

(place patient label here)

Patient Name: \_\_\_\_\_



PROVIDER ORDERS

Order Set Directions:

- > (✓) - Check orders to activate: Orders with pre-checked box  will be followed unless lined out.
- > Initial each place in the pre-printed order set where changes such as additions, deletions or line outs have been made
- > Initial each page and Sign/Date/Time last page

Diagnosis: \_\_\_\_\_

Allergies with reaction type: \_\_\_\_\_

### ICU DKA/HHS

Version 2 4/16/15

- Recommended for patient Age > 18 years old

#### Nursing Orders

- DKA goal glucose level 150-200 mg/dL UNTIL acidosis is resolved
- HHS goal glucose level 200-300 mg/dL UNTIL patient is mentally alert
- Point of Care Capillary Blood Glucose: Following fluid bolus and every hour while on insulin drip
- Assess neurologic status: every hour
- IF patient is admitted with an insulin infusion pump, physically remove the pump, tubing and subcutaneous catheter at start of insulin infusion
- IF capillary blood glucose decreases more than 100 mg/dL per hour
  - Step 1) Start Dextrose infusion (BAG 2) at 250-299 blood glucose rate if not already started.
  - \*\*If glucose continues to decrease more than 100mg/dL per hour:
  - Step 2) Decrease insulin infusion rate to 0.05 unit/kilogram per hour.
  - \*\*If capillary blood glucose continues to decrease more than 100 mg/dL:
  - Step 3) Notify Provider
- If urinary output less than 30 mL/hr Notify Provider
- Notify provider when basic metabolic panel results obtained 4 hours after first complete metabolic panel
- When capillary blood glucose < 200 mg/dL Notify provider for total fluid rate adjustments
- IF capillary blood glucose is less than 125 mg/dL AND Beta-Hydroxybutyrate > 1 and/or anion gap remains abnormal: Initiate DKA/HHS Hypoglycemia Protocol and Notify Provider
- When Beta-Hydroxybutyrate is less than 1 AND anion gap has normalized Notify Provider so transition to subcutaneous insulin can be made.

#### Diet

- NPO
- NPO except ice chips
- Clear Liquid Diet: Sugar free or diet liquids only

#### IV/ Line Insert and/or Maintain

- Peripheral IV insert/maintain
- Saline lock with saline flush every BID; Place 2nd IV if patient is in SHOCK OR if second IV is needed for any other infusions.
- Arterial Line insert/maintain

#### Initial Treatment

IV Fluids - Bolus (If not already done in ED) For patients with severe hypovolemia, without cardiac compromise

- If cardiogenic shock present consider hemodynamic monitoring and pressors
  - Sodium Chloride 0.9% IV
    - 20 milliliter/kilogram intravenously BOLUS Now- Infuse as fast as possible
    - 15 milliliter/kilogram intravenously BOLUS Now- Infuse as fast as possible

#### Bicarbonate Therapy

- Consider IV bicarbonate therapy for pH less than or equal to 7.0
  - sodium bicarbonate
    - 100 milliequivalent intravenous push once; Recheck blood gas and BMP post infusion and notify provider of results.

Initials \_\_\_\_\_

(place patient label here)

Patient Name: \_\_\_\_\_



PROVIDER ORDERS

Order Set Directions:

- > (✓)- Check orders to activate: Orders with pre-checked box  will be followed unless lined out.
- > Initial each place in the pre-printed order set where changes such as additions, deletions or line outs have been made
- > Initial each page and Sign/Date/Time last page

**Electrolyte Replacement**

- If serum potassium is 3.4-5.1 mEq/L potassium will be added to maintenance fluids.  
For serum potassium less than or equal to 3.3 mEq/L SELECT:  
potassium chloride
  - 30 milliequivalent in 300 milliliter of NS intravenously infuse over 1.5 hour FOR PERIPHERAL IV;  
PATIENT MUST BE MONITORED
  - 30 milliequivalent in 100 milliliter of NS intravenously infuse over 1 hour FOR CENTRAL LINE IV ONLY;  
PATIENT MUST BE MONITORED

**Insulins**

- Insulin infusion begins following initial fluid resuscitation and continues until Beta-hydroxybutyrate is less than 1
- Select Insulin bolus only if not already given in ED  
insulin regular
  - 0.1 unit/kilogram intravenous push onceinsulin regular 250 units in 0.9% Saline 250 milliliter (1 unit/milliliter)
  - 0.1 unit/kilogram per hour - Begin after fluid bolus (if ordered)

**IV Fluids RATE**

- Recommended 2 Bag Total Fluid rate following initial fluid bolus: 250-500 mL/hr until glucose is less than 250 mg/dL followed by 150-250 mL/hr. May be adjusted for patient hydration status \*exclude insulin rate from total fluid rate\*
  - 2 Bag Total IV Fluid Rate: 250 milliliter/hour
  - 2 Bag Total IV Fluid Rate: \_\_\_\_\_ milliliter/hour

**2 bag Fluids -Select one 2 bag combination**

- Corrected Sodium = Measured Na + [(Serum glucose as mg/dL - 100)/100] X 1.6  
For corrected sodium greater than or equal to 135 mEq/L and potassium less than or equal to 5.1 mEq/L Select both  
Sodium Chloride 0.45% IV with 20 mEq/L KCl; BAG 1
  - \_\_\_\_\_ milliliter/hour continuous intravenous infusion Begin following initial fluid bolus Titrate per two-bag system calculator; Coincide with insulin infusionDextrose 10% and 0.45% Sodium Chloride IV with 20 mEq/L KCl; BAG 2
  - \_\_\_\_\_ milliliter/hour continuous intravenous infusion Begin when Blood Glucose is less than 300 mg/dL and titrate per two-bag system calculator; Coincide with insulin infusion

For corrected sodium greater than or equal to 135 mEq/L and potassium greater than 5.1 mEq/L Select both

- Sodium Chloride 0.45% IV BAG 1
  - \_\_\_\_\_ milliliter/hour continuous intravenous infusion Begin following initial fluid bolus Titrate per two-bag system calculator; Coincide with insulin infusionDextrose 10% and 0.45% Sodium Chloride IV BAG 2
  - \_\_\_\_\_ milliliter/hour continuous intravenous infusion Begin when Blood Glucose is less than 300 mg/dL and titrate per two-bag system calculator; Coincide with insulin infusion

For corrected sodium less than 135 mEq/L and potassium less than or equal to 5.1 mEq/L Select both

- Sodium Chloride 0.9% with 20 mEq/L of KCl BAG 1
  - \_\_\_\_\_ milliliter/hour continuous intravenous infusion Begin following initial fluid bolus Titrate per two-bag system calculator; Coincide with insulin infusionDextrose 10% and 0.9% Sodium Chloride IV with 20 mEq/L KCl BAG 2
  - \_\_\_\_\_ milliliter/hour continuous intravenous infusion Begin when Blood Glucose is less than 300 mg/dL and titrate per two-bag system calculator; Coincide with insulin infusion

Initials\_\_\_\_\_

(place patient label here)

Patient Name: \_\_\_\_\_



PROVIDER ORDERS

Order Set Directions:

- > (✓)- Check orders to activate: Orders with pre-checked box  will be followed unless lined out.
- > Initial each place in the pre-printed order set where changes such as additions, deletions or line outs have been made
- > Initial each page and Sign/Date/Time last page

For corrected sodium less than 135 mEq/L and potassium greater than 5.1 mEq/L Select both Sodium Chloride 0.9% BAG 1

- \_\_\_ milliliter/hour continuous intravenous infusion Begin following initial fluid bolus Titrate per two-bag system calculator; Coincide with insulin infusion

Dextrose 10% and 0.9% Sodium Chloride IV BAG 2

- \_\_\_ milliliter/hour continuous intravenous infusion Begin when Blood Glucose is less than 300 mg/dL and titrate per two-bag system calculator; Coincide with insulin infusion

Transition to subcutaneous insulin- Begins after resolution of DKA or HHS

- When patient is ready to transition to subcutaneous insulin SELECT Diabetes Management order set

Laboratory

- For patients with suspected DKA or HHS, consider obtaining serum electrolytes, glucose, calcium, magnesium, phosphorus, and blood gases at least every 2 to 4 hours in more severe cases. Monitor BUN, creatinine, and hematocrit every 6 to 8 hours until normal.

Admission labs or labs to be obtained now: (IF not already done in ER)

- CBC/AUTO DIFF
- COMPREHENSIVE METABOLIC PANEL
- MAGNESIUM LEVEL, PLASMA
- PHOSPHORUS LEVEL, PLASMA
- BETA-HYDROXYBUTYRATE, BLOOD
- GLYC-HEMOGLOBIN (HGB A1C)
- Blood gas study, arterial
- TROPONIN I
- BLOOD CULTURE, from two different sites five minutes apart
- UA W/MICROSCOPY, CULT IF INDIC
- OSMOLALITY, SERUM

Timed Labs:

- Adjust start times as needed based on ED or admission lab times
  - BETA-HYDROXYBUTYRATE, BLOOD
    - every 2 hours from first test, while on insulin drip
  - BASIC METABOLIC PANEL
    - every 4 hours x 24 hours
  - MAGNESIUM LEVEL, PLASMA
    - every 4 hours x 24 hours
  - PHOSPHORUS LEVEL, PLASMA
    - every 4 hours x 24 hours
  - OSMOLALITY, SERUM
    - every 4 hours x 24 hours
  - Blood gas study, arterial
    - every 4 hours

Consults

- Consult to diabetes educator

Provider Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_