**ICU Diabetic Ketoacidosis (DKA) Admission Orders**

**Continuous Intravenous Insulin Infusion Management**

This Clinical Guideline is based on recommended best practices. The goal is to improve the care of individuals with diabetes. It is not intended to supersede clinical judgment in the care of the individual patient.

- **Status Inpatient:** See *Initial Order Set - Patient Status* already completed by MD

**ALLERGIES/ PRECAUTIONS:**
- If Allergic to PCN/Cephalosporin or carbapenem - Reaction:
  - ___ Anaphylaxis/Breathing difficulties
  - ___ Urticaria
  - ___ Delayed Rash
  - ___ Unknown
  - ___ Other
- Reaction investigated & Patient may receive Cephalosporin or Carbapenem:
  - ____ Yes
  - _____ No

**CODE STATUS:**
- See DNR Order

**CONSULTATION:**
- Glucose Management Team re: ____________________________ to see: STAT / TODAY / IN AM
- Dr. ____________________ re: _________________________ to see: STAT / TODAY / IN AM
- Diabetic Education

**NURSING:** (text in parenthesis before a blank is the default if no alternative value is entered)
- Vital Signs Q 1 hr with continuous pulse oximetry
- Neuro Checks Q (4) ______ hr
- Delirium Assessment Q shift
- Initiate the ICU pressure Ulcer prevention Protocol (includes daily weight)
- Strict I&O: □ Place Foley Catheter with drainage to gravity
  - **Indication:** Need for accurate urine output in critically ill patient

- □ Notify MD:
  - SBP < (90) ______ or > (180) ______; DBP < (40) ______ or > (100) ______
  - HR < (50) ______ or > (120) ______; RR > (30) ______; Temp > (101) ______
  - O2 sats < (92%) ______; Urine Output < (1mL / kg / hr) ______ or > ______
  - If K+ < 3.3 mmol/L or K+ > 5.0 mmol/L *(If K+ > 5.0 mmol/L, discontinue IVFs containing potassium)*
  - If Na < (128) ______ mmol/L or If Na > (150) ______ mmol/L
  - If pH < 7.25 or Serum CO2 < ______ mmol/L
  - If phosphorous < 1.0 mg/dL

**ACTIVITY:**
- □ Bedrest with HOB >30 unless contraindicated

**DIET:**
- □ NPO
- □ Clear liquids
- □ Consistent Carbohydrate
- □ OG: □ continuous low suction OR □ clamped/check residuals Q4hr
- □ Other: __________________________
- □ Consult Registered Dietitian (RD) for nutrition management per RD
- □ RD may modify/manage diet order and/or enteral nutrition per approved MNT protocol

**RESPIRATORY:**
- □ Nasal Cannula AND/OR □ Face Mask at ______ L/min or ______ FiO2

**STAT LABS:**
- □ CBC w DIFF
- □ BMP
- □ CMP
- □ Blood Culture x 2
- □ LFTs
- □ Mg
- □ Phosphorous
- □ Sputum gram stain
- □ Ionized Calcium
- □ Amylase
- □ Lipase
- □ Sputum Culture
- □ PT/ INR
- □ PTT
- □ Lipid Panel
- □ Urinalysis
- □ ABG
- □ Serum osmolality
- □ Urine culture

**MD Signature:**
- Date: __________  Time: __________

**RN Signature:**
- Date: __________  Time: __________
ICU Diabetic Ketoacidosis (DKA) Admission Orders
Continuous Intravenous Insulin Infusion Management

IMAGING/CARDIAC:
☐ ECG 12 lead STAT
☐ 2-D Echo with color doppler (read by ________________) Indication for echo: ________________
☐ Portable CXR - Indication: _____________________________

IN AM LABS:
☐ BMP + Mg
☐ BMP + Mg + Phos + Calcium
☐ CBC
☐ ABG
☐ HgbA1C ☐ Other: ________________________________

SCHEDULED LABS:
☐ BMP Q 4 hrs x 3
☐ BMP + Mg + Phos Q 4 hrs x 3
☐ ABG Q ___ hrs
☐ ABG at ____:

IV FLUIDS:
Initial:
☐ 0.9% NaCl IV at _______mL/hr over _____ hrs

Subsequent:
☐ 0.9% NaCl IV with _______ mEq/L KCL at _______mL/hr for ____ hrs
☐ 0.45% NaCl IV with _______ mEq/L KCL at _______mL/hr

Clinical Decision Support:
- If hypoperfusion or organ dysfunction (15% fluid loss or more), resuscitation with 20 mL/kg; repeat PRN
- For fluid volume deficit replacement, (10% fluid loss; 100mL/kg) Replace 50% over first 8hrs, then remainder over 16hrs. *Adjust type & rate of fluid administration in the elderly, CHF or renal failure
- Type of fluid used for deficit replacement is based on corrected serum sodium

Corrected Sodium (mmol/L) =
Measured Sodium (mmol/L) + 0.016[BG (mg/dL) - 100]

Clinical Decision Support: Establish adequate renal function (urine output)

<table>
<thead>
<tr>
<th>K+ &gt; 5.0 mmol/L</th>
<th>DO NOT add KCL *</th>
</tr>
</thead>
<tbody>
<tr>
<td>K+ 3.3 to 5.0 mmol/L</td>
<td>20 mEq KCL per liter*</td>
</tr>
<tr>
<td>K+ &lt; 3.3 mmol/L</td>
<td>40 mEq KCL per liter*</td>
</tr>
<tr>
<td>K+ &lt; 3.3 mmol/L</td>
<td>Replace K+ before starting</td>
</tr>
</tbody>
</table>

*Adjust type of fluid in renal failure

When BG < 250 mg/dL:
☑ Change IVF to D5 / 0.45% NaCl at the same concentration and rate as the current fluids being administered

INSULIN:
Dosing and Monitoring: via Method A or B below

Method A:
☐ Discontinue all other current insulin orders, all oral hypoglycemic agents and insulin pumps.
☐ Continuous IV insulin infusion per EndoToo IV® DKA mode of therapy (100 units regular insulin / 100 mL 0.9% NaCl)
☐ D50W IV PRN hypoglycemia as instructed per EndoTool IV®
☐ Carrier fluid for insulin infusion - 0.9% NaCl at 10 mL/hr IV
- Initiate EndoTool IV® software by entering the necessary patient information; Follow EndoTool IV® software instructions for: glycemic control, IV insulin infusion rate, IV insulin bolus doses, D50W bolus doses, Recovery carbohydrates and time frame for next FSBG check
- Prime tubing with a minimum of 20 mL insulin infusion, prior to starting infusion.
- Finger Stick Blood Glucose Monitoring: refer to Hospital Policy (refer to pg 6 D 1-4)
- EndoTool IV® SubQ correctional orders MUST be reviewed daily by MD to determine if adjustments to dosing are required.

Notify MD:
- Patient remains hypoglycemic (BG < 70mg/dL) after treating event twice
- Insulin drip rate is ≥ 50 units/hr for 2 hours
- Insulin drip rate is 0 units/hr without hypoglycemia (BG < 70 mg/dL)

Method B:
☑ Initiate Insulin Infusion Order Sheet

MD Signature: Date: Time:
RN Signature: Date: Time:
**BICARBONATE REPLACEMENT:**
- NaHCO₃ 50mEq IV in 250 mL sterile water
  - Infuse over 1 hr
  - Check ABG and K+ 30 min post dose administration
  - Repeat x 1 if pH < 7.0 and K+ > 5.0 mmol/L

**PHOSPHOROUS REPLACEMENT:**
- 15 mmol potassium phosphate in 250 mL 0.9% NaCl IV over 4 hours (if K⁺ ≤ 5.0 mmol/L)
- 15 mmol sodium phosphate in 250 mL 0.9% NaCl IV over 4 hrs; (if K⁺ > 5.0 mmol/L)

**HEMODYNAMICS:**
- CVP
  - Measure CVP Q1 hr and after each fluid bolus
    - If CVP remains < ____ and SBP < 90 mmHg or MAP < 65 mmHg, Notify MD
- Pulmonary Artery Catheter
  - Measure PAS / PAD Q1 hr
  - Measure PCWP / CO / CI Q 4hrs – Notify MD if CI < 2.0

**MEDICATIONS:**
- **Norepinephrine** 4 mg/250 mL D5W IV OR maximize concentration to 8 mg/250 mL D5W
  - Starting dose ____ micrograms/min
  - Titrate 2 micrograms/min Q 5 min to maintain SBP > ____ mmHg or MAP > ____ mmHg
  - Notify MD if patient requires > 50 micrograms/min
  - Maximum dose 80 micrograms/min
- **Phenylephrine** 20 mg/250 mL D5W IV OR maximize concentration 80 mg/250 mL D5W
  - Starting dose ____ micrograms/min
  - Titrate 10 micrograms/min Q 5 min to maintain SBP > ____ mmHg or MAP > ____ mmHg
  - Notify MD if patient requires > 180 micrograms/min
  - Maximum dose 180 micrograms/min

**VTE Risk And Prevention:** Moderate / High Risk
- Bilateral Sequential Compression Devices – SCDs
- **Lovenox** 40mg SQ Q 24h (caution in patients with CrCl < 30ml/min)
- **Heparin** 5000 units SQ Q 8hr
- Anticoagulation Contraindicated because:
  - High risk of bleeding
  - On therapeutic anticoagulation
  - Other: ________________________________
  - If Lovenox or Heparin ordered: CBC, BMP, INR, PTT Prior to giving dose (if not done in the last 24h)
  - If Lovenox or Heparin ordered: CBC every other day

**PRN MEDICATIONS:**

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MD Signature: Date: Time:

RN Signature: Date: Time: