Pediatric Diabetic KetoAcidosis (DKA) Algorithm

**Recognition of DKA**

- DKA can occur in existing or new onset type 1 or type 2 diabetes
- **Diagnostic criteria:** Diabetes (random blood glucose ≥11.1 mmol/L) + Ketonuria + Acidosis
- **Clinical features:** Polyuria, polydipsia, weight loss, dehydration, Kussmaul breathing, headache, decreased level of consciousness, abdominal pain, vomiting

**Alert Pediatric Referral Centre**

**Initial Management**

- Assess ABCs, vital signs (including BP) + neurovitals (GCS, pupils)
- Rapid bedside glucose
- O₂ 10-15 Lpm non-rebreather mask (if signs of shock)
- IV Access x 2 lines (consider intraosseous if unsuccessful)
- Serum glucose, electrolytes, venous gas, urea, creatinine, serum osmolality
- Urinalysis for glucose, ketones; bladder catheterization if needed
- Consider other investigations:
  - Obtain cultures (e.g. blood, urine, throat) if clinical evidence of infection
  - ECG for baseline assessment of K⁺ status (if delay in obtaining serum K⁺)

**Signs of CEREBRAL EDEMA?**

- GCS <14 and/or irritability in younger children
- And/or Cushing’s triad: ↑BP, ↓HR, ↓RR

**Fluid Resuscitation (Based on recent evidence)**

Administer 10 mL/kg NS bolus over 30 minutes.

Persistent tachycardia, or other signs of hypoperfusion (cap refill >2 sec or cool extremities)?

**Rehydration Table: Total IV Fluids**

<table>
<thead>
<tr>
<th>Weight</th>
<th>mL/kg/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 - &lt;10 kg</td>
<td>6.5</td>
</tr>
<tr>
<td>10 - &lt;20 kg</td>
<td>6</td>
</tr>
<tr>
<td>20 - &lt;40 kg</td>
<td>5</td>
</tr>
<tr>
<td>≥40 kg</td>
<td>4 [MAX 250 mL/hr]</td>
</tr>
</tbody>
</table>

Repeat 10 mL/kg NS bolus over 30 min. Reassess after each bolus and repeat if persistent hypoperfusion. Discuss with Pediatric Referral Centre.

**Pediatric Referral Centre Discussion**

**Cerebral Edema Management**

- Call Pediatric Referral Centre
- Assess and manage ABCs
- Bed rest, elevate head of bed to 30°
- If hypothermic (tachycardia, cap refill)
- >2 sec, cool extremities), give 10 mL/kg NS bolus over 30 minutes; reeassess after bolus and repeat x 1 if persistent hypoperfusion. Discuss further fluid management with Pediatric Referral Centre.
- Run IV fluids at 60% of rate outlined in Rehydration Table
- 3% NS (0 mL/kg IV over 15 min) or Mannitol (0.5 – 1 g/kg IV over 20 min)
- Start insulin infusion 0.1 units/kg/hr IV after 1 hour of IV fluids
- Head CT not required prior to transport

**Ongoing Monitoring Until Transfer**

- Q 1 hour:
  - Blood glucose
  - Fluid ins and outs
  - Neurovitals (GCS, pupils)
  - HR and BP
- Q 2-4 hours: Electrolytes and venous gas
  - Monitor ECG for T-wave changes

Dedicate one IV line to use as saline lock for serial bloodwork

‡See DKA instructions in Drug Dosing Binder