VANDERBILT UNIVERSITY MEDICAL CENTER
DIVISION OF TRAUMA AND SURGICAL CRITICAL CARE

Surgical Critical Care Nutrition Guideline – Revised 5/2013

Clinical judgment may supersede guidelines as patient circumstances warrant

Initial Nutrition Evaluation (SCC NUTRITION MANAGEMENT ORDER SET)

- Resuscitation goals met?

No -> Continue resuscitation. Do not start nutrition provision.

Yes -> Consult Nutrition Service and start enteral nutrition (see below, Enteral Nutrition).
Ensure all patients should have nutrition regimen by day 2.
Enteral nutrition (EN) is preferred over parenteral nutrition (PN)(see protocols below).

- Protocols

GI Stress Ulcer Prophylaxis: refer to unit specific protocol.

Lab Protocol:
Enter HEO (SCC NUTRITION SUPPORT LAB ORDER SET) on all critically ill patients.
- Obtain pre-albumin and CRP levels at day 2 if anticipated ICU stay is > 3 days.
- Repeat and re-assess every Monday/Thursday.

Glucose Control: refer to protocol.

Wound Healing Protocol (for open abdomen, burns, large wounds, or fistulas):
(TRAUMA WOUND HEALING ORDER SET)
☐Ascorbic acid (Vitamin C) 500mg BID PO/PT/IV x 10 days
☐Vitamin A 10,000 IU, PO/PT/IM x 10 days
☐Zinc 220mg PO x 10 days PO or PT -50mg/10ml elemental oral solution (Order set)

Severe Cachexia/Malnourishment Protocol:
☐Consider use of Oxandrolone 10mg po/pt twice daily.

Enteral Nutrition (EN)

- Initiation of EN:

Start at 50% of goal (~20-30ml/hr) within 24 – 48 hours of admission.
Advance as tolerated to goal by day 5 with improvement of SIRS or critical illness.
If not at 60% of goal after 7 days, consider PN supplementation (refer to protocol).

- Withhold EN if hemodynamically unstable.

- EN Access:

Cortrak Placement:
Inserted by either SICU Procedure RN or SICU NP.
DHT confirmed by KUB.
Consider bedside endoscopic, fluoroscopic, or intraoperative placement.

Gastric access:
Short-term: OGT, NGT, small bore feeding tube.
Long-term: PEG (initiate TF 6 hours later or the next day post PEG placement).
Post-pyloric access:
Short-term:
• If placement unsuccessful, consider flouro placement of PEG/J-tube.
Indications:
• Gastroparesis with persistent high (500ml) Gastric Residual Volume (GRV) despite prokinetic agents or recurrent emesis.
• Severe active pancreatitis (endoscopic placement for jejunal feeds).
• Open abdomen.
Contraindications for EN Nutrition:
Thoracic patients enteral access/nutrition managed per Thoracic team only.

Parenteral Nutrition (PN)

• If previously healthy, initiate PN only after the first 7-10 days of hospitalization if EN is not feasible.
• If protein-calorie malnutrition present and EN not feasible, start PN immediately after resuscitation.
• Weaning TPN when:
TFs tolerated at 60% of goal
☐Decrease TPN to ~half, decrease dextrose/AA per PN team order.
☐Wean off TPN as TF rate advances to goal or per clinician judgment.
POs tolerated at 60% of meals consumed
☐Decrease TPN to ~half, decrease dextrose/AA per PN team order.
☐Weaned off TPN per clinician judgment.

Nutritional Goals:

• Dosing Weight:
Use IBW or upper IBW for height if actual body weight is > IBW
Hamwi method:
☐Men:106# (48kg)1st 5 ft, then add 6# (2.7kg) per inch >5ft, +/-10%.
☐Women: 100# (45kg)1st 5 ft, then add 5# (2.3kg) per inch >5ft, +/-10%.
Use actual body weight if weight is < IBW.
• Caloric Goals:
o 25 – 35 kcal/kg dosing weight.
o If BMI > 30, use 22 – 25 kcal/kg IBW.
• Protein needs:
o General: 1.2 – 2.0 g/kg dosing weight.
o Obesity
☐BMI of 30 – 40, use > 2 g/kg IBW.
☐BMI > 40, use > 2.5 g/kg IBW.
o Renal Failure (HD/CRRT): 1.2 – 2.5 g/kg dosing weight (upper IBW).
o Hepatic Failure: 1.2 – 2.0 g/kg dosing weight.
• Fluid Needs - 1 ml/kcal baseline:
o Cover Additional losses – (ie. fever, diarrhea, GI output, tachypnea).
o Fluid restriction – CHF, renal failure, hepatic failure with ascites, CNS injury, and electrolyte abnormality.

If LOS>7 days and pt has not consistently met 60% needs, consider nutritional provision from a combination of PO/EN/PN routes.

Authors:
Oliver Gunter, MD
Laurie Ford,, ACNP-BC
Beth Mills, MS, RD, CNSC, LDN
Donna Sika, MS, RD, CNSC, LDN

Sources:
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McClave SA, Martindale RG, Vanek VW, McCarthy M, Roberts P et al. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient. Journal of Parenteral and Enteral Nutrition. 2009; 33 (3): 277-316.

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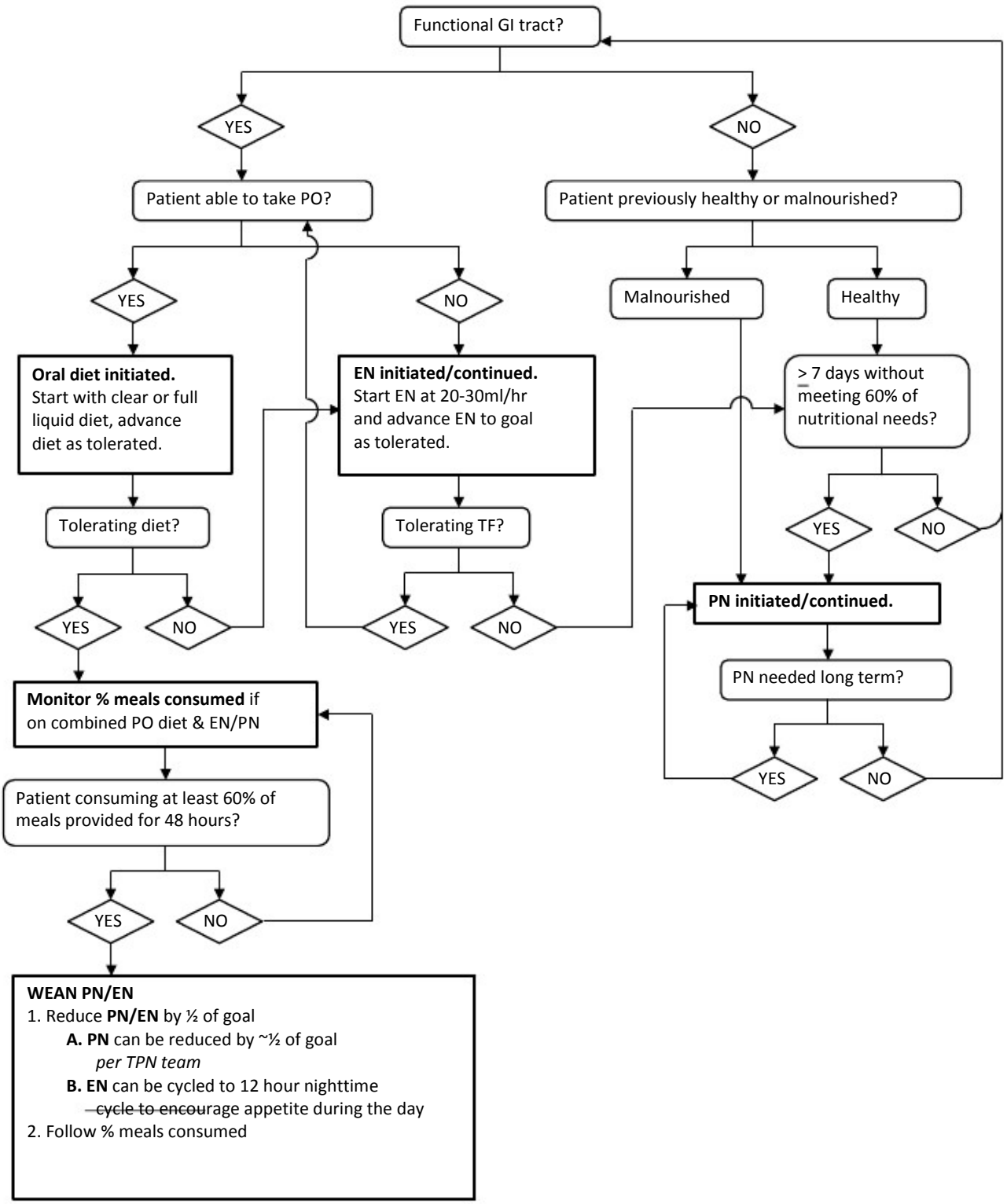
Combination Feeding (EN/PN) Protocol

(SCC NUTRITION MANAGEMENT ORDER SET)



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Total Enteral Nutrition Flow Diagram

Start EN within 24-48 hours of admission

(SCC NUTRITION MANAGEMENT ORDER SET)

SICU

Critically Ill Surgery Patient

Non-Critically Ill Post-Op Patient

Standard Formula

Promote 1.0

Osmolite 1.2

Osmolite 1.5

Two Cal HN

Pivot 1.5

Consider other conditions

Consult RD for details to use disease specific formulas

Persistent Uncontrolled Hyperglycemia	ARDS (P/F < 200)	Renal Failure	Acute Pancreatitis	MODS/Chyle Leak
Glucerna 1.2	ALI (P/F < 300)	(On RRT/Cr > 2.5)	(moderate to severe)	**Vivonex RTF 1.0**
	Oxepa 1.5	**Nepro 1.8 (for IHD)**	**Vital 1.5**	
		Promote (for CRRT)	**Vivonex RTF 1.0**	

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Gastric Residual Volume (GRV) Protocol

Check Residuals Every 4 Hours After Initiating/Continuing TF

(Prior to starting TF – always check position of tube with KUB)

GRV ≥ 500 ml
x 2 consecutive residuals

- Replace residuals
- Hold feeds
- **Check residuals after 4 hours**

GRV ≤ 500 ml

- Replace residuals

GRV ≥ 500 ml **GRV ≤ 500 ml**

Physical signs of intolerance present?

YES NO

- Consider starting medication
  - o Prokinetic Agents
  - **(SCC NUTRITION MANAGEMENT ORDER SET)**
    - ☐ **Erythromycin 200 mg IV or per tube q6h x 3 days.** (If history of diabetic gastroparesis, continue on erythromycin. Consider prolongation of QTc.
    - ☐ **Metoclopramide 10 mg IV q6h x 3 days**
    - ☐ **Naloxone 8mg q 8hr,** then 8mg q 6hr if needed
- Reduce risk of aspiration by elevating HOB to 30-45° and switching to continuous infusion if receiving bolus
- **Recheck residuals in 4 hours**

- Replace residual
- Restart feeds at 60% of goal
- **Recheck residuals in 4 hours**

GRV ≥ 500 ml **GRV ≤ 500 ml**

GRV ≤ 500 ml **GRV ≥ 500 ml**

Consider:
- Small bowel feedings if gastroparesis present
- TPN if > 7 days of not achieving 60% goal rate of EN or ileus present

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Pre-Operative Protocol for Enteral Nutrition (EN) Feeding For Protected Airway Patients

• **Non-Abdominal Surgery**	• **Abdominal Surgery** • **Operative Intervention requiring Prone Positioning**	• **Upper GI Endoscopy**
• Turn feeds off just prior to OR departure or beside procedure. • Gastric tube will be flushed and aspirated.	• Turn feeds off 6 hours before planned anesthesia • Gastric tube will be flushed and aspirated prior to OR departure	• Turn feeds off 1 hour prior to elective endoscopy • Place NGT tube to suction

Stop insulin infusion prior to OR transport

Alert anesthesiologist to perform Accucheck perioperatively in OR if SQ insulin given within 2 hours

Restart feedings post surgery unless orders to hold TF post surgery.

- For patient with confirmed post-pyloric feeding tube consider perioperative continuous feeding by anesthesiologist and surgeon
- If patient is on insulin infusion, continue along with tube feedings.