Critical Care & Food/Med Interaction
Group Case Study
30 Points
FND 430-Lab

**Critical Care:**

Archie was recently involved in a car accident and is in the ICU under medically induced coma. Their anthropometrics include weight 120lb, height 5'4". They currently present with the following symptoms: body temp of 101 degrees Fahrenheit, heart rate of 127 bpm, blood glucose of 189 mg/dl. Due to stressors on their kidneys, Archie is receiving CRRT to maintain function while they are still under intubation. They are presenting with multiple wounds to their lower extremities and abdomen and will be requiring orthopedic surgery once stabilized.

1. What would be an acceptable range of protein needs for Archie based on the above information?
    a. Range of 2.0 – 2.5 g/kg ABW, reason selected:
        i. They have a BMI of 20.6 which is considered normal
        ii. They are receiving CCRT
2. Based on the information above, would you consider Archie to be in the ebb or flow phase of response to injury? Explain your answer.
    a. Archie is in the FLOW phase. In this phase, there is an increase of metabolism and associated temperature (101 degrees F), heart rate (127 bpm) glucose (189 mg/dl)
3. Based on your answer to question 1, explain the role of ketones as an energy source for a patient in this state.
    a. At this stage, body metabolism is altered and in a catabolic state. The factors impacting energy during a flow phase are increased glucose production, free fatty acid release, circulating levels of insulin, catecholamines, glucagon and cortisol. Energy production is dependent upon protein (amino acids converted to glucose), and ketone bodies (generated from free fatty acids), as described in Table 38-1 in Krause text. Due to the fact that they are in a state of metabolic stress (vs starvation) the ketones that are generated are used as fuel for the brain. During metabolic stress, gluconeogenesis is increased, but so is insulin resistance so the ketones can adapt to provide fuel.
4. Based on figure 38-6 in your Krause text, describe the criteria this patient would need to meet prior to starting enteral nutrition to meet their needs.
    a. NPO for more than 7 days OR premorbid BMI of less than 18.5 OR > 10% weight loss)
    b. Hemodynamically stable without the following:
        i. Obstruction/active pseudo-obstruction
        ii. High output fistula
        iii. Excessive vomiting/diarrhea
        iv. Bowel perforation or ischemia (functioning GI tract)

**Food & Medication Interaction:**

Log-in to the Nutrition Care Manual https://www.nutritioncaremanual.org and navigate to the following page:

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-On the home page under the *nutrition care* drop down, select *conditions*
-On the *conditions* page, select *Drug-Nutrient Interactions* on the left-hand menu

Reference the information found on this section of the Nutrition Care Manual and Ch. 8 of your Krause text to answer the following questions:

1. Abigail has an average intake of 320 mcg of Vitamin K per day prior to starting Warfarin. Her Physician determine the quantity of Warfarin she will prescribe based on Abigail's description of her usual Vitamin K intake. At a follow up visit, Abigail reports the following intakes in her 24-hour recall:
   ½ cup cooked oatmeal, 1 cup orange juice, 6 oz. yogurt
   4 oz. smoked salmon, 2 cups raw spinach, 2 oz. sesame dressing
   4 oz. grilled chicken, 1 cup wild rice, 1 cup roasted broccoli, 1 dinner roll
   a. Based on this recall, would there be any concerns to report to Abigail's physician?
      i. Yes, there are concerns about diet intake and drug interaction. Warfarin in a blood thinner (anticoagulant) used to treat the formation of blood clots. The effectiveness of Warfarin is impacted by dramatic changes in vitamin K intake from food. Spinach and broccoli are vegetables that should maintain even amounts of intake. For example one serving of broccoli contains 110 mcg, and one serving of spinach contains 145 mcg (times two) [Krause Appendix 44]. Her intake from those two items is approximately 400 mcg which exceeds the 320 mcg her dosage is based on.
      ii. Another interaction with Warfarin is with the cytochrome P450 flavonoid inhibition by cranberry juice. Although the FDA removed the juice warning from the label, orange juice does contain the cytochrome P450 flavonoid, and should likely be avoided.
   b. What recommendations would you provide to the patient to address these concerns?
      i. She should either reduce her intake of broccoli and spinach to reduce intake to 320 mcg daily OR talk to her doctor about increasing the Warfarin dose.
      ii. She should limit juice intake – swap out orange juice for apple juice or water.
      iii. She should avoid large doses of vitamin E – particularly in the form of supplements as that will interfere with vitamin K absorption.
2. Richard recently started 2 antibiotics for an infection (he's currently on Amoxil and Flagyl.) Primarily using your Krause text as a reference, answer the following:
   a. What are 2 potential side-effects of these medications that could impact Richard's nutrition status?
      i. Diarrhea (Amoxil) – resulting in dehydration, and nutrient loss from lack of absorption from food

   ii. Suppressed appetite leading to Anorexia (Flagyl). This is a particular risk for patients who are already underweight or at an age of rapid growth (children/adolescents).

b. Provide 2-3 examples of specific assessments you could conduct to evaluate the implications of these symptoms.
   i. Perform an ASPEN malnutrition screen to evaluate risk of anorexia due to the intake of Flagyl
   ii. Calculate BMI as a simple screen for risks associated with Flagyl
   iii. Physical exam for dehydration – skin pinch test