

Hyperglycemia with Insulin Pump

Have you ever had high glucose levels that don't come down even after giving more insulin? It was probably due to an infusion site failure — where insulin does not flow through the infusion site cannula into the body well enough.

Causes of an infusion site failure include:

- A bent cannula or cannula that has come out from under the skin
- If cannula is not bent or out of skin, it could be that the location you are wearing the infusion site isn't absorbing insulin well enough anymore and needs to be changed to a new location.

Because insulin pumps do not use long-acting insulin, ketones can form quickly when infusion sites fail, increasing your risk of developing diabetic ketoacidosis (DKA). DKA can make you sick and requires treatment in the hospital.

Symptoms of DKA include:

persistent vomiting, stomach pain, confusion and rapid breathing

Follow these instructions (below and next page) to help troubleshoot infusion site failure and prevent DKA and a trip to the hospital.

If your glucose has been over 300 mg/dL for 2 hours or more, check ketone levels.

See next page 

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If your glucose has been over 300 mg/dL for 2 hours or more, check ketone levels and follow the steps in the chart below...

Ketone levels:

0.1-0.9 mmol/L
= normal to small ketones

1. **Give correction bolus via insulin pump**
2. **Recheck glucose and ketone levels in 2 hours**
 - a. If your glucose is still **over 250 mg/dL AND** ketone levels are **below 1.0 mmol/L**, change infusion set and give correction bolus with new infusion set every 2 hours until glucose is below 180 mg/dL
 - b. If your glucose is still **over 250 mg/dL AND** ketone levels are **1.0 mmol/L or more**, follow the instructions below based on the ketone level
 - c. If glucose is **below 250 mg/dL**, you may continue using your current infusion set. Give correction bolus every 2 hours until glucose is below 180 mg/dL

1.0-2.5 mmol/L
= moderate to large ketones

1. **Give injection of insulin by syringe or pen NOW (not through pump)**
You will need more insulin than your usual correction dose because of the ketones. Talk to your diabetes care team about how to calculate your dose.
2. **Change infusion set**
3. **Drink water**
4. **Recheck glucose and ketone levels every 2 hours** and give correction bolus with new infusion set every 2 hours after syringe/pen injection until ketones are below 1.0 mmol/L and glucose is below 180 mg/dL

> 2.5 mmol/L
= extra large ketones

1. **Give injection of insulin by syringe or pen NOW (not through pump)**
You will need more insulin than your usual correction dose because of the ketones. Talk to your diabetes care team about how to calculate your dose.
2. **Change infusion set**
3. **Follow ALL steps for “ketones 1.0-2.5 mmol/L” and CALL your diabetes care team** if ketone levels are not decreasing 2 hours after you gave insulin dose by syringe/pen

Go to the ER or CALL 911 if experiencing confusion, frequent vomiting, or rapid breathing