DKA Emergency management in children – Flowchart

Child with DKA diagnosis (BGL >11 mmol/L, pH <7.3 +/- HCO3 <15 mmol/L & moderate or large ketonuria/ketonaemia)

- Seek urgent specialist advice if child has pump, stop pump.

Assessment
- Including signs of dehydration (see Box A) and circulatory or neurological compromise.
- Additional investigations: U&Es, HbA1c. If a new diagnosis - TFT, coeliac screen.

Mild
- pH 7.2-7.3 or HCO3<15 mmol/L
- No/mild dehydration

- Oral fluids
- Insulin: SC insulin on Paediatric/Endocrine advice
- Monitor:
  - Hourly: HR, RR, strict fluid balance, and neuro obs
  - 4-hourly: temperature & BP
  - Standard BGL

Monitor
- Continuous ECG (assess T waves)
- Hourly vital signs, BGL, blood ketones, strict fluid balance and neuro obs
- 2-4-hourly: temperature, VBG, FBC, formal glucose and U&Es

Insulin
- After 1 hour of IV fluids commence low-dose continuous insulin infusion at 0.1 units/kg/hr

IV Rehydration
- Calculate IV fluid requirements
- Aim to correct over 48 hours
- Use 1 L Sodium Chloride 0.9% + 40 mmol Potassium Chloride (pre-mixed) if to suck otherwise nil by mouth
- Consider NG tube (if paediatric paresis)

Ressuscitate using ABCD
- Oxygen via NRB
- Support ventilation (BVM)
- +/- ETT
- IV or IO access
- IV fluid bolus 10 mL/kg Sodium Chloride 0.9%, repeat to maximum of 20 mL/kg
- Monitor for signs of cerebral oedema
- Consider sepsis

Management if suspect cerebral oedema (Box B)
- Rate head of bed to 30°
- Restrict fluids by one third
- Consider hyperosmolar agents (Hypertonic saline/Mannitol)
- Active airway management to avoid hyperventilation (aim for pCO2 35-40 mmhg)
- Consider CT/MRI once stabilised

IV fluid and insulin therapy as per moderate to severe DKA

Life-threatening
- (including suspected cerebral oedema)

- Referred to appropriate inpatient service
- Referred to Ongoing Management DKA Flowchart
- Referred to Paediatric Critical Care (onsite or via RSCQ)

Box A: Hydration assessment in DKA
- Volume deficit is often overestimated in DKA which can result in over rehydration with IV fluids.
- Specific considerations in DKA include:
  - Tachypnoea secondary to acidosis can exacerbate dryness of oral mucosa
  - Vasoconstriction from acidosis may contribute to the appearance of cool extremities
  - Catabolism due to insulin deficiency may result in weight loss

Box B: Signs and symptoms of cerebral oedema
- Headache
- Inappropriate slowing of heart rate
- Recurrence of vomiting
- Change in neurological status (restlessness, irritability, increased drowsiness, incontinence)
- Specific neurological signs
- Rising BP
- Decreased oxygen saturation

Seek senior Paediatric/Endocrine advice as per local practice.

Seek urgent Paediatric/Endocrine/Critical Care advice (onsite or via Retrieval Services Queensland (RSQ) on 1300 799 127)