Assessment Test
Managing Hyperglycemia in Inpatients: Ensuring Success

This activity is located at http://www.ashadvantagemedia.com/hyperglycemia/ondemand.php

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1. To achieve lower rates of infection and shorter intensive care unit (ICU) stays in trauma patients, guidelines of the American College of Critical Care Medicine (ACCM) suggests that blood glucose levels of what level should trigger initiation of insulin therapy to achieve what blood glucose target?
   a. 150 mg/dL or greater with goal of less than 150 mg/dL, but absolutely less than 180 mg/dL.
   b. 150 mg/dL or greater with goal of less than 140 mg/dL, but absolutely less than 180 mg/dL.
   c. 180 mg/dL or greater with goal of less than 140 mg/dL, but absolutely less than 200 mg/dL.
   d. 140 mg/dL or greater with goal of less than 140 mg/dL, but absolutely less than 150 mg/dL.

2. Why do ACCM guidelines for the management of hyperglycemia in critically ill patients suggest avoiding even brief episodes of severe hypoglycemia, defined as blood glucose of 40 mg/dL or less?
   a. Associated with subsequent tolerance to effects of insulin.
   b. Associated with subsequent sensitivity to effects of insulin.
   c. Associated with greater risk of mortality and increased risk with prolonged or frequent episodes.
   d. Associated with greater risk of mortality but with no change in risk with prolonged or frequent episodes.

3. To avoid potential harm, guidelines from the American College of Physicians recommends avoiding targets less than ________________ in patients with or without diabetes in surgical or medical intensive care units because harms are likely to increase at lower blood glucose targets.
   a. 80 mg/dL.
   b. 110 mg/dL.
   c. 120 mg/dL.
   d. 140 mg/dL.
4. Which of the following statements best describes how the A1C level (either a new level or from the previous 2 or 3 months) can be used for discharge planning of a hospitalized patient treated with insulin for new hyperglycemia?
   a. Indicates whether blood glucose is currently stable.
   b. Used in calculation to determine the amount of insulin needed as outpatient.
   c. Helps determine patient readiness for discharge.
   d. Helps make diagnosis of diabetes and guide therapy recommendations.

5. All of the following would be considered a short-acting insulin that would be an appropriate choice to use as nutritional insulin EXCEPT
   a. Insulin aspart.
   b. Insulin glulisine.
   c. Insulin lispro.
   d. Insulin detemir.

6. A 60-year-old, 55-kg woman in good health is admitted to the hospital for abdominal surgery. After surgery, her blood glucose on two successive readings was found to be over 200 mg/dL, and so basal-bolus with correction factor insulin was ordered. Assuming she continues to eat meals, which of the following is the best estimate of this patient’s total daily dose of insulin?
   a. 17 units.
   b. 22 units.
   c. 28 units.
   d. 33 units.

7. CG is a 58-year-old 100-kg man who was diagnosed with type 2 diabetes mellitus 8 years ago, and he is admitted to the hospital with a diabetes-related foot infection. As an outpatient, he has been taking glipizide 10 mg orally daily, metformin 1000 mg orally twice daily, and NPH insulin 20 units subcutaneously at bedtime. His A1C is 10%, and blood glucose on admission was 240 mg/dL. He is eating regular meals. Upon admission, which of the following would be the best approach for managing CG’s blood glucose during the hospitalization?
   a. Continue home regimen of metformin, glipizide, and NPH insulin.
   b. Continue metformin and glipizide at half of outpatient dose.
   c. Withhold oral medications and start insulin glargine 30 units daily, insulin lispro 10 units before every meal, and moderate corrective insulin regimen.
   d. Withhold oral medications and start correction insulin only.

8. On hospital day 3, CG had an emergency with subsequent hypotension, and a rapid response was called. He was transferred to the intensive care unit, started on norepinephrine drip at 10 mcg/min, and intubated. His blood glucose level was 201 mg/dL soon after arrival in the ICU and 248 mg/dL 6 hours later. What insulin regimen would you use now?
   a. Continue current glycemic regimen.
   b. Withhold all subcutaneous insulin and start IV insulin infusion.
   c. Restart home NPH of 20 units subcutaneously at bedtime.
   d. Administer 2 units regular insulin subcutaneously every hour until blood glucose is less than 150 mg/dL.
9. CG is now extubated and the norepinephrine is discontinued; the team asked the pharmacist for recommendations to transition off insulin infusion so CG can be moved from the ICU to the medical unit. Does CG need scheduled subcutaneous insulin?
   a. No because CG will be discharged soon to home regimen.
   b. Yes because CG has type 1 diabetes.
   c. Yes because CG has type 2 diabetes mellitus and A1C greater than 6%.
   d. Yes because CG has type 2 diabetes mellitus and insulin rate is greater than 5 units/hour.

10. Which of the following statements best describes Dr. Box’s recommendation about the need for institutions to have protocols related to different aspects of hyperglycemia management (e.g., initiating a basal-bolus insulin regimen, transitioning from intravenous insulin infusion to basal-bolus regimen, preventing and managing hypoglycemia)?
   a. All hospitals regardless of size should have these protocols in place.
   b. Only large, academic hospitals with specialized critical care units need to have these protocols.
   c. Only smaller institutions need to have these protocols in place because they often do not have a specialized team available to answer patient-specific questions.
   d. Because the protocols are very institution specific, reviewing protocols used by other institutions is not a valuable first step in developing protocols.

11. Which of the following statements best describes the relationship found by Krinsley in 2003 between blood glucose values and mortality in patients during their stay in medical and surgical intensive care units?
   a. Mortality increased as blood glucose values decreased.
   b. Mortality decreased as blood glucose values increased.
   c. Mortality increased as blood glucose values increased.
   d. There was no relationship between mortality and blood glucose values.

12. Which of the following statements best describes Dr. Szumita’s assessment of the fixed protocol for managing hyperglycemia published by Furnary et al.?
   a. Useful because it guides therapy based on current and previous levels of blood glucose.
   b. Not useful because it guides therapy based on a single blood glucose level.
   c. Useful because it recommends different blood glucose goal for patients with previously diagnosed diabetes.
   d. Not useful because it does recommend different blood glucose goal for patients with previously diagnosed diabetes.

13. When a multiplication factor protocol is used to determine the rate of insulin infusions, the multiplication factor
   a. Adjusts insulin by a fixed number of units based on the previous bedside blood glucose value.
   b. Changes based on the total daily dose of insulin for the past 24 hours.
   c. Changes based on the rate of insulin infusion for the past 24 hours.
   d. Changes based on the rate of change in bedside blood glucose value over time.
14. In regard to target blood glucose levels in the critical care setting, recent studies by Krinsley et al. (2013) and Lanspa et al. (2013) suggest
   a. Patients without diabetes may benefit from a lower goal compared with patients with diabetes.
   b. Patients with diabetes may benefit from a lower goal compared with patients without diabetes.
   c. Patients with and without diabetes should have the same goal.

15. PY is a 78-year-old woman hospitalized for worsening dyspnea and cough. She has had chronic obstructive pulmonary disease since age 55 years, and she has no previous history of diabetes. The physician ordered methylprednisolone 40 mg IV every 6 hr, and on day 2 her blood glucose was 210 mg/dL. Which of the following best explains the cause of PY’s hyperglycemia?
   a. Decreased physical activity from COPD creates imbalance in insulin production and energy expenditure.
   b. Glucocorticoid therapy impairs insulin production in the pancreas and impairs glucose uptake in peripheral tissues.
   c. Glucocorticoid therapy increases glucose uptake in peripheral tissues and rebound increases in postprandial glucose.
   d. Glucocorticoid therapy increases hepatic glucose production and impairs glucose uptake in peripheral tissues.

16. When a hospitalized patient is prescribed glucocorticoid therapy, blood glucose levels should be monitored
   a. During initiation and tapering of therapy.
   b. For at least 24 hours from initiating therapy.
   c. Every other day starting 48 hours after initiating therapy.
   d. Only for patients receiving insulin infusions.

17. TJ, a 60-year-old man with no prior history of diabetes, was admitted to the hospital with hemorrhagic pancreatitis. His blood glucose on admission was 200 mg/dL with A1C of 7.5%, indicating previously unrecognized diabetes mellitus. Total parenteral nutrition was started because TJ is not eating, and it is expected that he will not eat for one week. Which of the following best describes the approach for managing TJ’s blood glucose during his hospitalization?
   a. Insulin therapy not needed because TJ is not eating.
   b. Long-acting insulin administered as part of the parenteral nutrient formulation.
   c. Regular insulin administered as part of the parenteral nutrient formulation plus subcutaneous correction-dose insulin as needed.
   d. Rapid- or short-acting insulin administered every 4-6 hours for duration of parenteral nutrition therapy.