DKA – Emergency management in children – Flowchart

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

- Neoneate or on insulin pump?
  - Yes: Seek urgent specialist advice. For child with pump, stop pump.
  - No: Assessment

**Assessment**
Including signs of dehydration (see **Box A**) and circulatory or neurological compromise.

**Additional investigations:** U&E, 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

**Moderate to severe**
- pH<7.2 +/- HCO3 <10 mmol/L

- Seek paediatric endocrine/critical care advice if:
  - age < 5 years
  - electrolyte abnormalities
  - IV or IO access

**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)
- Ice to suck otherwise nil by mouth
- Consider NG tube (if gastric paresis)

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

**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&E

**Life-threatening (including suspected cerebral oedema)**

**Resuscitate using ABCD**
- Oxygen via NRBM
- Support ventilation (BVM)
- +/- ETTO
- 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)
  - Raise head of bed to 20°
  - Restrict fluids by one third
  - Consider hyperosmolar agents (Hypertonic saline/Mannitol)
  - Active airway management to avoid hypercarbia (aim for pCO2 35-40 mmHg)
  - Consider CT/MRI once stabilised

**IV fluid and insulin therapy as per moderate to severe DKA**

**Clinical & biochemical improvement?**
- Yes
  - Refer to appropriate inpatient service
- No
  - Refer to Ongoing Management DKA Flowchart

**Responding to treatment?**
- Yes
  - Refer to Paediatric Critical Care (onsite or via RSQ)
- No

**Box A: Hydration assessment in DKA**
Volume deficit is often overestimated in DKA which can result in over resuscitation 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

**For more information refer to CHQ-GDL-60016 - Diabetic Ketoacidosis (DKA) – Emergency management in children**