ACG Clinical Guideline: Nutrition Therapy in the Adult Hospitalized Patient

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Abstract

The value of nutrition therapy for the adult hospitalized patient is derived from the outcome benefits achieved by the delivery of early enteral feeding. Nutritional assessment should identify those patients at high nutritional risk, determined by both disease severity and nutritional status. For such patients if they are unable to maintain volitional intake, enteral access should be attained and enteral nutrition (EN) initiated within 24–48 h of admission. Orogastric or nasogastric feeding is most appropriate when starting EN, switching to post-pyloric or deep jejunal feeding only in those patients who are intolerant of gastric feeds or at high risk for aspiration. Percutaneous access should be used for those patients anticipated to require EN for >4 weeks. Patients receiving EN should be monitored for risk of aspiration, tolerance, and adequacy of feeding (determined by percent of goal calories and protein delivered). Intentional permissive underfeeding (and even trophic feeding) is appropriate temporarily for certain subsets of hospitalized patients. Although a standard polymeric formula should be used routinely in most patients, an immune-modulating formula (with arginine and fish oil) should be reserved for patients who have had major surgery in a surgical ICU setting. Adequacy of nutrition therapy is enhanced by establishing nurse-driven enteral feeding protocols, increasing delivery by volume-based or top-down feeding strategies, minimizing interruptions, and eliminating the practice of gastric residual volumes. Parenteral nutrition should be used in patients at high nutritional risk when EN is not feasible or after the first week of hospitalization if EN is not sufficient. Because of their knowledge base and skill set, the gastroenterologist endoscopist is an asset to the Nutrition Support Team and should participate in providing optimal nutrition therapy to the hospitalized adult patient.

Introduction

The modern era of clinical nutrition began with the development of total parenteral nutrition (PN) by Dudrick (1) in 1966, suggesting for the first time that clinicians could compensate for intestinal failure with the potential to supply nutrients to any hospitalized patient. Further support for the unique contribution of PN came from a paper entitled “The Skeleton in the Hospital Closet” by Butterworth (2), which indicated that nearly 50% of patients in an urban hospital setting (in the United States) were malnourished. The response to these innovative concepts spurred the growth of nutrition support teams and PN-based therapy over the next two decades with the primary objective being to maintain lean body mass, achieve nitrogen balance, and prevent malnutrition (3). Over this time period, however, randomized controlled trials (RCTs) showed little outcome effect from the use of PN compared with standard therapy (where patients are managed with intravenous (IV) fluids, no enteral or parenteral therapy, and advancement to oral diet as tolerated) (4,5). Meta-analyses showed that, outside the setting of intestinal failure, in the absence of severe malnutrition, PN had little effect on clinical outcomes and actually had the potential to cause net harm (6). In the 1990s, a paradigm shift

ensued toward enteral nutrition (EN)-based therapy, with the goal changing as well to maintaining gut integrity, providing immune modulation, and downregulating inflammatory responses (3). Early meta-analyses showed that EN was both superior to PN-based therapy and more effective in improving outcome than standard therapy (4,7,8). Lately, challenges to the practice of clinical nutrition have occurred in response to the introduction of immune- and metabolic-modulating nutrition therapy, the evolving epidemic of obesity in the United States, and recent clinical trials suggesting that short-term (4–7 days) low- dose "trophic" feeding (aka, permissive underfeeding or hypo- caloric feeding) might be equally as effective as full feeding for the first week of hospitalization (9–11). Furthermore, in an era of moderate glucose control, better care of central lines, protocolized management of risk, and avoidance of overfeeding, the outcome benefits of PN may be approaching that of EN (12).

Support for the benefit of EN-based therapy on clinically important outcomes is derived from five distinct bodies of research in the literature. Multiple RCTs comparing early vs. delayed EN suggest that feedings started within the first 24 to 36 h of admission to the intensive care unit (ICU) are associated with significantly reduced infection, hospital length of stay, and mortality compared with feedings started after that time point (13–15). RCTs comparing early EN vs. standard therapy (in elective surgery, surgical critical care, and patients being operated on for complications of pancreatitis) showed a significant correlation between enteral feeding initiated the day after the operation and reductions in infection, hospital length of stay, and mortality (8,16,17). Observational data from five prospective trials suggest that an increasing caloric deficit (created by daily patient energy expenditure and delays in delivery of nutrition therapy) is associated with significant increases in organ failure, hospital length of stay, infectious morbidity, and total com- plications (18,19). Nutrition therapy designed to reduce the caloric deficit has been associated with improved outcomes, as shown by significant reductions in infection and mortality (20). The positive impact of nurse-driven protocols, which serve to increase delivery of EN, has been demonstrated in RCTs and prospective trials (before and after implementation of the protocol), where the use of such strategy has been associated with subsequent reductions in infection, hospital length of stay, and mortality compared with non-protocolized therapy (21,22). Finally, three decades of mechanistic data in animal models and clinical studies show that early EN helps maintain gut integrity, supports the role of commensal bacteria, reduces the gut/lung axis of inflammation, sustains the mass of gut-associated and mucosal-associated lymphoid tissue, and attenuates systemic inflammatory responses (23).

Although the intended target patient population of these guidelines is the hospitalized patient, most of the information on pro- viding nutrition therapy is derived from the management of patients in the ICU. Every hospitalized patient has a unique metabolic/immune response to surgery, illness, or injury, which may be modulated or attenuated by appropriate nutrition therapy (24). As a result, nutrition therapy has emerged as a primary therapeutic intervention. The degree to which a patient benefits from nutrition therapy depends on disease severity, baseline nutritional status, and design of the nutrition regimen itself (24). The timing, route, content, delivery, and patient tolerance are all variables that influence the potential for those benefits. Successful nutrition therapy depends on the appropriate assessment of gut function, achievement of enteral access, the creation of protocols to standardize delivery, and an ongoing process to monitor tolerance.

Methodology

A list of questions and recommendations were compiled by the group of experts on the guideline committee. A literature search was performed using Embase, Pubmed, MEDLine, Cochrane Database,

Google search for scholarly articles, and personal files of committee members. Search terms included tube feeding, EN, PN, enteral access, percutaneous endoscopic gastrostomy and jejunostomy, nasojejunal, and nutritional risk.

Quality of evidence was determined using GRADE methods, based on study design, study quality, consistency, and directness (**Table 1**) (25). Four levels of evidence were assigned based on study limitations, inconsistency of results, and uncertainty about the directness of evidence (**Table 2**) (25). Strength of recommendation was assigned as "Strong" if supported by moderate-to-high quality of evidence (RCTs and high-quality observational studies) or "Conditional" if supported by low quality of evidence (low- quality RCTs, observational studies, or expert opinion; **Table 3**) (25,26).

The target population for these guidelines was the adult hospitalized patient, unable to sustain volitional intake, expected to remain in the hospital for >3 days. Unless otherwise stated, these guidelines are focused on all hospitalized patients, whether they are in an ICU or in a general ward. Specialized Nutrition Therapy was defined as providing either EN via an enteral access device or PN via a central line catheter. Standard therapy was defined as the provision of IV fluids, no EN or PN, and advancement to oral diet as tolerated.

Table 1. Derivation of rating for quality of evidence (25)

Study design	Initial quality of evidence	Quality adjustors	Final quality of evidence
Randomized trials	High (++++)	Decrease quality: risk of bias, inconsistency, indirectness, imprecision, publication bias	High ++++ Moderate +++
Observational studies	Low (++)	Increase quality: large effect, dose response, adjustment for all plausible residual confounders	Low ++ Very low +
Expert consensus			

Table 2. Significance of the four levels of evidence (25)

High	We are very confident that the true effect lies close to that of the estimate of effect
Moderate	We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of effect, but there is a possibility that it is substantially different
Low	Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of effect
Very low	We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect

Table 3. Strength of recommendation (25)

Strong	The desirable effects of the intervention clearly outweigh the undesirable effects or clearly do not
Conditional	The tradeoffs are less certain between the desirable and undesirable effects of an intervention

Table 4. Benefits of early enteral nutrition (24)
Non-nutrition benefits
Gastrointestinal responses
Maintain gut integrity
Reduced gut/lung axis of inflammation
Enhance motility/contractility
Absorptive capacity
Maintain mass of GALT tissue
Support and maintain commensal bacteria
Production of secretory IgA
Trophic effect on epithelial cells
Reduced virulence of endogenous pathogenic organisms
Immune responses
Modulate key regulatory cells to enhance systemic immune function
Promote dominance of anti-inflammatory Th-2 over proinflammatory Th-1 responses
Stimulate oral tolerance
Influence anti-inflammatory nutrient receptors in the GI tract (duodenal vagal, colonic butyrate)
Maintain MALT tissue at all epithelial surfaces (lung, liver, lacrimal, genitourinary, and pulmonary)
Modulate adhesion molecules to attenuate trans-endothelial migration of macrophages and neutrophils
Metabolic responses
Promote insulin sensitivity through the stimulation of incretins
Reduce hyperglycemia (AGEs), muscle, and tissue glycosylation
Attenuating stress metabolism to enhance more physiologic fuel utilization
Nutrition benefits
Sufficient protein and calories
Provide micronutrient and anti-oxidants
Maintain lean body mass by providing substrate for optimal protein synthesis
Support cellular and subcellular (mitochondria) function
Stimulate protein synthesis to meet metabolic demand of the host
AGEs, advanced glycolytic end products; GALT, gut-associated lymphoid tissue; GI, gastrointestinal; MALT, mucosal-associated lymphoid tissue.

Table 5. Nutrition assessment scoring systems used to determine nutrition risk

NRS-2002: factors used to determine score (30)

Impaired nutritional status		**Severity of disease**	
Absent score 0	Normal nutritional status	Absent score 0	Normal nutritional requirements
Mild score 1	Weight loss >5% in 3 months OR Food intake <50–75% of normal requirement in preceding week	Mild score 1	Hip fracture Chronic patients in particular with acute complications: cirrhosis, COPD Chronic hemodialysis, diabetes, oncology
Moderate score 2	Weight loss >5% in 2 months OR BMI 18.5–20.5+impaired general condition OR Food intake 25–50% of normal requirement in preceding week	Moderate score 2	Major abdominal surgery, stroke Severe pneumonia, hematologic malignancy
Severe score 3	Weight loss >5% in 1 month (15% in 3 months) OR BMI <18.5+impaired general condition OR Food intake <25% of normal requirement in preceding week	Severe score 3	Head injury Bone marrow transplantation Intensive care patients (APACHE II>10)

NUTRIC Score: factors used to determine score (29)

Factors	**NUTRIC points**			
	0	1	2	3
Age (years)	<50	50–74	≥75	—
APACHE II Score	<15	15–19	20–27	≥28
Baseline SOFA Score	<6	6–9	≥10	—
No. of comorbidities	0–1	≥2	—	—
Days in hospital to ICU admit	0	≥1	—	—
Interleukin-6 (μ/ml)	0–399	≥400	—	—

APACHE, Acute Physiologic and Chronic Health Evaluation; BMI, body mass index; COPD, chronic obstructive pulmonary disease; ICU, intensive care unit; NRS-2002, Nutritional Risk Score 2002; SOFA=Simplified Organ Failure Assessment.
If age≥70 years, add 1 point (for NRS-2002).
Total score=(Points for nutritional status)+(Points for disease severity)+(Points for age) (for NRS-2002).
Total score is from six separate factors (for NUTRIC Score).

Table 6. Summary of Recommendations	
Indications for nutritional therapy	
Question: Which hospitalized patients should be considered for specialized nutrition therapy and by which route (enteral or parenteral) should it be provided?	
Recommendations:	
1.	Specialized nutrition therapy in the form of EN should be initiated promptly in the hospitalized patient who is at high nutritional risk and is unable to maintain volitional oral intake (conditional recommendation, low level of evidence).
2.	EN should be used preferentially over PN in hospitalized patients who require non-volitional specialized nutrition therapy, and do not have a contraindication to the delivery of luminal nutrients (conditional recommendation, low level of evidence).
3.	Specialized nutrition therapy (EN or PN) is not required for hospitalized patients who are at low nutritional risk, appear well nourished, and are expected to resume volitional intake within 5 to 7 days following admission (conditional recommendation, very low level of evidence).
4.	PN should be reserved for the hospitalized patient under specific circumstances, when EN is not feasible or sufficient enough to provide energy and protein goals (conditional recommendation, very low level of evidence).
Nutritional assessment	
Question: How should the hospitalized patient be assessed prior to initiation of specialized nutrition therapy, and how are energy and protein requirements determined?	
Recommendations:	
5.	Prior to initiation of specialized nutrition therapy (either EN or PN), a determination of nutritional risk should be performed using a validated scoring system such as the NRS-2002 or the NUTRIC Score on all patients admitted to the hospital for whom volitional intake is anticipated to be insufficient (conditional recommendation, very low level of evidence).
6a.	An additional assessment should be performed prior to initiation of nutrition therapy of factors, which may impact the design and delivery of the nutrition regimen (conditional recommendation, very low level of evidence).
6b.	Use of “traditional” nutrition indicators (albumin, pre-albumin, transferrin, and anthropometry) should be avoided (conditional recommendation, very low level of evidence).
6c.	Surrogate markers of infection or inflammation should not be used for nutritional assessment (conditional recommendation, very low level of evidence).
7a.	Caloric requirements should be determined and then be used to set the goal for delivery of nutrition therapy (conditional recommendation, very low level of evidence).
7b.	One of the three strategies should be used to determine caloric requirements: • Indirect calorimetry (conditional recommendation, very low level of evidence). • Simple weight-based equations (conditional recommendation, very low level of evidence). • Published predictive equations (conditional recommendation, very low level of evidence).
8.	Protein requirements should be determined independently of caloric needs, and an ongoing assessment of protein provision should be performed (conditional recommendation, very low level of evidence).

Table 6. Summary of Recommendations *continued*	
Enteral access	
Question: How should enteral access be achieved, and at what level of the GI tract should enteral nutrition be infused?	
Recommendations:	
9a.	A nasogastric or orogastric feeding tube should be used as the initial access device for starting EN in a hospitalized patient (conditional recommendation, very low level of evidence).
9b.	Radiologic confirmation of placement in the stomach should be carried out prior to feeding (except with use of electromagnetic transmitter-guided feeding tubes). Repeated periodic radiologic confirmation of correct tube position in the GI tract is not required unless there is concern for tube displacement because of nausea/vomiting, regurgitation, coughing, retching, or overt displacement (conditional recommendation, very low level of evidence).
10a.	Conversion to a post-pyloric feeding tube should be carried out only when gastric feeding has been shown to be poorly tolerated or the patient is at high risk for aspiration (strong recommendation, moderate-to-high level of evidence).
10b.	Simultaneous aspiration/decompression of the stomach with jejunal feeding may be accomplished by using a dual lumen aspirate/feed nasoenteric tube, a combined percutaneous GJ tube, or the use of both gastrostomy and jejunostomy tubes (conditional recommendation, very low level of evidence).
11.	When long-term enteral access is needed in a patient with gastroparesis or chronic pancreatitis, a jejunostomy tube should be placed (conditional recommendation, very low level of evidence).
12.	A percutaneous enteral access device should be placed, either via the gastric or jejunal route, if enteral feeding is anticipated to be required for greater than 4 weeks duration (conditional recommendation, very low level of evidence).
13.	A percutaneous gastrostomy should be placed preferentially in the gastric antrum in order to facilitate conversion to a GJ tube in the event that the patient is intolerant to gastric feeding (conditional recommendation, very low level of evidence).
14.	For the patient at high risk for tube displacement, steps should be taken proactively to secure the access device at the time of placement (conditional recommendation, very low level of evidence).
Initiating enteral nutrition	
Question: How soon, at what dose, and with which formula should enteral nutrition be initiated in the hospitalized patient?	
Recommendations:	
15.	In the patient at high nutritional risk unable to maintain volitional intake, EN should be initiated within 24–48 h of admission to the hospital (conditional recommendation, low level of evidence).
16a.	Although early EN should be initiated within 24–48 h of admission, the timing by which to advance to goal is unclear. When tolerated, feeding should be advanced to goal within 48–72 h (conditional recommendation, very low level of evidence).

Table 6. Summary of Recommendations *continued*	
Initiating enteral nutrition *continued*	
Question: How soon, at what dose, and with which formula should enteral nutrition be initiated in the hospitalized patient? *continued*	
Recommendations *continued*:	
16b.	With reduced tolerance, feeding should be advanced with caution to goal by 5 to 7 days (conditional recommendation, very low level of evidence).
17.	Permissive underfeeding (i.e., hypocaloric feeding) is an acceptable alternative to full feeding and may be considered in three separate patient scenarios: • Acute lung injury/acute respiratory distress syndrome (strong recommendation, high level of evidence). • Obesity with BMI>30 (conditional recommendation, very low level of evidence). • Placement on PN over the first week of nutrition therapy (conditional recommendation, low level of evidence).
18a.	A standard polymeric formula or a high-protein standard formula should be used routinely in the hospitalized patient requiring EN (conditional recommendation, very low level of evidence).
18b.	An immune-modulating formula containing arginine and omega-3 fish oil should be used for patients who have had major surgery and are in a surgical ICU setting (conditional recommendation, very low level of evidence).
18c.	An immune-modulating formula containing arginine and omega-3 fish oil should not be used routinely in patients in a medical ICU (conditional recommendation, very low level of evidence).
Monitoring tolerance and adequacy of enteral nutrition	
Question: How should adequacy and tolerance of enteral nutrition be assessed in the hospitalized patient?	
Recommendations:	
19a.	Hospitalized patients on EN should be monitored daily by physical exam (conditional recommendation, very low level of evidence).
19b.	Patients on EN should be monitored for adequacy of provision of EN as a percent of target goal calories, cumulative caloric deficit, and inappropriate cessation of EN (conditional recommendation, very low level of evidence).
20.	In the patient at high risk for refeeding syndrome, feeding should be ramped up slowly to goal over 3 to 4 days, while carefully monitoring electrolytes and volume status (conditional recommendation, very low level of evidence).
21a.	Enteral feeding protocols should be used in hospitalized patients in need of nutrition therapy (strong recommendation, moderate-to-high level of evidence).
21b.	A validated protocol should be used, such as a volume-based feeding protocol or a multi-strategy (bundled) top-down protocol (conditional recommendation, very low level of evidence).
22.	Gastric residual volume should not be used routinely as a monitor in hospitalized patients on EN (conditional recommendation, very low level of evidence).
23a.	Patients on EN should be assessed for risk of aspiration (conditional recommendation, very low level of evidence)

Table 6. Summary of Recommendations *continued*	
Monitoring tolerance and adequacy of enteral nutrition *continued*	
Question: How should adequacy and tolerance of enteral nutrition be assessed in the hospitalized patient? *continued*	
Recommendations *continued*:	
23b.	For patients determined to be at high risk, the following steps should be taken to proactively reduce that risk: • Use a prokinetic agent (conditional recommendation, low level of evidence). • Divert the level of feeding lower in the GI tract (strong recommendation, moderate-to-high level of evidence). • Switch to continuous infusion (conditional recommendation, very low level of evidence). • Use chlorhexidine mouthwash twice daily (conditional recommendation, very low level of evidence).
24a.	For the patient receiving EN who develops diarrhea, an evaluation should be initiated to identify an etiology and direct management (conditional recommendation, very low level of evidence).
24b.	The patient receiving EN who develops diarrhea should be managed by one of the three strategies: • Use of fermentable soluble fiber as an adjunctive supplement to a standard EN formula (conditional recommendation, very low level of evidence). • Switching to a commercial mixed fiber (soluble and insoluble) formula (conditional recommendation, low level of evidence). • Initiating a small peptide/MCT oil formula (conditional recommendation, very low level of evidence).
Complications of enteral access	
Question: How should complications of enteral feeding in the hospitalized patient be assessed and treated?	
Recommendations:	
25.	The percutaneous enteral access site should be monitored by cleaning daily with mild soap and water and maintaining correct positioning of the external bolster (conditional recommendation, very low level of evidence).
26a.	Prevention of tube clogging is important to successful EN and may be achieved by frequent water flushes delivered every shift and each time medications are given (conditional recommendation, very low level of evidence).
26b.	When a clogged tube is encountered and the use of water flushes is unsuccessful at clearing, a de-clogging solution comprising a nonenteric-coated pancreatic enzyme tablet dissolved in a sodium bicarbonate solution should be used (conditional recommendation, very low level of evidence).
26c.	If still unsuccessful, a mechanical de-clogging device should be considered prior to exchanging the tube for a new one (conditional recommendation, very low level of evidence).

Table 6. Summary of Recommendations *continued*	
Complications of enteral access *continued*	
Question: How should complications of enteral feeding in the hospitalized patient be assessed and treated? *continued*	
Recommendations *continued*:	
27a.	A patient who inadvertently dislodges a recently placed percutaneous gastrostomy tube (<7–10-day old) should be brought back immediately to the endoscopy or radiology suite and a new tube placed endoscopically or radiologically through the same site on the abdominal wall (conditional recommendation, very low level of evidence).
27b.	If a percutaneous gastrostomy tube becomes dislodged that has been in place long enough for a partially formed tract to develop (>7–10 days), a tube of similar diameter should be placed blindly as expeditiously as possible to maintain patency and prevent closure of the tube tract. In this latter circumstance, radiologic confirmation should be carried out prior to feeding if there is any question of inappropriate location of the tube (conditional recommendation, very low level of evidence).
28a.	For a patient with deterioration, breakdown, increased drainage/leakage, or enlarging stoma around the percutaneous tube site, an evaluation should be performed to determine etiology and appropriate management (conditional recommendation, very low level of evidence).
28b.	Placement of a larger tube should not be used to manage leakage caused by an enlarging stoma around the percutaneous access device (conditional recommendation, very low level of evidence).
29.	A percutaneous enteral access device that shows signs of fungal colonization with material deterioration and compromised structural integrity should be replaced in a non-urgent but timely manner (conditional recommendation, very low level of evidence).
Parenteral nutrition	
Question: When and how should parenteral nutrition be utilized in the hospitalized patient?	
Recommendations:	
30a.	If early EN is not feasible and the patient is at low nutritional risk upon admission, no specialized nutrition therapy should be provided and PN should be withheld for the first week of hospitalization (conditional recommendation, very low level of evidence).
30b.	If a patient is at high nutritional risk on admission to the hospital and EN is not feasible, PN should be initiated as soon as possible (strong recommendation, moderate level of evidence).
31.	Supplemental PN should be considered for the patient already on enteral tube feeding only after 7 to 10 days, when unable to meet greater than 60% of energy and/or protein requirements by the enteral route alone. Initiating supplemental PN prior to this 7–10-day period in those patients already receiving EN does not improve outcomes and may be detrimental to the patient (strong recommendation, moderate level of evidence).
32.	In hospitalized patients receiving PN, mild permissive underfeeding (delivery 80% of energy requirements with full protein provision) should be considered initially for the first 7 to 10 days. Following this first week (if long-term PN is required), energy provision should be increased to meet energy goals (conditional recommendation, low level of evidence).

Table 6. Summary of Recommendations *continued*	
Parenteral nutrition *continued*	
Question: When and how should parenteral nutrition be utilized in the hospitalized patient? *continued*	
Recommendations *continued*:	
33.	Peripheral PN should not be used, as it leads to inappropriate use of PN, has a high risk of phlebitis and loss of venous access sites, and generally provides inadequate nutrition therapy (conditional recommendation, very low level of evidence).
34a.	Careful transition feeding should be used in the patient on PN, for whom EN is now being initiated. As tolerance to EN improves and volume of delivery increases, PN should be tapered to avoid overfeeding (conditional recommendation, very low level of evidence).
34b.	PN should be stopped when the EN provides >60% of energy and protein goals (conditional recommendation, very low level of evidence).
Nutritional therapy at end-of-life	
Question: Should specialized nutrition therapy be provided to a hospitalized patient at end-of-life?	
Recommendations:	
35a.	The decision to place a gastrostomy tube in an end-of-life situation should be determined by patient autonomy and the wishes of that patient and their family, even though the nutrition therapy may do little to change traditional clinical outcomes (conditional recommendation, very low level of evidence).
35b.	Regardless of prognosis, placement of a gastrostomy device should be based on whether achieving enteral access and initiating EN successfully meet the goals of the patient and/or their family. Percutaneous gastrostomy placement should be considered even if the only benefit is to provide improvement in the quality of life for the family, increased ease of providing nutrition, hydration, and medications, or to facilitate transfer out of the hospital setting to a facility closer to home (conditional recommendation, very low level of evidence).
36.	The clinician is not obligated to provide hydration and nutrition therapy in end-of-life situations. The decision to initiate nutrition therapy is no different than the decision to stop therapy once it has started (thus, clinicians are not obligated to provide therapy that is unwarranted) (conditional recommendation, very low level of evidence).
37a.	If requested, nutrition therapy in end-stage malignancy should be provided by the enteral route (conditional recommendation, very low level of evidence).
37b.	Use of PN in this setting may cause net harm and should be highly or aggressively discouraged (conditional recommendation, very low level of evidence).
38.	The clinician who has ethical concerns of his own in a difficult end-of-life situation should excuse himself from the case, as long as he can transfer care to an equally qualified and willing health-care provider (conditional recommendation, very low level of evidence).
BMI, body mass index; EN, enteral nutrition; GI, gastrointestinal; ICU, intensive care unit; NRS-2002, Nutritional Risk Score 2002; PN, parenteral nutrition.	