

## Problem Solving High Blood Sugars When Using an Insulin Pump

When using an insulin pump, it is important to understand that when insulin flow stops, the blood glucose (sugar) will rise quickly. A sudden high blood glucose could be related to an insulin pump problem.

When the body does not have enough insulin, blood glucose rises quickly. This can lead to diabetic ketoacidosis (DKA). Fat is burned for energy. The breakdown of fat produces ketones which are an acid. When ketones build up in the blood, this is called DKA.

DKA can occur quickly and can be life threatening. For this reason, an **unexpected blood glucose over 250 should never be ignored.**

### Symptoms of DKA

- Nausea, vomiting
- Thirst
- Frequent urination
- Feeling drowsy and having difficulty staying awake
- Weakness
- Stomach pain or cramps
- Shortness of breath
- Fruity taste or odor on the breath
- Dehydration

### Common Causes of High Blood Glucose

- Problem with the infusion set or site. The site may or may not appear red, swollen or be painful.
- Insulin pump reservoir or pod is empty.
- Leaking where tubing or pod connects to the reservoir or the body.
- Infusion set or pod is dislodged or kinked.

### Other Causes

- Illness
- Changes in eating plan or exercise
- Physical stress: injury, pain, infection
- Emotional stress
- Steroid pills or injection
- Missed bolus or under-counting carbohydrates at a meal

If high blood glucose is due to illness, make sure your pump is working correctly and then follow sick day guidelines. Contact your pump company if concerned about pump malfunction or the need for a possible replacement.

### If blood glucose is more than 250 mg/dL two times in a row:

- Determine cause of the high blood glucose.
- Check urine ketones.
- Troubleshoot the pump, check your infusion set and site.
- Follow action plan on the next page.

## What to Do Based on Ketones and Blood Glucose Levels

If ketones are negative:	If ketones are positive:
<ol style="list-style-type: none"> <li>1. Take a correction bolus using your pump.</li> <li>2. Increase fluid intake (8 ounces every hour).               <ul style="list-style-type: none"> <li>• <b>Children:</b> 1 ounce per year of life up to 7-8 ounces every hour. (example: 4 ounces every hour for a 4-year-old)</li> <li>• <b>Adults:</b> 8 ounces every hour</li> </ul>               Drink plenty of water or non-carbohydrate fluids to prevent dehydration.             </li> <li>3. Recheck blood glucose in 1-2 hours.</li> </ol> <p>If next blood glucose is lower:</p> <ul style="list-style-type: none"> <li>• No further action is needed. Continue to monitor blood glucose more closely the rest of the day.</li> </ul> <p>If next blood glucose is NOT lower:</p> <ul style="list-style-type: none"> <li>• Take a correction bolus of your rapid acting insulin (Humalog<sup>®</sup>, Novolog<sup>®</sup> or Apidra<sup>®</sup>) using a syringe or insulin pen.</li> <li>• Change insulin pump infusion set (pod) and site.</li> <li>• Test urine ketones again. If urine ketones are moderate to large and/or you have symptoms of DKA, call your doctor or go to urgent care or the emergency room.</li> </ul>	<ol style="list-style-type: none"> <li>1. Take correction bolus by syringe or insulin pen.</li> <li>2. Change pump infusion set (pod) and site.</li> <li>3. Increase fluid intake.               <ul style="list-style-type: none"> <li>• <b>Children:</b> 1 ounce per year of life up to 7-8 ounces every hour. (example: 4 ounces every hour for a 4-year-old)</li> <li>• <b>Adults:</b> 8 ounces every hour</li> </ul>               Drink plenty of water or non-carbohydrate fluids to prevent dehydration.             </li> <li>4. Recheck blood glucose in 2 hours.</li> </ol> <p>If next blood glucose is lower:</p> <ul style="list-style-type: none"> <li>• Check blood glucose again in 2 hours to be sure the new set (pod) is working.</li> <li>• Continue to check urine ketones every 2 hours until negative.</li> <li>• Resume giving correction bolus with the pump.</li> <li>• Continue to monitor blood glucose more closely the rest of the day.</li> </ul> <p>If next blood glucose is NOT lower:</p> <ul style="list-style-type: none"> <li>• Continue to take insulin using your correction scale using a syringe or pen every 2 hours (or your sick day plan as directed). Do this until blood glucose levels start coming down.</li> <li>• Test urine ketones every 2 hours until negative.</li> <li>• If urine ketones are moderate to large and/or you have symptoms of DKA, call your doctor or go to urgent care or the emergency room.</li> </ul>

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person's health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 8/2023 University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF# 6979