



Overview Algorithm for the Management of Children and Young People under the age of 18 years with Diabetic Ketoacidosis

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- Clinical History:**
- Polyuria/polydipsia
 - Weight loss
 - Abdominal pain
 - Weakness
 - Vomiting
 - Confusion

- Clinical Signs:**
- Dehydration
 - Kussmaul breathing
 - Ketotic smell
 - Lethargy, drowsiness

- Biochemistry:**
- Hyperglycaemia (>11mmol/L)
 - Acidaemia (pH<7.3)
 - Ketosis (blood ketones >3mmol/L or urine ketones ++)

Confirm diagnosis
DIABETIC KETOACIDOSIS
 Call senior staff

pH <7.1 = Severe DKA (10% dehydration)
 pH <7.2 = Moderate DKA (5% dehydration)
 pH <7.3 = Mild DKA (5% dehydration)

- Tachycardia
- Prolonged central capillary refill
- Poor peripheral pulses
- Hypotension (late sign)

Is the patient shocked?

Resuscitation

Airway +/- NG tube
Breathing 100% O₂
Circulation

- 10mL/kg fluid*
- Repeat until circulation restored
- By 40mL/kg discuss with senior doctor and consider inotropes

Slow Bolus

- 10mL/kg fluid* bolus over 30 min

Intravenous therapy

- Calculate fluid requirements: dka-calculator.co.uk
- Use fluid* with 40 mmol/L potassium (check serum K⁺ in normal range and urine output first)
- Start insulin at 0.05 or 0.1 Units/kg/hour 1-2 hours after starting fluids

- Signs of cerebral oedema:**
- Headache, irritability
 - Slowing HR
 - Reduced GCS / coma
 - Signs of raised ICP
 - Others as show on care pathway

Acidosis failing to improve?

Features of cerebral oedema?

Management of Persisting Acidosis

- Re-evaluate fluid balance - may require further resus fluid
- Check insulin rate and running properly
- Consider sepsis and other differentials as per care pathway
- Consider restarting protocol

Observations

- Hourly blood glucose - 1-2 hourly blood ketones
- Hourly neuro obs and fluid balance
- Check electrolytes at 2 hours, then 4 hourly

Management of Cerebral Oedema

- Give 5mL/kg 2.7% Sodium Chloride **OR** 20% Mannitol 2.5 - 5 mL/kg
- Call senior staff
- Restrict IV fluids by 50%
- Refer to care pathway for further actions

Blood glucose <14mmol/L

- Change fluids* to contain 5% glucose
- Continue monitoring as above

* 0.9% Sodium Chloride or Plasmalyte 148

Blood glucose <6mmol/L

Management of Falling Blood Glucose

- Change fluids* to contain 10% glucose
- Do not reduce insulin below 0.05 Units/kg/hour if ketones >1 mmol/L
- If glucose falls below 4mmol/L refer to care pathway for management of hypoglycaemia

Resolution of DKA

- Clinically well, tolerating oral fluids, blood ketones <1mmol/L or pH normal
- Start S/C insulin **THEN** stop IV insulin 1 hour later

This algorithm is a summary of the main care pathway and should not be considered as a complete guide to the management of paediatric DKA.

Refer to the main care pathway at the earliest opportunity by visiting dka-calculator.co.uk or the BSPED guidelines page.