

★BRILLIANT DIETITIANS★

Clinical Case Study Example

By Bethany H. Tait, MS, RDN

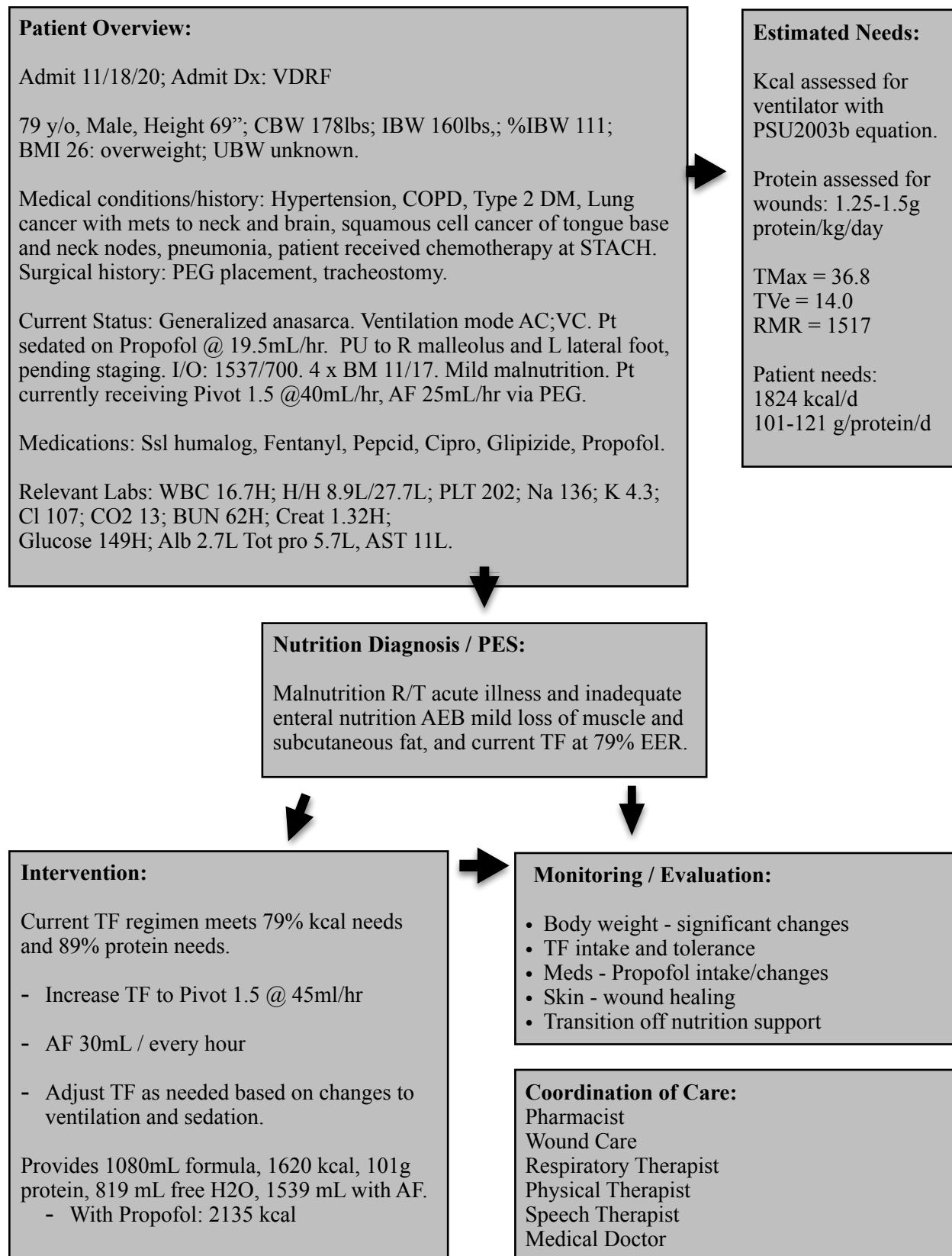
Patient: "J.S."

Facility: Long-Term Acute Care Hospital (LTAC)

Admit Diagnosis: Ventilator-Dependent Respiratory Failure (VDRF)

Key Nutrition Topics: *Enteral Feeding, Ventilation, Malnutrition, Cancer, Wounds*

Case Study Concept Mapping - Patient "J.S."



Calculations

Weight:

178lbs

$$178 / 2.2 = 80.7\text{kg}$$

Height:

69"

$$69" \times 2.54\text{cm} = 175\text{cm}$$

BMI:

$$(178\text{lbs} / 69" / 69") \times 703 = 26 - \text{overweight}$$

IBW:

$$106 + 6(9) = 160\text{lbs}$$

$$160\text{lbs} / 2.2 = 72.7\text{kg}$$

%IBW:

$$(178 / 160) \times 100\% = 111\% \text{ IBW}$$

UBW:

unknown

Energy Needs:

PSU 2003b (ventilator-dependent, BMI<30, <60yrs)

$$T_{\text{Max}} = 36.8; M_{\text{Ve}} = 14.0$$

$$\text{RMR} = \text{MSJ}: (9.99 \times 80.7\text{kg}) + (6.25 \times 175\text{cm}) - (4.92 \times 79) + 5 = 1517 \text{ kcals}$$

$$(1517 \text{ kcals} \times 0.96) + (14.0 \times 31) + (36.8 \times 167) - 6212 = 1824 \text{ kcals per day}$$

Protein Needs:

1.25-1.5 g/kg (Actual body weight)

$$1.25\text{g} \times 80.7\text{kg} = 101\text{g protein/day}$$

$$1.5\text{g} \times 80.7\text{kg} = 121\text{g protein/day}$$

$$\text{Range} = 101-121 \text{ g protein/day}$$

Enteral Nutrition Calculations

Current regimen:

Pivot 1.5 @ 40mL/hr, AF 25mL/hr.

Provides:

- **mL Formula:** 40mL x 24hrs = 960mL
- **Kcals:** 960mL x 1.5kcal/mL = 1440 kcals
- **Protein:** 960mL x = 90g protein
- **Water:** 960mL x = 728mL free water; 25mL AF x 24 hrs = 600 mL AF; 728mL + 600mL = 1328 mL total water with AF.

Current Regimen Meets:

$(1440^* / 1824) \times 100 = 79\%$ est. kcal needs for ventilator

$(90g / 101g) \times 100 = 89\%$ protein needs for wounds

*based on 24 hrs; not including Propofol d/t unknown sedation hx prior to admission.

Propofol:

19.5mL per hour

19.5mL x 24 hrs = 468mL/d

468mL x 1.1 kcal/mL = 515 kcals

Recommended TF Regimen:

Pivot 1.5 @ 45mL/hr, AF 30mL every hour.

Provides:

- **mL Formula:** 45mL x 24hrs = 1080mL
- **Kcals:** 1080mL x 1.5kcal/mL = 1620 kcals
- **Protein:** 1080mL x = 101g protein
- **Water:** 1080mL x = 819mL free water; 30mL AF x 24 hrs = 720 mL AF; 819mL + 720mL = 1539 mL total water with AF.
- Total Regimen with Propofol: 1620 kcals from TF + 515 kcals from sedation = 2135 kcals/day

Medication	Indications/Mechanism	Nutritional Concerns
Ssl Humalog	sliding scale insulin for DM	affects blood sugar
Glipizide	sulfonylurea for DM	blood glucose lowering; may cause stomach pain
Ciprofloxacin	antibiotic	food may decrease absorption of medication; may cause nausea, vomiting, diarrhea
Famotidine	histamine 2 blocker, used for GERD	may cause constipation or diarrhea; may elevate LFTs
Fentanyl	analgesic, opioid, used to treat pain	avoid grapefruit juice. may cause constipation
Propofol	intravenous anesthetic and sedative	affects mental and motor capacity, may decrease appetite, may increase triglyceride level; provides 1.1 fat kcals per mL.

Abnormal Lab	Value	Rationale
WBC	16.7 H	infection - pneumonia
Hbg / Hct	8.9 L / 27.7 L	Cancer, medications, recent chemotherapy, inflammation, IV fluids > 1 week
BUN	62 H	malignancy, medications, dehydration, T2DM
Creatinine	1.32H	malignancy, medications, muscle wasting, dehydration, T2DM
Glucose	149 H	pt in catabolic state, medications, T2DM
Albumin	2.7 L	inflammation
Total Protein	5.7 L	neoplasia - pt has cancer, malnutrition, infection

ADIME**Subjective:**

Patient is a 79-year-old Hispanic male with lung cancer and metastasis to the neck, tongue, and brain. Patient was admitted 11/17/15 for Ventilator-Dependent Respiratory Failure.

Assessment:*Food/Nutrition-Related History:*

Patient has generalized anasarca. Ventilation mode: AC;VC. Patient is sedated on Propofol @ 19.5mL/hr. PU to R malleolus and L lateral foot, pending staging. I/O: 1537/700mL. Net Intake/Output since admission: +837mL. Bowel movements x 4 11/17. Mild malnutrition. Patient currently receiving Pivot 1.5 @40mL/hr, AF 25mL/hr via PEG, providing 960mL formula, 1440 kcals, 90g protein, 728mL free water, 600 mL AF, 1328 mL total water. RMR (MSJ): 1517 kcal/d. Protein needs for wounds 1.25-1.5g/kg/d: 101-121 g/protein/d. Current TF regimen meeting 79% kcal needs and 89% protein needs.

Anthropometric Measurements:

Height = 69"; CBW = 178lbs; IBW = 160lbs; %IBW = 111; BMI = 26 - overweight; UBW = unknown

Biochemical Data, Medical Tests, and Procedures:

Blood Chemistry: Relevant Labs: WBC 16.7H; H/H 8.9L/27.7L; PLT 202; Na 136; K 4.3; Cl 107; CO2 13; BUN 62H; Creatinine 1.32H; Glucose 149H; Alb 2.7L; Tot pro 5.7L; AST 11L.

Medications: Ssl humalog, Fentanyl, Pepcid, Cipro, Glipizide, Propofol.

Ventilator: TMax = 36.8; TVe = 14.0

Nutrition-Focused Physical Findings:

Physical findings: Generalized anasarca. Mild malnutrition: Mild subcutaneous fat loss. Mild muscle mass loss. Noted mild temporal wasting, prominent cheek bones, clavicle prominent.

Client History:

Medical: Hypertension, COPD, Type 2 DM, lung cancer with metastasis to neck and brain, squamous cell cancer of tongue base and neck nodes, pneumonia, patient received chemotherapy at STACH. *Surgical:* PEG placement, Tracheostomy.

Diagnosis/PES Statement:

Malnutrition R/T acute illness with inadequate intake AEB mild loss of muscle mass and subcutaneous fat; current TF at 79% Estimated Energy Requirement (EER).

[NC-4.1.3: Acute disease or injury-related malnutrition]

Nutrition Intervention:

[ND-2.1.4 Modify volume of enteral nutrition]

[ND-2.1.3 Modify rate of enteral nutrition]

[RD-1.4 Collaboration with other providers]

- *Nutrient Intake:*
 - Increase TF to Pivot 1.5 @ 45ml/hr
 - Increase AF 30mL / every hour
 - Adjust TF as needed based on changes to ventilation and sedation.
 - Provides 1080mL formula, 1620 kcal, 101g protein, 819 mL free H₂O, 1539 mL with AF.
 - With Propofol: 2135 kcal
- *Nutrition Counseling and Education:*
 - Not applicable
- *Coordination of Care:*
 - Wound Care Nurse
 - Respiratory Therapist
 - Physical Therapist
 - Speech Therapist
 - Medical Doctor

Monitoring/Evaluation

- *Daily check in while in ICU with full follow-up nutrition assessment in 7 days.*
- Enteral nutrition intake and tolerance: EN formula/solution; feeding tube flush
- Prescription medication use: monitor Propofol rate daily
- Body weight changes (gain/loss)
- Biochemical data: Daily labs - Hgb/Hct, BUN, Creatinine, Glucose, WBC
- Nutrition-Focused Physical Findings r/t malnutrition dx: changes in subcutaneous fat and muscle mass, generalized edema
- Monitor changes in ventilator settings
- Monitor wound evaluation and progress: bilateral feet pressure ulcers.
- Goal to transition from nutrition support if/when appropriate.