



## Insulin Pumps

Today we have multiple insulin therapies or regimens. Not all regimens will suit all people, but each person can find one that suits them best. The factors that may determine what suits an individual are personal preference, lifestyle, and optimal blood glucose control.

### Insulin therapies include:

- A long or intermediate acting insulin taken once a day (this is only suitable in type 2 diabetes).
- Mixed/mixing insulins (a combination of quick and long acting insulins), twice daily.
- A rapid/quick acting insulin before each meal and a long acting insulin at least daily (4+ injections/day).
- Insulin pump therapy.

### What is an insulin pump?

A pump is about the size of a telepager. It is designed to deliver insulin continuously, 24 hours a day, through an infusion set (plastic tubing) connected to a cannula (a small plastic tube) positioned under the skin.

### How does a pump work?

- The pump is programmed to deliver very small amounts of rapid acting insulin every hour.
- This is called *background* or *basal insulin*.

- The pump can be programmed to deliver different rates of basal insulin for different times of the day. For example, you may need a very small basal rate from midnight to 5am, followed by an increase as many people's Blood Glucose Level (BGL) rises in the early morning.
- It will generally have a range of alarms to help safeguard your insulin delivery.
- Your specialist and educators will work with you to decide what basal rates need to be set.
- When you are going to eat, you program the pump to deliver insulin for that meal; this is called a *bolus* dose. With most pumps you can tell the pump what your BGL is and how much carbohydrate you are going to eat. The pump will suggest the insulin dose to give and you then have the choice to give that dose or program in your own dose.
- For slowly digested food (e.g. pizza), the bolus can be programmed to be delivered slowly, thus minimising the high BGL often experienced following this type of food.
- The pump can be programmed for dose adjustment for a meal, for high BGLs and for the presence of ketones and physical activity.

### Advantages of a pump

- Less insulin may be required than with injections.
- Reduced risk of hypos.
- Reduced severity of hypos.
- Insulin delivery closer to how the pancreas would deliver insulin.

- Ability to achieve better control of your diabetes.
- Greater convenience.
- May lead to regaining some hypo-awareness in those whose awareness has diminished
- MAY make losing weight easier.

### Disadvantages of a pump

- Risk of diabetic ketoacidosis (DKA). If the pump is not delivering insulin and the alarms have not been triggered you may not be aware that you are not receiving insulin
- Need to self monitor blood glucose at least 4 times per day (every day)
- Need to wear the pump 24 hours a day (except when showering, swimming or playing sport)
- Cost of the pump and its consumables
- Minor risk of skin infections—lessened if proper techniques followed
- MAY lead to weight GAIN as it is easier to eat freely.

### What are the costs?

- The pump itself costs around \$6000 - \$8000. It is usually under warranty for 4 years but could continue to function well for 7-10 years
- The purchase of the consumables, infusion sets and pump syringes (called reservoirs).
- Frequent testing every day, which means extra strip usage.

### How are the costs offset?

- With most private health insurers there is an initial waiting period, after which hospital cover will cover the full cost of a new pump. Most companies will then cover the cost of a new pump every four years.
- Registering with NDSS for subsidised purchase of consumables and strips

### It is important to find which insulin therapy best suits you

- You don't know until you give it a go. Sometimes you may need to try more than one option to find what best suits you.
- Remember that if one insulin therapy doesn't work for you it is not failure on your behalf. It is just that therapy has not met your personal needs; everyone is an individual and has different needs.
- Discussing this with your specialist and educator can help you decide what your best option is.
- Talk to other people on insulin; find out their experiences and their own pros and cons.

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