

# L'indicazione alla Nutrizione Artificiale nell'Anziano

Franco Contaldo

Dipartimento di Medicina Clinica e  
Chirurgia

Università Federico II di Napoli

- Malnutrition in the elderly has been described as a “*silent crisis*” because it often goes undetected.
- Clinically, poor nutrition is linked with adverse health outcomes in a growing elderly population and is one of the most important contributors to frailty.

- Early identification of malnutrition holds important implications for both prevention and treatment, preventing in particular WL (weight loss) and improving ADL (Activity of Daily Living) functions.
- Malnutrition is present, although at a different degree, in hospitalized, nursing home residents and in elderly receiving home care.

Several factors are associated with poor nutritional health:

- Age
- Living alone
- Eating and oral health issues
- Loss in sensory functions
- Low functional capacity
- Diminished cognitive function
- Depression
- Poor vision
- Changes in body composition (sarcopenia)

# Adverse health outcomes associated with undernutrition in the elderly.

- Delayed wound healing
- Impaired immune function
- Poor muscle function
- Mental health problems
- Impaired quality of life
- Increased peripheral fractures (falls)
- Increased morbidity and mortality rates

# Measurement systems for malnutrition in the elderly

---

Dietary Intake	<75% of RDA in $\geq 3$ key nutrients <2/3 of RDA in >4 nutrients <50% of calculated maintenance energy requirement
Biochemical indices	Serum albumin <35 mg/dL Serum albumin <30 mg/dL Serum transferrin <20 g/L Total lymphocyte count <1.5 cells/mm
Anthropometrics	Body mass index <5 percentile Body mass index <24 Body mass index <20 Mid-arm circumference <5 percentile Arm muscle circumference <5 percentile Triceps skinfold <5 percentile Weight <75% standard weight for height Weight <80 percentile standard weight for height <90 percentile standard weight for height Loss of >5% of weight in 6 months

---

RDA, Recommended daily allowance.

# Comparison of Marasmus and Kwashiorkor

	Marasmus	Kwashiorkor
Clinical causes	Insufficient calorie intake	Insufficient protein intake during stress/illness
Clinical features	Starved appearance Wt <80% standard for Ht. TSF <3 mm MAMC <15 cm	Well-nourished appearance Easy hair pluckability Oedema
Laboratory data	Creatinine-height index <60% norm	Albumin <3.5/3.0 g/dL
Time to develop	Months	Weeks

Wt, Weight; Ht, Height; TSF, Triceps skinfold; MAMC, Mid-arm muscle circumference.

# Nutritional indexes currently used in the diagnosis of Malnutrition in the elderly

- Mini-Nutritional Assessment Short form (MNA-SF): ↓ Food Intake and mobility, ↑WL, psychol stress, acute diseases in the last 3 months.
- The short nutritional Assessment Questionnaire 65+ (SNAQ65+) involuntary WL in the last 6 mo, poor appetite, diff walk stairs, MUAC measurement.
- Subjective global assessment index (SGA)



# Clinical approach to Protein Energy Malnutrition in the Elderly

- Insufficient dietary intake (generalized, selective)
- Poor Nutritional Status
- Sarcopenia (reduced FFM/muscle loss) +/- excess body fat
- “Critical attitudes” (anorexia, depression, mood changes, metabolic complications etc)
- Antecedents of PEM (loss, dependency, loneliness etc)

- Protein Energy Malnutrition cannot be adequately studied without recognition of the influence of psycho-social and behavioural factors in the progression and management of physical changes.
- Nurse/care giver with a central role in identifying such changes and to prevent, diagnose and cure malnutrition in the elderly.

- The decision-making concerning artificial nutrition or hydration (ANH) can be considered an example of end-of-life treatment decision.
- ANH is a medical treatment by which “nutrition” or hydration is provided enterally (gastrostomy, etc.) or parenterally.
- ANH is one of the most frequent life-sustaining treatments.

- The EURELD Consortium study on random samples of nutritional death certificates from 6 European Countries found that a decision to decline ANH occurred between 2.6% (Italy) and 10,9% (the Netherlands).

- ANH decision-making often occurs in patients with dementia.
- In these patients losing the ability to eat, is an independent symptom of end-stage dementia/diseases.

- Decision-making concerning ANH in patients with dementia is clinically, emotionally and ethically challenging as it deals with one of the fundamental necessities of life (to eat and drink) and with deep-seated beliefs both in families and health care staffs.

- The best available clinical evidence has been unable to validate in elderly patients with dementia supposed benefits of ANH intervention (prolonging life, improving nutritional status, preventing aspiration, providing comfort). On the other hand has revealed several accompanying complications (infections, aspiration, vomiting, diarrhoea etc)
- In dementia it is not sufficient to look at prolonged life, but also at quality of life

# Care-giver roles in ANH decision making in dementia

- Nurse/care giver may give the initial signal that patient's nutritional status is deteriorating.
- Acts as “initiator” of the decision-making process of ANH.
- Plays a guiding role with the family, in particular when it does not realize the seriousness of the situation, has another viewpoint, has unrealistic expectations



# Comfort Feeding Only (CFO): 1

- Reduced oral intake is expected in advanced dementia, not only due to eating problems, but also as a result of the pathological consequences of the disease.
- Because of the lower resting metabolic rate and inactivity in advanced dementia, calorie needs are reduced.

# Comfort Feeding Only (CFO): 2

- About 1/3 of nursing home residents with advanced cognitive impairment have feeding tubes.
- EN does not prolong survival in “advanced” dementia
- EN prolongs survival in “early” dementia
- Patients with “other terminal diseases” who can communicate do not suffer from hunger or thirst.

# Comfort Feeding Only (CFO): 3

- Given the substantial cognitive and physical impairment of patients with dementia, survival may not be the only relevant outcome to consider for PEG feeding.
- CFO emphasizes that the patient will be fed so long as it is not distressing.
- CFO refers to the goals of the feeding.

# Comfort Feeding Only (CFO): 4

- CFO provides an individualized care plan to hand feed the patient as long as it is not causing distress.
- Conclusion of the process is not “feed or don’t feed” but “**care** feeding or **treat** by Enteral Nutrition (through PEG) “.
- CFO avoids the misleading dichotomy of care versus no care.

# Awake, sleep pattern and spontaneous swallowing in elderly patients with advanced dementia orally fed or receiving Enteral Nutrition by PEG

- Aim of the study was to evaluate general conditions, consciousness level and complications risks in elderly patients with dementia orally fed versus PEG fed
- (swallowing function is inversely related to aspiration pneumonia risk)

Biological observation of patients by PEG

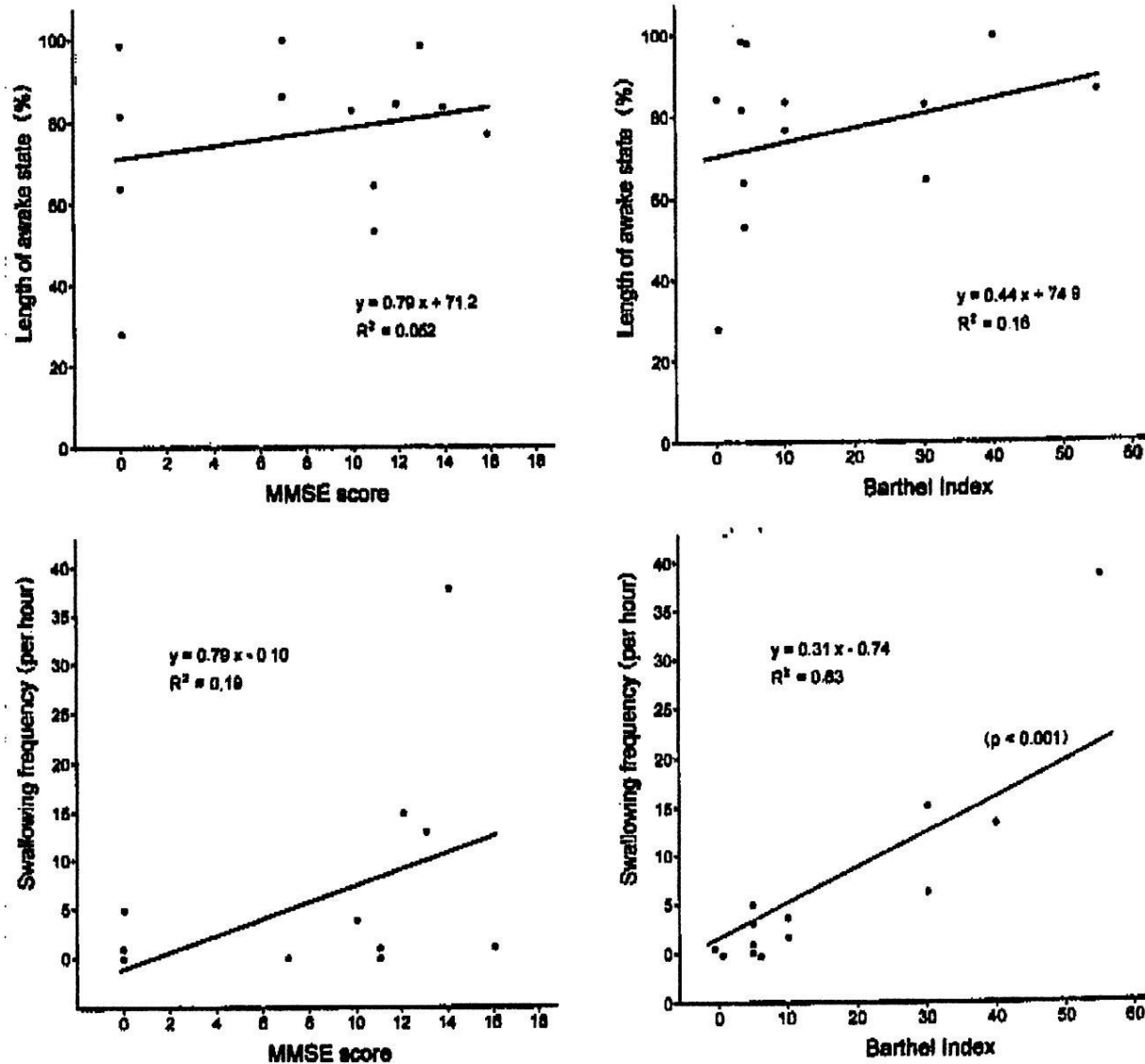
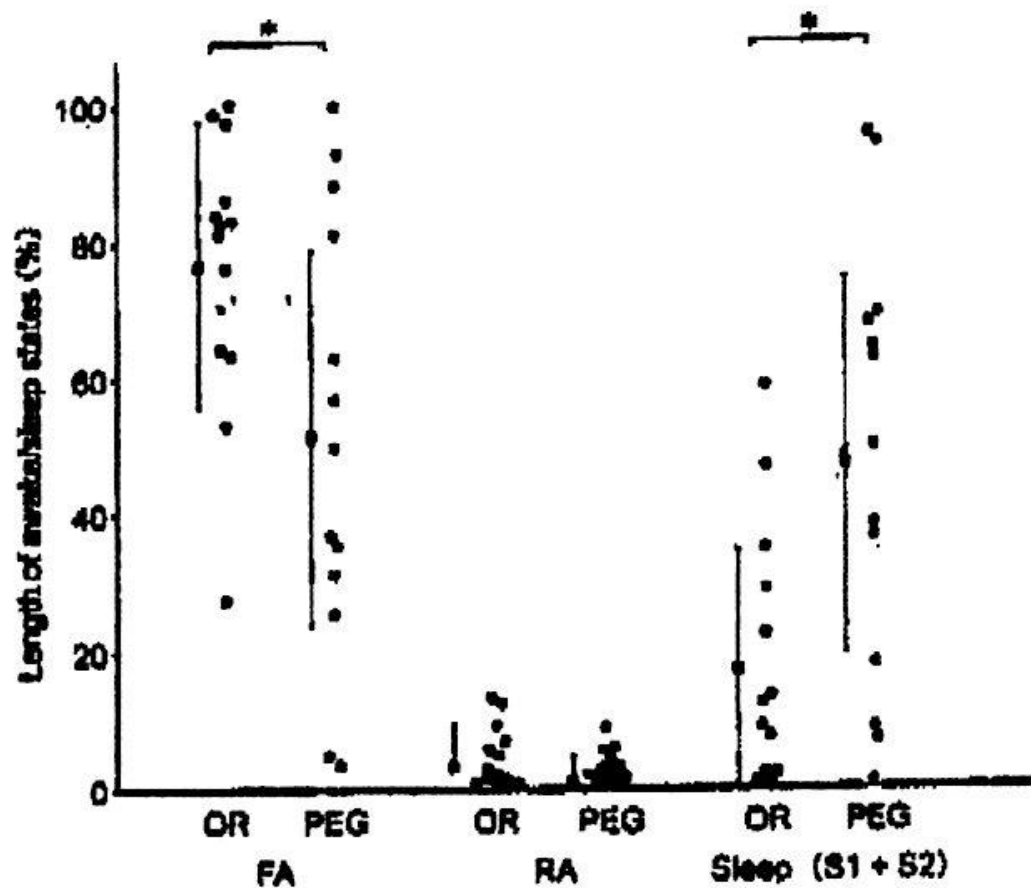


Figure 4 Top: correlation between the Mini-Mental State Examination (MMSE) score (left) or Barthel Index (BI, right) and length of the full-awake (FA) state (top) in patients who took meals orally (OR). Bottom: correlation between the MMSE score (left) or BI (right) and swallowing frequency in OR patients. The BI and number of spontaneous swallowing movements correlated significantly in OR patients ( $r = 0.863$ ,  $P < 0.001$ ), but there was no significant correlation between other values. The line indicates the correlation curve with formulae.



**Figure 3** Length of awake/sleep states during the recording period in demented patients undergoing artificial nutrition by percutaneous endoscopic gastrostomy (PEG) and patients with dementia who took meals orally (OR). The value was significantly different in the full-awake state (FA) and sleep states (S1 and S2) between OR and PEG patients (\* $P < 0.01$ ). There was no difference in the value for the rest-awake (RA) state. A solid square (■) and vertical bar indicate the mean and standard deviation, respectively, in each patient group

Yamaguchi 2011

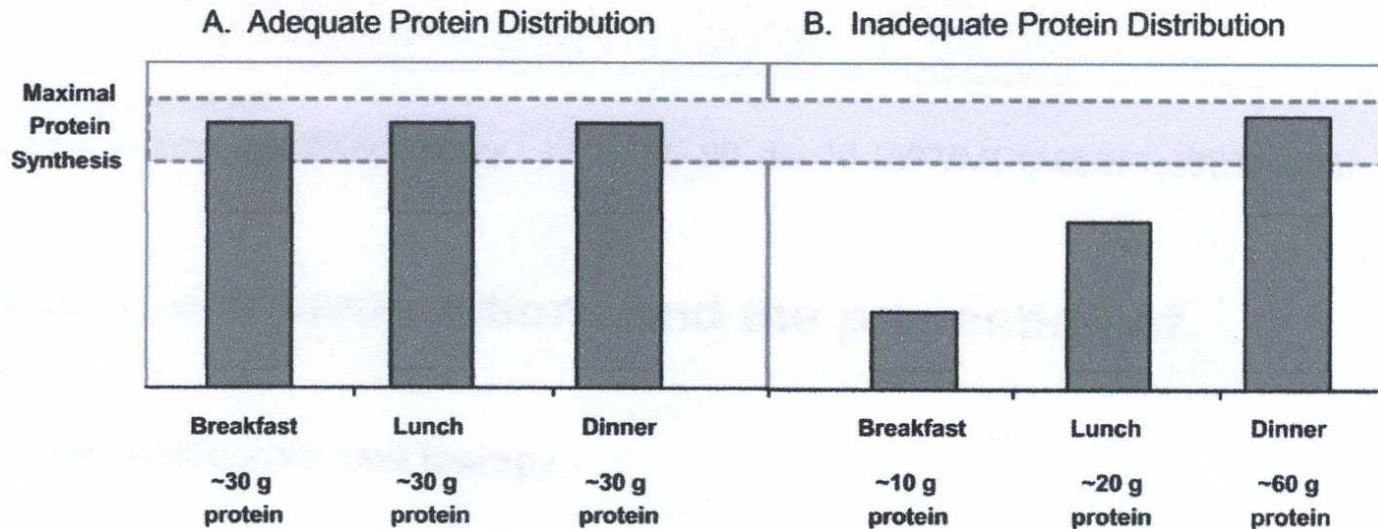
# Oral feeding versus EN by PEG in dementia

- OR patients were consistently awake at meal times (and tend to maintain awake/sleep rhythm).
- EN by PEG showed no awake period at meal times and the number of spontaneous swallowing was especially small



# Protein/energy/water recommendations in the healthy elderly (kg “desiderable” body weight)

- 0.8 g protein
- 20-30 kcal
- 30-35 ml water



**Figure 1. A pictorial example of the proposed relationship between the amount of protein ingested per meal and the resultant anabolic response**  
 (a) Ingestion of 90 g of protein, distributed evenly over 3 meals. (b) Ingestion of 90 g of proteins unevenly distributed throughout the day. Stimulating muscle protein synthesis to a maximal extent during the meals shown in Figure 1A is more likely to provide a greater 24 h protein anabolic response than an unequal protein distribution.

# Strategies for protein supplementation (2)

- Ingestion of approx 25-30 g high biol. value proteins per meal maximally stimulates protein synthesis

*(Paddon-Jones and Rasmussen 2009)*

- FFM retention is obtained with a moderate regular exercise training (8 kcal/kg/wk i.e. about 700 kcal/wk)

*(Church et al 2007)*

# Dietary protein recommendations and the prevention of sarcopenia

- Rather than recommending a large, global increase in the recommended dietary allowance (RDA) for proteins for all elderly individuals, clinicians should stress the importance of ingesting a sufficient amount of protein with each meal.
- To maximize muscle protein synthesis while being cognizant of total energy intake , we propose a dietary plan that includes 25-30g of high quality protein per meal. Paddon Jones 2009