



IT'S YOUR HEALTH



Insulin Pumps

THE ISSUE

An insulin pump is a **medical device** used by people with **diabetes**. It's an alternative to multiple daily injections of insulin using a syringe or pen.

Insulin pumps are becoming increasingly popular. However, they are complex devices. It's important to know how to use the pump properly to avoid problems or address them if they occur. If you do not know how to use your pump properly to maintain your blood sugar levels, or if there are problems, you are at risk of serious side effects from uncontrolled diabetes.



HOW INSULIN PUMPS WORK

Insulin pumps are worn externally and deliver a continuous amount of fast-acting **insulin** 24 hours a day.

There are three main components to insulin pump therapy:

1. a pump (with a battery and controls), which pumps the insulin into your body
2. a reservoir or a cartridge, where insulin is held
3. an infusion set, which includes a thin tube that runs from the reservoir in the pump to the infusion site on your body, and a short cannula (a small tube) that is inserted under your skin

The main steps to using the pump include placing the insulin-filled reservoir inside the pump, and inserting the cannula under your skin using a needle. The cannula is held in place with an adhesive (sticky) patch for 24 to 72 hours, after which time it should be replaced. A tube connects the cannula to the reservoir in the pump and delivers a set amount of insulin into your body.

Two types of **insulin** doses are delivered to your body by the pump:

1. Basal insulin doses are delivered continuously over 24 hours and keep your blood sugar levels stable between meals and overnight.
2. Bolus insulin doses are delivered when you push a button on the pump – you can use them when you eat (or when needed) to correct high blood sugar levels.

The pump can be worn in many places on your body. It can be attached to your waistband, pocket, bra, armband, or underwear. When you sleep, you can lay it next to you on your bed or nightstand. You can disconnect the pump for activities such as swimming or showering. Insulin pumps that are not waterproof should not be exposed to water.

It's important to make sure that your insulin pump and related components suit your body type and lifestyle. Talk to your doctor for help and advice in choosing an insulin pump, developing an insulin treatment plan and selecting the dose that's right for you.

SIDE EFFECTS

Side effects can happen for a number of reasons, including improper diabetes management, improper use of the insulin pump or its related components, or pump failure. It's important to be aware when you might be having a side effect and know what to do if it happens. Some serious complications of uncontrolled [diabetes](#) include:

- **Hyperglycaemia**—Your blood sugar level is too high. Hyperglycemia doesn't usually cause symptoms until glucose levels are significantly elevated (11+ mmol/L). Symptoms are those of untreated diabetes: being thirsty, urinating more often and fatigue/feeling tired.
- **Hypoglycaemia**—Your blood sugar level is too low. Symptoms can include hunger, confusion, disorientation, fainting or you can have a seizure and go into a coma.

- **Diabetic ketoacidosis**—Prolonged high blood sugar and a shortage of insulin can cause your body to burn fatty acids instead of glucose (sugar). Symptoms can include excessive thirst or urination, nausea, vomiting, a distinctive fruity odour on the breath, and abdominal pain. If left untreated, it can progress to cerebral oedema (water on the brain) and coma.

Talk to your health care provider ahead of time so you know what to do if you have a side effect. Report all side effects to your health care provider. If you or someone you know have side effects like weakness, fainting or loss of consciousness, get medical help immediately!

Complaints involving device problems should also be reported to [Health Canada](#).

REDUCE YOUR RISK

Insulin pump therapy is not for everyone. You should have a proven history of good diabetes management. As well, you need to be willing to undergo training on an ongoing basis to learn how to use insulin pump therapy to properly manage your diabetes. If you are thinking about using insulin pump therapy, talk to your health care provider about its benefits and risks. Ask about other treatment options to find out which option is best for you and your lifestyle.



If you are using insulin pump therapy, make sure to:

- **Test your blood.** Check your blood glucose levels as directed by your health care provider so you can be sure you are getting the right amount of insulin.
- **Get training.** It takes time to learn to manage your diabetes using insulin pump therapy. If you are a diabetic, parent or caregiver, get training to learn how to use the pump and related components correctly. Work with your health care provider to develop a back-up plan in case of problems.
- **Read the manual.** Follow all instructions and use your pump exactly as directed.
- **See your doctor regularly.** Follow up with your health care provider to make sure that you are using your insulin pump therapy the right way and that it works for you. Your health care provider can assess your response and if you are getting enough insulin. You may need to adjust your dose and the pump's program.
- **Store safely.** Make sure to practice proper insulin storage guidelines like refrigerating and bringing the insulin to room temperature before use. Store insulin and all other medications in a safe place (ideally locked), out of the reach of children and teenagers.
- **Throw out safely.** Drugs and needles should never be thrown out at home (in the sink, toilet or trash). Bring any unused medication back to the pharmacy for safe disposal. Check with your city or town for how to safely dispose of used needles.



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Tips for using insulin pump therapy

If used properly, insulin pumps and their related components are reliable and safe. But as with any technology, problems can sometimes occur. It's important to be aware of potential problems and what to do if they arise, to maintain blood sugar levels and avoid side effects.

Tips for proper insulin pump therapy include:

- Watch for cannulas (tube) becoming kinked, or leakage in the reservoir or the infusion sets. Kinked cannulas (tube) and insulin leaks can lead to interruption of insulin flow, blockages, or mechanical failures.
- Check your pump for damage, such as a cracked display or jammed buttons.
- Make sure your battery is working, check the battery indicator and replace the battery as needed. Check for a loose or damaged battery cap to avoid unexpected power loss.
- Don't expose your pump to water if it is not waterproof. Also avoid exposing the internal casing to water by changing the battery only in a dry area and making sure that the battery cover is not worn out or missing.
- Understand your personal settings. Be sure to adjust the program to account for changes in activity or diet.

- Change the infusion set according to the instructions for the infusion set you are using and the recommendations of your doctor or health care team.
- Pay attention to device alerts, such as beeps or vibrations. Make sure the volume is set high enough so that you can hear it.

It is very important to monitor your blood sugar regularly and be aware of any signs that there may be a problem, so you can take action before a side effect occurs. Talk to your health care provider about steps to maintain blood sugar levels in case of device problems.

If you have a technical problem with your pump, contact the manufacturer. Manufacturers must provide manuals and training to clearly explain how to use insulin pumps. They must also tell you what to do if you have a side effect or if the device fails.

You should also report technical problems to Health Canada's Health Products and Food Branch Inspectorate. [Contact us online](#) or call our toll-free hotline at 1-800-267-9675.

Canada 

THE GOVERNMENT OF CANADA'S ROLE

Health Canada regulates the safety, effectiveness and quality of medical devices imported into and sold in Canada, including medical devices like insulin pumps. As part of this work, we:

- review insulin pumps to make sure they meet our requirements for safety, quality and effectiveness before we grant a medical device licence to manufacturers
- monitor problems with insulin pumps on the market and work with manufacturers to correct them when problems are identified
- encourage Canadians to [report complaints](#) about insulin pumps and other medical devices to our Health Products and Food Branch Inspectorate

We also send safety information about medical devices to health care professionals and consumers.

FOR MORE INFORMATION

- To [report complaints](#) about insulin pumps and other medical devices, contact us online at: www.hc-sc.gc.ca/dhp-mps/compli-conform/prob-report-rapport/md_prob_rep-rap_incident_im-eng.php or call our toll-free hotline at 1-800-267-9675.
- [Medical Devices web section](#) at: www.health.gc.ca/medicaldevices
- [Diabetes web section](#) at: www.hc-sc.gc.ca/hc-ps/dc-ma/diabete-eng.php

- *It's Your Health*—[Type 2 Diabetes](#) at: www.hc-sc.gc.ca/hl-vs/iyh-vsv/diseases-maladies/diabete-eng.php
- *It's Your Health*—[Insulin Products](#) at: www.hc-sc.gc.ca/hl-vs/iyh-vsv/med/insul-eng.php
- [Insulin Pumps](#) (The Hospital for Sick Children) at: www.aboutkidshealth.ca/en/resourcecentres/diabetes/treatmentofDiabetes/InsulinPumps/Pages/default.aspx
- [Insulin Pumps](#) (American Diabetes Association) at: www.diabetes.org/living-with-diabetes/treatment-and-care/medication/insulin/insulin-pumps.html

ADVISORIES AND WARNINGS

- [Drug and medical device recall listings](#) at: www.hc-sc.gc.ca/dhp-mps/compli-conform/recall-retrait/_list/index-eng.php

RELATED RESOURCES

- *It's Your Health*—[Buying Medical Devices from the Internet](#) at: www.hc-sc.gc.ca/hl-vs/iyh-vsv/med/med_mat-eng.php
- *It's Your Health*—[Safe Use of Medicines](#) at: www.hc-sc.gc.ca/hl-vs/iyh-vsv/med/safe-secure-eng.php
- *It's Your Health*—[Proper Use and Disposal of Medication](#) at: www.hc-sc.gc.ca/hl-vs/iyh-vsv/med/disposal-defaire-eng.php
- For safety information about food, health and consumer products, visit the [Healthy Canadians](#) website at: www.healthycanadians.gc.ca

- For more articles on health and safety issues, go to the *It's Your Health* web section at: www.health.gc.ca/iyh

You can also call toll free at 1-866-225-0709 or TTY at 1-800-267-1245*

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