

## INSULIN PUMP TEMPORARY REMOVAL GUIDELINES

There may be times when you need to go off your pump. These may include the following:

- lack of supplies while away from home (for example, running of infusion sets while camping)
- pump malfunction when a replacement is not available right away
- pump is lost, stolen or damaged
- taking a "pump break" even for just part of a day (for example, you don't want to wear the pump at the beach)
- diagnostic tests or hospitalizations where you will not be able to operate the pump

If the pump is not delivering insulin, insulin must be given by pen or syringe to prevent ketoacidosis. See our handout *Insulin Pumper's Guide to Managing High Blood Sugars and Preventing DKA*.

When off the pump, it is best to keep as close to a "basal-bolus" routine as possible. The following are only **guidelines** for calculating insulin doses by pen or syringe when not using the pump. Extra blood glucose monitoring is needed, including overnight, to assess how the doses are working for you. If you need further assistance, please call the Diabetes Clinic or the Pediatric Endocrinologist on call.

**1) Short term off pump:** To be off the pump for a short period (less than 24 hours), give rapid-acting insulin (Humalog®, NovoRapid® or Apidra®) every 3 hours. Combine:

- 3 hours of basal insulin (unless long-acting insulin has been taken)
- pre-meal insulin bolus for carbohydrates, and
- correction bolus, if needed

**Example:** At 8 AM, the blood glucose is 14.8, breakfast is 40 grams of carbohydrate, the insulin/carb ratio is 1 unit per 15 grams, the insulin sensitivity (correction) factor is 4, and the basal rate from 8-11 AM is 0.6 units/hour.

- 3 hours of basal insulin is  $0.6 \times 3 = 1.8$  units
- food bolus is  $40 \text{ grams} \div 15 = 2.6$  units
- correction bolus is  $(14.8 - 6) \div 4 = 2.2$  units

This totals  $1.8 + 2.6 + 2.2 = 6.6$  units. The insulin dose at 8 AM is  $6\frac{1}{2}$  or 7 units of rapid-acting insulin given by insulin pen or syringe. Another dose will be needed in about 3 hours. To prevent insulin 'stacking', do not give correction boluses less than 3 hours apart.

**2) 24 hours or more off pump:** There are 3 options:

- give long-acting basal insulin and rapid-acting insulin for boluses
- give intermediate-acting insulin (NPH). This is not the preferred regimen.
- if long-acting insulin or NPH is not available, you will need to continue to give rapid-acting insulin every 3 hours, **including overnight**, as in the previous "short-term" example

**USING INSULIN DETEMIR (LEVEMIR®) OR INSULIN GLARGINE (LANTUS®, BASAGLAR®):**

- Lantus®, Basaglar® and Levemir® are long-acting basal insulins; they have no "peak"
- Lantus® and Basaglar® last about 20-24 hours and are best given once a day
- Levemir® lasts about 12-16 hours and is best given as twice a day
- do not mix with any other insulins in a syringe
- to prevent injecting into a muscle, use only the abdomen or buttocks
- take rapid-acting insulin before all meals and snacks for carbohydrate eaten and as a correction for blood sugars greater than 10 mmol/L
- the insulin/carb ratio and the insulin sensitivity factor remain the same as for the pump

Calculate the total daily **basal** amount of insulin and give as:

- 1 dose of Lantus®/Basaglar® every 24 hours **OR** 2 half-doses of Levemir® every 12 hours

**Example:** Basal rate is 0.5 units/hour from 12-6 AM, and 0.6 units/hour from 6 AM until 12 AM. The total daily basal insulin amount is 13.8 units (you can read this off the pump look in Carelink™ or Diasend). The dose of basal insulin will be 14 units of Lantus® every 24 hours **OR** 7 units of Levemir® every 12 hours, until insulin pump use is resumed.

- since Lantus®, Basaglar® and Levemir® are basal insulins, when you start using the pump again, you must not deliver any basal insulin by pump until the last injected dose has worn off
- if you want to use the pump earlier, for food and correction boluses, a temporary basal rate of 0.0 units/hour or -100% should be set to run until it has been 24 hours since the last injection of Lantus® or Basaglar®, or 12 hours since the last injection of Levemir®
- if a pump basal and injected basal insulin are **both** working at the same time, **severe hypoglycemia** may result
- children who are unable to give their own insulin may need to bring a low-carbohydrate lunch to school, or a parent may need to give the lunch bolus by injection

**IMPORTANT THINGS TO REMEMBER:**

- extra blood glucose checks will be needed to see how your adjustments are working
- bolus insulin may need to be decreased for activity
- check for ketones when blood glucose is more than 15 mmol/L
- **carry an insulin pen with rapid-acting insulin at all times**
- basal insulin is good for 4-6 weeks once the vial/cartridge has been opened
- always keep some long-acting insulin at home and take it with you when travelling
- pack more than enough pump supplies, ketone strips and insulin when travelling
- be sure to double-check the battery and the pump settings before reconnecting
- if planning travel overseas, call the pump support line on the back of your pump and ask if a backup pump is available to take with you. There may be shipping costs involved.