Nutritional Needs

Requirements

- Protein
- Carbohydrates
- Lipids
- Vitamins
- Minerals
- Water
Macronutrients – serve as body’s source of energy

- Carbohydrates (4 kcal per gram)
  - Glucose
  - Mouth and Small Intestine

- Protein (4 kcal per gram)
  - Amino Acids
  - Stomach

- Lipids (9 kcal per gram)
  - Triglycerides
  - Mouth, mostly Small Intestine

Essential for the growth and maintenance of tissue
- Cell structures, enzymes, hormones, neurotransmitters, carriers for substances in the bloodstream (osmotic pressure), antibodies
- Of the 20+ Amino Acids eight are essential
  - isoleucine, leucine, lysine, threonine, tryptophan, methionine, histidine, valine and phenylalanine
- In developed countries, adequate amounts of protein are usually obtained
  - However, not all AA are consumed
  - Contrary to popular belief, all may be obtained through plant sources
  - Meat products tend to be overused for protein sources
- 15%-20% of total calories should come from protein
Carbohydrates

- Body’s primary source of energy
  - Help regulate fat and protein metabolism

- Sugars
  - Simple (monosaccharide), disaccharide
    - Glucose, Fructose, and Galactose; Maltose, Sucrose, Lactose
    - Avoid these carbs except when found in fresh fruit

- Starches
  - Complex (polysaccharide)
    - Create sustained energy and better blood sugar levels
    - Best choices are found in root vegetables, potatoes, whole grains, and corn

- Fiber
  - Provides little caloric value but are important in maintaining proper GI function and elimination
  - Absorb water, binds toxins, and may reduce fat and cholesterol absorption
  - Cellulose found in skins and outer hulls of vegetables and fruits and grains
  - Soluble and Insoluble types
  - Other good sources include carrageen, guar gum, pectin and agar and alginate

- 55%-65% of calories should come from Carbohydrates
  - Most from complex sources
Lipids

- Adipose Tissue
  - Retains heat, supports & protects organs, energy reserve
- Needed for cell membrane structure, transport roles within the blood stream, myelin sheath production
- Triglycerides
  - Form of fat that provides energy
  - 95% of lipid content of food and easily stored
  - Saturated (mostly animal sources)
  - Unsaturated (plant sources)
    - Monounsaturated found in avocados and olive, almond, canola oils
    - Polyunsaturated found in safflower, corn, sesame and soybean oils
- EFA – linoleic and arachidonic (omega-6) and linolenic (omega-3)
- Cholesterol
  - Naturally produced in the body and is important for Vit D production, cell membrane function, and formation of some androgens

- 20 to 30% of the diet should be comprised of lipids and 15% or more of that should come from essential fats

Vitamins

- Essential for proper regulation of metabolic reactions and biochemical processes
- Most cannot be synthesized in the body

- Fat soluble – A, D, E, K, and Carotenoids
  - Can be stored in the body and in excess can be toxic

- Water soluble – All B vitamins, C, and bioflavonoids
  - Needs to be replenished daily because they are broken down easily and the body does not store them
  - No storage capacity makes them less likely to be toxic
  - Refer to handout on website
Vitamins and Minerals

- Needed to provide Antioxidants
  - Vitamin C & E, Beta-Carotene, and Selenium are most recommended
  - Free radicals attack and damage proteins, lipids, cell membranes, and DNA

- Minerals are required for many vital processes
  - Macrominerals comprise at least .01 % of bodyweight
    - Ca, Cl, Mg, P, K, and Na
  - Microminerals (trace) comprise less than .01 % of bodyweight
    - Cr, Co, Cu, I, Fe, Mn, Mo, Se, S, Zn

Intake

- RDA – Recommended Daily Allowances
  - Since 1940, the U.S. government provided suggested intake of certain nutrients

- RDI - Reference Daily Intakes
  - In 1993, the FDA took over
    - Nutrient intake based on a 2000 calories diet, no age, gender differences

- SONA – Suggested Optimal Nutrient Allowance
  - Formulated by holistic physicians because some RDIs were not sufficient enough
  - Still take into account individual differences
National Academy of Sciences created guidelines for a well-balanced diet. The ranges allow for flexibility in planning diets for individual health and physical activity needs. The source of fat calories is critical. ChooseMyPlate.org

<table>
<thead>
<tr>
<th>TABLE 3.6 The American Diet: Current and Recommended Carbohydrate, Fat, and Protein Intake Expressed as a Percentage of Total Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Percentage</strong></td>
</tr>
<tr>
<td>Carbohydrates:</td>
</tr>
<tr>
<td>Simple</td>
</tr>
<tr>
<td>Complex</td>
</tr>
<tr>
<td>Fat:</td>
</tr>
<tr>
<td>Monounsaturated:</td>
</tr>
<tr>
<td>Polyunsaturated:</td>
</tr>
<tr>
<td>Saturated:</td>
</tr>
<tr>
<td>Protein:</td>
</tr>
</tbody>
</table>
### One or Two Servings?

<table>
<thead>
<tr>
<th></th>
<th>Single Serving</th>
<th>% DV</th>
<th>Double Serving</th>
<th>% DV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size</td>
<td>1 cup (228g)</td>
<td></td>
<td>2 cups (456g)</td>
<td></td>
</tr>
<tr>
<td>Calories</td>
<td>250</td>
<td></td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Calories from Fat</td>
<td>140</td>
<td></td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Total Fat</td>
<td>12g</td>
<td>18%</td>
<td>24g</td>
<td>36%</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>1.5g</td>
<td></td>
<td>3g</td>
<td></td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>3g</td>
<td>15%</td>
<td>6g</td>
<td>30%</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>30mg</td>
<td>10%</td>
<td>60mg</td>
<td>20%</td>
</tr>
<tr>
<td>Sodium</td>
<td>470mg</td>
<td>20%</td>
<td>940mg</td>
<td>40%</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>31g</td>
<td>10%</td>
<td>62g</td>
<td>20%</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>0g</td>
<td>0%</td>
<td>0g</td>
<td>0%</td>
</tr>
<tr>
<td>Sugars</td>
<td>5g</td>
<td></td>
<td>10g</td>
<td></td>
</tr>
<tr>
<td>Protein</td>
<td>5g</td>
<td></td>
<td>10g</td>
<td></td>
</tr>
<tr>
<td>Vitamin A</td>
<td>5g</td>
<td>4%</td>
<td>10g</td>
<td>8%</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>5g</td>
<td>2%</td>
<td>10g</td>
<td>4%</td>
</tr>
<tr>
<td>Calcium</td>
<td></td>
<td>20%</td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>Iron</td>
<td></td>
<td>4%</td>
<td></td>
<td>8%</td>
</tr>
</tbody>
</table>

The % DV is based on 100% of the daily value for **each** nutrient.
What's High? What's Low?  
Do You Have to Calculate to Know?

Footnote

*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

<table>
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<th>Nutrient</th>
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Limit these Nutrients

Get Enough of these Nutrients

Quick Guide to % DV

5% DV or less is Low

20% DV or more is High
No % Daily Value

- Trans Fat
- Sugars
- Protein

Read the Nutrition Facts Label For Total Sugars

Plain Yogurt

Fruit Yogurt
### Look at the Ingredient List for Added Sugars

**Plain Yogurt**

| INGREDIENTS: CULTURED PASTEURIZED GRADE A NONFAT MILK, WHEY PROTEIN CONCENTRATE, PECTIN, CARRAGEENAN. |

**Fruit Yogurt**

| INGREDIENTS: CULTURED GRADE A REDUCED FAT MILK, APPLES, HIGH FRUCTOSE CORN SYRUP, CINNAMON, NUTMEG, NATURAL FLAVORS, AND PECTIN. CONTAINS ACTIVE YOGURT AND L. ACIDOPHILUS CULTURES |

### Organics and GMOs

- **Genetically modified organism (GMO) benefits:**
  - Resist disease and extreme environmental conditions better.
  - Require less fertilizers and pesticides.
  - Last longer.
  - Have better nutrient content and taste.
  - Save billions of dollars and help feed the hungry.

- **Debate over GM foods**
  - Genetic modifications create new "transgenic" organisms that have potentially unpredictable effects on the environment and on humans.
  - Illnesses or allergies in humans; destruction of other plants or herbicide-resistant "superweeds" may emerge.

- **Avoiding GM foods**
  - Buy organic foods; organic trade organizations will not certify GM foods.
  - Buy from local markets; small farmers are less likely to use this technology.
Organics and GMOs

According to the USDA, organic foods are described as:

- Organic meat, poultry, eggs and dairy products come from animals that are given no antibiotics or growth hormones. Organic food is produced without using most conventional pesticides, fertilizers made with synthetic ingredients or sewage sludge, bioengineering or ionizing radiation.

- Organically grown foods are safer and more nutritious than foods raised with non-organic methods such as pesticides, non-organic fertilizers, antibiotics and hormones
  - [http://www.ams.usda.gov/AMSv1.0/nop](http://www.ams.usda.gov/AMSv1.0/nop)

To be certified as organic, food products need to come from farms and processing plants that are certified as organic.

Foods that are organically grown can state that fact on the label:

- **"100% Organic"**
  Foods that are labeled as 100% Organic must contain all organically grown ingredients except for added water and salt.

- **"Organic"**
  Foods that are labeled as Organic need to contain at least 95% organic ingredients, except for added water and salt, plus they must not contain sulfites added as a preservative. Sulfites have been known to provoke allergies and asthma in some people. Up to 5% of the ingredients may non-organically produced.

- **"Made with Organic Ingredients"**
  Product labels that claim Made with Organic Ingredients need to contain at least 70% organic ingredients, except for added water and salt.
  Food products made with less than 70% organic ingredients may state which ingredients are organic, but they can not claim to be organic food products.
Are Organic Foods Worth the Cost?

Maryland Organic Farms

Dietary Guidelines for Americans

1. Consume a variety of foods
2. Control calorie intake
3. Be physically active
4. Increase intake of fruits, vegetables, whole grains, and milk products
5. Choose fats wisely
6. Choose carbohydrates wisely
7. Choose and prepare foods with little salt
8. If you drink alcohol, do so in moderation
9. Keep food safe to eat
   - Behaviors to prevent foodborne illness
You can vote to change this system three times a day.

- Buy from companies that treat workers, animals, and the environment with respect.
- When you go to the supermarket, choose foods that are in season. Buy foods that are organic. Know what’s in your food. Read labels.
- The average meal travels 1,500 miles from the farm to the supermarket. Buy foods that are grown locally. Shop at farmers’ markets. Plant a garden. (Even a small one.)
- Cook a meal with your family and eat together.
- Everyone has a right to healthy food. Make sure your farmers’ market takes food stamps. Ask your school board to provide healthy school lunches.
- The FDA and USDA are supposed to protect you and your family. Tell Congress to enforce food safety standards and re-introduce Kevin’s Law.
- If you say grace, ask for food that will keep us and the planet healthy. You can change the world with every bite.

Hungry for change? Go to www.takepart.com/foodinc.
Maryland Food Bank, Baltimore, MD

People Served:
- Annual estimated number of clients: 357,400
- Weekly estimated number of clients: 72,100
- Percentage under 18: 29.0%
- Percentage of elderly: 8.0%

Poverty Statistics:
- Percentage below poverty line in previous month: 67.0%
- Percentage who are homeless: 6.0%
- Percentage who are food insecure: 77.0%
- Percentage who are food insecure with kids: 81.0%
- Percentage who are food insecure with hunger: 45.0%
- Percentage with hunger with kids: 40.0%
- Percentage who receive Food Stamps: 25.0%
- Percentage who received General Assistance, welfare, or Temporary Assistance for Needy Families (TANF) in the past two years: 8.5%
Local Hunger

- **Working Poor:**
  - Percentage of households with at least one employed adult: 48.0%
  - Median monthly income: $700

- **Choices:**
  - Percentage who made the choice between food and utilities: 52.0%
  - Percentage who made the choice between food and housing: 48.0%
  - Percentage who made the choice between food and health care: 40.0%

- Learn more at [http://www.mdfoodbank.org](http://www.mdfoodbank.org)

Future of Food

- Play Movie