



Medications and Diabetes

Understanding Insulin Therapy

The importance of insulin

A TRUEinsight™ Guide to understanding the importance of insulin for diabetes management

Once diagnosed with diabetes, you and your healthcare professional will work together to develop a treatment plan to help achieve blood glucose levels within your target range. To help you learn about and manage diabetes, your practitioner may recommend a diabetes self-management training program – available at local hospitals and covered by Medicare and most insurance plans.

These programs are designed to provide you with the knowledge and skills to understand key aspects of your treatment plan, including healthy meal planning, physical activity, blood glucose monitoring and medication therapy. Other topics include how to manage high and low blood glucose levels, preventing complications, taking care of diabetes when you are sick, and other topics relating to living with diabetes. This TRUEinsight™ Guide focuses on understanding the goals of insulin therapy and the types of insulin on the market. You'll also learn about insulin delivery options and the importance of blood glucose monitoring to determine if your diabetes management plan is effective in achieving your target blood glucose goals.



The goal of Insulin Therapy

In normal metabolism, insulin is produced by the pancreas and released when glucose levels are rising, such as after a meal. Insulin works to lower blood glucose levels by transporting the glucose from the blood into the body cells for energy. People with Type 1 diabetes do not produce any insulin, so they are required to administer insulin to regulate blood glucose levels.

People with Type 2 diabetes taking oral medications may require insulin to help them achieve their target blood glucose goals at some point in the course of their diabetes. The goal of insulin therapy is to control blood glucose levels and prevent complications of diabetes, including nerve damage, kidney damage, vision loss and cardiovascular disease.



Types of insulin*

Insulin is available in many different types, and each type of insulin works differently in the body. Insulins vary depending on how fast they start working after being injected, the time it takes for the insulin to peak in the body and the length of time the insulin lasts.

Short-Acting Insulin

Regular insulin is considered a "short-acting" insulin. It begins to work 30 minutes after injection, peaks in two to three hours and lasts for three to six hours.

Intermediate-Acting Insulin

An "intermediate-acting" insulin begins to work later than a short-acting insulin but works for a longer time. For example, an intermediate-acting insulin, NPH, takes two to four hours to begin working, peaks in four to 12 hours and can last for 12 to 18 hours.

Long-Acting Insulin

"Long-acting" insulin which begins working in one to two hours, works continuously in the body and lasts for approximately 24 hours. Insulin glargine and insulin detemir are designed to be injected any time during the day as long as it's injected at the same time every day.



Rapid-Acting Insulin

"Rapid-acting" insulin – insulin lispro or insulin aspart – begins to work in approximately 15 minutes after injection, works the hardest in about one to two hours and lasts for three to four hours. Because rapid-acting insulins begin to work in approximately 15 minutes after injection, it is important to have your meal ready to eat before injecting.

The type of insulin and dosage of insulin a person takes depends on specific characteristics of his/her disease. Each type of insulin works differently from person to person – depending on your lifestyle, how well you follow your meal plan, your physical activity program and your overall health status. It is important to work with a diabetes healthcare professional to determine the type and dosage of insulin required to help you achieve your target blood glucose goals.


Pre-mixed Insulin

Pre-mixed insulin is available to make it easier for people to inject 2 different types of insulin without having to draw it up themselves and mix it in the syringe. Pre-mixed insulins are often packaged in a pen type device that makes it easy to measure and deliver the insulin dose.

Pre-mixed insulin may be a combination of regular and NPH insulin called 70/30. This means that the mixture contains 70% NPH intermediate -acting insulin and 30% of regular or short-acting insulin. There may be other combinations of different types of insulin and different mixtures.

Insulin delivery options

All insulin is measured in units and drawn up into a syringe for injection into the subcutaneous area of the skin on the abdomen, thighs, or upper arms. Some people take multiple daily injections of insulin using a fine-needle syringe. Other insulin delivery devices include insulin pens or insulin pumps. An insulin pen device offers the convenience of a prefilled insulin syringe with a dial that allows the user to dial up the correct units of insulin to inject.



Some insulin pens are designed to require a specific type of insulin, others will use any type or mixture of insulin.

Insulin pumps

Some people with Type 1 diabetes are candidates to use a pump device to deliver insulin. The device is about the size of a beeper and delivers insulin via a plastic cannula that is inserted directly under the skin. The pump is programmed to deliver small amounts of insulin throughout the day and can also be programmed to give additional insulin based on the number of carbohydrates consumed during a meal and to correct a high pre-meal blood glucose levels.

Benefits of pumps

The benefits of wearing an insulin pump include the ability to determine insulin dosage based on food choices and the elimination of multiple insulin injections throughout the day.

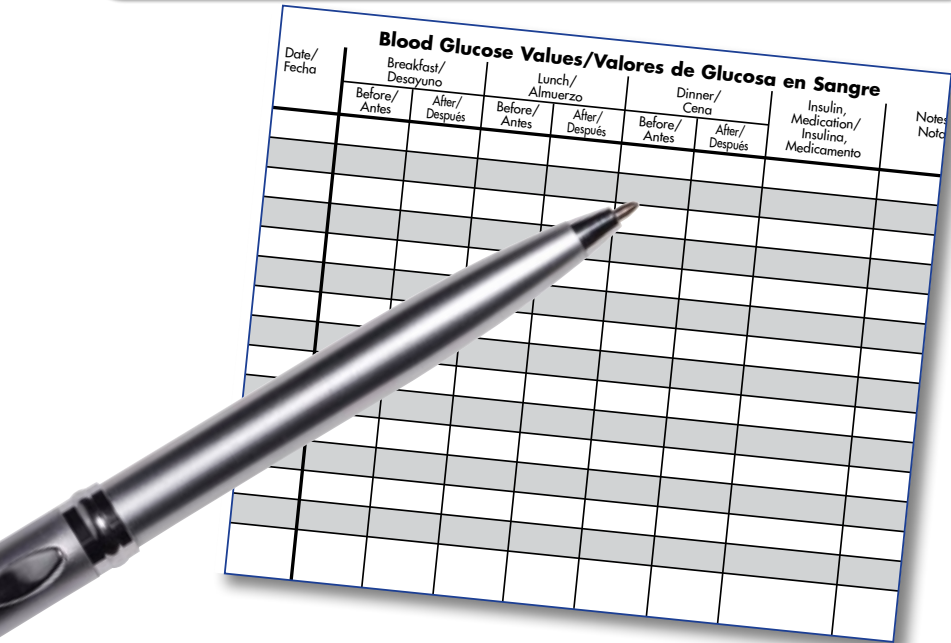


The insulin pump is not an option for everyone with diabetes. You and your diabetes healthcare professional will work together to determine what is the most appropriate insulin delivery option for you. Your diabetes management training will include learning how to draw up and inject insulin, and/or learning about how to properly wear and maintain an insulin pump.

The importance of blood glucose monitoring and insulin therapy

Whether you use a needle and syringe or other insulin delivery option, monitoring your blood glucose levels is critical in understanding if your insulin therapy is effective in controlling your blood glucose levels. Checking your blood glucose levels frequently and writing the results down in your log book can help you to identify patterns and trends of too high or too low blood glucose levels.

The American Diabetes Association recommends that people using insulin should test blood sugar levels three or more times a day.



You should test your blood glucose levels more frequently when:

- Your glucose levels are out of your target range
- Your diabetes management plan has changed
- You are ill and/or not feeling well
- You are under a lot of stress

More frequent testing

People who are using an insulin pump may require more frequent blood glucose testing. It is also a good practice to check your blood glucose levels more frequently when your diabetes treatment plan is changing or you are ill.

The goal of insulin therapy is to normalize blood glucose levels to prevent the complications of diabetes. If your blood glucose levels are in your target range, then your diabetes management plan is working.

If you are having difficulty achieving your target blood glucose goals, then meet with your diabetes healthcare professional to review your blood glucose results so that you can work together to actively develop a plan to help you achieve blood glucose results near or within your target range.



**For more information
about diabetes visit
www.homediagnostics.com**

Contact your insurance company or local diabetes association to find out if you qualify to receive diabetes self-management education. Remember, the more you learn about diabetes, the better you will be able to understand and manage your daily self-care program.

Below are some references for additional information about diabetes.



**American Association of
Diabetes Educators**
800-TEAM-UP-4
www.aadenet.org

**Juvenile Diabetes Research
Foundation International**
1-800-533-2873
www.jdrf.org

Home Diagnostics, Inc.
www.homediagnostics.com

**American Diabetes
Association**
800-342-2383
www.diabetes.org

**National Institute of
Diabetes and
Digestive and Kidney
Diseases, National
Diabetes Information
Clearinghouse**
800-860-8747
www.niddk.nih.gov

Information contained in this brochure was sourced through:
American Diabetes Association, Resource Guide 2008; Diabetes Forecast, January 2008, pg. RG 11-14.
American Diabetes Association Standards of Medical Care in Diabetes, Diabetes Care, January 2008, pgs. S2-S54.
Life with Diabetes: A Series of Teaching Outlines, 2nd edition by the Michigan Diabetes Research and Training Center; lead authors Martha M. Funnell, M.S., R.N., C.D.E.; Marilyn S. Arnold, M.S., R.D., C.D.E.; Patricia A. Barr, B.S.; Andrea Lasichak, M.S., R.D., C.D.E.; 2000 by American Diabetes Association.