

13. Guidelines for Management of Insulin Pump Therapy Emergencies

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Key Message: *“If pump stopped, must replace basal insulin within 2 hours to prevent Diabetic Ketoacidosis (DKA)”*

Potential insulin pump emergencies are managed in a similar manner to any other patient with type 1 diabetes

- 1) **DIABETIC KETOACIDOSIS (DKA)** can occur very quickly (2-4 hours) if insulin delivery is disrupted for any reason because:
 - The insulin pump only delivers rapid acting insulin (continuously to cover basal requirements and in bolus fashion to cover meals and correct for high blood sugars)
 - Patients on the insulin pump **do not** use intermediate or long acting insulin

Pump patients feeling unwell require **immediate assessment** for DKA:

- Typical symptoms of DKA include lethargy, nausea, vomiting, abdominal pain, intercurrent illness
- Perform assessment of hydration status
- Urgent lab testing for blood glucose, serum electrolytes, capillary blood gas and urine/serum ketones
- If patient on an SGLT2 inhibitor (canagliflozin (Invokana), dapagliflozin (Forxiga), empagliflozin (Jardiance), DKA may be present even if glucose is within normal range
- *AHS employees-please see Diabetic Ketoacidosis (DKA), Adult, Emergency Department, on AHS intranet under Clinical Knowledge Topics*

Treatment of hyperglycemia/DKA:

- If DKA is confirmed, treat as one would for any individual with Type 1 diabetes, including **IV insulin**
- **Do not** rely on the insulin pump for insulin delivery.
- Disconnect/suspend pump and remove insertion set
- If severe hyperglycemia, but not in DKA, and there is any concern regarding the integrity of the pump system, administer insulin via another route (SC or IV)

- 2) **SEVERE HYPOGLYCEMIA**

- Suspend or disconnect the pump until blood glucose readings are above 6 mmol/L
- Once above 6 mmol/L, restart the insulin pump
- The patient will quickly become insulin deficient if the pump is disconnected for >2 hours
- Following a severe hypoglycemic episode, instruct patient to reduce both the basal and bolus doses of insulin by approximately 20% for several days

- 3) **INFUSION SITE ABSCESS OR INFECTION**

Most are secondary to *Staphylococcus aureus*

- Remove and discard infusion set and reservoir
- Have patient insert new infusion set at a new site, prepped with an antiseptic wipe
- Incise and drain abscess, send debrided material for culture and susceptibility testing
- Treat with cloxacillin
- In high resistance areas, use antibiotic with methicillin-resistant *Staphylococcus aureus* (MRSA) coverage (Refer to local antibiogram)

NOTE: If the patient on insulin pump therapy is treated for any of the above 3 issues in the Emergency Department and not admitted to hospital, they should be instructed to contact their Diabetes Insulin Pump Clinic or their Diabetes in Pregnancy Clinic (if applicable) for reassessment of the insulin regimen and further pump education. You are asked to consider sending a referral to an approved insulin pump clinic in your area to ensure that follow up occurs.

Current referral information to approved insulin pump clinics is available at:

<http://www.health.alberta.ca/services/insulin-pump-therapy-program.html>

If assistance is required in managing a pump-related emergency, please consult endocrinology on call (if available) at your site, or the patient's diabetes physician.

REFERENCES: Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada, *Can J Diabetes* 2013; 37 (suppl 1): S1-S212.

These guidelines are available online at: (<http://guidelines.diabetes.ca/Browse/Chapter15>)