Assignment:

- Take out a piece of paper and write down what you had for breakfast today

- Now... write down what you had for lunch and dinner yesterday
Write down your favorite food

What is your favorite?

Food and drink provide:
- The energy needed to run the body
- The nutrients needed to maintain and build tissues, hormones, cells, proteins, cholesterol, etc.
- The vitamins and minerals required for metabolic, tissue, and bone health
“Diet” refers to what you eat and drink

- The ideal diet should
  - Replenish the amount of calories or energy that your body will use throughout the day
  - Include a variety of foods in order to assure a good selection of nutrients
  - Restrict fats to <30% of the total daily calories
  - Provide enough calcium for bone/skeletal health maintenance or growth
  - Be good to the palate!

What are the general guidelines?

- Calorie intake based needs (you can calculate yours knowing your activity level and using daily estimates, nomograms, nutritionist consultation, or web-based calculators)
- No more than 30% daily calories from fat
- No more than 10% daily calories from saturated fat
- Protein intake at no more than 15-20% of daily calories
- Carbohydrate intake at 50-60% of daily calories (may be different for persons with diabetes)
- Calcium intake about 1,000 mg per day (for ages 19-50 without pregnancy or osteoporosis)
- Vitamins and minerals per RDA unless pregnant
- Water intake at 6-8 full glasses per day unless restrictions exist

Calories

- A calorie is a measure of how much energy a food provides
- Different types of foods have different caloric values:
  - 1 gm of fat provides 9 calories
  - 1 gm of carbohydrate (CHO) provides about 4 calories
  - 1 gm of protein provides 4 calories if used for energy
  - 1 gm of alcohol provides 7 calories
How many calories does a person need?

- Quick estimates of energy needs using body weight for adults

<table>
<thead>
<tr>
<th>Goal</th>
<th>Calories/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Loss</td>
<td>25</td>
</tr>
<tr>
<td>Weight maintenance</td>
<td>30</td>
</tr>
<tr>
<td>Weight gain</td>
<td>35</td>
</tr>
<tr>
<td>Malnourished</td>
<td>35-50</td>
</tr>
</tbody>
</table>

Calorie Proportions

- Carbohydrates should compose 50-60% total calories
- Protein should compose 15-20% of total calories
- Fat should compose 20-30% of total calories or less

An example...

- The average male weighs 160 pounds...
- That’s about 73 kg...
- Using 30 cal/kg, this person would need approximately 2200 calories per day
- Of these calories, 1100-1320 should be carbohydrate, 330-440 should be protein, and 440-660 should come from fat
Carbohydrates

Simple Carbs - Monosaccharides and disaccharides
- Sources: fruit, syrup, honey, table sugar, milk (lactose)
- Simple sugars provide lots of calories but have no staying power, should be less than 50% of CHO intake

Complex carbs - Starch
- Sources: Grains (rice, wheat, corn, oats), legumes (beans and peas), and tubers (potatoes and yams)
- Carbs are the foundation of a diet, and are best when consumed as grains (wheat, rice, oats) because they are composed of starch and fiber (fiber increases satiety)
- They are low in fat

Protein

- We need protein because 9 amino acids are essential
- Sources
  - Animal: Milk, yogurt, cheese, meat, poultry, fish, and eggs
  - Plant: dry beans, nuts, soybeans, peanuts, peas, cereals, fruits and vegetables
- No plant products contain all the essential AA so vegetarians should prepare a variety of food products containing protein to supply all AA (“complete” protein)

Facts about Fat

- Triglycerides are composed of fatty acids:
  - Saturated fatty acids - found in animal sources, like beef, pork, poultry, milk, butter; also in coconut oil, palm oil; solid at room temp
  - Monounsaturated fatty acids - found in vegetable oils like canola, olive, peanut as well as avocados, pecans, and almonds; liquid at room temp
  - Polyunsaturated fatty acids - found in vegetable oils like safflower, sunflower, corn, flaxseed, and canola; also in seafood; liquid or soft at room temp
  - 2 Types: Omega-3 and Omega-6
  - Trans fatty acids - made when vegetable oils are processed into margarine or shortening; found in snack foods, can occur naturally in dairy products; aka “partially hydrogenated vegetable oil” or “vegetable shortening”
Health implications of FAT

- Excess Sat Fat intake --> Increases LDL, chol, risk of heart disease
- Lots of MUFA intake --> may lower LDL and decreases risk of heart disease
- Eating PUFA instead of Sat Fat decreases LDL
- Trans fatty acids increase LDL, may lower HDL
- Excess Cholesterol intake --> Increases LDL
- Minimize Sat and Trans Fat Intake (7-10% total cals)
- Get 10% total cals from PUFA
- Get 10-15% total cals from MUFA
- Total fat calories should be ≤ 30% of total cals

Putting it all together

- CHO is 50-60% total cal, 4 cal/g
- Protein is 15-20% total cal, 4 cal/g
- Fat is 20-30% total cal, 9 cal/g
- When making a diet for someone, start by calculating total calories
- Again, the average male who weighs 73 kg will need 30 cal/kg, or ~2200 total calories

Putting it all together, cont.

- Of 2200 total calories, 1100 should come from CHO, 440 should come from protein, and 660 should come from fat
- 1100 cal ÷ 4 cal/g CHO = 275 g CHO/d
- 440 cal ÷ 4 cal/g Pro = 110 g Protein/d
- 660 cal ÷ 9 cal/g Fat = 73 g Fat/d
Serving Size
- 1 serving =
  - 15 grams of Carbohydrate
  - 7 grams of Protein
  - 5 grams of Fat
- How many servings can this person have?
  - 275 g CHO/d ÷ 15 g/serv = 18 servings CHO/d
  - 110 g Pro/d ÷ 7 g/serv = 16 servings Protein/d
  - 73 g Fat/d ÷ 5 g/serv = 14 servings Fat/d
- This seems like a lot but...

1 Carbohydrate Serving

<table>
<thead>
<tr>
<th>Food</th>
<th>Amount</th>
<th>Food Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread</td>
<td>1 slice</td>
<td>Starch</td>
</tr>
<tr>
<td>Cereal (uncooked)</td>
<td>1/4 cup</td>
<td>Starch</td>
</tr>
<tr>
<td>Pasta</td>
<td>1/2 cup</td>
<td>Starch</td>
</tr>
<tr>
<td>Beans (white or brown)</td>
<td>1/2 cup</td>
<td>Starch</td>
</tr>
<tr>
<td>Baked Beans</td>
<td>1/2 cup</td>
<td>Starch</td>
</tr>
<tr>
<td>Corn</td>
<td>1/4 cup</td>
<td>Starch</td>
</tr>
<tr>
<td>Mashed potato</td>
<td>1/4 cup</td>
<td>Starch</td>
</tr>
<tr>
<td>Banana</td>
<td>1/2 cup (1/2)</td>
<td>Fruit</td>
</tr>
<tr>
<td>Apple/Orange juice</td>
<td>1/4 cup</td>
<td>Fruit</td>
</tr>
<tr>
<td>Milk (Skim, 1, 2, 4%, Soy)</td>
<td>1 cup</td>
<td>Milk</td>
</tr>
<tr>
<td>Sugar</td>
<td>1 tbsp</td>
<td>Sugar</td>
</tr>
</tbody>
</table>

1 Protein Serving

<table>
<thead>
<tr>
<th>Food</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry, beef, pork, lamb, veal, fish, shellfish</td>
<td>1 oz. (about 1 slice of packaged meat)</td>
</tr>
<tr>
<td>Cottage cheese</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Cheese</td>
<td>1 oz. (1 slice)</td>
</tr>
<tr>
<td>Egg</td>
<td>1/2</td>
</tr>
<tr>
<td>Egg whites</td>
<td>1/4</td>
</tr>
<tr>
<td>Egg substitute</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Tofu</td>
<td>1/2 cup (4 oz)</td>
</tr>
</tbody>
</table>
1 Fat Serving

<table>
<thead>
<tr>
<th>Food</th>
<th>Amount</th>
<th>Type of fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avocado</td>
<td>2 Tbsp</td>
<td>MUFA</td>
</tr>
<tr>
<td>Olive</td>
<td>1 Tbsp</td>
<td>MUFA</td>
</tr>
<tr>
<td>Almonds, cashews</td>
<td>1 oz</td>
<td>MUFA</td>
</tr>
<tr>
<td>Margarine (crisco/stick)</td>
<td>1 Tbsp</td>
<td>PUFA</td>
</tr>
<tr>
<td>Mayonnaise</td>
<td>1 Tbsp</td>
<td>PUFA</td>
</tr>
<tr>
<td>Corn, Safflower oil</td>
<td>1 Tbsp</td>
<td>PUFA</td>
</tr>
<tr>
<td>Salad dressing</td>
<td>1 Tbsp</td>
<td>PUFA</td>
</tr>
<tr>
<td>Bacon</td>
<td>1 slice</td>
<td>Saturated</td>
</tr>
<tr>
<td>Half and half</td>
<td>2 Tbsp</td>
<td>Saturated</td>
</tr>
<tr>
<td>Cream Cheese</td>
<td>2 Tbsp</td>
<td>Saturated</td>
</tr>
<tr>
<td>Sour Cream</td>
<td>2 Tbsp</td>
<td>Saturated</td>
</tr>
</tbody>
</table>

Reading Food Labels

- **Serving Size**
  - Household measure
  - Influences all other nutrients, if serv size is doubled then all nutrients doubled
  - Compare the serving size to how much YOU eat

- **Calories**
  - How much energy one serving provides
  - Note that calories from fat are also shown
Reading Food Labels, cont.

- "Limit these Nutrients"
  - Total fat
  - Cholesterol
  - Sodium

- "Get enough of these nutrients"
  - Fiber
  - Vitamin A
  - Vitamin C
  - Calcium
  - Iron

% Daily Value
- Daily values help the lay person determine whether the nutrient contributes a lot or a little to their daily diet
- Based on nutrient guidelines for a 2,000 calorie diet
- 5% or less of the daily value is considered LOW
- 20% or more of the daily value is considered HIGH
Mayo Clinic Healthy Weight Pyramid

- Lose Weight and Keep It Off
- Developed to encourage weight loss, weight maintenance and long term health
- Focusing on low-energy-dense foods which contain high amounts of water and fiber
- Physical activity at center of pyramid to encourage a central role for regular activity
- An unlimited allowance of vegetables and fruits
- Fruit, veggies, whole grain carbs (potatoes, pasta, brown rice) occupy a lot of space, take a long time to eat, and lead to decreased calorie intake resulting in weight loss and less hunger

Nutrition Screening and Assessment
Nutrition Screening

- The purpose of nutrition screening is to identify patients who would benefit from nutrition intervention or nutrition support
  - Example: Patients who have lost weight, have been on nutritional support, are pregnant, very elderly, or have trouble eating

How do you know if you need to make changes in your diet?

- Do you have a medical problem or risk such as high blood pressure, high cholesterol or diabetes?
- Can the problem or risk be improved by changing your diet?
- Do diabetes, cancer, heart disease, or osteoporosis run in your family?
- Are you overweight or have you gained weight over the years?
- Are you underweight or lost weight without trying?
- Do you have questions about the kinds of foods to eat or vitamins?
- Do you think that you might benefit from nutritional counseling?

How to perform a Nutrition Screening

- Review the chart and obtain
  - Height and weight
  - Diagnosis
  - Medical history
  - Labs
  - Medications
  - Current Diet
- Interview the patient
  - Note weight changes
- Diet changes
- Food allergies and intolerances
- Difficulty chewing or swallowing
- Changes in appetite
- Obtain info not available from the chart
- Assign "nutrition risk"
Nutrition Risk

- **Low Risk** - classification for a patient who does not have any current nutritional problems, has had no change in weight, is eating well
- **Moderate Risk** - classification for patients who have had a small weight loss, are not eating well, or have a current or past diagnosis indicating nutritional concern
- **High Risk** - classification for patients who have had a weight change of >5% in the last month or 10% loss in less than 6 months, are on nutrition support, or have a diagnosis indicating nutritional issues

Generally, patients at high risk should be referred to a registered dietitian for assessment.

Obesity Assessment using BMI

**Body Mass Index:**

\[
\text{BMI} = \frac{\text{Weight in Kg}}{\text{Height in meters squared}}
\]

or

\[
\text{BMI} = \frac{\text{Weight in Lb} \times 703}{\text{Height in inches squared}}
\]

**BMI Ranges**

- Normal: 18.5 to 24.9
- Overweight: 25.0 to 29.9
- Class I obesity: 30.0 to 34.9
- Class II obesity: 35.0 to 39.9
- Class III obesity: 40.0 or greater (extreme obesity)
Nutrition Assessment

- Determines the nutritional status of a patient using clinical markers, anthropometrics, labs, and medical history and ends with a plan for the patient
- Understand the factors that can affect good nutrition such as:
  - dental health
  - mental illness
  - physical impairment such as swallow after a stroke or uncontrolled ulcer pain
  - drug therapy effects on appetite, gi comfort and function, salivation, motivation and alertness

Nutrition Assessment, cont.

- Parts of an Assessment
  - **Subjective Data**
    - What does the pt look like? Are they fat, skinny, cachetic?
    - Can the pt chew/swallow?
    - Is the pt jaundiced?
    - Is the pt oriented and can they eat without assistance?
    - How are the pt's bowel habits?
  - **Objective Data**
    - How is the pt eating?
    - Can the patient afford food?
    - Is the pt physically active?
    - Diagnosis that may alter nutrient needs
    - Past medical hx
    - Height and weight
    - Labs
    - Medications
    - Age
    - Sex

Nutrition Assessment

- **Assessment**
  - Weight (%IBW)
  - % Weight change
  - BMI
  - Calorie needs
  - Protein needs
  - Fluid needs
  - Labs
  - Meds
  - Other - food intolerances, nutrition support, etc.

- **Plan**
  - Identify the appropriate diet for the patient
  - Identify whether liquid or vitamin supplements are needed
  - Refer pts on nutrition support to an RD
  - Provide nutrition counseling when appropriate
The pharmacist and nutrition counseling

- Understand the basics about nutrition and how to explain these principles to patients
- Be able to identify if a person has a balanced diet given the food pyramid
- Be sensitive to the nutritional traditions and needs of individuals based on cultural background

Nutrition Counseling 101: Keep it Simple!

- The concept of the food pyramid and how it relates to a balanced diet
- How to read a food label

Nutrition: Advanced counseling, one step at a time

- Review the patient's food history if possible noting daily intakes (e.g. calorie total)
- Use the words "food choices" instead of "diet"
- Honor the patient's likes & dislikes whenever possible - keep life interesting!
- Identify the patient's required calorie, fat, protein, carb, vitamin and fluid intake
- Outline a plan for managing specific dietary restrictions (e.g. sodium)
- Instruct the patient how to weigh him or herself
- Agree on a reasonable body weight goal
- Outline a reasonable weight loss rate (if needed)
Nutrition Summary

- Pharmacists are in a unique position to recognize patients who may need nutrition assessment, counseling, or referral to an expert
- Questions?

Helpful Websites

- http://www.nutrition.gov
- The basics of good nutrition at http://cpmcnet.columbia.edu/texts/guide/hmg06_0000.html
- General diet information at http://www.cyberdiet.com
- Nutritional information for fitness at http://www.primusweb.com/fitnesspartner/
- Mike’s calorie counter at http://wwwcaloriecountercharts.com
- http://atkins.com, weightwatchers.com, and zoneperfect.com