

## Pediatric DKA Admission Guidelines

Admit to appropriate monitoring

Strongly consider admission to PICU if

1. Less than 5 years of age,
2. Calculated osmolality greater than 340,
3. Unstable vitals,
4. Altered mental status
5.  $\text{HCO}_3 < 8$

Peds intermediate for most other cases. **The pediatric intensivist and/or hospitalist on call can assist with determining appropriateness of admission unit.**

**Vitals:** Q 1 hour with neuro checks X 6 hours then Q 2 hours.

**Neuro checks:** Call MD for any neurologic concerns regarding mental status including headache, lethargy, vomiting, incontinence, fussiness or irritability in younger children, combativeness in older children, change in respiratory pattern, hypertension/hypotension, and heart rate decrease greater than twenty/min from baseline HR on admission to ED.

**Activity:** Bed rest X 24 hours.

### **Labs:**

On admission; accucheck, CBC, CMP, Calcium, Phosphorus, Magnesium, ABG/venous blood gas/venous PH, serum ketones, and urine analysis. Pregnancy test in teenage females.

Accucheck Q 1 hour call if decrease of  $> 100/\text{hour}$ .

Q 4 hour electrolytes and pH until stable.

Q 8 hour calcium, phosphorus, and Mg and ketones (serum or urine)

**IV Fluids** NS 20 ml/kg over 30-60 min for hypoperfusion.

2<sup>nd</sup> 10 ml/kg can be repeated if needed for persistence of hypoperfusion

Maintenance fluids of NS with 20 mEq KPO<sub>4</sub> with 20 mEq K acetate or KCL (Hold potassium if no urine output, renal failure, or hyperkalemia  $>5.5 \text{ mMol/L}$  is suspected or present). Call pharmacist to check accuracy of potassium acetate/phosphate added as the units are different.

**Run IVF at 1½ X maintenance rate**

### **Regular Insulin**

0.1U/kg/hour IV infusions

Insulin bolus is strongly discouraged in all patients. In extenuating circumstances where there is a significant delay in starting an insulin drip, a small dose of subcutaneous regular insulin could be considered (0.05units/kg subQ)

Change fluids to Dextrose containing fluids when blood glucose level is less than 300 mg/dL.

The most efficient method would be a **2-bag method**.

One of maintenance solution has electrolytes without dextrose (bag A), and the other (bag B) has D10 with same electrolytes as bag A; to be run at a combined rate of 1.5 X maintenance. The ratio between the two bags dictates the percent dextrose, such as A/B of 0/100=10%, 25/75=7.5%, 50/50=5%, 75/25=2.5%, and 100/0=0% dextrose.

	Bag A	Bag B	
	Given as a Ratio		
Plasma Glucose	0.9%NaCl	D10 0.9%NaCl	Final Dextrose Concentration
>250	1	0	0%
200-250	1	1	5%
150-199	1	3	7.5%
100-149	0	1	10%
<100 Call Intensivist on call			

**AVOID** use of bicarbonate irrespective of the base deficit. The only indications for use of bicarbonate in DKA are during CPR and life-threatening hyperkalemia.

**Use of bicarbonate in DKA is associated with risk of development of cerebral edema.**

**Identify and manage Cerebral Edema early (Monitor neurostatus closely during initial treatment):**

**A. High Risk Patients:**

- a. New-onset diabetes
- b. Age < 5 years
- c. Use of IV bicarbonate
- d. High BUN and low PaCO<sub>2</sub>

**B. Symptoms and Signs:**

- a. Headache
- b. Diplopia
- c. Agitation, combative behavior (please DO NOT SEDATE)
- d. Altered level of consciousness
- e. Bradycardia and slow respirations are **LATE SIGNS**

**C. Aggressive Management:**

- a. IV Mannitol 0.25 to 1 gm/kg rapid push repeat in 20 min if necessary
- b. IV 3% saline 5-10 ml/kg over 30 minutes, repeat in 20 min if necessary
- c. Intubation and hyperventilation for deep coma with impending respiratory arrest

**Pearls:**

1. **Early activation of transport system**
2. **Open communication with intensivist or hospitalist of receiving hospital**
3. **Accurate documentation**
4. **Call intensivist/hospitalist for any questions or concerns**

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