Dietary Assessment Continued

January, 2001

Choline

- AI: 550 µg, men and 425 µg, women
- Humans may not be able to make adequate amounts under certain conditions-
  results in liver damage
- Dementia, CVD, Cancer???
- UL: 3.5 g/day critical effect hypotension and fishy body odor

Antioxidant Definition

A dietary antioxidant is a substance in foods that significantly decreases the adverse effects of reactive species, such as reactive oxygen and nitrogen species on normal physiological function in humans.

Vitamin C

- RDA
  - 90 mg/day adult men
  - 75 mg/day adult women
  - +35 mg/day for smokers
- UL
  - 2 g/day
  - Adverse effects: osmotic diarrhea and GI disturbances

Vitamin E

- RDA
– 15 mg/day α-tocopherol, (RRR α-tocopherol or 2R stereoisomeric forms)
– 30 mg/day of all rac α-tocopherol (supplements, and fortified foods)
– Recommendation is not based on lowering risk of chronic dx
– UL 1000 mg/day supplemental α-tocopherol (hemorrhage)

Selenium

• RDA
  – 55 µg/day
  – Based on maximal synthesis of glutathione peroxidase

• UL: 400 µg/day

β - Carotene

• RDA based on provitamin A activity will be established in concert with Vitamin A RDA.
  • No RDA is established, but recommend increased consumption of carotene rich foods.
  • Supplements are not advisable.

Users manual

• Uses and Interpretations Subcommittee
  • A “practical and easy to read” manual for health professionals
  • To be published within a few years

Daily Values

• Reference Daily Intakes (RDI):
The highest 1968 RDA value within specific age groups.

Four versions

- Daily Reference Values (DRV):
  - Protein based on RDA
  - Others cover dietary components that have no true RDA

Comparison of RDIs and DRIs

Food Pyramid Servings

Supplements?

Exceptions

- Fluoride: Consumption of fluoridated water
- Calcium: \( \infty \)
  - Dairy product consumption
  - Fortified foods?
- Folate: 5 svg. Fortified foods \( \sim 400 \mu g \) DFE
- Vitamin D: supplement in the elderly
- \( B_6 \) and \( B_{12} \): fortified foods or supplements in the elderly
- Failure to consume 1600 kcal

Energy Requirements
• Basal (resting) energy expenditure

• Activity related expenditure

• Thermic effect of food (diet induced thermogenesis)

Harris-Benedict Equation

REE (males)

\[ 66 + [13.7 \times \text{weight(kg)}] + [5.0 \times \text{height(cm)}] - [6.8 \times \text{age}] = \text{kcal/day} \]

REE (females)

\[ 665 + [9.7 \times \text{weight(kg)}] + [1.8 \times \text{height(cm)}] - [4.7 \times \text{age}] = \text{kcal/day} \]

Adjusted body weight for Obese patients

Adjusted body weight =

\[ [(\text{current body weight} - \text{ideal body weight}) \times .25] + \text{ideal body weight} \]
Weight Control

Obesity

- Obesity = BMI ≥ 30
- Waist Circumference ≥
  - 39 inches for men
  - 35 inches for women
- Increased risk of co-morbidities begins at BMI > 25 (overweight)

Co-morbidities associated with Obesity

Relative Risk >>3

- Diabetes
- Gallbladder Disease
- Dyslipidemia
- Insulin Resistance
- Breathlessness
- Sleep Apnea

Relative Risk ~ 2-3

- Coronary Heart Disease
- Hypertension
- Osteoarthritis (knees)
- Hyperuricemia and gout
Factors involved in the development of obesity

Obesity can only occur when energy intake exceeds energy expenditure

Genetics

- Factors affecting energy expenditure
  - Efficacy of the coupling of electron transport to oxidative phosphorylation
- Proteins like Leptin
  - Decreases food intake in rodents
  - Levels are increased in humans-Resistance?

Environment

- Diet
  - High fat
  - High energy density
- Physical activity

Genetics X Environment

- 25% - 75% of body weight variation may be explained by genes.
- U.S. genotype has not changed: body weight has increased

Treatment of Obesity

- First goal should be to prevent weight gain.
• 10% reduction in body weight associated with health improvement

Goals

Behavioral Weight Loss Treatment

• Diet

• Physical Activity

Surgical Weight Loss Treatment