

Managing Illness When a Child is on an Insulin Pump

An illness (such as an infection or flu) often causes high blood sugars and ketones. This can make it harder to manage diabetes. High blood sugars and ketones can also happen because of a pump or infusion site problem. If not managed properly, life-threatening **diabetic ketoacidosis** (DKA) can develop very quickly. Sometimes diarrhea, loss of appetite, and vomiting can result in **low** blood sugars. As well, these symptoms and high blood sugar along with frequent urination (peeing often) can lead to **dehydration**.

The five rules below will help you safely manage an illness when your child is on an insulin pump.

1. Check the blood sugar every 2–4 hours around the clock.
2. If the blood sugar is **14.0 mmol/L or higher** check the urine or blood for ketones.
3. Give insulin as follows:
 - If the blood sugar is 14.0 mmol/L or higher and urine ketones are positive or blood ketones are 0.6 mmol/L or higher, **give your child a correction by injection** (pen or syringe) **right away**. When ketones are positive your child will need at least **50% more correction insulin** than normal. You can give extra insulin by one of the following methods.

- 1) Give a correction that is 50% more than what your bolus calculator recommends. For example: If it recommends 6.4 units, give 3.2 units more for a total of 9.6 units. Round off to 10 units and give 10 units by **injection**.

- 2) Use a correction formula to calculate the dose.

$$\frac{\text{current blood sugar} - \text{target blood sugar}}{\text{insulin sensitivity factor}} \times 1.5$$

Example: If the blood sugar is 22.8, ketones are ++, insulin sensitivity factor is 3, and the target blood sugar is 7.

$$\frac{22 - 7}{3} \times 1.5 = 7.9 \text{ Round off and give 8 units by } \mathbf{injection}.$$

- After giving the insulin by injection, change the infusion set. Keep correcting high blood sugars every 2 hours. If the blood sugar is less than 14.0 mmol/L or the ketones are negative, use the usual correction.
 - If your child has an illness that has resulted in ongoing **high** blood sugar, **increase the basal rate**. Set a temporary basal rate of 20–50% more for 4 hours and then reassess. If the blood sugar is still high, increase by another 20–50% for 4 hours. Always reassess the basal rates every 4 hours.
 - If your child’s illness has resulted in **low** blood sugar (less than 4.0 mmol/L), treat the low blood sugar, stop the pump for 1 hour, and reassess. When the blood sugar is 6.0 mmol/L or more restart the pump with a **decreased basal rate**. Set a temporary basal rate of 50% less for 4 hours and then reassess. Do not bolus for food or fluids until the blood sugar is 10 mmol/L or more.
4. Push fluids to prevent dehydration. Your child should have at least ½–1 cup (125–250 mL) of fluids per hour. Fluids should be sugar-free if the blood sugar is high. Canned broths, Gatorade®, and Pedialyte® will help replace electrolytes.
 5. Page the diabetes nurse or endocrine doctor on-call or go to the Emergency Department if:
 - your child throws up more than 2 times in 4 hours
 - the ketones do not go away after 2 corrections
 - your child has signs of dehydration—dry mouth and tongue, cracked lips, sunken eyes, passing less water
 - your child has symptoms of DKA—high blood sugar and ketones with vomiting, stomach pain, fast breathing, and drowsiness. DKA is a medical emergency. It has to be treated right away with intravenous insulin and fluid and electrolyte replacement.

Weekdays 8 a.m.– 4 p.m: 403-955-7211 (ask for the diabetes nurse on-call)

After hours or weekends: 403-955-7211 (ask for the endocrine doctor on-call)

This material is for information purposes only. It should not be used in place of medical advice, instruction and/or treatment. If you have questions, speak with your doctor or appropriate healthcare provider.