

Insulin pump therapy in type 1 diabetes

Insulin pump therapy is also known as continuous subcutaneous insulin infusion (CSII). Insulin pump therapy can help match your insulin to your lifestyle and minimise the number of insulin injections. When you work closely with your diabetes care team, insulin pump therapy can help keep blood glucose levels within your target ranges.

What is an insulin pump?

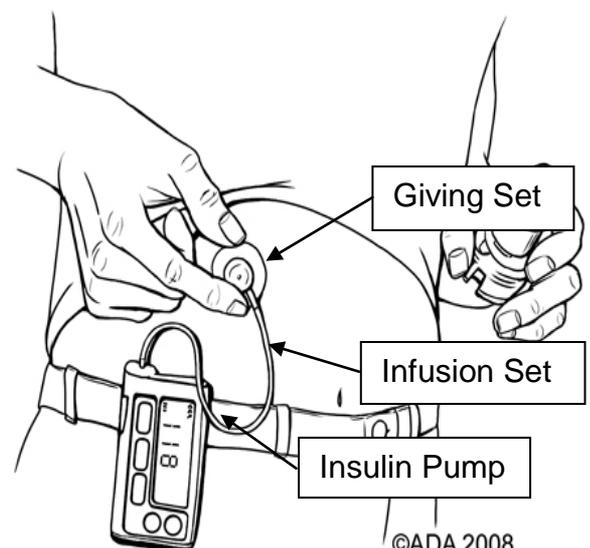
An insulin pump is a small battery operated electronic device that holds a syringe (reservoir) of insulin. It is about the size of a mobile phone and is worn 24 hours a day.

The insulin pump is worn outside the body. You can buy a pump case or it can be clipped directly to a waistband, pocket, bra, garter belt, sock, or underwear.

An infusion set (thin plastic tubing) is connected to the insulin pump and the other end of the infusion set is connected to giving set.

The giving set is made up of a fine needle and cannula (fine tube). The fine needle is used to place the cannula under the skin and is then removed. The cannula delivers insulin just under the skin (subcutaneous tissue). The cannula stays there for up to three days.

The infusion and giving sets are held in place by an adhesive see-through dressing. After 2 - 3 days, a new infusion and giving set should be inserted into a different place on your body. It is important to rotate sites, just as you would do with multiple daily insulin injections.



What are the benefits of insulin pump therapy?

Provided the suggested management guidelines are followed, insulin pump therapy may improve your;

- > daily blood glucose control
- > HbA1c
- > and quality of life.

Are there any disadvantages of insulin pump therapy?

The insulin pump is not suitable for everyone and has to be worn 24 hours a day. Apart from minor discomfort at the time of the insertion of the cannula, there is no expected discomfort when wearing the insulin pump.

There is a small risk of infection but this risk is reduced by using a sterile technique when inserting the cannula and protecting the skin site with the see-through dressing when the insulin pump is worn.

Normal daily activities are encouraged. Most insulin pumps are water resistant and some are water proof. However, for showering, bathing or swimming, the insulin pump can be temporarily disconnected. Contact sports should be avoided whilst wearing the insulin pump and disconnecting the insulin pump during this time is advised.

Mechanical faults can occur and so it is important to have a backup plan with insulin and insulin syringes available.

Of greatest concern is the risk of life threatening diabetic ketoacidosis from insulin pump malfunction or problems with insulin delivery. This is because the insulin pump uses only rapid acting insulin and ketones and ketoacidosis can develop much more quickly than when using multiple daily injections (that use both rapid acting and long acting insulin). It is recommended that an insulin pump is not disconnected nor insulin delivery suspended for more than 1 hour. A sick day action plan can be developed in consultation with the credentialled diabetes educator, doctor or diabetes specialist.

Even though using an insulin pump has disadvantages, most pump users agree the advantages outweigh the disadvantages.

How does the insulin pump work?

With assistance from your diabetes team, your insulin pump is programmed to deliver rapid acting insulin 24 hours a day to cover your specific needs of;

- > **Basal insulin** - these doses are needed to allow the body to get the energy it needs, while keeping blood glucose levels within target levels while sleeping or during the day (eg between meals).
- > **Bolus doses** - are also known as meal-time insulin and use a carbohydrate:insulin ratio. When you plan to eat, you use buttons on the insulin pump to enter in the carbohydrate food amount and the insulin pump then suggests a bolus dose to match the blood glucose rise expected after eating and to keep the blood glucose level in target. You can use the buttons on the insulin pump to take the bolus dose suggested or make a change to that dose.
- > **Correctional doses** – are also known as supplemental insulin and are used to manage hypoglycaemia, hyperglycaemia and ketosis. The insulin pump is programmed with your blood glucose level target and an insulin sensitivity factor. When you do a blood glucose level test, you can use buttons on the insulin pump to enter your blood glucose level result. The insulin pump then suggests a correctional dose to return the blood glucose levels to target. You can use the buttons on the insulin pump to take the correctional bolus dose suggested or make a change to that dose.

What costs are involved?

An insulin pump can cost up to \$9500. However, if you have private insurance, you may be eligible for some reimbursement of costs.

If you are under 18 years of age, you can apply to the Type 1 Diabetes Insulin Pump Subsidy Program established by Diabetes Australia and the Juvenile Diabetes Research Foundation. For more information on eligibility for the insulin pump full subsidy, or to apply for the subsidy, go to [JDRF](#) website.

The consumables (eg infusion and giving sets, dressings) are covered by the National Diabetes Service Scheme (NDSS) at a reduced cost.

What can I do now?

If you would like to use an insulin pump, you must first discuss this with your credentialed diabetes educator, doctor or diabetes specialist. Your diabetes team will work with you and assist in learning more about:

- > your closest insulin pump service
- > choosing the right pump for you
- > costs involved
- > NDSS changes required
- > ordering the pump and consumables
- > education plan
- > insulin pump start up appointment
- > and ongoing requirements.

Where can I go for more information?

Diabetes Australia

www.diabetesaustralia.com.au

National Diabetes Services Scheme

www.ndss.com.au

Juvenile Diabetes Research Foundation

www.jdrf.org.au/

My D (for under 25s)

www.ndss.com.au/MyD/

Australian and Medical Scientific Limited

www.amsl.com.au/

Medtronic

www.medtronic-diabetes.com.au/

Roche Diagnostics Australia Pty Limited

www.roche-australia.com/

For more information

CHSA Diabetes Service
Country Health SA LHN
PO Box 287, Rundle Mall
ADELAIDE SA 5000
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www.chsa-diabetes.org.au

