## Major Case Study: Critical Illness & Nutrition Support
### (11 questions; 60 points total)

### PURPOSE
This assignment will be a continuation of your critically thinking through a patient case study utilizing the Electronic Health Record (EHR).

Knowledge – Required Curriculum Components and Core Knowledge toward the R.D.N.:
- KRDN 1.1: Demonstrate how to locate, interpret, evaluate, and use professional literature to make ethical, evidence-based practice decisions.
- KRDN 1.2: Use current information technologies to locate and apply evidence-based guidelines and protocols.
- KRDN 1.3: Apply critical thinking skills.
- KRDN 2.1: Demonstrate effective and professional written communication and documentation.
- KRDN 3.1: Use the Nutrition Care Process to make decisions, identify nutrition-related problems and determine and evaluate nutrition interventions.

### Skills:
- Demonstrate ability to assess nutritional needs in dynamic situations of critical illness
- Demonstrate critical thinking skills and ability to apply clinical assessment information via MNT recommendations for appropriate specialized feeding strategies
- Communicate MNT recommendations through a comprehensive, but concise ADIME format chart note

### INSTRUCTIONS
1. Review the pt's medical record on EHRgo: https://web21.ehrgo.com/rd/?courseActivityId=33138 **Note that EHRgo includes the patient's hospitalization details up to Day 2 only**. **All the information that you need for Days 10 and 21 is included in the text of this assignment.**
2. Type your name and answers.
3. Submit your work online in pdf format. You should submit three separate pdf files on Canvas. File A should contain the answers for Question 1-6. File B should contain the answers for Question 7-9 and 11. The third file should be your ADIME note from EHR Go.
4. Be concise and cite sources not listed in point 5 below.
5. First sources should be slides & lecture from N116BL & B, the NTP textbook, the MNT Pocket Guide, and FMI text.
6. Please make sure that you add the appropriate IDNT diagnostic codes (also available on Canvas under the Course resources and or the IDNT book under Reading List).

**Case Study**

You are the RDN in the burn unit of your hospital. You have been consulted for a nutrition assessment of Mr. B, and you will be responsible for follow-up assessments, planning, and monitoring throughout his hospitalization.

## Part 1 - Initial Assessment [Day 2]

Using the EHRgo information, assess the patient's nutritional needs at the time of the initial consult, which is on day 2 of admission.

1. Which of the following statements best describes your nutrition screening of Mr. B's risk level? Choose one: (2 pts)

_____ Minimal risk (no weight loss prior to admission); no specialized nutrition therapy over the first week of hospitalization is required.

_____ Moderate risk (no weight loss prior to admission); limited alertness duration likely > 72 hours; trophic (trickle) feeds at 10-20 ml/hr recommended to be started within 48 hours of admission and continued through first week of hospitalization.

__X__ High risk (no weight loss prior to admission) with high injury severity; enteral feeds recommended to be started within 48 hours of admission; enteral nutrition support recommended to provide >80% of goal energy & protein needs.

_____ High risk (no weight loss prior to admission) with high injury severity; trophic feeds recommended to be started within 48 hours of admission; parenteral nutrition support recommended to provide >80% of goal energy & protein needs.

2. Calculate Mr. B's estimated energy needs on **Day 2** of hospitalization, using the following methods. Show your work. Do not round the numbers.

a. Quick shortcut per the 2016 ASPEN Critical Care Guidelines [25-30 kcal/kg BW] (1 pt)
**25 x 75 kg = 1875 kcal**
**30 x 75 kg = 2250 kcal**
**Avg: 2062.5 kcal**

b. TEE using Mifflin St-Jeor formula with appropriate AF and IF (1 pt)
10 (75) + 6.25 (177.8 cm) – 5 (32) + 5 = 1706.25 kcal
x 1.1 AF x 1.68 IF
= 3,153.15 kcal

c. TEE using the Curreri formula (1 pt)

25 x 75 kg + 40 x 30 = 3,075 kcal

d. Describe how these three estimates are either different or similar, and state what you would use as your actual energy recommendation for this patient. Provide justification for why you selected this energy recommendation. (3 pts)

The Curreri formula set up puts the pt at higher energy needs due to their burn damage whereas the Mifflin St Jeor calculates it in the injury factor. The ASPEN CCG is too low for this burn pt. The Mifflin St Jeor is the highest and would be my first choice for this pt to encapsulate their energy needs.

3. Calculate Mr. B's estimated protein needs on **day 2** of hospitalization. Show your work and provide a goal range. (2 pts)

1.5 g/kg/d x 75 kg = 112.5 g pro
2.0 g/kg/d x 75 kg = 150 g pro
 = 132 g pro AVG
113 -150 g pro

4. Based on the patient's needs, consider the enteral formula to recommend
Peptamen Intense/Promote/Peptamen AF when using the comparison of the lecture material and the formulary

a. Describe <u>two desirable features or characteristics</u> of the type of formula you would select and recommend. (refer to the UCD TF lecture) (2 pt)
Calorically dense (kcals), high in protein for skin rebuilding (wound healing) for burn victims.

b. Give <u>one example</u> of an appropriate enteral formula meeting these characteristics, using the UCDMC formulary provided on the course web site. (2pt)
Peptamen Intense by Nestle is referenced as high protein to promote wound healing with appropriate osmolality. I would seek out something high in protein, calories, and avoid low electrolyte formulas (because of fluid loss).

5. Mr. B is on IV Famotidine (Pepcid). What type of medication is this (i.e., what is its mechanism of action) & why is it being used for this patient? Why do you think IV Famotidine was used instead of the alternative Cimetodine liquid, which can be added to the feeding tube? (Use the FMI text for this question) (2 pts)

Medication: helps aid in stomach issues such as ulcers, high acid content, GERD (heartburn) by being a histamine-2 blocker to decrease gastric acid secretion by inhibiting parietal cells in stomach.
https://pubchem.ncbi.nlm.nih.gov/compound/famotidine
https://www.drugs.com/famotidine.html


Reason for use of IV Famotidine instead of Cimetodine: Cimetodine has food and drug interaction w/ caffeine since it can precipitate in NG tube that can cause clogging. Also it has N-nitrosodimethylamine so it is banned by FDA for carcinogenic properties.
https://www.fda.gov/news-events/press-announcements/fda-requests-removal-all-ranitidine-products-zantac-market

6. List and explain 3 ways you could determine the adequacy of your recommendations for energy and protein intake for this burn patient. (In other words, what will you monitor to decide if your recommendations are adequate, and why?) (3 points)
Nitrogen balance can be monitored to understand protein need and nitrogen excretion rates.
Wt and fluid loss are easy markers for malnutrition status to follow as a large picture situation for wound healing (TBSA%)
Also inflammation response can be reflected by CRP values
**Part 2 - Ongoing Assessments [Day 10]**

It is now day 10 post-injury and you have the following additional information available:
- Some wounds are still open (new estimate: 15% TBSAB). More surgery for skin grafting is scheduled in the next week.
- Diet order during the past week has been changed by MD to: Jevity 1.2 @ 60 ml/hr x 24hrs, plus PO intake as tolerated.
- You have conducted kcal counts for the past 3 days. They show that pt is taking 100 kcals/day by oral intake, in addition to TF. Nursing I/O's indicate that the full TF volume is being delivered each day.
- The patient tells you it is difficult for him to eat by mouth due to pain, and that he doesn't have much of an appetite. He refuses to try eating for now.
- Current BW: 70 kg, no significant edema
- Current labs: prealbumin 8 mg/dL, UUN 23 g/24 hr

7. Re-assess Mr. B's estimated energy, protein, and fluid needs using the current information available on Day 10. Do not round numbers

a. Energy:

   10 (70) + 6.25 (177.8 cm) – 5 (32) + 5 = 1656.25 kcal
   x 1.1 AF x 1.0 IF
        x 1.5 IF
   = 1821.88 – 2732.8 kcal = 2194.53 kcal AVG
   = 1822-2733 kcal/d based on 70 kg CBW Mifflin*1.1AF*1.0-1.5IF

b. Protein:

1.5 g/kg/d x 70 kg = 105 g pro
2.0 g/kg/d x 70 kg = 140 g pro
   = 122.5 g pro AVG
=105-140g pro/d
c. Fluid:
   1822-2733 kcal/d x 1mL = 1822-2733mL/d
 2194.53 ml/kcal = 2194.53 mL AVG

8. Calculate the energy, protein, and fluid provided by the current TF regimen (Jevity).  Show your work
    a.  Energy: 1.2 kcal/mL x 60 mL/hr = 72 kcal/hr x 24 hr = 1728 kcal/d

    b.  Protein: 55.5 gm pro/L x 1.44L = 79.92 pro g/d

    c.  Fluid: 80.7% x 1.44 L x 1000mL = 1252.8 mL

9. You calculate Mr. B's nitrogen balance at day 10, using the formula and values given below.

   N balance = g protein – (UUN + 4) = 92 g pro – (23 g + 4) = - 12.3 g N/d
                    6.25                    6.25

79.92/6.25 –(23g +4) = -14.2 g N/d

What do the results of the nitrogen balance study above mean? Is the current TF order adequate to meet estimated protein needs? (2 points)

The protein output is greater than input. Malnutrition is noted as pt is wasting away by breaking down body's own amino acids/proteins. Value should zero. Not adequate TF formula order.

10. Write an ADIME note for your day 10 follow-up assessment of Mr. B.  (21 points)

*Hints: Follow the 2020 ADIME note guide and include all the relevant parameters. Be sure to evaluate his current anthropometrics (and any trends seen), current kcal/pro needs, adequacy of the current diet order (including both the TF and PO intake), and current labs. What do the anthropometric and biochemical data reveal? Is the current diet order adequate and realistic for the patient? Write one PES statement that reflects your assessment and include it in your note. In the Plan section, make very specific nutrition support and monitoring recommendations for this patient at this point in time.*

# Progress Report Overview

| | |
|---|---|
| **Student:** | **Bailey Morrison** |
| **Activity:** | Mark Bard |
| **Start Time:** | 02/18/2021 20:37:04 |
| **End Time:** | 02/21/2021 14:58:37 |
| **Total Time:** | 19:16:25 |

## Actions

Note at 02/21/2021 14:58:35

## Part 3 - Ongoing Assessment [Day 21]

11. It is 3 weeks since admission and Mr. B is now in a transitional care unit. Mr. B's wounds are closed and healing well. He is finally interested in trying to eat more foods orally and his appetite is returning. The goal is to transition the patient from TF support to oral feeding. How could his current continuous TF regimen (the one recommended in your ADIME note) be modified to provide a total of approximately 1000 kcal/day and not interfere with his intake at meal times? Make specific recommendations for an appropriate transitional TF plan/order and how to monitor. (6 points total)

To ensure adequate transition from TF to PO, TF can decrease from 24 hr frequency to partial TF ADAT for continuation to PO exclusive. The TF can be on a cyclic form such as every 12 hours to encourage appetite and foods PO. The continued TF can be done while pt is sleeping to encourage movement, PO eating, and freedom during the hour while the pt is awake. In the future when foods are chosen for PO, they should be soft texturally to encourage an easy transition from TF.

EN: Peptamen Intense 1.0 goal rate 83.33mL/hr x 12hr providing 1000mL, 1000kcal/d, 92 g pro, 840 mL free water formula. Start with 30-40mL/hr advancing by 15-20mL/hr x 4 ADAT until goal amount achieved. 55mL water flushes x 4 hrs for an additional 160mL fluid for total fluid amount of 1000mL.

Peptamen Intense:
1 kcal/mL, 92 g pro/L, 840 mL water/L per the formulary
(1000 kcal/1 kcal/mL) = 1000 mL/d
  (1000 mL/12 hr) = 83.33 mL/hr x 12 hrs
   83.33 mL/hr x 12 hr = 999.96 mL/d
    999.96 mL x 1 kcal/mL= 999.96 kcal/d
     (999.96 mL x 92 g pro)/ 1000 mL= 91.996 = 92 g pro
     999.96 mL x 0.84 = 839.96 = 840 mL free water
      999.96 mL – 840 mL = 159.96 = 160 mL flush fluid
      160 mL/3 flushes = 53 = 55 mL