



# 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)

**Signs of shock:**

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

**Is the patient shocked?**

**Resuscitation**

**Airway** +/- NG tube  
**Breathing** 100% O<sub>2</sub>  
**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](http://dka-calculator.co.uk)
- Use fluid\* with 40 mmol/L potassium (check serum K<sup>+</sup> 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](http://dka-calculator.co.uk) or the BSPED guidelines page.