SMH DKA PROTOCOL

Physician Information
Insulin Drip protocol for DKA

- **Purpose:** Quick/Safe management of the patient in DKA
- **Method:** Evidence based approach using a standardized protocol.
- **Outcomes:** Patient will have complete recovery from DKA episode and be discharged in a safe and timely manner.
History at SMH

- The DKA protocol has been used in the:
  - Renal, Diabetic, Wound Unit (7wt) for 2 years
  - ICU for 1 year
  - ECC for 6 months

- It was developed by a team lead by Dr. Antunes, Pharmacy, the Certified Diabetic Educator on 7wt and the Clinical Manager on 7wt.

- The Protocol is evidence based.*
Procedure

- When your patient comes into the ECC the ECC MD may have already initiated the ECC DKA Protocol. When the patient reaches 7wt/ICU it will be discontinued and converted to the inpatient DKA protocol.

- To continue the protocol just add "DKA Protocol" to your orders, the patient will be on algorithm 2 from the ECC.

- If you are initiating then please specify which algorithm to start the protocol on 1 or 2.

- Once the patient is stabilized we will need orders for long acting insulin, short acting sliding scale insulin and a diet order. We like to keep patient on clear liquids until we can get blood sugar and CO2 in a safe range.

- Once the patient's glucose, CO2 and potassium are within range the long acting insulin can be given and the drip discontinued within 4-8 hours.
Details of management

- Patient admitted to 7WT or ICU
- Nurse hangs IV fluids per protocol.
- Accuchecks hourly with rate changes
- Appropriate potassium replacement given per DKA protocol
Chem 8

- Upon Admission
- 2 hours after insulin drip initiated
- Every 4 hours until CO2 is greater than 18.
- Then Daily x2 days
Criteria for Placement on 7WT

- Patient must be stable
- CO2 must be 8 or greater
- Potassium must be 3.0. If this is the only factor keeping the patient from 7wt please call communicator on the floor.
- Patient must be on remote telemetry if potassium less than 3.0 or greater than 6.
MD Notification

- Any acute change in condition
- If urine output less than 30 ml/hr
- Creatinine greater than 2.0
- Potassium less than 3.0 or greater than 6
- If hypoglycemia not resolved per protocol in 20 minutes
- When the accucheck is less than 70mg/dl x2 consecutive hours and before the drip is resumed.
- If on algorithm #4 and needs to move up an algorithm (an endocrinology consult may be indicated at this point)
Hydrating Fluids

- 0.9% Normal Saline at 500ml/hr x 2 liters then...
- 0.9% Normal Saline at 250ml/hr x 2 liters then...
- 0.9% Normal Saline at 150 ml/hr ......
- When blood glucose is 300 or less......
- Dextrose 5% 0.9 normal saline at 150 ml/hr
- Co-morbidities restricting fluid intake require specific orders from MD, otherwise the above protocol will be used to aggressively hydrate the patient.
## Potassium Sliding Scale

<table>
<thead>
<tr>
<th>Potassium level</th>
<th>KCL IV additive</th>
<th>Kcl flash (20 meq)</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 5</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>3.6-5.0</td>
<td>20 meq</td>
<td>None</td>
</tr>
<tr>
<td>3.0-3.5</td>
<td>20 meq</td>
<td>20 meq x 1</td>
</tr>
<tr>
<td>Less than 3.0</td>
<td>20 meq</td>
<td>20 meq x 1 call md-recheck K 2hrs</td>
</tr>
</tbody>
</table>
Accuchecks

- every hour until BG between 70-180 x 4 hours then.....
- Every 2 hours
- If patient drops below 70 the insulin drip is stopped and the SMH hypoglycemia protocol is initiated. The drip is restarted in 1 hour if BG is greater than 70.
- Drip rate adjusted according to Algorithms
### Insulin Drip Algorithm

<table>
<thead>
<tr>
<th>ALGORITHM 1</th>
<th>ALGORITHM 2</th>
<th>ALGORITHM 3</th>
<th>ALGORITHM 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG Units/hr</td>
<td>BG Units/hr</td>
<td>BG Units/hr</td>
<td>BG Units/hr</td>
</tr>
<tr>
<td>&lt;70 off</td>
<td>&lt;70 Off</td>
<td>&lt;70 off</td>
<td>&lt;70 off</td>
</tr>
<tr>
<td>70-109 0.2</td>
<td>70-109 0.5</td>
<td>70-109 1</td>
<td>70-109 1.5</td>
</tr>
<tr>
<td>110-119 0.5</td>
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<td>110-119 2</td>
<td>110-119 3</td>
</tr>
<tr>
<td>120-149 1</td>
<td>120-149 1.5</td>
<td>120-149 3</td>
<td>120-149 5</td>
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<tr>
<td>150-179 1.5</td>
<td>150-179 2</td>
<td>150-179 4</td>
<td>150-179 7</td>
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<tr>
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<td>210-239 4</td>
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<td>210-239 12</td>
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<tr>
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<td>240-269 5</td>
<td>240-260 8</td>
<td>240-269 16</td>
</tr>
<tr>
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<td>270-299 6</td>
<td>270-299 10</td>
<td>270-299 20</td>
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<td>300-329 7</td>
<td>300-329 12</td>
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<tr>
<td>&gt;360 6</td>
<td>&gt;360 12</td>
<td>&gt;360 16</td>
<td>&gt;360 32</td>
</tr>
</tbody>
</table>

**Moving down an algorithm**
- If the accuchek decreases more than 100mg/dl in 1 hour
- Is less than 70mg/dl x2hours

**Moving up an algorithm**
- If outside the goal blood glucose of 70-180 and does not decrease at least 60mg/dl in 1 hour
Discontinuing the Insulin Drip

- Specify time to administer the long acting insulin
- Specify time to stop the drip, usually 4-8 hours after long acting insulin is administered.
- Specify sliding scale to use ac and hs
Final Notes

- Pharmacy is a partner in this protocol and is kept informed of any algorithm changes that are made.
- Modifications to the protocol negate its safety and efficacy and are not allowed except where noted in this presentation.
- Although only infrequent calls to the MD have been necessary it is helpful that any MD taking call for you is aware that you have a patient on the DKA Protocol.
For all questions please call:

- Dr. Antunes at his office 365-0333
- Rhonda Ryan RNC CPS 7wt -917-1230
- Nancy A. Finzar RN MN Clinical Manager 7wt- 917-4114
- Any Communicator on 7wt -917-7670