

KIDS CLINICAL GUIDELINE – DIABETIC KETOACIDOSIS - INITIAL ASSESSMENT AND MANAGEMENT

DIAGNOSE DIABETIC KETOACIDOSIS (DKA) IN A CHILD OR YOUNG PERSON WHO HAS...

BLOOD GLUCOSE > 11* - (glucose *may* be normal in a known diabetic) + **ACIDOSIS** - pH <7.3 or HCO₃⁻ <18mmol/l + **KETONAEMIA** – Blood Ketones >3mmol/l

Children and young people with a **pH of 7.1 or above** have **MILD or MODERATE DKA**/ Children and young people with a **pH of less than 7.1** have **SEVERE DKA†**

*If Hyperglycaemic in the absence of significant ketosis / acidosis – Consider Hyperosmolar Hyperglycaemic state.

†If DKA – consider causes and THINK SEPSIS

INITIAL ASSESSMENT

AIRWAY

Assess patency – if not self-maintaining, or AVPU score = 'V' or less

- Insert OPA / NPA if required
- Seek anaesthetic assistance
- Insert an NG tube
- [CONTACT KIDS](#)

ASPIRATION CAN BE FATAL IN DKA

BREATHING

- Give high flow O₂
- Continuously monitor RR and SpO₂
- If requiring assistance with ventilation seek urgent anaesthetic help and [CONTACT KIDS](#)

CIRCULATION

- Record BP and start continuous ECG monitoring
- Obtain IV Access and send bloods for FBC, U&E, Glucose, Blood Gas and Ketones

DISABILITY

- Measure GCS / AVPU **1 hourly OR every 30 minutes** in severe DKA / under 2's
- Print and use [BSPED observation chart](#)**
- Assess for evidence of cerebral oedema – see box

FLUID DEFICIT AND MAINTENANCE

If signs of shock present (**severe DKA only**)

- Give a single bolus of 10mls/kg 0.9% saline

If shock persists

- [CONTACT KIDS](#) for further advice
- Consider 2nd 10mls/kg 0.9% Saline bolus
- Consider inotropes

CALCULATE FLUID DEFICIT

- **Mild/Moderate** DKA (pH ≥ 7.1) = **5% DEFICIT**
- **Severe** DKA (pH < 7.1) = **10 % DEFICIT**

CALCULATE MAINTENANCE REQUIREMENTS

- If <10kgs – Give 2ml/kg/hr*
- If 10-40kgs give 1ml/kg/hr
- If > 40kgs give a fixed volume of 40ml/hr

Hourly Rate (mls/hr)	= $\frac{(\text{Deficit \%} \times \text{Weight (kg)} \times 10)}{48 \text{ hours}}$ + Maintenance requirement in mls/kg/hr
Use of BSPED Calculator (click) is recommended	

N.B. Fluid boluses >20ml/kg should be subtracted from total allowance – BSPED calculator includes this correction

- Use 0.9% saline + 40mmol/l KCl for initial fluids
- If glucose <14mmol/l and ketones <3mmol/l** change to 0.9% Saline & 5% Glucose + 40mmol/l KCl – Reduce insulin if dose > 0.05units/kg/hr
- If glucose <14mmol/l and ketones >3mmol/l** change to 0.9% Saline & 10% Glucose + 40mmol/l KCl and maintain insulin rate

*If Neonatal DKA [CONTACT KIDS](#) (special circumstance)

INSULIN

- Commence an IV Insulin infusion **1 hour** after beginning IV fluid therapy.
- Use a soluble insulin infusion at an initial rate of 0.05units/kg/hr ([see BSPED Calculator](#))

Expect K+ levels to fall with insulin infusion

- Monitor 2 hourly with VBG/Lab U&E
- If < 3.0mmol [CONTACT KIDS](#) - may require central access

HYPOKALAEMIA CAN BE FATAL IN DKA

CEREBRAL OEDEMA

Assess for headache, irritability, ↓GCS, ↓HR, ↑BP, unequal/dilated pupils or oculomotor palsies

Calculate corrected Na⁺ using [BSPED Fluid Calculator](#)
Na⁺ should rise with therapy by 0.5-1mmol/hr. **If failing to increase and GCS falling treat as cerebral oedema**

Do not give intravenous sodium bicarbonate

In suspected cerebral oedema...

- Give 3mls/kg of 3% Saline **or** 2.5-5mls/kg of 20% Mannitol over 15 mins
- Place in 30° head up position
- Seek urgent anaesthetic help and [CONTACT KIDS](#)

CEREBRAL OEDEMA CAN BE FATAL IN DKA