

Methods for Estimating Dietary Intake

- 24 Hour Recall
- Usual Intake/Dietary History
- Food Frequency Questionnaire
- Dietary Records

24 Hour Recall

- Advantages
 - easily obtained
 - patients can usually recall
- Disadvantages
 - difficulty estimating portion sizes
 - difficulty remembering everything
 - 24 hours may not be representative of diet
 - pressure to say what is perceived as desired

Usual Intake/Diet History

- Advantages
 - provides information about intake patterns
 - better reflects long term habits
 - Quick
- Disadvantages
 - limited information about quantities of food
 - May be difficult to describe usual intake

Food Frequency Questionnaire

- Advantages
 - Identifies food groups that are avoided
- Disadvantages
 - difficulty remembering frequency
 - no information about preparation or mealtime habits

Food Record

- Advantages
 - Can be very accurate and complete
 - beyond assessment: may be useful for behavior modification
- Disadvantages
 - Labor intensive and time consuming
 - Portion size estimation
 - Accuracy depends on the number of days

History

Social History

- Occupation, exercise, family status
- Education, economic status, residence
- Alcohol, tobacco, illegal drugs, caffeine
- Diet History

Family History

Diabetes
Heart disease
Obesity
Hypertension
Osteoporosis

Assessment of the Diet

Now that you know what you are eating, is it the “right stuff”?

Assessment of Intake

- Comparison to the Dietary Guidelines
- Comparison to the Food Pyramid
- Comparison to the RDI
- Comparison to estimated energy needs

Recommended servings from the Food Pyramid

Dietary Recommendations for Macronutrients

The Popular Diet Continuum

Dietary Carbohydrate

Dietary Protein

Dietary Fat

Recommended Dietary Allowances

- Recommended intakes of nutrients that meet the needs of almost all healthy people of similar age and gender.
- Established by the Food and Nutrition Board of the National Academy of Sciences.

Four Steps to a RDA

1. Determine the physiological requirement for a population group and the variability within the group.
2. Increase the requirement to an amount sufficient to meet the needs of nearly all members of the population.
3. Increase allowance to account for inefficient utilization of the nutrient.
4. Use scientific judgment when information about requirements is limited.

Estimated Safe and Adequate Daily Dietary Intakes (ESADDIs)

- Insufficient data to set RDA
- Enough data to set range for reasonable intake for groups

Minimum Requirements

- Sodium, potassium and chloride
- Minimum nutrient needs
- The optimal and/or actual intake may vary considerably from these values

What are the Dietary Reference Intakes?

- Used for planning and assessing diets for healthy populations
- Replace the periodic revisions of the recommended Dietary Allowances (RDA)
- Consider the prevention of deficiency diseases as well as reduction of risk of chronic disease
- Include the EAR, RDA, AI, and UL

Expert Nutrient Group Panels

1. Calcium, Vitamin D, phosphorus, magnesium, fluoride
2. Folate, B₁₂, B vitamins, choline
3. Antioxidants (e.g. Vitamins C, E and Selenium)
4. Energy and Macronutrients

5. Trace elements
6. Electrolytes and water
7. Other food components (e.g., fiber, phytoestrogens)

EAR

- Nutrient intake value estimated to meet the requirement defined by a specific indicator of adequacy in 50 percent of the individuals in a life-stage and gender group
- Includes an adjustment for the assumed bioavailability

RDA

- Daily dietary intake level sufficient to meet the nutrient requirements of nearly all (97-98 percent) of the individuals in a life-stage and gender group
- $RDA = EAR + 2SD_{EAR}$
- $RDA = EAR(1.2)$, CV_{EAR} of 10% assumed

AI

- Used when sufficient scientific evidence is not available to calculate an EAR
- Based on an observed or experimentally determined approximation of the average nutrient intake, by a defined population or subgroup, that appears to sustain a defined nutritional state such as normal circulating nutrient values or growth.
- Used for infants to age one
- Calcium, Vitamin D and Fluoride, Pantothenic Acid, Biotin and Choline

UL

- The maximal level of nutrient intake that is unlikely to pose risks of adverse health effects to almost all individuals of the target group
- Does not imply a possible beneficial effect
- Not intended to be a recommended level of intake

Summary

Uses of Dietary Reference Intakes for Healthy Individuals and Groups

Individual

- Planning
 - RDA: Aim for this intake
 - AI: Use as a guide for intake
- Assessment
 - EAR: Examine possibility of inadequacy
 - UL: examine the possibility of overconsumption

Groups

- Planning
 - EAR: set goals for mean intake
 - AI: formulation of tentative goals for mean intake
 - UL: ensure that goals do not place group at risk for overconsumption
- Assessment
 - EAR: Prevalence of inadequate intakes within a group

Focus on some nutrients

Calcium

- Goal: Optimal Ca intake that results in lowest risk of osteoporotic fracture
- Optimal Ca intake that results in maximal retention-surrogate marker of risk

Vitamin D

- Amount of Vitamin D to maintain adequate Calcium metabolism and good bone health

Fluoride

- AI: 4 μ Men, 3 μ (ESADDI 1.5-4 μ g)

AI based on the estimated intakes shown to reduce the incidence of dental caries without causing side effects.

Vitamin B₆

- Supplemental B₆ is more available than dietary B₆
- Adverse effect, sensory neuropathy
- UL is 100 mg/day

Vitamin B₁₂

- Food bound B₁₂ less well absorbed than supplemental
- Absorption likely to be decreased in the elderly: recommend that major source should be from supplements or fortified foods.

Folate

- 50% lower bioavailability of food folate
- DFE = 1 μ g food folate = 0.6 μ g folate with meals
- Possible effects on CVD, cancer, mental disorders not used to determine RDA
- UL 1000 μ g/day risk of exacerbating B₁₂ deficiency neuropathy