



## T1D Terms & Definitions

### Acronyms

- A1C: 3-month average blood glucose value
- BG: blood glucose AKA blood sugar level
- CGM: continuous glucose monitor
- Endo: endocrinologist
- LADA: latent autoimmune diabetes in adults AKA type 1.5 diabetes
- GAD65: antibody most commonly associated with T1D
- PCP: primary care physician
- T1D: type 1 diabetes AKA autoimmune diabetes AKA juvenile diabetes

### Common Terms

**A1C:** A test that measures a person's average blood sugar level over the past 2 to 3 months.

**Alpha cell:** A type of cell in the pancreas. Alpha cells make and release a hormone called glucagon. The body sends a signal to the alpha cells to make glucagon when blood sugar (blood glucose) falls too low. Then glucagon reaches the liver where it tells it to release glucose into the blood for energy.

**Amylin:** A hormone formed by beta cells in the pancreas. Amylin regulates the timing of glucose release into the bloodstream after eating by slowing the emptying of the stomach.

**Antibody:** Proteins made by the body to protect itself from invasion of "foreign" substances, such as bacteria or viruses. People get type 1 diabetes when their bodies make antibodies that mistakenly attack healthy insulin-making beta cells.

**Antigen:** Any substance that causes a person's immune system to produce autoantibodies (attack healthy cells).

**Autoantibody:** A protein produced by the body's immune system that attacks one or more of its healthy proteins.

**Autoimmune disease:** A disorder of the body's immune system where the immune system mistakenly attacks and destroys body tissue it believes to be foreign.

**Autoimmunity:** The body's systematic immune response against its own healthy cells and tissues.

**Basal rate:** A steady trickle of low levels of longer-acting insulin, such as that used in insulin pumps.

**Beta cells:** The cells in the body that makes insulin. Beta cells are located in the islets of the pancreas.

**Blood glucose meter:** A small, portable machine used by people with diabetes to check their blood glucose (sugar) levels. After pricking the skin, a drop of blood is placed on a test strip. The test strip is placed in a machine, which displays the blood glucose level as a number on the digital display.

**Blood glucose monitoring:** Checking blood glucose level on a regular basis in order to manage diabetes.

**Blood sugar (also called blood glucose):** The main sugar found in the blood, and the body's main source of energy.

**Blood sugar level (also called blood glucose level):** The amount of sugar in a given amount of blood. It is noted in milligrams.

**Bolus:** An extra amount of insulin taken to cover an expected rise in blood sugar (blood glucose), often related to a meal or snack.

**Brittle diabetes:** When a person's blood sugar (blood glucose) levels move in extremes from low to high and from high to low.

**C-peptide:** "Connecting peptide", a substance the pancreas releases into the bloodstream in equal amounts to insulin. A test of C-peptide levels shows how much insulin the body is making.

**Carbohydrate:** One of the three main nutrients in food. Foods that provide carbohydrate are starches, vegetables, fruits, dairy products, and sugars.

**Carbohydrate counting:** A method of meal planning for people with diabetes based on counting the number of grams of carbohydrate in food.

**Certified diabetes educator (CDE):** A health care professional specializing in diabetes education who has met eligibility requirements and successfully completed a certification exam.

**Complications of T1D:** Harmful effects of diabetes, such as damage to the eyes, heart, blood vessels, nervous system, teeth and gums, feet and skin, or kidneys. Research shows that keeping blood glucose, blood pressure, and low-density lipoprotein cholesterol levels close to normal can help prevent or delay these problems.

**Continuous glucose monitor (CGM):** A system that uses a tiny sensor inserted under the skin to check glucose (sugar) levels. The sensor stays in place for several days to a week and then is replaced. A transmitter sends glucose levels via radio waves from the sensor to a pager-like wireless monitor. Because currently approved CGM devices are not as accurate as standard blood glucose meters, users should confirm glucose levels with a meter before making a change in treatment.

**Combination therapy:** The use of more than one medication (this can be oral and injected medications typically used to treat type 2 diabetes and insulin) to manage blood sugar (blood glucose) levels.

**Complications:** Harmful effects of diabetes such as damage to the eyes, heart, blood vessels, nerves system, teeth and gums, feet, skin, or kidneys. Studies show that managing blood sugar (blood glucose), blood pressure, and cholesterol can help prevent or delay these problems.

**Creatinine:** A waste product from protein in the diet and from the muscles of the body. Creatinine is removed from the body by the kidneys. As kidney disease progresses, the level of creatinine in the blood increases.

**Dawn phenomenon:** The early-morning (4 a.m. to 8 a.m.) rise in blood sugar level that may stay higher later into the morning.

**Dehydration:** The loss of too much body fluid compared to the amount of fluid you're taking in. This lack of fluid keeps your body from working properly and can be caused from frequent urinating, sweating, diarrhea, or vomiting.

**Diabetes:** A condition where the body's blood sugar (blood glucose) levels are higher than normal (hyperglycemia) resulting from the body's inability to use or store blood sugar for energy. In type 1 diabetes, the pancreas no longer makes insulin and blood sugar can't enter the cells to be used for energy. In type 2 diabetes, either the pancreas does not make enough insulin or can't use the insulin it does produce effectively.

**Diabetic ketoacidosis:** An emergency condition in which high blood sugar (blood glucose) levels, along with a lack of insulin, result in the breakdown of body fat for energy and an accumulation of ketones in the blood and urine. Signs of DKA are nausea and vomiting, stomach pain, fruity breath odor, and rapid breathing. Untreated DKA can lead to coma and death.

**Diabetes educator:** A health care professional who teaches people how to manage their diabetes. Some diabetes educators are certified diabetes educators (CDE). Diabetes educators are found in hospitals, physician offices, managed care organizations, home healthcare and other settings.

**Diabetic ketoacidosis (DKA):** A life-threatening condition that can occur in people with type 1 diabetes. DKA happens when there is a shortage of insulin. In response, the body switches to burning fatty acids and producing acidic ketone bodies that cause most of the symptoms and complications. Signs of DKA include vomiting, sleepiness, fruity smelling breath, difficulty breathing, and, if untreated, coma and death.

**Dialysis:** The process of cleaning wastes from the blood artificially. This job is normally done by the kidneys. If the kidneys fail, the blood must be cleaned artificially with special equipment. The two major forms of dialysis are hemodialysis and peritoneal dialysis. Diabetic kidney disease can lead to the loss of kidney function and the need for dialysis.

**Endocrinologist:** A doctor trained in managing, diagnosing, and treating endocrine disorders, such as diabetes.

**Fructose:** A sugar that occurs naturally in fruits and honey. Fructose has four calories per gram.

**Gastroparesis:** A form of neuropathy that affects the stomach. Digestion of food may be incomplete or delayed, resulting in nausea, vomiting, or bloating, making the management of blood sugar (blood glucose) difficult.

**Gestational diabetes:** A type of diabetes that develops only during pregnancy and usually disappears upon delivery, but increases the risk that the mother will develop diabetes later. GDM is managed with meal planning, activity, and, in some cases, insulin.

**Glucose:** A carbohydrate and the most important simple sugar in human metabolism.

**Glucose meter:** A small portable machine used to check blood glucose (sugar) levels. After pricking the skin, a drop of blood is placed on a test strip in the machine. The meter (or monitor) displays the blood glucose level as a number on a digital display.

**Glucose monitoring:** Glucose monitoring helps people with diabetes manage the disease and avoid complications. A person can use the results of glucose monitoring to make decisions about food, physical activity, and medications.

**Glomerular filtration rate:** Measure of the kidney's ability to filter and remove waste products.

**Glucagon:** A hormone produced by the alpha cells in the pancreas. It raises blood sugar (blood glucose). An injectable and nasal forms of glucagon, available by prescription, is used to treat severe hypoglycemia.

**Glucose tablets:** Chewable tablets made of pure glucose used for treating hypoglycemia.

**Glycemic index:** A ranking of carbohydrate-containing foods, based on the food's effect on blood sugar (blood glucose) compared with a standard reference food. This value is not easily accessible for meal planning.

**HDL cholesterol:** high-density-lipoprotein cholesterol. A fat found in the blood that takes extra cholesterol from the blood to the liver for removal. Sometimes called "good" cholesterol.

**Honeymoon phase:** Some people with type 1 diabetes experience a brief remission called the "honeymoon phase." During this time, the pancreas may still make some insulin. But over time, insulin production stops and insulin injections become necessary. The honeymoon phase can last weeks, months, or even up to a year or more.

**Hyperglycemia:** The medical term for high blood glucose (sugar). It occurs when the body has too little insulin or when the body can't use insulin properly.

**Hypoglycemia:** The medical term for low blood glucose (sugar). It occurs when blood glucose drops below normal levels.

**Hypoglycemia unawareness:** A state in which a person does not feel or recognize the symptoms of hypoglycemia. People who have frequent episodes of hypoglycemia may no longer experience the warning signs of it.

**Immune system:** The body's system for protecting itself from viruses and bacteria or any "foreign" substances.

**Insulin:** A hormone made by the pancreas that allows your body to use sugar (glucose) from carbohydrates in the food you eat. Insulin helps keep your blood sugar level from getting too high (hyperglycemia) or too low (hypoglycemia).

**Insulin analogues:** An insulin analogue is a tailored form of insulin in which certain amino acids in the insulin molecule have been modified. The analogue acts in the same way as the original insulin, but with some beneficial differences for people with diabetes. Analogues are sometimes referred to as "designer" insulins.

**Insulin pen:** A device for injecting insulin that holds replaceable cartridges of insulin. Also available in disposable form.

**Insulin pump:** An insulin-delivering device about the size of a deck of cards that can be worn on a belt or kept in a pocket. An insulin pump connects to narrow, flexible plastic tubing that ends with a needle inserted just under the skin. Users set the pump to give a steady trickle or basal amount of insulin continuously throughout the day. Pumps can also release bolus doses of insulin (several units at a time) at meals and at times when blood sugar (blood glucose) is too high

**Insulin pump:** An insulin-delivering device about the size of a deck of cards that can be worn on a belt or kept in a pocket. It connects to narrow, flexible plastic tubing connected to a needle that is inserted just under the skin. Users set the pump to give a steady trickle of insulin throughout the day. The pump releases a larger single dose of insulin (several units at a time) at meals and times when blood glucose is too high.

**Islet cell autoantibodies (ICA):** Proteins found in the blood of people with type 1 diabetes and people who may be developing type 1 diabetes. Presence of ICA indicates damaged beta cells in the pancreas.

**Islets of Langerhans:** Groups of cells located in the pancreas that make hormones that help the body break down and use food. For example, alpha cells make glucagon and beta cells make insulin. Also called islets.

**Ketone:** A chemical produced when there is a shortage of insulin in the blood and the body breaks down body fat for energy. High levels of ketones can lead to diabetic ketoacidosis (DKA). Sometimes referred to as ketone bodies.

**Ketosis:** A ketone buildup in the body that may lead to diabetic ketoacidosis (DKA). Signs of ketosis are nausea, vomiting, and stomach pain.

**Kidney failure:** A chronic condition in which the body retains fluid and harmful wastes build up because the kidneys no longer work properly. A person with kidney failure needs dialysis or a kidney transplant. Also called end-stage renal (REE-nul) disease or ESRD.

**Kidneys:** The two organs that filter wastes from the blood to be removed in urine. The kidneys are located near the middle of the back. They send urine to the bladder.

**Lancet:** A spring-loaded device used to prick the skin with a small needle to obtain a drop of blood for blood glucose (sugar) monitoring.

**Latent autoimmune diabetes in adults (LADA):** A condition in which type 1 diabetes develops in adults.

**LDL cholesterol,** stands for low-density lipoprotein cholesterol. A fat found in the blood that takes cholesterol around the body to where it is needed for cell repair and also deposits it on the inside of artery walls. Sometimes called "bad" cholesterol.

**Lipid profile:** A blood test that measures total cholesterol, triglycerides, and HDL cholesterol. LDL cholesterol is then calculated from the results. A lipid profile is one measure of a person's risk of cardiovascular disease.

## Metabolism

The term for the way cells chemically change food so that it can be used to store or use energy and make the proteins, fats, and sugars needed by the body.

**Mg/dL milligrams per deciliter:** A unit of measure that shows the concentration of a substance in a specific amount of fluid. In the United States, blood sugar (blood glucose)

results are reported as mg/dL. Other countries use millimoles per liter (mmol/L). To convert to mg/dL from mmol/L, multiply mmol/L by 18. Example: 10 mmol/L  $\times 18 = 180$  mg/dL.

**Mixed Meal Tolerance Test (MMTT):** A test that tells doctors how much insulin your body is making. It involves drinking a special mixture of protein, fat and carbohydrates. The drink raises blood sugar, causing beta cells to make insulin. An intravenous catheter (I.V.) is placed in a vein in the arm from which 11 blood samples are taken at set times over the next four hours. The samples are sent to a lab for analysis.

**Microalbumin:** Small amounts of the protein called albumin in the urine detectable with a special lab test.

**Microalbuminuria:** The presence of small amounts of albumin, a protein, in the urine. Microalbuminuria is an early sign of kidney damage, or nephropathy, a common and serious complication of diabetes. Microalbuminuria is usually managed through blood sugar (blood glucose) management, reducing blood pressure, and a healthy eating plan.

**Microvascular disease (MY-kro-VASK-yoo-ler)**  
Disease of the smallest blood vessels, such as those found in the eyes, nerves, and kidneys. The walls of the vessels become abnormally thick but weak. The weakness of the walls cause them to crack and bleed, causing complications.

**Mmol/L**  
Millimoles per liter, a unit of measure that shows the concentration of a substance in a specific amount of fluid. In other countries, blood sugar (blood glucose) results are reported as mmol/L. In the United States, milligrams per deciliter (mg/dL) is used. To convert to mmol/L from mg/dL, divide mg/dL by 18. Example:  $180 \text{ mg/dL} \div 18 = 10 \text{ mmol/L}$ .

**Neuropathy:** Disease of the nervous system. The three major forms in people with diabetes are peripheral neuropathy, autonomic neuropathy, and mononeuropathy. The most common form is peripheral neuropathy, which affects mainly the legs and feet.

**Nutritionist:** A person with training in nutrition, who may or may not have specialized training and qualifications. See dietitian.

**Ophthalmologist:** A medical doctor who diagnoses and treats all eye diseases and eye disorders. Ophthalmologists can also prescribe glasses and contact lenses.

**Oral glucose tolerance test (OGTT):** A test to diagnose pre-diabetes and diabetes. After an overnight fast, a blood sample is taken, and then the patient drinks a high glucose beverage.



Blood samples are taken at intervals over 2 to 3 hours. Test results are compared with a standard and measure how the body uses glucose over time.

Pancreas: An organ that makes insulin and enzymes for digestion. It is located behind the lower part of the stomach and is about the size of a hand.

Pediatric endocrinologist: A doctor who treats children who have endocrine disorders, such as diabetes.

Polydipsia: Excessive thirst; may be a sign of diabetes.

Polyphagia: Excessive hunger; may be a sign of diabetes.

Polyuria: Excessive urination; may be a sign of diabetes.

Postprandial blood glucose: the blood sugar (blood glucose) level one to two hours after eating.

Preprandial blood glucose: Blood sugar (blood glucose) level before eating.

Protein: 1. One of the three main nutrients in food. Foods that provide protein include meat, poultry, fish, cheese, milk, dairy products, eggs, and dried beans. 2. Proteins are also used in the body for cell structure, hormones such as insulin, and other functions.

Renal: Having to do with the kidneys. A renal disease is a disease of the kidneys. Renal failure means the kidneys have stopped working.

Retinopathy: Eye disease that is caused by damage to the small blood vessels in the retina. Loss of vision may result. (Also known as diabetic retinopathy)

Risk factor: Anything that raises the chances of a person developing a disease.

Side effects: The unintended action(s) of a drug or treatment.

Sliding scale: A set of instructions for adjusting insulin on the basis of blood sugar (blood glucose) test results, meals, or activity levels.

**Somogyi effect (rebound hyperglycemia):** When the blood sugar (blood glucose) level swings high following hypoglycemia. The Somogyi effect may follow an untreated hypoglycemic episode during the night and is caused by the release of stress hormones.

**Subcutaneous injection:** Putting a fluid into the tissue under the skin with a needle and syringe.

**Sucrose:** A two-part sugar made of glucose and fructose. Known as table sugar or white sugar, it is found naturally in sugar cane and in beets.

**Sugar:** A class of carbohydrates with a sweet taste, including glucose, fructose, and sucrose.

**Sugar alcohols:** Sweeteners that produce a smaller rise in blood sugar (blood glucose) than other carbohydrates. Their calorie content is about two calories per gram. Includes erythritol, hydrogenated starch hydrolysates, isomalt, lactitol, maltitol, mannitol, sorbitol, and xylitol. Also known as polyols (PAH-lee-alls.)

**Symptoms of T1D:** Caused by high levels of glucose in the blood, T1D symptoms include increased thirst and urination, unexplained weight loss, blurred vision, and feeling tired all the time. These symptoms may be mistaken for severe flu or another rapid-onset illness.

**Triglyceride:** The storage form of fat in the body. High triglyceride levels may occur when diabetes is out of control.

**Type 1 diabetes:** A condition characterized by high blood sugar (blood glucose) levels caused by a lack of insulin. Occurs when the body's immune system attacks the insulin-producing beta cells in the pancreas and destroys them. The pancreas then produces little or no insulin. Type 1 diabetes develops most often in young people but can appear in adults.

**Type 2 diabetes:** A condition characterized by high blood sugar (blood glucose) levels caused by either a lack of insulin or the body's inability to use insulin efficiently. Type 2 diabetes develops most often in middle-aged and older adults but can appear in young people.

**Unit of insulin:** The basic measure of insulin. U-100 insulin means 100 units of insulin per milliliter (mL) or cubic centimeter (cc) of solution. Most insulin made today in the United States is U-100.

Urea: A waste product found in the blood that results from the normal breakdown of protein in the liver. Urea is normally removed from the blood by the kidneys and then excreted in the urine.

Urologist: A doctor who treats people who have urinary tract problems. A urologist also cares for men who have problems with their genital organs, such as impotence.

Vascular: Relating to the body's blood vessels.

Vein: A blood vessel that carries blood to the heart.

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