Pediatric DKA “Two Bag Method”

Basics & Background:
• Two liter bags of IV fluids containing electrolytes are hung simultaneously for hydration and electrolyte replacement and maintenance while insulin is infusing.
  o The major difference between IV bags: **one bag will contain dextrose**
  o The total rate of the two IV bags should equal the total desired maintenance fluid rate
  o As glucose levels fall with the administration of insulin, Bag 1 (without dextrose) will be titrated down and Bag 2 (contains dextrose) will be titrated up
• Use of the “Two Bag Method” does not hasten the time to resolution of ketoacidosis. However, logistical benefits such as decreased response time for fluid order changes and a decrease in number of IV fluid bags used.

Logistics:
• EM or Pediatric providers will enter fluid orders for the “Two Bag Method” from the Pedi DKA orderset
• IV fluid bags will be verified by a pharmacist, compounded in the Main Pharmacy, and tubed to the proper tube station
• A calculator for IV fluid rates can be found on the EM Guidelines website. Open this file, enter the patient’s weight into the appropriate box, and the fluid rates will calculate. **These should match what has been entered in Epic**
• Each liter of IV fluid should run on its own pump (2 fluids + 1 insulin = 3 pumps)
• RNs may notify providers when IV fluid rate changes are indicated based on glucose values, but MDs are responsible for changing orders within Epic.

<table>
<thead>
<tr>
<th></th>
<th>Pediatric</th>
<th>Adult</th>
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</thead>
<tbody>
<tr>
<td><strong>Insulin Dose</strong></td>
<td>0.1 units/kg/hour</td>
<td>0.14 units/kg/hour</td>
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<tr>
<td><strong>Insulin Titration</strong></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Fluids</strong></td>
<td>Two bags titrated throughout protocol</td>
<td>One bag, contents may change based on electrolytes and phases</td>
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<tr>
<td><strong>Usual Fluid Dispense Location</strong></td>
<td>Main Pharmacy (IV Room)</td>
<td>Floorstock/Store Room</td>
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<td><strong>Phases of Protocol?</strong></td>
<td>No</td>
<td>Yes</td>
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</tbody>
</table>

References:

Created by J. Bierlein, Pharm.D, BCPS  4/2017
Pediatric New Onset Diabetes Mellitus Practice Guideline

All patients <18 years of age sent/presenting to ED with new-onset diabetes mellitus or suspected DKA

Triage identifies patient as ESI 2 and triggers patient to a care area

Nursing Interventions (not protocol orders, MD/Pa must order):
1. IV placed and labs drawn within 30 minutes of arrival.
2. Send urinalysis.
3. Normal Saline bolus at 10cc/kg
4. Water at the bedside for alert and oriented children who can safely drink (water only).

Physician Interventions:
1. Brief H&P
2. Utilize labs from Pedi diabetes/DKA set to get all labs needed
3. Consult with Pediatric Endocrinology Attending
4. STAT head CT if signs of cerebral edema

Venous pH <7.3 or bicarbonate <15 AND Plasma glucose

Yes
• See IVF in pedi DKA on ED Sharepoint or EM guidelines.
• Contact PICU for admission

No
• Insulin to be ordered based on patient specific road map ask peds admission team to calculate. Goal is within one hour
• Cover carbohydrates using the road map if patient eats.
• BBCH inpatient

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