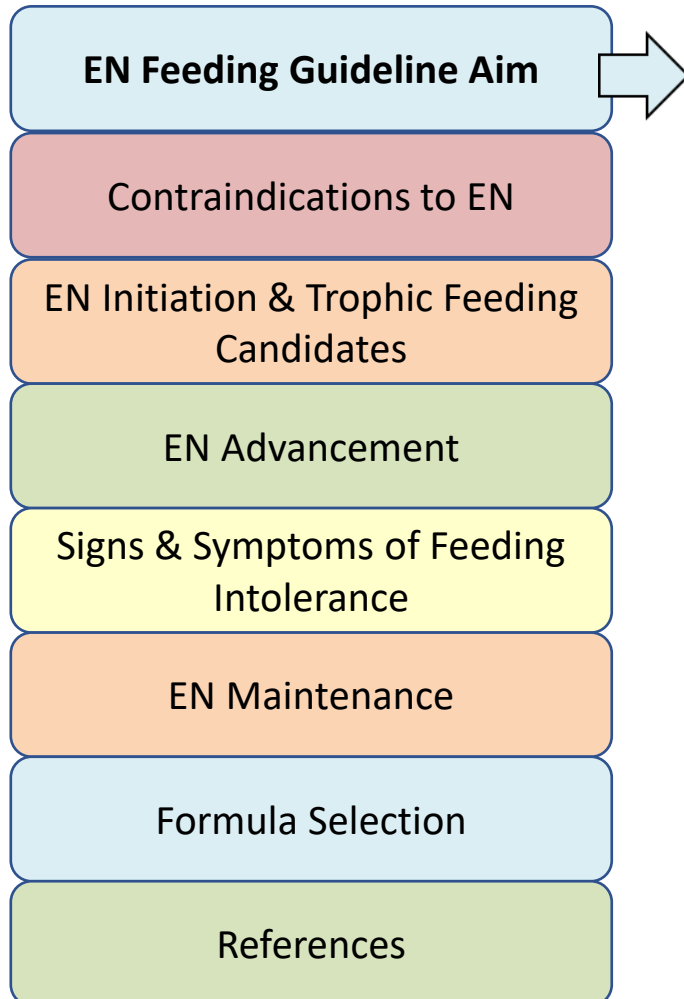


PICU Enteral Feeding Guideline

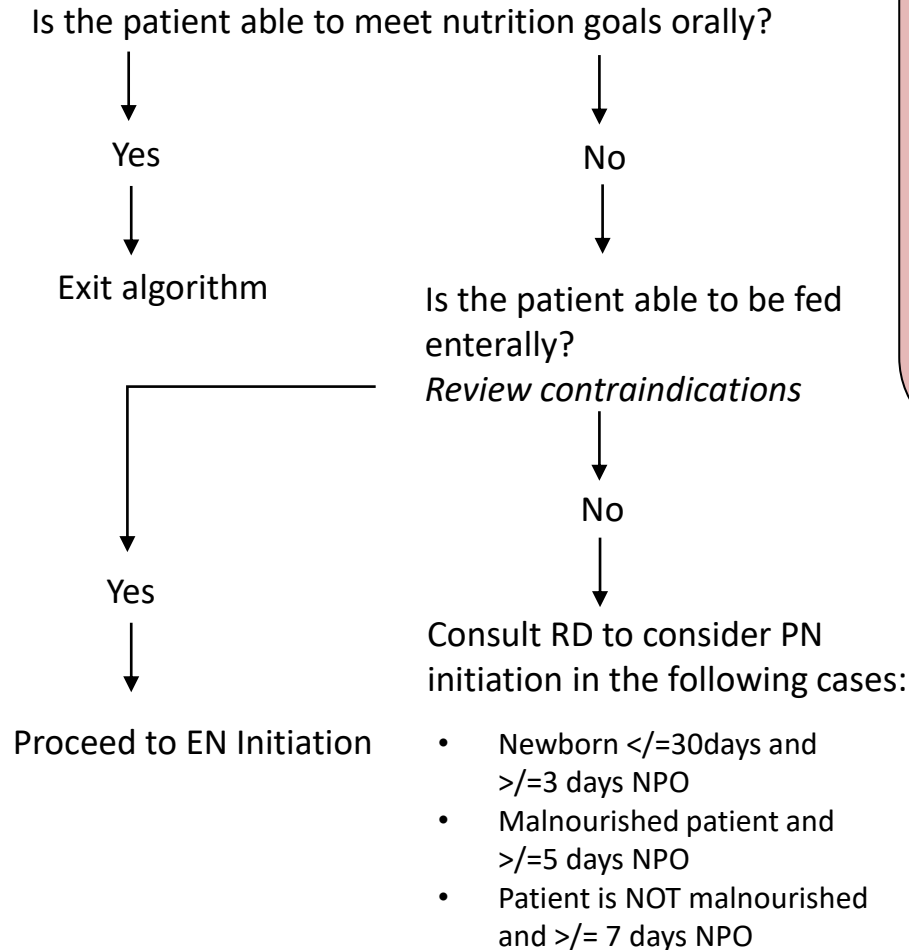
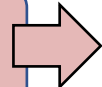


AIM: *To continue, resume or initiate enteral feeds within 24 hours of PICU admission and reach target nutritional goals earlier for all patients unable to take adequate oral nutrition.*

Early enteral nutrition reduces morbidity and mortality, preserves protective gut barrier function and improves overall nutritional status.

Contraindications to EN

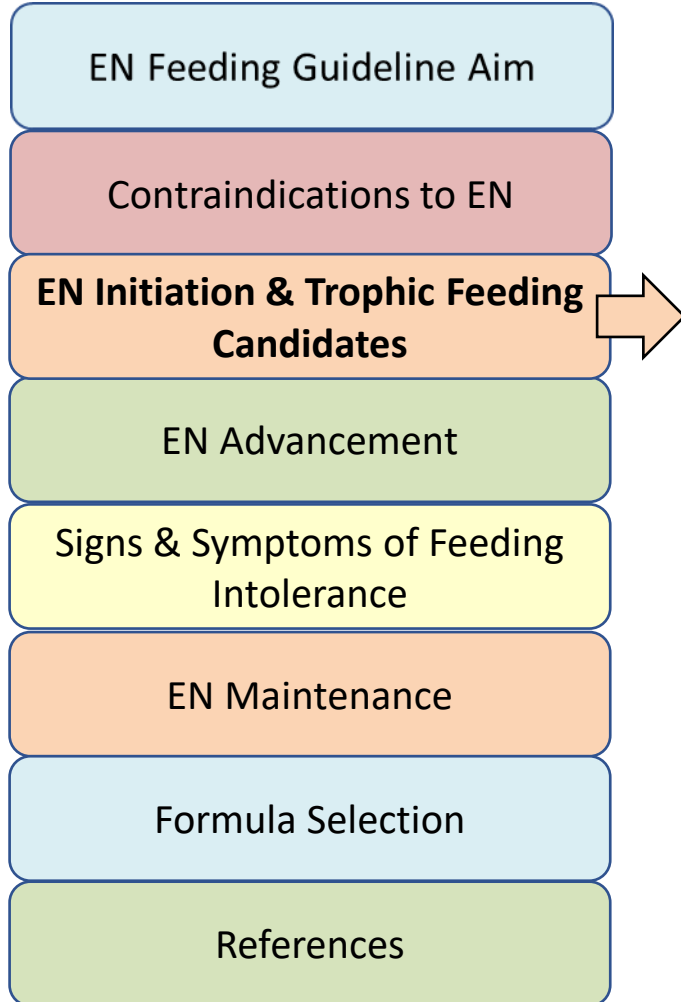
- EN Feeding Guideline Aim
- Contraindications to EN**
- EN Initiation & Trophic Feeding Candidates
- EN Advancement
- Signs & Symptoms of Feeding Intolerance
- EN Maintenance
- Formula Selection
- References



CONTRAINDICATIONS:

- Severe acidosis; hypoxia
- Hypotension; shock
- Escalating pressor support
- Ongoing volume resuscitation
- Severe cardiac dysfunction
- Mechanical bowel obstruction, bowel ischemia, significant GI bleed, severe ileus with vomiting, intractable diarrhea.
- Imminent surgery or procedure

EN Initiation



INDICATIONS:

- All PICU patients (including those requiring ventilator support) who are unable to feed orally, or sustain adequate oral nutrition
 - Functioning GI tract
 - Absence of contraindications
 - Absence of ileus confirmed
- *Trophic feeding may start in absence of bowel sounds*

Trophic Feeding Candidates:

Resolving hypotension
Weaning pressor support
Post GI surgical patients




Start:

<10kg: 0.5ml/kg/hr
10-40kg: 5ml/hr
>40kg: 10ml/hr

- Establish tolerance of trophic volume without increasing
- Assess appropriateness for advancement on daily rounds
- If unable to advance after 3-5 days, consider PN: earlier for malnourished patients, 3 days for <2 years well-nourished, 5 days for well-nourished >2 years

- **Evaluate for risk of aspiration** (depressed cough/gag, altered mental status, delayed gastric emptying, significant reflux or vomiting, severe bronchospasm, prone positioning, unable to elevate HOB >30 degrees):
 - +aspiration risk* → transpyloric (nasoduodenal or nasojejunal) feeding tube
 - aspiration risk* → nasogastric feeding tube or via G.T.T. (in place prior to admission)
- **Place nasogastric tube**, preferably at time of intubation, or transpyloric tube, then confirm placement
- **Elevate HOB >30 degrees** unless contraindicated
- **Obtain Nutrition Consult** for all patients starting enteral feeds; coordinate with dietitian to identify goal feeding volume, nutritional status/ risk of malnutrition, caloric needs

EN Advancement

- EN Feeding Guideline Aim
- Contraindications to EN
- EN Initiation & Trophic Feeding Candidates
- EN Advancement** 
- Signs & Symptoms of Feeding Intolerance
- EN Maintenance
- Formula Selection
- References

Continuous Feeding Candidates:

- All patients with transpyloric or jejunal feeding tubes
- Intolerance to bolus feeds
- Ready to advance trophic feeds to goal volumes



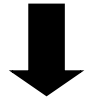
Start:
1 mL/kg/hr
OR
25% hourly goal rate
Max: 25mL/hr

Advance:
<10kg: 1-5mL/hr q 4hrs
>10kg: 5-20mL/hr q 4hrs

- Advance until goal volume reached
- Titrate IVF to enteral volumes

Bolus Feeding Candidates:

- Stable
- Gastric tube placement
- Ready to consolidate or resume home schedule



Transition from Continuous:
<6 months: Provide 3 hr equivalent volume over 1 hr
>6 months: Provide 4 hr equivalent volume over 1 hr

Resuming Home Regimen:

- Initiate feeds at ½ of usual home bolus volume
- If tolerating, advance to ¾ of usual home bolus volume at next feeding
- Advance to full volume of usual home bolus
- Titrate IVF to enteral volumes

Signs and Symptoms of Feeding Intolerance


- EN Feeding Guideline Aim
- Contraindications to EN
- EN Initiation & Trophic Feeding Candidates
- EN Advancement
- Signs & Symptoms of Feeding Intolerance** →
- EN Maintenance
- Formula Selection
- References

Signs and Symptoms of Feeding Intolerance **notify MD if the following occur:**

- **Emesis:** >2 or more episodes/24hrs → hold x 4hrs and reassess, consider scheduled antiemetic if appropriate or transpyloric tube placement; if volume intolerant, reduce volume of bolus feeds or consider continuous drip
- **Diarrhea:** >3 episodes of loose stool/24hrs → discontinue laxatives and stool softeners, consult pharmacy to discontinue any sorbitol containing medication; consider opiate withdrawal; evaluate for stool pathogen (C.difficile if hematest positive) or malabsorption; consult dietitian to consider addition of soluble fiber and/or probiotic, need for alternate formula
- **Abdominal discomfort** (patient verbalizes discomfort, exhibits increased heart rate or blood pressure) **or abdominal distention:** >2 consecutive increases in abdominal girth measurement/24hrs → hold x 4hrs and reassess; ensure patient is stooling adequately; consider venting G.T.T. after/between feeds if applicable; consider promotility agent (erythromycin); consider return to previously tolerated feeding rate or volume

Gastric residual volumes do NOT correlate with gastric volumes, gastric emptying, reflux, or aspiration therefore are NOT an indication for feeding intolerance in absence of other signs and symptoms of intolerance

EN Maintenance

- EN Feeding Guideline Aim
- Contraindications to EN
- EN Initiation & Trophic Feeding Candidates
- EN Advancement
- Signs & Symptoms of Feeding Intolerance
- EN Maintenance** 
- Formula Selection
- References

Bowel Management

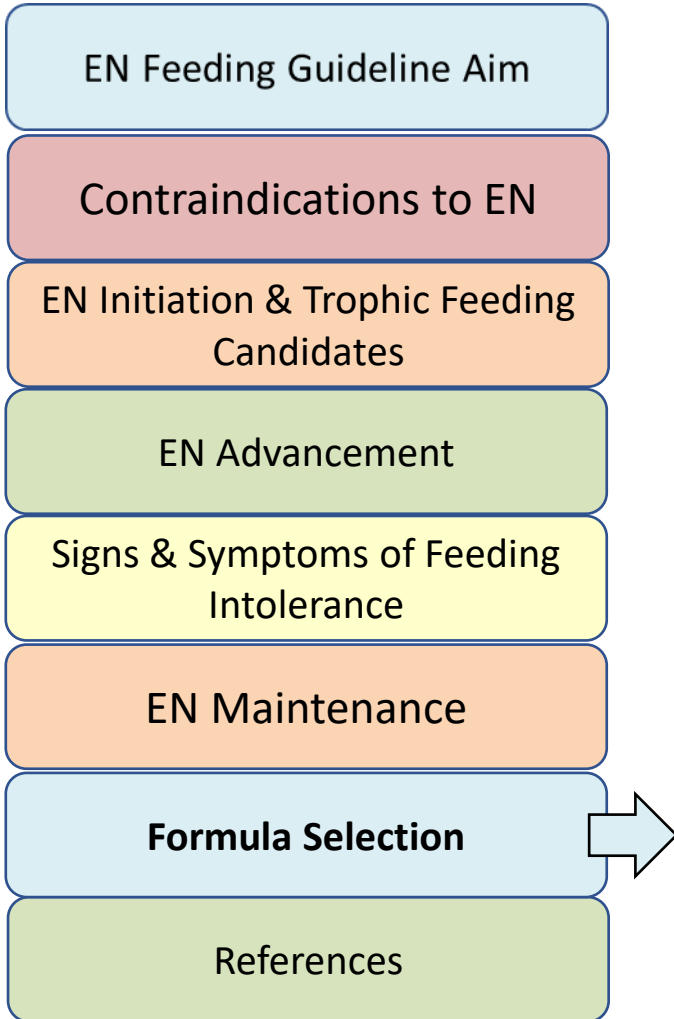
- **Upon initiation of enteral nutrition, choose one of the following:**
 - Docusate sodium (Colace®) PO BID, or
 - Polyethylene glycol (Miralax™) PO at bedtime

***IF ON OPIATES**, add senna (Senokot®) PO at bedtime or may substitute Peri-Colace® (fixed dose combination of docusate sodium and senna) PO BID*
- **If NO stool after 48hrs on enteral nutrition, choose one of the following:**
 - Increase Miralax™ to BID, or
 - Consider glycerin suppository or bisacodyl suppository once daily
- **If NO stool after 24 hrs of increasing Miralax™ or adding suppository, choose one of the following:**
 - Start Senokot (stimulant) PO daily or BID (if not started already)
 - Consider phosphate enema

Enteral Nutrition Maintenance

- **Review if goal volumes have been met** after day 3 of starting feeds. If no, consider promotility agent or transpyloric tube placement; ensure implementation of bowel management strategies; avoid unnecessary and prolonged interruptions in enteral feeding; monitor daily weights (ideally)
- **If enteral feeds are interrupted** for procedures or reasons other than intolerance, feedings should be resumed at previously tolerated rates

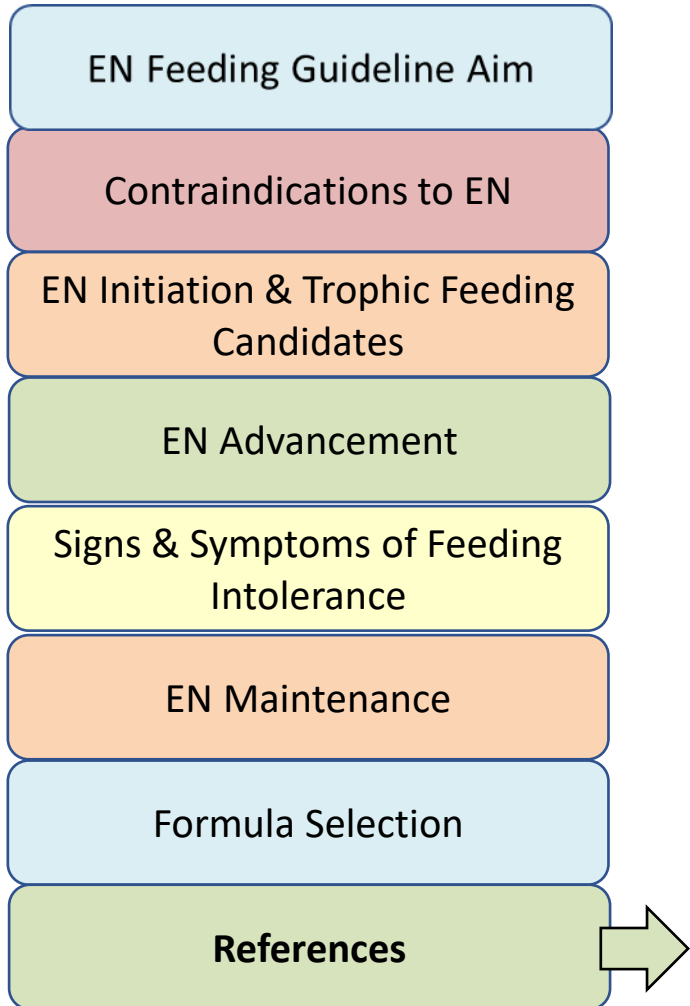
Formula Selection



Formula Selection

- **Infants <12months CGA or ≤10kg:** breast milk or standard term formula (Enfamil or Similac) or home formula, if known
- **Toddler/Children >12 months or >10kg:** use Peptamen Jr or equivalent as default pediatric formula if no history of prior enteral formula feeding and no documented milk protein allergy
- **Older children/Teenagers over 10 years or 40kg:** use adult Peptamen with Prebio or equivalent as default formula if no prior formula feeding and no documented milk protein allergy
- **Consult unit dietitian or on-call dietitian,** if needed, for clarification of home formula and/or appropriate formula choice

References



Bechard LJ, Staffa SJ, et al. Time to Achieve Delivery of Nutrition Targets is Associated with Clinical Outcomes in Critically Ill Children. *Am J Clin Nutr.* 2021;114:1859-1867. **(Level 2)**

Boullata JJ, et al. ASPEN Safe Practices for Enteral Nutrition Therapy. *J Parenteral Enteral Nutr.* 2017;41(1):15-103. **(Level 5)**

Brown A, Forbes M, et al. Effects of a Gastric Feeding Protocol on Efficiency of Enteral Nutrition in Critically Ill Infants and Children. *Infant, Child, Adolescent Nutrition.* 2012;4:175-180. **(Level 1)**

Fivez T, Kerklann D, et al. Early versus Late Parenteral Nutrition in Critically Ill Children. *J Medicine.* 2016;374 (12)1111-1122. **(Level 1)**

Marik PE. Enteral Nutrition in the Critically Ill: Myths and Misconceptions. *Crit Care Med.* 2014;42(4):962-969. **(Level 3)**

Mehta NM, Skillman HE, et al. Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Pediatric Critically Ill Patient: Society of Critical Care Medicine and American Society for Parenteral and Enteral Nutrition. *J Parenteral and Enteral Nutrition.* 2017;41 (5):706-742. **(Level 3)**

Tume LN, Valla FV, et al. Nutritional Support for Children During Critical Illness: European Society of Pediatric and Neonatal Intensive Care (ESPNIC) Metabolism, Endocrine and Nutrition Section Position Statement and Clinical Recommendations. *Intensive Care Med.* 2020;46:411-425. **(Level 5)**

Ziemba KJ, Kumar R, et al. Clinical Decision Support Tools and a Standardized Order Set Enhances Early Enteral Nutrition in Critically Ill Children. *Nut Clin Practice.* 2019;34(6):916-921. **(Level 2)**