Diabetic Ketoacidosis (DKA) Two Bag System Protocol [3361]

DKA: Blood glucose greater than 250 mg/dL, arterial or venous pH less than 7.3, serum bicarbonate less than 15 mEq/L anion gap greater than 12 and ketonuria or ketonemia.

Discontinue all previous insulin orders and oral diabetes medications.

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**Nursing**

**Finger Stick Blood Glucose (FSBG) Monitoring**

[X] Bedside glucose monitoring

Routine, Every hour

Unless otherwise specified

**Notify**

[X] Notify Provider

Routine, Until discontinued, Starting S

• HOLD Initiation of insulin doses if Potassium is LESS THAN 3.3 mEq/L. Treat potassium per DKA potassium replacement protocol and contact prescriber for instruction on insulin initiation.

• Notify prescriber if blood glucose is LESS THAN 200 mg/dL and anion gap is LESS THAN OR EQUAL to 12 (RESOLUTION OF DKA)* to consider transition to basal-bolus insulin and advance diet OR if unable to advance diet, change DKA insulin drip to ICU insulin Drip Order Set for Target Blood Glucose 140 - 180.

• Notify prescriber if glucose is LESS THAN 100 mg/dL for two consecutive times and anion gap is GREATER THAN 12 for further insulin AND/OR Dextrose containing IV fluid rate adjustment.

• Notify prescriber if glucose is LESS THAN 70 mg/dL.

• Notify prescriber if potassium is GREATER THAN 5.2 mEq for possible adjustments on potassium content in IVF

**Diet**

[X] NPO-Except meds

Diet effective now, Starting S

NPO: Except meds

Pre-Operative fasting options:

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**DKA Potassium Replacement Protocol**

DKA Potassium Replacement Protocol

[X] DKA Potassium Replacement Protocol - RN will enter orders "Per Protocol"

Routine, Until discontinued, Starting S

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**IV Fluids**

**Initial IV Fluids**

[X] Initial IV Fluids

"Followed by" Linked Panel

[X] sodium chloride 0.9 % infusion

1,000 mL, intravenous, for 60 Minutes, once, For 1 Doses

**Subsequent IV Fluids (Single Response) (Selection Required)**

(X) Choice # 1 with Dextrose 10 %: D10 + 1/2NS + 20 mEq/L potassium chloride and 1/2NS + 20 mEq/L potassium chloride

"And" Linked Panel

D10 is the preferred dextrose containing fluid (use D5W only if D10 is on backorder/unavailable)

[X] sodium chloride 0.45 % with potassium chloride 20 mEq/L infusion (for DKA)

0-250 mL/hr, intravenous, titrated

Titrates both fluids per protocol for a combined rate of:

[X] dextrose 10 % and sodium chloride 0.45 % + potassium chloride 20 mEq/L infusion (for DKA)

0-250 mL/hr, intravenous, titrated

Titrates both fluids per protocol for a combined rate of:
( ) Choice # 2 with Dextrose 5%: D5 + 1/2NS + 20 mEq/L potassium chloride and 1/2NS + 20 mEq/L potassium chloride

D10 is the preferred dextrose containing fluid (use D5W only if D10 is on backorder/unavailable)

<table>
<thead>
<tr>
<th></th>
<th>And Linked Panel</th>
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</thead>
<tbody>
<tr>
<td>[]</td>
<td>dextrose 5% and sodium chloride 0.45% with potassium chloride 20 mEq/L infusion</td>
</tr>
<tr>
<td>[]</td>
<td>sodium chloride 0.45% with potassium chloride 20 mEq/L infusion (for DKA)</td>
</tr>
</tbody>
</table>

Initial Electrolytes Replacement

Initial Electrolytes Replacement

<table>
<thead>
<tr>
<th></th>
<th>Or Linked Panel</th>
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</thead>
<tbody>
<tr>
<td>[]</td>
<td>Oral Replacement - Potassium</td>
</tr>
<tr>
<td></td>
<td>[] potassium chloride (K-DUR) CR tablet oral, once, For 1 Doses</td>
</tr>
<tr>
<td></td>
<td>[] potassium chloride (KAYCIEL) 10% solution 20 mEq, oral, once, For 1 Doses</td>
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<tr>
<td>[]</td>
<td>IV Replacement - Potassium (Single Response)</td>
</tr>
<tr>
<td></td>
<td>() For peripheral line - potassium chloride 10 mEq in 100 mL IVPB 10 mEq, intravenous, for 60 Minutes, every 1 hour, For 1 Doses</td>
</tr>
<tr>
<td></td>
<td>() For central line - potassium chloride 20 mEq in 100 mL IVPB 20 mEq, intravenous, for 60 Minutes, every 1 hour, For 1 Doses</td>
</tr>
<tr>
<td>[]</td>
<td>IV Replacement - Phosphorus level LESS than 2.5 mg/dL 20 mmol, intravenous, for 3 Hours, once, For 1 Doses</td>
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</tbody>
</table>

Insulin Management Protocol

Insulin Infusion Management (Single Response) (Selection Required)

( ) No, patient is NOT ESRD

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>[]</td>
<td>insulin bolus from bag 0.1 Units/kg, intravenous, once, For 1 Doses</td>
</tr>
<tr>
<td>[]</td>
<td>insulin bolus from bag 0.1 Units/kg, intravenous, once PRN, may repeat bolus one time after the first hour</td>
</tr>
</tbody>
</table>
insulin regular 1 unit/mL infusion for DKA

0.1 Units/kg/hr, intravenous, continuous

Start Regular Human Insulin 100 units in Normal Saline 100 mL (1 unit/mL) via an intravenous pump and dedicated line at the rate indicated.

If:

GLUCOSE level does not decrease by at least 50 mg/dL from the initial value after the first hour:
- Administer bolus 0.1 unit/kg OR 0.05 units/kg (for ESRD).
- Continue same infusion rate and follow IV fluids titration.
- If blood glucose GREATER THAN 400 mg/dL by POC testing, send serum glucose to the lab for confirmation.

GLUCOSE GREATER THAN OR EQUAL TO 300 mg/dL:
- Continue same infusion rate and follow IV fluids titration.

GLUCOSE 200 - 299 mg/dL:
- Continue same infusion rate and follow IV fluids titration.

GLUCOSE 150 - 199 mg/dL:
- Continue same infusion rate and follow IV fluids titration.

GLUCOSE 100 - 149:
- DECREASE insulin infusion rate by 50% ONLY ONCE and follow IV fluids titration.
- Notify prescriber if continues to be LESS than 100 with the next POC for further adjustments

GLUCOSE 70 - 99 mg/dL:
- DECREASE insulin rate by 50 % ONLY ONCE if not already done, follow IV fluids titration.
- Notify prescriber if continues to be LESS than 100 with the next POC for further adjustments.

GLUCOSE LESS than 70 mg/dL:
- HOLD insulin and send blood glucose to lab for confirmation
- Give dextrose 50% 25 mL and notify prescriber.
- Recheck blood glucose in 20 minutes; if GREATER than 70 mg/dL and anion gap greater than 12, restart insulin at 50% of prior infusion rate.
- Discontinue insulin drip 2 hours after initiation of long acting insulin.

GLUCOSE LESS than 200 mg/dL and anion gap is LESS THAN OR EQUAL to 12 (RESOLUTION OF DKA)
- Notify prescriber to consider transition to basal-bolus insulin

dextrose 50% intravenous syringe
25 g, intravenous, every 20 min PRN, low blood sugar, as directed for glucose less than 70 mg/dL, For 2 Doses

Yes, Patient is ESRD

insulin bolus from bag
0.05 Units/kg, intravenous, once, For 1 Doses

insulin bolus from bag
0.05 Units/kg, intravenous, once PRN, may repeat bolus one time after the first hour
Insulin regular 1 unit/mL infusion for DKA

0.05 Units/kg/hr, intravenous, continuous
Start Regular Human Insulin 100 units in Normal Saline 100 mL (1 unit/mL) via an intravenous pump and dedicated line at the rate indicated.

If:
GLUCOSE level does not decrease by at least 50 mg/dL from the initial value after the first hour:
- Administer bolus 0.1 unit/kg OR 0.05 units/kg (for ESRD).
- Continue same infusion rate and follow IV fluids titration.
- If blood glucose GREATER THAN 400 mg/dL by POC testing, send serum glucose to the lab for confirmation.

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- Discontinue insulin drip 2 hours after initiation of long acting insulin.

GLUCOSE LESS than 200 mg/dL and anion gap is LESS THAN OR EQUAL to 12 (RESOLUTION OF DKA)
- Notify prescriber to consider transition to basal-bolus insulin

Dextrose 50% intravenous syringe
25 g, intravenous, every 20 min PRN, low blood sugar, as directed for glucose less than 70 mg/dL, For 2 Doses

Labs

Laboratory STAT (if not previously done)

| [X] Blood gas, venous | STAT For 1 Occurrences |
| [X] Serum ketones (Beta hydroxybutyrate) | STAT For 1 Occurrences |
| [X] Lactic acid level | STAT For 1 Occurrences |
| [X] Comprehensive metabolic panel | STAT For 1 Occurrences |
| [X] Magnesium | STAT For 1 Occurrences |
| [X] Phosphorus | STAT For 1 Occurrences |
| [X] DKA electrolytes and glucose test | Now then every 2 hours For 3 Occurrences |
| [X] DKA electrolytes and glucose test | STAT and Every 2 Hours x2 (Followed by DKA electrolytes and glucose test every 4 hours x3) |

This test includes: Sodium, Potassium, Chloride, CO2, Anion Gap, and Glucose
<table>
<thead>
<tr>
<th>Test</th>
<th>Frequency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DKA electrolytes and glucose test</strong></td>
<td>Every 4 hours For 3 Occurrences</td>
<td>(To follow DKA electrolytes and glucose test STAT and every 2 hours x2) This test includes: Sodium, Potassium, Chloride, CO2, Anion Gap, and Glucose</td>
</tr>
<tr>
<td><strong>Amylase</strong></td>
<td>STAT For 1 Occurrences</td>
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<tr>
<td><strong>Lipase</strong></td>
<td>STAT For 1 Occurrences</td>
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<tr>
<td><strong>CBC with differential</strong></td>
<td>STAT For 1 Occurrences</td>
<td></td>
</tr>
<tr>
<td><strong>Urinalysis screen and microscopy, with reflex to culture</strong></td>
<td>STAT For 1 Occurrences</td>
<td>Specimen Source: Urine Specimen Site:</td>
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<tr>
<td><strong>Sputum culture</strong></td>
<td>STAT For 1 Occurrences, Sputum</td>
<td></td>
</tr>
<tr>
<td><strong>Blood culture x 2</strong></td>
<td>&quot;And&quot; Linked Panel</td>
<td></td>
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<tr>
<td><strong>Blood Culture (Aerobic &amp; Anaerobic)</strong></td>
<td>Once, Blood Collect before antibiotics given. Blood cultures should be ordered x2, with each set drawn from a different peripheral site. If unable to draw both sets from a peripheral site, please call the lab for assistance; an IV line should NEVER be used.</td>
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<tr>
<td><strong>Hemoglobin A1c</strong></td>
<td>STAT For 1 Occurrences</td>
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<tr>
<td><strong>Creatine kinase, total (CPK)</strong></td>
<td>STAT For 1 Occurrences</td>
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<tr>
<td><strong>Troponin I</strong></td>
<td>STAT For 1 Occurrences</td>
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### Other Diagnostic Tests

#### ECG

<table>
<thead>
<tr>
<th>Test</th>
<th>Frequency</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td><strong>ECG 12 lead</strong></td>
<td>STAT, Once</td>
<td>Clinical Indications: Other: Other: DKA Interpreting Physician:</td>
</tr>
</tbody>
</table>

#### Imaging

<table>
<thead>
<tr>
<th>Test</th>
<th>Frequency</th>
<th>Notes</th>
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<tbody>
<tr>
<td><strong>Chest 1 Vw Portable</strong></td>
<td>Routine, 1 time imaging For 1</td>
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### Consults

#### Pharmacy Consults

<table>
<thead>
<tr>
<th>Test</th>
<th>Frequency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consult to Pharmacy - Notification of DKA Patient</strong></td>
<td>Routine, Until discontinued, Starting S Specify reason: Notification of DKA patient</td>
<td></td>
</tr>
</tbody>
</table>