NUT 116BL Due: February 24th, 2023 @ 7:59 pm **Name: _____KaFai Li_____**

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)

165 lb x (1 kg / 2.2 lb) = 75 kg
75 kg x (25-30 kcal/kg BW) = 1875 - 2250 kcal/BW

b. TEE using Mifflin St-Jeor formula with appropriate AF and IF (1 pt)
70 inch x 2.54 cm = 177.8 cm
Energy using MSJ: [(10 x 75kg) + (6.25 x 177.8cm) - (5 x 32yr) + 5] x 1.1 x 1.5-1.85
= (750 + 1111.25 - 160 + 5) x 1.1 x 1.5-1.85
= 1706.25 x 1.1 x 1.5- 1.85
= 1876.875 x 1.5-1.85
= 2815- 3472 kcal/d

c. TEE using the Curreri formula (1 pt)
(25 x 75 kg + 40 x 30%)
= 1875 + 1200
= 3075 kcal/d

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 similarity between ASPEN guideline, Mifflin St Jeor equation, and Curreri equation is all of them calculate the estimation of energy (total kcal) for patients. The difference between ASPEN guideline, Mifflin, and Curreri equation are ASPEN is based on the BMI to estimate the total energy requirements for patients. On the other hand, the Mifflin St Jeor equation is based on heigh, weight, age, injury factor, and activity factor to measure the total energy requirement. Conversely, the Curreri equation is based on the body weight of patients and % body surface area (%BSA) burned to determine the total energy requirement.

In comparison to all above equations, I would use the Curreri equation as my actual energy recommendation for Mr. Michael Bard because Mr. Michael Bard has a burn injury. Even though the Mifflin St Jeor also provide the injury factor range of %BSA (burns), it only provides the range which is not the most accurate. However, the Curreri equation is based on the exact % BSA with burns which is the most accurate measurement for patients who have burn injury. Conversely, ASPEN guidelines also is not the best one because it only uses MBI to calculate the total energy requirement which is not applicable in this case which the patient has burn injury.

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

(1.5-2.0 g/kg) x 75 kg
= 112.5 – 150 g
~ 113 -150 g pro/d

4. Based on the patient's needs, consider the enteral formula to recommend .
a. Describe two desirable features or characteristics of the type of formula you would select and recommend. (refer to the UCD TF lecture) (2 pt)

- The type of enteral formula I would select are high protein and no fiber.

b. Give one example of an appropriate enteral formula meeting these characteristics, using the UCDMC formulary provided on the course web site. (2pt)

- Promote because it is whole protein, fiber-free, and high calorie. Mr. Michael Bard has a server burn injury which need high protein requirements to maintain basal metabolic rate. In addition, these enteral formulas have fiber-free. Fiber can absorb digestive enzymes which reduce nutrient absorption.

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 Cimetidine liquid, which can be added to the feeding tube? (Use the FMI text for this question) (2 pts)

Action:

- Competitively inhibits histamine at histamine H_2-receptor site, thus decreasing gastric secretion while pepsin remains at a stable level.

- The IV Famotidine provide prevention the GI track damage because the burn injury can also cause stress ulcer. It ensures that the integrity of GI track is well functioning.

Reason for use of IV Famotidine instead of Cimetidine:

- It is because IV famotidine would not generate precipitation in the tube. However, the Cimetidine could generate precipitation in the tube which causes blockage.

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)

- Weight: Under-nutrients absorption/hypermetabolic rate/hypercatabolic rate can cause weight loss, especial this patient has severe burn injury. If there is adequate energy intake, weight is supposed to be stable.

- Nitrogen: High protein turnover, means that lean body mass will be decreased due to hypercatabolic rate which breakdown protein to amino acids for healing.

- Input and output such as tube feeding and bowel movement. Monitor tube feeding ensure that there is not any blockage to stuck in the feeding tube. Monitor bowel movement ensure that the patient won't have constipation and exertion such as urination.

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 @ 55 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: (2 pt)

(25 x 70 kg + 40 x 15%)
= 1750 + 600
=2350 kcal/d

b. Protein: (2 pt)

(1.5-2.0 g/kg) x 70 kg
= 105 - 140 g pro/d

c. Fluid: (2 pt)

70 x 30-35 mL/kg
= 2100-2450 mL/day

8. Calculate the energy, protein, and fluid provided by the current TF regimen. Show your work

a. Energy: (2 pt)

55mL/hr x 24hours/day = 1320 mL formula /day
1320 mL formula/day x 1.2 kcal/mL formula = 1584 kcal/day

b. Protein: (2 pt)

1.320L formula/day x 55.5 gm/L formula = 73.26 ~ 73 gm/day protein

c. Fluid: (2 pt)

1.320 L formula /day x 80.7% fluid/L formula = 1.065 ~1065 mL fluid/day

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

$$\text{N balance} = \frac{\text{g protein}}{6.25} - (\text{UUN} + 4) = \frac{92 \text{ g pro}}{6.25} - (23 \text{ g} + 4) = -12.3 \text{ g N/d}$$

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

It is negative nitrogen balance. It demonstrates that there is more nitrogen excretion than nitrogen ingestion. The current TF order seem cannot provide enough estimated protein requirement for Mr. Michael Bard because the current TF order only have 73 gm/day protein which is less than the daily protein intake 105-140 gm pro.

10. Write an ADIME note for your day 10 follow-up assessment of Mr. B. (21 points)
Hints: Follow the 2021 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:	**KaFai Li**
Activity:	Michael Bard
Start Time:	02/15/2023 16:19:38
End Time:	02/24/2023 16:44:40
Total Time:	17:02:43

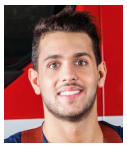
Actions

Note at 02/24/2023 16:44:39

Michael Bard Documentation

Student: KaFai Li
Activity Start: 02/15/2023 16:19:38
Activity Completion: 02/24/2023 16:44:40
Activity Completion: 17:02:43

Patient Data



Patient: Michael Bard
Age/Sex: 32 yo M
Location: General Hospital

DOB: 10/12/1990
MR#: 62591
Admit Date: 02/14/2023

Notes

Note at 02/22/2023 08:07:29

ADIME Note

Basic Information

Date:
02/22/2023 08:07:29

Author:
KaFai Li

Location:
General Hospital

Patient name:
Michael Bard

Date:
02/22/2023

Assessment

Diagnosis:

Admitted for severe burn injury 30% TBSAB in day 2 that change to 15% TBSAB in day 10. MD ordered consult for nutrition education.

Age:
32

Gender:

Male

Race:

White

Client History

Medical history:

N/A

Medical diagnoses:

Burn injury x 10 days ago-progression of burn from 30% TBSAB to 15% TBSAB

Family history:

Father and mother are both living. None of their health status is provided.

Social history:

Industrial chemist and living alone.

Current medications:

N/A

Nutrition-related medications:

Famotidine 0.4 MG/ML 20mg
Maalox Max 4 mL
Lactated Ringer's 1000mL

Current supplements:

N/A

Anthropometric history

Height:

178 cm (70")

Weight at admission:

75.0 kg

Current Weight:

70.0 kg (154 lbs)

BMI:

22.1 kg/m^2 (normal)

% Weight change:

-7%

IBW:

75.5 kg

% IBW:

93%

UBW:

75.0 kg

% UBW:

93%

Other:

N/A

Weight assessment:

Pt Hx shows loss weight 5kg (7%) change from day 2 to day 10, severity of wt loss d/t severely burn injury.

Biochemical history, medical tests, labs, and procedures:

1: Prealbumin 8 mg/dL (L)
2: UUN 23 g/24 hr (H)

Nutrition Focused Physical Exam

Skin Assessment

☑ Wound

Edema
None

Feeding Ability

☑ Needs assistance

Oral Motor

☑ Intact

Muscle and fat store assessment:

WDWN

If other, please explain:

N/A

Food and Nutrition History

Current diet order:

PO as tolerated and Tube feeding prescription: Jevity 1.2 @ 55ml/hr x 24 hrs by the MD

Assessment of usual intake:

N/A

Assessment of current intake:

Using Jevity 1.2 formular tube feeding plus 100 kcals/dat by oral intake

Supplements/herbals:

N/A

Food allergies and intolerances:

NKA

Intake and digestive problems:

Pain during eating d/t burn injury

Assessment of Nutritional Status/Nutrition Risk

☑ Moderate malnutrition

Malnutrition criteria met per current malnutrition guidelines:

D/t acute injury (30% TBSAB in day 2 to 15% TBSAB),<72% energy intake for >7d, >1-2% body wt in 1 week.

☑ Decreased energy intake

Specify:

EER is 3075 kcal/d to 2350 kcal/d from day 2 to 10 after burning injury. Current TF only contains 1584 kcal/d plus PO intake ~100kcal/d, which is ~72% in day 10. Pt is having inadequate energy intake for day 2 to day 10.

☑ Weight loss

Specify:

Admission wt us 75kg, but the CBW is 70 kg in day 10. wt loss about 7% from day 2 to day 10. BMI is still normal.

Nutrition Recommendations

kcal/day based on:

2350 kcal/d

g protein/day based on:

105 - 140 gm/d

mL fluid/day based on:

2100-2450 mL/d

Other:

N/A

Nutrition assessment summary:

Pt loss weight -7% (5kg) from day 2 to day 10 d/t severe burn injury, inadequate protein intake, and low appetite.

Diagnosis

Nutrition Diagnosis:

Inadequate energy intake (NI-1.2)

PES Statement:

Inadequate energy intake (NI-1.2) R/T excessive energy utilization d/t severe burn injury AEB 30% TBSAB, weight loss (-7%), and negative nitrogen balance -12.3g N/d.

Nutrition Intervention

Nutrition prescription:

To prevent further wt loss by providing new TF prescription and soft diet with high kcal/pro food to prevent loss lean body mass.

Food and nutrition delivery:

Diet Rx: enteral nutrition (ND 2.1) and soft diet (ND-1.2.1.8) with nutrition rec'd 2350 kcal, 105 - 140 g, 2100-2450 mL/day.

Rec'd
1: Rec'd using soft diet: Geek yogurt and apple sauce for reducing pain (ND-1.2)
2: Rec'd renewing the TF prescription to increase protein intake (ND-1.2)

Nutrition education:

Discussed the importance of adequate energy intake which is beneficial for burn healing. (E-1.1)

Handout: Enteral nutrition support in burn care

Nutrition counseling:

To provide motivational interviewing (C-2.1) and goal setting (C-2.2) to increase compliance with oral intake.

Behavioral goals:
1: Pt have food as tolerated instead of solid food during lunch/dinner at least 2x/wk for 2 weeks.
2: Pt can use SFM around 4 SFM/d at least 3x/wk for 2 wks.

Compliance:
Expect low compliance r/t pt's reported that low appetite and pain due to facial burn injury and pt expected to in the contemplation stage of change (C-1.4).

Coordination of care:

N/A

Monitoring and Evaluation

Food and nutrient intake:

Monitor estimated energy intake via written dietary record.t (FH-1.1.1.1)
Monitor PO intake based on the leftover (FH-1.2)

Anthropometric measurements

Monitor wt (AD-1.1.2.1) 1x/2wk

Biochemical data:

Monitor UUN (BD-1.12.34) in 1 mo.

Nutrition focused physical findings:

F/U in 2 wk in clinic

Signature/credential/date:

KaFai Li, Clinical Nutrition Student, 02/24/2023

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)

Goal: 1000 kcal/day, formula Jevity 1.2
We need to calculate the amount of formula the patient needs per hours.

1000 kcal/day / 1.2 kcal/mL formula = 833.3333 mL formula/d ~835 mL formula/d
835 mL formula/d /12 hr = 69.5833 mL/hr ~70 mL/hr
Therefore, Mr. B that is on Jevity 1.5 at 70 mL/hr (goal rate).

In order to provide around 1000 kcal/d TF without interfering with the normal mealtime, using TF during the nighttime may be the good idea.

The idea TF goal rate is 70ml/hr over 12 hr at night. It provides:

70 mL/hr x 12 hr = 840 mL formula, 840 mL x 1.2 kcal/hr = 1008 kcal/d, 840mL x 55.5 gm pro/L / 1000 mL = 46.62 g/ pro d ~ 47 g/pro, 840 mL x 0.807 = 677.88 mL ~678 mL/d.

Ensure the EN and fluid infusion are stable. Counting leftover every meal so that we can measure the patient has enough energy and protein intake. (Ensure the energy intake not less than 60% in protein and energy need)

Based on the ASPEN guidelines, pt don't need to TF if their energy and protein intake is at least 75% of their need for 3 days.