

DKA PREVENTION WHEN ON AN INSULIN PUMP

Insulin pumps use only rapid-acting insulin. If the pump or pump site fails, there is **no** insulin delivery; and the blood glucose **will** rise quickly. Ketones can develop within 4 to 6 hours. As ketones rise, there is a risk of Diabetic Ketoacidosis (DKA).

Symptoms of DKA include:

- Stomach cramps
- Nausea
- Vomiting
- Tiredness
- Fruity smell to the breath

By testing for ketones as soon as the blood glucose rises, extra insulin can be given to avoid DKA.

Blood glucose over 14 with low or no ketones (urine ketones small or blood ketones lower than 0.6)	Blood glucose over 14 with ketones (urine ketones moderate or large or blood ketones higher than 0.6)
<ul style="list-style-type: none"> • Determine insulin correction using your ISF or Correction Factor. • If you use the Ez bolus (Animas), Bolus Wizard (Medtronic), or Bolus Calculator (Omnipod), you would use this to determine the dose. • Give insulin using pump. • Re-test blood glucose and ketones after 2 hours. If blood glucose has not decreased by at least 3.0 points on your meter or ketones are present or have increased, follow the steps for blood glucose over 14 with moderate or large urine ketones. 	<ul style="list-style-type: none"> • Extra insulin must be given using INSULIN SYRINGE OR PEN. • Determine insulin dose using ISF or Correction Factor • If you use the Ez bolus (Animas), Bolus Wizard (Medtronic), or Bolus Calculator (Omnipod), you can use this to determine the dose. • Give 1.5 times the usual correction dose using insulin syringe or pen. Example: Blood glucose target of 7. Correction factor is 2.0, blood glucose is 21.0 mmol/L, and blood ketones are 2.0 $21 - 7 = 14$ $14 \div 2 = 7 \text{ u}$ $7 \times 1.5 = 10.5 \text{ u}$ (if you do not have a $\frac{1}{2}$ u pen, give either 10 or 11) • Once you have given the insulin by pen or syringe, change the pump site. • Continue testing for ketones and giving insulin as above every 2 hours until ketones are negative. • Call the Diabetes Centre if ketones do not improve.

TIPS FOR PREVENTING DKA ON AN INSULIN PUMP

- Change the infusion site at least every 3 days. If there is an increase in the blood glucose before each scheduled site change, then change the site sooner.
- If you are correcting blood glucose using the pump and the blood glucose does not decrease as you would expect, this may mean that the site is failing. Give the next correction using a pen or syringe. The pump site should then be changed.
- If blood glucose is high, always re-test blood glucose after 2 hours to ensure that the correction has worked.
- Never go to bed with an elevated blood glucose without testing for ketones or a plan for re-testing during the night.
- Make sure that you have current basal, insulin-to-carbohydrate ratios, correction factor (ISF), and target blood glucose along with average total daily insulin recorded in a safe place. These are needed to calculate the dose of basal insulin while off the pump.

Elevated blood glucose with vomiting can be a sign of impending DKA.

For high ketones with vomiting or fast breathing, call your Diabetes Centre or go to the hospital.

For assistance, please call the Diabetes Centre at:

Adapted from: IWK Pediatric Diabetes Program Handout, Halifax, NS

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