



Diabetes and Insulin

WHAT IS DIABETES?

Diabetes is a disease in which blood glucose (sugar) levels are higher than normal. Glucose is produced in the body from the foods that you eat. The pancreas, an organ located in the abdomen just behind the stomach, produces insulin. Insulin is a hormone that takes glucose from the bloodstream and carries it into your body's cells where it is used for energy.

Diabetes occurs when the pancreas does not produce enough insulin or when the body doesn't use insulin properly (called insulin resistance). Sometimes people have both problems. In either case, the result is that glucose does not enter the cells and builds up in the blood.

Over time, uncontrolled diabetes may cause serious complications including heart disease, stroke, kidney failure, blindness, and nerve damage. Keeping blood glucose levels close to normal is the key to preventing these health problems.

DID YOU KNOW?

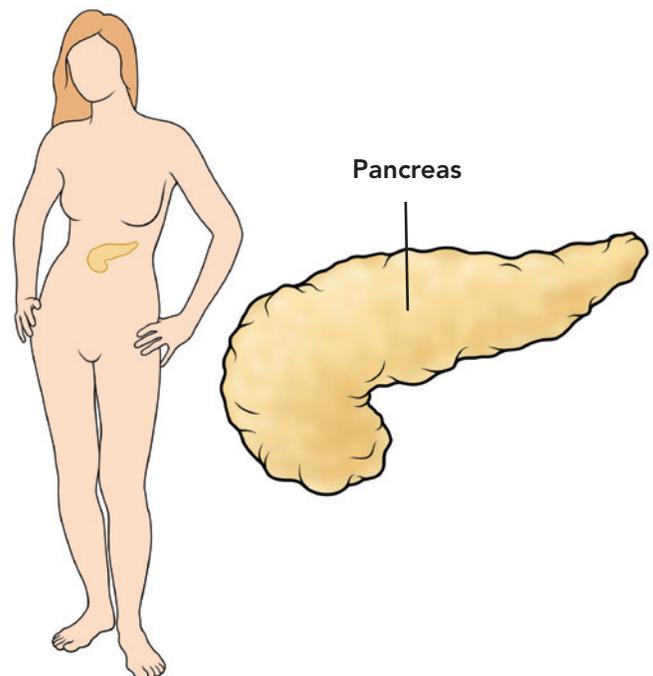
Different types of insulin have different effects on the body.

HOW IS DIABETES TREATED?

Treatment depends on the type of diabetes you have. There are three main types of diabetes:

- **Type 1** occurs when the pancreas stops making insulin. It is usually seen in children and teens, but may occur later in life. People with type 1 diabetes need insulin to survive.

- **Type 2** is the most common type of diabetes. With type 2 diabetes, the body does not produce enough insulin and it becomes resistant to insulin's effects. It occurs in adults and elderly patients, many of whom are overweight. Younger people can also develop type 2 diabetes.
- **Gestational** diabetes is a type of diabetes that occurs only during pregnancy. It usually goes away after the baby is born. Women who have had gestational diabetes are more likely to develop type 2 diabetes later in life, however.



Treatment includes changes in lifestyle (diet and exercise), plus medicine (if needed): oral medicines (pills), insulin, and/or other injected medicines. People with type 1 diabetes always need insulin. People with type 2 diabetes usually need treatment with oral medicines for several or even many years, but may eventually need insulin to maintain glucose control.

WHAT ARE THE DIFFERENT TYPES OF INSULIN?

Different types of insulin are classified by how fast they work and how long they continue to work in the body.

Mealtime (or “bolus”) insulin. Used before meals to control the rise of blood glucose levels after eating.

- Rapid-acting: lispro, aspart, glulisine
- Short-acting: regular human insulin

Basal insulin. Controls blood glucose levels between meals and throughout the night. This is usually used once or twice daily. It can be used alone or in combination with oral medicines or rapid-acting insulin.

- Intermediate-acting: human NPH
- Long-acting: glargine and detemir

Pre-mixed insulin. Combination of bolus and basal insulins that controls blood glucose levels after and between meals. These are usually used twice daily before breakfast and dinner. They can be used alone or in combination with oral medicines.

The type of insulin your doctor prescribes will depend on the type of diabetes you have, your lifestyle (when and what you eat, how much you exercise), your age, and your body’s response to insulin. It also depends on how often you are able or willing to check your blood glucose and give yourself injections.

People with type 1 diabetes often need more than one type of insulin. Most people with type 2 diabetes who use insulin just use basal (long-acting) insulin.

WHAT ARE INSULIN ANALOGS?

In recent years, scientists have developed new products called insulin analogs. These have been genetically engineered to better match the insulin produced by your pancreas.

Insulin analogs make it easier to control blood glucose. By controlling and preventing hyperglycemia (high blood glucose) and hypoglycemia (low blood glucose), they may reduce the risk of diabetic health problems and improve your quality of life.

Like traditional insulins, insulin analogs are injected with a syringe, an insulin pen, or an insulin pump. Insulin analogs include long-acting, basal insulins (glargine and detemir) and rapid acting, bolus insulins (lispro, aspart, and glulisine).

Some insulin analogs have not yet been approved for use during pregnancy. If you are or plan to become pregnant, talk with your doctor about the best insulin for you.

HOW CAN YOU TAKE CARE OF YOURSELF AND YOUR DIABETES?

If you have diabetes, you should maintain a healthy lifestyle and learn as much as you can about your condition. Follow your doctor’s recommendations for treatment and regularly monitor your blood glucose to avoid high or low blood glucose. You can manage your diabetes with diet, exercise, and medicines (if needed).

Questions to ask your doctor

- What type of diabetes do I have?
- What kind of medicine do I need for my diabetes?
- What are the risks and benefits of the medicine?
- Do I need to take insulin? What type? How often?
- How often will I need check-ups?
- Should I see a diabetes educator?
- Should I see an endocrinologist for my care?

RESOURCES

- Find-an-Endocrinologist: www.hormone.org or call 1-800-HORMONE (1-800-467-6663)
- Find a diabetes educator (American Association of Diabetes Educators): www.diabeteseducator.org/DiabetesEducation/Find.html
- Hormone Health Network diabetes information: www.hormone.org/diabetes
- National Diabetes Information Clearinghouse (National Institutes of Health): diabetes.niddk.nih.gov
- American Diabetes Association: www.diabetes.org
- Mayo Clinic: www.mayoclinic.com/health/insulin/DA00091

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The Hormone Health Network offers free, online resources based on the most advanced clinical and scientific knowledge from The Endocrine Society (www.endo-society.org). The Network’s goal is to move patients from educated to engaged, from informed to active partners in their health care. This fact sheet is also available in Spanish at www.hormone.org/Spanish.

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www.hormone.org