“Zone”ing in on Healthy Eating

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Zoneing in on Healthy Eating

US Army Research Institute of Environmental Medicine (USARIEM)

Approved for public release, distribution unlimited

Diet and health outcome relationships

- Saturated fat
- MUFA
- PUFA
- ω-3 (fish)
- Trans FA
- Refined starches/sugar
- Fiber
- Processed meats
- Lycopene
- Fruit
- Vegetable
- Calcium
- Dairy products
- Salty foods
- Alcohol

- CHD
- Breast cancer
- Diabetes
- Constipation
- Diverticular disease
- Prostate cancer
- Blood pressure
- Cataracts
- Body weight
- Fractures
- Stomach cancer
Nutrition and health guidelines

- AR 40-25, BUMEDINST 10110.6, AFI 44-141, Nutrition Standards and Education (2002)

- Scientific expert panels:
  - US Dietary Guidelines
  - World Health Organization
  - American Heart Association
  - American Cancer Society
  - Country guidelines

- Experts:
  - Atkins (50 g/d CHO)
  - Ornish (10% fat)
  - Zone (40%-30%-30%, C,P,F)
  - LEARN (~60% CHO, 10% SAT fat)
Weight change relative to baseline (women)

Weight change relative to baseline (women)

- Secondary outcomes (change at 12 month):
  - % body fat (NS – 3% in Atkins)
  - LDL-cholesterol (NS)
  - HDL-cholesterol [least in Ornish]
  - Triglycerides [least in Zone]
  - Insulin (NS)
  - Glucose (NS)
  - Systolic BP [greatest in Atkins]
  - Diastolic BP [least in Ornish]

Healthy diet

Focus:
- Prevent nutrient deficiency
- Optimization of long-term health

DoD short term:
- Training
- Deployment (field feeding)
- Mission
- Precise food combinations NOT adequate under ALL conditions

Long term:
- Career military personnel (entry to retirement)
- Major diseases develop over decades
Healthy diet (cont)

- Promote health with sound advice:
  - Authoritative
  - Evidence (science) based
  - Comprehensible

- Optimal nutrient intake (improved functionality):
  - Muscle strength, immune function, intellectual ability
  - Difficult to substantiate with population-based controlled studies

- Define goal of public health interest (nutrient or food[s]):
  - Overweight / obesity (excess energy and exercise)
  - Fractures (calcium, vitamin D)
  - Anemia (iron)

- Alternative nutritional therapies (supplements):
  1. Work
  2. Do not work
  3. Efficacy is uncertain
**Information needed to form guidelines**

- Current consumption of foods
- Current incidence, prevalence, and trends of diet-related public health problems (TMA)
- Links between diet and nutrients and disease/conditions (leverage with national expert panels – military specific)
- Are dietary interventions feasible?
Information to form guidelines (cont)

- Consider:
  - Cost (economics)
  - Current consumption patterns
  - Food availability
  - Consumer preferences (taste, sustainability of the diet)
  - Purpose (reset, treatment)
National Nutrition Monitoring and Related Research Act of 1990, Public Law 101-445:

- What We Eat In America – NHANES
  - Health and nutritional status of Americans (all ages)
  - Complex, multistaged, stratified probability sampling (oversampling of some groups required)
  - ~ 5000 persons per year
- Monitor health trends – obesity (risk factors / comorbidities)
- Military excluded

Establish a DoD-NHANES program
Trends in overweight (BMI $\geq 25.0$) by Service in military personnel ($\geq 20$ yo)


- $^a$Greater than 1995 prevalence.
- $^b$Greater than previous year prevalence.

NHANES 2003-2004: 66.2%
Soldiers* on the Army Weight Control Program (AWCP)

- **October, 2005**
  - Total: 486,262
  - % of Force: 3.2%
  - % of AWCP: 87.1 / 12.9%

- **July, 2006**
  - Total: 495,014
  - % of Force: 3.1%
  - % of AWCP: 87.2 / 12.8%

- **May, 2007**
  - Total: 502,302
  - % of Force: 2.7%
  - % of AWCP: 82.2 / 17.8%

*Includes USAR/ARNG soldiers on active duty in support of the war.
Stress as reason for weight gain

2005 Survey of Health Related Behaviors Among Active Duty Military Personnel, RTI Int.
Behaviors for coping with stress (2005)

“I eat because I am depressed… I’m depressed because I eat.”
Anonymous

2005 Survey of Health Related Behaviors Among Active Duty Military Personnel, RTI Int.
Current, Relevant & Scientifically Valid

- Leverage DoD program with U.S. expert panels
- Institute a DoD-focused food guide pyramid
- Establish DoD NHANES program
- Near term success (overweight)

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