Nutrition and Aging

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Objectives

- Demographics of aging
- Impact of aging on nutrition
- Specific nutritional problems in aged
- Undernutrition & obesity
- Ethics of nutrition & tube feeding
Nutrition

“Half of what we eat keeps us alive; the other half keeps doctors living well!”

Walter Bortz, *The Roadmap to 100*, 2010

“Eat food, mostly plants, not too much.”

Michael Pollan, *In Defense of Food*, 2008
Aging & Nutrition

- 40% of men and 10% of women underweight
- 16% ingest <1000 kcal/day
- 50% of hospitalized are malnourished on admission
- 66% are malnourished at discharge

Risk Factors in Aging

- Biological
  - Impaired taste or smell
  - Impaired vision
  - Multiple medications
  - Cognitive deficits
  - Difficulty swallowing
  - Stomach/intestine diseases
  - End-stage disease
Risk Factors in Aging

- Psychological/mental health
  - Depression
  - Dementia
  - Bereavement
  - Substance abuse
  - Pre-death?
Risk Factors in Aging

- Social
  - Isolation
  - Recent moves
  - Institutionalization
  - Fear of crime
  - Fear of falling
  - Poverty
Risk Factors in Aging

- Functional
  - Manual dexterity problems
  - Mobility limitations
  - Falls
  - Incontinence
Specific Problems

- Dehydration
- Protein/calorie malnutrition
- Obesity
- Calcium
- Vitamin D
- Vitamin $B_{12}$
- Fiber
Dehydration

- 200,000 Medicare admits/yr
- Minor changes can create big problems
- 2% water loss reduces:
  - work capacity by 20%
  - cognitive performance by 10%
- Recommendation: drink 1500-1800 ml per day (5-6 glasses)
Body Composition

![Bar chart showing body composition in kg for 25 y/o (light blue) and 70 y/o (dark blue). The categories are Bone, Cell solids, Water, and Fat. Water has the highest value for both age groups, followed by Fat, Cell solids, and Bone.]
Malnutrition

**Effects**

- Decreased immunity
- Increased falls
- Poor wound healing
- Decreased cognition
- Depression
- Weakness/fatigue
- Anorexia

Low albumin levels – below 3.5 g/dl
Dx of P/C Malnutrition

- <90% of average body weight
- BMI < 22
- Serum albumin < 3.5 g/dl
- Serum cholesterol < 160 mg/dl
- Low transferrin, prealbumin, white blood cells
What About Supplements?

- **Vitamins - Two types**
  - Fat soluble – A, D, E, K
  - Water soluble – B, C

- Problem of ingredients versus whole foods

- Problem of doses

- Worrisome recent study
“Real” Vitamins

- Best in real food
  - Food has complex mixtures of interacting vitamins, minerals, and other
  - One leaf of thyme has 35 antioxidants

- Vit E
  - Alpha-tocopherol versus gama-tocopherol
  - Dietary E, not capsules, reduced risk of Alzheimers

Vitamins from the farm, not the pharmacy
Problem of Doses

- Vitamin E
  - 100 IU – Nurses Health Study – decreased heart disease
  - 400 IU – increased heart failure and prostate cancer

- No study has clearly shown benefits of megadoses
  - Except in deficiency states
Iowa Women’s Study

- 38,772 women 1986-2010
- Observational cohort study
- Increased mortality with vitamins
  - Multivitamin – 6%
  - B6 – 10%
  - Folic acid – 15%
  - Iron – 10%
  - Copper – 45%
- Calcium decreased mortality – 9%
Calcium

- Increased need with age
  - Inadequate intake
  - Decreased absorption
  - Lactose intolerance
  - Use of lasix (furosemide)

- Males: 1000 mg/d
- Females: 1500 mg/d
Vitamin D

- 35% of hospitalized elders are deficient
- Risks:
  - Low milk consumption,
  - Those who rarely go outside
  - Liver and renal disease
- Routinely test all admits to NH or supported housing?
Vitamin $\text{B}_{12}$

- 15% of those over 65 and 30% of those with gastric surgery are deficient
- Atrophic gastritis & GI surgery
- $\text{B}_{12}$ levels not reliable between 200-300 pg/dl
- Levels of methylmalonic acid or homocysteine are better
Zinc

n Symptoms mistaken for aging
  – Impaired taste & smell, hypogonadism, immune deficiencies, dry skin, anorexia

n May retard pressure ulcer and wound healing

n DM and liver disease
Other Supplements

- Omega -3
- Resveratrol
- Co-Q10
- DHEA
- HGH
Obesity

- Weight loss more problematic
- Mortality tends to decrease with weight gain
- 26% of 65-76 y/o are overweight
- May complicate certain conditions (OA)
- Diets <1000 kcal to be avoided
- Watch for dehydration if dieting
Salt

- 44% of sodium consumed came from 10 food categories:
  - bread, pizza, soups, cheese, mixed pasta dishes, savory snacks
  - cold cuts and cured meats, poultry, sandwiches, mixed meat dishes
- Reducing the sodium content of the 10 leading sources by one-quarter would
  - reduce total dietary sodium by more than 10%,
  - preventing an estimated 28 000 deaths and
  - Decrease healthcare expenditures by $7 billion annually.
Diets?

- Mediterranean
- DASH – Dietary Approach to Stop Hypertension
- Atkins
  - Low carb, risky (ketones)
- South Beach
  - Glycemic index, only 33% of claims supported by evidence
- Weightwatchers

*Eat, Drink, and Be Healthy*, Walter Willet, 2005
Ethical Issues – Artificial Nutrition

- All persons decrease intake as dying
  - Two weeks of hardly eating is common
  - Two to three days of no fluid intake is common

- Cancer model

- Real life (& death) model
Artificial Nutrition Myths

- Prolongs life
- Promotes comfort
- Prevents aspiration
- It is “ordinary care”
Patient Comfort

- No evidence of enhanced comfort if pt doesn’t ask for food or water
- Some evidence of increased suffering with feeding
- Most discomfort can easily be relieved


McCann R. Comfort care for terminally ill patients. *JAMA* 1994;272:1263