

ED Pediatric DKA Pathway: Dartmouth Health 2026

DKA definition

- Glucose > 200 AND
- pH \leq 7.3 OR serum bicarb < 15 mmol/L AND
- BOHB \geq 3 mmol/L or mod/large ketonuria OR
- Glucose >1000, altered mental status or shock

Initial management

- **VS with BP, Weight, POC glucose, UA**
- ESI Level 2 (Level 1 if altered mental status or resp distress)
- Place PIV, consider second IV for insulin + IVF administration
- Labs: VBG, CBC, BMP, BOHB, Mag, Phos, serum osmolality, Hgb A1C
- NPO, cardiac monitor
- EKG if K < 3.5 or > 6.5*
- PICU consult, ED charge RN notify PICU RN
- **Q 1 hr POC glucose**

Initial IV fluid bolus

- **NS 10 mL/kg bolus over 30 min**
- Repeat POC glucose after bolus (expect glucose \downarrow by 100-200 after bolus)
- If in shock consider repeat 10 mL/kg NS bolus

Maintenance IV fluids**

- **Glucose >300: NS with 40 mEq KCl/L at 1.5x maintenance rate**
- Glucose 200-300: D5 NS with 40 mEq KCl/L at 1.5x maint rate
- Glucose <200: D10 NS with 40 mEq KCl/L at 1.5x maint rate***

4-2-1 rule to calculate maintenance rate
(multiply by 1.5 for DKA rate):

- 1-10 kg: 4 mL/kg/hr +
- 10-20 kg: 2 mL/kg/hr +
- >20 kg: 1 mL/kg/hr

*Start management based on VBG results;
do not need to wait for full BMP

**Continue ED fluids while pt in ED. Discuss
with PICU if pt in ED >4 hrs.

***If D10NS not available, decrease insulin
rate to 0.05 U/kg/hr and continue D5NS with
40 mEq KCl/L

Insulin drip*

- **Insulin 0.1 units/kg/hr IV**
- NO insulin bolus
- Start insulin after NS bolus
- If K<3.5 give 1 mEq/kg (max 10 mEq) KCl IV over 1 hr, recheck K before starting insulin

Ongoing management

- Q 1 hr POC glucose
- Q 2 hr VBG until pH > 7.2
- Q 4 hr BMP, Mag, Phos
- Dip all urine for glucose and ketones
- Cardiac monitor
- Q 1 hr VS and neuro checks (watch for cerebral edema – see page 2)
- Consider Lantus 0.3 U/kg subQ in consult with PICU

Cerebral edema

- Monitor with Q 1 hr neuro checks
- Usually develops within 12 hrs of treatment initiation
- Risk factors for cerebral edema
 - ↑ BUN
 - ↓ pCO₂
 - Bicarb therapy (NOT indicated in pediatric DKA tx)
- Diagnostic criteria for cerebral edema
 - Abnormal motor or verbal response to pain
 - Decorticate or decerebrate posture
 - CN palsy (esp III, IV, and VI)
 - Abnormal respiratory pattern (tachypnea, grunting, Cheyne-Stokes respirations)
 - Major criteria
 - Altered mentation, confusion, fluctuating LOC
 - Sustained HR decrease >20 bpm (not due to sleep or fluid resuscitation)
 - Age-appropriate incontinence
 - Minor criteria
 - Vomiting, headache, lethargy or not easily arousable, DBP >90, age <5 yrs
- Management of cerebral edema
 - Contact PICU attending
 - Stop IV fluids and insulin
 - Elevate head of bed
 - CT head
 - Consider Mannitol 0.5-1 g/kg IV over 10-15 min
 - Effect within 15 min, lasts 120 min
 - Can repeat dose if needed after 30 min
 - Consider 3% saline 2.5 mL/kg over 10-15 min
 - Can use instead of mannitol
 - Can give if no response to mannitol in 15-30 min
 - Consider intubation and careful hyperventilation in consult with PICU