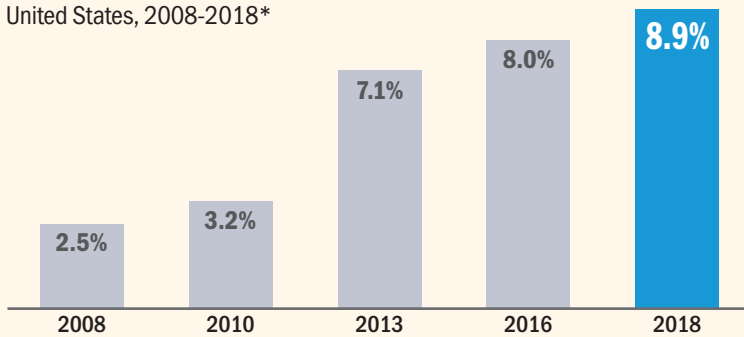


# PARENTERAL NUTRITION

## Therapy for Malnutrition

### Malnutrition in Hospitalized Patients: Continues to Rise<sup>1</sup>

Prevalence of Malnutrition Diagnoses in Discharged Patients  
United States, 2008-2018\*



\*Years 2008-2010 were all hospital discharges, 2013-2018 were non-maternal, non-neonatal hospital discharges.

### And Leads to Poorer Outcomes<sup>1</sup>

Malnourished Patients Have:

**3.4X HIGHER**  
In-Hospital Deaths



**2.0X HIGHER**  
Discharge Rates  
to Long-Term Care or  
Rehab Facilities



**1.9X LONGER**  
Hospital Stays



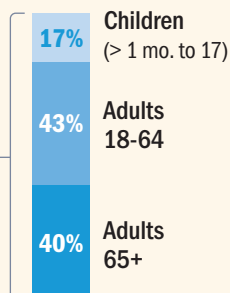
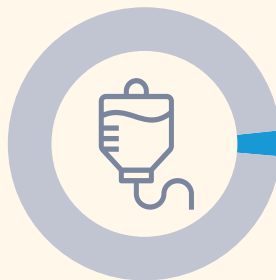
**1.4X HIGHER**  
Need for Home Health Care  
Services



### Yet, Malnourished Patients Often Do Not Receive Parenteral Nutrition (PN)

**ONLY 2.9%**

of those with  
coded malnutrition  
**received PN** in the  
hospital in 2018<sup>2</sup>



### When Is Parenteral Nutrition Appropriate?

PN offers a life-sustaining option when intestinal failure prevents adequate oral or enteral nutrition (EN). ASPEN published appropriate indications for PN so that providers understand when patients need this therapy.

#### Summary of Recommendations<sup>3</sup>

#### 1 Parenteral Nutrition Use Based on Medical Diagnosis or Disease State

##### Adult

- Do not use PN based solely on medical diagnosis or disease state.
- Prior to initiating PN, conduct a full evaluation of the feasibility of using EN; reserve PN for clinical situations in which adequate EN is not an option.

##### Pediatric

Use PN for children when the intestinal tract is not functional or cannot be accessed or when nutrient needs to provide for growth are greater than that which can be provided through oral intake or EN support alone.

##### Neonatal

Consider PN for neonates in the critical care setting, regardless of diagnosis, when EN is unable to meet energy requirements for energy expenditure and growth.

#### 2 Circumstances Where PN Is the Preferred Method of Nutrition Support

##### Adult

Use PN in patients who are malnourished or at risk for malnutrition when a contraindication to EN exists or the patient does not tolerate adequate EN or lacks sufficient bowel function to maintain or restore nutrition status (*Tables 1 and 2 on next page*).

##### Neonatal and Pediatric

Initiate PN for total or supplemental nutrient provision if EN is not feasible or not sufficient to meet total nutrient needs.

Continued

**HELP STOP MALNUTRITION: [nutritioncare.org/malnutrition](https://nutritioncare.org/malnutrition)**

# PARENTERAL NUTRITION: A THERAPY FOR MALNUTRITION

## Summary of Recommendations (continued)

### 3 Determining When EN Is Not Feasible

#### Adult

Evaluate clinical factors derived from history, physical examination, and diagnostic evaluations in determining if EN is contraindicated (Table 3).

#### Neonatal and Pediatric

- Initiate PN and withhold EN in neonatal and pediatric patients when a clear contraindication to EN exists, such as intestinal injury and perforation.
- Assess intestinal function and perfusion, as well as overall hemodynamic stability, when evaluating readiness for EN, rather than relying on strict adherence to a list of contraindications to EN, such as the presence of umbilical catheters or use of vasoactive medications.

### 4 Time Frame for Initiating PN

#### Adult

- Initiate PN after 7 days for well-nourished, stable adult patients who have been unable to receive significant (50% or more of estimated requirements) oral or enteral nutrients.
- Initiate PN within 3 to 5 days in those who are nutritionally-at-risk and unlikely to achieve desired oral intake or EN.
- Initiate PN as soon as is feasible for patients with baseline moderate or severe malnutrition in whom oral intake or EN is not possible or sufficient.
- Delay the initiation of PN in a patient with severe metabolic instability until the patient's condition has improved.

#### Pediatric

For the infant, child, or adolescent with a self-limited illness, it is reasonable to delay starting PN for 1 week. However, initiate PN within 1–3 days in infants and within 4–5 days in older children and adolescents when it is evident that they will not tolerate full oral intake or EN for an extended period.

#### Neonatal

Begin PN promptly after birth in the very low birth weight infant (less than 1500 g). Insufficient data exist to suggest a specific time frame in which PN is ideally initiated in more mature preterm infants or critically ill term neonates.

Table 1. Elements of Appropriate PN Use

- Identify clinical indications for PN, including manifestations of acute and chronic intestinal failure
- Recognize situations in which PN is not likely to be of benefit
- Initiate PN based on gastrointestinal function, nutrition status, and clinical status
- Select the vascular access device best suited to the therapy planned
- Implement measures to promote safety and reduce adverse outcomes
- Evaluate response to therapy
- Adjust in the therapeutic plan based on ongoing monitoring
- Assess continued need for PN
- Transition promptly to oral or enteral nutrition as feasible
- Collaborate across disciplines and departmental boundaries

Table 2. Intestinal Failure Categories Based on Onset and Parenteral Support Requirements

Category	Intestinal Dysfunction	Nutrition Support Requirements
Type I	A common, acute, short-term, and self-limiting condition, which occurs following abdominal surgery or in association with certain critical illness. Condition typically lasts less than 14 d.	Generally requires short courses of intravenous fluid and/or nutrition support.
Type II	A prolonged, acute condition; often in septic, metabolically unstable patients, requiring complex multidisciplinary care. Often occurs in association with an intra-abdominal catastrophe. May also include an acute complication of Type III, resulting in an "acute on chronic" condition.	Requires intravenous supplementation over periods of weeks or months.
Type III	Chronic condition in metabolically stable patients; condition may be reversible or irreversible.	Requiring intravenous supplementation over months or years (including lifelong).

Table 3. Contraindications to Enteral Access (Absolute and Relative)

#### All types of enteral access

- Mechanical obstruction of the gastrointestinal tract
- Uncontrolled peritonitis
- Uncorrected coagulopathy or thrombocytopenia
- Bowel ischemia
- Recent gastrointestinal bleeding with high risk of recurrent bleeding (peptic ulcer disease or esophageal varices)

#### Nasal placement

- Basilar skull fracture: temporal, occipital, sphenoid, or ethmoid fracture
- Recent transsphenoidal surgery
- Facial, nasal, or sinus trauma
- Significant esophageal pathology: stricture, tumor, severe esophagitis
- Esophageal varices with recent banding (delay placement 72 h)

#### Percutaneous and surgical abdominal placement

- Massive ascites
- Hemodynamic instability
- Morbid obesity with large panniculus
- Gastric outlet or duodenal obstruction (percutaneous endoscopic or surgical gastrostomy)
- Anticipated duration less than 4 wk

#### References

1. Guenter P, Abdelhadi R, Anthony P, et al. Malnutrition diagnoses and associated outcomes in hospitalized patients: United States, 2018. *Nutr Clin Pract.* 2021 Oct;36(5):957-969.
2. Guenter P, Blackmer A, Malone A, et al. Update on use of enteral and parenteral nutrition in hospitalized patients with a diagnosis of malnutrition in the United States. *Nutr Clin Pract.* 2022 Feb;37(1):94-101.
3. Worthington P, Balint J, Bechtold M, et al. When is parenteral nutrition appropriate? *JPEN J Parenter Enteral Nutr.* 2017;41(3):324-377.

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