight, such as more energy and improved health.
- **Cut back on calories.** Remember that extra calories are converted to triglycerides and stored as fat. Reducing your calories will reduce triglycerides.
- **Avoid sugary and refined foods.** Simple carbohydrates, such as sugar and foods made with white flour, can increase triglycerides.
- **Choose healthier fats.** Trade saturated fat found in meats for healthier monounsaturated fat found in plants, such as olive, peanut and canola oils. Substitute fish high in omega-3 fatty acids — such as mackerel and salmon — for red meat.
- **Limit how much alcohol you drink.** Alcohol is high in calories and sugar and has a particularly potent effect on triglycerides. Even small amounts of alcohol can raise triglyceride levels.
- **Exercise regularly.** Aim for at least 30 minutes of physical activity on most or all days of the week. Regular exercise can lower triglycerides and boost "good" cholesterol. Take a brisk daily walk, swim laps or join an exercise group. If you don't have time to exercise for 30 minutes, try squeezing it in 10 minutes at a time. Take a short walk, climb the stairs at work, or try some sit-ups or pushups as you watch television.

Source: http://www.mayoclinic.org/