

## HYPERGLYCEMIA / DIABETIC KETOACIDOSIS PROTOCOL

- Hyperglycemia
- Ketonemia / Ketonuria
- Metabolic Acidosis ( $\text{pH} \leq 7.30$ ,  $\text{HCO}_3^- < 15$ )
- Moderate =  $\text{pH} < 7.2-7.3$ ,  $\text{HCO}_3^- < 15$
- Severe =  $\text{pH} < 7.1$ ,  $\text{HCO}_3^- < 10$
- Fluids:
  - Bolus: 20cc/kg bolus of NS over ½ to 1 hour (slower if new onset). If in shock/hemodynamic instability, repeat bolus of NS.
  - Maintenance: 1.5X maintenance fluids of ½ NS with 20Meq KCL and 20Meq  $\text{KPO}_4/\text{L}$  for established diabetic patients.
  - For *new onset DKA* patients, consider fluids changed to NS with 20KCL/Liter+ 20 $\text{KPO}_4/\text{Liter}$
- Strict I & O recording
- Electrolytes:
  - Sodium:** General fluid should contain ½ NS or NS if hyponatremic.
  - Potassium & Phosphate:** One half KCL and the other half  $\text{KPO}_4$ . 40Meq/L of K (20Meq KCL/L and 20Meq  $\text{KPO}_4/\text{L}$ ).
  - Bicarbonate: *DO NOT USE UNLESS DIRECTED BY ENDOCRINOLOGIST or INTENSIVIST!*
- Insulin drip: (mix 50 units Regular Insulin / 50-250cc NS):
- NO BOLUS OF INSULIN!**
- Begin with continuous insulin drip 0.1unit/kg/hr after first fluid bolus
- Drop glucose at 80-100 mg/dL/hr
- When glucose  $< 300$ , or glucose decreases  $> 100\text{mg/dL/hr}$  change fluids
- Add D5 1/2NS with 20Meq KCL & 20Meq  $\text{KPO}_4/\text{L}$  at 1.5 x maintenance
- Increase insulin to keep glucose slowly decreasing
- Laboratory values:
  - Check blood glucose Q 1hr
  - Check VBG
  - Check electrolytes Q 2hrs
  - Monitor urine for ketones and glucose with each void

**PEDIATRIC HYPERGLYCEMIA / DIABETIC KETOACIDOSIS PROTOCOL**

1. Obtain verbal order to begin hyperglycemia protocol (may obtain via telecommunication)
2. Obtain a finger stick blood glucose
3. If the blood glucose > 300, place the patient in the Pediatric Emergency Room as soon as possible
4. Establish IV access.
5. Obtain a Chem-7 / ER Panel, Venous Blood Gas, Magnesium level, Phosphorus level, and a Urine dipstick (for ketonuria and glucosuria)
6. If the patient has a temperature > 38 degrees Celsius, hold a CBC and Blood Culture
7. Give an IV fluid bolus of 20 mL of Normal Saline per kilogram of bodyweight over an hour
8. If the pH of the Venous Blood Gas < 7.35, the Bicarbonate level is <15, and the blood glucose level is > 300, then the patient is in Diabetic Ketoacidosis. Obtain orders for a continuous Insulin infusion. The infusion should be 50 units of Regular Insulin mixed in 50 mL of Normal Saline.
9. The Insulin infusion should be run at 0.1 units / kg / hour. The Insulin infusion should not be started unless fluids containing Dextrose are given at the same time.
10. Once the IV fluid bolus is finished, change the IV fluid to Normal Saline with 20 milliequivalents of Potassium Chloride per Liter and 20 milliequivalents of Potassium Phosphate per Liter. The IV fluids should be continued at a rate if 1.5 x the maintenance IV fluid rate. If the Insulin infusion is available, the IV fluids should be changed to D5Normal Saline with 20 milliequivalents of Potassium Chloride per Liter and 20 milliequivalents per Liter of Potassium Phosphate.
11. Repeat laboratory tests at regular intervals:
  - a. Blood glucose after the Normal Saline bolus and every hour thereafter
  - b. Electrolytes every 2 hours
  - c. Measure urine for ketones and glucose with each void.
12. Contact the PICU for admission

\_\_\_\_\_  
*Physician Signature*

\_\_\_\_\_  
*Date & Time*

( ) Verbal order obtained and RBO. \_\_\_\_\_

*RN Signature*

*Date & Time*