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 O_2 to maintain normal SpO_2
- ☐ Continuously monitor RR and SpO_2
- ☐ If requiring assistance with ventilation seek urgent anaesthetic help & CONTACT NECTAR

CIRCULATION

- ☐ Record BP hourly, start continuous ECG monitoring (peaked T waves = hyperkalamia)
- ☐ 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

Give 10ml/kg over 1hr *(subtract from deficit)*

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

- ☐ Give a single bolus of 20mls/kg 0.9% saline over 15 min involving Consultant Paediatrician
- ☐ If persistent shock carefully consider further fluid boluses and/or inotropes involving Diabetes Consultant/NECTAR for further advice.

CALCULATE FLUID DEFICIT

- pH <7.3 = Mild DKA (5% dehydration)
- pH <7.2 =Moderate DKA (7% dehydration)
- pH <7.1 = 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 80 kg body weight/97th centile for age** *(choose lower)*

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

N.B. Fluid boluses should be subtracted from total fluid allowance only for non-shocked patients

- ☐ 0.9% saline or PlasmaLyte 148 are suitable
- ☐ 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 - may require central access

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^o 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

V3.0 AK Review Jan 2023