

Red Flags: Pediatric Diabetic Ketoacidosis (DKA)

DKA Clinical Features: Polyuria, polydipsia, weight loss, dehydration, headache, Kussmaul breathing, abdominal pain, vomiting

- Diabetes: random blood glucose >11 mmol/L **AND**
- Acidosis: pH <7.3 or $\text{HCO}_3^- <18$ mmol/L on venous or capillary blood gas **AND**
- Ketonuria/ketonemia: moderate/large urine ketones or serum beta-hydroxybutyrate ≥ 3 mmol/L

CEREBRAL INJURY Clinical Features:

- GCS ≤ 13 , severe/progressive headache, vomiting, focal neurological signs, incontinence
- Irritability/inconsolability in pre-verbal children
- Cushing's triad: \uparrow BP, \downarrow HR, abnormal breathing

Management

- Point-of-care blood glucose at triage
- Perform urgent investigations: serum glucose, VBG, Na, K, Cl, urea, creatinine, osmolality, serum or urine ketones
- Use TREKK DKA Algorithm to guide management
- Patients with DKA are significantly dehydrated. Initiate fluid resuscitation with NS or RL 20 mL/kg IV bolus
- Continue ongoing rehydration with NS or RL with added KCl as per Rehydration Table
- Change to a dextrose-containing solution (e.g., D5NS, D5RL, D10NS or D10RL) with added KCl when blood glucose is less than 17 mmol/L or is decreasing by more than 5 mmol/L/hr after insulin started
- Start insulin infusion **AFTER** 1 hour of IV fluid administration

Minimize Treatment-associated Risks for Cerebral Injury

- Ensure adequate fluid resuscitation, avoid hypotension, frequently reassess ABCDs
- **NEVER** start insulin infusion before 1 hour of IV fluid administration
- **NEVER** bolus IV insulin
- Sodium bicarbonate is **ONLY** used for hyperkalemia with ECG changes or if indicated during CPR

Pediatric DKA Rehydration Table: Ongoing IV Fluids

Weight	mL/kg/hr
5 - <10 kg	6.5
10 - <20 kg	6
20 - <40 kg	5
≥40 kg	4 (MAX 500 mL/hr)