Diabetic Ketoacidosis: A practical guide to the nursing care processes

For full details refer to the full nursing DKA supplement and JBDS guideline

The 'D' is for **Diabetes**- a blood glucose concentration of >11.0mmol/L **or known to have diabetes mellitus**

The 'K' is for **Ketonaemia** or **ketonuria** - a capillary or blood ketone concentration of ≥ 3.0mmol/L **or** significant ketonuria (more than 2+ on standard urine sticks)

The 'A' is for **Acidaemia/acidosis**– a bicarbonate concentration of ≤15.0mmol/L **and/or** venous pH <7.3

What you will need

- Patient will require TWO large bore cannulas one for intravenous insulin management and another for fluid replacement
- Infusion pump for fluids
- Infusion pump for IV insulin
- Point of care glucose and ketone testing equipment
- Access to venous blood gas testing/ lab sampling
- Access to equipment required for vital sign monitoring

Immediate actions

- Baseline point of care glucose and ketone test results
- Baseline VBG for acidosis and potassium (K^+)
- Baseline vital signs
- Ensure IV fluids prescribed and commenced
- Ensure FIXED rate intravenous insulin infusion (FRIII) prescribed and commenced
- Ensure basal insulin prescribed subcutaneously alongside FRIII; If patient usually takes basal insulin, ensure this is prescribed and continued otherwise refer to local guideline for commencing basal insulin
- If not already done, escalation to primary medical team
- Ensure admitted to approapriate area i.e. ward vs critical care
- Assessment of patient for wearable diabetes teschnology i.e. insulin pump or glucose sensor and inform medical team

Monitoring

- Hourly point of care glucose (Lab if 'HI') and ketone testing
- VBG for pH, bicarbonate and potassium at 60 minutes; 2 hours and 2 hourly thereafter
- Ensure that all interventions are clearly documented in line with local practice
- If ketones and glucose are not falling as expected always check the insulin infusion pump is working and connected and that the correct insulin residual volume is present (to check for pump malfunction)

When to call Dr for help

- If the blood ketone concentration does not reduce by 0.5mmol/L/hour
- If there is NOT an increase the venous bicarbonate by 3.0mmol/L/hour
- If the capillary blood glucose remains > 14 mmol/L and does not reduce by 3.0mmol/L/hour
- If the potassium is not maintained between 4.0 and 5.5mmol/L
- Change in cognition or concerns in relation to fluid balance

Who to refer to

- Urgent Referral to the diabetes specialist team (if not primary medical team)
- Referral to diabetes inpatient specialist nurses in accordance with local pathway
- If the patient used an insulin pump always refer to the diabetes inpatient specialist nurse
- Psychological wellbeing if appropriate

Actions on resolution

- Resolution of DKA is defined as ketones less than 0.6mmol/L, and venous pH over 7.3
- Eating: There should be an overlap between the insulin infusion and first administration of rapid acting/ mixed insulin (preferably via the patients usual method i.e. injection or insulin pump)
- Not eating once DKA has resolved: move to a VRIII as per local guidelines
- If the person was previously on a basal insulin this should have been continued
- If the basal insulin had been stopped in error, the insulin infusion should not be stopped until some form of basal insulin has been given
- Ensure education provided as required by the appropriate teams (such as DSN/dietitians) prior to discharge
- Ensure they have required consumables including new insulin pens, cartridges or vials (if on CSII), BG and ketone meter with strips, needles)
- Ensure follow up arranged with the diabetes team or usual diabetes care provider post discharge