WHAT IS AN INSULIN PUMP?

• An INSULIN PUMP is a very small computer (the size of a cell phone) and is clipped to a belt/waistband or in a pouch/pocket.

• The pump holds a syringe (also known as a cartridge or reservoir) filled with rapid-acting insulin (Humalog®, NovoRapid®, or Apidra®). The pump is programmed to give small amounts of insulin through an infusion set. This is a thin plastic tubing attached to the syringe. At the end of the tubing, is a small needle.

• The infusion set is inserted into the injection site (the stomach or buttocks) and the needle is removed. Once the needle is removed, a small plastic tubing, called a cannula, stays in place under the skin. The insulin is delivered through this cannula. The stomach is the usual site for the infusion set to be inserted; however, the buttock and hip area may be used for smaller, leaner people. Arms and legs are also used sometimes. The syringe and infusion set must be changed every 2-3 days. At the same time, the insertion site must be rotated to a new site. The pump can be disconnected from the infusion set for short periods for swimming, bathing, or exercise.

• The pump is not able to predict the insulin dose – the pumper needs to program the required amount of insulin to be delivered. As with injections, the dose will be determined based on the blood glucose results, amount of food eaten, and activity planned.

• Education is essential for pump therapy to be successful. Many people describe starting on an insulin pump as if they were just being diagnosed with diabetes all over again.

HOW DOES THE PUMP WORK?

• The pump is designed to work like a pancreas to deliver insulin. The pancreas always delivers small amounts of insulin known as BASAL or background insulin. With food intake, and times of high blood glucose, the pancreas will secrete more insulin known as a BOLUS.

• The BASAL dose is pre-programmed, based on the individual’s previous insulin needs. Basal doses can be programmed to provide different insulin rates over a 24-hour period.

• A BOLUS is given at the time of a meal or snack. The amount of the bolus is based on how much carbohydrate is eaten. This is referred to as a CARBOHYDRATE BOLUS. A bolus is also given to treat a high blood glucose. This bolus is called a CORRECTION BOLUS.

WHAT ARE THE ADVANTAGES OF INSULIN PUMP THERAPY?

• FLEXIBILITY. As there is no long-acting insulin, the need to eat at specific times is no longer essential. The carbohydrate bolus is given at the time of a meal or snack.

• MORE PRECISE INSULIN DOSES. The dose of insulin is matched more closely to the individual’s needs. Once the dose is determined, it is possible to keep the blood glucose at a level close to normal.
**WHAT ARE THE ADVANTAGES OF INSULIN PUMP THERAPY? (CONTINUED)**

- **TO MAINTAIN CONTROL.** Blood glucose testing and remembering to bolus faithfully must continue. Corrective action will still need to be taken (change in basal/bolus) according to blood glucose test results. It is easier to manage the dawn phenomenon (high morning glucose), sleeping in, overnight lows, illness, sports/activity, and dealing with picky eaters.

- **OVERALL.** The pump may or may not improve the diabetes control and minimize the wide swings in blood glucose.

**WHAT ARE THE POTENTIAL DISADVANTAGES OF INSULIN PUMP THERAPY?**

- Risk of **DIABETIC KETOACIDOSIS (SEVERE ILLNESS REQUIRING HOSPITALIZATION).** This happens because the pump uses rapid-acting insulin, and there are no deposits of long-acting insulin that can act as a buffer if a dose is forgotten or insulin delivery fails. Any interruption in insulin delivery will cause a rise in blood glucose. If not responded to quickly, diabetic ketoacidosis (DKA) can develop.

- Ongoing **COMMITMENT** to the daily management and blood glucose testing. **There will be even more frequent checking of blood glucose** to assist in determining the best basal and bolus amounts of insulin to meet food and activity needs.

- **CONTROL MAY WORSEN RATHER THAN IMPROVE.** A very common problem is that boluses are often forgotten.

- **BODY IMAGE CONCERNS.** Some people do not like the idea of having a pump attached to them as a constant reminder of their diabetes.

- **RISK OF INFECTION** at the insertion site. This can be prevented with good technique and site rotation every 2-3 days.

- **COST.** The pump costs ~$7,000.00, with monthly pump supplies costing an additional $200 to $300. Depending on family income and size, some costs may be covered by the Nova Scotia Insulin Pump Program (NSIPP). Continuous glucose monitoring supplies, if needed, will cost extra.

- **WEIGHT GAIN.** With the improvement of diabetes control and flexibility with the diet, there may be some weight gain, especially if there is increased food intake/snacking. Individuals are encouraged to make sure that they continue to meet nutritional needs and make healthy food choices.

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**THE PUMP CANNOT WORK ON ITS OWN – IT NEEDS A GOOD OPERATOR.**

**Insulin Pump Manufacturers**
- Medtronic – [www.medtronicdiabetes.ca](http://www.medtronicdiabetes.ca) or 1-800-284-4416;
- Insulet Canada Corporation – [www.MyOmnipod.ca](http://www.MyOmnipod.ca) or 1-855-763-4636

**Helpful Resources**
