# Pump Safety: Preventing DKA

**What is Diabetic Ketoacidosis (DKA)?**

DKA is a dangerous condition which can happen if your body is not getting enough insulin. Your muscles start burning fat instead of sugar for energy. This produces **ketones –** acidic substances that are **toxic** to the body. At high levels, they can cause **diabetic ketoacidosis**, which is a medical emergency.

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## Those using an insulin pump are at higher risk of developing DKA.

**Why?**

- For someone using insulin injections, the basal (background) insulin is delivered in a single shot, which lasts for 24 hours or more. If bolus doses are missed, background insulin is still present in the body for some time.
- An insulin pump delivers basal (background) insulin in tiny doses throughout the day. So if there is a problem with your pump or you become disconnected, insulin delivery stops completely. With no insulin in the body, DKA can occur within hours.

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**How will I know if my pump is not delivering insulin?**

Sometimes this is obvious (for example, if the infusion set has been pulled out). However, this can also happen without any visible signs. *Whenever your blood sugars are high and you're not sure why, you should suspect a problem with insulin delivery, so check your pump!*

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**Possible reasons for unexplained highs:**

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|---|---|---|
| **Delivery issue** | ○ dislodged infusion set<br>○ kinked cannula | ○ insulin leak |
| **Site issue** | ○ scar/lipohypertrophy at infusion site | ○ inflammation<br>○ old site |
| **Insulin issue** | ○ expired insulin<br>○ insulin left out of the fridge for too long | ○ insulin or tubing exposed to extreme temps |
| **Pump issue** | ○ pump was suspended | ○ technical issue |
| **Personal factors** | ○ illness<br>○ stress<br>○ pain<br>○ infection | ○ missed bolus<br>○ new medication<br>○ high intensity exercise<br>○ menstrual cycle |



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# Dealing with Unexplained Highs – My Action Plan

**Unexplained high BG**

- Take correction dose using your pump
- Recheck BG in 1 hour

**BG is lower ✓**

- Continue to monitor every 2 hours to ensure BG returns to target

**BG is the same or higher**

- Change infusion set & reservoir
- Check for ketones & follow the steps below

**Ketones negative (<0.6 mmol/L) ✓**

- Take usual correction dose using pen or syringe
- Continue to monitor every 2 hours to ensure BG returns to target

**Ketones high (>3.0 mmol/L)**

- Take adjusted correction dose using pen or syringe*
- **Go to the ER or call 911**

**Ketones moderate (0.6-2.9 mmol/L)**

- Take adjusted correction dose using pen or syringe*
- Check BG & ketones every 2 hours and repeat correction as needed

*If your blood ketone level is elevated, you will need more insulin than usual to bring down your blood sugars. Follow our DKA handout to help you estimate how much extra insulin to take.

**If you know your pump has not been delivering insulin for >4 hrs check ketones right away.**



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