

# Using Insulin



## Types of insulin

Many different types of insulins are available, offering more flexibility in the number and timing of injections you may need and making it easier for you to maintain your target blood glucose levels. You may need one or more injections a day to better manage your blood glucose levels.

Insulins differ by their duration of action (how long they work), their onset of action (how quickly they start working) and when their action peaks (when they are most effective). By understanding how your insulin works, you can time your meals, snacks and activity levels accordingly.

To work, insulin must be injected under the skin but not directly into the blood. Insulin is absorbed from different parts of your body at different rates and can also be affected by the amount of physical activity you are doing. Different injection devices may require specific injection sites. Talk to your family health care provider or diabetes educator about a pattern for your injections.

## What is insulin?

Insulin is a hormone produced by the pancreas to control the amount of glucose (sugar) in the blood. In people who have diabetes, the pancreas does not produce any or enough insulin, or is unable to effectively use the insulin it does produce. As a result, glucose builds up in the bloodstream, potentially leading to serious health problems such as blindness, heart disease, kidney problems, amputation, nerve damage and erectile dysfunction.

## Insulin and type 1 diabetes

People with type 1 diabetes do not naturally produce any insulin. As a result, they need to take insulin every day.

## Insulin and type 2 diabetes

People with type 2 diabetes may be able to keep their blood glucose levels within their target range through healthy eating, physical activity and by taking diabetes medication.

However, many people with type 2 diabetes will need to use insulin to properly manage blood glucose levels at some point. The most important thing is to manage your diabetes and prevent complications. The good news is that modern injection devices, such as insulin pens, are simple to use and virtually painless.

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## The importance of monitoring your blood glucose levels

Monitor your blood glucose levels regularly.

Regular monitoring is the best way to know that your blood glucose levels are in your target range. Regular checks also give you important information about how your blood glucose levels vary during the day, how much insulin you need and whether you're on track in managing your diabetes.

Your family health care provider or diabetes educator will help you with any questions you have about your insulin, including how to mix or inject two different kinds.

## What insulin plan is right for you?

When prescribing an insulin plan, your family health care provider will consider several factors, including your treatment goals, age, lifestyle, meal plan, general health, risk and awareness of low blood glucose (hypoglycemia), and motivation. Social and financial factors may also be considered. There is no “one size fits all” plan.

Your health care team will talk with you about the best insulin plan to meet your needs. Remember, it will take time to fine-tune your insulin regimen, which may change over time depending on life events (such as a major illness) and changes in your lifestyle (such as a new exercise plan).

Talk to your family health care provider or diabetes educator if you have any questions or concerns about your insulin schedule, or if you aren't sure how to handle certain situations, such as adjusting your insulin when travelling.

## How do I use insulin?

Insulin can be administered by syringe, pen or pump – according to your personal preference.

- Insulin pens combine a very fine needle and insulin cartridge in a single unit, making it easier to give multiple injections. Some people carry two or more pens if they use more than one kind of insulin at different times of the day. If you need to use two types of insulin at the same time, you will need two separate pens and will need to give yourself two injections. One of the main benefits of insulin pens is their portability.
- Jet injectors have no needles at all. These devices release a tiny stream of insulin, which is forced through the skin by pressure. Some people find that bruising occurs at the injection site.
- Syringes today are smaller than ever and have finer needles with special coatings so injecting causes little discomfort. If you need to use two types of insulin at the same time, you can mix the insulin and give yourself only one injection, or you may be prescribed a mixed insulin.
- Insulin pumps are a safe, effective way to deliver intensive insulin therapy. The device involves a small catheter, which is inserted under the skin, and a pump, which is about the size of a pager, that is worn outside the body. The pump has a reservoir and can be programmed to deliver small amounts of insulin on a schedule that you determine. To deliver extra doses of insulin (at meal times, for example), you simply press a button on the device.

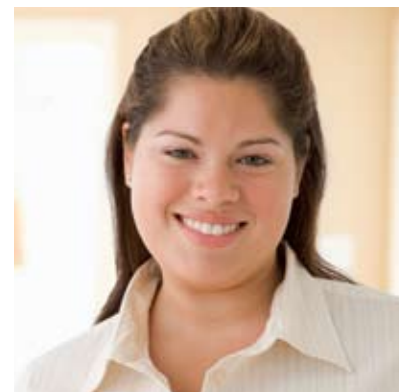
Talk to your family health care provider or diabetes educator about which device is right for you. For more information on using insulin, watch the “Medication” video, which is part of this kit.

## Types of insulin (approved for use in Canada)

Insulin type (appearance)	Action	Brand names (generic name in brackets)	Dosing schedule
<b>Rapid-acting analogue (clear)</b>	Onset: 10-15 minutes Peak: 60-90 minutes Duration: 3-5 hours	Apidra® (insulin glulisine) Humalog® (insulin lispro) NovoRapid® (insulin aspart)	Usually taken right before eating, or to lower high blood glucose
<b>Short-acting (clear)</b>	Onset: 30 minutes Peak: 2-3 hours Duration: 6.5 hours	Humulin®-R Novolin®ge Toronto	Taken about 30 minutes before eating, or to lower high blood glucose
<b>Intermediate-acting (cloudy)</b>	Onset: 1-3 hours Peak: 5-8 hours Duration: up to 18 hours	Humulin®-N Novolin®ge NPH	Often taken at bedtime, or twice a day (morning and bedtime)
<b>Long-acting analogue (clear and colourless)</b>	Onset: 90 minutes Peak: none Duration: up to 24 hours (Lantus 24 hours, Levemir 16-24 hours)	Lantus® (insulin glargine) Levemir® (insulin detemir)	Usually taken once or twice a day
<b>Premixed (cloudy)</b>	A single vial or cartridge contains a fixed ratio of insulin (the numbers refer to the percentage of rapid- or fast-acting insulin versus the percentage of intermediate-acting insulin)	<b>Premixed regular insulin</b> NPH Humulin® (30/70) Novolin®ge (30/70, 40/60, 50/50) <b>Premixed insulin analogues</b> Humalog® Mix25 and Mix50 NovoMix 30	Depends on the combination

Adapted from the Canadian Diabetes Association's consumer fact sheet, *Insulin: Things you should know* © 2008.

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## Insulin tips

- Keep a written record of the name(s) and amounts of the insulin(s) you use, what times during the day you should inject your insulin, how long the insulin works and when it is most effective.
- Keep unopened insulin at refrigerated temperatures of 2°C to 10°C (35°F to 50°F). Once opened, insulin has a shelf life of 28 days. Unopened vials are good until the expiry date – be sure to check the expiry date on a vial before you use it.
- Make sure your insulin does not freeze or get too hot (not over 37°C or 98.6°F).