Approach to Oral and Enteral Nutrition (PN) in Adults

Module 8.1

Indications and Contraindications of EN

Learning Objectives

- To understand the main indications for EN;
- To identify patients who might benefit from EN;
- To know the main contraindications to EN.

Contents

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Key Messages

- EN is a safe and effective method of nutritional therapy;
- Main indication for EN is prevention and treatment of malnutrition in order to improve outcome;
- Main contraindications are severe impairment of gastrointestinal function and metabolic instability.
1. What exactly is EN?

Enteral nutrition is one form of “artificial nutrition” and includes feeding via a nasogastric/enteral or percutaneous (gastric or jejunal) tube as well as by oral nutritional supplements. It comprises all forms of nutritional support that involve the use of “dietary foods for special medical purposes” as defined in the European legal regulation of the commission directive 1999/21/EC of 25 March 1999 (1). It is a safe, effective and generally well tolerated method of nutritional therapy in patients with a normally functioning gastrointestinal tract.

The main goal of EN is prevention or treatment of malnutrition in order to improve outcome. Although this is intuitively probable, there is also strong evidence from a number of excellent studies that malnutrition is an independent risk factor for poor outcome in terms of morbidity, delayed convalescence after surgery or trauma, higher readmission rates, increased length of hospital stay, higher treatment costs as well as higher mortality rates (2, 3). There is also substantial evidence for the benefits of EN in a number of clinical conditions.

In this context it is worth mentioning the editorial of the 2006 ESPEN guidelines on Enteral Nutrition (4): “Although nutritional support is therapy in most cases it is exactly what it says - supportive rather than specific treatment of the underlying disease.”

2. Indications for EN

In general there are two indications for enteral nutrition:
Anticipated inadequate oral food intake for more than 7 days
Present or imminent malnutrition

2.1 Definition of Malnutrition and Nutritional Risk

The term malnutrition can be used for either a deficiency or excess of macro- or micronutrients (1). However, in clinical practice and in the context of enteral nutrition or other nutritional interventions malnutrition is commonly used to describe a nutritional deficit with clinically significant effects on body composition, organ function and clinical outcome.

According to the ESPEN guidelines (1) the term nutritional risk is used to describe malnutrition of sufficient degree to impair outcome. Severe nutritional risk is defined as the presence of at least one of the following criteria:

- Weight loss > 10 % within 6 months
- BMI < 18.5 kg/m²
- SGA Grad C or NRS ≥ 3
- Serum albumin < 30 g/l (with no evidence of hepatic or renal dysfunction). Hypoalbuminaemia, although a risk factor for outcome is not strictly a nutritional marker, since it is mainly caused by redistribution due to inflammation and is therefore a reflection of disease severity. It is also influenced by the dilutional effects of infused crystalloids.

The SGA (Subjective Global Assessment) was established by Detsky and coworkers (5) and relies on the patient’s history regarding weight loss, dietary intake, gastrointestinal symptoms, functional capacity, and physical signs of malnutrition (loss of subcutaneous fat or muscle mass, edema, ascites). The NRS (Nutritional Risk Screening 2002) was established by Kondrup and coworkers (6) and considers weight loss, food intake, BMI, disease severity and age. Both scores are useful to identify patients at nutritional risk who might benefit from enteral nutrition.

In geriatric patients criteria for the definition of nutritional risk was modified due to their reduced capacity to recover from nutritional deficits which require early intervention (7). The recommended cut-off value for BMI is <22 kg/m², ie higher than in adults (< 20 kg/m²), and weight loss > 5 % in 3 months is considered as critical as a weight loss of > 10 % in 6 months.

2.2 Specific Indications for EN According to the ESPEN Guidelines 2006

The 2006 ESPEN guidelines on EN have reviewed and analyzed hundreds of intervention studies to create evidence based recommendations for the use of EN in different diseases and clinical settings (8).

The following table summarizes the main indications for EN and the evidence levels provided by these guidelines. The grades of recommendations are:
Grade A: Meta-analysis of randomized controlled trials or at least one randomized controlled trial
Grad B: At least one well-designed controlled trial without randomization or at least one other type of well-designed, quasi experimental study or well-designed non-experimental descriptive studies such as comparative studies, correlation studies, case-control studies
Grade C: Expert opinion and/or clinical experience of respected authorities

Table 1 Specific indications for EN in selected diseases/clinical situations

<table>
<thead>
<tr>
<th>Disease/Setting</th>
<th>Indication</th>
<th>Grade</th>
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<tbody>
<tr>
<td>Intensive Care</td>
<td>All patients who are not expected to be on a full oral diet within 3 days.</td>
<td>C</td>
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<td>Surgery</td>
<td>Perioperative: Use nutritional support in patients with severe nutritional risk for 10-14 days prior to elective major surgery even if surgery has to be delayed.</td>
<td>A</td>
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<td>Initiate nutritional support without delay:</td>
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<td></td>
<td>- even in patients without obvious undernutrition, if it is anticipated that the patient will be unable to eat for more than 7 days.</td>
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<td></td>
<td>- in patients who cannot maintain oral intake above 60% or recommended intake for more than 10 days.</td>
<td>C</td>
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<td>Organ transplantation</td>
<td>Before transplantation: In undernutrition, use additional ONS or even TF.</td>
<td>C</td>
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<td></td>
<td>Assess nutritional status regularly while monitoring patients on the waiting list</td>
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<td></td>
<td>After transplantation: Initiate early normal food or EN after heart, lung, liver, pancreas and kidney transplantation.</td>
<td>C</td>
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<td>Even after transplantation of the small intestine, nutritional support can be initiated early, but should be increased very carefully.</td>
<td>C</td>
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<td>Non-surgical oncology</td>
<td>General: If undernutrition already exists or if it is anticipated that the patient will be unable to eat for &gt; 7 days or if intake is &lt; 60% of estimated requirement for &gt; 10 days.</td>
<td>B</td>
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<td></td>
<td>In patients with weight loss due to insufficient nutritional intake.</td>
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<td></td>
<td>Perioperative: Patients with severe nutritional risk benefit from nutritional support 10-14 d prior to major surgery even if surgery has to be delayed.</td>
<td>A</td>
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<td></td>
<td>During radio- or radio-chemotherapy: Use intensive dietary advice and oral nutritional supplements to increase dietary intake and to prevent therapy-associated weight loss and interruption of therapy</td>
<td>A</td>
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<td>During chemotherapy: Routine enteral nutrition is not useful.</td>
<td>C</td>
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<td>Crohn's Disease</td>
<td>Active disease: Use enteral nutrition as sole therapy for the acute phase mainly when treatment with corticosteroids is not feasible. Use combined therapy (EN and drugs) in undernourished patients or in patients with inflammatory stenosis of the intestine. Maintenance of remission: Use ONS in case of persistent intestinal inflammation (steroid dependent patients).</td>
<td>A</td>
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<tr>
<td>Ulcerative colitis</td>
<td>Active disease: EN is not recommended as treatment of active ulcerative colitis unless the patient is malnourished. Maintenance of remission: EN is not recommended.</td>
<td>C</td>
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<td>Pancreas</td>
<td>Mild acute Pancreatitis: EN is unnecessary, if the patient can consume normal food after 5-7 days. EN within 5-7 days has no positive impact on the course of the disease and is therefore not recommended. Tube feed if oral nutrition is not possible due to consistent pain for more than 5 days. Severe necrotizing pancreatitis: EN is indicated if possible. EN should be supplemented by parenteral nutrition if needed. In severe acute pancreatitis with complications tube feeding can be performed successfully.</td>
<td>B</td>
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<tr>
<td>Disease</td>
<td>Indications</td>
<td>Recommendation</td>
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<td>Chronic pancreatitis</td>
<td>10-15% of all patients require ONS, tube feeding is indicated in approximately 5%.</td>
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<td>Liver disease</td>
<td>Liver cirrhosis: Use ONS or TF (even in presence of oesophageal varices) if caloric requirements cannot be met through oral intake. PEG placement is not recommended. Alcoholic steatohepatitis: see above.</td>
<td>A</td>
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<td>Renal disease</td>
<td>Chronic renal failure: Consider EN when oral feeding is not possible; when oral intake is insufficient overnight TF might be indicated. Haemodialysis therapy (HD): Use EN when normal nutrition is not possible due to intercurrent catabolic acute conditions. Consider TF when oral intake is inadequate and in unconscious patients.</td>
<td>C</td>
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<td>Infectious Disease</td>
<td>HIV: Start nutritional therapy when weight loss or loss of body cell mass &gt;5% in 3 months or BMI is &lt;18.5 kg/m². Diarrhea and/or malabsorption are no contraindication for EN (Positive effect on nutritional status will not be prevented, PN has similar effects, EN has positive impact on stool frequency and consistency).</td>
<td>A</td>
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<td>Chronic Heart Failure</td>
<td>EN is recommended to stop or reverse weight loss in cardiac cachexia, but not in prophylaxis of cardiac cachexia.</td>
<td>C</td>
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<td>COPD</td>
<td>Evidence of beneficial effects of EN in COPD patients is limited. In combination with exercise and anabolic pharmacotherapy it might improve nutritional status and function.</td>
<td>B</td>
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ONS - oral nutritional supplement; TF - tube feeding

This table gives only a rough overview of selected indications for EN. More detailed recommendations concerning other clinical situations, routes for enteral feeding, and choice of feeding solution are given in the full text of the ESPEN guidelines published in the April 2006 edition of Clinical Nutrition.

Note: Especially in geriatrics a variety of specific indications exist, because this group of patients carries the highest risk for malnutrition. This will be treated in detail in LLL-module “nutritional therapy in elderly patients” (see topic 36).

A particularly difficult clinical situation is the nutritional support of incurable patients. The consensus (expert opinion level) of the ESPEN working group on “non-surgical oncology” is, those cancer patients with incurable disease should receive “enteral nutrition in order to minimize weight loss as long as the patient consents and the dying phase has not yet started”. When the end of life is very close prevention or treatment of malnutrition is no longer an indication for EN. In this situation most patients require only minimal amounts of food and water to reduce thirst and hunger and maintain comfort, helping to avoid dehydration and confusional states.

The situation becomes even more complex when the patient is not able to give consent or when both the prognosis and possible benefits of tube feeding are uncertain. The ethical and legal aspects of such situations have been extensively discussed by Körner and colleagues (9).

### 3. Contraindications to EN

Contraindications to EN are severely impaired gastrointestinal function or severe metabolic and circulatory instability (10), in particular:

- Gastrointestinal
  - Intestinal obstruction / ileus
  - Intestinal ischemia
  - Severe peritonitis
  - Nausea / vomiting
  - Malassimilation

- Metabolic
  - Diabetic ketoacidosis
  - Diabetic coma
  - Hepatic coma
Circulatory
Severe acute heart insufficiency
Shock of any origin

Nausea and mal-assimilation are not strict contraindications, and EN may be possible when the underlying condition is adequately treated or particular formulae are used. General contraindications to endoscopic tube placement are discussed in LLL-module “Techniques of EN”. According to the ESPEN guidelines PEG placement is not recommended in patients with liver cirrhosis or on chronic ambulatory peritoneal dialysis due to the increased risk of peritonitis and other complications. In patients with advanced cirrhosis, however, oesophageal varices are not associated with increased risk of bleeding, and thus, nasogastric tube feeding is possible (11).

Summary

In this module indications for and contraindications to enteral nutrition in a number of clinical situations are discussed. The recommendations are based on the 2006 published ESPEN guidelines on enteral nutrition.

References