EmergencyKT: New Onset Diabetes, Non-DKA

Definition: ED patient with newly discovered hyperglycemia, >200 mg %

Obtain:
- CBC/D
- EP1
- VBG
- Serum Ketone
- Hemoglobin A1c (for follow up)
- UA
- β-hCG (female at risk for pregnancy)

Asymptomatic
Without polydipsia/polyuria (P/P)
- Serum glucose < 250 mg %
- No admissable or serious concomitant illness

ED Treatment:
None

Disposition:
1. Brief diabetes education and diabetes discharge documents
2. Follow-up with PCP or urgent medicine clinic <7 days if no PCP
3. If no clinic follow up available consider referral to Adele Corbin (at Hoxworth diabetes clinic) for urgent DM follow up care. Call 584-0942 and leave up to date patient contact information

Symptomatic
Polydipsia/polyuria (P/P)
- Serum glucose < 400 mg/dL
- Anion Gap < 15
- Creatinine < 1.5
- No admissable or serious concomitant illness

ED Treatment:
1. 1-2 liters normal saline
2. 2-5 units Humolog insulin subcutaneous
3. Recheck EP1 in 1-2 hours

Disposition:
1. Glucose < 300 mg % (ideally <250)
2. Patient competent, good home setting
3. Brief diabetes education and diabetes discharge documents
4. Start metformin 500 mg. qd
5. Follow-up with PCP or urgent medicine clinic <7 days if no PCP
6. Referral to Adele Corbin (at Hoxworth diabetes clinic) for urgent DM follow up. Call 584-0942 and leave up to date patient contact information

Symptomatic
Polydipsia/polyuria (P/P)
- Serum glucose 400-600 mg/dL
- Anion Gap < 15
- Creatinine < 1.5
- No admissable or serious concomitant illness

ED Treatment:
1. 2-3 liters normal saline
2. 5-10 units Humolog insulin subcutaneous
3. Recheck EP1 in 2 hours

Disposition:
1. Glucose < 300 mg % (ideally <250)
2. Patient competent, good home setting
3. Brief diabetes education and diabetes discharge documents
4. Start metformin 500 mg. qd
5. Follow-up with PCP or urgent medicine clinic <7 days if no PCP
6. Referral to Adele Corbin (at Hoxworth diabetes clinic) for urgent DM follow up. Call 584-0942 and leave up to date patient contact information
# EmergencyKT: Use of HbA1c in the Emergency Department

## What is a Hemoglobin A1c (HbA1c)?
HbA1c represents a patient’s average glucose level over the last 1-4 months. HbA1c measures the percentage of glycosylated hemoglobin in the blood and thus reflects the average glucose level over the life of a red blood cell (120 days) and the hemoglobin it contains. Because of the constant turning over of red blood cells, more recent glucose levels (ie. the last few weeks) have a greater effect on the HbA1c value than do those from 8 or 12 weeks ago. It is estimated that half of an HbA1c value is attributable to the previous month’s glucose level, a further quarter to the month before that, and the other quarter to the two months before that. Since the HbA1c value is not influenced by daily fluctuations in blood glucose concentration, it should not be used to monitor day-to-day blood glucose concentrations and to adjust insulin treatment. Moreover, the HbA1c value may not reflect the day-to-day presence or absence of hyperglycemia and/or hypoglycemia.

- HbA1c level may be **falsely increased** in patients with: kidney failure, chronic excessive alcohol intake (Vit B12 and foliate deficiency), untreated iron deficient anemia, and hypertriglyceridemia
- HbA1c level may be **falsely decreased** in patients with: acute or chronic blood loss, sickle cell disease, hemolytic anemia/thalassemia.

## Why obtain an HbA1c in the Emergency Department?
Without primary care and proper diabetes management it is extremely difficult for many diabetics to control their glucose levels. It is this lack of glycemic control that is ultimately responsible for the host of debilitating and potentially life threatening health complications associated with poorly controlled diabetes. Diabetic patients who present to the emergency department (and who lack adequate primary care or who are in need of improved diabetes management, education and/or follow up) should have their HbA1c level obtained. The result can then be used to assess the patient’s current glycemic control and determine their urgency of needed follow up.

The implementation of this tool could significantly reduce the number of unnecessary emergency department visits by decreasing the number of diabetic patients who use the emergency department as a means of obtaining primary care and by decreasing the incidence and severity of diabetic related complications that require emergency department treatment. This also has the potential to reduce costs by decreasing the number of emergency department visits and their related work ups.

<table>
<thead>
<tr>
<th>HbA1c %</th>
<th>&lt; 5.0</th>
<th>5.4-6.4</th>
<th>6.5-7.0</th>
<th>7.1-8.0</th>
<th>8.1-9.0</th>
<th>9.1-11.9</th>
<th>&gt; 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Serum Glucose mg/dL</td>
<td>&lt; 81</td>
<td>94-127</td>
<td>130-147</td>
<td>150-180</td>
<td>184-214</td>
<td>217-310</td>
<td>&gt; 314</td>
</tr>
<tr>
<td><strong>Known Diabetic</strong></td>
<td>Increased risk for severe hypoglycemia adverse events including coma, seizures and death</td>
<td>Excellently Controlled Diabetes</td>
<td>Well Controlled Diabetes</td>
<td>Marginally Managed Diabetes</td>
<td>Take action to lower average glucose levels</td>
<td>Poorly Managed Diabetes</td>
<td>Very Poorly Managed Diabetes</td>
</tr>
<tr>
<td><strong>New Onset Hyperglycemia</strong></td>
<td>Diabetes Unlikely</td>
<td>(Pre Diabetic) Increased risk for diabetes and diabetes related complications</td>
<td>Borderline Diabetes Likely</td>
<td>Diabetes Likely</td>
<td>Diabetes Likely</td>
<td>Diabetes Likely</td>
<td>Diabetes Likely</td>
</tr>
</tbody>
</table>


Standards of Medical Care in Diabetes – 2010. *Diabetes Care.* January 2010; 33:511-561
Ensure that patient has all needed diabetic supplies including glucometers, and Rx refill for supplies if needed (free glucometers and generic Rx forms for common medications and DM supplies can be found in the radio room, see DM Committee member if none are available).

Brief diabetes education and discharge instructions specific for diabetes (found on CPQE).

Follow up with PCP

If no PCP, consider urgent medicine clinic referral
