

DIABETIC KETOACIDOSIS – INITIAL MANAGEMENT GUIDE

DIAGNOSIS OF DKA BLOOD GLUCOSE(BG) > 11*- (glucose *may* be normal in a known diabetic) + **ACIDOSIS** - pH <7.3 or HCO₃⁻ <15mmol/l + **KETONAEMIA** – Bld Ketones > 3mmol/l

*If Hyperglycaemic (>35mmol/L) in the absence of significant ketosis or acidosis – Consider [Hyperosmolar Hyperglycaemic State](#)

Follow BSPED Integrated Care Pathway (ICP) in conjunction with the online calculator at www.dka-calculator.co.uk

DIAGNOSIS OF SHOCK – APLS definition – Tachycardia, prolonged CRT, poor peripheral pulses, hypotension (late sign)

Beware – acidosis due to DKA can alter CRT and cause poor peripheral perfusion

INITIAL ASSESSMENT

AIRWAY

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

- Insert OPA / NPA if required
- Seek urgent anaesthetic assistance
- Insert an NG tube on free drainage
- CONTACT NECTAR**

ASPIRATION CAN BE FATAL IN DKA

BREATHING

- Give high flow O₂ to maintain normal SpO₂
- Continuously monitor RR and SpO₂
- If requiring assistance with ventilation seek urgent anaesthetic help & **CONTACT NECTAR**

CIRCULATION

- Record BP hourly, start continuous ECG monitoring (peaked T waves = hyperkalemia)
- Obtain IV/IO access and send bloods for FBC, U&E, CRP Glucose, Blood Gas and Ketones

INADEQUATE RESUSCITATION CAN BE FATAL

DISABILITY

- Measure GCS / AVPU **1 hourly OR every 30 minutes** in severe DKA / under 2s
- Use PEWS or equivalent local chart alongside the Serial Data Sheet in the ICP
- Assess for evidence of cerebral oedema – *see box*

FLUID DEFICIT AND MAINTENANCE

If no shock give 10ml/kg over 30min (*subtract from deficit*)

If signs of **shock/thready pulse/hypotension**

- Give a single bolus of 20mls/kg 0.9% saline ASAP and involve the Consultant Paediatrician
- If persistent shock carefully consider further fluid boluses and/or inotropes involve Diabetes Consultant/**NECTAR** for further advice.

CALCULATE FLUID DEFICIT

pH <7.3/ HCO₃⁻ <15mmol/L = Mild DKA (5% dehydration)

pH <7.2/ HCO₃⁻ <10mmol/L = Mod DKA (5% dehydration)

pH <7.1/ HCO₃⁻ <15mmol/L = Severe DKA (10% dehydration)

CALCULATE MAINTENANCE REQUIREMENTS

- Weigh patient or use recent accurate weight
- 100 ml/kg/day for the first 10 kg BW
- 50 ml/kg/day for the second 10 kg BW
- 20ml/kg for each additional kilogram above 20 kg
- **Max 75 kg body weight/97th centile for age** (*choose lower*)

$$\text{Hourly Rate (mls/hr)} = \left[\frac{(\text{Deficit \%} \times \text{Weight (kg)} \times 10)}{48 \text{ hours}} \right] + \left[\text{Maintenance requirement in mls/hr} \right]$$

N.B. Fluid boluses should not be subtracted from total fluid allowance for shocked patients

- 0.9% saline for fluid bolus
- All fluids except bolus to contain 40mmol/L KCl
- Change to 0.9% saline + 5% Glucose once BG <14mmol/L

**If Neonatal DKA CONTACT NECTAR (special circumstance)*

INSULIN

- Commence an IV Insulin infusion **1-2hrs after** starting IV fluid therapy due to expected fall in blood glucose
- Start soluble insulin infusion at 0.05-0.1units/kg/hr

Expect K⁺ levels to fall with insulin infusion

- Monitor 1-2hrly Glu/Ketones and Lab U&E
- If < 3.0mmol – **contact NECTAR**
HYPOKALAEMIA CAN BE FATAL IN DKA

CEREBRAL OEDEMA

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

- Calculate corrected Na⁺=Na⁺+{(Glucose mmol - 5.5)/3.5} Lab 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

- Place in 30° head up position
- Give 2.5-5 mls/kg of 3% Saline or 2.5-5 ml/kg of 20% Mannitol over 15mins
- ½ maintenance & slow deficit over 72hrs
- Urgent anaesthetic help and **CONTACT NECTAR**
- Consider excluding other diagnoses with CT

CEREBRAL OEDEMA CAN BE FATAL IN DKA