

(place patient label here)

Patient Name: _____



PROVIDER ORDERS

Order Set Directions:

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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 _____

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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
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- ___ 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: _____