# Malnutrizione: inquadramento clinico

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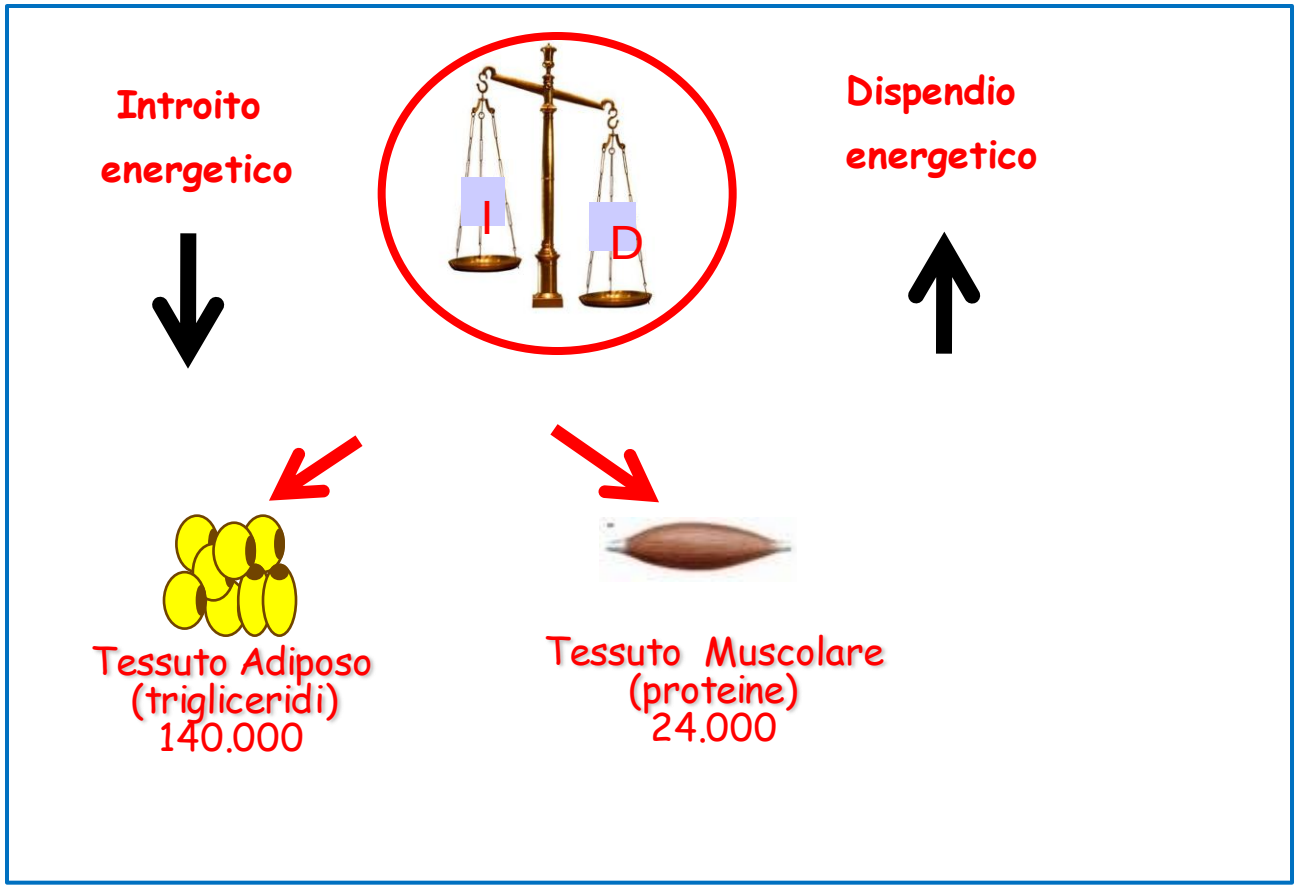
# Energy or Energy Protein Malnutrition

is present when insufficent energy or protein is available to meet metabolic demands, may develop because of poor dietary protein and or calorie intake, increased metabolic demands

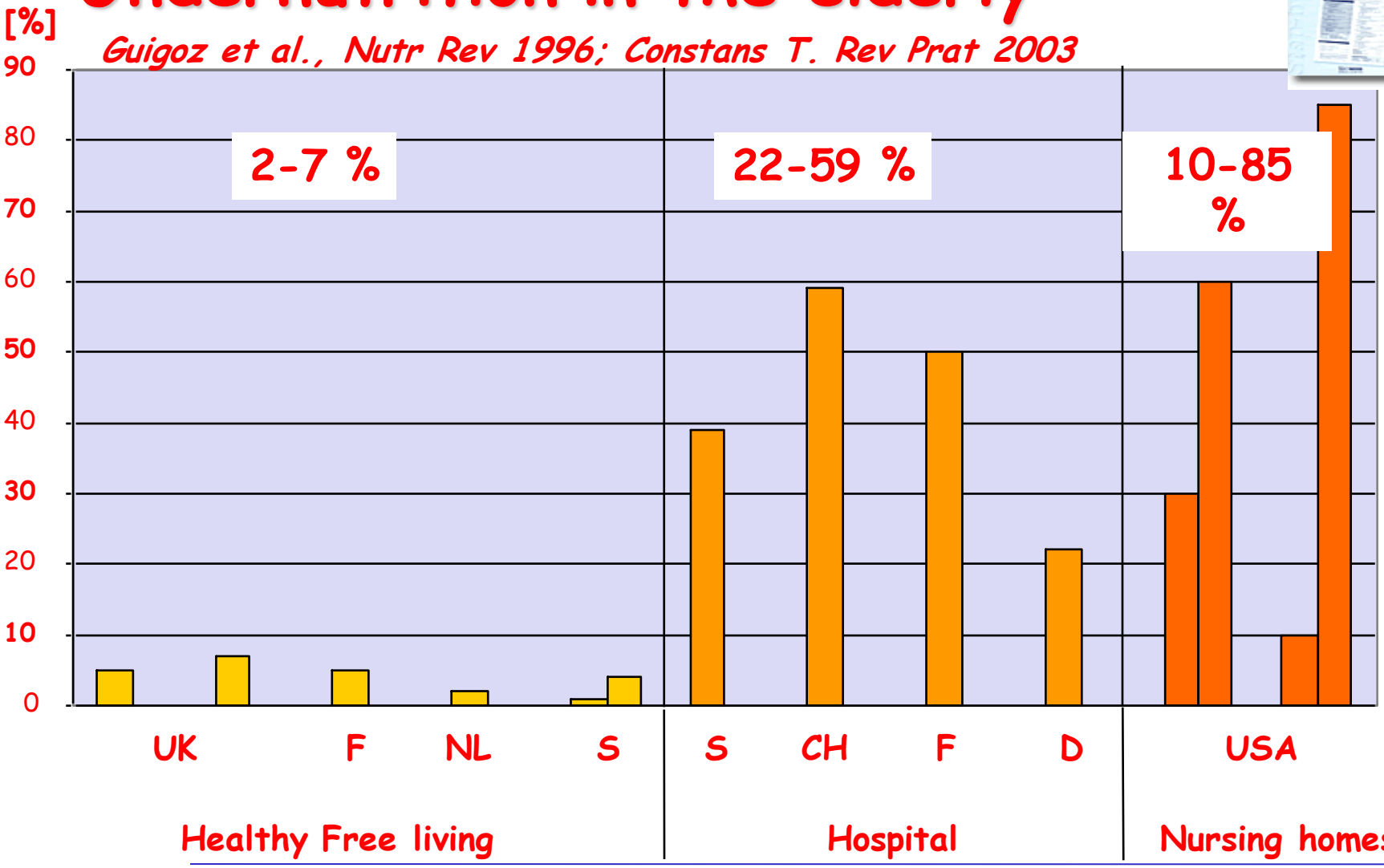



## Weight loss

With a decline in
Fat mass
Muscle mass
Visceral protein

# Undernutrition in the elderly

*Guigoz et al., Nutr Rev 1996; Constans T. Rev Prat 2003*

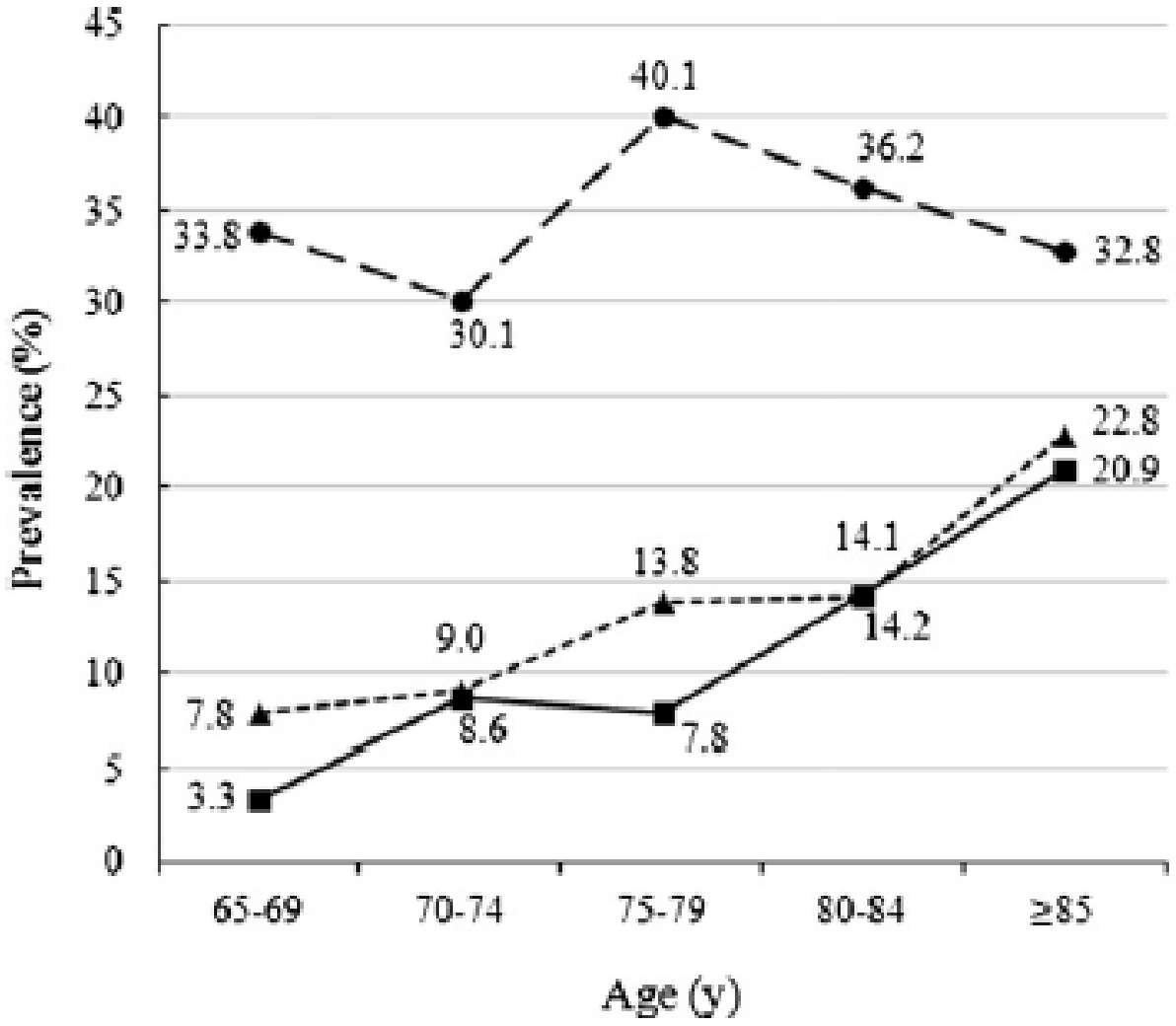


# Prevalence of malnutrition in patients older than 65 years by using MNA in 4507 subjects in 12 EU countries

| CATEGORY | PREVALENCE |
|---|---|
| **Malnutrition** | |
| Community | 6% |
| Hospital | 39% |
| Rehabilitation | 51% |
| Nursing home | 14% |
| **Malnutrition: at risk** | **46%** |

KAISER m ET AL, 2010

# High prevalence of undernutrition in Dutch community-dwelling older individuals




| Age | LASA *N* | GP *N* | HC *N* |
|---|---|---|---|
| 65-69 | 209 | 476 | 71 |
| 70-74 | 336 | 502 | 93 |
| 75-79 | 269 | 428 | 157 |
| 80-84 | 247 | 305 | 188 |
| ≥85 | 206 | 167 | 305 |

*J. Schilp et al. / Nutrition 28 (2012) 1151–1156*

# Cause mediche e sociali di malnutrizione

*(Department of Health and Social Security, London 1979)*

## A - Mediche

- BPCO
- Gastrectomia
- Cattiva dentizione
- Difficile salivazione
- Fumo
- Alcolismo
- Riduzione dell'appetito
- Malassorbimento
- Abuso di farmaci
- Deficit cognitivi
- Depressione

## B - Sociali

- Solitudine
- Incapacità di uscire
- Pasti irregolari
- Povertà
- Bassa classe sociale

# The geriatric quintet

*Harper et al, 1978*

# CACHEXIA

**Complex syndrome combining:**

- **Weight loss (> 10%)**
- **Reduced food intake (< 1'500 Kcal /day)**
- **Systemic inflammation (CRP > 10 mg / l)**

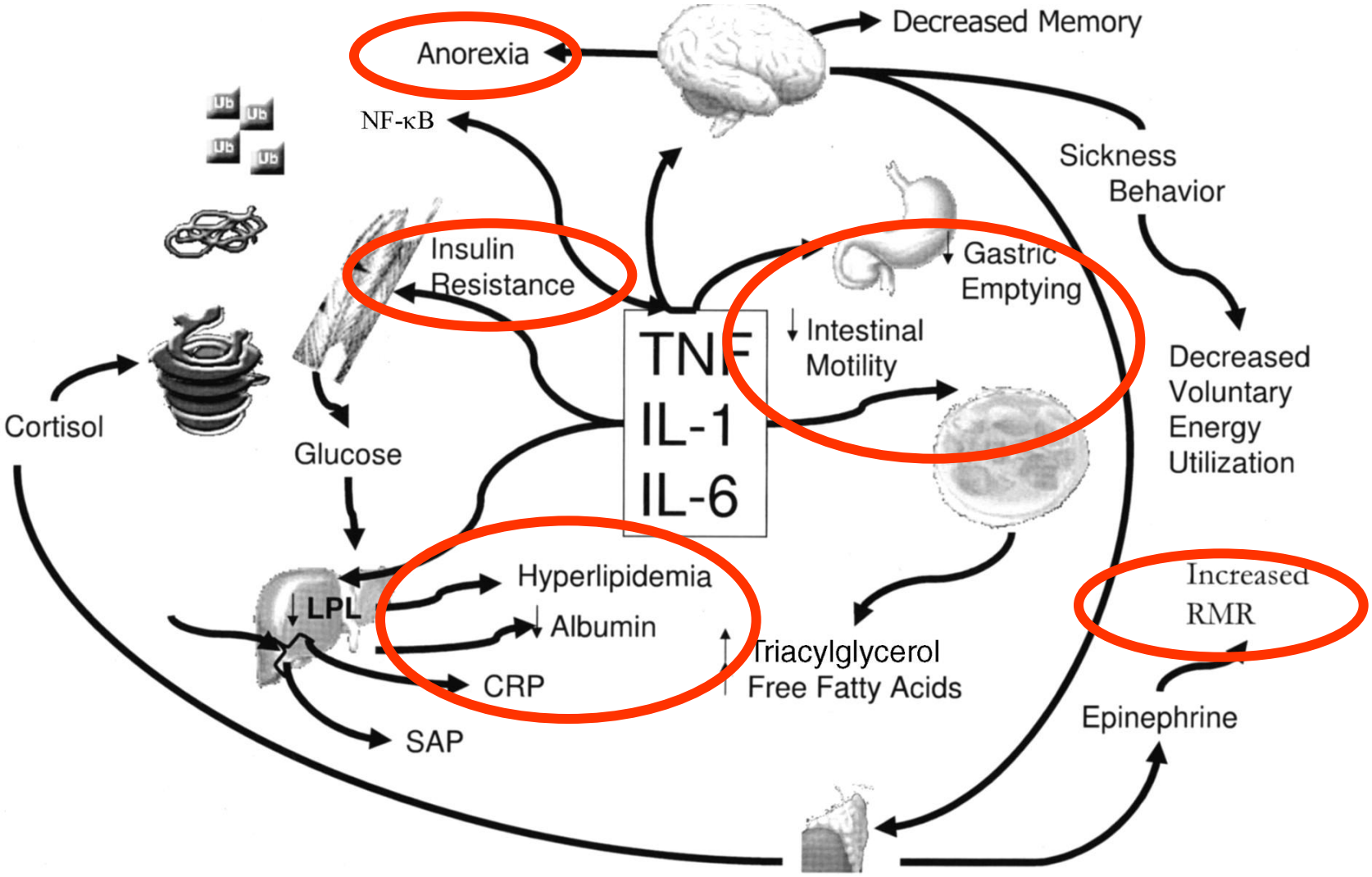
**+ Anorexia & Weakness**

**Linked to the advanced stages of various (CHRONIC) illnesses**

- **Cancer**
- **Heart failure**
- **Obstructive pulmonary disease**
- **Kidney disease**

*FEARON KC et al Clin Nutr 2006; 83: 1345-50*

# Cytokines: a central player in malnutrition and cachexia




Morley, J. E et al. Am J Clin Nutr 2006;83:735-743

The American Journal of CLINICAL NUTRITION

# Different kinds of weight loss

| | Cachexia | Malnutrition (Malab sorption) | Malnutrition (Anorexia) |
|---|---|---|---|
| Weight loss | ↘↘ | ↘ | ↘ |
| Lean tissue | ↘ | ↘ | ↘ |
| Fat tissue | ↘ | ↘ | ↘ |
| Appetite | ↘ | ↗ | ↘ |
| Anemia | Yes | ± | No |
| Proteolysis | Yes | ? | ? |
| CRP | ↗ | = | = |
| Albumin | ↘ | ↘± | ↘± |

*MORLEY JE et al Nutrition 2008; 24: 815-9 (mod)*

***More than 50% of protein-energy malnutrition may go undetected in hospitalized geriatric patient.***

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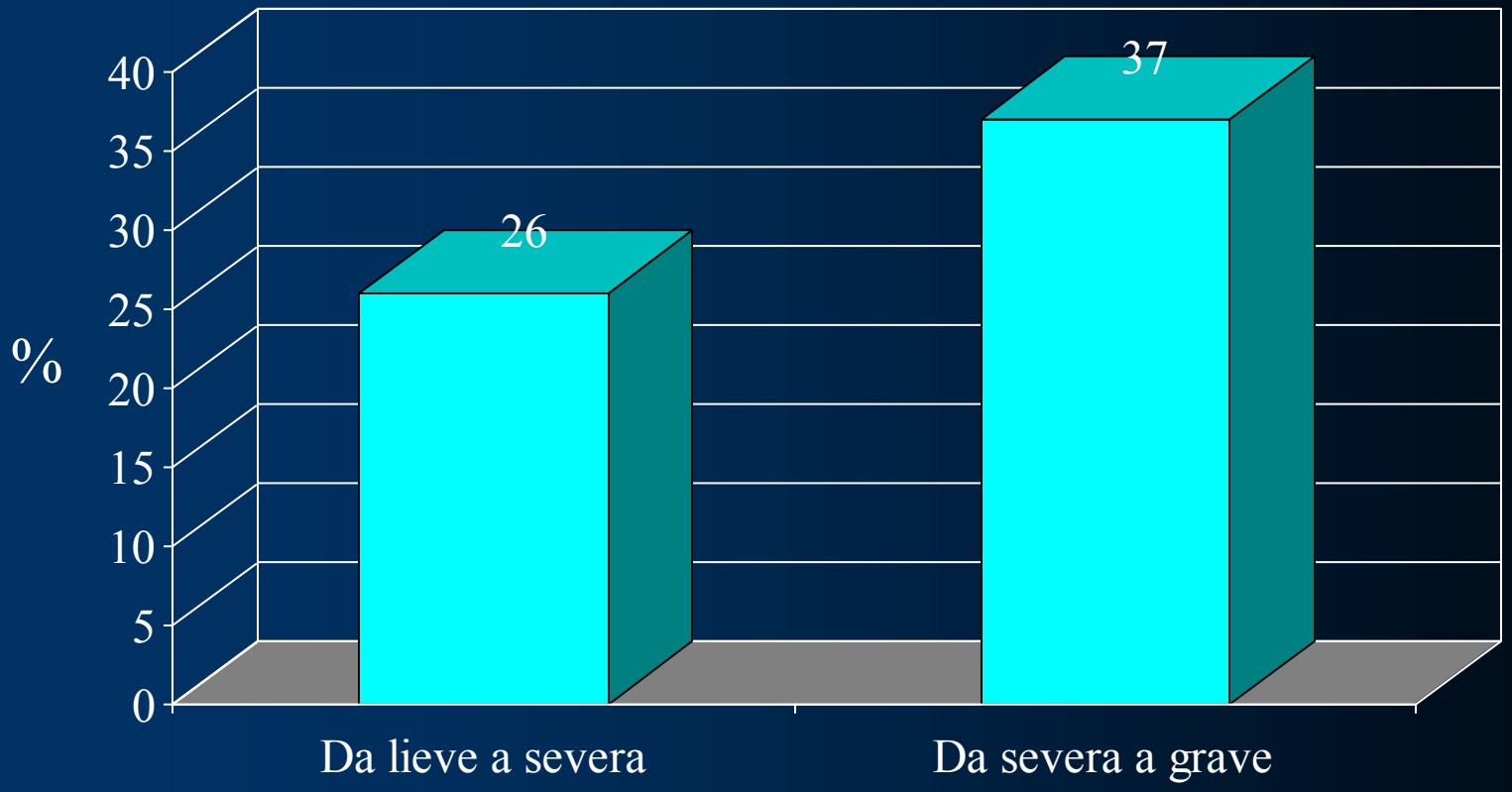
*Muhlethaler et al, 1995*

# Variazione del grado di malnutrizione durante l'ospedalizzazione




*McWhiter et al, 1994*

# Undesiderable practices-1

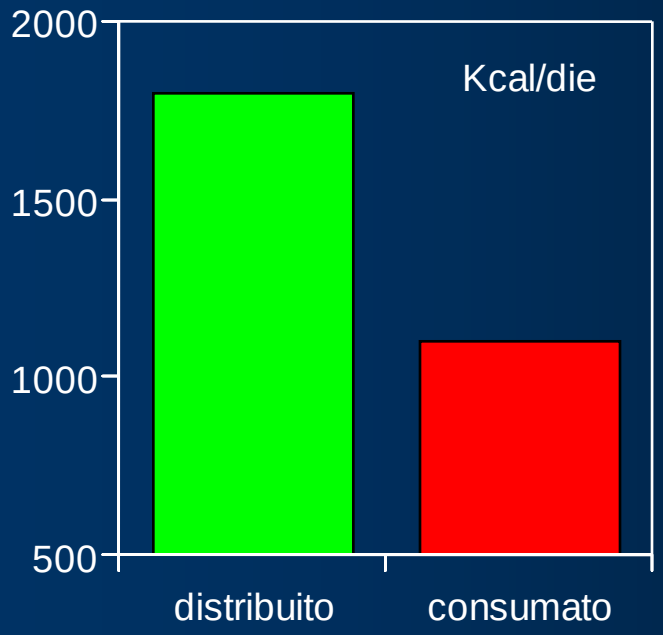
*Butterworth, 1974*

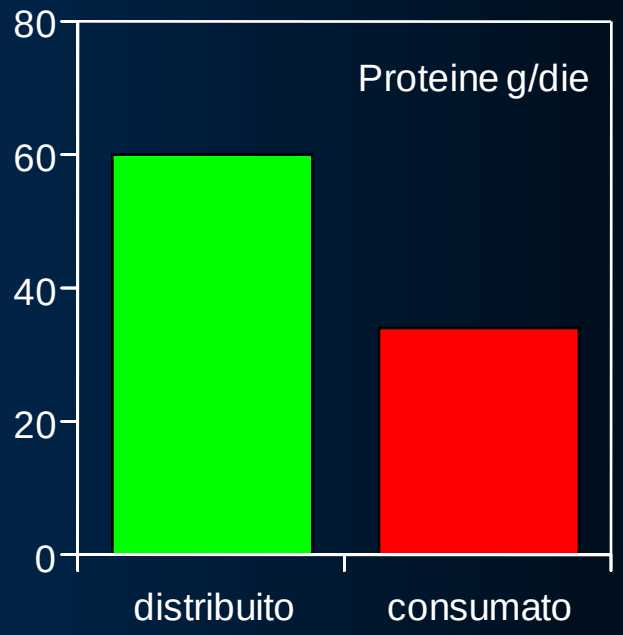
- mancata registrazione di peso e altezza in grafica
- dispersione di responsabilità nell'accudire il paziente
- prolungato trattamento con glucosata e fisiologica
- mancata osservazione e registrazione dell'introito alimentare
- "salto" dei pasti per indagini diagnostiche
- uso inadeguato della nutrizione artificiale
- ignoranza sulla composizione dei prodotti "dietetici"

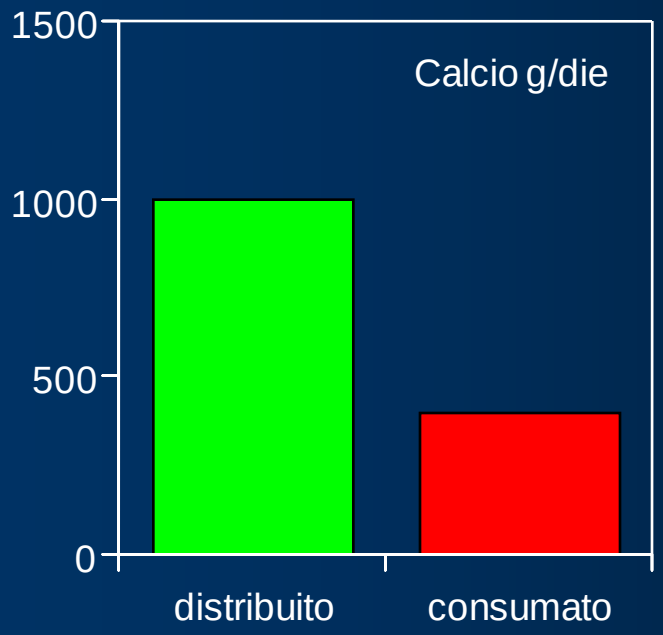
# Undesiderable practices-2

*Butterworth, 1974*

- mancato riconoscimento delle aumentate necessità nutrizionali per trauma o malattia
- limitata disponibilità di esami di laboratorio per valutare lo stato nutrizionale o mancata utilizzazione di questi ultimi
- scarso rilievo alla educazione nutrizionale nelle scuole mediche




Calorie, proteine e calcio distribuite ad anziani ospedalizzati ed effettivamente consumate.

*Delmi et al, 1990*

# Specific problems – Nursing Home

- Meals given at unusual times.

- Menus may not be consistent with the resident's food preferences

- Behavior of others at the same table can be disruptive or distracting

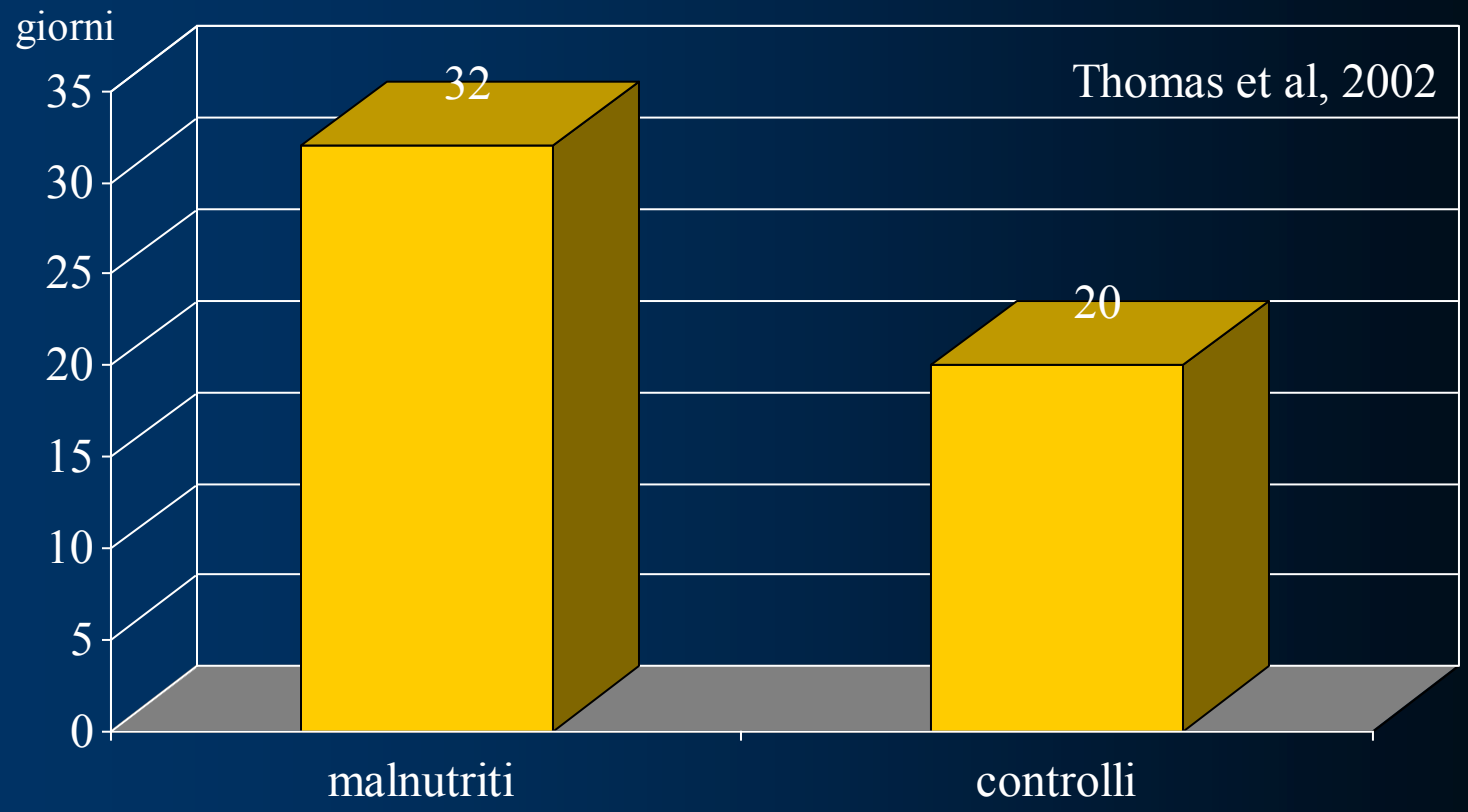
- Dementia is often associated with eating problems.

- Lack of personnel to assist at mealtimes.

# Complicanze della malnutrizione nell'anziano (adattato da Morley JE)

- Anemia
- Ridotta guarigione dalle piaghe
- Stanchezza
- Polmoniti
- ↓ Funzioni cognitive
- Disidratazione
- ↑ Incidenza di ulcere da decubito
- ↓ Massima capacità respiratoria
- ↑ Ricovero ospedaliero e lunghezza del ricovero
- ↑ Mortalità

# Lunghezza della degenza in 837 ultrasettantenni afferenti a strutture per pazienti post-acuti




*Mini Nutritional Assessment Score*

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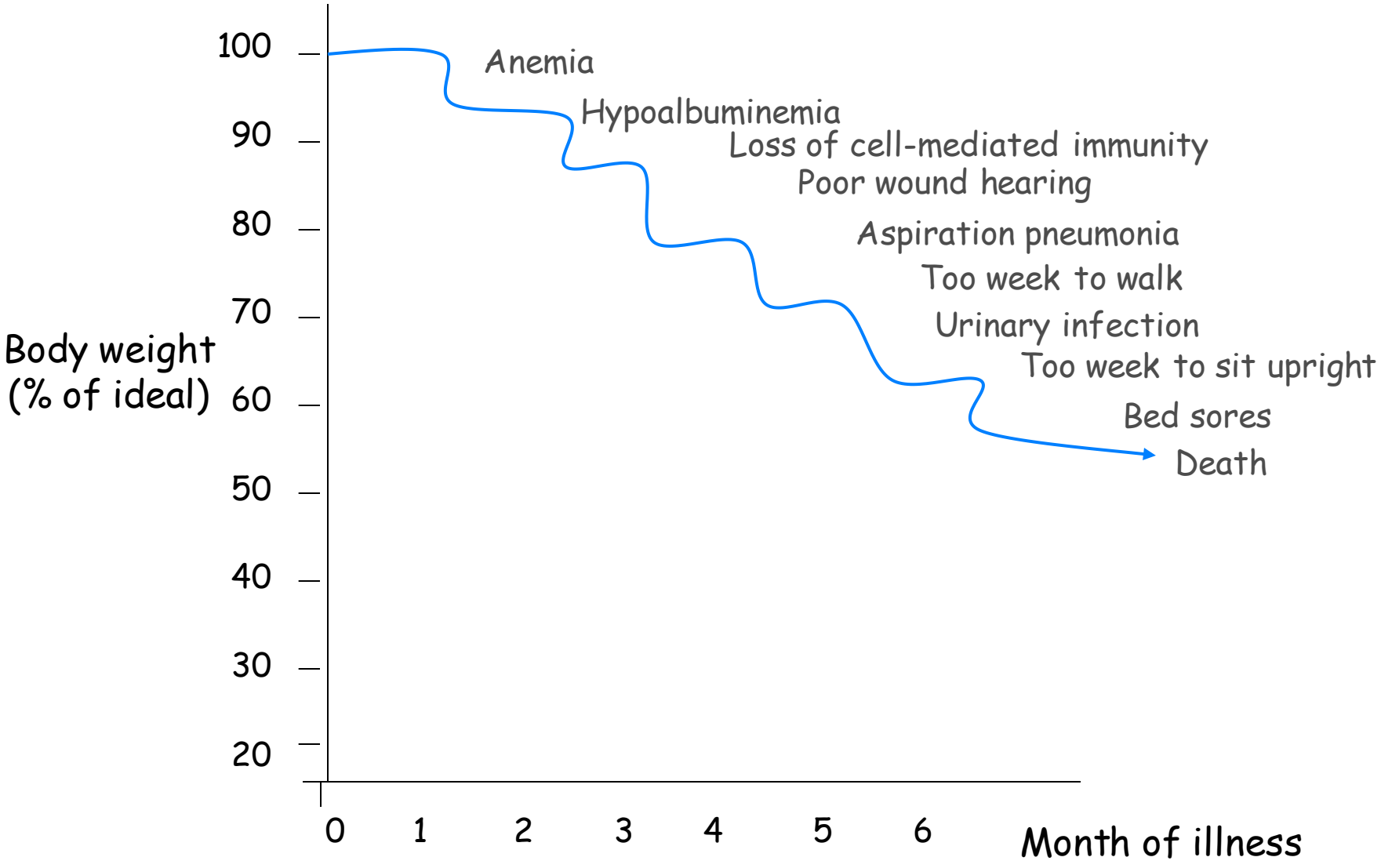
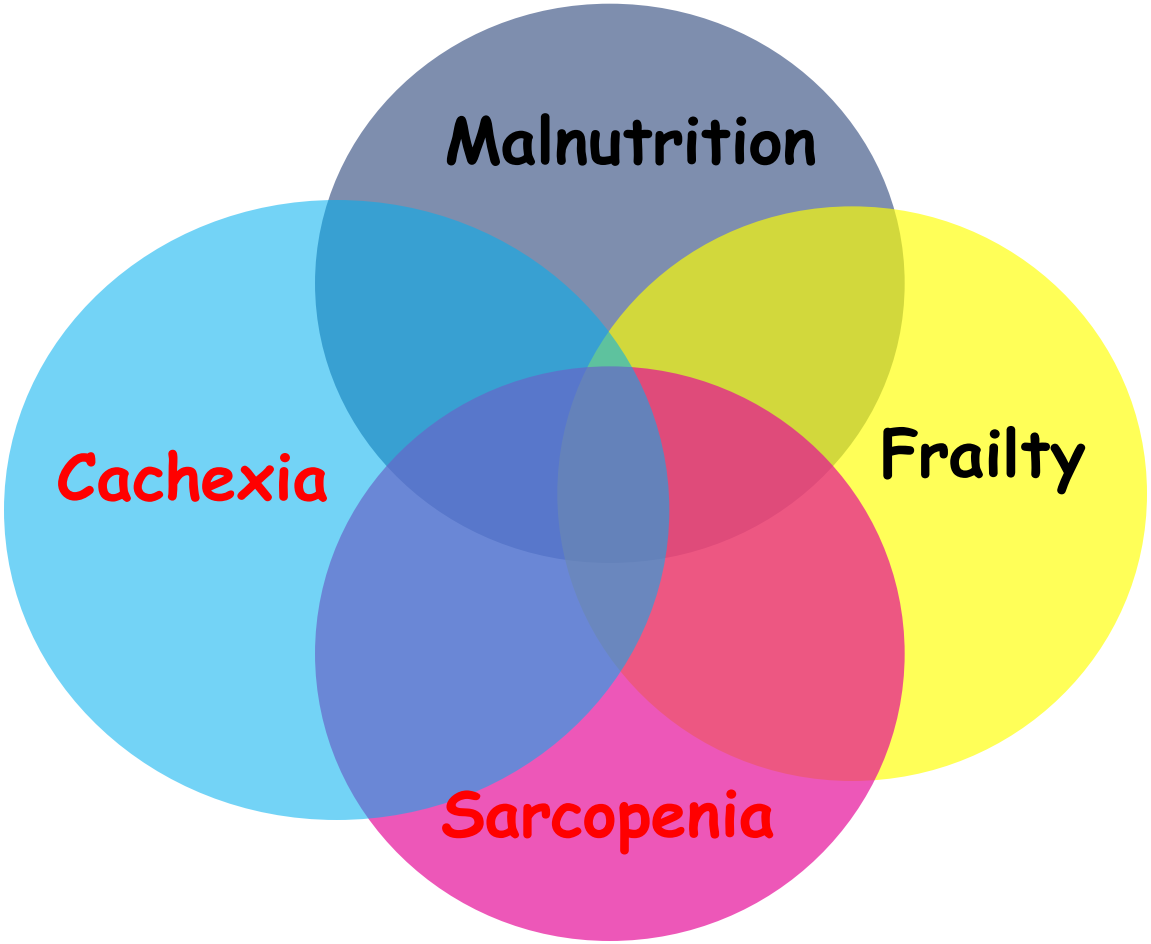
# Hypothetical course of a typical patient with protein energy malnutrition



# Cachexia, sarcopenia, malnutrition, frailty overlapping conditions



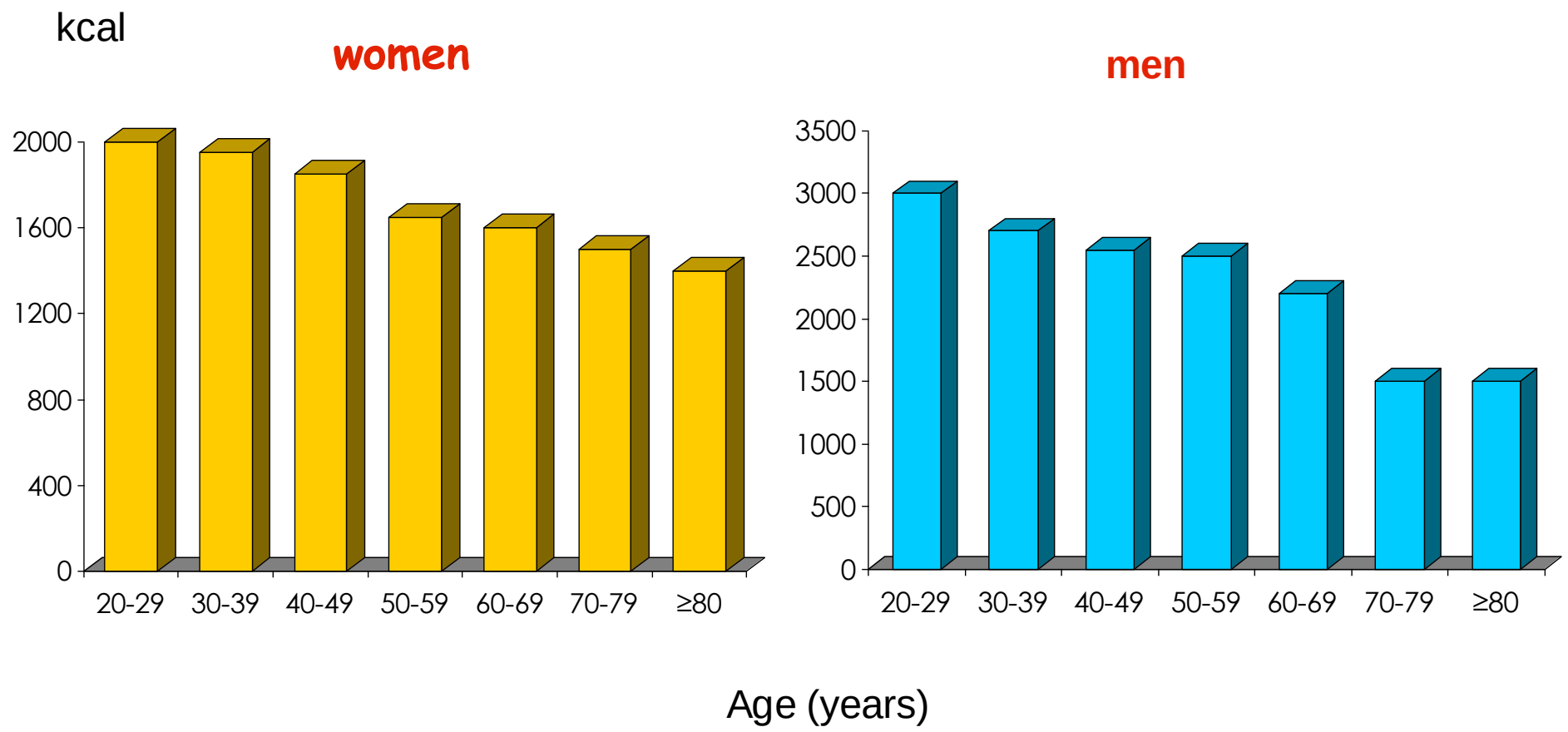
"Physiologic anorexia and weight loss in the elderly may predispose to malnutrition"

"This is particularly likely to develop in the presence of other pathological factors associated with aging"

Morley J et, al 2000

# Age related calorie intake in women and men

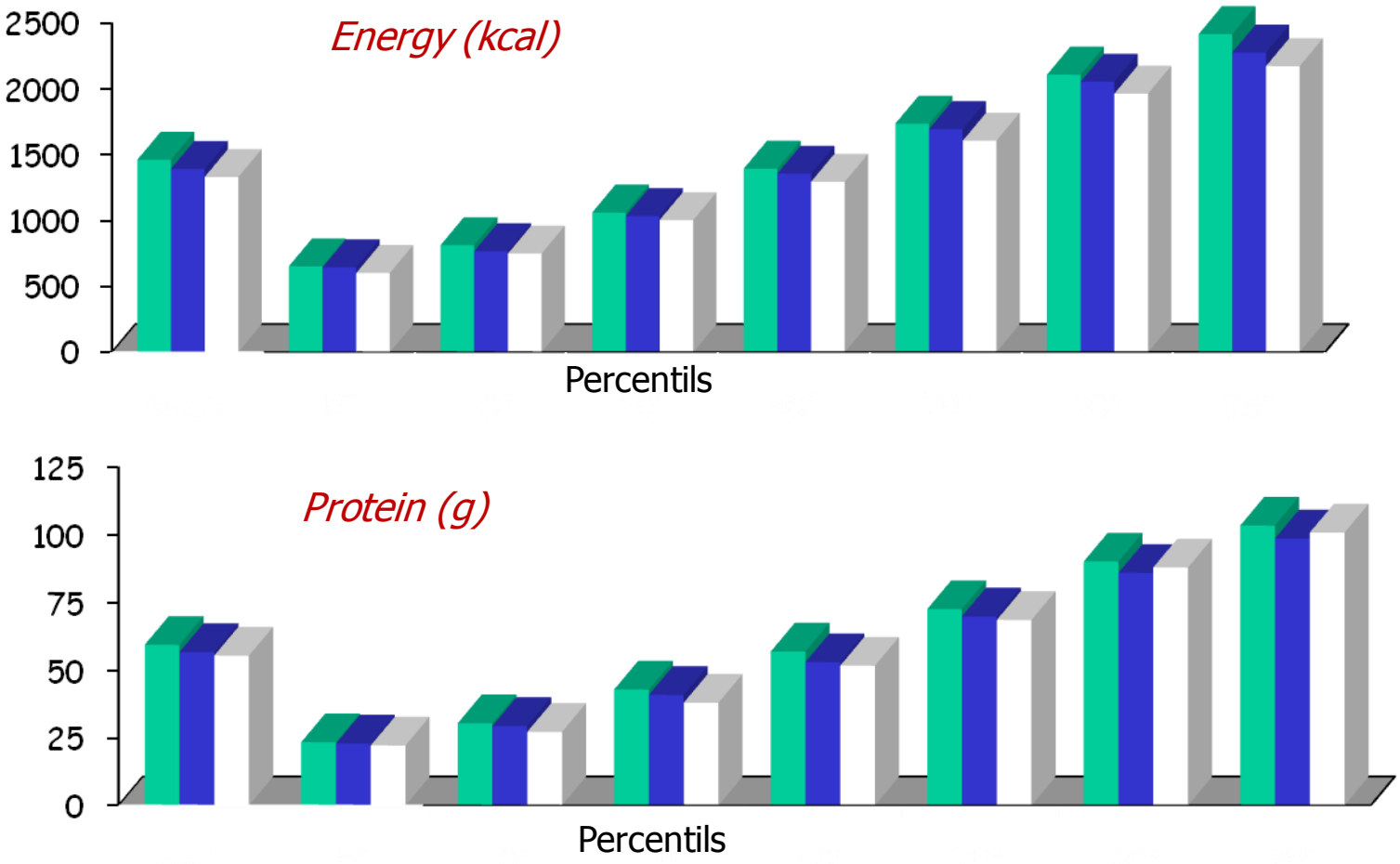
NHANES III



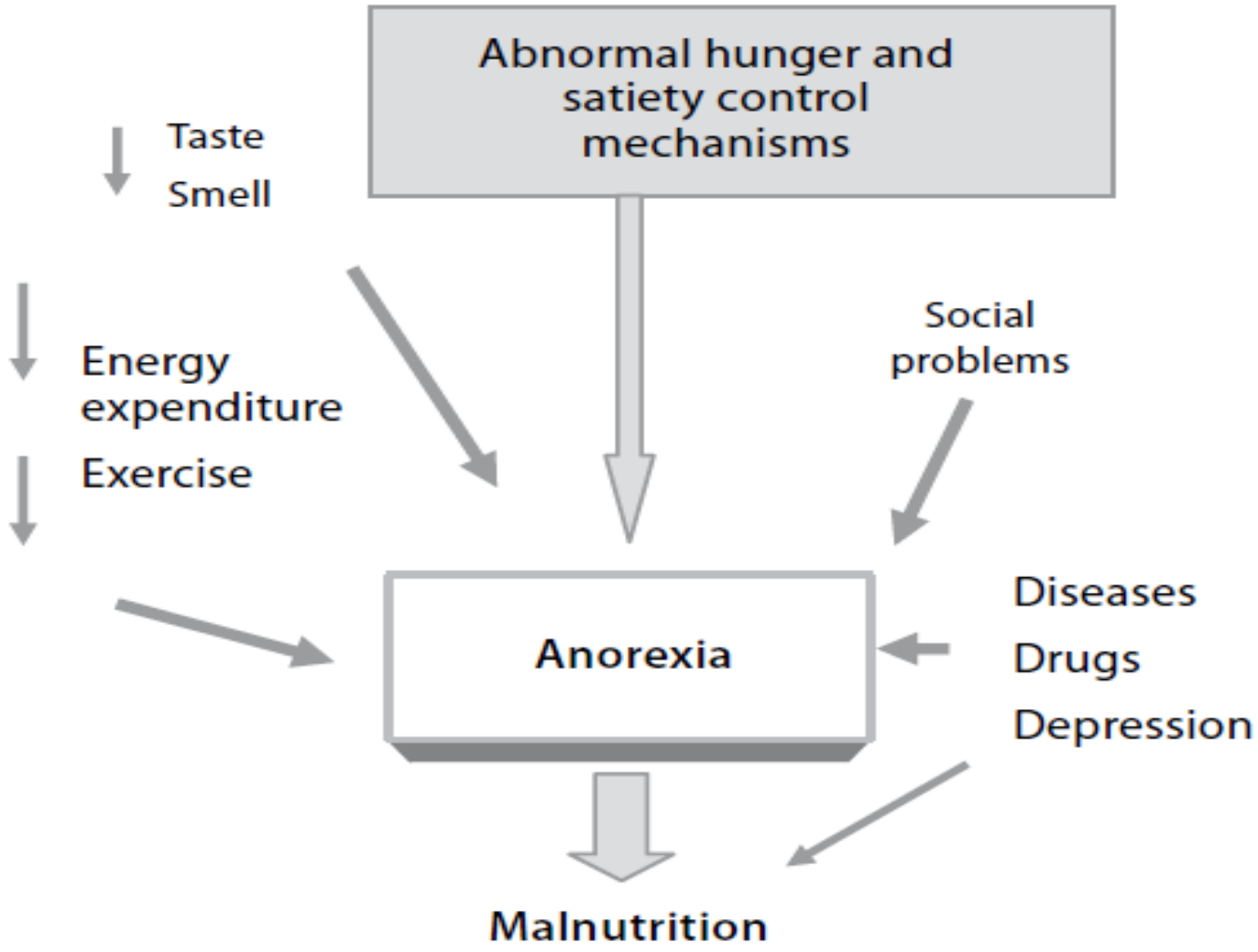

*Morley et al., 1997*

# Distribution of nutrient intake in elderly women

Continuing Survey of Food Intakes by Individuals (15000 subjects, 60, 70, 80 y or older)

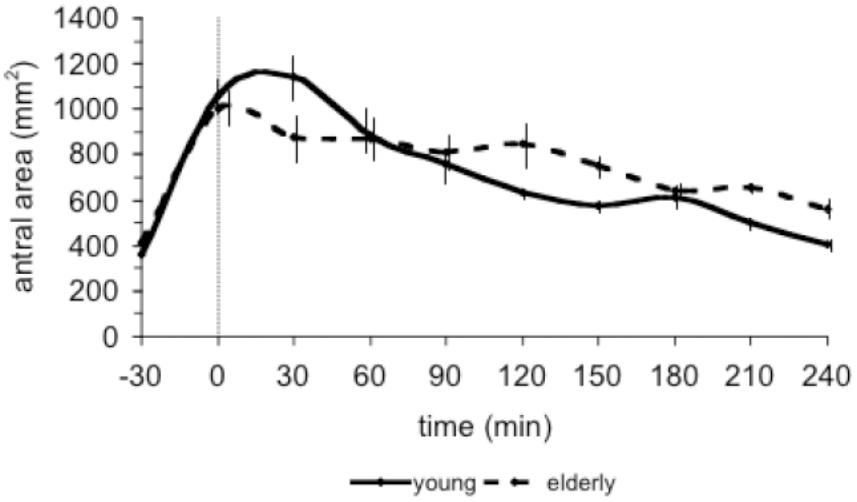



*Wakimoto & Block, 2001*

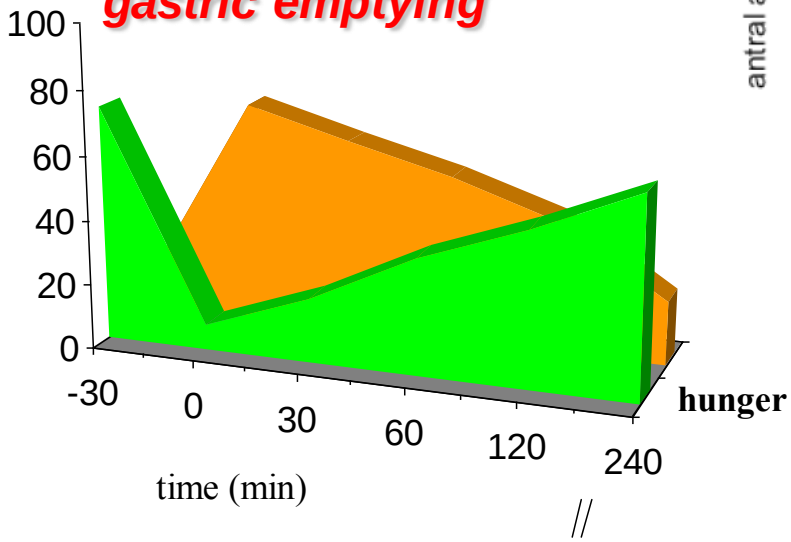



Di Francesco V, Fantin F, Zamboni M et al, 2010

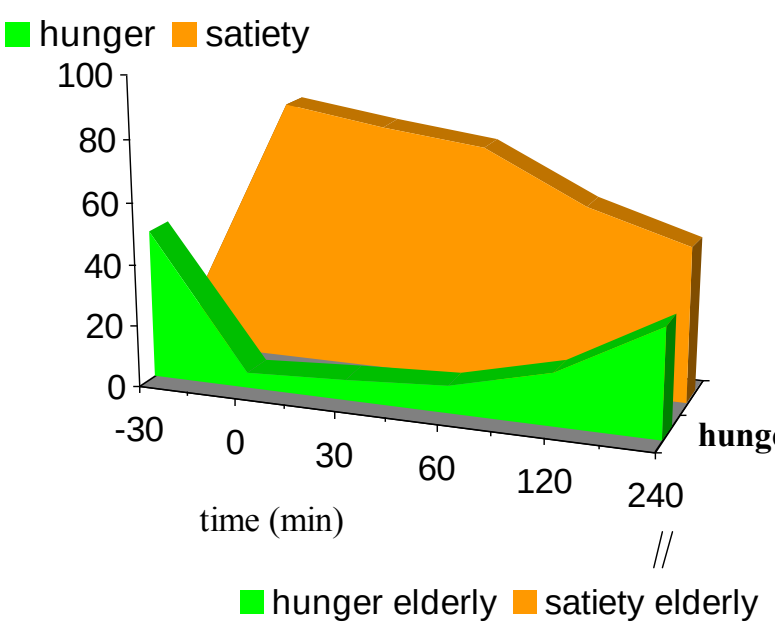
## Delayed postprandial gastric emptying




young controls




## Hunger and satiety

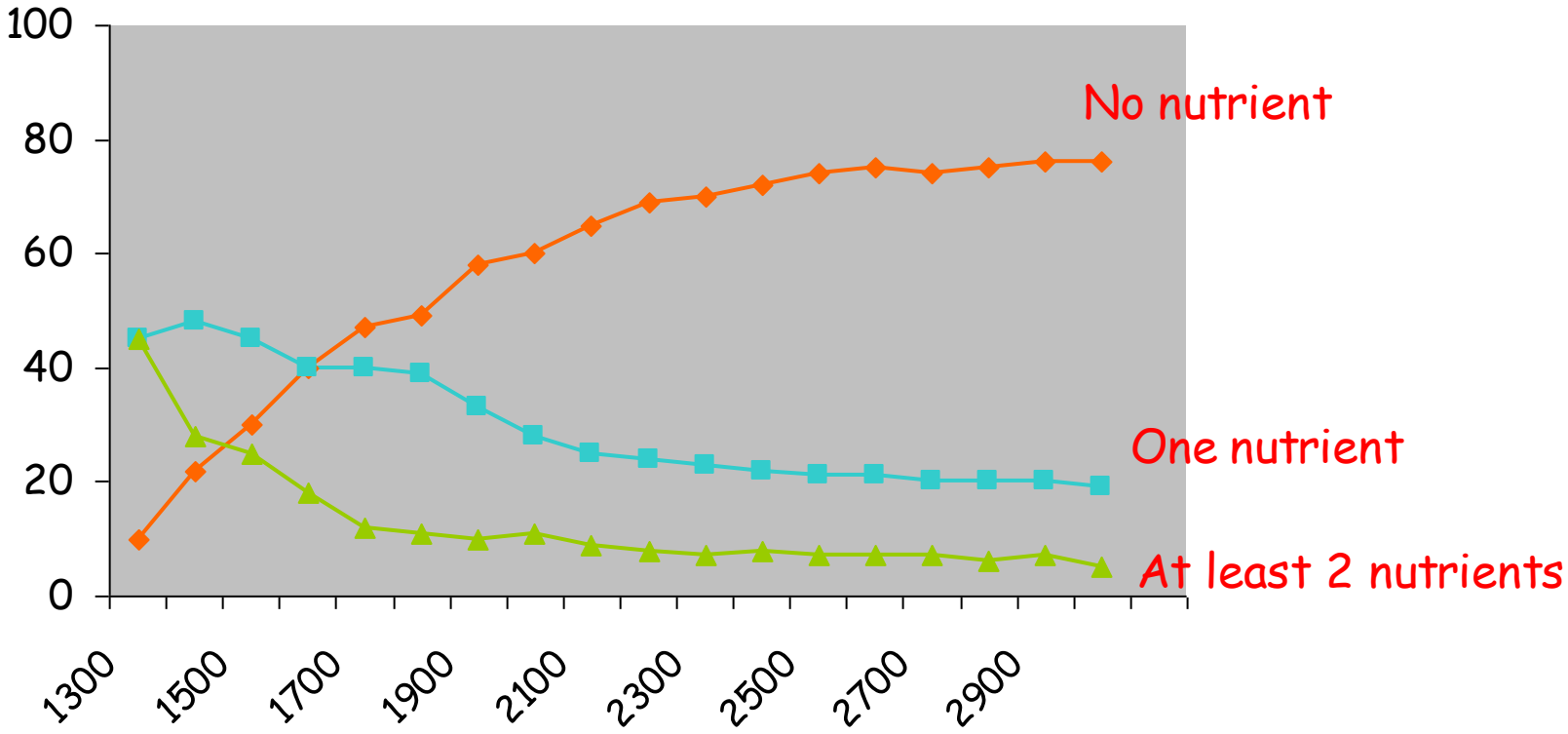



elderly

the Journals of gerontology
BIOLOGICAL SCIENCES AND MEDICAL SCIENCES

V Di Francesco et al, 2005

# Percentage of men with nutrient deficencies in relation to calorie intake

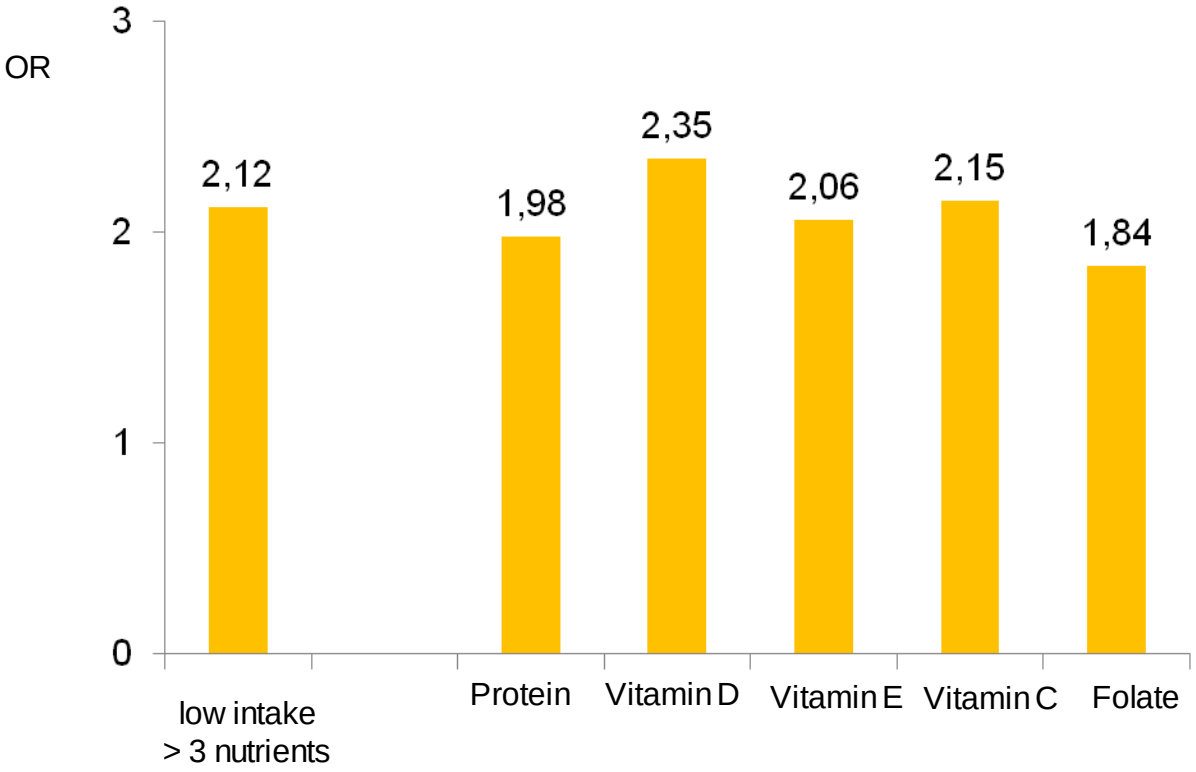



*De Groot et al., 1999*

# Low Nutrient Intake Is an Essential Component of Frailty in Older Persons

Benedetta Bartali[1], Edward A. Frongillo[1], Stefania Bandinelli[2], Fulvio Lauretani[2], Richard D. Semba[3], Linda P. Fried[3], and Luigi Ferrucci[4]

Odd ratios for Frailty associated with low intake of specific nutrients




J Gerontol A 2006; 61: 589-93

reduced intake of energy

reduced intake of Vitamins Minerals Micronutrients Water

# Malnutrition

Energy or Protein-Energy

Selective

# Undernutrition

third leading condition in Hospital and Home Care sites

fourth leading condition in Office practice and Nursing Home

for which quality improvement effortes would enhance the functional health of older persons

Reuben et al, 2007 (mod)

# Quality indicators for the Care of Undernutrition in Vulnerable Elders

1. Weight and BMI measurement
2. Weight loss documentation
3. Albuminemia
4. Oral intake evaluation
5. Evaluation of causes of poor nutritional intake for people with Weight loss or Hypoalbuminemia
6. Evaluation of comorbid conditions in patients with Weight loss or Hypoalbuminemia
7. Evaluation of Energy Expenditure in patients with Weight loss or hypoalbuminemia

Reuben et al, 2007 (mod)