

# Undernutrition in the Elderly

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## PHYSIOLOGIC CHANGES WITH AGING AFFECTING NUTRITION

- Decreased lean body mass, total body water, bone density;
- Increased total body fat and insulin resistance leading to glucose intolerance
- Atrophic gastritis may result in decreased absorption of Fe and B<sub>12</sub>, and bacterial overgrowth
- Decreased glomerular filtration rate (GFR) with impaired water and electrolyte excretion

## DEFINITION (NO UNIFORMLY ACCEPTED DEFINITION)

- Depends on population
  - ▶ For community-dwelling:
    - Involuntary weight loss ( $\geq 10$  lb over 6 months or 4% over 1 y)
    - Low body mass index (BMI) ( $< 20$ )
    - Hypoalbuminemia ( $\leq 3.8$  g/L)
    - Hypocholesterolemia ( $< 160$  mg/dL)
  - ▶ Hospitalized
    - Dietary intake ( $< 66\%$  estimated caloric needs)
    - Hypoalbuminemia ( $< 3.5$  g/L)
    - Hypocholesterolemia ( $< 160$  mg/dL)
  - ▶ Nursing Home (Minimum Data Set criteria)
    - Wt loss of  $\geq 5$  lb in past 30 d;  $\geq 10\%$  in 180 d
    - Dietary intake of  $< 75\%$  at most meals

## EPIDEMIOLOGY

- 15-60% incidence of malnutrition in nursing-home residents
- 53-61% incidence hospitalized elderly patients
- associated with increased hospital length of stay and increased cost; mortality in hospital, nursing home, and community-based populations

## NUTRITIONAL ASSESSMENT

- Multi-dimensional assessment
  - ▶ Economic barriers
  - ▶ Availability of quality food
  - ▶ Dental problems
  - ▶ Medical illness
  - ▶ Functional disability
  - ▶ Food preferences
  - ▶ Poor appetite
  - ▶ Depressive symptoms
- Anthropometrics
  - ▶ Body Mass Index (BMI)—wt (kg)/ ht (m<sup>2</sup>)
    - overweight BMI 25-29.9
    - obesity = BMI  $\geq 30$  (National Heart Lung and Blood Institute 1998); overweight defined as BMI  $> 27.8$  for men or  $> 27.3$  for women (National Health and Nutrition Examination Survey, 1985)

- ▶ Skin fold measurements may not be accurate in elderly patients
- Biochemical markers (all can drop precipitously due to trauma, sepsis, or significant infection)
  - ▶ albumin (half-life 18-20 days) but may be valuable in non-acute settings;
  - ▶ transferrin (half-life 7 days);
  - ▶ prealbumin (half-life 48 hours) may be useful in monitoring nutritional recovery
  - ▶ cholesterol low or falling values of serum cholesterol have prognostic value but may not be nutritionally mediated

## TREATMENT

- Enteral Formulas Many formulas are available (see attached examples); read the content labels and choose based on calories per ml, protein, fiber, lactose, and fluid load.
  - ▶ Oral Many (e.g., Carnation instant breakfast, Health Shake) are milk-based and provide approximately 1.0-1.5 calories per ml.
  - ▶ Enteral Commercial preparations have between 0.5 and 2.0 calories per ml; most contain no milk (lactose) products. For patients who need fluid restriction, the higher concentrated formulas may be valuable but they may cause diarrhea. Because reduced kidney function with aging, some recommend that protein should contribute no more than 20% of the formula's total calories. If formula is sole source of nutrition, consider formula that contains fiber (25 g/day is optimal).

## ENTERAL NUTRITION PRODUCTS-UCLA MEDICAL CENTE

PRODUCT TYPE Product Name	Calories (Kcal/ml)	Protein (gm/L)	Fat (gm/L)	Carbohydrate (gm/L)	Osmolality (mOsm/kg)	Water (ml/L)	Electrolytes				Fiber (gm/L)	Vol for 100% USRDA (ml)
							Na	K	P	Ca		
							(mEq/L)		(mg/L)			
ORAL SUPPLEMENTS												
MILK BASED	1.55	50	33	266	N/A	N/A	34	57	1112	1112	0	N/A
Health Shake												
Carnation Diet	0.92	44	18	89	500-524	804	35	63	1111	1661	0	N/A
Instant Breakfast												
CLEAR LIQUID												
Resource	1.06	33	0	228	430	842	24	1.3	1111	1111	0	N/A
Nutritious Juice Drink												
LACTOSE FREE												
Boost	1.01	43	17.6	173	610	840	24	43	1060	1270	0	1185
Boost Plus	1.52	61	57	190	670	780	37	38	850	850	0	1180
Boost with Fiber	1.06	46	35	139	480	850	31	36	710	850	11.0	1420
ENTERAL NUTRITION POLYMERIC												
Isocal	1.06	34	44	138	270	850	23	34	530	630	0	1887
Isocal HN	1.06	44	46	123	270	850	40	41	850	850	0	1179
Deliver	2.00	75	102	200	640	710	35	43	1000	1000	0	1000
FIBER CONTAINING												
Ultracal	1.06	44	46	123	310	850	40	41	850	850	12.8	1180
PEPTIDE												
Peptamen VHP	1.00	62	39	104	300	841	24	38	700	800	0	1500
DISEASE SPECIFIC												
Renalcal	2.00	34	82	290	600	704	0	0	0	0	0	N/A
NUTRITION BAR	One bar provides: 130 calories, 6 gm protein, 21 gm carbohydrates, 3 gm fat, f mEq sodium, 5 mEq potassium, 150 mg phosphorus, 250 mg calcium											
Ensure Bar												

## **REFERENCES:**

Nutrition Chapter in The Merck Manual of Geriatrics. Abrams, WB, Beers MH, Berkow R eds. Merck and Co. Whitehouse Station, NJ, 1995.

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UCLA Enteral Nutrition Pocket Card