Diabetes Cases 2026

Case #1

1. A 52-year-old female presents to the emergency department with chest pain. She is obese (BM 32), and has a history of hypothyroidism, HTN, and dyslipidemia and takes levothyroxine, amlodipine and atorvastatin. She last went to her PCP 18 months ago and labs were normal at that time. Upon presentation, she is hypertensive to 160/95. Her labs are significant for a creatinine of 1.5, BUN 24, troponins are elevated but flat at 75, 72, and 65, respectively. CXR is normal. EKG is normal sinus rhythm with no ST-T changes. Glucose on BMP is 175. She is admitted to you as a "chest pain rule out".
    a. Would you work up the glucose level further and what would you do?
        i. Confirm diagnosis of DM with hemoglobin A1C and initiate insulin if blood sugar is > 180 mg/dL on 2 occasions within 24 hours
    b. With regards to inpatient glucose control, what are appropriate targets?
        i. Target glucose is 100-180 mg/dL in non-critically ill adults
    c. How would you manage her blood sugar during her hospitalization?
        i. Calculate basal-bolus insulin based on her medical co-morbidities and body weight

DOSING INSULIN: IT'S EASY!
SOCIETY OF HOSPITAL MEDICINE

- **All DM1 & most DM2 = scheduled basal insulin**
- Estimate total daily dose (TDD) insulin*:
- Malnourished, elderly (>65)**, CKD, ESRD, ESLD
    - 0.2-0.3 units/kg
    - 0.1 units/kg or DDP-4 inhibitor alone or DPP-4 + basal can be safe alternative in elderly pts
- Normal-weight patients, incl. Type I DM
    - 0.4 units/kg
- Overweight
    - 0.5 units/kg
- Obese, high-dose steroids, insulin resistance
    - 0.6 units/kg

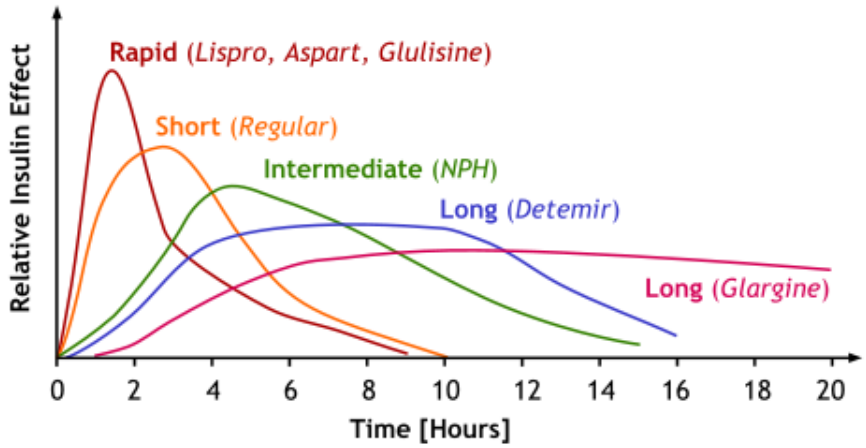
DOSING INSULIN: IT'S EASY!

- **NPO or clear liquids**
  - Basal: 50% TDD, nutritional: none, SSI if needed
- **Eating meals**
  - Basal: 50% TDD, nutritional: 50% TDD / 3 meals, SSI if needed
- **Continuous TFs**
  - Basal: continue prior, if none, use 5 units NPH/detemir q12h or 10 units glargine q24h
  - Nutritional: 1 unit/10 grams carbs in TF formula
  - Correctional: q6h regular insulin or q4h with rapid-acting insulin
- **Bolus TFs**
  - Basal: continue prior or 50% TDD; nutritional: 1 unit/1015 grams carbs prior to feeding
- **Parenteral nutrition (add to bag if requiring > 20 units/day)**
  - Regular insulin to TPN – 1 unit/10 g carbs, continue SSI

Adjust q1-2 days based on glucose trends; decrease by 20% if hypoglycemia

Case #2

2. A 75-year-old male Veteran with a past medical history of diabetes mellitus and chronic kidney disease (CKD) presents to the clinic for a diabetes follow up visit. Prior to arrival, he had fasting labs done which show blood sugar of 200 and creatinine of 2.5 from 1.8. His home insulin regimen is 15 units "70/30" Novolin BID and regular insulin sliding scale as needed for blood sugars > 180 which he usually uses at lunch and dinner. For the past week, he has been feeling shaky, diaphoretic and weak, especially after lunch and dinner, such that he's needed to eat a high carbohydrate snack. He checked his blood sugar around 3 pm yesterday and it was 55. He tells you that lately he's been taking his BID insulin doses close together because he sleeps in until 10 AM.
    a. What factor(s) contributed to the patient's hypoglycemia?
        i. Novolin 70/30 (70% NPH, 30% regular) has an onset of approximately 30-60 minutes and peaks in 2 to 10 hours. His insulin dosing has "stacked" leaving him hypoglycemic. He has AKI on CKD, altering insulin metabolism.
    b. What are pre-mixed insulins and how do they work?
        i. 70% NPH and 30% regular, dosed twice daily
        ii. Need to take regularly and eat meals consistently to avoid hypoglycemia
        iii. Cheap
    c. You want to switch him to basal-bolus insulin. The patient's weight is 75 kg. Calculate his dose keeping in mind his acute kidney injury.
        i. 75 kg x 0.2 units/kg = 15 units TDD; 15 / 2 = 7.5 basal and 7.5 mealtime. 7.5 / 3 = 2.5 units short-acting per meal. Use sliding scale with lowest correction factor.



Case #3

3. A 65-year-old morbidly obese female with type II diabetes mellitus, COPD, systolic heart failure and CKD stage 3a presents with the Emergency Department with an acute COPD exacerbation. She takes U-500 insulin as an outpatient but is not always compliant. Her last A1C was 10.5%. Other medications are metoprolol, aspirin, spironolactone, Lasix, sacubitril-valsartan, and tiotropium. Her blood glucose on presentation is 325 mg/dl. She received 125 mg IV Solumedrol in the Emergency Department and is sent home with prednisone 40 mg daily. Her other labs are within normal limits except for her blood glucose and creatinine at baseline of 1.6. When she gets home, she calls the clinic because blood sugars have been consistently > 500.
    a. What is U-500 insulin?
        i. 500 units of insulin per milliliter (mL), making it five times more concentrated than standard U-100 insulin (100 units/mL). It is primarily used for individuals with severe insulin resistance who require more than 200 units of insulin per day.
        ii. Use of concentrated insulins such as glargine U-300, degludec U-200, and U-500 regular insulin in the inpatient and perioperative settings are limited and have shown variable results. Hypoglycemia and dosing errors are a particular concern for individuals using U-500 insulin whose inpatient insulin needs are reduced up to 75% compared with home dosing regardless of preadmission glycemia.
    b. Calculate her basal-bolus insulin dosing regimen based on a weight of 112 kg keeping in mind her medical co-morbidities.
        i. 112 kg x 0.6 units/kg = 67.2 units TDD; 67.2 / 2 = 33.6 units basal and 33.6 units mealtime; 33.6 / 3 = 11.2 units for meals
    c. Two days into the patient's hospital admission, her blood glucose levels have been consistently > 200 mg/dL. Re-calculate her insulin dosing.
        i. Increase dosing by 10-20%. 74 units is increase by 10% of TDD. 74 / 2 = 37 units basal and 37 units mealtime; 37 / 3 = 12

d. She is improved and ready for discharge home. What additional medications should be considered?
    i. SGLT-2 inhibitor
    ii. Statin
    iii. GLP-1/GIP
    iv. Ensuring she has DM provider identified, all her insulin supplies, sick day management plans, DM education, nutrition consult.
    v. Initiate oral anti-diabetics 1-2 days prior to discharge.

Case #4

4. A 47-year-old diabetic male presents with fever, nausea, vomiting and right leg pain. He is found to have right lower extremity cellulitis and is admitted to the hospital. Admission labs are as follows: blood glucose 200, sodium 134, bicarbonate 15, chloride 95, K 3.5, albumin 3.5, UA shows ketones. He has type 2 DM and is on 20 units of Lantus QHS and Jardiance was recently started about 1 month ago.
    a. What is this patient's anion gap?
        i. AG = 25 when corrected for albumin.
    b. What additional testing might you want to order?
        i. ABG to check pH. Consider A1C.
    c. What is the most likely diagnosis?
        i. Euglycemic DK
    d. How do you treat the above condition?
        i. Hold Jardiance. Fluids + dextrose, electrolyte replacement, insulin gtt until gap closes.
5. Upon discharge, you are assuming care. He was diagnosed with type 2 diabetes mellitus 5 years ago and his A1C has been increasing over the last year. He is on 20 units of Lantus QHS and Jardiance. His last A1C was 9.5%. He hands you his glucometer, and all his blood glucose levels have been between 100 and 150 mg/dl. He checks his blood sugars fasting and before meals. BMI = 22.
    a. What hemoglobin A1C level should correlate with glucose level between 100 and 150?
        i. Based on reported blood glucose levels, the patient's A1C should be between 6 and 7 (corresponds to blood sugar of 126-154 mg/dL).
        ii. One explanation could be post-prandial hyperglycemic excursions.
    b. What else could explain the discrepancy between his A1C and blood sugar levels?

ALTERATIONS IN HEMOGLOBIN A1C

- Hemoglobin variants (hemoglobinopathies)
- Increased RBC turnover
  - Pregnancy
  - G6PD, sickle cell
  - Recent blood loss or transfusion
  - Hemodialysis and EPO therapy
- Decreased RBC life span

c. What tool could you recommend to monitor his blood sugars more closely?
    i. Continuous glucose monitor