Outline

• Who is IOM?
• What are DRIs?
• How were they created?
• Why are they important?
Institute of Medicine

- Established in 1970
- Health Arm of the National Academy of Sciences
- Private, independent, nonprofit
- Work outside of government
- Consensus Studies, Convening Activities, Fellowships
The focal point for activities of the Institute of Medicine concerned with food, nutrition, obesity, and food safety and their roles in health maintenance and disease.
Key Question of Nutrition Science and Good Health

• What substances in food (and in what amounts) are necessary for good health?

• Traditional endpoints
  – Growth and development
  – Successful reproduction
  – Prevention of deficiency diseases
What else constitutes good health?

• Observational epidemiology, clinical trials link diet to increased risk of chronic diseases

• Epidemiology and nutrient-gene expression studies are refining a new concept: Developmental origins of health and disease
Endpoints for defining good health

• Growth and development
• Successful reproduction
• Maintenance of physiological functions
• Prevention of deficiency diseases
• Prevention of chronic diseases
• Prevention of toxicity
Recommended Dietary Allowances
1941

- Energy
- Protein
- 2 minerals (Ca, Fe)
- 6 vitamins (A, C, D, thiamin, riboflavin, niacin)

1989

- Energy
- Protein
- 7 minerals (Ca, Fe, P, Mg, Zn, I, Se)
- 11 vitamins (A, C, D, thiamin, riboflavin, niacin, E, K, B₆, B₁₂, folate)
- Safe and adequate daily dietary intakes (biotin, pantothenate, Cu, Mn, F, Cr, Mo)
New Approach after 1989 -- Dietary Reference Intakes

• Advances in knowledge about
  – Other food components, e.g., fiber, carotenoids
  – Role of dietary factors in chronic disease prevention
  – Statistical approaches

• Many uses
Dietary Reference Intakes (DRIs)

DRI is a collective term that includes nutrient-based dietary reference values:

- Estimated Average Requirement (EAR)
- Recommended Dietary Allowance (RDA)
- Adequate Intake (AI)
- Tolerable Upper Intake Level (UL)
DRI Concept

IOM 2006
Process for Setting DRIs

• Overseen by Standing Committee on Scientific Evaluation of Dietary Reference Intakes

• Separate subcommittees on uses and on upper levels

• For groups on nutrients (each a report)
  – Panel of experts
  – Evidence review
  – Solicitation of advice (e.g., workshops)
  – Rigorous external review

• Broad support from many agencies
Dietary Reference Intakes for US and Canada

<table>
<thead>
<tr>
<th>Year</th>
<th>Milestones</th>
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<tbody>
<tr>
<td>1994</td>
<td>Food and Nutrition Board proposes new framework*</td>
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<tr>
<td>1997</td>
<td>Work starts on DRIs for US and Canada (with calcium, vitamin D, and related nutrients)</td>
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<tr>
<td>1997-2004</td>
<td>6 reports on groups of nutrients</td>
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<td>2004</td>
<td>2 reports on how to use new values</td>
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<td>2006</td>
<td>Single Volume guide for health professionals</td>
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<td>2007</td>
<td>Workshop on Lessons Learned</td>
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<tr>
<td>2009</td>
<td>Start work on next iteration with vitamin D and calcium</td>
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<tr>
<td>2011</td>
<td>DRI for calcium D and calcium published</td>
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*How Should the Recommended Dietary Allowances Be Revised? National Academy Press.*
Why are the DRIs important?

- Statutory or De Facto standard for virtually all food programs
  - Official USDA food plans, including the Thrifty Food Plan
  - SNAP allotments/WIC food packages/school meals/elderly feeding programs
  - Standard of comparison for USDA review of food distribution programs on Indian Reservations

- Food fortification and supplementation policies

- Nutrition Labeling

- Indirectly influencing food industry practices, e.g., removal of *trans* fat in foods
Dietary Reference Intakes

- Basis for nutritional standards of many other countries

- Uses in everyday life
  - By health professionals counseling patients
  - By divorce courts to set alimony payments
  - By bankruptcy courts to determine income for food expenses
Dietary Reference Intakes

A science standard for federal nutrition guidance
- HHS/USDA Dietary Guidelines for Americans
- USDA MyPyramid and MyPlate
- Health Canada Canadian Food Guide
Science Underpinning for
Dietary Guidelines for Americans

Science-based advice for healthy Americans age 2 years and over about how to choose foods and be active to promote health and prevent disease.

- Mandated by law since 1990
- Published every 5 years by HHS and USDA
- Cornerstone of Federal nutrition policy
- Basis for nutrition education/promotion activities
Policy in Action: Examples of Federal Programs That Implement the Dietary Guidelines for Americans

- Know Your Farmer, Know Your Food
- The Heart
- Be Food Safe
- DASH Diet
- Team Nutrition Facts Panel
- More
- Fight BAC!
- Let'sMove.gov
- ChooseMyPlate
- SmallSteps.gov
- Head Start
- Thrifty Food Plan / SNAP
- Other USDA Food Plans
- Front-of-Pack
- Hearts ‘n Parks
- Thrifty Food Plan / SNAP
- Expanded Food and Nutrition Education Program
- Schools Breakfast
- WIC
- Steps to a Healthier US
- Supplemental Nutrition Assistance Program
- Nutrition Essentials: Teaching Tools for Healthy Choices
- Weight-Control Information Network
- Live Healthier, Live Longer
- Thanks to Robert Post

Label Claims (e.g., nutrient content, health, and structure/function claims)
The Future

• How to continue to meet national needs?
• How to assure currency?
• How to identify criteria for determining time to update?
• As with many things, how to support?
For more information

• [www.iom.edu/fnb](http://www.iom.edu/fnb)

• [www.iom.edu/dri](http://www.iom.edu/dri)

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Additional Background
Dietary Reference Intakes >40

- Nutrient Reference Values by age and gender group and life stage
- Estimated Average Requirement (EAR) – median requirement; used to assess prevalence in groups
- Recommended Dietary Allowance (RDA) – covers 97-98% age/gender group; calculated from EAR; used by individuals
Dietary Reference Intakes (continued)

- **Adequate Intake (AI)** – average of healthy population; used when not enough data to set EAR and RDA

- **Tolerable Upper Intake Level (UL)** -- As intake increases above the UL, the potential risk of adverse effects increases

**New:** **Acceptable Macronutrient Distribution Ranges (AMDR)** -- % of energy associated reduced chronic disease risk while providing enough essential nutrients