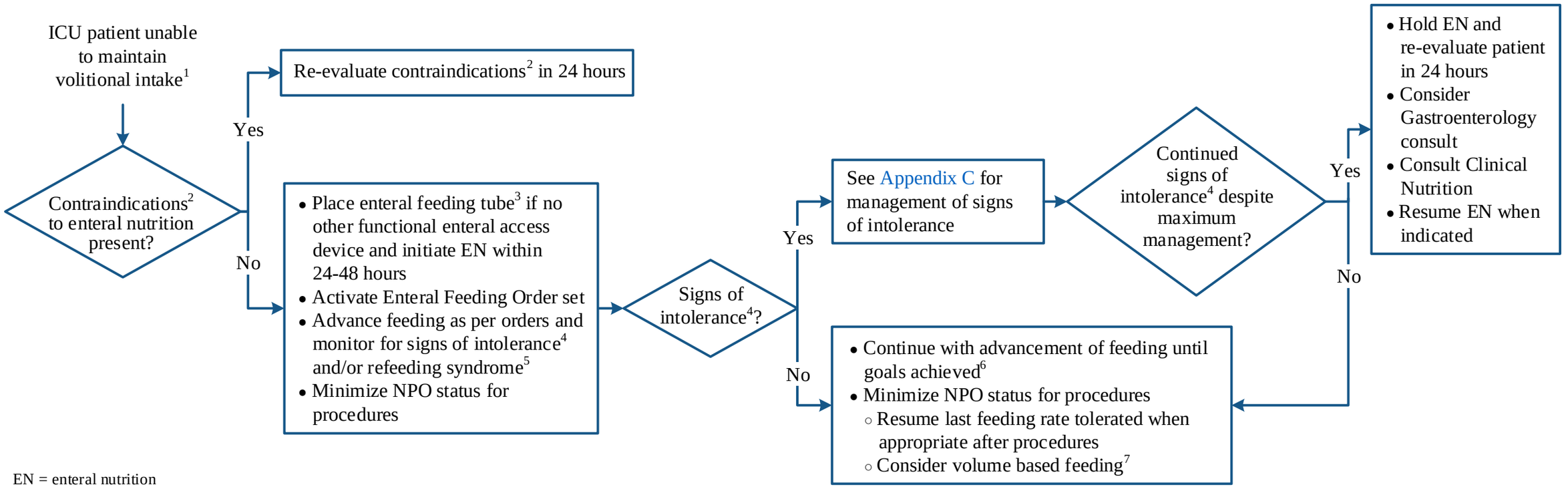
# ICU Adult Early Nutrition








EN = enteral nutrition

[1] If patient meets criteria for malnutrition, add malnutrition to problem list (see Appendix A: Malnutrition Criteria)

[2] **Contraindications: Note**: Contraindications do NOT include absence of bowel sounds or flatus, ileus, diarrhea, or increased gastric residual volume

- Bowel ischemia
- Bowel obstruction
- Gastrointestinal bleeding
- Hemodynamic instability defined as norepinephrine > 15 micrograms/minute or phenylephrine > 150 mcg/min or vasopressin > 0.02 units/minute or need for > 2 vasoactive infusions

[3] Consider post pyloric feeding tube placement for patients at risk for aspiration (see Appendix B), gastroparesis, and/or major abdominal surgery. If expertise in placement of post pyloric feeding tube is not available, it is acceptable to initiate gastric feeding.

[4] **Signs of Intolerance:**

- Abdominal distention
- Gastric residual volume > 300 mL
- Decreased passage of stool
- Nausea
- Diarrhea: at least 3-5 loose, liquid, or watery bowel movements/day
- Development of contraindications

[5] Refer to American Society for Parenteral and Enteral Nutrition (ASPEN) Consensus Recommendations for Refeeding Syndrome (see Page 7)

[6] Goal is to provide > 80% of estimated energy and protein needs within 72 hours for maximum clinical benefit

[7] Consult Clinical Nutrition for recommendations



Department of Clinical Effectiveness V1
Approved by the Executive Committee of the Medical Staff on 04/20/2021

## APPENDIX A: Malnutrition Criteria

This document is a reasonable guideline for the identification of malnutrition in the adult population (medical, surgical, rehabilitation and behavioral health) when used with professional clinical judgment.

- If the clinical dietitian/nutritionist identifies evidence from a nutritional assessment that patient meets criteria below, the diagnosis of malnutrition is added to the Problem List. At least two criteria are required to identify Severe or Non Severe malnutrition.
- Criteria may apply at all Body Mass Index calculations
- Criteria noted below may encompass patient data prior to admission as determined from medical record documentation and/or information provided by the patient/reliable care givers

| **ICD-10 Code: E43**<br>**Severe, Protein-Calorie Malnutrition** | **Severe Malnutrition in context of Acute Illness/Injury** | **Severe Malnutrition in context of Chronic Illness** | **Severe Malnutrition in context of Social/Behavioral/Environmental Circumstances** |
|---|---|---|---|
| **Weight Loss** - Evaluated in light of other clinical findings including hydration. Weight change over time is reported as a percentage of weight lost from baseline. | **Weight Loss**<br>> 2% in 1 week<br>> 5% in 1 month<br>> 7.5% in 3 months | **Weight Loss**<br>> 5% in 1 month<br>> 7.5% in 3 months<br>> 10% in 6 months<br>> 20 % in 12 months | **Weight Loss**<br>> 5% in1 month<br>> 7.5% in 3 months<br>> 10% in 6 months<br>> 20 % in 12 months |
| **Intake** - RD obtains diet history and estimates energy needs. Suboptimal intake is determined as a percentage of estimated needs over time. | **Energy Intake**<br>≤ 50% energy intake compared to estimated energy needs for ≥ 5 days | **Energy Intake**<br>≤ 75% energy intake compared to estimated energy needs for ≥ 1 month | **Energy Intake**<br>≤ 50% energy intake compared to estimated energy needs for ≥ 1 month |
| **Body Fat** – Loss of subcutaneous fat *e.g.*, orbital, triceps, fat overlying ribcage | **Body Fat**<br>Moderate depletion | **Body Fat**<br>Severe depletion | **Body Fat**<br>Severe depletion |
| **Muscle Mass** – Loss of muscle *e.g.*, temples, clavicles, shoulders, scapula, thigh and calf | **Muscle Mass**<br>Moderate depletion | **Muscle Mass**<br>Severe depletion | **Muscle Mass**<br>Severe depletion |
| **Fluid Accumulation** – General or local fluid accumulation *e.g.*, extremities, ascites or vulvar/scrotal edema | **Fluid Accumulation**<br>Moderate to Severe | **Fluid Accumulation**<br>Severe | **Fluid Accumulation**<br>Severe |
| **Functional Assessment –** ECOG Performance Status | **ECOG Performance Status**<br>Decline from baseline | **ECOG Performance Status**<br>Decline from baseline | **ECOG Performance Status**<br>Decline from baseline |

RD = registered dietitian ECOG = European Cooperative Oncology Group

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## APPENDIX A: Malnutrition Criteria - continued

| **ICD-10 Code: E440**<br>**Malnutrition of Moderate Degree** | **Non-Severe Malnutrition in context of Acute Illness/Injury** | **Non-Severe Malnutrition in context of Chronic Illness** | **Non-Severe Malnutrition in the context of Social/Environmental Circumstances** |
|---|---|---|---|
| **Weight Loss** - Evaluated in light of other clinical findings including hydration. Weight change over time is reported as a percentage of weight lost from baseline. | **Weight Loss**<br>1-2% in 1 week<br>5% in 1 month<br>7.5% in 3 months | **Weight Loss**<br>5% in 1 month<br>7.5 % in 3 months<br>10% in 6 months<br>20% in 12 months | **Weight Loss**<br>5% in 1 month<br>7.5 % in 3 months<br>10% in 6 months<br>20% in 12 months |
| **Intake** - RD obtains diet history and estimates energy needs. Suboptimal intake is determined as a percentage of estimated needs over time. | **Energy Intake**<br>< 75 % energy intake compared to estimated energy needs for > 7 days | **Energy Intake**<br>< 75% energy intake compared to estimated energy needs for ≥ 1 month | **Energy Intake**<br>< 75% energy intake compared to estimated energy needs for ≥ 3 months |
| **Body Fat** – Loss of subcutaneous fat *e.g.*, orbital, triceps, fat overlying ribcage | **Body Fat**<br>Mild depletion | **Body Fat**<br>Mild depletion | **Body Fat**<br>Mild depletion |
| **Muscle Mass –** Loss of muscle *e.g.*, temples, clavicles, shoulders, scapula, thigh and calf | **Muscle Mass**<br>Mild depletion | **Muscle Mass**<br>Mild depletion | **Muscle Mass**<br>Mild depletion |
| **Fluid Accumulation** – General or local fluid accumulation *e.g.*, extremities, ascites or vulvar/scrotal edema | **Fluid Accumulation**<br>Mild | **Fluid Accumulation**<br>Mild | **Fluid Accumulation**<br>Mild |
| **Functional Assessment –** ECOG Performance Status | **ECOG Performance Status**<br>Decline from baseline | **ECOG Performance Status**<br>Decline from baseline | **ECOG Performance Status**<br>Decline from baseline |
| **ICD-10 Code: E441**<br>**Malnutrition of Mild Degree** | Applicable for Pediatric only | | |
| **ICD-10 Code: E440 Moderate Protein Malnutrition** | Malnutrition of Moderate Degree (Protein) | | |
| **ICD-10 Code: E440 E43 Severe Protein-Calorie Malnutrition** | Malnutrition of Severe Degree (Protein-Calorie) | | |

## APPENDIX B: Risk Factors and Prevention for Aspiration

| Risk Factors | Interventions for Prevention in Patients with Risk Factors (including in those not tolerating gastric enteral nutrition) |
|---|---|
| • Inability to protect airway<br>• Presence of naso/oro-gastric enteral access<br>• Mechanical ventilation<br>• Age > 70 years<br>• Reduced level of consciousness<br>• Poor oral care<br>• Inadequate nurse:patient ratio<br>• Neurologic deficits<br>• Gastroesophageal reflux<br>• Use of bolus intermittent enteral feeding | • Post-pyloric feeding<br>• Elevate head of bed 30-45°<br>• Switch delivery to continuous infusion<br>• Chlorhexidine mouthwash twice daily<br>• Prokinetic agents (see Appendix C) |

## APPENDIX C: Management of Signs of Intolerance

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|---|---|---|
| **Gastric Residual Volume (GRV) > 300 mL** | • For initial GRV > 300 mL:<br>◦ Do not hold EN in the absence of other signs of intolerance<br>◦ Replace up to 500 mL of aspirate and discard remaining<br>◦ Review stooling pattern<br>◦ Consider pro-kinetics[1] and continue GRV measurements every 4 hours<br>- Metoclopramide 10 mg IV every 6 hours<br>- Erythromycin 250 mg IV every 6-8 hours for 48 hours<br>◦ If GRV > 500 mL, consider reducing EN rate by half while evaluating causes of increased residuals | • For GRV > 300 mL for two consecutive measurements:<br>◦ Do not hold EN in the absence of other signs of intolerance<br>◦ Replace up to 500 mL of aspirate and discard remaining<br>◦ Review stooling pattern<br>◦ Initiate pro-kinetics[1,2] and continue GRV measurements every 4 hours<br>- Metoclopramide 10 mg IV every 6 hours<br>- Erythromycin 250 mg IV every 6-8 hours for 48 hours<br>◦ If continued GRV on pro-kinetics, consider switch to post-pyloric and discontinue pro-kinetics<br>◦ If GRV > 500 mL, hold EN while evaluating causes of increased residuals |
| **Diarrhea:**<br>At least 3-5 loose, liquid, or watery bowel movements/day | • EN should not be automatically interrupted for diarrhea; evaluate etiology of diarrhea to determine appropriate therapy<br>• Evaluate patient history to determine pre-existing conditions which could cause diarrhea (*e.g.*, ulcerative colitis)<br>• Assess the abdomen and consider imaging if indicated<br>• Consider evaluating for Clostridium difficile<br>• Evaluate medications which may be contributing to diarrhea including but not limited to those containing sorbitol, chemotherapy, antibiotics, scheduled bowel management medications, and metoclopramide<br>• Rule out stool impaction<br>• Consider fecal incontinence management system<br>• If fiber is not contraindicated, 10-20 grams of fermentable soluble fiber is suggested, given in divided doses over 24 hours as adjunctive therapy<br>• Use of small peptide formulations in the patient with persistent diarrhea, suspected malabsorption, or lack of response to fiber is suggested<br>• Avoiding both soluble and insoluble fiber in patients at high risk for bowel ischemia or severe dysmotility is suggested. A fermentable soluble fiber should be considered for routine use in all hemodynamically stable medical and surgical patients.<br>• Consider the use of anti-diarrheal medications if indicated such as loperamide hydrochloride (Immodium A-D) or diphenoxylate and atropine (Lomotil). Probiotics, such as lactobacillus acidophilus/bulgaricus (Lactinex) may be considered for antibiotic-associated diarrhea. | |

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[1] Monitor QTc. QTc prolongation resulting in torsades de pointes is a risk but only under certain conditions such as excessive dose, hypokalemia, congenital long QT, or drug-drug interaction.

[2] Consider adding second pro-kinetic if initial pro-kinetic not effective

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## APPENDIX C: Management of Signs of Intolerance - continued

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|---|---|
| **Decreased passage of stool:**<br>No stool for > 48 hours | • Initiate stools softeners and/or laxatives as indicated:<br>◦ Docusate 100 mg enteral feeding tube every 12 hours scheduled<br>◦ Sennosides 17.6 mg enteral feeding tube every 12 hours scheduled<br>◦ Lactulose 20 grams enteral feeding tube every 12 hours PRN no bowel movement > 48 hours<br>◦ Bisacodyl suppository 10 mg rectal daily PRN no bowel movement > 48 hours<br>• Consider methylnaltrexone for patients experiencing opioid-induced constipation with inadequate respond to other laxative therapy and no known or suspected mechanical gastrointestinal obstruction |
| **Abdominal pain** | • Hold EN while evaluating causes<br>• Evaluate for bowel ileus or obstruction<br>• Resume EN at prior rate if clinically indicated |
| **Nausea** | • Consider addition of anti-emetics(s) as indicated<br>◦ Ondansetron 4 mg IV every 6 hours or 8 mg IV every 8 hours PRN<br>◦ Prochlorperazine 2.5-10 mg IV every 6-8 hours PRN<br>◦ Promethazine 12.5-25 mg IV every 6 hours PRN<br>◦ Metoclopramide 5-10 mg IV every 6 hours PRN<br>• Evaluate for other causes of nausea and treat as indicated<br>◦ Refer to Adult Antiemetic Management of Chemotherapy-Induced Nausea and Vomiting (CINV) algorithm<br>◦ Refer to Nausea/Vomiting Associated with Surgery-Adult algorithm |
| **Development of contraindications** | Hold EN |

EN = enteral nutrition

## SUGGESTED READINGS

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## DEVELOPMENT CREDITS

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