RISK FACTORS FOR MALNUTRITION

- **Risk factors unrelated to age:** cancer, chronic and severe organ failure, diseases causing malabsorption, chronic alcoholism, infectious and/or chronic inflammatory diseases and all situations that may cause a reduction in food intake and/or an increase in energy requirements.

- **Risk factors more specific to the elderly:**
  - Psycho-socio-environmental factors
  - Any acute disorder or decompensation of chronic disease
  - Long-term drug treatment

<table>
<thead>
<tr>
<th>Psycho-socio-environmental factors</th>
<th>Any acute disorder or decompensation of chronic disease</th>
<th>Long-term drug treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social isolation</td>
<td>Pain</td>
<td>Polymedication</td>
</tr>
<tr>
<td>Grieving</td>
<td>Infectious disease</td>
<td>Medication causing dryness of the mouth, dysgeusia, gastrointestinal disorders, anorexia, drowsiness, etc.</td>
</tr>
<tr>
<td>Financial difficulties</td>
<td>Fracture causing a disability</td>
<td>Long-term corticosteroids</td>
</tr>
<tr>
<td>Ill-treatment</td>
<td>Surgery</td>
<td></td>
</tr>
<tr>
<td>Hospitalisation</td>
<td>Severe constipation</td>
<td></td>
</tr>
<tr>
<td>Change in lifestyle: admission to an institution</td>
<td>Pressure sores</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Oral and dental disorders</th>
<th>Restrictive diets</th>
<th>Dementia and other neurological disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mastication disorders</td>
<td>Salt-free</td>
<td>Alzheimer's disease</td>
</tr>
<tr>
<td>Poor dental status</td>
<td>Slimming</td>
<td>Other forms of dementia</td>
</tr>
<tr>
<td>Poorly fitting dentures</td>
<td>Diabetic</td>
<td>Confusional syndrome</td>
</tr>
<tr>
<td>Dryness of the mouth</td>
<td>Cholesterol-lowering</td>
<td>Consciousness disorders</td>
</tr>
<tr>
<td>Oropharyngeal candidiasis</td>
<td>Long-term, residue-free</td>
<td>Behavioural disorders</td>
</tr>
<tr>
<td>Dysgeusia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Swallowing disorders</th>
<th>Dependency in daily activities</th>
<th>Psychiatric disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENT disease</td>
<td>Eating dependency</td>
<td>Depressive syndromes</td>
</tr>
<tr>
<td>Degenerative or vascular neurological disorders</td>
<td>Dependency for mobility</td>
<td>Behavioural disorders</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SCREENING METHODS

<table>
<thead>
<tr>
<th>Target populations</th>
<th>Frequency</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>All elderly persons</td>
<td>Once/year in primary care</td>
<td>Search for malnutrition risk factors (see above)</td>
</tr>
<tr>
<td></td>
<td>Once/month in institutional care</td>
<td>Assess appetite and/or food intake</td>
</tr>
<tr>
<td></td>
<td>On each admission to hospital</td>
<td>Repeatedly measure body weight and evaluate weight loss in comparison with earlier record</td>
</tr>
<tr>
<td>Elderly persons at risk of malnutrition</td>
<td>More frequent monitoring: according to clinical status and degree of risk (several concomitant risk factors)</td>
<td>Calculate body mass index [BMI = Body weight / Height² ] (weight in kg, height in metres)</td>
</tr>
</tbody>
</table>

A questionnaire such as the Mini Nutritional Assessment (MNA) questionnaire can be used for screening.
One or more of the following:

<table>
<thead>
<tr>
<th>NUTRITIONAL SUPPORT STRATEGY</th>
</tr>
</thead>
</table>

- The earlier nutritional support is provided the more effective it is.

### Objectives of nutritional support in the malnourished elderly

- Energy intake of 30 to 40 kcal/kg/day
- Protein intake: 1.2 to 1.5 g/kg/day

### Possible nutritional support methods

- Oral (dietary advice, assistance with eating, fortified diet and oral nutritional supplements (ONS))
- Enteral
- Parenteral

### Criteria for choosing methods of support

- Nutritional status of elderly person
- Spontaneous energy and protein intakes
- Severity of underlying disease(s)
- Associated disabilities and their foreseeable outcome
- Opinion of patient and close relatives as well as ethical considerations

### Indications for nutritional support

- Oral feeding is recommended as first-line treatment except when contraindicated
- Enteral nutrition (EN) may be used if oral nutrition is insufficient or impossible.
- Parenteral nutrition is restricted to the following three situations and implemented in specialized units, within the scope of a coherent treatment plan:
  - Severe anatomical or functional malabsorption
  - Acute or chronic bowel obstruction
  - Failure of well-conducted enteral nutrition (poor tolerability)

### Table 1. Strategy for nutritional support in the elderly person

<table>
<thead>
<tr>
<th>Spontaneous dietary intake</th>
<th>Nutritional status</th>
<th>Normal</th>
<th>Malnutrition</th>
<th>Severe malnutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Monitoring</td>
<td>Dietary advice</td>
<td>Fortified diet Reassessed at 1 month</td>
<td>Dietary advice Fortified diet and ONS Reassessed at 15 days</td>
</tr>
<tr>
<td>Reduced but more than half usual intake</td>
<td>Dietary advice Fortified diet Reassessed at 1 month</td>
<td>Dietary advice Fortified diet Reassessed at 15 days and if failure: ONS</td>
<td>Dietary advice Fortified diet and ONS Reassessed at 1 week and if failure: EN</td>
<td></td>
</tr>
<tr>
<td>Very reduced and less than half normal intake</td>
<td>Dietary advice Fortified diet Reassessed at 1 week and if failure: ONS</td>
<td>Dietary advice Fortified diet and ONS Reassessed at 1 week and if failure: EN</td>
<td>Dietary advice Fortified diet and EN from outset Reassessed at 1 week</td>
<td></td>
</tr>
</tbody>
</table>

ONS: oral nutritional supplements; EN: enteral nutrition

1 Reassessment comprises:
- Body weight and nutritional status
- Clinical course of underlying disease
- Tolerability and adherence to treatment
- Estimation of spontaneous food intake
FOLLOW-UP OF MALNUTRITION IN THE ELDERLY

<table>
<thead>
<tr>
<th>Tools</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body weight</td>
<td>Scales appropriate to patient mobility</td>
</tr>
<tr>
<td>Food intake</td>
<td>Simplified “semi-quantitative” method or precise calculation of intake over 3 days or at least over 24 hours</td>
</tr>
<tr>
<td>Serum albumin</td>
<td>Assay except if normal baseline value</td>
</tr>
</tbody>
</table>

PRACTICAL METHODS OF NUTRITIONAL SUPPORT

**Dietary advice**
- Apply benchmarks of the French National Nutrition Health Programme (PNNS)\(^1\)
- Increase daytime eating frequency
- Avoid long periods without food during the night (>12 hours)
- Provide high-energy and/or high-protein foods suited to patients’ preferences
- Organize feeding assistance (technical and/or human) and provide agreeable surroundings

**Fortified foods**
- Fortify traditional diet with various basic products (powdered milk, concentrated whole milk, grated cheese, eggs, fresh cream, melted butter, industrial protein oil or powders, high-protein pasta or semolina etc.). The aim is to increase the energy and protein intake of meals without increasing their volume.

**Oral nutritional supplements (ONS)**
- ONS are complete, high-energy or high-protein nutrient mixes with a variety of tastes and textures that may be given orally
- High-energy (≥1.5 kcal/mL or g) and/or high-protein (proteins ≥7.0 g/100 mL or 100 g, or proteins ≥20% of total energy intake products are advised
- ONS must be eaten during snacks (at least 2 hours before or after a meal) or during meals (in addition to the meal)
- The goal is to provide an additional food intake of 400 Kcal/day and/or 30 g/protein day (generally with 2 units/day)
- ONS must be tailored to patients’ preferences and any disabilities
- Storage conditions must be followed once opened (2 hours at room temperature and 24 hours in the refrigerator).

**Enteral nutrition (EN)**
- Indications: Failure of oral nutritional support and first-line therapy in the case of severe swallowing disorders or severe malnutrition with a very low food intake.
- Institution: Hospitalization for at least a few days (intubation, evaluation of tolerability, education of patient and close relatives)
- Continuation at home: After direct contact between the hospital department and primary care doctor, initiation and follow-up by a specialized service provider possibly with a home nurse or a hospital-at-home unit, if the patient or his family cannot manage the EN
- Prescription: Initial prescription for 14 days, then a 3-month, renewable follow-up prescription
- Monitoring: By the prescribing department and the primary care doctor according to body weight and nutritional status, disease outcome, safety, adherence to EN and assessment of oral food intake.

\(^1\) [http://www.sante.gouv.fr//htm/pointsur/nutrition/index.htm](http://www.sante.gouv.fr//htm/pointsur/nutrition/index.htm)
**SPECIAL SITUATIONS**

### Nutritional support in Terminal disease
- Aims: for pleasure and comfort
- Maintenance of a good oral status
- Relief of symptoms that may affect the desire to eat or the pleasure of eating (pain, nausea, glossitis and dryness of the mouth)
- Refeeding by the parenteral or enteral route is NOT recommended

### Alzheimer patients
- Recommended in the case of weight loss
- Appropriate in food behaviour disorders dyspraxia or swallowing disorders.
- **Mild or moderate disease**: Begin by the oral route and then if this fails, propose enteral nutrition for a limited time
- **Severe** forms: Enteral nutrition is NOT recommended owing to the high risk of life-threatening complications

### Patients with or at risk of pressure ulcers
- Same nutritional goals as those for malnourished patients
- Start orally
- If this fails, institute enteral nutrition, taking into account the patient's somatic characteristics and ethical considerations.

### Patients with swallowing disorders
- Continue to feed orally, even with very small amounts provided that there is only a low risk of aspiration
- Enteral nutrition is indicated if the oral route causes respiratory complications and/or is insufficient to cover nutritional requirements
- If swallowing disorders are expected to last for more than 2 weeks, enteral nutrition by gastrostomy is preferred to a nasogastric tube

### During convalescence (after acute disease or surgery)
- In the case of weight loss after acute disease or surgery
- In cases of hip fracture, temporary prescription of oral nutritional supplements

### During depression
- In the case of malnutrition or reduced food intake
- Regular nutritional monitoring of patients

**COORDINATION OF NUTRITIONAL SUPPORT**

### At home
- Individual assistance: from family and friends, domestic help, meals-on-wheels, senior citizen meal centres
- Organizations with the role of setting up systems, coordination and information:
  - Healthcare networks including those for geriatric patients
  - Community Social Action Centres (CCAS)
  - Local Information and Coordination Centres (CLIC)
  - Social Services
- Financial support for this assistance
  - APA (personal autonomy allowance)
  - Social Assistance from the county (département)
  - Pension funds and some mutual insurance companies

### In healthcare institutions
- Multidisciplinary management under the responsibility of the coordinating doctor

### In the hospital
- To improve nutritional support and ensure high-quality food and nutrition services:
  - Diet and Nutrition Liaison Committee (CLAN)
  - Creation in hospitals of interdepartmental nutrition units (UTN)

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Clinical Practice Guideline – April 2007
The full guidelines (in English) and the scientific report (in French) can be downloaded from [www.has-sante.fr](http://www.has-sante.fr)