Inpatient Diabetes Management

PrePodcast Questions

A 54-year-old male patient is admitted to your ICU for an acute overdose of Oxycontin. The patient has a past medical history significant for hypertension, diabetes mellitus type 2, chronic back pain, and depression. This patient presents with a random blood glucose of 305 so you decide to start the patient on insulin. What is the goal range for blood glucose in this patient?

a. 100-140 mg/dL
b. 110-150 mg/dL
c. 120-200 mg/dL
d. 140-180 mg/dL

Answer: **d. 140-180 mg/dL**

Rationale: **ADA standard of care guidelines recommend a critically ill patient have their blood glucose be maintained between 140-180 mg/dL**

Objective: **Identify blood glucose goals in hospitalized patients**

A 100 kg female patient is admitted to your general medicine ward with shortness of breath secondary to COPD. She has a past medical history significant for diabetes mellitus type 2, hypertension, and COPD. Her home medications are:
-Spiriva 1 puff QD
-albuterol 2 puffs PRN
-lisinopril 10 mg QD
-metformin 1000 mg BID
-Invokana (canagliflozin) 300 mg QD
-Januvia 100 mg QD
-Lantus 10 units QHS.

Upon admission the patient had a random BS of 257 mg/dL. The patient will be admitted for a course of nebulizers and steroids. Please select an appropriate regimen to treat this patient's diabetes.

a. 30 units Lantus QHS and 10 units Humalog with meals
b. Metformin 1000 mg BID, Lantus 60 units QHS
c. IV regular insulin drip @ 10 units/hr
d. 15 units Lantus QHS and 5 units Humalog with meals

Answer: **a. 30 units Lantus QHS and 10 units Humalog with meals**

Rationale: **ADA standards of care recommend that oral diabetes medications be held while the patient is admitted to the hospital due to risk of unpredictable hypoglycemia. Given the patient's weight and concomitant use of steroids it is appropriate to start the patient on a basal/bolus**

insulin regimen of 0.6 units/kg/day. Using this we get 60 units/day which is divided equally between basal and bolus insulin dosing.

Objective: **Create an initial diabetes regimen for inpatients (including appropriate insulin regimen) to meet blood glucose goals**

A 57 kg female patient with past medical history significant for diabetes mellitus type 2, hypertension, peripheral neuropathy, and hypothyroidism is admitted for pneumonia and is having frequent episodes of hyperglycemia. The patient is currently on the following insulin regimen: 9 units Lantus QHS and 3 units Humalog with meals. Upon reviewing her chart you see the following pattern of preprandial blood sugars:
-0700: 100 mg/dL;
-1230: 240 mg/dL;
-1800: 300 mg/dL;
-2200: 113 mg/dL.

A similar pattern was seen the previous day. Assuming the patient is consuming 100% of their meals, what changes to this patient's insulin regimen might you recommend?

a. Increase Lantus to 12 units QHS; No changes to Humalog
b. No changes to Lantus; Increase Humalog to 6 units with each meal
c. No changes to Lantus; Increase Humalog to 5 units with breakfast and lunch, no change with dinner
d. Increase Lantus to 14 units QHS, Increase Humalog to 5 units with each meal

Answer: **b. No changes to Lantus; Increase Humalog to 6 units with each meal**

Rationale: **This patient has a fasting blood glucose within goal range (<140 mg/dL) therefore there is no need to adjust their basal insulin at this time. The patient is having high blood sugars following breakfast and lunch and is within range at bedtime, indicating a need for more insulin with breakfast and lunch. Due to the minimal amounts of insulin used by this patient a small dosage increase is indicated.**

Objective: **Adjust an insulin regimen based on blood glucose readings**

PostPodcast Questions

A 62-year-old male is admitted to your general medicine floor with chest pain secondary to angina. The patient has a past medical history significant for hypertension, hyperlipidemia, diabetes mellitus type 2, and tobacco use. What would be an appropriate fasting goal for blood glucose in this inpatient?

a. <100 mg/dL
b. <110 mg/dL
c. <140 mg/dL
d. <180 mg/dL

Answer: **c. <140 mg/dL**

Rationale: **This patient is not critically ill, therefore American Diabetes Association guidelines recommend a fasting plasma glucose of less than 140.**

Objective: **Identify blood glucose goals in hospitalized patients**

A 46-year-old male is admitted to your general medicine floor with complaints of flank pain and dysuria. The patient weights 75 kg. This patient has a past medical history significant for diabetes mellitus type 2, hypertension, nephrolithiasis, and peripheral neuropathy. The patient's home medications are:
-metformin 1000mg BID
-glimepiride 2 mg BID
-Victoza (liraglutide) 1.8mg SubQ QD
-lisinopril 10 mg QD
-gabapentin 400 mg TID
-aspirin 81mg QD.

You notice the patient has acute kidney injury with a serum creatinine of 1.6. The patient will likely be in the hospital for a few days. What would be an appropriate regimen to treat this patient's diabetes while they are in the hospital?

a. Metformin 1000mg BID and Lantus 10 units QHS
b. IV regular insulin @ 5 units/hr
c. Glimepiride 2 mg BID, Victoza 1.8 mg SubQ QD, Humalog 5 units QAC
d. Lantus 15 units QHS and Humalog 5 units QAC

Answer: **d. Lantus 15 units QHS and Humalog 5 units QAC**

Rationale: **The patient falls into the normal weight category therefore a recommended starting dose of insulin would be 0.4 units/kg/day. Using this calculation we come up with a total daily dose of 30 units. Dividing the total daily dose in half gives us the basal and bolus components of the insulin regimen. The bolus insulin should then be divided evenly and administered with meals. For prolonged stays the ADA guidelines recommend discontinuation of oral diabetes medications. This patient has a contraindication to metformin (SCr >1.5 in males).**

Objective: **Create an initial diabetes regimen for inpatients (including appropriate insulin regimen) to meet blood glucose goals**

You notice a patient is having consistently high blood sugars at dinnertime. You decide to start the patient on a supplemental dose of insulin at dinnertime. The patient takes 5 units of Humalog with meals.

You have previously calculated the patient's insulin sensitivity factor as 20. When the nurse took this patient's blood sugar prior to dinner they found it to be elevated at 240 mg/dL. Assume a premeal goal of 140 mg/dL. How many units of insulin will the nurse give the patient (bolus + correction)?

a. 7 units Humalog
b. 10 units Humalog
c. 12 units Humalog
d. 15 units Humalog

Answer: **b. 10 units Humalog**

Rationale: **240-140 (current blood sugar – goal blood sugar) = 100. 100/20 (sensitivity factor) = 5. This means the patient will require an extra 5 units of rapid acting insulin to be given alongside their bolus insulin (5 units), giving a total of 10 units.**

Objective: **Adjust an insulin regimen based on blood glucose readings**