Approach to Oral and Enteral Nutrition (PN) in Adults

Module 8.2

Oral and sip feeding

Learning Objectives

• To be aware of the importance of optimal nutrition in hospital patients;
• To know about the different menus and possibilities of fortification offered by the average hospital food service;
• To learn about innovative approaches to increase nutritional intake of normal food in hospital patients;
• To know the indications for and types of oral nutritional supplements.

Contents

1. Why is oral nutrition important in hospital patients?
2. Requirements of oral nutrition in hospital
3. Monitoring and improving oral intake
4. Fortification of standard hospital food and oral supplements (sip feeds)
5. When to administer oral supplements

Key Messages

• Oral feeding with either normal food or special and/or fortified diets is always the first choice to prevent or treat undernutrition in patients;
• Food served in hospitals should be a “role model” for food at home, i.e. should have a high quality in terms of nutritional physiology, raw materials and preparation and should be attractive in taste and appearance;
• The quantity of oral intake must be carefully monitored, especially in patients at nutritional risk;
• Sip feeding (oral nutritional supplements) should be used when adequate oral intake of normal food including special and/or fortified diets is not possible.
1. Why is Oral Nutrition Important in Hospital Patients?

Good and nutritious food is a major contributor to quality of life and wellbeing.
Oral nutrition with normal food should therefore always represent the first-line dietary measure for patients who are able to eat in order to prevent or correct malnutrition. Hospital food must consequently meet several requirements: In order to provide the patients with all necessary macro- and micronutrients, it should have a high quality in terms of nutritional physiology, raw materials, hygiene and preparation. It must be attractive in both taste and appearance. The temperature of served food is also of central importance (60 - 70°C), especially for slow eaters and those who need help to eat (1).

2. Requirements of Oral Nutrition in Hospital

The macronutrient ratio of the standard hospital food (general menu) corresponds to the requirements of an optimal nutrition and should consist of 45 -55% carbohydrates (of which 20-30 grams fibre), fat 30 -35% and protein 15 -20%. 25% of the energy should be provided at breakfast, 30% at lunch and 25% in the evening. The remaining 25% should be distributed over the day in form of snacks.

Macronutrient ratio, meal pattern and menus (including diets on medical indication) vary between European countries. Most countries have issued national recommendations either on governmental level or guidelines by clinical nutrition societies (see "Food and nutritional care in hospitals: how to prevent undernutrition" by the Committee of experts on nutrition, food safety and consumer health ad hoc group - nutrition programmes in hospitals).

A variety of menus targeted to specific patient categories and needs must be available in hospital such as diets on medical indication (energy reduced, diets with defined protein and electrolyte content (protein and electrolyte restricted), texture modified diets for patients with chewing and swallowing problems as well as energy and protein dense diets aimed at patients at risk or with disease related malnutrition. Since it might be difficult to take all religious or individual dietary regulations into account, vegetarian dishes must be offered as a possible alternative.

Indications must be well grounded if dietary restrictions are instituted for medical reasons, since undernutrition can result from unnecessary restrictive diets (2). (Fig. 1)

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**Figure 1 Food intake in hospital**

**Problem:** Low nutritional intake is frequent

**Monitoring of food intake allows evaluation of food intake**

**Mealtimes:**
Serving hours should be planned to allow sufficient time between each meal for in-between snacks in the morning, afternoon and late evening. Bearing in mind that nil by mouth periods and diagnostic examinations frequently collide with the appointed meal times, in between snacks and nourishing drinks should be available to the patients on all wards and also offered when appropriate in order to enhance nutritional intake. Every effort should be made in order to minimize interruptions of the meal times.
Patients should be able to choose from a menu which is in accordance with their age, religious and cultural background and should receive help and guidance in choosing the food by the ward staff if necessary.
Patients should be able to order extra food at any time and should be informed of this possibility. Feedback from the patients to the ward and to the kitchen regarding disliking or liking of the served food should be encouraged.

3. Monitoring and Improving Oral Intake

Taking into account that food intake in hospital is frequently suboptimal (3,4), every effort should be made to ensure appropriate nutritional intake. (Fig. 2)

**Enhancing nutritional intake I**

- Protected mealtimes
  3 mealtimes free from avoidable and unnecessary interruptions
- In between snacks

Figure 2 Enhancing nutritional intake I

One novel way of ensuring at least thirty minutes of undisturbed meal time, is the “protected meal times” policy which has been promoted by the British Hospital Caterers Association (HCA). The protected meal times requires the minimisation of interruptions such as ward or drug rounds or cleaning and the rescheduling of procedures during the three appointed meal times. Nursing staff is then able to provide assistance and encouragement to eat where necessary and has immediate knowledge of patients eating habits or difficulties. (Fig. 3)

**Enhancing nutritional intake II**

- Fortification of hospital food
  Protein: powder
  Fat: cream, butter, oil
  Carbohydrates: maltodextrines, dextrose
- Oral supplements (sip feeds)

Figure 3 Enhancing nutritional intake II
Monitoring nutritional intake is mandatory for early detection of patients who are at nutritional risk. Therefore supervision of tray collection is a first line measure to learn about patients’ food intake, which should be noted with a semi quantitative system. If a patient is at risk of malnutrition and is receiving nutritional therapy of any kind, food intake should be registered with proper dietary records. Data from either kitchen or menu nutrient database regarding energy and protein content of hospital food and portion size should be available to each ward in order to aid nursing staff in the assessing of patients’ food intake. The quantity of the nutritional intake should be used to calculate the patients need for further nutritional support.

4. Fortification of Standard Hospital Food and Oral Supplements (sip feeds)

Fortification:
If patients are at nutritional risk and food intake is inappropriate, fortification of hospital food in order to improve nutritional intake can be considered. Protein can be added in powder form and adding fat (cream, butter, oil) or carbohydrates (maltodextrines, dextrose) is a simple way to enhance the energetic value of food. By adding these components to the food, there is naturally a sensoric limitation to the amount of additional energy or protein. Several studies have however shown that enriching food leads to improved nutritional intake in elderly patients who do not manage large amounts of food (5,6).

In patients who are not able to eat unaided but able to digest food, feeding assistance is essential and should not routinely be replaced by artificial nutrition support. (Fig. 4)

<table>
<thead>
<tr>
<th>Types of sip feeds</th>
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<tbody>
<tr>
<td>▪ Energy rich:</td>
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<tr>
<td>▪ e.g. malnutrition, Crohn’s disease, cancer</td>
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<tr>
<td>▪ Energy and protein rich:</td>
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<tr>
<td>▪ e.g. malnutrition, convalescence</td>
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<td>▪ Reduced protein and low electrolyte conc.</td>
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<td>▪ e.g. compensated CRF</td>
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<tr>
<td>▪ Energy and protein rich, with low electrolyte content</td>
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<td>▪ e.g. haemodialysis</td>
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<tr>
<td>▪ Immunonutrition:</td>
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<td>▪ e.g. cancer patients perioperatively</td>
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Figure 4 Types of sip feeds

Type of nutritional supplements:
Liquid (milk based) sip feeds: generally used as supplements, they can be used as a sole source of nutrition if they are nutritionally complete.
Powdered: not suitable as sole source of nutrition. Powdered feeds can be prepared with different consistencies which might be useful for patients with dysphagia.
Semi solid: not suitable as sole source of nutrition. Useful for dysphagic patients.
Energy supplements: not suitable as sole source of nutrition. They mainly contain carbohydrates, and can be used in patients who need energy but are protein restricted.

Liquid sip feeds are available composed as follows:

Rich in fat:
Macronutrient ratio: 15 - 18 % protein, 50 - 55 % fat and 30 - 32 % carbohydrates (e.g. for cancer patients who are malnourished/cachectic/with enhanced energy requirement)
Energy and protein rich:
Macronutrient ratio: 15 - 20 % protein, 30 - 35 % fat and 50 - 55 % carbohydrates. (e.g. prevention or correction of malnutrition)

Energy and protein rich, with restricted electrolyte content:
Macronutrient ratio: 15 - 18 % protein, 40 - 43 % fat and 40 - 42 % carbohydrates. (e.g. for patients on haemodialysis)

Energy and protein restricted, with restricted electrolyte content
Macronutrient ratio: 5 - 7 % protein, 10 - 1 % fat and 80 - 84 % carbohydrates. (e.g. for patients with compensated CRF)

Immunonutrition:
Macronutrient ratio: 18 % - 22 % protein, 25 - 30 % fat and 50 - 55 % carbohydrates. Enriched with glutamine, arginine and omega 3 fatty acids (e.g. for cancer patients before and after major surgery)

Fat free:
Macronutrient ratio: 10 - 15 % protein, 0 % fat and 85 - 90 % carbohydrates (e.g. for patients with impaired fat assimilation, digestion and resorption: IBD, short bowel syndrome, chronic pancreatitis)

Some oral supplements are designed to cover daily requirements of macro- and micronutrients. (Fig. 5)

**HOSPITAL MENUS**

- Standard menu
- Diets with defined protein and electrolyte content 
  *(e.g. protein and electrolyte restricted)*
- Diets with reduced/defined energy content
- Gastroenterological diets 
  *(e.g. gluten free, lactose free, diets for malassimilation, maldigestion and malabsorption)*
- Special diets 
  *(e.g. puric acid free, fructose free, germ reduced)*

Figure 5 Hospital menus

5. When to Administer Oral Supplements

When patients cannot meet their nutritional requirements with standard hospital food or enriched diets, supplementation with sip feeds must be initiated at once.

Oral supplements should always be the first choice over enteral tube feeding, provided that there are no swallowing difficulties and no obstruction in the oesophageal or gastric tract. Oral sip feeding is not invasive and has no major side effects such as nasopharyngeal complications that may occur with nasogastric tubes. Moreover salivary secretion with its antibacterial properties is stimulated.

In patients with no signs of malnutrition oral supplementation should start immediately if food intake is < 60% of required intake during an anticipated period of 10 days, whereas malnourished patients with an anticipated reduced intake must be offered sip feeds immediately. In case of weak
Effects of oral supplements in enhancing nutritional status:
A meta-analysis dating from 1998 (10) on protein energy supplementation in adults analyzing results from 30 randomized controlled trials involving 2062 patients demonstrated that nutritional parameters improved in the supplemented patients. 17 of the trials used oral supplementation and mean body weight improvement in the treated groups was 2.39% (95% CI 2.43-3.89%) and the odds ratio for death in those taking supplementation was 0.58 (95% CI 0.39-0.87%). However the authors concluded similar to the authors of a systematic review from 2001 (11) on treatment of protein energy malnutrition in non-malignant disease that further larger trials are needed to provide a firm scientific basis for recommendation on how and when nutritional supplements should be administered in certain diseases.

Choice of product:
Apart from the medical indication, the choice of product depends on its nutritional profile, palatability and acceptability of the patient. Since good compliance is essential to the success of the nutritional therapy, patient preference is vital. Once a product is chosen, compliance is enhanced through offering a variety of flavours. Also, varying the form of intake (eg milk-based sip feeds should be served cold, but can be added to fruits or dishes, frozen into ice creams or diluted with milk) can improve compliance.

Patients should however be counselled on the intake of the sip feeds. In order to avoid side effects such as diarrhoea, constipation, nausea, the oral supplements should be sipped slowly. Also they should not be consumed before a meal, but in between meals (≥ 1 hour before) in order to increase energy consumption and avoid premature satiation (12).

Monitoring:
Nutritional therapy with oral supplements must be planned and supervised. Patients’ compliance and weight changes must be monitored. If appropriate the therapy must be adjusted on at least a weekly basis taking into account patients nutritional intake, weight change and relevant clinical parameters.
It is important that the intake of oral supplements does not decrease normal food intake, so dietary food records should be kept.
The amount of oral supplement should normally account for the missing energy and protein that the patient is not able to consume with the oral food intake.

Summary
Oral nutrition with normal food should be considered the first dietary measure to correct or prevent malnutrition. Therefore a variety of menus for specific patient categories as well as adequate choices for age, religious and cultural background should be provided. The appropriate nutritional intake should be assured with measures like the ‘protected mealtimes policy’. Monitoring nutritional intake is mandatory for early detection of patients who are at nutritional risk.
If patients are identified of being at nutritional risk or malnourished, their food can be fortified to improve nutritional intake by adding protein, fat and carbohydrates; if the problem is an inability to feed themselves, they can be given feeding assistance. If those actions do not ameliorate the situation, supplementation with sip feeds must be initiated. In case of weak or severely malnourished patients, where intake of oral supplements is not likely to cover requirements, tube feeding or parenteral nutrition must be considered from the beginning. The choice of supplement...
depends on the nutritional profile and the acceptance of the patient. Good compliance is essential to the success of nutritional therapy.

References