Preface

As a veteran 7th grade science teacher myself, it is my pleasure and privilege to offer "An Ounce of Prevention: The Diet and Disease Connection" to all 7th grade health and science teachers. This Nutrition Education and Health Screening Unit is made possible by the Healthy Campus/Community Initiative at Delta State University. The ten lesson unit is designed to engage middle school students in personal awareness of proper nutrition as a means of disease prevention. Lessons are totally teacher friendly containing all lesson plans, copies, and materials to conduct each one. Part I (Lessons 1-5) focus on basic nutritional principles; whereas, Part II (Lessons 6-10) focus on diet related diseases with an emphasis on prevention.

Each lesson has enough content, activities, and extension ideas to cover a minimum of two class periods. Although with a little selective omission, most lessons could be shortened to one class period. Furthermore, each lesson in the unit can stand alone. In other words, the lessons in this unit may be used as a comprehensive 2-4 week study or taught sporadically throughout the year one lesson at a time. Either way should prove effective.

Two of the lessons include a screening activity with which the HCCI staff will gladly assist. However, one month's notice is required for HCCI scheduling purposes (846-4303 or 846-4300).

Most importantly, though, this unit is meant to be a very positive educational experience for the students. The intent is that the lessons and activities will help the students recognize that healthy lifestyle choices can be fun and that they really do pay off! Here's to healthy teaching!
HCCI 7th Grade Health Unit

Lesson #1 Good Nutrition from the Ground Up

Lesson Plan

Suggested time: 1-2 class periods

I. Goal: To educate students on the importance of eating a variety of foods from all food groups for good health.

II. Objectives

Students will be able to:

1. Name the food groups of the MyPyramid food guide.
2. Adapt a menu to include foods from all the food groups.
3. Identify unusual fruits and vegetables.

III. Procedure

A. Pre-test

B. Introduction/Motivation

1. Today we are going to learn about good nutrition and the importance of eating a variety of foods. Ask:
   - What does good nutrition mean to you?
   - What does poor nutrition mean to you?
   - How does variety pertain to good nutrition?

2. Allow students 3-4 minutes to write down everything they ate and drank for supper last night.

   Refer to the MyPyramid Poster and ask them: “How many of the food groups did your supper include?” Allow a few minutes for discussion. “What could you have added to your meal to include all the food groups?”

3. Explanation: Start with the basics. Eating right doesn’t have to be complicated and there
are lots of benefits. Good nutrition and regular exercise help people maintain healthy weight and reduce the risk of chronic illnesses like hypertension, diabetes, and certain cancers.

A healthy eating plan emphasizes a combination of fruits, vegetables, whole grains, low-fat or fat-free dairy and includes lean meats, fish, chicken, beans and nuts. Each food group provides specific nutrients in our diets. For example, grains are important for energy, B Vitamins, iron, and fiber; fruits and vegetables are the best sources of Vitamins C, A, E, and potassium; fat-free dairy products are needed for protein, calcium, Vitamin D and B vitamins; and lean meats and beans are needed for protein, B vitamins, iron, and zinc; even healthy oils are needed in small amounts for absorption of Vitamins A, D, E, & K. A healthy eating plan is low in saturated fats, trans fats, cholesterol, salt and added sugars. If we are lacking one or more of the food groups in our daily diet, it is nearly impossible to meet all our nutritional needs, thus causing our bodies to perform at a less than optimal level.

On the MyPyramid food guide, the broad bottom base which narrows at the top of the pyramid represents “nutrition from the ground up”. The phrase “nutrition from the ground up” also pertains to the idea that we need to start with the basics of good nutrition mentioned before and make changes gradually the way healthy foods take time to grow such as fruits, vegetables, grains, beans, and nuts.

C. Study/Learning

1. Definitions:

**Whole grain**-cereal grains that consist of the intact, ground, cracked or flaked fruit of the grain. Exs. are wheat, rice, wild rice, barley, oats, corn.

**Low fat dairy**- <2% saturated fat content

**Fat free dairy**- <1% saturated fat content

**Saturated fat**- unhealthy fats found primarily in animal foods such as meats, whole milk, cheese, butter and eggs. Many are solid at room temperature.
Trans fats- unhealthy fats often found in margarine and pastries, etc. These fats have been processed to change the fat from a liquid to solid state.

Unsaturated fats- healthy fats from plant sources which are primarily in liquid form. Exs. are vegetable oils like canola, olive, peanut, corn, and safflower.

Nutrient rich- a food that supplies many nutrients per calorie. Ex. A medium apple has approximately the same calories as 2 oreo cookies, but the apple has lots more vitamins, minerals, and fiber.

2. Explanation: When adding variety to your food plan, make your calories count by thinking “nutrient rich” rather than “good or bad” foods. Most food choices should be packed with vitamins, minerals, fiber and other nutrients and lower in calories. As a rule, the more colorful the fruit or vegetable, the more nutrient rich. “Making half your grains whole” for the day is another way to boost your nutrient intake, as well as fiber. Be careful with portion sizes, too. A serving of raw fruit or vegetable is about 1 cup or the size of your fist. Servings of cooked fruits or vegetables should be ½ cup or the size of a cupped handful.

3. Using the MyPyramid Poster and handouts, review the food groups according to the colors and widths of the bands on the pyramid. Review the number of servings for each food group.

4. Using the handouts “Benefits of Fruits & Vegetables” and “20 Ways to Get More Fruits & Veggies”, choose a few highlights to read and discuss.

5. Activity
   Divide the class into teams of 5-6 people and let each team choose their own nutritious team name. Write the team names on the board and ask one student to volunteer to keep score. play Food Group Jeopardy. Give the team that wins the most money a prize such as apples, oranges or bananas.

D. Culmination

1. Ask: Why must we eat more than just meat and bread or junk food and soda?
Answer: In order to meet all our nutritional needs for carbohydrates, protein, fat, vitamins, minerals, and water we must eat from all the food groups on the MyPyramid. Meeting our nutritional needs enables our bodies to function, look, and feel their best.

2. Play the Fruit and Vegetable Icebreaker Game using the deck of Fruit and Vege Cards

E. Follow-up/Extension

1. Assign each student an unusual food from the list included for homework. Have each student report to the class the
   -Name of the food & which food group it belongs
   -Where it is grown/eaten mostly
   -Show a picture of the food

2. Using the “Nutrition from the Ground Up” Poster have the students play Name the Food Game. This game may be played with the entire class or divide into teams and have students work in groups to fill out their Name the Food Game sheet. Share the correct answers with students.

3. Allow students to taste 1 or 2 unusual foods, such as pomegranate, edamame* pronounced ed-um-mom-may (freezer section at Kroger’s and follow serving directions on bag)

4. Post-test

Materials

60 copies pre/post-tests
(1) MyPyramid Poster
(1) Nutrition from the Ground Up Poster
(1) Jeopardy Game
(1) Name the Food Game
(1) package Fruit and Vegetable Cards
$10 Kroger card to buy foods

30 each Handouts:

MyPyramid tear sheets
Benefits of Fruits & Vegetables
20 Ways to Enjoy More...
HCCI Health Unit: Lesson 1 Nutrition From the Ground Up Pre/Post-Test

Name_________________________________________

_______ 1. How many cups of fruits and vegetables should you eat each day for good health?
   a. 2 ½ - 5 ½ cups  
   b. 3 ½ - 6 ½ cups  
   c. 4 ½ - 7 ½ cups  
   d. don’t know

_______ 2. Which of the following foods would be the most nutrient rich?
   a. donut  
   b. whole milk  
   c. broccoli  
   d. French fries

_______ 3. Which of these are benefits of eating different colored fruits and vegetables?
   a. decreased risk of accidents  
   b. decreased risk of measles  
   c. maintain a healthy weight  
   d. don’t know

_______ 4. Enriched white bread has the same nutritional value as whole wheat bread.
   a. True  
   b. False

_______ 5. One rounded cupped handful of raw carrots or sliced strawberries is equal to about:
   a. ¼ cup of fruits or vegetables  
   b. ½ cup of fruits or vegetables  
   c. 1 cup of fruits or vegetables  
   d. don’t know
Pre/Post Test Answers

1. b.
2. c.
3. c.
4. b.
5. b.

Unusual Foods List – Homework

France-crepes (pronounced crapes) * Great Britain-mincemeat pie * Spain-tapas (top’us)
Italy-biscotti * Scotland-haggis * China-spring rolls * Mexico-empanadas (em’-pan-yod’-us)

lychee (leech’-ee) * kohlrabi (cole-rob’-ee) * couscous (coo-soos) * plantain
jicama (hick’-um-uh) * bulgar * kiwi (kee-wee) * bok choy * star fruit * kumquat
pomegranate (pom’-a-gran’-it) * basmati rice (boz-mot’-ee) * sugar snap peas
avocado (ah-vah-cah’-doe) * garbanzo beans (gar’-bon-zoe) * Brussels sprouts * macadamia nuts
hazelnuts * almonds * mango * papaya (pah-pie’-yah) * guava (gowv’-uh) * currants (ker’-ants)
quinoa (keen’-wah) * maze * edamame (ed’-uh-mom’-may)
ACTIVITIES
FOOD GROUP "JEOPARDY"

PREPARATION

1. This game may be played with individual contestants or with teams (for a noisier, more enthusiastic effect). You may also create your own food questions, of course.

2. You may take this file and create a computer display on the chalkboard, or print it out on a transparency to use with your projector. If you wish, each square may be individually enlarged, cut out and pasted on the board. (Be sure to delete the "Daily Double" questions and answers from the bottom of the grid. These are for your use only.)

3. Cover each answer under each category with a piece of paper labeled $100, $200, $300, etc. (See attached which have been prepared for you.) As contestants choose, remove the paper to see the answer for which they need to guess the question.

4. See also "Simpler Procedure" below.

PLAY

1. First contestant chooses the food group from which she would like to hear an answer. For example, MILK.

2. Teacher/moderator removes the cover; for example, "Rocky Road and Chocolate Chip"

3. Contestant states: "What is ice cream?" That response is correct. Contestant gets "the money" indicated for that question.

4. Proceed as above with next contestant. A contestant may choose whatever square she wishes. For example, if she is the first contestant and wants to go directly to a $700 square, that is permitted.

5. If any contestant responds incorrectly, give the next contestant the opportunity to respond and receive the money.

6. When someone selects the "Daily Double," he may wager some or all of his money. If he responds correctly, he receives double the amount wagered. If he is incorrect, he loses the money wagered.

7. Play continues until all squares are uncovered. Contestant or team with the most money wins.

SIMPLER PROCEDURE

1. Write the five food group names horizontally across the board: FRUITS, VEGETABLES, MILK, GRAINS, MEAT & BEANS.

2. First contestant chooses the food group from which she would like to hear an answer. For example, MILK.

3. Teacher states an answer from the attached grid: for example: "Rocky Road and Chocolate Chip."
FOOD GROUP "JEOPARDY"

<table>
<thead>
<tr>
<th>FRUITS</th>
<th>VEGETABLES</th>
<th>MILK</th>
<th>GRAINS</th>
<th>MEAT &amp; BEANS</th>
</tr>
</thead>
<tbody>
<tr>
<td>It keeps the doctor away.</td>
<td>It comes in ears.</td>
<td>Rocky Road and Mint Chocolate Chip</td>
<td>Popular in China, we have it in brown or white.</td>
<td>This is the biggest part of Thanksgiving dinner.</td>
</tr>
<tr>
<td>It's yellow, and a lady named Chiquita made it famous.</td>
<td>It's dark green, very good for you, and breaks apart into something like little flowers.</td>
<td>Pizza would be dull without it.</td>
<td>Spaghetti is one type of this product.</td>
<td>This is also a slang word for &quot;disagreement.&quot;</td>
</tr>
<tr>
<td>It's also a color.</td>
<td>They are small, round, green and come in pods.</td>
<td>This is meant for the very &quot;cultured.&quot;</td>
<td>Popular in Mexico, add a favorite filling to it.</td>
<td>You can have this scrambled, fried or poached.</td>
</tr>
<tr>
<td>A homonym for this word means &quot;two.&quot;</td>
<td>They have &quot;eyes.&quot;</td>
<td>Molars, wisdom and canines.</td>
<td>Saltines and oyster are two kinds.</td>
<td>Cashews and almonds are two kinds.</td>
</tr>
<tr>
<td>If someone calls you this, they think you're nice.</td>
<td>Some say this is really a fruit. Most of us think of this red delight as a veggie.</td>
<td>Use it on toast or mashed potatoes.</td>
<td><strong>DAILY DOUBLE</strong></td>
<td>Salmon, trout and herring are three kinds.</td>
</tr>
<tr>
<td>It's green, fuzzy and has four letters.</td>
<td>We bake this in pies at Thanksgiving.</td>
<td>It's utterly ridiculous to have cereal without this.</td>
<td>Breakfast product, sometimes with a prize in the box.</td>
<td>Placed in a bun, these are popular at baseball games.</td>
</tr>
<tr>
<td>It's red, white and green with seeds of two colors.</td>
<td>Tofu is made from these.</td>
<td><strong>DAILY DOUBLE</strong></td>
<td>Made with an &quot;iron&quot; and drizzled with syrup.</td>
<td>&quot;The Colonel&quot; sells this in buckets.</td>
</tr>
</tbody>
</table>

---

**DAILY DOUBLE - Milk**  
Name one nutrient provided by the MILK group.

**DAILY DOUBLE - Grains**  
True or False: Foods labeled with the words "multi-grain," "stone-ground," "100% wheat," "cracked wheat," "seven-grain," or "bran" are ALWAYS whole-grain products.
FOOD GROUP "JEOPARDY"

<table>
<thead>
<tr>
<th>FRUITS</th>
<th>VEGETABLES</th>
<th>MILK</th>
<th>GRAINS</th>
<th>MEAT &amp; BEANS</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPLE</td>
<td>CORN</td>
<td>ICE CREAM</td>
<td>RICE</td>
<td>TURKEY</td>
</tr>
<tr>
<td>BANANA</td>
<td>BROCCOLI</td>
<td>CHEESE</td>
<td>PASTA</td>
<td>BEEF</td>
</tr>
<tr>
<td>ORANGE</td>
<td>PEAS</td>
<td>YOGURT</td>
<td>TORTILLA or TACO</td>
<td>EGGS</td>
</tr>
<tr>
<td>PEAR</td>
<td>POTATO &quot;eyes&quot;</td>
<td>TEETH</td>
<td>CRACKERS</td>
<td>NUTS</td>
</tr>
<tr>
<td>PEACH</td>
<td>TOMATO</td>
<td>BUTTER, MARGARINE</td>
<td>DAILY DOUBLE</td>
<td>FISH</td>
</tr>
<tr>
<td>KIWI</td>
<td>PUMPKIN</td>
<td>MILK</td>
<td>CEREAL</td>
<td>HOT DOGS</td>
</tr>
<tr>
<td>WATERMELON</td>
<td>SOYBEANS</td>
<td>DAILY DOUBLE</td>
<td>WAFFLE</td>
<td>CHICKEN</td>
</tr>
</tbody>
</table>

**DAILY DOUBLE — MILK**  Name one nutrient provided by the MILK group (Calcium, potassium, Vitamin D and protein.)

**DAILY DOUBLE — GRAINS**  The answer is “false.” Always check the food label.
5. Proceed to next player as above. Play continues until all questions have been answered.

MONETARY AMOUNTS – TO BE TAPED OVER THE “ANSWER” SQUARES. THESE MAY BE ENLARGED.

$100   $100   $100   $100   $100
$200   $200   $200   $200   $200
$300   $300   $300   $300   $300
$400   $400   $400   $400   $400
$500   $500   $500   $500   $500
$600   $600   $600   $600   $600
$700   $700   $700   $700   $700
Fruit and Veggie Icebreaker

LEARNING OBJECTIVES
By the end of the lesson, participants will be able to:

- Describe at least three health benefits associated with eating a variety of colorful fruits and vegetables as part of a healthy diet.
- Identify at least three ways to prepare fruits and vegetables.
- Apply the concept of teamwork to the other lessons.

MATERIALS

- The Health Benefits of Eating Fruits and Vegetables handout (p. H – 3)
- One deck of fruit, vegetable, and physical activity playing cards
- Paper clips

PREPARATION

1. Photocopy the Health Benefits of Eating Fruits and Vegetables handout for each participant, and become familiar with the content prior to implementing the lesson.

2. Open the box of fruit, vegetable, and physical activity playing cards, and set aside the aces, couch potato and junk food jokers, and physical activity face cards.

3. Shuffle the remaining cards that contain the fruit and vegetable images. Prepare a list of yes/no questions as described in Step 5 of the instructions to help participants determine the name of the fruit or vegetable on the playing card. Display the list of questions for the participants to review before the lesson.

INSTRUCTIONS

1. Arrange participants into teams of three to four players.

2. Paperclip a fruit or vegetable playing card, image side up, to the back of each participant's shirt collar. Make sure that each participant doesn't know which fruit or vegetable appears on his or her playing card.

3. Have participants turn their backs to their team members to reveal their fruit or vegetable playing cards. Remind participants not to reveal to their teammate wearing the card what fruit or vegetable is on the card.

4. Instruct participants to figure out, one at a time, their fruit or vegetable by asking their team members a series of questions. The team members may only respond with a "yes" or "no" answer.
5. Participants should ask general rather than specific questions. For example, "Am I a fruit?" instead of, "Am I an apricot?" Other good questions include: "Should I be peeled before I am eaten?" "Do I grow on a tree?" "Am I green in color?" "Am I sweet?" "Am I sour?" "Do I have seeds?" Feel free to come up with additional questions. Each participant should ask questions until he or she correctly identifies his or her card.

6. The first team to have all of its member's identify their fruits and/or vegetables wins the game.

7. Distribute the Health Benefits of Eating Fruits and Vegetables handout to each participant. Ask participants to identify and discuss with their team members the health benefits of fruits or vegetables.

8. Conclude the lesson by having participants share with their team members their favorite ways to prepare the fruits and/or vegetables pictured on their playing cards.

Expansion Ideas

PHYSICAL ACTIVITY ROUND
Introduce the concept of physical activity by adding the physical activity face cards (e.g., jogging king, dancing queen, and soccer playing jack) to the game. Following instructions 3 and 4, have participants guess the physical activity depicted on their playing cards. Prepare a list of questions that will help participants determine the physical activity that is shown on their cards.

Sample questions:
- Is the activity performed outdoors?
- Is it an aerobic activity?
- Is the activity done with a ball?
- Can you do the activity with friends and family members?
- Does the activity require a partner?

Conclude the lesson with a discussion about physical activity. Ask participants to share their favorite physical activities. Include questions and comments that will help participants identify opportunities to get the recommended level of physical activity every day.

Tip
If participants enjoy being competitive, award prizes to the winning teams.
**Name the Foods**

1. Print out these two sheets.
2. On the second sheet, write all the foods included in the National Nutrition Month® 2010 graphic above.
3. Foods must be in the correct MyPyramid food group.
4. Add up each food group and write your totals in the spaces below.

<table>
<thead>
<tr>
<th>Vegetables</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
<td></td>
</tr>
<tr>
<td>Beans</td>
<td></td>
</tr>
<tr>
<td>Grains</td>
<td></td>
</tr>
<tr>
<td>Nuts</td>
<td></td>
</tr>
</tbody>
</table>
Be specific. (See example under “Vegetables.”) There are more blank spaces than you need.

<table>
<thead>
<tr>
<th>VEGETABLES</th>
<th>VEGETABLES</th>
<th>VEGETABLES</th>
<th>FRUITS</th>
<th>NUTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>peas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pea pods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sugar snap peas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BEANS

GRAINS

oats
Answers to “Name the Foods” Quiz

Fruits = 19
Apple
Apricots
Avocado
Banana
Blackberries
Blueberries
Cantaloupe
Grapes
Red
Champagne or Black Corinth
Kiwi
Lemons
Lime
Orange
Peaches
Pear
Plum
Raspberries
Strawberries
Watermelon

Beans = 4
Garbanzo or chickpeas
Kidney or red
Lima
Pinto

Nuts = 2
Almonds
Pecans

Grains = 3
Groats
Oatmeal
Rice

Vegetables = 31
Asparagus
Broccoli
Brussels sprouts
Carrots
Carrots, baby
Celery
Corn
Cucumber
Green beans
Haricots verts
Lettuce
Mushrooms (2)
  White Button
  Enoki or crimini
Pea pods
Peas (green or English)
Potatoes
Radishes
Red onion
Spinach (baby)
Sugar snap peas
Sweet potato
Tomato
Tomatoes, cherry
Yellow squash
Zucchini
Zucchini, baby

Peppers = 5
Orange (bell or sweet)
Yellow (bell or sweet)
Banana
Jalapeno
Red (chili or serrano)

Grand total = 59
HANDBOUTS
HCCI Health Unit: Lesson 1 Nutrition From the Ground Up Pre/Post-Test

Name________________________________________

_____ 1. How many cups of fruits and vegetables should you eat each day for good health?

   a. 2 ½ - 5 ½ cups
   b. 3 ½ - 6 ½ cups
   c. 4 ½ - 7 ½ cups
   d. don't know

_____ 2. Which of the following foods would be the most nutrient rich?

   a. donut
   b. whole milk
   c. broccoli
   d. French fries

_____ 3. Which of these are benefits of eating different colored fruits and vegetables?

   a. decreased risk of accidents
   b. decreased risk of measles
   c. maintain a healthy weight
   d. don't know

_____ 4. Enriched white bread has the same nutritional value as whole wheat bread.

   a. True
   b. False

_____ 5. One rounded cupped handful of raw carrots or sliced strawberries is equal to about:

   a. ¼ cup of fruits or vegetables
   b. ½ cup of fruits or vegetables
   c. 1 cup of fruits or vegetables
   d. don't know
Top 10 Reasons to Eat MORE Fruits & Vegetables

Why eat MORE fruits and veggies?

1. Color & Texture. Fruits and veggies add color, texture ... and appeal ... to your plate.

2. Convenience. Nutritious in any form - fresh, frozen, canned, dried and 100% juice, so they're ready when you are!

3. Fiber. Fruits and veggies provide fiber that helps fill you up and keeps your digestive system happy.

4. Low in Calories. Fruits and veggies are naturally low in calories.

5. May Reduce Disease Risk. Eating plenty of fruits and veggies may help reduce the risk of many diseases, including heart disease, high blood pressure, and some cancers.

6. Vitamins & Minerals. Fruits and veggies are rich in vitamins and minerals that help you feel healthy and energized.

7. Variety. Fruits and veggies are available in an almost infinite variety...there's always something new to try!

8. Quick, Natural Snack. Fruits and veggies are nature's treat and easy to grab for a snack.

9. Fun to Eat! Some crunch, some squirt, some you peel ... some you don't, and some grow right in your own backyard!

10. Taste Great!
20 Ways to Enjoy More Fruits, Vegetables, Whole Grains and Dairy

To get the most nutrition out of your calories, choose foods packed with vitamins, minerals, fiber and other nutrients—and lower in calories. Pick fruits, vegetables, whole grains and fat-free or low-fat dairy more often. Be aware of portion sizes. Even low-calorie foods can add up when portions are larger than you need.

1. Variety abounds when using vegetables as pizza topping. Try broccoli, spinach, green peppers, tomatoes, mushrooms and zucchini.

2. Get saucy with fruit: Puree berries, apples, peaches or pears for a thick, sweet sauce on grilled or broiled seafood or poultry, or on pancakes, French toast or waffles.

3. Mix up a breakfast smoothie made with low-fat milk, frozen strawberries and a banana.

4. Heat leftover whole-grain rice with chopped apple, nuts and cinnamon.

5. Make a veggie wrap with roasted vegetables and low-fat cheese rolled in a whole-wheat tortilla.

6. Try crunchy vegetables instead of chips with your favorite dip or low-fat salad dressing.

7. Grill colorful vegetable kabobs packed with tomatoes, green and red peppers, mushrooms and onions.


9. Add color to salads with baby carrots, grape tomatoes, spinach leaves or mandarin oranges.

10. Prepare instant oatmeal with low-fat or fat-free milk in place of water. Top with dried cranberries and almonds.
11. Stuff an omelet with vegetables. Turn any omelet into a hearty meal with broccoli, squash, carrots, peppers, tomatoes or onions with low-fat sharp cheddar cheese.

12. “Sandwich” in fruits and vegetables. Add pizzazz to sandwiches with sliced pineapple, apple, peppers, cucumbers and tomato as fillings.

13. Wake up to fruit. Make a habit of adding fruit to your morning oatmeal, ready-to-eat cereal, yogurt or toaster waffle.

14. Stock up: Fill your fridge with raw vegetables and fruits — “nature’s fast food” — cleaned, fresh and ready to eat.

15. Top a baked potato with beans and salsa or broccoli and low-fat cheese.

16. Microwave a cup of tomato or vegetable soup for a quick afternoon snack.

17. “Grate” complement: Add grated, shredded or chopped vegetables such as zucchini, spinach and carrots to lasagna, meat loaf, mashed potatoes, pasta sauce and rice dishes.

18. Stuff a whole grain pita with ricotta cheese and Granny Smith apple slices. Add a dash of cinnamon.

19. Make your main dish a salad of dark, leafy greens and other colorful vegetables. Add chickpeas or edamame (fresh soybeans). Top with a low-fat dressing.

20. Try this recipe for an easy, healthy snack. Surprise! Popcorn is a whole grain.

---

**Popcorn Delight**

Makes 1 serving

3 cups popped fat-free unsalted popcorn
1 tablespoon sliced almonds
2 tablespoons raisins or other dried fruit such as cranberries, apricots or dates
1/2 teaspoon ground cinnamon
1 teaspoon sugar

In a medium bowl, combine the ingredients and toss well.

**Nutrition Facts per Serving:**

Calories: 230
Fat: 7 g
Saturated fat: 1 g
Carbohydrates: 39 g
Fiber: 6 g
Protein: 6 g
Sodium: 274 mg


---

For a referral to a registered dietitian and for additional food and nutrition information visit www.eatright.org.

The American Dietetic Association is the world’s largest organization of food and nutrition professionals. ADA is committed to improving the nation’s health and advancing the profession of dietetics through research, education and advocacy.

---

This tip sheet is provided by:

---

©2009 ADA. Reproduction of this tip sheet is permitted for educational purposes. Reproduction for sales purposes is not authorized.

---

Authored by American Dietetic Association staff registered dietitians.
Smart Snacking for Adults and Teens

Make snacks work for you by choosing nutrient-rich foods from the MyPyramid food groups. Snacks can boost your energy between meals and supply essential vitamins and minerals. There is a place for snacks in a healthy eating plan. Just choose wisely:

- Think of snacks as mini-meals that contribute nutrient-rich foods. You can fit snack calories into your personal healthy eating plan without over-spending your day’s calorie budget.
- Snack only when you’re hungry. Skip the urge to nibble when you’re bored, frustrated or stressed. Feed the urge to do something by walking the dog or working in the garden.
- Keep portion control in mind. Have a single-serve container of yogurt or put a small serving of nuts in a bowl. Eating directly from a multiple-serving package can lead to overeating.
- Plan snacks ahead of time. Keep a variety of nutritious ready-to-eat supplies on hand, such as whole-grain crackers and low-fat cheese.

Get creative with the following snack suggestions by swapping out different fruits, vegetables and grains to keep your snacking exciting!

**Snacks with 200 calories or less:**
- One tablespoon peanut butter spread on slices of a medium apple
- One cup tomato soup with five whole-grain crackers
- Three cups air-popped popcorn sprinkled with three tablespoons grated parmesan cheese
• Tri-color veggie snack: 6 baby carrots, 10 sugar snap peas (or green pepper strips), 6 cherry tomatoes and 2 tablespoons reduced-fat ranch dressing for dipping
• Small baked potato topped with salsa and 1 ounce low-fat cheese
• Toaster waffle topped with ½ cup blueberries and 2 tablespoons low-fat yogurt
• Six whole-wheat crackers and one slice low-fat Colby cheese
• Fruit smoothie: Blend 1 cup fat-free milk, ½ cup frozen strawberries and ½ banana
• One 6-inch flour tortilla with ¼ cup black beans and 2 tablespoons fresh salsa
• Quick-to-fix salad: 2 cups mixed greens with ½ cup mandarin oranges, 1 tablespoon sliced almonds and 2 tablespoons reduced-fat dressing
• Mini-sandwich: Whole-grain dinner roll with 1 slice deli turkey, 1 slice low-fat cheese and mustard
• One 4-ounce fat-free, ready-to-eat vanilla pudding with ¼ cup fresh fruit and 5 vanilla wafers
• Veggie pizzas: Split whole wheat English muffin. Top with 2 tablespoons low-fat cream cheese, ½ cup diced fresh veggies and one ounce low-fat mozzarella cheese
• Cinnamon-raisin mini-bagel spread with one tablespoon peanut butter
• Hot chocolate made with low-fat or fat-free milk and a small oatmeal cookie
• Whole-grain toaster waffle with 1 ½ tablespoons chocolate-flavored hazelnut spread
• Banana split: banana sliced length-wise topped with ½ cup frozen yogurt and a tablespoon of chopped nuts

For more healthy eating tips, visit www.eatright.org.

Snacks with 200 to 300 calories for active adults, teens and athletes:
• Refuel between meals or after a work-out with these higher-calorie snacks. Watch serving sizes to stay within the range of 200 to 300 calories.
• Whole wheat pita cut into wedges with 2 tablespoons hummus for a dip
• Yogurt parfait: Layer 6 ounces fat-free yogurt, ½ cup berries and ¼ cup granola
• Trail mix: Mix 20 almonds, miniature box of raisins, and ¼ cup sunflower seeds
• Instant oatmeal made with fat-free milk with 1 tablespoon honey, ½ cup sliced peaches and dash of cinnamon

For a referral to a registered dietitian and for additional food and nutrition information visit www.eatright.org.

The American Dietetic Association is the world’s largest organization of food and nutrition professionals. ADA is committed to improving the nation’s health and advancing the profession of dietetics through research, education and advocacy.

This tip sheet is provided by:

Authoried by American Dietetic Association staff registered dietitians.

©2010 ADA. Reproduction of this tip sheet is permitted for educational purposes. Reproduction for sales purposes is not authorized.
TEACHER RESOURCES
National Nutrition Month® 2010
Teacher’s Guide

Learning Objectives
Students will be able to:
- Understand that healthful eating includes a variety of foods from all the food groups.
- Name the food groups of the MyPyramid food guide.
- Give an example of a menu that includes foods from all of the food groups.
- Share information about unusual or favorite foods with other students.

Key Messages for 2010
- Start with the basics. Eating right doesn’t have to be complicated. A healthy eating plan emphasizes fruits, vegetables, whole grains, low-fat or fat-free dairy and includes lean meats, poultry, fish, beans and nuts. A healthy eating plan is also low in saturated fats, trans fats, cholesterol, salt and added sugars.

- Make calories count by thinking nutrient-rich rather than “good” or “bad” foods. Most food choices should be packed with vitamins, minerals, fiber and other nutrients—and lower in calories. Be aware of portion sizes. Even low-calorie foods can add up when portions are larger than you need.
Small Group Activities

- Children create an alphabet poster of foods. (Hints: ugli fruit, xtra carrots, yellow peppers)
- Assign a MyPyramid food group to each team. Ask children to choose a food, create a television commercial and perform it for the class.
- Form small teams. Each team is responsible for selecting a country and researching one or two of their foods and celebrations with food. On presentation day, children arrange their desks by teams and decorate as appropriate to that country. They may also dress in native costumes

From the Past

Suggested Classroom Activities

- Read books with food-related titles: Green Eggs and Ham, If You Give a Mouse a Cookie, Charlie and the Chocolate Factory, La Tortilleria
- Create a fish pond, using a large tub. The “fish” are plastic foods from the children’s play area. When a child catches a “fish,” he tells the class its food group name.
- Ask children to create a calendar highlighting development of new food products; e.g.: George Washington Carver and the peanut. This site will help: http://www.foodtimeline.org/
- Microwave s’mores as a post-lunch treat. Discuss graham crackers (made from unsifted whole-wheat flour containing the bran of the wheat kernel); chocolate (dating back to the Aztec king Montezuma); and marshmallow (once made from the root of the marshmallow plant, but now made from corn syrup, gelatin and sugar).
- Contact your school nutrition program or state Dietetic Association to request a presentation by a registered dietitian. http://www.eatright.org/
- Provide a world map handout with a food list. Have children match the food with the country. Or use a map of the States and match foods to the region. See Activity 4 for examples.
- Give children a week’s notice to bring in empty food product boxes. Spend some time reading labels and comparing calories, fat, sugar content and vitamins. “Shop Smart – Get the Facts on Food Labels” can help. Find it at http://www.eatright.org/NNM/content.aspx?id=5342
- Expanding on the previous suggestion, divide children into teams. Ask them to plan a healthy meal, using what they learned from reading food labels.
- Invite children to bring their favorite recipes – illustrated with their own food art -- and prepare a cookbook. This can be as simple as stapling together or doing a 3-hole punch with rings purchased from an office supply store.
- Encourage children to write and illustrate a story with food as a central part. This can be a fantasy (with foods being characters) or a real-life experience.
- Have a “blind taste test” for young children, and teach the concepts of sweet, sour, bitter and salt. Take turns blindfolding children to see if they correctly recognize the various tastes.
- Play the alphabet game. One child begins with: “My father owns a grocery store, and he sells apples.” The next child says, “My father owns a grocery store, and he sells apples and bananas.” The game continues with each child taking a turn reciting the entire list and adding a new item for the next letter of the alphabet.
- Arrange a tour of the school cafeteria so that children can see how the food service staff prepares lunches.
- For young children, display pictures of foods and ask them to name the food group of each.
The Nutrition Source
Vegetables and Fruits: Get Plenty Every Day

Table of contents

- Introduction
- Vegetables, Fruits, and Chronic Disease
  - Cardiovascular Disease
  - Blood Pressure
  - Cancer
  - Gastrointestinal Health
  - Vision
- The Bottom Line: Recommendations for Vegetable and Fruit Intake
- References

Introduction

"Eat your fruits and vegetables" is one of the tried and true recommendations for a healthy diet. And for good reason. Eating plenty of vegetables and fruits can help you ward off heart disease and stroke, control blood pressure, prevent some types of cancer, avoid a painful intestinal ailment called diverticulitis, and guard against cataract and macular degeneration, two common causes of vision loss.

Your Questions Answered
Vegetables & Fruits

Q. What counts as a cup of vegetables and fruits?
A. For most fresh or cooked vegetables and fruits, 1 cup is just what you would put in a household measuring cup. There are two main exceptions to that rule: For lettuce and other raw leafy greens, you need to eat 2 cups to get the equivalent of 1 cup of vegetables. For dried fruit, you only need to eat 1/4 cup to get the equivalent of 1 cup of fruit.

Remember—on the Healthy Eating Pyramid, created by the Department of Nutrition at the Harvard School of Public Health, potatoes are not counted as a vegetable, since they are mostly starch and should be used sparingly.

What does "plenty" mean? More than most Americans consume. If you don’t count potatoes—which should be considered a starch rather than a vegetable—the average American gets a total of just three servings of fruits and vegetables a day. The latest dietary guidelines call for five to thirteen servings of fruits and vegetables a day (2 1/2 to 6 1/2 cups per day), depending on one’s caloric intake. (1) For a person who needs 2,000 calories a day to maintain weight and health, this translates into nine servings, or 4 1/4 cups per day (2 cups of fruit and 2 1/2 cups of vegetables).

Over the past 30 years or so, researchers have developed a solid base of science to back up what generations of mothers preached (but didn’t always practice themselves). Early on, fruits and vegetables were acclaimed as cancer-fighting foods. In fact, the ubiquitous 5-A-Day message (now quietly changing to Fruits and Veggies: More Matters) seen in produce aisles, magazine ads, and

http://www.hnhs.harvard.edu/nutritionsource/what-should-you-eat/vegetables-full-story/in...
Vegetables and Fruits: Get Plenty Every Day - What Should You Eat? - The Nutrition So...

schools was supported in part by the National Cancer Institute. The latest research, though, suggests that the biggest payoff from eating fruits and vegetables is for the heart.

**Vegetables, Fruits, and Cardiovascular Disease**

There is compelling evidence that a diet rich in fruits and vegetables can lower the risk of heart disease and stroke.

The largest and longest study to date, done as part of the Harvard-based Nurses' Health Study and Health Professionals Follow-up Study, included almost 110,000 men and women whose health and dietary habits were followed for 14 years. The higher the average daily intake of fruits and vegetables, the lower the chances of developing cardiovascular disease. Compared with those in the lowest category of fruit and vegetable intake (less than 1.5 servings a day), those who averaged 8 or more servings a day were 30 percent less likely to have had a heart attack or stroke. (2) Although all fruits and vegetables likely contribute to this benefit, green leafy vegetables such as lettuce, spinach, Swiss chard, and mustard greens; cruciferous vegetables such as broccoli, cauliflower, cabbage, Brussels sprouts, bok choy, and kale; and citrus fruits such as oranges, lemons, limes, and grapefruit (and their juices) make important contributions. (2)

When researchers combined findings from the Harvard studies with several other long-term studies in the U.S. and Europe, and looked at coronary heart disease and stroke separately, they found a similar protective effect: individuals who ate more than 5 servings of fruits and vegetables per day had roughly a 20 percent lower risk of coronary heart disease (2) and stroke, (1) compared with individuals who ate less than 3 servings per day.

**Vegetables, Fruits, and Blood Pressure**

High blood pressure is a primary risk factor for heart disease and stroke. As such, it's a condition that is important to control. Diet can be a very effective tool for lowering blood pressure. One of the most convincing associations between diet and blood pressure was found in the Dietary Approaches to Stop Hypertension (DASH) study. (3)

This trial examined the effect on blood pressure of a diet that was rich in fruits, vegetables, and low-fat dairy products and that restricted the amount of saturated and total fat. The researchers found that people with high blood pressure who followed this diet reduced their systolic blood pressure (the upper number of a blood pressure reading) by about 11 mm Hg and their diastolic blood pressure (the lower number) by almost 6 mm Hg—as much as medications can achieve.

More recently, a randomized trial known as the Optimal Macronutrient Intake Trial for Heart Health (OmniHeart) showed that this fruit and vegetable-rich diet lowered blood pressure even more when some of the carbohydrate was replaced with healthy unsaturated fat or protein. (6)

**Vegetables, Fruits, and Cancer**

Numerous early studies revealed what appeared to be a strong link between eating fruits and vegetables and protection against cancer. But because many of these were case-control studies, where people who already have a certain health outcome (cases) are compared to people who do not have that outcome (controls), it is possible that the results may have been skewed by problems inherent in these types of studies; people with illnesses, for example, often recall past behaviors differently from those without illness, which can lead to potential inaccuracy in the information that they provide to study investigators.

Cohort studies, which follow large groups of initially healthy individuals for years, generally provide more reliable information than case-control studies because they don't rely on information from the past. And data from cohort studies have not consistently shown that a diet rich in fruits and vegetables prevents cancer in general. For example, in the Nurses' Health Study and the Health Professionals Follow-up Study, over a 14-year period, men and women with the highest intake of fruits and vegetables (8+ servings a day) were just as likely to have developed cancer as those who ate the fewest daily servings (under 1.5). (2)

A more likely possibility is that some types of fruits and vegetables may protect against certain cancers. A massive report by the World Cancer Research Fund and the American Institute for Cancer Research suggests that non-starchy vegetables—such as lettuce and other leafy greens, broccoli, bok choy, cabbage, as well as garlic, onions, and the like—and fruits "probably" protect against several types of cancers, including those of the mouth, throat, voice box, esophagus, and stomach; fruit probably also protects against lung cancer. (7)

Specific components of fruits and vegetables may also be protective against cancer. For example, a line of research stemming from a finding from the Health Professionals Follow-up Study suggests that tomatoes may help protect men against prostate cancer,
especially aggressive forms of it. (8) One of the pigments that give tomatoes their red hue—lycopene—
could be involved in this protective effect. Although several studies other than the Health Professionals
study have also demonstrated a link between tomatoes or lycopene and prostate cancer, others have not
or have found only a weak connection. (9) Taken as a whole, however, these studies suggest that
increased consumption of tomato-based products (especially cooked tomato products) and other lycopene-containing foods may
reduce the occurrence of prostate cancer. (7) Lycopene is one of several carotenoids (compounds that the body can turn into vitamin
A) found in brightly colored fruits and vegetables, and research suggests that foods containing carotenoids may protect against lung,
mouth, and throat cancer. (7) But more research is needed before we know the exact relationship between fruits and vegetables,
carotenoids, and cancer.

Vegetables, Fruits, and Gastrointestinal Health
One of the wonderful components of fruits and vegetables is their indigestible fiber. As fiber passes through the digestive system, it
sops up water like a sponge and expands. This can calm the irritable bowel and, by triggering regular bowel movements, can relieve
or prevent constipation. (10) The bulking and softening action of insoluble fiber also decreases pressure inside the intestinal tract and
so may help prevent diverticulosis (the development of tiny, easily irritated pouches inside the colon) and diverticulitis (the often
painful inflammation of these pouches). (11)

Vegetables, Fruits, and Vision
Eating plenty of fruits and vegetables also keeps your eyes in good shape. You may have learned that the
vitamin A in carrots aids night vision. Other fruits and vegetables help prevent two common aging-
related eye diseases—cataract and macular degeneration—which afflict millions of Americans over age
65. Cataract is the gradual clouding of the eye’s lens, a disk of protein that focuses light on the light-
sensitive retina. Macular degeneration is caused by cumulative damage to the macula, the center of the
retina. It starts as a blurred spot in the center of what you see. As the degeneration spreads, vision
shrinks.

Free radicals generated by sunlight, cigarette smoke, air pollution, infection, and metabolism cause much of this damage. Dark green
leafy vegetables—such as spinach and kale—contain two pigments, lutein and zeaxanthin, that accumulate in the eye; these pigments
are found in other brightly colored fruits and vegetables as well, including corn, squash, kiwi, and grapes. (12) These two pigments
appear to be able to snuff out free radicals before they can harm the eye’s sensitive tissues. (13)

In general, a diet rich in fruits and vegetables appears to reduce the chances of developing cataract or macular degeneration. (14–17)
Lutein and zeaxanthin, in particular, seem protective against cataract. (18)

The Bottom Line: Recommendations for Vegetable and Fruit Intake
Vegetables and fruits are clearly an important part of a good diet. Almost everyone can benefit from eating more of them, but variety
is as important as quantity. No single fruit or vegetable provides all of the nutrients you need to be healthy. The key lies in the variety
of different vegetables and fruits that you eat.

Recipes for Health

Get your leafy greens today—try Mollie Katzen’s
delicious spring recipe for ruby chard.
Try these tips to fit more fruits and vegetables into your day:

- **Keep fruit out where you can see it.** That way you'll be more likely to eat it. Keep it out on the counter or in the front of the fridge.
- **Get some every meal, every day.** Try filling half your plate with vegetables or fruit at each meal. Serving up salads, stir fry, or other fruit and vegetable-rich fare makes it easier to reach this goal. Bonus points if you can get some fruits and vegetables at snack time, too.
- **Explore the produce aisle and choose something new.** Variety is the key to a healthy diet. Get out of a rut and try some new fruits and vegetables—include dark green leafy vegetables; yellow, orange, and red fruits and vegetables; cooked tomatoes; and citrus fruits.
- **Bag the potatoes.** Choose other vegetables that are packed with more nutrients and more slowly digested carbs.
- **Make it a meal.** Try some new recipes where vegetables take center stage, such as Tunisian carrot salad and spicy broccoli with red pepper.

**References**


The Nutrition Source
Vegetables and Fruits

5 Quick Tips
Eating More Vegetables and Fruit

1. Keep fruit out where you can see it. That way you'll be more likely to eat it. Keep it out on the counter or in the front of the fridge.

2. Get some every meal, every day. Try filling half your plate with vegetables at each meal. Serving up salads, stir fry, or other vegetable-rich fare makes it easier to reach this goal. Bonus points if you can get some fruits and vegetables at snack time, too.

3. Explore the produce aisle and choose something new. Variety is the key to a healthy diet. Get out of a rut and try some new fruits and vegetables.

4. Bag the potatoes. Choose other vegetables that are packed with more nutrients and more slowly digested carbs. Read the "Carbohydrates" section of The Nutrition Source to learn how to add good carbs to your diet. Or try one of these delicious whole grain recipes as an alternative to potatoes.

5. Make it a meal. Try some new healthy recipes where vegetables take center stage, such as Mollie Katzen's asparagus with warm tarragon pecan vinaigrette, or Nina Simonds' spicy broccoli with red pepper.

The Bottom Line

Choose more vegetables and fruits. Go for color and variety—dark green, yellow, orange, and red.

It's hard to argue with the health benefits of a diet rich in vegetables and fruits: lower blood pressure, reduced risk of heart disease, stroke, and probably some cancers; lower risk of overweight and digestive problems; and a mellowing effect on blood sugar that can help keep appetite in check.

Read more about vegetables and fruits and health.

Most people should aim for at least nine servings (at least 4½ cups) of vegetables and fruits a day, and potatoes don't count. Go for a variety of kinds and colors of produce, to give your body the mix of nutrients it needs. Best bets? Dark leafy greens, cooked tomatoes, and anything that's a rich yellow, orange, or red color.

Try these delicious vegetable recipes:

- Asparagus with Warm Tarragon-Pecan Vinaigrette
- Asparagus Saute with Mandarin Orange
- Fresh Spinach with Spume Seeds
- Green Beans with Dried Cherries
- Green Beans with Chili Garlic Sauce
Note: Obtain school scales from PE or school RN for this lesson

HCCI 7th Grade Health Unit

Lesson #2 What About My Weight?

Lesson Plan

Suggested time: 1-2 class periods

I. Goal: To increase students' awareness and understanding of the importance of a healthy body weight by determining personal height, weight, Body Mass Index (BMI), BMI Percentiles on Centers for Disease Control (CDC) growth charts, and the concept of caloric balance.

II. Objectives: Upon completion of this lesson, students will

1. Weigh and measure each other in class using proper techniques

2. Calculate their own BMI using a mathematical formula

3. Plot personal BMI on CDC growth charts and evaluate their own weight based on US standard percentiles

4. Identify their estimated caloric needs per day on a chart based on age and gender

III. Procedures

A. Pre-test

B. Introduction/Motivation

1. Ask students: How would you rate your weight? Choose from these terms: underweight, healthy weight, overweight, or obese. Write down your rating on a piece of paper and put it aside for now.

   Today you are going to evaluate your own Body Mass Index or BMI based on your height, weight, age, and gender. When you finish you may compare your written guess and what you discover in this lesson. A healthy weight is most important because it improves self esteem and makes you look and feel your best. It also decreases your risk for chronic illnesses like high blood pressure, diabetes, heart disease, stroke, cancer, asthma, arthritis, liver and gallbladder
disease, sleep apnea, and irregular periods and infertility in women. Being overweight is one of the main risk factors for each of these diseases which often occur when the body is forced to carry excess weight over the years.

C. Study/Learning

1. Definitions:

**BMI-Body Mass Index** is a calculated number based on a person’s weight in relation to his/her height. It is useful in estimating body fat for most children, teens, and adults.

**Underweight**- BMI < 5th percentile on growth charts for children & teens

**Healthy Weight**- a BMI between the 5th to < 85th percentiles on growth charts for children & teens.

**Overweight**- BMI between the 85th to < 95th percentiles on growth charts for children and teens.

**Obese**- BMI > 95th percentile on growth charts for children & teens

**Calorie**- a measure of heat that comes from burning different dried foods in a science lab. Foods with more calories will burn hotter than those with less calories.

1 pound of fat= 3,500 calories. In order to lose 1 pound of fat, one must decrease caloric intake from food and burn more calories through activity to equal 3,500 calories per week or 500 calories per day.

2. **Weight control** is basically a balancing act between calories we take in through food and drinks and calories we burn during daily living and activity. Many factors affect how many calories a person needs each day to maintain a healthy weight such as age, gender, body frame, and activity level. If a person eats about the same number of calories as he burns through activity in a day, this person’s weight will stay the same. This is **weight maintenance**. If a person uses more calories than he or she eats in a day, this person will have **weight loss**. On the other hand, if a person uses fewer calories than he or she eats, this person will have **weight gain**. How do we
know how many calories we need per day? Well, we will explore this later in the lesson.

3. Activity: Measuring Height and Weight

Teacher should bring a set of digital scales and place them in a secluded area of the classroom. In separate areas of the room, tape a tape measure to a wall and provide a ruler for a straight edge to form a 90 degree angle over the crown of the student’s head and the tape measure on the wall. Use the teacher resource page on proper measuring techniques to explain how the students are to weigh and measure themselves.

a) Have students find a partner of their choice and ask them to weigh and measure each other & record the results on a piece of paper. Weight should be in pounds. Height should be in inches.

b) Put the following formula on the board for calculating BMI: \[
\text{BMI} = \left(\frac{\text{Wt(lbs)}}{\text{Ht(in)}}\right) \times 703
\]

or weight divided by height divided by height times 703.

Teacher chooses if kids will use calculators or work the math problem out by themselves. As the students get measured, have each one calculate his/her own BMI using the formula above.

c) Next have each student plot his/her BMI on a growth chart (pink for girls and blue for boys). Remind students about the differences in body composition and average growth rates for guys and girls. Put a dot on the graph and write his/her BMI % on the front of the growth chart. Ask each student to use the chart on the front of the growth chart to find where his/her percentile falls and circle whether he/she is considered underweight, healthy weight, overweight, or obese. Explain that percentiles on the charts are comparisons of US kids. If a student is in the 25%, this means the student falls within healthy weight range and 75% of US kids would have a higher BMI than this student. If a student is above the 95th %, he/she falls into the obese category and only 5% of US kids of the same age and gender would be larger than this student.

D. Culmination

1. Ask if the students were surprised to find out where their BMI’s fell on the charts?
2. Review the concept of weight management and caloric balance.

3. Use the following scenarios to see if the students understand the concepts:

#1 Andrea eats about 2300 calories per day. She uses up about 1800 calories per day during her normal activities. If Andrea continues this pattern, how will her weight change? She will gain weight.

#2 William eats about 2000 calories per day. He uses up about 2300 calories per day during his normal activities. If William continues this pattern, how will his weight change? He will lose weight.

E. Follow-Up/Extension

1. Give students Handouts 18, 19 and 20.

2. Have each student refer to p. 19 and circle the approximate calories he/she needs a day based on age and gender.

3. Assign students p. 19 and 20 for homework to see how they are doing on calories “in and out”.

4. Allow students to put on the fat roll to see what extra pounds feel like and how this would put a strain on the heart, lungs, joints, etc.

5. Post-test

HCCI Lesson #2 Pre/Post-Test answers: 1.c  2.d  3.b  4.a  5.c

Materials

Calculators (optional)

2 Tape Measures

2 Rulers

Digital scales

20 each Handouts: Pink growth charts & Blue Growth Charts

30 each Worksheets p.18, p. 19, p.20

Fat Roll Belt
ACTIVITIES
About BMI for Children and Teens

If you have height and weight measurements recently taken by a healthcare provider, enter those measurements and the date the measurements were taken.

If you take height and weight measurements at home, follow these guidelines:

- **Measuring Height Accurately At Home (#Height)**
- **Measuring Weight Accurately At Home (#Weight)**

To measure height accurately at home to calculate BMI-for-age:

1. Remove the child's shoes, bulky clothing, and hair ornaments, and unbranded hair that interferes with the measurement.
2. Take the measurement on flooring that is not carpeted and against a flat surface such as a wall with no molding.
3. Have the child stand with feet flat, together, and against the wall. Make sure legs are straight, arms are at sides, and shoulders are level.
4. Make sure the child is looking straight ahead and that the line of sight is parallel with the floor.
5. Take the measurement while the child stands with head, shoulders, buttocks, and heels touching the flat surface (wall). (See illustration.) Depending on the overall body shape of the child, all points may not touch the wall.
6. Use a flat headpiece to form a right angle with the wall and lower the headpiece until it firmly touches the crown of the head.
7. Make sure the measurer's eyes are at the same level as the headpiece.
8. Lightly mark where the bottom of the headpiece meets the wall. Then, use a metal tape to measure from the base on the floor to the marked measurement on the wall to get the height measurement.
9. Accurately record the height to the nearest 1/8th inch or 0.1 centimeter.

To measure weight accurately at home to calculate BMI-for-age:

1. Use a digital scale. Avoid using bathroom scales that are spring-loaded. Place the scale on firm flooring (such as tile or wood) rather than carpet.
2. Have the child or teen remove shoes and heavy clothing, such as sweaters.
3. Have the child or teen stand with both feet in the center of the scale.
4. Record the weight to the nearest decimal fraction (for example, 55.5 pounds or 25.1 kilograms).

---

*Page last reviewed: January 27, 2009*
*Page last updated: January 27, 2009*
*Content source: Division of Nutrition, Physical Activity and Obesity (http://www.cdc.gov/nccdphp/dnpa/index.htm), National Center for Chronic Disease Prevention and Health Promotion (http://www.cdc.gov/nccdphp/)*

---

*USA.gov Government Made Easy*

Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348, 24 Hours/Every Day - cdcinfo@cdc.gov
About BMI for Children and Teens

On this page:

- What is BMI? (What is BMI)
- What is a BMI percentile? (What is BMI percentile)
- How is BMI used with children and teens? (How is BMI used with children and teens)
- How is BMI calculated and interpreted for children and teens? (How is BMI calculated)
- Is BMI interpreted the same way for children and teens as it is for adults? (Interpreted the same way)
- Why can't healthy weight ranges be provided for children and teens? (Normal weight ranges)
- How can I tell if my child is overweight or obese? (How can I tell if my child is overweight)
- Can I determine if my child or teen is obese by using an adult BMI calculator? (Using an adult BMI calculator)
- My two children have the same BMI values, but one is considered obese and the other is not. Why is that? (My two children)
- References (References)

For information about the consequences of childhood obesity, its contributing factors and more, see Tips for Parents - Ideas and Tips to Help Prevent Childhood Obesity (healthyweight/children/index.html).

Body Mass Index (BMI) is a number calculated from a child's weight and height. BMI is a reliable indicator of body fatness for most children and teens. BMI does not measure body fat directly, but research has shown that BMI correlates with direct measures of body fat, such as underwater weighing and dual energy x-ray absorptiometry (DXA). BMI can be considered an alternative for direct measures of body fat. Additionally, BMI is an inexpensive and easy-to-perform method of screening for weight categories that may lead to health problems.

For children and teens, BMI is age- and sex-specific and is often referred to as BMI-for-age.

After BMI is calculated for children and teens, the BMI number is plotted on the CDC BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. Percentiles are the most commonly used indicator to assess the size and growth patterns of individual children in the United States. The percentile indicates the relative position of the child's BMI number among children of the same sex and age. The growth charts show the weight status categories used with children and teens (underweight, healthy weight, overweight, and obese).

BMI-for-age weight status categories and the corresponding percentiles are shown in the following table.

<table>
<thead>
<tr>
<th>Weight Status Category</th>
<th>Percentile Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>Less than the 5th percentile</td>
</tr>
<tr>
<td>Healthy weight</td>
<td>5th percentile to less than the 85th percentile</td>
</tr>
<tr>
<td>Overweight</td>
<td>85th to less than the 95th percentile</td>
</tr>
<tr>
<td>Obese</td>
<td>Equal to or greater than the 95th percentile</td>
</tr>
</tbody>
</table>

BMI is used as a screening tool to identify possible weight problems for children. CDC and the American Academy of Pediatrics (AAP) recommend the use of BMI to screen for overweight and obesity in children beginning at 2 years old.

For children, BMI is used to screen for obesity, overweight, healthy weight, or underweight. However, BMI is not a diagnostic tool. For example, a child may have a high BMI for age and sex, but to determine if excess fat is a problem, a health care provider would need to perform further assessments. These assessments might include skinfold thickness measurements, evaluations of diet, physical activity, family history, and other appropriate health screenings.

Calculating and interpreting BMI using the BMI Percentile Calculator involves the following steps:


3. Review the calculated BMI-for-age percentile and results. The BMI-for-age percentile is used to interpret the BMI number because BMI is both age-and sex-specific for children and teens. These criteria are different from those used to interpret BMI for adults — which do not take into account age or sex. Age and sex are considered for children and teens for two reasons:
The amount of body fat changes with age. (BMI for children and teens is often referred to as BMI-for-age.)

The CDC BMI-for-age growth charts for girls and boys (http://www.cdc.gov/growthcharts) take into account these differences and allow translation of a BMI number into a percentile for a child’s or teen’s sex and age.

4. Find the weight status category for the calculated BMI-for-age percentile as shown in the following table. These categories are based on expert committee recommendations.

<table>
<thead>
<tr>
<th>Weight Status Category</th>
<th>Percentile Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>Less than the 5th percentile</td>
</tr>
<tr>
<td>Healthy weight</td>
<td>5th percentile to less than the 85th percentile</td>
</tr>
<tr>
<td>Overweight</td>
<td>85th to less than the 95th percentile</td>
</tr>
<tr>
<td>Obese</td>
<td>Equal to or greater than the 95th percentile</td>
</tr>
</tbody>
</table>

See the following example of how some sample BMI numbers would be interpreted for a 10-year-old boy.

The CDC BMI-for-age growth charts are available at: CDC Growth Charts: United States (http://www.cdc.gov/nchs/about/major/npahs/growthcharts/charts.htm).

http://www.cdc.gov/healthyweight/assessing/hbmi/childrens_bmi/about_childrens_bmi.html
Healthy Weight: Assessing Your Weight: BMI: About BMI for Children and Teens | DN...

Although the BMI number is calculated the same way for children and adults, the criteria used to interpret the meaning of the BMI number for children and teens are different from those used for adults. For children and teens, BMI age- and sex-specific percentiles are used for two reasons:

- The amount of body fat changes with age.
- The amount of body fat differs between girls and boys.

The CDC BMI-for-age growth charts take into account these differences and allow translation of a BMI number into a percentile for a child's sex and age.

For adults, on the other hand, BMI is interpreted through categories that do not take into account sex or age.

Healthy weight ranges cannot be provided for children and teens for the following reasons:

- Healthy weight ranges change with each month of age for each sex.
- Healthy weight ranges change as height increases.

CDC and the American Academy of Pediatrics (AAP) recommend the use of Body Mass Index (BMI) to screen for overweight and obesity in children and teens aged 2 through 19 years. Although BMI is used to screen for overweight and obesity in children and teens, BMI is not a diagnostic tool.

For example, a child who is relatively heavy may have a high BMI for his or her age. To determine whether the child has excess fat, further assessment would be needed. Further assessment might include skinfold thickness measurements. To determine a counseling strategy, assessments of diet, health, and physical activity are needed.

No. The adult calculator provides only the BMI number and not the BMI age- and sex-specific percentile that is used to interpret BMI and determine the weight category for children and teens. It is not appropriate to use the BMI categories for adults to interpret BMI numbers for children and teens.

The interpretation of BMI-for-age varies by age and sex so if the children are not exactly the same age and of the same sex, the BMI numbers have different meanings. Calculating BMI-for-age for children of different ages and sexes may yield the same numeric result, but that number will fall at a different percentile for each child for one or both of the following reasons:

- The normal BMI-related changes that take place as children age and as growth occurs.
- The normal BMI-related differences between sexes.

See the following graphic for an example for a 10-year-old boy and a 15-year-old boy who both have a BMI-for-age of 23. (Note that two children of different ages are plotted on the same growth chart to illustrate a point. Normally the measurement for only one child is plotted on a growth chart.)
Body mass index-for-age percentiles: Boys, 2 to 20 years

A 10-year-old boy with a BMI of 23 would be in the obese category (95th percentile or greater).

A 15-year-old boy with a BMI of 23 would be in the healthy weight category (85th percentile to less than 95th percentile).

---


HANDOUTS
HCCI Lesson #2  What About My Weight?  Pre/Post-Test

Name__________________________________________

_____ 1. Which of the following best describes Body Mass Index?

   a. a person’s weight
   b. the amount of calories one should eat for their size
   c. a calculated number from one’s weight & height that indicates body fatness
   d. don’t know

_____ 2. Which of the following diseases are related to being overweight?

   a. high blood pressure
   b. type II diabetes
   c. cancers
   d. all of these

_____ 3. When measuring people’s weights, they should wear shoes to be more accurate.

   a. true
   b. False

_____ 4. One pound of fat equals:

   a. 3,500 calories
   b. weight loss
   c. weight gain
   d. don’t know

_____ 5. If Sally’s BMI is between the 25-50 % on a growth chart, this means:

   a. Sally is overweight
   b. Sally is underweight
   c. Sally is at a healthy weight
   d. don’t know
ACTIVITIES
2 to 20 years: Girls
Body mass index-for-age percentiles

<table>
<thead>
<tr>
<th>Date</th>
<th>Age</th>
<th>Weight</th>
<th>Stature</th>
<th>BMI*</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Weight Status Category** | **Percentile Range**
--- | ---
Underweight | Less than the 5th percentile
Healthy weight | 5th percentile to less than the 85th percentile
Overweight | 85th to less than the 95th percentile
Obese | Equal to or greater than the 95th percentile

Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

SAFER - HEALTHIER - PEOPLE*
# 2 to 20 years: Boys

## Body mass index-for-age percentiles

<table>
<thead>
<tr>
<th>Date</th>
<th>Age</th>
<th>Weight</th>
<th>Stature</th>
<th>BMI*</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Weight Status Category

<table>
<thead>
<tr>
<th>Status</th>
<th>Percentile Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>Less than the 5th percentile</td>
</tr>
<tr>
<td>Healthy</td>
<td>5th percentile to less than the 85th percentile</td>
</tr>
<tr>
<td>Overweight</td>
<td>85th to less than the 95th percentile</td>
</tr>
<tr>
<td>Obese</td>
<td>Equal to or greater than the 95th percentile</td>
</tr>
</tbody>
</table>

---

**Published May 30, 2000 (modified 10/18/03)**

**SOURCE:** Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).

http://www.cdc.gov/growthcharts
**Energy in Food**

The amount of energy found in food is measured in **calories**. All food contains calories. Nutritious food contains calories and nutrients needed by the body. Sweet and other "junk" food contains empty calories that provide energy and little nutrients.

This chart lists some common foods and the calories in each. Use the chart to complete page 19. (tr means trace, a very small amount)

<table>
<thead>
<tr>
<th>Dairy Group</th>
<th>Calories</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>butter</td>
<td>100</td>
<td>tr</td>
<td>12</td>
<td>tr</td>
</tr>
<tr>
<td>cheese (American)</td>
<td>115</td>
<td>6</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>egg, raw, boiled, or poached</td>
<td>80</td>
<td>6</td>
<td>6</td>
<td>tr</td>
</tr>
<tr>
<td>ice cream, plain</td>
<td>95</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>milk, fluid, skim or buttermilk</td>
<td>90</td>
<td>9</td>
<td>tr</td>
<td>12</td>
</tr>
<tr>
<td>cream, heavy, whipped</td>
<td>160</td>
<td>9</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>cheese, creamed, cottage</td>
<td>125</td>
<td>8</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>yogurt, plain</td>
<td>65</td>
<td>8</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meat and Protein Group</th>
<th>Calories</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>bacon, broiled or fried</td>
<td>90</td>
<td>5</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>beef, hamburger</td>
<td>245</td>
<td>21</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>chicken, broiled</td>
<td>115</td>
<td>20</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>frankfurter, heated</td>
<td>170</td>
<td>7</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>ham, boiled</td>
<td>135</td>
<td>11</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>peanut butter</td>
<td>190</td>
<td>tr</td>
<td>tr</td>
<td>23</td>
</tr>
<tr>
<td>sausage, bologna</td>
<td>173</td>
<td>7</td>
<td>16</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fruit and Vegetable Group</th>
<th>Calories</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>apples, raw</td>
<td>70</td>
<td>tr</td>
<td>tr</td>
<td>30</td>
</tr>
<tr>
<td>bananas, raw</td>
<td>100</td>
<td>1</td>
<td>tr</td>
<td>26</td>
</tr>
<tr>
<td>beans</td>
<td>15</td>
<td>1</td>
<td>tr</td>
<td>4</td>
</tr>
<tr>
<td>broccoli, cooked</td>
<td>20</td>
<td>1</td>
<td>tr</td>
<td>4</td>
</tr>
<tr>
<td>carrots, raw, whole, or strips</td>
<td>20</td>
<td>1</td>
<td>tr</td>
<td>5</td>
</tr>
<tr>
<td>oranges</td>
<td>65</td>
<td>1</td>
<td>tr</td>
<td>16</td>
</tr>
<tr>
<td>peas, green, cooked</td>
<td>58</td>
<td>5</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>potatoes, baked</td>
<td>90</td>
<td>3</td>
<td>tr</td>
<td>21</td>
</tr>
<tr>
<td>potatoes, mashed</td>
<td>95</td>
<td>2</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>tomato, raw</td>
<td>40</td>
<td>2</td>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grain Group</th>
<th>Calories</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>bread, white</td>
<td>70</td>
<td>2</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>bread, whole wheat</td>
<td>60</td>
<td>3</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>pasta, noodles</td>
<td>150</td>
<td>5</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>rice, preboiled, cooked</td>
<td>140</td>
<td>3</td>
<td>tr</td>
<td>31</td>
</tr>
<tr>
<td>spaghetti, cooked</td>
<td>115</td>
<td>4</td>
<td>1</td>
<td>24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Foods Group</th>
<th>Calories</th>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>cake, plain chocolate</td>
<td>130</td>
<td>2</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>candy, chocolate</td>
<td>145</td>
<td>2</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>diet cola</td>
<td>96</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>cookies, chocolate chip</td>
<td>60</td>
<td>1</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>doughnuts, cake type</td>
<td>125</td>
<td>1</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>tomato ketchup</td>
<td>15</td>
<td>tr</td>
<td>tr</td>
<td>4</td>
</tr>
<tr>
<td>diet soda</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>coffee and tea</td>
<td>2</td>
<td>tr</td>
<td>tr</td>
<td></td>
</tr>
</tbody>
</table>
THE CALORIES YOU EAT

People of different ages, sex, and levels of activity need different amounts of calories each day. This chart lists some of the basic calorie requirements for people of different ages.

**RECOMMENDED DAILY CALORIE REQUIREMENTS**

<table>
<thead>
<tr>
<th>AGE</th>
<th>CALORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–3</td>
<td>1250</td>
</tr>
<tr>
<td>4–6</td>
<td>1600</td>
</tr>
<tr>
<td>7–9</td>
<td>2000</td>
</tr>
<tr>
<td>10–12</td>
<td>2500</td>
</tr>
<tr>
<td>13–14</td>
<td>2300 (girls) 2700 (boys)</td>
</tr>
<tr>
<td>15–18</td>
<td>2400 (girls) 3000 (boys)</td>
</tr>
</tbody>
</table>

**Activity**

Keep track of the food you eat and the number of calories you consume in one day. Use the calorie chart on page 18.

<table>
<thead>
<tr>
<th>FOOD</th>
<th>NUMBER OF CALORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total number of calories**

Based on the above chart, did you eat the correct number of calories in a day?
The Calories You Use

Every activity uses calories—even sitting quietly and sleeping. The following chart lists some common activities and the number of calories used in an hour.

<table>
<thead>
<tr>
<th>Calories Used An Hour</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>80–100</td>
<td>No or Little Movement, sleeping, watching television, reading, writing, listening to music</td>
</tr>
<tr>
<td>110–160</td>
<td>Some Movement, dressing or undressing, walking slowly, cooking, taking a shower or bath, brushing teeth</td>
</tr>
<tr>
<td>170–240</td>
<td>Moderate Movement, making beds, washing the car, working in the garden, average walking</td>
</tr>
<tr>
<td>250–350</td>
<td>Vigorous Movement, roller or ice skating, walking fast, scrubbing the floor, playing golf</td>
</tr>
<tr>
<td>More than 350</td>
<td>Strenuous Movement, jogging, playing basketball or volleyball, dancing, aerobic dancing, swimming, skiing</td>
</tr>
</tbody>
</table>

Activity

Use the chart to keep a record of the calories you use in a day.

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midnight — 2:00 AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00 — 4:00 AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00 — 6:00 AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00 — 8:00 AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:00 — 10:00 AM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 — Noon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noon — 2:00 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00 — 4:00 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00 — 6:00 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00 — 8:00 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:00 — 10:00 PM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 — midnight</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How many calories do you eat in a day (Look at page 19.) __________

Did you use more or eat more calories in a day? __________
TEACHER RESOURCES
The Health Effects of Overweight and Obesity

Research has shown that as weight increases to reach the levels referred to as "overweight" and "obesity," the risks for the following conditions also increases:

- Coronary heart disease
- Type 2 diabetes
- Cancers (endometrial, breast, and colon)
- Hypertension (high blood pressure)
- Dyslipidemia (for example, high total cholesterol or high levels of triglycerides)
- Stroke
- Liver and Gallbladder disease
- Sleep apnea and respiratory problems
- Osteoarthritis (a degeneration of cartilage and its underlying bone within a joint)
- Gynecological problems (abnormal menses, infertility)

*Overweight is defined as a body mass index (BMI) of 25 or higher; obesity is defined as a BMI of 30 or higher.

Learn about the the risks for adults from many diseases and conditions, by National Heart, Lung and Blood Institute (NIH).

Did you know that nearly 9 out of 10 people with newly diagnosed type 2 diabetes are overweight? If you are overweight, losing some weight could help you better manage your diabetes.

CDC’s Obesity and Overweight (http://www.cdc.gov/obesity/index.html)
Obesity trends, economic consequences, state-based programs and other resources for the health professional.


Please note: Some of these publications are available for download only as *.pdf files. These files require Adobe Acrobat Reader in order to be viewed. Please review the information on downloading and using Acrobat Reader software, (fileformats.html#pdf)

* Links to non-Federal organizations found at this site are provided solely as a service to our users. These links do not constitute an endorsement of these organizations or their programs by CDC or the Federal Government, and none should be inferred. CDC is not responsible for the content of the individual organization Web pages found at these links.

- Page last reviewed: May 19, 2009
- Page last updated: May 19, 2009
- Content source: Division of Nutrition, Physical Activity and Obesity (http://www.cdc.gov/nccdphp/dnpao/index.html), National Center for Chronic Disease Prevention and Health Promotion (http://www.cdc.gov/nccdphp/)

Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA 800-CDC-INFO (800-232-4636) TTY: (888) 232-6348, 24 Hours/Every Day - cdcinfo@cdc.gov
Healthy Eating for a Healthy Weight

A healthy lifestyle involves many choices. Among them, choosing a balanced diet or eating plan. So how do you choose a healthy eating plan? Let's begin by defining what a healthy eating plan is:

According to the Dietary Guidelines for Americans, a healthy eating plan:

- Emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products
- Includes lean meats, poultry, fish, beans, eggs, and nuts
- Is low in saturated fats, trans fats, cholesterol, salt (sodium), and added sugars
- Stays within your daily calorie needs

A healthy eating plan that helps you manage your weight includes a variety of foods you may not have considered. If “healthy eating” makes you think about the foods you can’t have, try refocusing on all the new foods you can eat—

- Fresh fruits — don’t think just apples or bananas. These are great choices, but try some “exotic” fruits, too. How about a mango? Or a juicy pineapple or kiwi fruit! When your favorite fresh fruits aren’t in season, try a frozen, canned, or dried variety of a fresh fruit you enjoy. One caution about canned fruits is that they may contain added sugars or syrups. Be sure and choose canned varieties of fruit packed in water or in their own juice.
- Fresh vegetables — try something new. You may find that you love grilled vegetables or steamed vegetables with an herb you haven’t tried like rosemary. You can sauté vegetables in a non-stick pan with a small amount of cooking spray. Or try frozen or canned vegetables for a quick side dish — just microwave and serve. When trying canned vegetables, look for vegetables without added salt, butter, or cream sauces. Commit to going to the produce department and trying a new vegetable each week.
- Calcium-rich foods — you may automatically think of a glass of low-fat or fat-free milk when someone says “eat more dairy products.” But what about low-fat and fat-free yogurts without added sugars? These come in a wide variety of flavors and can be a great dessert substitute for those with a sweet tooth.
- A new twist on an old favorite — if your favorite recipe calls for frying fish or breaded chicken, try healthier variations using baking or grilling. Maybe even try a recipe that uses dry beans in place of higher-fat meats. Ask around or search the internet and magazines for recipes with fewer calories — you might be surprised to find you have a new favorite dish!

Take a look at these healthy meal plans and see what you can have!

- [MyPyramid.gov](http://www.mypyramid.gov) The MyPyramid.gov eating plan is based upon the approximate number of calories your body needs according to your age, sex, height, weight, and activity level. The plan gives you the amounts of foods from the various food groups you should eat each day to meet that caloric goal.
- [The DASH eating plan](http://www.nhlbi.nih.gov/health/public/heart/dash/introduction.htm) was originally developed as an eating plan to reduce hypertension. (DASH stands for Dietary Approaches to Stop Hypertension.) However, the plan also represents a healthy approach to eating for those who do not have a problem with hypertension.

No matter which of these plans you choose, you'll get healthy recommendations for foods you can enjoy.

No! Healthy eating is all about balance. You can enjoy your favorite foods even if they are high in calories, fat or added sugars. The key is eating them only once in a while and balance them out with healthier foods and more physical activity.
Some general tips for comfort foods:

- Consume them less often. If you normally eat these foods every day, cut back to once a week or once a month. You’ll be cutting your calories because you’re not having the food as often.
- Eat smaller amounts. If your favorite higher calorie food is an afternoon chocolate bar, have a smaller size or only half a bar. Be careful! This technique works well for some people, but others may find it too tempting to have their favorite food available, even in smaller amounts.
- Try a lower-calorie version. Use lower-calorie ingredients or prepare it differently. For example, if your macaroni and cheese recipe uses whole milk, butter, and full-fat cheese, try remaking it with non-fat milk, less butter, light cream cheese, fresh spinach and tomatoes. Just remember to not increase your portion size. For more ideas on how to cut back on calories, see Eat More Weigh Less (/healthyweight/healthy_eating/energy_density.html).

The point is, you can figure out how to include almost any food in your healthy eating plan in a way that still helps you lose weight or maintain a healthy weight.

Being consistently healthy in your eating choices is the key. Making the same healthy eating choices over time can lead to better eating habits. By thinking more positively and focusing on what you can have, you’ll help yourself establish healthy eating habits.

Improving Your Eating Habits (/healthyweight/losing_weight/eating_habits.html)
To learn more about getting started and changing your eating habits.

Planning Meals (meals.html)
By stocking up on healthier foods that contain fewer calories, you’ll be making small changes that can prepare you to be a weight-loss success story!

Cutting Calories (cutting_calories.html)
Ways to cut calories for your meals, snacks, and even beverages.

Healthy Recipes (/healthyweight/healthy_eating/recipes.html)
Links to healthy recipes with calorie counts and nutritional information.
In addition, studies have shown that obese children and teens are more likely to become obese as adults.\textsuperscript{9,10}

To help your child maintain a healthy weight, balance the calories your child consumes from foods and beverages with the calories your child uses through physical activity and normal growth.

Remember that the goal for overweight and obese children and teens is to reduce the rate of weight gain while allowing normal growth and development. Children and teens should NOT be placed on a weight reduction diet without the consultation of a health care provider.

Balancing Calories: Help Kids Develop Healthy Eating Habits

One part of balancing calories is to eat foods that provide adequate nutrition and an appropriate number of calories. You can help children learn to be aware of what they eat by developing healthy eating habits, looking for ways to make favorite dishes healthier, and reducing calorie-rich temptations.

\textbf{Encourage healthy eating habits.}
There's no great secret to healthy eating. To help your children and family develop healthy eating habits:

\begin{itemize}
  \item Provide plenty of vegetables, fruits, and whole-grain products.
  \item Include low-fat or non-fat milk or dairy products.
  \item Choose lean meats, poultry, fish, lentils, and beans for protein.
  \item Serve reasonably-sized portions.
  \item Encourage your family to drink lots of water.
  \item Limit sugar-sweetened beverages.
  \item Limit consumption of sugar and saturated fat.
\end{itemize}

Remember that small changes every day can lead to a recipe for success!


\textbf{Look for ways to make favorite dishes healthier.}
The recipes that you may prepare regularly, and that your family enjoys, with just a few changes can be healthier and just as satisfying. For new ideas about how to add more fruits and vegetables to your daily diet check out the recipe database from the \textit{FruitsandVeggiesMatter.gov} (http://apps.nccd.cdc.gov/dnparecipe/recipeaspx). This database enables you to find tasty fruit and vegetable recipes that fit your needs.

\textbf{Remove calorie-rich temptations!}
Although everything can be enjoyed in moderation, reducing the calorie-rich temptations of high-fat and high-sugar, or salty snacks can also help your children develop healthy eating habits. Instead only allow your children to eat them sometimes, so that they truly will be treats! Here are examples of easy-to-prepare, low-fat and low-sugar treats that are 100 calories or less:

\begin{itemize}
  \item A medium-size apple
  \item A medium-size banana
  \item 1 cup blueberries
  \item 1 cup grapes
  \item 1 cup carrots, broccoli, or bell peppers with 2 tbsp. hummus
\end{itemize}

Balancing Calories: Help Kids Stay Active

Another part of balancing calories is to engage in an appropriate amount of physical activity and avoid too much sedentary time. In addition to being fun for children and teens, regular physical activity has many health benefits, including:

\begin{itemize}
  \item Strengthening bones
  \item Decreasing blood pressure
  \item Reducing stress and anxiety
  \item Increasing self-esteem
  \item Helping with weight management
\end{itemize}

\textbf{Help kids stay active.}
Children and teens should participate in at least 60 minutes of moderate intensity physical activity most days of the week, preferably daily.\textsuperscript{11} Remember that children imitate adults. Start adding physical activity to your own daily routine and encourage your child to join you.

\url{http://www.cdc.gov/healthyweight/children/index.html}
Some examples of moderate intensity physical activity include:

- Brisk walking
- Playing tag
- Jumping rope
- Playing soccer
- Swimming
- Dancing

Reduce sedentary time.
In addition to encouraging physical activity, help children avoid too much sedentary time. Although quiet time for reading and homework is fine, limit the time your children watch television, play video games, or surf the web to no more than 2 hours per day. Additionally, the American Academy of Pediatrics (AAP) does not recommend television viewing for children age 2 or younger. Instead, encourage your children to find fun activities to do with family members or on their own that simply involve more activity.

Here are some additional resources that you (and your child) can use to help reach or keep a healthy weight through physical activity and healthy food choices!

For Parents and Guardians

Child and Teen BMI (Body Mass Index) Calculator
(http://apps.nccd.cdc.gov/dnpabmi)
Worried about your child's weight? For children, BMI is used to screen for overweight, but is not a diagnostic tool. For more, see About BMI for Children and Teens (healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html).

Childhood Overweight (http://www.cdc.gov/obesity/childhood/defining.html)
This Web site provides information about childhood overweight, including how overweight is defined for children, the prevalence of overweight, the factors associated with overweight, and the related health consequences.

- Defining Childhood Overweight and Obesity (http://www.cdc.gov/obesity/childhood/defining.html)
- Obesity Prevalence (http://www.cdc.gov/obesity/childhood/prevalence.html)
- Contributing Factors (http://www.cdc.gov/obesity/childhood/contributing_factors.html)
- Consequences (http://www.cdc.gov/obesity/childhood/consequences.html)

Physical Activity for Everyone (http://www.cdc.gov/physicalactivity/everyone/guidelines/index.html)
Provides information about physical activity for you and your children.

FruitsandVeggiesMatter.gov (http://www.fruitsandveggiesmatter.gov)
Great recipes and information about how to incorporate fruits and vegetables in your daily meals.

How to Avoid Portion Size Pitfalls (healthyweight/healthy_eating/portion_size.html)
Confused about portion sizes? Play the CDC's portion control game!

MyPyramid.gov (http://www.mypyramid.gov)
Provides a tailored explanation of how to balance your meals and includes an interactive game for kids.

We Can! (http://wecan.nhlbi.nih.gov)
This national education program is designed for parents and caregivers to help children 8-13 years old stay at a healthy weight. The booklet "Finding the Balance: A Parent Resource" offers an array of easy to use practical tips and tools for parents and guardians to help their children and families eat healthy, increase physical activity, and decrease screen time.

For Kids ONLY

BAM! Body and Mind (http://www.bam.gov/index.html)
Have fun, stay active and healthy.

My Pyramid Blast Off Game (http://www.mypyramid.gov/kids/kids_game.html)
Learn what it takes to blast off in the food pyramid space shuttle!

Powerful Girls Powerful Bones (http://www.cdc.gov/powerfulbones/)
Check out Carla and her friends.

Power Panther... to the Rescue! (http://www.fns.usda.gov/eatsmartplayhardkids/)
Eat smart, play hard.
VERB (http://www.verbnow.com/)
Hey! It's what you do.


Please note: Some of these publications are available for download only as *pdf files. These files require Adobe Acrobat Reader in order to be viewed. Please review the information on downloading and using Acrobat Reader software. (http://fileformats.info/pdf)

* Links to non-Federal organizations found at this site are provided solely as a service to our users. These links do not constitute an endorsement of these organizations or their programs by CDC or the Federal Government, and none should be inferred. CDC is not responsible for the content of the individual organization Web pages found at these links.

- Page last reviewed: May 19, 2009
- Page last updated: May 19, 2009
- Content source: Division of Nutrition, Physical Activity and Obesity (http://www.cdc.gov/nccdphp/dnpao/index.htm), National Center for Chronic Disease Prevention and Health Promotion (http://www.cdc.gov/nccdphp/)
Balancing Calories

There's a lot of talk about the different components of food. Whether you're consuming carbohydrates, fats, or proteins all of them contain calories. If your diet focus is on any one of these alone, you're missing the bigger picture.

- The Caloric Balance Equation (#Striking a Balance)
- Am I in Caloric Balance? (#Am I in Calorie Balance)
- Recommended Physical Activity Levels (#Recommended PA Levels)
- Questions and Answers About Calories (#Questions and Answers)

When it comes to maintaining a healthy weight for a lifetime, the bottom line is — calories count! Weight management is all about balance—balancing the number of calories you consume with the number of calories your body uses or "burns off."

- A calorie is defined as a unit of energy supplied by food. A calorie is a calorie regardless of its source. Whether you're eating carbohydrates, fats, sugars, or proteins, all of them contain calories.
- Caloric balance is like a scale. To remain in balance and maintain your body weight, the calories consumed (from foods) must be balanced by the calories used (in normal body functions, daily activities, and exercise).

CALORIES IN
Food Beverages

CALORIES OUT
Body functions Physical activity

If you are... Your caloric balance status is...

Maintaining your weight "in balance." You are eating roughly the same number of calories that your body is using. Your weight will remain stable.

Gaining weight "in caloric excess." You are eating more calories than your body is using. You will store these extra calories as fat and you'll gain weight.

Losing weight "in caloric deficit." You are eating fewer calories than you are using. Your body is pulling from its fat storage cells for energy, so your weight is decreasing.

If you are maintaining your current body weight, you are in caloric balance. If you need to gain weight or to lose weight, you'll need to tip the balance scale in one direction or another to achieve your goal.

If you need to tip the balance scale in the direction of losing weight, keep in mind that it takes approximately 3,500 calories below your caloric needs to lose a pound of body fat. To lose about 1 to 2 pounds per week, you'll need to reduce your caloric intake by 500—1000 calories per day.

To learn how many calories you are currently eating, begin writing down the foods you eat and the beverages you drink each day. By writing down what you eat and drink, you become more aware of everything you are putting in your mouth. Also, begin writing down the physical activity you do each day and the length of time you do it. Here are simple paper and pencil tools to assist you:

- Food Diary (healthyweight/pdf/Food_Diary_CDC.pdf) (PDF-33k)
- Physical Activity Diary (healthyweight/pdf/Physical_Activity_Diary_CDC.pdf) (PDF-42k)

http://www.cdc.gov/healthyweight/calories/index.html
An interactive version is found at My Pyramid Tracker (http://www.mypyramidtracker.gov/), where you can enter the foods you have eaten and the physical activity you have done to see how your calorie intake compares to your calorie expenditure. This tool requires you to register, simply to save the information you are tracking.

By studying your food diary you can be more aware of your eating habits and the number of calories you take in on an average day. Check out MyPyramid Plan (http://www.mypyramid.gov/mypyramid/index.aspx) to see how that number compares to the suggested food pattern for someone of your gender, age and activity level.

Physical activities (both daily activities and exercise) help tip the balance scale by increasing the calories you expend each day.

**Recommended Physical Activity Levels**

- 2 hours and 30 minutes (150 minutes) of moderate-intensity aerobic activity (i.e., brisk walking) every week and muscle-strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).

- Increasing the intensity or the amount of time that you are physically active can have even greater health benefits and may be needed to control body weight.

- Encourage children and teenagers to be physically active for at least 60 minutes each day, or almost every day.

- For more detail, see How much physical activity do you need? (http://www.cdc.gov/physicalactivity/everyone/guidelines/index.html)

The bottom line is... each person's body is unique and may have different caloric needs. A healthy lifestyle requires balance, in the foods you eat, in the beverages you consume, in the way you carry out your daily activities, and in the amount of physical activity or exercise you include in your daily routine. While counting calories is not necessary, it may help you in the beginning to gain an awareness of your eating habits as you strive to achieve energy balance. The ultimate test of balance is whether or not you are gaining, maintaining, or losing weight.

**Q: Are fat-free and low-fat foods low in calories?**

A: Not always. Some fat-free and low-fat foods have extra sugars, which push the calorie amount right back up. The following list of foods and their reduced fat varieties will show you that just because a product is fat-free, it doesn't mean that it is "calorie-free." And, calories do count! See FAT-Free Versus Calorie Comparison (http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/fat_free.htm) for more information.

Always read the Nutrition Facts food label to find out the calorie content. Remember, this is the calorie content for one serving of the food item, so be sure and check the serving size. If you eat more than one serving, you'll be eating more calories than is listed on the food label. For more information about the Nutrition Facts food label, visit How to Understand and Use the Nutrition Facts Food Label (http://www.cfsan.fda.gov/~dms/nf034ab.html).

**Q: If I eat late at night, will these calories automatically turn into body fat?**

A: The time of day isn't what affects how your body uses calories. It's the overall number of calories you eat and the calories you burn over the course of 24 hours that affects your weight.

**Q: I've heard it is more important to worry about carbohydrates than calories. Is this true?**

A: By focusing only on carbohydrates, you can still eat too many calories. Also, if you drastically reduce the variety of foods in your diet, you could end up sacrificing vital nutrients and not be able to sustain the diet over time.

**Q: Does it matter how many calories I eat as long as I'm maintaining an active lifestyle?**

A: While physical activity is a vital part of weight control, so is controlling the number of calories you eat. If you consume more calories than you use through normal daily activities and physical activity, you will still gain weight.

**Q. What other factors contribute to overweight and obesity?**

A: Besides diet and behavior, environment, and genetic factors may also have an effect in causing people to be overweight and obese. For more, see Other Factors in Weight Gain (healthyweight/calories/other_factors.html).

**Cutting Calories at Every Meal** (healthyweight/healthy eating/cutting_calories.html)

You can cut calories by eating foods high in fiber, making better drink choices, avoiding portion size pitfalls, and adding more fruits and vegetables to your eating plan.

**Losing Weight** (healthyweight/losing_weight/index.html)

Even a modest weight loss, such as 5 to 10 percent of your total body weight, can produce health benefits.

**Physical Activity for a Healthy Weight** (healthyweight/physical_activity/index.html)

Physical activity can increase the number of calories your body uses for energy or "burns off." The burning of calories through physical activity, combined with reducing the number of calories you eat, creates a "calorie deficit" that can help with weight loss.

http://www.cdc.gov/healthyweight/calories/index.html
1DHHS, A Healthier You, page 19. Available online:

2DHHS, AIM for a Healthy Weight, page 5. Available online:

Please note: Some of these publications are available for download only as .pdf files. These files require Adobe Acrobat Reader in order to be viewed. Please review the information on downloading and using Acrobat Reader software. (/fileformats.html#pdf)

- Page last reviewed: April 1, 2009
- Page last updated: April 1, 2009
- Content source: Division of Nutrition, Physical Activity and Obesity (http://www.cdc.gov/nccdphp/dnpa/index.html), National Center for Chronic Disease Prevention and Health Promotion (http://www.cdc.gov/nccdphp/)

Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348, 24 hours/Every Day - cdcinfo@cdc.gov
Tips for Parents – Ideas to Help Children Maintain a Healthy Weight

You've probably read about it in newspapers and seen it on the news: in the United States, the number of obese children and teens has continued to rise over the past two decades.¹ You may wonder: Why are doctors and scientists troubled by this trend? And as parents or other concerned adults, you may also ask: What steps can we take to help prevent obesity in our children? This page provides answers to some of the questions you may have and provides you with resources to help you keep your family healthy.

- Why is childhood obesity considered a health problem? (#problems)
- What can I do as a parent or guardian to help prevent childhood overweight? (#prevention)
- Want to learn more? (#more)

Doctors and scientists are concerned about the rise of obesity in children and youth because obesity may lead to the following health problems:

- Heart disease, caused by:
  - high cholesterol and/or
  - high blood pressure
- Type 2 diabetes
- Asthma
- Sleep apnea
- Social discrimination

Childhood obesity is associated with various health-related consequences. Obese children and adolescents may experience immediate health consequences and may be at risk for weight-related health problems in adulthood.

Psychosocial Risks

Some consequences of childhood and adolescent overweight are psychosocial. Obese children and adolescents are targets of early and systematic social discrimination.² The psychological stress of social stigmatization can cause low self-esteem which, in turn, can hinder academic and social functioning, and persist into adulthood.³

Cardiovascular Disease Risks

Obese children and teens have been found to have risk factors for cardiovascular disease (CVD), including high cholesterol levels, high blood pressure, and abnormal glucose tolerance. In a population-based sample of 5- to 17-year-olds, almost 60% of overweight children had at least one CVD risk factor while 25 percent of overweight children had two or more CVD risk factors.²

Additional Health Risks

Less common health conditions associated with increased weight include asthma, hepatic steatosis, sleep apnea and Type 2 diabetes.

- Asthma is a disease of the lungs in which the airways become blocked or narrowed causing breathing difficulty. Studies have identified an association between childhood overweight and asthma.⁴ ⁵
- Hepatic steatosis is the fatty degeneration of the liver caused by a high concentration of liver enzymes. Weight reduction causes liver enzymes to normalize.²
- Sleep apnea is a less common complication of overweight for children and adolescents. Sleep apnea is a sleep-associated breathing disorder defined as the cessation of breathing during sleep that lasts for at least 10 seconds. Sleep apnea is characterized by loud snoring and labored breathing. During sleep apnea, oxygen levels in the blood can fall dramatically. One study estimated that sleep apnea occurs in about 7% of overweight children.⁶
- Type 2 diabetes is increasingly being reported among children and adolescents who are overweight.⁷ While diabetes and glucose intolerance, a precursor of diabetes, are common health effects of adult obesity, only in recent years has Type 2 diabetes begun to emerge as a health-related problem among children and adolescents. Onset of diabetes in children and adolescents can result in advanced complications such as CVD and kidney failure.⁸
Healthy Body Image Advertising Questionnaire

Answer each question below for the ad your group is analyzing.

1. Does the ad include people with a variety of body shapes and sizes?
   A. Yes
   B. No

2. How do the people look in the advertisement? (What is their body type?)
   A. Normal weight
   B. Unusually thin
   C. Overweight

3. Do you think people who actually use the product being advertised typically have the body type shown in the advertisement?
   A. Yes
   B. No

4. Do you think the models in the ad naturally look the way they appear or do you think their picture or their appearance has been enhanced in some way?
   A. This is their natural look.
   B. The picture (or their appearance) was probably enhanced.

5. How would you say the people appear in this ad?
   A. Happy/having fun
   B. Unhappy
   C. Neither happy nor unhappy

6. How would you describe the product being advertised?
   A. Healthy
   B. Unhealthy
   C. Neither healthy nor unhealthy
Activity 3: Healthy Eating in a Nutshell

Facilitator’s Notes

Purpose
This activity is designed to ensure that participants are aware of where to find dietary information on which they can depend. A secondary purpose is to be sure that participants know what components make up a healthy diet and are aware of some behavioral approaches they can use to help achieve a healthy body weight.

Materials needed
- Chalkboard, marker board, easel and pad, or other large writing surface or masking tape to attach papers to the wall
- Computer with Internet connection (optional)

Suggested delivery format
This activity is designed to be a participatory, dialogue-type discussion.

Objectives
By the conclusion of today’s discussion, participants will be able to:
- Describe what is meant by the “diet myth.”
- Describe where to find dependable information on healthy eating habits.
- List at least three characteristics of a healthy diet.
- List at least four behavioral keys to achieving a healthy body weight.

Discussion Outline

Note: If you intend to have the teens practice proper exercise techniques during the next session, tell them to dress in exercise clothing for that session.

1. What do you think is the key factor in maintaining a healthy body weight? Write responses on the board or paper, then ask the group to reach a consensus about the most important factor. Possible responses:

   1. What you eat.
   2. Physical activity.
   3. A combination of diet and exercise.
   4. Eating behaviors (i.e., time of day you eat, portion sizes, etc.).
   5. Diet supplements.
   6. Dieting.
A. The National Weight Control Registry is:
   1. A national database established in 1994 by university researchers.
   2. A list of adults (18 and over) who have lost at least 30 pounds and kept it off for at least a year.

B. The National Weight Control Registry counters the "diet myth" that the best way to lose weight is through dieting.
   1. The database shows that:
      a. Successful weight loss maintainers almost always use a combination of diet and exercise.
      b. Successful weight loss maintainers continue to eat lower calorie and lower fat diets and exercise to maintain their loss.
   2. Although dieting may lead to short-term weight loss, very few people are able to maintain losses based on diet alone.
   3. Diet and exercise are essential parts of long-term weight management. No "magic pills" for long-term weight management have been identified.

II. Where can I find nutrition information that I can depend on?


B. MyPyramid.gov contains information on foods to eat.

C. MyPyramid.gov contains information on portion sizes.


III. What are the keys to healthy eating?

A. Use the information provided in MyPyramid.gov.

B. Eat a variety of foods.

C. Eat the amounts of fruits and vegetables that are recommended for you by MyPyramid.gov.

D. Become knowledgeable about portion sizes.

E. Drink three 8-ounce glasses of milk (or its equivalent) each day (it is essential for healthy bone growth).

F. Eat breakfast – adults who eat breakfast have been found to be better weight maintainers than those who don’t (Wyatt et. al., 2002).
IV. What eating behaviors are keys to a healthy body weight?

A. Don't diet to lose weight.
B. Eat when you're hungry, stop when your hunger is satisfied (it is normal to be hungry when your body is growing).
C. Eat slowly. It takes about 20 minutes for your body to let you know your hunger has been satisfied.
   1. Try setting your spoon or fork down between each bite to remind yourself to slow down.
   2. Don't watch TV or read while you eat. These types of distractions tend to make us less conscious of how fast we are eating.
A. Restrict your eating to one place in your home, such as the kitchen table.
B. Have nutritious snacks ready for when you need something to eat.
C. Don't skip meals.
D. Look for nutritious choices when you eat away from home.
E. Get an adequate amount of sleep.
F. Limit TV and Internet time.
G. Remember that a healthy diet and regular physical activity are necessary for maintaining a healthy weight.

Take-home message

Good nutrition and regular physical activity are essential for long-term weight management and good health. Many people mistakenly try to use either diet alone or exercise alone to manage their weight. As people grow and mature, healthy eating and regular physical activity are essential for normal growth and development. MyPyramid.gov provides a wealth of dependable information about diet (and exercise) developed by nutrition experts.

Selected references


<table>
<thead>
<tr>
<th>Meal/Snack (Indicate time of day)</th>
<th>What You Ate and Drank</th>
<th>Where and With Whom</th>
<th>Notes (Feelings, hunger, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snack</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snack</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
HCCI 7th Grade Health Unit

Lesson #3 Weight Control Tips for Teens

Lesson Plan

Suggested time: 1 class period

I. To empower students with knowledge about healthy weight control measures and warn against fad diets.

II. Objectives: Upon completion of this lesson, students will

1. Set realistic goals for behavior changes to help with weight challenges (underweight, overweight, or weight maintenance)

2. List “Green Light Foods” for weight loss and “Red Light Foods” for rare occasions in their goals

3. Apply weight control facts while playing a game

III. Procedures

A. Pre-test

B. Introduction/ Motivation

Today we are going to talk about ways to get or keep our weight where we want it to be. Therefore whether you are happy with your weight or not, this lesson is for you. If you are too heavy, you will learn healthy measures to shed the excess weight. If you are where you want to be with your weight, don’t you want to stay that way?

Based on 2003 statistics from the Centers for Disease Control, approximately 20% of all MS middle school children (grades 6-8) are overweight. There is a good chance that this % may be higher now. This means that 1 out of every 4-5 middle school kids in MS is overweight...not a glowing record! Overweight children and teens are at high risk for developing serious diseases such as type II diabetes, heart disease, hypertension, and certain cancers. These diseases used to be considered adult illnesses; however with the rise in childhood obesity, these diseases are now showing up frequently in school aged children. There are treatments for these diseases but no
cures. The best thing you can do NOW is get to a good weight (and stay there) which could help PREVENT these conditions, a much better solution than doctor visits, lots of medicine, surgeries, and shots!

Ask: Have any of you ever been on a diet to lose weight? Which diet did you try? Allow time for answers. If no one speaks up, mention the Adkins Diet, Sugar Busters, Nutri-system, Jenny Craig, Diet Center, Ally, Metabolite, and South Beach Diet. How well did they work? Were you able to keep the weight off when you stopped the diet? What did you like or dislike about the diet? Well, believe it or not, dieting is not the best way to lose weight for teens. Let's see why...

In teenagers, dieting usually means eating very little, cutting out whole food groups (like grain products or carbohydrates), skipping meals, & fasting. Other unhealthy weight loss behaviors include smoking, diet pills, laxatives, colonics, and self-induced vomiting.

C. Study/Learning

1. Definitions:

Fad Diets—diets that usually promise quick weight loss by leaving out certain foods or combining certain foods. Diets that sound too good to be true, usually are!

Fast—when a person does not eat or drink anything for a given period of time

Green Light Foods—those foods that are great for weight loss and weight maintenance because they are rich in nutrients but not calories. Exs. fresh or frozen fruits & vegetables, whole grain cereals, breads, pastas, and crackers, calcium rich foods (low-fat), lean protein foods, water & other sugar free drinks. Eat plenty of all these!

Red Light Foods—those foods that contribute to weight gain because they are high in calories, sugar, and fats and low in vitamins, minerals and fiber. Exs. regular sodas, Gatorade, juices sweetened with sugar or high fructose corn syrup, sweet tea, kool-aid, cookies, cakes, pies, fried foods, fast foods, chips, candy bars, butter, margarine, sour cream, cream cheese. Eat these only occasionally!
Calcium—the mineral that strengthens bones and teeth and is found mostly in fat-free dairy products. Recent research has shown calcium to be helpful in weight loss, too. Teens need 3 (1 cup) servings of fat-free calcium rich dairy products per day. Other calcium sources are soy products, dark leafy greens, salmon, and broccoli.

Lean Protein—the body needs protein to build and repair body tissues like muscles and organs. Protein foods also keep you more satisfied between meals when trying to practice good weight control. Teens need about 5 ½ oz. of protein per day. Hint: 1 oz. of protein is about the size of a small matchbox and 3 oz. would be the size of a deck of cards. Lean means that your meats, fish, chicken, eggs, turkey, beans would have the skin or outer fat removed before cooking and very little added fat. The healthiest cooking methods for proteins and other foods are: baking, broiling, boiling, steaming, stewing, or grilling.

Barriers to good health—things that keep us from making good choices and healthy changes; Exs. best friend who never wants to do anything but play Nintendo or mom does not keep fruits and vegetables in the house.

2. Teaching: Use the teacher’s “Weight Loss and Nutrition Myths” guide to debunk some of the myths listed in the article. Highlight as many as you have time for or think the students would be interested in.

Give students handout “Tips for Weight Control.” Next use the teacher resource “Take Charge of Your Health” starting with p. 3 and help the students expand the info on their tip sheet through discussion

3. Activity

Let the students take some time looking over all the “Tips” and have them write 2-3 personal behavior change goals they could make to improve their health and weight control. Ask them to list certain “Green Light Foods” to include more often and specific “Red Light Foods” to leave out. Tell them to be realistic in their goal setting. Also ask the students to list the barriers they may
face in making these healthy changes.

Allow time for those students who have not had an opportunity, to try on the fat roll belt to see what it feels like for the body to carry extra weight.

D. Culmination

To summarize the lesson today, have the students play Weight Control Fill in the Blanks (Hangman).

Directions included in the “Activities” section.

E. Follow-Up

1. Ask each student to find a buddy to share their goals and encourage each other. From time to time during the semester, give the “buddies” 3-5 minutes to check in with each other about their progress and set new goals pertaining to good health & weight control.

2. Post-test

HCCI Pre/Post-Test answers: 1. a   2. b   3.a   4.b   5.b

Materials

30 copies “Weight Control Tips for Teens”

1 copy Weight Control Fill In the Blanks Game

Blackboard or Dry Erase Board

Fat Roll Belt
ACTIVITIES
Weight Control Fill in the Blank
(A takeoff on the old “Hangman” game)

1. Teacher will develop several food-related puzzle titles, such as “FRUITS ARE YUMMY.” Titles may be more challenging, depending on age group and reading ability.

2. On the chalkboard, write enough blanks to accommodate the letters of the first puzzle – leaving space between the words so that students can see where one word ends and another begins. A period at the end might be appropriate, too. In “Fruits Are Yummy,” the blanks and spaces would be arranged as shown below:

   ___________  ___________  ___________

3. Divide students into two teams, and seat team members together.

4. First contestant on Team A suggests a letter – perhaps “S.” Teacher (or student who wants to act as host) places the letter in the appropriate spot as shown below:

   ___________  ___________  ___________  S

5. Since Team A was successful in finding a letter in the puzzle, their next contestant gets a turn. Continue until the team calls a letter that is NOT in the puzzle.

6. When a letter is called that is NOT in the puzzle, teacher writes that letter in a nearby area of the chalkboard called “Not in Puzzle.” Students should be reminded not to waste a turn calling one of those letters.

7. When Team A calls a letter not in the puzzle, Team B gets a turn. Continue as shown above.

8. When any team member feels she has enough information to guess the puzzle, she may do that during her turn. If she guesses correctly, her team wins the round. If she is incorrect, the turn goes back to the other team.

9. The next contestant on the other team should be encouraged to call another letter before taking a guess – it will give them more information on the solution.

10. When a team solves the puzzle, it gets a point. Erase the board, and write the blanks for the next puzzle. Play three rounds, and the team with two solved puzzles is declared the winner. Or play indefinitely – depending on the day’s schedule.
Activity: Weight Control Hangman

Suggestions for Weight Control Fill in the Blank:

DON'T SKIP BREAKFAST
CALCIUM COUNTS
EAT LOTS OF FRUITS AND VEGETABLES
BE ACTIVE EVERYDAY
MAKE HALF YOUR GRAINS WHOLE
LIMIT FAST FOOD
HANDOUTS
1. You should strive for at least ____ minutes of moderate activity a day.
   a. 60 minutes
   b. 45 minutes
   c. 30 minutes
   d. 15 minutes

2. Skipping breakfast is a good way to cut back on daily calories to lose weight.
   a. true
   b. false

3. Which of the following nutrients is now known to play a role in weight control?
   a. calcium
   b. vitamin C
   c. vitamin A
   d. don’t know

4. Due to food and drug laws, marketing claims made by fad diets are always true.
   a. true
   b. false

5. “Red Light Foods” are foods:
   a. which we should stop eating completely
   b. which we should eat only occasionally
   c. that have lots of nutrients and few calories
   d. don’t know
# Weight Reduction Principles

<table>
<thead>
<tr>
<th>Principles</th>
<th>Concerns</th>
<th>Substitutions or Changes I am willing to make</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat Less Sweets</td>
<td>Soft drinks</td>
<td>Popsicles, Jams / Jellies, Chocolates</td>
</tr>
<tr>
<td></td>
<td>Candy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Syrup</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sugar</td>
<td>honey, Cookies</td>
</tr>
<tr>
<td></td>
<td>Molasses</td>
<td>donuts, Ice cream</td>
</tr>
<tr>
<td></td>
<td>Pies</td>
<td>Pasta</td>
</tr>
<tr>
<td></td>
<td>Jello</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cakes</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eat Less Fats</td>
<td>Margarine</td>
<td>Sour cream, Mayonnaise, Fried foods</td>
</tr>
<tr>
<td></td>
<td>Oil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Salad dressing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cream Sauces</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fat on meats</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Potato chips</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cream Soups</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Butter</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watch Portion Sizes</td>
<td>6 oz of lowfat protein foods per day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 servings of lowfat dairy products per day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 servings of breads, cereals and starches per day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 servings of vegetables per day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 servings of fruit per day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 servings of fat per day</td>
<td></td>
</tr>
<tr>
<td>Exercise More</td>
<td>Bicycling</td>
<td>Tennis, Skating</td>
</tr>
<tr>
<td></td>
<td>Walking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jogging</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Swimming</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dancing</td>
<td></td>
</tr>
</tbody>
</table>
TEACHER RESOURCES
Weight-loss and Nutrition Myths
How much do you really know?

Diet Myths

Myth: Fad diets work for permanent weight loss.

Fact: Fad diets are not the best way to lose weight and keep it off. Fad diets often promise quick weight loss or tell you to cut certain foods out of your diet. You may lose weight at first on one of these diets. But diets that strictly limit calories or food choices are hard to follow. Most people quickly get tired of them and regain any lost weight.

Fad diets may be unhealthy because they may not provide all of the nutrients your body needs. Also, losing weight at a very rapid rate (more than 3 pounds a week after the first couple of weeks) may increase your risk for developing gallstones (clusters of solid material in the gallbladder that can be painful). Diets that provide less than 800 calories per day also could result in heart rhythm abnormalities, which can be fatal.

Tip: Research suggests that losing 1/2 to 2 pounds a week by making healthy food choices, eating moderate portions, and building physical activity into your daily life is the best way to lose weight and keep it off. By adopting healthy eating and physical activity habits, you may also lower your risk for developing type 2 diabetes, heart disease, and high blood pressure.

Myth: High-protein/low-carbohydrate diets are a healthy way to lose weight.

Fact: The long-term health effects of a high-protein/low-carbohydrate diet are unknown. But getting most of your daily calories from high-protein foods like meat, eggs, and cheese is not a balanced eating plan. You may be eating too much fat and cholesterol, which may raise heart disease risk. You may be eating too few fruits, vegetables, and whole grains, which may lead to constipation due to lack of dietary fiber. Following a high-protein/low-carbohydrate diet may also make you feel nauseous, tired, and weak.

"Lose 30 pounds in 30 days!"

"Eat as much as you want and still lose weight!"

"Try the thigh buster and lose inches fast!"

And so on, and so on. With so many products and weight-loss theories out there, it is easy to get confused.

The information in this fact sheet may help clear up confusion about weight loss, nutrition, and physical activity. It may also help you make healthy changes in your eating and physical activity habits. If you have questions not answered here, or if you want to lose weight, talk to your health care provider. A registered dietitian or other qualified health professional can give you advice on how to follow a healthy eating plan, lose weight safely, and keep the weight off.
Eating fewer than 130 grams of carbohydrate a day can lead to the buildup of ketones in your blood. Ketones are partially broken-down fats. A buildup of these in your blood (called ketosis) can cause your body to produce high levels of uric acid, which is a risk factor for gout (a painful swelling of the joints) and kidney stones. Ketosis may be especially risky for pregnant women and people with diabetes or kidney disease. Be sure to discuss any changes in your diet with a health care professional, especially if you have health conditions such as cardiovascular disease, kidney disease, or type 2 diabetes.

**Tip:** High-protein/low-carbohydrate diets are often low in calories because food choices are strictly limited, so they may cause short-term weight loss. But a reduced-calorie eating plan that includes recommended amounts of carbohydrate, protein, and fat will also allow you to lose weight. By following a balanced eating plan, you will not have to stop eating whole classes of foods, such as whole grains, fruits, and vegetables—and miss the key nutrients they contain. You may also find it easier to stick with a diet or eating plan that includes a greater variety of foods.

**Myth:** Starches are fattening and should be limited when trying to lose weight.

**Fact:** Many foods high in starch, like bread, rice, pasta, cereals, beans, fruits, and some vegetables (like potatoes and yams) are low in fat and calories. They become high in fat and calories when eaten in large portion sizes or when covered with high-fat toppings like butter, sour cream, or mayonnaise. Foods high in starch (also called complex carbohydrates) are an important source of energy for your body.

**Tip:** A healthy eating plan is one that:

- Emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk and milk products.
- Includes lean meats, poultry, fish, beans, eggs, and nuts.
- Is low in saturated fats, trans fat, cholesterol, salt (sodium), and added sugars.

For more specific information about food groups and nutrition values, visit [http://www.healthierus.gov/dietaryguidelines](http://www.healthierus.gov/dietaryguidelines).

**Myth:** Certain foods, like grapefruit, celery, or cabbage soup, can burn fat and make you lose weight.

**Fact:** No foods can burn fat. Some foods with caffeine may speed up your metabolism (the way your body uses energy, or calories) for a short time, but they do not cause weight loss.

**Tip:** The best way to lose weight is to cut back on the number of calories you eat and be more physically active.

**Myth:** Natural or herbal weight-loss products are safe and effective.

**Fact:** A weight-loss product that claims to be “natural” or “herbal” is not necessarily safe. These products are not usually scientifically tested to prove that they are safe or that they work. For example, herbal products containing ephedra (now banned by the U.S. Government) have caused serious health problems and even death. Newer products that claim to be ephedra-free are not necessarily danger-free, because they may contain ingredients similar to ephedra.

**Tip:** Talk with your health care provider before using any weight-loss product. Some natural or herbal weight-loss products can be harmful.
Meal Myths

**Myth:** "I can lose weight while eating whatever I want."

**Fact:** To lose weight, you need to use more calories than you eat. It is possible to eat any kind of food you want and lose weight. You need to limit the number of calories you eat every day and/or increase your daily physical activity. Portion control is the key. Try eating smaller amounts of food and choosing foods that are low in calories.

**Tip:** When trying to lose weight, you can still eat your favorite foods—as long as you pay attention to the total number of calories that you eat.

**Myth:** Low-fat or fat-free means no calories.

**Fact:** A low-fat or fat-free food is often lower in calories than the same size portion of the full-fat product. But many processed low-fat or fat-free foods have just as many calories as the full-fat versions of the same foods—or even more calories. They may contain added sugar, flour, or starch thickeners to improve flavor and texture after fat is removed. These ingredients add calories.

**Tip:** Read the Nutrition Facts on a food package to find out how many calories are in a serving. Check the serving size too—it may be less than you are used to eating. For more information about reading food labels, visit the U.S. Food and Drug Administration online at http://www.cfsan.fda.gov/~dms/foodlab.html.

**Myth:** Fast foods are always an unhealthy choice and you should not eat them when dieting.

**Fact:** Fast foods can be part of a healthy weight-loss program with a little bit of know-how.

**Tip:** Avoid supersized combo meals, or split one with a friend. Sip on water or fat-free milk instead of soda. Choose salads and grilled foods, like a grilled chicken breast sandwich or small hamburger. Try a "fresco" taco (with salsa instead of cheese or sauce) at taco stands. Fried foods, like french fries and fried chicken, are high in fat and calories, so order them only once in a while, order a small portion, or split an order with a friend. Also, use only small amounts of high-fat, high-calorie toppings, like regular mayonnaise, salad dressings, bacon, and cheese.

**Myth:** Skipping meals is a good way to lose weight.

**Fact:** Studies show that people who skip breakfast and eat fewer times during the day tend to be heavier than people who eat a healthy breakfast and eat four or five times a day. This may be because people who skip meals tend to feel hungrier later on, and eat more than they normally would. It may also be that eating many small meals throughout the day helps people control their appetites.

**Tip:** Eat small meals throughout the day that include a variety of healthy, low-fat, low-calorie foods. For more information about healthy eating, read the Weight-control Information Network brochure Healthy Eating and Physical Activity Across Your Lifespan: Tips for Adults.

**Myth:** Eating after 8 p.m. causes weight gain.

**Fact:** It does not matter what time of day you eat. It is what and how much you eat and how much physical activity you do during the whole day that determines whether you gain, lose, or maintain your weight. No matter when you eat, your body will store extra calories as fat.

**Tip:** If you want to have a snack before bedtime, think first about how many calories you have eaten that day. And try to avoid snacking in front of the TV at night—it may be easier to overeat when you are distracted by the television.
Physical Activity Myth

**Myth:** Lifting weights is not good to do if you want to lose weight, because it will make you "bulk up."

**Fact:** Lifting weights or doing strengthening activities like push-ups and crunches on a regular basis can actually help you maintain or lose weight. These activities can help you build muscle, and muscle burns more calories than body fat. So if you have more muscle, you burn more calories—even sitting still. Doing strengthening activities 2 or 3 days a week will not "bulk you up." Only intense strength training, combined with a certain genetic background, can build very large muscles.

**Tip:** In addition to doing moderate-intensity physical activity (like walking 2 miles in 30 minutes) on most days of the week, try to do strengthening activities 2 to 3 days a week. You can lift weights, use large rubber bands (resistance bands), do push-ups or sit-ups, or do household or garden tasks that make you lift or dig. Strength training helps keep your bones strong while building muscle, which can help burn calories.

For more information about the benefits of physical activity and suggestions on how to be more active, read the 2008 Physical Activity Guidelines for Americans, available online at [http://www.health.gov/PAGuidelines](http://www.health.gov/PAGuidelines).

Food Myths

**Myth:** Nuts are fattening and you should not eat them if you want to lose weight.

**Fact:** In small amounts, nuts can be part of a healthy weight-loss program. Nuts are high in calories and fat. However, most nuts contain healthy fats that do not clog arteries. Nuts are also good sources of protein, dietary fiber, and minerals such as magnesium and copper.

**Tip:** Enjoy small portions of nuts. One-half ounce of mixed nuts has about 84 calories.

**Myth:** Eating red meat is bad for your health and makes it harder to lose weight.

**Fact:** Eating lean meat in small amounts can be part of a healthy weight-loss plan. Red meat, pork, chicken, and fish contain some cholesterol and saturated fat (the least healthy kind of fat). They also contain healthy nutrients like protein, iron, and zinc.

**Tip:** Choose cuts of meat that are lower in fat and trim all visible fat. Lower fat meats include pork tenderloin and beef round steak, tenderloin, sirloin tip, flank steak, and extra lean ground beef. Also, pay attention to portion size. Three ounces of meat or poultry is the size of a deck of cards.

**Myth:** Dairy products are fattening and unhealthy.

**Fact:** Low-fat and fat-free milk, yogurt, and cheese are just as nutritious as whole-milk dairy products, but they are lower in fat and calories. Dairy products have many nutrients your body needs. They offer protein to build muscles and help organs work properly, and calcium to strengthen bones. Most milk and some yogurt are fortified with vitamin D to help your body use calcium.
**Tip:** The *2005 Dietary Guidelines for Americans* recommends consuming 3 cups per day of fat-free/low-fat milk or equivalent milk products. For more information on these guidelines, visit [http://www.healthierus.gov/dietaryguidelines](http://www.healthierus.gov/dietaryguidelines).

If you cannot digest lactose (the sugar found in dairy products), choose low-lactose or lactose-free dairy products, or other foods and beverages that offer calcium and vitamin D (listed below).

**Calcium:** soy-based beverage or tofu made with calcium sulfate; canned salmon; dark leafy greens like collards or kale

**Vitamin D:** soy-based beverage or cereal (getting some sunlight on your skin also gives you a small amount of vitamin D)

---

**Myth:** "Going vegetarian" means you are sure to lose weight and be healthier.

**Fact:** Research shows that people who follow a vegetarian eating plan, on average, eat fewer calories and less fat than nonvegetarians. They also tend to have lower body weights relative to their heights than nonvegetarians. Choosing a vegetarian eating plan with a low fat content may be helpful for weight loss. But vegetarians—like nonvegetarians—can make food choices that contribute to weight gain, like eating large amounts of high-fat, high-calorie foods or foods with little or no nutritional value.

Vegetarian diets should be as carefully planned as nonvegetarian diets to make sure they are balanced. Nutrients that nonvegetarians normally get from animal products, but that are not always found in a vegetarian eating plan, are iron, calcium, vitamin D, vitamin B12, zinc, and protein.

**Tip:** Choose a vegetarian eating plan that is low in fat and that provides all of the nutrients your body needs. Food and beverage sources of nutrients that may be lacking in a vegetarian diet are listed below.

**Iron:** cashews, spinach, lentils, garbanzo beans, fortified bread or cereal

**Calcium:** dairy products, fortified soy-based beverages, tofu made with calcium sulfate, collard greens, kale, broccoli

**Vitamin D:** fortified foods and beverages including milk, soy-based beverages, or cereal

**Vitamin B12:** eggs, dairy products, fortified cereal or soy-based beverages, tempeh, miso (tempeh and miso are foods made from soybeans)

**Zinc:** whole grains (especially the germ and bran of the grain), nuts, tofu, leafy vegetables (spinach, cabbage, lettuce)

**Protein:** eggs, dairy products, beans, peas, nuts, seeds, tofu, tempeh, soy-based burgers

If you do not know whether or not to believe a weight-loss or nutrition claim, check it out! The Federal Trade Commission has information on deceptive weight-loss advertising claims. You can find this online at [http://www.ftc.com](http://www.ftc.com) or call 1-877-FTC-HELP (1-877-382-4357). You can also find out more about nutrition and weight loss by talking with a registered dietitian. To find a registered dietitian in your area, visit the American Dietetic Association online ([http://www.eatright.org](http://www.eatright.org)) or call 1-800-877-1600.
Additional Reading From the Weight-control Information Network

*Changing Your Habits: Steps to Better Health* guides readers through steps that can help them determine what "stage" they are in—how ready they are—to make healthy lifestyle changes. Once that stage is determined, strategies on how to make healthy eating and physical activity changes are offered.

*Choosing a Safe and Successful Weight-loss Program* provides a list of things to look for when choosing a safe and effective weight-loss program, as well as a list of questions to ask program providers.

*Tips to Help You Get Active* offers ideas to beat some of the environmental, personal, and health-related roadblocks to making physical activity a part of one's regular routine.

*Weight Loss for Life* discusses the benefits of weight loss and ways to develop healthy eating and physical activity plans. In addition, the differences between the two types of formal weight-loss programs—clinical and nonclinical—are discussed.

---

1 WIN Way
Bethesda, MD 20892–3655
Phone: (202) 828–1025
Toll-free number:
1–877–946–4627
FAX: (202) 828–1028
Email: WIN@info.niddk.nih.gov
Internet: http://www.win.niddk.nih.gov

The Weight-control Information Network (WIN) is a national information service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the National Institutes of Health, which is the Federal Government's lead agency responsible for biomedical research on nutrition and obesity. Authorized by Congress (Public Law 103-43), WIN provides the general public, health professionals, the media, and Congress with up-to-date, science-based health information on weight control, obesity, physical activity, and related nutritional issues.

Publications produced by WIN are reviewed by both NIDDK scientists and outside experts. This fact sheet was also reviewed by Donna Ryan, M.D., F.A.C.P., Associate Executive Director for Clinical Research, Pennington Biomedical Research Center.

---

This publication is not copyrighted. WIN encourages users of this fact sheet to duplicate and distribute as many copies as desired.

This fact sheet is also available at http://www.niddk.nih.gov.
Weight Control Tips for Teens

1. Eat fruits and veges everyday.
2. Count your calcium.
3. Power up with lean protein.
4. Go whole grain.
5. Know your fats.
6. Replenish your body with iron.
7. Control your food portions.
8. Read food labels.
10. Jumpstart your day with breakfast.
12. Snack smart.
13. Eat dinner with your family.
15. Be active everyday! Aim for 60 minutes; start with 20 and build up. Turn off the TV.
Popular Diets Reviewed 2006

By the time you read this, there may already be a new best-selling diet book heading the list. But with some help from current or former ADA media spokespeople, we have put together these facts to give you the scoop on current popular diets.


Diet Summary: Comprised of three phases, the South Beach Diet begins by banning carbohydrates such as fruit, bread, rice, potatoes, pasta and baked goods and allowing normal-size portions of meat, poultry, shellfish, vegetables, eggs and nuts. Dieters are told they will lose between eight and 13 pounds in the first two weeks during the “detoxification” phase. The second phase reintroduces “good carbs” (as defined using an online glycemic index) and dieters expect to lose one to two pounds per week until the weight goal is reached. The third phase is the least restrictive, allowing the dieters to eat pretty much anything in moderation.

The theory behind the South Beach Diet is that the faster sugars and starches are digested, the more weight is gained. Instead, the diet will cause weight loss because it is a low-calorie plan with an average intake of about 1,400 to 1,500 calories per day. The diet’s first phase promotes potentially dangerous accelerated weight loss; however, the second and third phases emphasize whole grains, lean proteins and dairy, unsaturated fats and fruits and vegetables, in addition to consistent meal times, snacks, a healthy dessert and plenty of water.

—Dawn Jackson, RD, LD

French Women Don’t Get Fat: The Secret of Eating for Pleasure by Mireille Guiliano, Knopf, 2004

Diet Summary: French Women Don’t Get Fat, like many other diet books, is a blend of some insight, shaky science and sheer speculation. The author, who is not a nutrition or weight loss professional and doesn’t claim to be, bases her advice on her own and her friends’ personal experiences and observations she’s made through living in France. She does make some recommendations, though, which can be supported by science. For instance, eating soup and eating more vegetables, which have been found to help reduce calorie intake naturally. Also, she recommends walking for exercise and weight training for women over forty, which most experts would agree is a terrific strategy.

However, the author makes some questionable dietary claims, such as that leeks are a mild diuretic, have a “magical” quality, and cause weight loss (there is no science backing these claims). She also advises people to start dieting through a semi-fast, eating predominantly leek soup. While most people would lose weight using this method, it’s not nutritionally adequate or a way of eating which can be maintained over the long term. Learning consistent eating habits is a more proven way to lose weight and keep it off.

Although the author says Americans wouldn’t be fat if we ate the way the French do (the French have about half of America’s overweight and obesity rate), French women do get fat — and the obesity rate in France is growing quickly.

—Katherine Tallmadge, MA, RD

Eat Right 4 Your Type: The Individualized Diet Solution to Staying Healthy, Living Longer & Achieving Your Ideal Weight by Peter D’Adamo, G. P. Putnam’s, 1996

Diet Summary: The author, a naturopathic physician, contends that the key to good health is eating optimally according to your blood type. If you are a Type O (about 46
percent of the population), you are in for a challenge—no beans, wheat or dairy products. While special consideration is given to one’s ethnic origins—African, Asian or Caucasian—in general, all Type Os are the original hunter-gatherers and need to eat meat and avoid grains; Type As are meant to be vegetarians; Type Bs do well as omnivores, tolerating a variety of food, and are the only blood type that can thrive on dairy products.

Alternative suggestions for foods to be avoided within each food group are provided and, with effort, nutritional adequacy could be achieved. Readers are encouraged to derive their nutrition from food, but the author recognizes that each blood type may need specific additional supplements.

Eat Right 4 Your Type pigeonholes the reader into dietary plans based only on blood type and does not take into consideration any individual variances. The general statements that suggest all blood type populations have specific problematic foods in common are not supported by current scientific research.

—Dave Grotto, RD, LD


Diet Summary: Arguably one of the most famous fad diets, the Atkins Diet program restricts carbohydrates and focuses on eating mostly protein with the use of vitamin and mineral supplements. According to the program, this will alter a body’s metabolism so it will burn stored fat while building muscle mass. The “new” Atkins Diet is the same diet with a more liberal maintenance plan.

With the “new” Atkins diet, some of the sensationalism is gone, and there is heavy promoting of low-carb bars and food products. But, the bottom line is still the same. Carbs are demonized and there are major restrictions on fruits and vegetables, whole grains, beans and low-fat dairy foods that contradict everything we know about health promotion and disease prevention.

—Keith Ayoob, EdD, RD, FADA

The 3-Hour Diet by Jorge Cruise, Collins, 2005.

The basic rules for following this diet include: eat within one hour of waking up in the morning; eat every three hours; and do not eat within three hours of going to bed. While some studies suggest that eating more frequently throughout the day can help you lose weight, the jury is still out on whether this is physiologically true. Also, there is no proof that going three hours between meals is the magic number or that you’ll lose more weight if you keep your calorie intake and expenditure constant by following such a plan.

Overall, the book is positive with a sensible and balanced program. For those who don’t mind eating by the clock, this book may make losing a few pounds more simple; but it would have been better had it made physical activity an equally important component for long-term weight loss.

—Elisa Zied, RD, CDN

Is It Right for You?
Successful weight loss means making small changes toward a healthy lifestyle. Make sure your weight loss plan is right for you. Does it include:

- Foods from all five food groups?
- The right number of servings from each group?
- Foods you will enjoy eating for the rest of your life?
- Foods you can buy at the supermarket?
- Some of your favorite foods?
- Foods that fit your budget and lifestyle?
- Regular physical activity or exercise?

If the answer is “yes” to all the questions, your weight loss plan is right for you. For names of registered dietitians in your area who can develop a personalized weight management plan, visit www.eatright.org.

American Dietetic Association
Knowledge Center
For a referral to a dietetics professional visit: www.eatright.org
Introduction

Does your life move at a hectic pace?

You may feel stressed from school, after-school activities, peer pressure, and family relationships. Your busy schedule may lead you to skip breakfast, buy lunch from vending machines, and grab whatever is in the refrigerator for dinner when you get home.

Where is the time to think about your health?

Yet healthy behaviors, like nutritious eating and regular physical activity, may help you meet the challenges of your life. In fact, healthy eating and regular exercise may help you feel energized, learn better, and stay alert in class. These healthy habits may also lower your risk for diseases such as diabetes, asthma, heart disease, and some forms of cancer.

Did you know?

- From 2003 to 2004, approximately 17.4 percent of U.S. teens between the ages of 12 and 19 were overweight.
Overweight children and teens are at high risk for developing serious diseases. Type 2 diabetes and heart disease were considered adult diseases, but they are now being reported in children and teens.

Dieting is not the answer.

The best way to lose weight is to eat healthfully and be physically active. It is a good idea to talk with your health care provider if you want to lose weight.

Many teens turn to unhealthy dieting methods to lose weight, including eating very little, cutting out whole groups of foods (like grain products), skipping meals, and fasting. These methods can leave out important foods you need to grow. Other weight-loss tactics such as smoking, self-induced vomiting, or using diet pills or laxatives can lead to health problems.

In fact, unhealthy dieting can actually cause you to gain more weight because it often leads to a cycle of eating very little, then overeating or binge eating. Also, unhealthy dieting can put you at greater risk for growth and emotional problems.

Take Charge.

What You Can Do

This booklet is designed to help you take small and simple steps to keep a healthy weight. It gives you basic facts about nutrition and physical activity, and offers practical tools that you can use in your everyday life, from reading food labels and selecting how much and what foods to eat, to replacing TV time with physical activities.

Healthy Eating

Eating healthfully means getting the right balance of nutrients your body needs to perform every day. You can find out more about your nutritional needs by checking out the 2005 Dietary Guidelines for Americans. Published by the U.S. Government, this publication explains how much of each type of food you should eat, along with great information on nutrition and physical activity. The guidelines suggest the number of calories you should eat daily based on your gender, age, and activity level.

According to the guidelines, a healthy eating plan includes:

- fruits and vegetables
- fat-free or low-fat milk and milk products
- lean meats, poultry, fish, beans, eggs, and nuts
- whole grains

In addition, a healthy diet is low in saturated and trans fats, cholesterol, salt, and added sugars.

When it comes to food portions, the Dietary Guidelines use the word "servings" to describe a standard amount of food. Serving sizes are measured as "ounce-" or "cup-equivalents." Listed below are some tips based on the guidelines that can help you develop healthy eating habits for a lifetime.
Eat fruits and vegetables every day.

When consumed as part of a well-balanced and nutritious eating plan, fruits and vegetables can help keep you healthy.

You may get your servings from fresh, frozen, dried, and canned fruits and vegetables. Teenagers who are consuming 2,000 calories per day should aim for 2 cups of fruit and 2 1/2 cups of vegetables every day. You may need fewer or more servings depending on your individual calorie needs, which your health care provider can help you determine.

<table>
<thead>
<tr>
<th>Fruits and Vegetables</th>
<th>1 Serving equals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit like apples, oranges, bananas, and pears</td>
<td>1 medium fruit</td>
</tr>
<tr>
<td>Raw leafy vegetables like romaine lettuce or spinach</td>
<td>1 cup</td>
</tr>
<tr>
<td>Cooked or raw vegetables</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Chopped fruit</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Dried fruits (raisins or apricots)</td>
<td>1/4 cup</td>
</tr>
</tbody>
</table>

*Note: All serving size information is based on Dietary Guidelines for Americans 2005 (www.healthierus.gov/dietaryguidelines).

Count your calcium.

Calcium helps strengthen bones and teeth. This nutrient is very important, since getting enough calcium now can reduce the risk for broken bones later in life. Yet most teens get less than the recommended 1,200 mg of calcium per day. Aim for at least three 1 cup-equivalents of low-fat or fat-free calcium-rich foods and beverages each day.

<table>
<thead>
<tr>
<th>Calcium-rich Foods</th>
<th>1 cup-equivalent equals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yogurt, low-fat or fat-free</td>
<td>1 cup</td>
</tr>
<tr>
<td>Cheddar cheese, low-fat</td>
<td>1 1/2 ounces</td>
</tr>
<tr>
<td>American cheese, fat-free</td>
<td>2 ounces</td>
</tr>
<tr>
<td>Soy-based beverage (soy milk) with added calcium</td>
<td>1 cup</td>
</tr>
</tbody>
</table>

Power up with protein.
Protein builds and repairs body tissue like muscles and organs. Eating enough protein can help you grow strong and sustain your energy levels. Teens need five and one-half 1 ounce-equivalents of protein-rich foods each day.

### Protein Sources

<table>
<thead>
<tr>
<th>What counts as a serving?</th>
<th>1 ounce-equivalent equals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lean meat, poultry, or fish</td>
<td>1 ounce</td>
</tr>
<tr>
<td>Beans (canned or cooked dry beans)</td>
<td>1/4 cup</td>
</tr>
<tr>
<td>Tofu</td>
<td>1/4 cup</td>
</tr>
<tr>
<td>Eggs</td>
<td>1</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>1 tablespoon</td>
</tr>
<tr>
<td>Veggie burger made with soy</td>
<td>A 0.75 ounce burger equals two and one-half 1 ounce-equivalents</td>
</tr>
<tr>
<td>Nuts/Seeds</td>
<td>1/2 ounce</td>
</tr>
</tbody>
</table>

Top
Go whole grain.

Grain foods help give you energy. Whole-grain foods like whole-wheat bread, brown rice, and oatmeal usually have more nutrients than refined grain products. They give you a feeling of fullness and add bulk to your diet.

### Whole-grain Sources

<table>
<thead>
<tr>
<th>What counts as a serving</th>
<th>1 ounce-equivalent equals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole-grain bread</td>
<td>1 slice</td>
</tr>
<tr>
<td>Whole-grain pasta (cooked)</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Brown rice (cooked)</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Foods made with bulgur (cracked wheat)</td>
<td>1 cup</td>
</tr>
<tr>
<td>like tabbouleh salad</td>
<td></td>
</tr>
<tr>
<td>Ready to eat whole-grain breakfast cereals like bran flakes</td>
<td>About 1 cup</td>
</tr>
</tbody>
</table>

Try to get six 1 ounce-equivalents of grains every day, with at least three 1 ounce-equivalents coming from whole-grain sources.

Know your fats.

Fat is also an important nutrient. It helps your body grow and develop, and it is a source of energy as well—it even keeps your skin and hair healthy. But be aware that some fats are better for you than others. Limit your fat intake to 25 to 35 percent of your total calories each day.

Unsaturated fat can be part of a healthy diet—as long as you do not eat too much since it is still high in calories. Good sources include:

- olive, canola, safflower, sunflower, corn, and soybean oils
- fish like salmon, trout, tuna, and whitefish
- nuts like walnuts, almonds, peanuts, and cashews

Limit saturated fat, which can clog your arteries and raise your risk for heart disease. Saturated fat is found primarily in animal products and in a few plant oils like:

- butter
- full-fat cheese
- whole milk
- fatty meats
- coconut, palm, and palm kernel oils

Limit trans fat, which is also bad for your heart. Trans fat is often found in:

- baked goods like cookies, muffins, and doughnuts
- snack foods like crackers and chips
- vegetable shortening
- stick margarine
- fried foods
Replenish your body with iron.

Teen boys need iron to support their rapid growth—most boys double their lean body mass between the ages of 10 and 17. Teen girls also need iron to support growth and replace blood lost during menstruation.

To get the iron you need, try eating these foods:

- fish and shellfish
- lean beef
- iron-fortified cereals
- enriched and whole-grain breads
- cooked dried beans and peas like black beans, kidney beans, black-eyed peas, and chickpeas/garbanzo beans
- spinach

Control your food portions.

The portion sizes that you get away from home at a restaurant, grocery store, or school event may contain more food than you need to eat in one sitting. Research shows that when people are served more food, they eat more food. So, how can you control your food portions? Try these tips:

- When eating out, share your meal, order a half-portion, or order an appetizer as a main meal. Be aware that some appetizers are larger than others and can have as many calories as an entree.
- Take at least half of your meal home.
- When eating at home, take one serving out of a package (read the Nutrition Facts to find out how big a serving is) and eat it off a plate instead of eating straight out of a box or bag.
- Avoid eating in front of the TV or while you are busy with other activities. It is easy to lose track of how much you are eating if you eat while doing other things.
- Eat slowly so your brain can get the message that your stomach is full.
- Do not skip meals. Skipping meals may lead you to eat more high-calorie, high-fat foods at your next meal or snack. Eat breakfast every day.

Read food labels.

When you read a food label, pay special attention to:

- **Serving Size.** Check the amount of food in a serving. Do you eat more or less? The "servings per container" line tells you the number of servings in the food package.
- **Calories and Other Nutrients.** Remember, the number of calories and other listed nutrients are for one serving only. Food packages often contain more than one serving.
- **Percent Daily Value.** Look at how much of the recommended daily amount of a nutrient (% DV) is in one serving of food—5-percent DV or
less is low and 20-percent DV or more is high. For example, if your breakfast cereal has 25-percent DV for iron, it is high in iron.

**Nutrition Facts**

<table>
<thead>
<tr>
<th>Amount per Serving</th>
<th>Calories 250</th>
<th>% Daily Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories from Fat</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Total Fat 12g</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>Saturated Fat 3g</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Trans Fat 1.5g</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Cholesterol 30mg</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Sodium 470mg</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Dietary Fiber 0g</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Sugars 5g</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>Protein 5g</td>
<td>4%</td>
<td></td>
</tr>
</tbody>
</table>

* 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>
<thead>
<tr>
<th>Calories 2,000</th>
<th>Calories 2,500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fat</td>
<td>65g</td>
</tr>
<tr>
<td>Sat Fat</td>
<td>21g</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>2g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>300mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>2,400mg</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>300g</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>25g</td>
</tr>
</tbody>
</table>
Plan meals and snacks.

You and your family have busy schedules, which can make eating healthfully a challenge. Planning ahead can help. Think about the meals and snacks you would like for the week—including bag lunches to take to school—and help your family make a shopping list. You may even want to go grocery shopping and cook together.

Jumpstart your day with breakfast.

Did you know that eating breakfast can help you do better in school? By eating breakfast you can increase your attention span and memory, have more energy, and feel less irritable and restless. A breakfast that is part of a healthy diet can also help you maintain an appropriate weight now and in the future.

Bag it! Pack your lunch.

Whether you eat lunch from school or pack your own, this meal should provide you with one-third of the day's nutritional needs. A lunch of chips, cookies, candy, or soda just gives you lots of calories, but not many nutrients. Instead of buying snacks from vending machines at school, bring food from home. Try packing your lunch with a lean turkey sandwich on whole-grain bread, healthy foods like fruits, vegetables, low-fat yogurt, and nuts.

Snack smart.

A healthy snack can contribute to a healthy eating plan and give you the energy boost you need to get through the day. Try these snack ideas, but keep in mind that most of these foods should be eaten in small amounts:

- fruit—any kind—fresh, canned, dried, or frozen
- peanut butter on rice cakes or whole-wheat crackers
- baked potato chips or tortilla chips with salsa
- veggies with low-fat dip
- string cheese, low-fat cottage cheese, or low-fat yogurt
- frozen fruit bars, fruit sorbet, or low-fat frozen yogurt
- vanilla wafers, graham crackers, animal crackers, or fig bars
- popcorn (air popped or low-fat microwave)

Eat dinner with your family.

For many teens, dinner consists of eating on the run, snacking in front of the TV, or nonstop munching from after school to bedtime. Try to eat dinner as a family instead. Believe it or not, when you eat with your family you are more likely to get more fruits, vegetables, and other foods with the vitamins and minerals your body needs. Family meals also help you reconnect after a busy day. Talk to your family about fitting in at least a few meals together throughout the week.

Limit fast food and choose wisely.
Like many teens, you may eat at fast food restaurants often. If so, you are probably taking in a lot of extra calories from added sugar and fat. Just one value-sized fast food meal of a sandwich, fries, and sweetened soda can have more calories, fat, and added sugar than anyone.

The best approach is to limit the amount of fast food you eat. If you do order fast food, try these tips:

- Skip "value-sized" or "super-sized" meals.
- Choose a grilled chicken sandwich or a plain, small burger.
- Use mustard instead of mayonnaise.
- Limit fried foods or remove breading from fried chicken, which can cut half the fat.
- Order garden or grilled chicken salads with light or reduced-calorie dressings.
- Choose water, fat-free, or low-fat milk instead of sweetened soda.

Rethink your drinks.

Soda and other sugary drinks have replaced milk and water as the drinks of choice for teens and adults alike. Yet these drinks are actually more like desserts because they are high in added sugar and calories. In fact, soda and sugar-laden drinks may contribute to weight problems in kids and teens. Try sticking to water, low-fat milk, or fat-free milk.

Physical Activity

Like eating well, physical activity may help you feel good. Being physically active may:

- Help you control your weight, build lean muscle, and reduce your body fat.
- Strengthen your bones.
- Increase flexibility and balance.
- Reduce your risk for chronic diseases like type 2 diabetes, heart disease, and high blood pressure.

Physical activity also has possible emotional and social benefits, including:

- Improving your self-esteem and mood.
- Decreasing feelings of anxiety and depression.
- Helping you do better in school.
- Improving your teamwork skills through sports.
Choose activities you like and stick to them.

Being physically active does not mean you have to join a gym or play a competitive sport. You can take a brisk walk around your neighborhood or even turn up the music and dance. Try some of these ideas:

- Play volleyball
- Swim laps
- Jump rope
- Shoot baskets
- Ride your bike
- Run

Be active every day.

Physical activity should be part of your daily life, whether you play sports, take P.E. or other exercise classes, or even get from place to place by walking or bicycling. Teens should be physically active for 60 minutes or more on most, preferably all, days of the week.

Turn off the TV and get moving!

Can too much TV contribute to weight problems? Several research studies say yes. In fact, one study noted that boys and girls who watched the most TV had more body fat than those who watched TV less than 2 hours a day.

Try to cut back on your TV, computer, and video game time and get moving instead. Here are some tips to help you break the TV habit.

- Tape your favorite shows and watch them later. This cuts down on TV time because you plan to watch specific shows instead of zoning out and flipping through the channels indefinitely.
- Replace after-school TV watching and video game use with physical activities. Get involved with activities at your school or in your community.

Top

Making It Work

Look for chances to move more and eat better at home, at school, and in the community.

It is not easy to maintain a healthy weight in today’s environment. Fast food restaurants on every corner, vending machines at schools, and not enough safe places for physical activity can make it difficult to eat healthfully and be active. Busy schedules may also keep families from fixing and eating dinners together.

Understanding your home, school, and community is an important step in changing your eating and activity habits. Your answers to the questions on this checklist can help you identify barriers and ways to change your behavior to support your success.
Home

1. Is the kitchen stocked with fruits, vegetables, low-fat or fat-free milk and milk products, whole-grain items, and other foods you need to eat healthy?
2. Can you get water and low-fat or fat-free milk instead of soda, sweetened tea, and sugary fruit drinks?
3. Do you pack healthy lunches to take to school?
4. Does your family eat dinner together a few times per week?
5. Do you have sports or exercise equipment at home, including balls, bikes, and jump ropes?
6. Do you limit the hours you spend watching TV or playing video or computer games?
What you can do at school:

Form a group of students and ask the principal for healthier food choices in the cafeteria or in vending machines.
You can also ask for more P.E. classes or school-sponsored physical activities.

School

1. Does the cafeteria offer healthy foods such as salads and fruit?
2. Are there vending machines in school where you can buy snacks and drinks like baked chips, fig bars, and bottled water?
3. Do you take gym class on a regular basis?
4. Are there after-school sports or other physical activities available aside from gym class?
What you can do in your community:

Write to local politicians and newspapers about the need for more places to play and exercise in your community. Also, be creative. Locate programs or places that you can get to by bus or train. Stay after school for activities or join local youth groups (such as church groups) and encourage them to offer opportunities for physical activity. The YMCA, 4-H, and the Boys and Girls Clubs of America are examples of organizations that offer youth health programs.

Community (Where You Live)

1. Are there bike paths, hiking trails, swimming pools, parks, or open fields that are safe to use?
2. Is there a community center, church, or other place that offers classes such as dance, self-defense, or other physical activities?
3. Are there grocery stores that offer fruits, vegetables, and other healthy foods?
4. Do the streets have sidewalks so you can walk safely?

Top
Old habits are hard to break and new ones, especially those related to eating and physical activity, can take months to develop and stick with. Here are some tips to help you in the process:

- **Make changes slowly.** Do not expect to change your eating or activity habits overnight. Changing too much too fast can hurt your chances of success.

- **Look at your current eating and physical activity habits and at ways you can make them healthier.** Use a food and activity journal for 4 or 5 days, and write down everything you eat, your activities, and your emotions. Review your journal to get a picture of your habits. Do you skip breakfast? Are you eating fruits and vegetables every day? Are you physically active most days of the week? Do you eat when you are stressed? Can you substitute physical activity for eating at these times? For tips on keeping a food and activity diary, check out the website of the American Academy of Family Physicians at www.familydoctor.org. You can also buy inexpensive journals at grocery stores, discount stores, or online bookstores.

- **Set a few realistic goals for yourself.** First, try cutting back the number of sweetened sodas you drink by replacing a couple of them with unsweetened beverages. Once you have reduced your sweetened soda intake, try eliminating these drinks from your diet. Then set a few more goals, like drinking low-fat or fat-free milk, eating more fruits, or getting more physical activity each day.

- **Identify your barriers.** Are there unhealthy snack foods at home that are too tempting? Is the food at your cafeteria too high in fat and added sugars? Do you find it hard to resist drinking several sweetened sodas a day because your friends do it? Use the tips above to identify changes you can make.

- **Get a buddy at school or someone at home to support your new habits.** Ask a friend, sibling, parent, or guardian to help you make changes and stick with your new habits.

- **Know that you can do it!** Use the information in this booklet and the resources listed at the end to help you. Stay positive and focused by remembering why you wanted to be healthier--to look, feel, move, and learn better. Accept relapses--if you fail at one of your nutrition or physical activity goals one day, do not give up. Just try again the next day. Also, share this information with your family. They can support you in adopting healthier behaviors.

**Websites**

- www.mypyramid.gov is your access point for the U.S. Department of Agriculture’s (USDA) food guidance system. This website contains general guidance on food and healthy eating, with tips and suggestions for making smart dietary choices. The site also features interactive tools that can customize food and calorie recommendations according to your age, gender, and physical activity level.

- http://www.health.gov/PAGuidelines is where you can learn about the benefits of physical activity. The 2008 Physical Activity Guidelines for Americans, from the U.S. Department of Health and Human Services, provides general information on physical activity for teenagers, including how often you should be active and which activities are best for you.
www.fitness.gov, run by The President's Council on Physical Fitness and Sports, provides regular updates on the Council's activities as well as resources on how to get involved in its programs.

www.girlshealth.gov, developed by the Office on Women's Health, provides girls with reliable health information on physical activity, nutrition, stress reduction, and more.

www.fns.usda.gov/tn is the USDA's Team Nutrition website, which focuses on the role nutritious school meals, nutrition education, and a health-promoting school environment play in helping students learn to enjoy healthy eating and physical activity.

www.nichd.nih.gov/msy is the National Institute of Child Health and Development's Media-Smart Youth: Eat, Think, and Be Active! program. This interactive after-school program is designed to help young people become aware of the media's influence on their food and physical activity choices.

www.cdc.gov/powerfulbones is part of the Centers for Disease Control and Prevention's (CDC) Powerful Bones, Powerful Girls, which is a national health campaign that provides tips on healthy eating and physical activity.

http://ndep.nih.gov/teens/index.aspx, from the National Diabetes Education Program, provides teens with information about diabetes. The website offers publications and resources on how teens can prevent and manage diabetes.

http://hin.nhlbi.nih.gov/portion/keep.htm is a quiz from the National Heart, Lung, and Blood Institute that tests your knowledge of how food portion sizes have changed during the last 20 years.

www.cdc.gov/nccdphp/dnnpa/physical/index.htm, a site sponsored by the CDC's Division of Nutrition and Physical Activity, addresses the importance of physical activity and provides recommendations on how to get started on a fitness program. It includes links to websites that offer health information for teenagers.

Top

Weight-control Information Network

1 WIN Way
Bethesda, MD 20892-3665
Phone: (202) 828-1025
Toll-free number: 1-877-946-4627
FAX: (202) 828-1028
E-mail: win@info.niddk.nih.gov
Internet: http://www.win.niddk.nih.gov

The Weight-control Information Network (WIN) is a national information service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the National Institutes of Health, which is the Federal Government's lead agency responsible for biomedical research on nutrition and obesity. Authorized by Congress (Public Law 103-43), WIN provides the general public, health professionals, the media, and Congress with up-to-date, science-based health information on weight control, obesity, physical
Weight Control Tips for Teens

1. Eat fruits and vegetables everyday.
2. Count your calcium.
3. Power up with lean protein.
4. Go whole grain.
5. Know your fats.
6. Replenish your body with iron.
7. Control your food portions.
8. Read food labels.
10. Jumpstart your day with breakfast.
12. Snack smart.
13. Eat dinner with your family.
15. Be active everyday! Aim for 60 minutes; start with 20 and build up. Turn off the TV.
HCCI Health Unit: Lesson #3  Weight Control Tips for Teens Pre/Post-Test

Name

1. You should strive for at least ___ minutes of moderate activity a day.
   a. 60 minutes
   b. 45 minutes
   c. 30 minutes
   d. 15 minutes

2. Skipping breakfast is a good way to cut back on daily calories to lose weight.
   a. true
   b. false

3. Which of the following nutrients is now known to play a role in weight control?
   a. calcium
   b. vitamin C
   c. vitamin A
   d. don’t know

4. Due to food and drug laws, marketing claims made by fad diets are always true.
   a. true
   b. false

5. “Red Light Foods” are foods:
   a. which we should stop eating completely
   b. which we should eat only occasionally
   c. that have lots of nutrients and few calories
   d. don’t know
Activity: Weight Control Hangman

Suggestions for Weight Control Fill in the Blank:

DON'T SKIP BREAKFAST
CALCIUM COUNTS
EAT LOTS OF FRUITS AND VEGETABLES
BE ACTIVE EVERYDAY
MAKE HALF YOUR GRAINS WHOLE
LIMIT FAST FOOD
HCCI 7th Grade Health Unit

Lesson #4 Portion Distortion

Lesson Plan

Suggested time: 1-2 class periods

I. Goal: To help students recognize the crucial role of correct portion sizes in proper nutrition and weight control.

II. Objectives: Upon completion of this lesson, students will

1. Identify proper serving sizes according to the MyPyramid food guide.
2. Differentiate between portion and serving size.
3. List 3 tips to “down size” portions.

III. Procedures

A. Pre-test

B. Introduction/Motivation

Portion Distortion is a term that describes the increasing serving sizes eaten in America. For the past 20 years, the average portion size has grown larger and larger. For example the average bagel 20 years ago was 3 inches in diameter and 140 calories. Today’s average bagel is 6 inches in diameter and 350 calories. Another example is blueberry muffins. Twenty years ago, a blueberry muffin was about 1 ½ ounces and 210 calories; now it is around 5 ounces and 500 calories! The “Super Size” and “Biggie Size” portions are another way Americans have doubled portions and calories in the fast food world. Doesn’t it make perfect sense that if people are eating twice as many calories because of portion sizes, US child and adult obesity are on the rise? Do you know that there are proper serving sizes for each food group based on the MyPyramid food guide? These serving sizes are scientifically based on the caloric and nutrient composition of the foods. There are actually different serving sizes for people of different ages. Recommended serving sizes are smaller for preschool age children than for junior high students. In this
lesson we will explore some solutions to the portion distortion problem!

C. Study/Learning

1. Definitions

Distortion- twisted or abnormal perception of something

Portion Distortion- when the amount of food we choose to eat is much larger than the recommended serving size on the MyPyramid food guide.

Portion- the amount of food you choose to eat. There is no standard portion size and no single right or wrong portion size.

Serving- a standard amount used to give advice about how much to eat or to identify how many calories and nutrients are in a food.

Visual associations- using everyday household objects or hands to picture proper serving sizes

2. Ask: Did you know that MS has the highest obesity rate in the US? Did you know that the MS Delta has the highest obesity rate in the state? Yes, we are the fattest of the fat, but why?

Allow time to discuss the reasons they interject. Reasons may include: poverty level (buying cheaper, less nutritious foods), inactivity, strong influence of fast foods, many rural people may buy from convenience stores, the "Southern Culture" way of cooking (fried foods, addition of sugar, fat, salt to foods), philosophy of getting the most for our money, thus oversized restaurant portions).

Many people think bigger is better when it comes to the amount of food they are served.

This is not so if you are trying to manage your weight. One of the best ways to stop unwanted pounds from creeping up is to eat sensible portions based on the recommended serving sizes on the MyPyramid food guide poster. Most people do not realize that only 100 extra calories per day for a year can lead to a 10 pound weight gain. Just to give you an idea...100 calories could be found in just 8 oz. of soda or fruit juice or 2 oreos. As you can see, it is easy to let these extra calories add up due to larger portion sizes because an 8 oz. serving of soda is hard
to find; canned sodas are 12 oz. and bottled sodas are usually 16 oz. or 20 oz.

US restaurants and fast food places serve larger portions than other countries. For example, a small order of McDonald’s French fries in France is 3 oz, whereas in America a small order of McDonald’s French fries is 5 ½ oz-almost double! This means Americans are getting twice the calories and fat in the “same size” portion as our foreign friends!

Now consider going to a steak house restaurant. The recommended amount of meat for an entire day is 5 ½ - 6 oz per day. Most restaurant steak portions range anywhere from 8 – 20 oz of meat. One 20 oz. steak would be 3 times the recommended amount of meat for the whole day. When working on weight control, it is still possible to eat at restaurants or fast food places occasionally, just watch portion sizes and limit your dining out to no more than once a week. It is much easier to control portion sizes at school and home.

3. Next give each student a “Portion Distortion” handout. Go over the handout and discuss some of the points on the front and back.

4. Pass the “Portion Placemat” around for students to see

5. Activity

a) Using the MyPyramid Serving Sizes for a Spaghetti Dinner, review proper serving sizes for each food group. Have students answer questions on the handouts. Emphasize the difference in the amount of food we are supposed to eat and the amount of food actually served.

b) Give each student a “Portion Distortion” matching quiz and let them work in pairs to complete.

D. Culmination

1. Question the students to review the lesson: How can we control portions at restaurants?

Possible answers may include:
Choose an appetizer instead of an entrée
Resign from the “clean plate club” and ask for a doggie bag
Ask for dressing on the side. Use a smaller amount.
Order a menu item instead of an “all you can eat” buffet
Don’t “super size” your order

What can we do at home to down size portions?

Possible answers may include:

- Every now and then measure your food portions with measuring cups
- Limit portions of high calorie foods such as cookies, cakes, sweets, fats, oils
- Use a smaller size plate such as a salad plate
- Serve your own plate with sensible servings & don’t take seconds

E. Follow-up

1. Ask students to go online at home or during library time and take both interactive Portion Distortion Quizzes (Part I and Part II) at http://hs2010.nhlbi.nih.gov/portion/. This is just for fun...not for a grade!

2. Post-Test

HCCI Pre/Post-Test answers: 1.b  2.a  3.b  4.c  5.d

HCCI Activity Sheet Answers “How Does My Spaghetti Dinner Measure Up?”

<table>
<thead>
<tr>
<th>Food</th>
<th>Your portion</th>
<th>1 Pyramid Svgs</th>
<th>Pyramid Food Group</th>
<th># Pyramid Svgs You Ate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spaghetti</td>
<td>2 cups</td>
<td>½ cup</td>
<td>Grains</td>
<td>4</td>
</tr>
<tr>
<td>Garlic Bread</td>
<td>2 slices</td>
<td>1 slice</td>
<td>Grains</td>
<td>2</td>
</tr>
<tr>
<td>Tomato Sauce</td>
<td>1 fist</td>
<td>½ cup</td>
<td>Vegetable</td>
<td>2</td>
</tr>
<tr>
<td>Meatballs</td>
<td>4 golf balls</td>
<td>3 oz.</td>
<td>Meats &amp; Beans</td>
<td>&gt; 1</td>
</tr>
<tr>
<td>Green Salad</td>
<td>1 baseball</td>
<td>1 cup</td>
<td>Vegetables</td>
<td>1</td>
</tr>
</tbody>
</table>

Qsts: 1. b  2. c

Materials (30) Serving Size Handout  Portion Placemat  MyPyramid Poster
(60) Pre/Post-Tests  (30) Activity Sheet “My Spaghetti Dinner”
(30) Portion Distortion Tear Pad Sheets  (30) Portion Distortion Matching Quiz
ACTIVITIES
ACTIVITY- A

Name__________________________________________

How Did My Spaghetti Dinner Measure Up? Activity

Last night you ate spaghetti and meatballs for dinner. This is the amount of food you ate:

2 cups (or fists) of pasta
1 fist of tomato sauce
4 ping pong balls of meat
1 baseball of green salad
2 cassette tapes of garlic bread

Using the info from class & on your handouts fill in the chart below. Answer the questions, too.

<table>
<thead>
<tr>
<th>Food</th>
<th>Your portion</th>
<th>One pyramid serving</th>
<th>Pyramid food group</th>
<th>Number of Pyramid servings you ate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spaghetti</td>
<td>2 cups</td>
<td>½ cup</td>
<td>Grains</td>
<td>4</td>
</tr>
<tr>
<td>Garlic Bread</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomato sauce</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meatballs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green Salad</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. According to the MyPyramid food guide, 1 serving from the grain group would be:
   a. 1 ½ cups rice   b. ½ cup pasta   c. 1 large bagel

2. Which of the following is considered a serving from the Fruit Group?
   a. 16 oz. apple juice   b. 1 fist of raisins   c. 1 medium apple
Can you guess popular portion sizes? A portion of each food or group of foods listed on the left matches up in size with one of the things listed on the right. Draw a line to connect each left-hand food with the correct right-hand object.

<table>
<thead>
<tr>
<th>Left Hand</th>
<th>Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cup fruit, vegetables, cooked cereal, pasta or rice</td>
<td>computer mouse</td>
</tr>
<tr>
<td>3 ounces cooked meat, poultry or fish</td>
<td>6 dice</td>
</tr>
<tr>
<td>1 tortilla (1 oz.)</td>
<td>2 checkers</td>
</tr>
<tr>
<td>½ bagel (1 oz.)</td>
<td>baseball</td>
</tr>
<tr>
<td>1 teaspoon of margarine or butter</td>
<td>small soft drink lid (diameter)</td>
</tr>
<tr>
<td>1 tablespoon of peanut butter (1 oz.)</td>
<td>1 can</td>
</tr>
<tr>
<td>1 small baked potato (1 cup)</td>
<td>your thumb tip</td>
</tr>
<tr>
<td>1 pancake or waffle (1 oz.)</td>
<td>deck of cards</td>
</tr>
<tr>
<td>1 medium apple or orange (1 cup)</td>
<td>baseball</td>
</tr>
<tr>
<td>3 cups popcorn (1 oz.)</td>
<td>3 baseballs</td>
</tr>
<tr>
<td>1½ ounces of cheese</td>
<td>small 6 inch plate</td>
</tr>
<tr>
<td>1½ cups of regular soft drink or fruit drink (12 oz.)</td>
<td>1 music CD</td>
</tr>
</tbody>
</table>

Get even smarter about healthy eating at www.kidnetic.com.
Can you guess popular portion sizes? A portion of each food or group of foods listed on the left matches up in size with one of the things listed on the right. Draw a line to connect each left-hand food with the correct right-hand object.

1 cup fruit, vegetables, cooked cereal, pasta or rice
3 ounces cooked meat, poultry or fish
1 tortilla (1 oz.)
½ bagel (1 oz.)
1 teaspoon of margarine or butter
1 tablespoon of peanut butter (1 oz.)
1 small baked potato (1 cup)
1 pancake or waffle (1 oz.)
1 medium apple or orange (1 cup)
3 cups popcorn (1 oz.)
1½ ounces of cheese
1½ cups of regular soft drink or fruit drink (12 oz.)

Get even smarter about healthy eating at www.kidnetic.com.
HANDOUTS
HCCI Lesson #4  Portion Distortion Pre/Post-Test

Name ________________________________

1. What is the proper serving size for raw vegetables?
   a. cupped handful or ½ cup
   b. baseball or 1 cup
   c. golf ball or ¼ cup
   d. don’t know

2. One 3 oz portion of meat would be about the size of a:
   a. deck of cards
   b. small match box
   c. light bulb
   d. don’t know

3. A portion and a serving are exactly the same thing.
   a. true
   b. false

4. Eating just an extra 100 calories per day for a year would cause a _______ pound weight gain.
   a. 1
   b. 5
   c. 10
   d. 20

5. Which of the following is NOT a good way to down size your portions?
   a. use a smaller plate
   b. split a meal with a friend
   c. dine out less often
   d. skip meals to cut calories
### Serving Size Handout

<table>
<thead>
<tr>
<th>Grain Group</th>
<th>Ice cream scoop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ounce or ½ cup cooked rice</td>
<td>Compact disc (CD)</td>
</tr>
<tr>
<td>1 ounce pancake</td>
<td>CD</td>
</tr>
<tr>
<td>1 slice of bread (1 ounce)</td>
<td>Fist - hand sizes vary so this is only a guide, or a baseball</td>
</tr>
<tr>
<td>1 cup of cereal flakes (1 ounce)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vegetable Group</th>
<th>Baseball or a fist</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cup salad greens</td>
<td>Scoop of ice cream or a light bulb</td>
</tr>
<tr>
<td>½ cup cooked broccoli</td>
<td>6 asparagus spears; 7 or 8 baby carrots or carrot sticks or 1 ear of corn on the cob</td>
</tr>
<tr>
<td>½ cup serving</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fruit Group</th>
<th>Tennis ball or a fist</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 medium size fruit</td>
<td>Fist</td>
</tr>
<tr>
<td>1 cup of cut-up fruit</td>
<td>Large egg</td>
</tr>
<tr>
<td>¼ cup raisins</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Milk Group</th>
<th>9-volt battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ½ ounces natural cheese</td>
<td>Pair of dice or your thumb</td>
</tr>
<tr>
<td>1 ounce processed cheese (½ serving)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meat Group</th>
<th>Ping-Pong ball</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 tablespoons peanut butter-equal to</td>
<td>Thumb tip</td>
</tr>
<tr>
<td>1 oz. of meat</td>
<td>Palm, a deck of cards or a cassette tape</td>
</tr>
<tr>
<td>1 tablespoon peanut butter</td>
<td>Checkbook</td>
</tr>
<tr>
<td>3 ounces cooked meat, fish, poultry</td>
<td></td>
</tr>
<tr>
<td>3 ounces grilled/baked fish</td>
<td>Chicken leg and thigh or breast</td>
</tr>
<tr>
<td>3 ounces cooked chicken</td>
<td></td>
</tr>
</tbody>
</table>

Compiled by Ellen Schuster, Oregon State University

<table>
<thead>
<tr>
<th>Bread Group</th>
<th>Vegetable Group</th>
<th>Fruit Group</th>
<th>Dairy Group</th>
<th>Meat/Protein Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 slice bread</td>
<td>½ cup cooked</td>
<td>1 whole medium</td>
<td>1 cup (8 oz) milk</td>
<td>2 eggs</td>
</tr>
<tr>
<td>1 medium muffin</td>
<td>1 cup raw leafy</td>
<td>¼ cup canned</td>
<td>2 slices cheese (2oz)</td>
<td>2-3 oz cooked meat</td>
</tr>
<tr>
<td>4 small crackers</td>
<td>½-¾ cup juice</td>
<td>¼ cup dried</td>
<td>1½ cups frozen yogurt</td>
<td>1 cup cooked beans</td>
</tr>
</tbody>
</table>

**Food Guide Pyramid:**

- **Handful = 1-2 oz.**
  - Example: 1 oz. nuts = 1 handful or 2 oz. pretzels = 2 handfuls

- **Fist = 1 cup**
  - Example: Two servings of pasta or oatmeal

- **Palm = 3 oz.** Example: a cooked serving of meat.

- **Thumb = 1 oz.**
  - Example: piece of cheese

Developed by Utah Department of Health
Portion Distortion

What you’re served

1/2 lb. cheeseburger, French fries, 3/4 cup ketchup, tomato slice and lettuce.

1,345 calories
53 grams fat

What’s one serving

1/4 lb. cheeseburger, half the French fries, 2 tablespoons ketchup, tomato slice and lettuce.

685 calories
33 grams fat

DID YOU KNOW?

Americans are the heaviest of people in developed countries. The U.S. surgeon general has called obesity a national epidemic. 61 percent of Americans are overweight.

- Consuming an extra 100 calories daily for a year, without using them up, can lead to a weight gain of 10 pounds.
- Every gram of carbohydrate or protein equals 4 calories.
- The number of overweight people in the world – 1.1 billion – now equals the number of undernourished people.
- With each decade as we age, we need 100 fewer calories per day.
- Every gram of fat equals 9 calories.
- 10 calories a day (2 hard candies) of unexpended energy puts on an extra pound a year.

© L S Dean
TEACHER RESOURCES
On the Plate....

What does portion distortion mean?
Wanda Koszewski, PhD, RD, LMNT

Portion distortion is a term that describes the increasing serving sizes eaten in America. For the past twenty years, the average portion size has grown. For example, the average bagel 20 years ago was three inches in diameter and 140 calories. Today’s average bagel is six inches in diameter and 350 calories. Twenty years ago, the average blueberry muffin was 1.5 ounces and 210 calories and today it is five ounces and 500 calories. Research has shown that when participants reduced their portion size by 25%, they ate 250 calories less per day and lost about a half a pound per week. Some tips to help you control your portion sizes are:

1. **Trim the trigger foods.** Know the serving size of your favorite foods based on MyPyramid. Use a scale, measuring spoons, or measuring cups to learn what an appropriate portion size should look like. If you do not have these items available, use the following common household objects to estimate portion size:
   - small fist - ½ cup fruit, vegetables, pasta, or rice
   - deck of cards - 3 ounces cooked meat, poultry, or fish
   - small salad plate - 1 tortilla
   - hockey puck - medium bagel
   - large egg - muffin
   - computer mouse - baked potato

2. **See less, eat less.** If the portion is bigger than the recommended portion size, divide it in half and save half for later. When eating out, ask for a to-go box. Before eating your meal, put half of the meal in the box so you are not tempted to overeat. Another option is to split an entrée with someone.

3. **Do not supersize.** Order the smallest size portion for you or your family.

4. **Shrink your plate.** Use small plates that are six inches in diameter, instead of the average plate, which is 10 to 12 inches in diameter.

5. **Develop your own cues to stop eating.** Many people continue to snack, even after the meal is over. Some suggestions to remind yourself that your meal is done are to brush your teeth after eating, chew on sugarless gum, or drink a hot beverage. These "rituals" help cue your mind and body that you are done eating.

6. **Know your hunger cues.** Eat when you are truly hungry and not when you are bored, tired, or thirsty. If you get the urge to eat and do not know if you are truly hungry, try going for a walk or getting a drink of water first.
What Counts as MyPyramid Ounce Equivalents?

**Whole Grain Choices:**
1 slice whole grain bread (such as whole wheat bread)
1 cup ready-to-eat whole grain cereal (such as Total or Cheerios)
½ cup cooked brown rice
5 whole grain crackers (such as Triscuit or Ry Krisp)
3 cups popped popcorn
½ cup cooked whole grain pasta, noodles or macaroni
1 6-inch diameter whole-wheat flour tortilla

**Refined Grain Choices:**
1 slice refined white bread
1 refined white roll (2½ inch diameter)
½ cup cooked white rice or pasta
1 4½-inch diameter pancake made with refined white flour
1 cup of ready-to-eat cereal (such as Rice Krispies or Corn Flakes)

Source: www.mypyramid.gov, USDA

Don’t Let Portion Distortion Fool You!

Serving sizes on food labels help you figure out how much to eat. Most people have difficulty estimating the amount of food in a serving. Common household items can provide important visual cues to help you. Paying attention to serving sizes will ensure that you and your child eat just the right amount.

**Did you know??**

<table>
<thead>
<tr>
<th>3 ounces of meat, poultry or fish</th>
<th>=</th>
<th>A deck of cards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cup ready-to-eat cereal</td>
<td>=</td>
<td>A baseball</td>
</tr>
<tr>
<td>1 6-inch tortilla</td>
<td>=</td>
<td>A 6-inch plate</td>
</tr>
<tr>
<td>1 slice of bread</td>
<td>=</td>
<td>Compact disc</td>
</tr>
<tr>
<td>1 bagel</td>
<td>=</td>
<td>A hockey puck</td>
</tr>
<tr>
<td>1 ½ ounces of natural cheese</td>
<td>=</td>
<td>9-volt battery</td>
</tr>
<tr>
<td>½ cup pasta</td>
<td>=</td>
<td>A small computer mouse</td>
</tr>
</tbody>
</table>
Portion Distortion

1. A soda was only 6 ounces and had about 85 calories. Now an average soda is 20 ounces. How many calories do you think it has?

2. A 3-inch diameter bagel is 140 calories. Today the normal size is 5-6 inches. How many calories do you think are in this size?

3. A 1 oz bag of chips have 150 calories. Take a guess at how much are in a 1.75 oz bag?

4. 2 cups of pasta use to be the norm 20 years ago. Now it is common to see at least 4 cups on your plate at any Italian restaurant. How many calories are in here?

Developed by the Children's Nutrition Research Center

Is Bigger Better?

Anyone eating on the run or at restaurants has probably noticed that food portions have gotten larger. Some portions are called "super sized," while others have simply grown in size and provide enough food for at least two people. With this growth comes an increase in waistlines and body weight.

One way to stop unwanted pounds from trickling on your body is to eat sensible portions. That's easy to say - but not always easy to do. Read through this lesson to help you decide what sensible portions are for you, and your child, to help you stick to those reasonable portion sizes.

How much do you eat?

Suppose you had dinner at an Italian restaurant last night. You ordered spaghetti with meatballs. While you were waiting for your order, you ate 2 slices of garlic bread. How can you tell if this dinner is too much food for you? You need to estimate how much you ate, and then compare that to the Food Guide Pyramid recommendations.

Before we start looking at our portion sizes, let's find out what portion sizes look like:

Serving Size Visual Associations

1 fruit serving = ½ cup canned or 1 medium fruit
(about the size of a tennis ball)
3. List two reasons why "bigger" is not always "better".

1.
2.

What's the difference between Portions and Servings?

- A portion is the amount of food you choose to eat. There is no standard portion size and no single right or wrong portion size.
- A serving is a standard amount used to help give advice about how much to eat, or to identify how many calories and nutrients are in a food.

For example:
You eat a sandwich with 2 slices of bread. The Food Guide Pyramid serving size for bread is 1 slice. Your portion is 2 slices, which equals 2 servings from the Pyramid Grains group. Your servings are one-third of the Pyramid recommendations of 6 serving for people needing 1,600 calories per day.

Another example:
A portion of McDonald's French Fries in Paris is 3 ounces, whereas the portion of fries is 5.5 ounces here in the U.S! This means Americans are getting nearly twice as many calories in the "same size" portions!

Let's take a look at some common fast food meals...

### Fast Food Meals

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8 oz</td>
<td>2 oz</td>
<td>small fries</td>
<td>24 oz</td>
</tr>
<tr>
<td>100</td>
<td>280</td>
<td>210</td>
<td></td>
</tr>
</tbody>
</table>

An 8 oz soda, regular hamburger, and small fries = 590 calories

When super sized it totals = 1440 calories

The difference in calories is 850 calories. It would take you over *2 hours of leisure walking to burn the extra calories. *Based on a 160 pound person.

To compare at your local fast food hamburger stops: Sonic Jr. Burger is 335 calories. Once supersized to the "Supersonic" it totals 930 calories.
Portion Distortion

Turkey Sandwich:

turkey Sandwich on two slices bread 320

10-inch turkey sandwich 820

A turkey deli slices on sandwich bread = 320 calories

10-inch turkey at most fast food sub restaurants = 820 calories

*The difference in calories is 500 calories. It would take you over *1 hour and 25 minutes of bike riding burn the extra calories. *Based on a 160 pound person.

Realize that it is still possible to eat fast food occasionally and follow a sensible diet. However, be cautious of the portions size and see how it relates to our serving size according to the USDA Food Guide Pyramid. It is also wise to limit your time spent at fast foods places to no more than once a week.

Tips to help you choose sensible portions:

- When eating out:
  - Order an appetizer instead of the entrée. (beware of fried appetizers)
  - Ask for the lunch portion. (You might have to pay dinner prices, but it beats the extra calories)
  - Resign from the "clean your plate club" - when you've eaten enough, leave the rest or ask for a "doggie bag".
  - Ask for salad dressing to be served "on the side" so you can add only as much as you want. Instead of pouring the dressing on, try dipping your fork in the dressing then eat your salad.
  - Order an item from the menu instead of the "all you can eat"

- At home:
  - Once or twice, measure your typical portion of foods you eat often. Use standard measuring cups. This will help you estimate the portion size of these foods and similar foods.
  - Be especially careful to limit portions of foods high in calories, such as cookies, cakes, other sweets, and fats, oils, and spreads.
  - Try using a smaller plate for your meal.
Portion Distortion

Put sensible portions on your plate at the beginning of the meal, and don’t take “seconds”.

Many people think that the bigger the portion, the better! But is that so? Not if you’re trying to manage your weight. Remember, the best way to stop unwanted pounds from trickling on your body is to eat sensible portions. So next time your served your spaghetti and meatballs, ask your waiter for an extra plate to share with your family.

Now let's review!

Activity 3:

1. Restaurants in the United States tend to serve bigger portions than in other countries.  
   True  False

2. The dinner served at your favorite steak house is most likely multiple servings and should not be eaten in one setting.  
   True  False

3. A portion is defined at the “amount” of food you choose to eat; whereas, a serving is a standard amount.  
   True  False

4. List three tips to downsize your meals.

1. 

2. 

3. 

5/19/2010
HCCI 7th Grade Health Unit
Lesson #5 The Junk In Your Trunk
Lesson Plan

Suggested time: 1-2 class periods

I. Goal: To enlighten students concerning the negative nutritional and health consequences of eating too much junk food and provide strategies for making better choices on the go

II. Objectives: After completing the lesson “The Junk In Your Trunk”, students will be able to

1. Recognize the excessive calorie, fat, salt, and sugar content of fast foods

2. Identify the relationship between excessive junk food intake and risk of weight gain and poor nutrition

3. Evaluate personal junk food intake and behaviors

4. Demonstrate strategies for making healthier snack and fast food choices

III. Procedures

A. Pre-Test

B. Introduction/Motivation

Ask students: “What comes to mind when you hear the word junk food? Fast foods? “

How many of you have eaten junk or fast food in the last 24 hours? Why is America called the fast food nation?” Allow a few minutes for discussion. Today we are going to take a good look at our personal eating habits pertaining to junk food. Investigating the nutritional values of different fast food chains will open our eyes to the high nutritional costs of eating lots of junk food in spite of its inexpensive monetary cost. One of those nutritional costs includes the risk of becoming overweight due to the high caloric content of fast food meals and snacks like cookies, cakes, chips, candy, etc. Another nutritional cost we must consider is that a diet that depends heavily on fast food and vending type snacks is most likely deficient in the vitamins, minerals, and fiber necessary for good health. And no, taking a vitamin supplement with a junk food diet is not
the same as getting the nutrients through healthy foods.

Now, each student needs to take a few minutes and complete the Handout p.24 “Patterns in Eating Junk Food.” Be as honest as you can in order to learn more about your eating habits. Increased awareness often leads to changes in behavior. Allow students 5-10 minutes to complete the questionnaire.

C. Study/Learning

1. Definitions

**Empty calorie foods** - those foods that contain a lot of calories but very few nutrients, such as sodas, sweets, chips, pastries, and fast foods

**Emotional eating** - eating “comfort” foods as a response to strong feelings such as fear, anger, sadness, or happiness

**Comfort foods** - particular foods that a person eats during periods of stress or strong emotions to get a false sense of comfort. Some fairly common comfort foods are chocolate, cookies, chips & dips, ice cream, macaroni & cheese, and fast food burgers, fries and shakes

**Stress** - the body’s response to a change in its environment; some stress is good and some is bad. Examples would be having the lead part in a class play (good) or having 4 tests scheduled on the same day (bad). Either kind of stress could lead to emotional eating.

2. Snacking is an American pastime! Snacks can contribute to a well-balanced diet if chosen from the food groups on the *MyPyramid* (not the “others” group). Eating small balanced meals with nutritious snacks between meals is really the best way to keep the body’s metabolism working efficiently, too. When we start choosing empty calorie snacks like candy, chips, and sodas, and replacing healthy meals with fast foods, we begin to lose ground nutritionally.

Also, *junk food* tends to have a cumulative effect...**the more we eat, the more we want to eat.** During emotional or stressful times, we need to be very aware of the increased desire for junk food. Before we know it, breaking up with a boyfriend could add an extra 10 pounds. Then we
feel badly about the weight gain and the cycle starts again. When it comes to non-nutritional snacking and eating fast food, never say never! It is unrealistic to swear off these foods forever, so just limit the times and amounts of the “others” list!

3. Give students the handouts “Healthy Fast Food Tips” and “Healthy Snack Attack.” Ask them to read through the suggestions and highlight or underline each idea that seems “doable”.

4. Using the “Rethink Your Drink” poster, discuss how drink calories can really get out of control.

5. Activity

Divide the class into teams of 3-4 people. Give each team a Nutrition in the Fast Lane booklet and 1 copy of the “Fast Food Quiz”. Have the students look up the answers in the booklets and complete the quiz as quickly as possible within their team. The first team to get all the CORRECT answers gets a prize like a homework pass or a piece of fresh fruit.

C. Culmination

1. Discuss some of the findings from the quiz that surprised the students. Allow students who is willing to share some of the suggestions they underlined/highlighted on the suggestion sheets as possible behavior changes pertaining to snacks and fast food. Be sure to praise those who verbalize plans for change.

2. Follow-Up/Extension

Assign students to keep a “Junk Food Diary” (handout) for 1 week to continue to increase their awareness of eating habits.

3. Post-test

HCCI Pre/Post-Test answers

1. c  2. a  3. a  4. b  5. a

Materials: $10 Kroger card to buy a healthy prizes

10 copies Fast Food Quiz

10 copies Nutrition in the Fast Lane

Rethink Your Drink Poster

(30) Healthy Snack Attack

(30) Healthy Fast Food Tips

(30) Patterns in Junk Food Eating/Diary
# Fast Food Quiz

**Name:**

<table>
<thead>
<tr>
<th>Starbucks</th>
<th>Lowest sat. Fat</th>
<th>Highest Sat. fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Starbucks Logo]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Burger King</th>
<th>Main</th>
<th>Side</th>
<th>Drink</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Burger King Logo]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>KFC</th>
<th>1. (most)</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6. (least)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[KFC Logo]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardee's</th>
<th>Big chicken fillet sandwich</th>
<th>Big hot ham and cheese</th>
<th>Original thickburger</th>
<th>Bacon cheese thickburger</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Hardee's Logo]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pizza Hut</th>
<th>Meat lovers</th>
<th>Supreme</th>
<th>Pepperoni</th>
<th>Veggie</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Pizza Hut Logo]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
<td>[Blank]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arbys</th>
<th>Muffin</th>
<th>Number of calories =</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Arbys Logo]</td>
<td>[Blank]</td>
<td>[Blank]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arbys</th>
<th>Spaghetti and meatballs</th>
<th>Number of calories =</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Arbys Logo]</td>
<td>[Blank]</td>
<td>[Blank]</td>
</tr>
<tr>
<td>Restaurant</td>
<td>List</td>
<td>Details</td>
</tr>
<tr>
<td>--------------</td>
<td>-------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>McDonald's</td>
<td>1. (Highest)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. (lowest)</td>
<td></td>
</tr>
<tr>
<td>Subway</td>
<td>1. (highest)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. (lowest)</td>
<td></td>
</tr>
<tr>
<td>Taco Bell</td>
<td>Burrito with the most sodium =</td>
<td></td>
</tr>
<tr>
<td>Wendy's</td>
<td>Pizza</td>
<td>Number of calories =</td>
</tr>
<tr>
<td></td>
<td>Popcorn</td>
<td>Number of calories =</td>
</tr>
</tbody>
</table>
What is the best choice at McDonalds?

Place the following menu items in order of calorie content, from the item which you think has the lowest calorie content to the one which you think has the highest calorie content:

Caesar salad with grilled chicken and Caesar dressing
Sausage McMuffin and egg
Warm cinnamon roll
Premium grilled chicken classic sandwich
Double cheeseburger
### Time for Starbucks?

Place these drinks in order, from the one with the lowest amount of saturated fat to the highest:

<table>
<thead>
<tr>
<th>Drink</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hot Chocolate</strong></td>
<td>Choice of steamed milk with mocha syrup, vanilla syrup and whipped cream.</td>
</tr>
<tr>
<td><strong>Caramel Chocolate Frappuccino® Blended Crème</strong></td>
<td>Rich chocolate, caramel syrup and milk blended with ice, topped with whipped cream and a drizzle of caramel sauce.</td>
</tr>
<tr>
<td><strong>Caffè Latte</strong></td>
<td>Espresso and steamed milk. Rich, full-bodied Starbucks® espresso in steamed milk lightly topped with foam.</td>
</tr>
<tr>
<td><strong>Vanilla Bean Frappuccino® Blended Crème</strong></td>
<td>Vanilla beans and milk blended with ice, topped with whipped cream.</td>
</tr>
</tbody>
</table>
Select the best meal from Burger King

From the menu below, select a drink, main sandwich, and a side dish to create as healthy a meal as you can. Think about total calories AND how much fat each item might contain.

<table>
<thead>
<tr>
<th>Main</th>
<th>Side</th>
<th>Drink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original WHOPPER® Sandwich</td>
<td>Onion Rings (Small)</td>
<td>Diet Coke® (Medium)</td>
</tr>
<tr>
<td>The Angus Steak Burger</td>
<td>French Fries (Small)</td>
<td>Sprite® (Small)</td>
</tr>
<tr>
<td>TENDERCRISP™ Garden Salad</td>
<td>Dutch Apple Pie</td>
<td>Vanilla Shake (Small)</td>
</tr>
<tr>
<td>Original WHOPPER JR.® Sandwich</td>
<td>HERSHEY®'S Sundae Pie</td>
<td>Coca Cola® (Small)</td>
</tr>
</tbody>
</table>
You are at Subway and in need of some protein to help repair the muscles you have damaged while lifting weights. From the following menu items, put them in order, from the one with the highest amount of protein to the lowest.

All sandwiches are 6" size.

Ham
Roast Beef
Sweet onion chicken teriyaki
Turkey Breast
Sugar?

You need some sugar! Which KFC side dish has the most sugar in it? Match the amount of sugar (g) to the correct side dish.

<table>
<thead>
<tr>
<th>Side dishes</th>
<th>Grams of sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macaroni and Cheese</td>
<td>0</td>
</tr>
<tr>
<td>Potato wedges</td>
<td>3</td>
</tr>
<tr>
<td>Three bean salad</td>
<td>18</td>
</tr>
<tr>
<td>Green beans</td>
<td>11</td>
</tr>
<tr>
<td>Cole slaw</td>
<td>2</td>
</tr>
<tr>
<td>Cornbread muffin</td>
<td>7</td>
</tr>
</tbody>
</table>
You know your recommended daily sodium allowance is 2000mg. Which of these Taco Bell burritos will send you over your daily allowance?

**Grilled Stuft Burrito - chicken**
A large, warm, soft, flour tortilla wrapped around marinated and grilled all-white-meat chicken, hearty beans, seasoned rice, a blend of three cheeses — cheddar, pepperjack and mozzarella, creamy Pepper Jack sauce, and Fiesta Salsa, then grilled to perfection.

**Burrito Supreme – chicken**
A warm, soft, flour tortilla wrapped around marinated and grilled all-white-meat chicken, hearty beans, tangy red sauce, crisp, shredded lettuce, real cheddar cheese, diced onions, diced ripe tomatoes, and reduced fat sour cream.

**Fiesta Burrito – chicken**
A warm, soft, flour tortilla wrapped around marinated and grilled all-white-meat chicken, real cheddar cheese, seasoned rice, and Fiesta Salsa.
Saturated Fat?

Hardee's

Philly Cheesesteak Thickburger
charbroiled 1/3-pound, 100 percent Angus beef patty, topped with thin-sliced steak, sautéed peppers and onions and Swiss and American cheeses on a seeded bun.

You need to watch your intake of saturated fat and know that you should limit it to 10% of your total calorie intake (1g of fat = 9 calories; If you should eat 2000 calories a day, you consume no more than 20g of saturated fat daily). Match these menu items with the amount of saturated fat they have.

<table>
<thead>
<tr>
<th>Menu Item</th>
<th>Saturated Fat (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big chicken fillet sandwich</td>
<td>24</td>
</tr>
<tr>
<td>Big hot ham and cheese</td>
<td>21</td>
</tr>
<tr>
<td>Original thickburger</td>
<td>13</td>
</tr>
<tr>
<td>Bacon cheese thickburger</td>
<td>6</td>
</tr>
</tbody>
</table>
Answers

McDonalds
1. Sausage McMuffin and egg – 370 kcal
2. Caesar salad with grilled chicken and Caesar dressing – 410 kcal
3. Premium grilled chicken classic sandwich – 420 kcal
4. Double cheeseburger – 440 kcal
5. Warm cinnamon roll – 460 kcal

Starbucks
1. Caramel chocolate frappucino 2g
2. Caffe latte 9g
3. Vanilla Bean frappucino 10g
4. Hot Chocolate 13g

Burger King

<table>
<thead>
<tr>
<th>Main</th>
<th>Side</th>
<th>Drink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original WHOPPER® Sandwich</td>
<td>Onion Rings (Small) 180, 9g</td>
<td>Diet Coke® (Medium) 0, 0g</td>
</tr>
<tr>
<td>700, 42g</td>
<td>French Fries (Small) 230,</td>
<td>Sprite® (Small) 140, 0g</td>
</tr>
<tr>
<td></td>
<td>11g</td>
<td></td>
</tr>
<tr>
<td>The Angus Steak Burger</td>
<td>Dutch Apple Pie 300, 13g</td>
<td>Vanilla Shake (Small)</td>
</tr>
<tr>
<td>570, 22g</td>
<td></td>
<td>400, 15g</td>
</tr>
<tr>
<td>TENDERCRISP™ Garden Salad</td>
<td>HERSHEY®'S Sundae Pie 300, 18g</td>
<td>Coca Cola® (Small)</td>
</tr>
<tr>
<td>530, 34g</td>
<td></td>
<td>140, 0g</td>
</tr>
<tr>
<td>Original WHOPPER JR.® Sand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>390, 22g</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subway
1. Sweet onion chicken teriyaki 26g
2. Roast Beef 19g
3. Turkey Breast 18g
4. Ham 17g

Taco Bell
Grilled Stuffed Burrito - chicken 2160 mg
Burrito Supreme – chicken 1370 mg
Fiesta Burrito – chicken 1220 mg

KFC

<table>
<thead>
<tr>
<th>Side dishes</th>
<th>Grams of sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macaroni and Cheese</td>
<td>3</td>
</tr>
<tr>
<td>Potato wedges</td>
<td>0</td>
</tr>
<tr>
<td>Three bean salad</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-----</td>
</tr>
<tr>
<td>Green beans</td>
<td>2</td>
</tr>
<tr>
<td>Cole slaw</td>
<td>18</td>
</tr>
<tr>
<td>Cornbread muffin</td>
<td>11</td>
</tr>
</tbody>
</table>

**Pizza Hut**

- Meat lovers – 60mg
- Veggie lovers – 20mg
- Pepperoni and mushroom – 30mg
- Supreme – 35mg

**Hardee’s**

<table>
<thead>
<tr>
<th>Food</th>
<th>Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big chicken fillet sandwich</td>
<td>6g</td>
</tr>
<tr>
<td>Big hot ham and cheese</td>
<td>13g</td>
</tr>
<tr>
<td>Original thickburger</td>
<td>21g</td>
</tr>
<tr>
<td>Bacon cheese thickburger</td>
<td>24g</td>
</tr>
</tbody>
</table>

**Wendy’s and Arby’s**

For Wendy’s and Arby’s I posted two of the slide print outs from the portion distortion quiz for each restaurant and had the students answer those questions.
HCCI Lesson #5 The Junk In My Trunk Pre/Post-Test

Name

1. Which of the following statements is true?
   a. the more junk food and fast food we eat, the more we want
   b. junk food and fast food contain a lot of calories, fat, salt, and sugar
   c. both a & b
   d. none of these

2. Which of these items would be the best choice at a fast food restaurant?
   a. grilled chicken wrap with lettuce & tomato
   b. “biggie” burger
   c. chocolate milkshake
   d. fried apple pie

3. Stress can be good or bad.
   a. true
   b. false

4. Snacking can play an important role in good nutrition in what way/s?
   a. helps calm nerves when feeling anxious
   b. helps meet the daily nutritional requirements
   c. takes the place of meals
   d. don’t know

5. Empty calorie foods are ones that:
   a. include chips, sodas, and candy bars
   b. contain plenty of nutrients and very few calories
   c. you can eat all you want because they have so few calories
   d. don’t know
**JUNK FOOD DIARY**

Junk food is food that contains many calories and few nutrients. Common junk foods are potato chips, corn chips, soft drinks, gum, candy, and cookies. Many people eat junk food when they are bored or when they watch television.

**ACTIVITY**

Keep a Junk Food Diary for a week. Record all the junk food you eat, when and where you eat it, and what your feelings were when you ate it. An example is filled in on the chart below.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SURROUNDINGS</th>
<th>FEELINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>kitchen table before school watching TV</td>
<td>hungry bored</td>
</tr>
<tr>
<td>doughnut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunday</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monday</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PATTERNS IN EATING JUNK FOOD


2. Where are you most often while eating junk food?

3. When are you most likely to eat junk food?

4. What are you usually doing while eating junk food?

5. When are you most likely not to eat junk food?

6. Do you recognize any junk food eating habits you have?

7. What can you do to change your junk food eating habits or patterns?
Healthy Fast Food: Tips for Making Healthier Fast Food Choices

The Big Burger Chains

**Less Healthy choices**
1. Double-patty hamburger with cheese, mayo, special sauce, and bacon
2. Fried chicken sandwich
3. Fried fish sandwich
4. Salad with toppings such as bacon, cheese, and ranch dressing
5. Breakfast burrito with steak
6. French fries
7. Milkshake
8. Chicken "nuggets" or tenders
9. Adding cheese, extra mayo, and special sauces

**Healthier choices**
1. Regular, single-patty hamburger without mayo or cheese
2. Grilled chicken sandwich
3. Veggie burger
4. Garden salad with grilled chicken and low-fat dressing
5. Egg on a muffin
6. Baked potato or a side salad
7. Yogurt parfait
8. Grilled chicken strips
9. Limiting cheese, mayo, and special sauces

The Big Fried Chicken Chains

**Less healthy choices**
1. Fried chicken, original or extra-crispy.
2. Teriyaki wings or popcorn chicken
3. Caesar salad
4. Chicken and biscuit "bowl"
5. Adding extra gravy and sauces

**Healthier choices**
1. Skinless chicken breast without breading
2. Honey BBQ chicken sandwich
3. Garden salad
4. Mashed potatoes
5. Limiting gravy and sauces

Subs, Sandwich and Deli Choices

**Less healthy choices**
1. Foot-long sub
2. High-fat meat such as ham, tuna salad, bacon, meatballs, or steak
3. The "normal" amount of higher-fat (cheddar, American) cheese
4. Adding mayo and special sauces
5. Keeping the sub "as is" with all toppings
6. Choosing white bread or "wraps" which are often higher in fat than normal bread

**Healthier choices**
1. Six-inch sub
2. Lean meat (roast beef, chicken breast, lean ham) or veggies
3. One or two slices of lower-fat cheese (Swiss or mozzarella)
4. Adding low-fat dressing or mustard instead of mayo
5. Adding extra veggie toppings
6. Choosing whole-grain bread or, taking the top slice off your sub and eating it open-faced

The Big Taco Chains

**Less healthy choices**
1. Crispy shell chicken taco
2. Refried beans
3. Steak chalupa
4. Crunch wraps or gordita-type burritos

**Healthier choices**
1. Grilled chicken soft taco
2. Black beans
3. Shrimp ensalada
4. Grilled "fresco" style steak burrito
5. Veggie and bean burrito
6. Limiting sour cream or cheese
Healthy Snack Attack

Why are snacks important?
Snacks are important because they help keep your energy level up between meals so you can do the things you like to do. Eating small, well-balanced snacks between meals can also keep you from eating too much at meal time.

What snacks should I choose?
Foods from the grain, fruit, vegetable, protein, and dairy groups are healthy snacks because they are packed with nutrients. Foods like chips, cookies, and candy are not as healthy because they are loaded with refined grains and sugars that can raise your insulin levels. It's okay to eat these snacks once in a while, but not every day. Remember to pick high fiber, low sugar foods from the grain group and combine them with high protein foods. For example, try an apple or celery and peanut butter, whole-wheat crackers and cheese, whole-wheat pita or carrots and hummus, or yogurt and nuts.

Easy snack ideas

- String cheese
- Fruit such as an apple, orange or grapes
- Popcorn - try the new mini microwave bag
- High fiber cereal like Kashi, Puffs, and shredded wheat (look for more than 5 grams of fiber per serving)
- Nuts
- Energy Bar, such as Balance or Luna (look for <25 grams of carbohydrates per bar)
- Peanut butter and celery, apple, or crackers
- Light yogurt with granola or fruit
- Light yogurt smoothies
- Hummus and carrots
- Cottage cheese
- Cheese and high fiber crackers like Kashi TLC, Ak-Mak, Triscuit, or WASA (look for at least 2 grams of fiber per serving)
- Fruit Salad
- Sugar-free Jell-O with fruit
- Soy nuts
- Raw vegetables (like baby carrots) with reduced-fat ranch dressing or yogurt dip
- Celery with low fat cream cheese
- Sunflower seeds
- Whole wheat bread or English muffin with cheese
TEACHER RESOURCES
25 Healthy Snacks for Kids
When a snack attack strikes, refuel with these nutrition-packed snacks.

**Easy, Tasty (and Healthy) Snacks**
You may need an adult to help with some of these snacks.

1. Peel a banana and dip it in yogurt. Roll in crushed cereal and freeze.
2. Spread celery sticks with peanut butter or low-fat cream cheese. Top with raisins. Enjoy your “ants on a log.”
3. Stuff a whole-grain pita pocket with ricotta cheese and Granny Smith apple slices. Add a dash of cinnamon.
4. Mix together ready-to-eat cereal, dried fruit and nuts in a sandwich bag for an on-the-go snack.
5. Smear a scoop of frozen yogurt on two graham crackers and add sliced banana to make a yummy sandwich.
6. Top low-fat vanilla yogurt with crunchy granola and sprinkle with blueberries.
7. Microwave a small baked potato. Top with reduced-fat cheddar cheese and salsa.
9. Toast a whole grain waffle and top with low-fat yogurt and sliced peaches.
10. Spread peanut butter on apple slices.
12. Make a mini-sandwich with tuna or egg salad on a dinner roll.
13. Sprinkle grated Monterey Jack cheese over a corn tortilla; fold in half and microwave for twenty seconds. Top with salsa.
14. Toss dried cranberries and chopped walnuts in instant oatmeal.
15. Mix together peanut butter and cornflakes in a bowl. Shape into balls and roll in crushed graham crackers.

16. Microwave a cup of tomato or vegetable soup and enjoy with whole grain crackers.

17. Fill a waffle cone with cut-up fruit and top with low-fat vanilla yogurt.

18. Sprinkle grated Parmesan cheese on hot popcorn.


20. Sandwich Cut-Outs: Make a sandwich on whole grain bread. Cut out your favorite shape using a big cookie cutter. Eat the fun shape and the edges, too!

21. Spread mustard on a flour tortilla. Top with a slice of turkey or ham, low-fat cheese and lettuce. Then roll it up.

22. Mini Pizza: Toast an English muffin, drizzle with pizza sauce and sprinkle with low-fat mozzarella cheese.

23. Rocky Road: Break a graham cracker into bite-size pieces. Add to low-fat chocolate pudding along with a few miniature marshmallows.


25. Parfait: Layer vanilla yogurt and mandarin oranges or blueberries in a tall glass. Top with a sprinkle of granola.

Now that you are refueled, take a trip to Planet Power. Play the MyPyramid Blast-Off game at www.mypyramid.gov.

Dip it! Bonus Snacks

- Dip baby carrots and cherry tomatoes in low-fat ranch dressing.
- Dip strawberries or apple slices in low-fat yogurt.
- Dip pretzels in mustard.
- Dip pita chips in hummus.
- Dip graham crackers in applesauce.
- Dip baked tortilla chips in bean dip.
- Dip animal crackers in low-fat pudding.
- Dip bread sticks in salsa.
- Dip a granola bar in low-fat yogurt.
- Dip mini-toaster waffles in cinnamon applesauce.

For a referral to a registered dietitian and for additional food and nutrition information visit www.eatright.org.

The American Dietetic Association is the world's largest organization of food and nutrition professionals. ADA is committed to improving the nation's health and advancing the profession of dietetics through research, education and advocacy.

This tip sheet is provided by:
Healthy Fast Food
TIPS FOR MAKING HEALTHIER FAST FOOD CHOICES

America has been called a “fast food nation” and for good reason. Everyday, one out of four Americans eats fast food. If you are eating out, a fast food restaurant is often the cheapest option, but unfortunately, not usually the healthiest one. Eating just one fast food meal can pack enough calories, sodium and fat for an entire day, but the quick-and-cheap temptation can be hard to resist.

As an informed customer, you can make healthier choices and still enjoy the convenience of fast food restaurants.

IN THIS ARTICLE:
Make healthier choices
Guides to healthier choices
Burger fast food
Fried chicken
Mexican fast food
Subs, sandwich & deli
Asian fast food
Italian fast food
Higher quality fast food
Related links

Learning to make healthier choices at fast food restaurants

Making healthier choices at fast food restaurants is easier if you prepare ahead by checking guides that show you the nutritional content of meal choices at your favorite restaurants. Free downloadable guides help you evaluate your options. If you have a special dietary concern, such as diabetes, heart health or weight loss, the websites of national non-profits provide useful advice. You can also choose to patronize restaurants that focus on natural, high quality food.

If you don’t prepare ahead of time, common sense guidelines help to make your meal healthier. For example, a seemingly healthy salad can be a diet minefield when smothered in high-fat dressing and fried toppings, so choose a salad with fresh veggies, grilled toppings and a lighter dressing. Portion control is also important, as many fast food restaurants serve enough food for several meals in the guise of a single serving.

Top tips for healthy eating at fast food restaurants

Make careful menu selections – pay attention to the descriptions on the menu. Dishes labeled deep-fried, pan-fried, basted, batter-dipped, breaded, creamy, crispy, scalloped, Alfredo, au gratin or in cream sauce are usually high in calories, unhealthy fats or sodium. Order items with more vegetables and choose leaner meats.

Drink water with your meal. Soda is a huge source of hidden calories. One 32-oz Big Gulp with regular cola packs about 425 calories, so one Big Gulp can quickly gulp up a big portion of your daily calorie intake. Try adding a little lemon to your water or ordering unsweetened iced tea.

“Undress” your food. When choosing items, be aware of calorie- and fat-packed salad dressings, spreads, cheese, sour cream, etc. For example, ask for a grilled chicken sandwich without the mayonnaise. You can ask for a packet of ketchup or mustard and add it yourself, controlling how much you put on your sandwich.

Don’t be afraid to special order. Many menu items would be healthy if it weren’t for the way they were prepared. Ask for your vegetables and main dishes to be served without the sauces. Ask for olive oil and vinegar for your salads or order the dressing “on the side” and spoon only a small amount on at a time. If your food is fried or cooked in oil or butter, ask to have it broiled or steamed.

Watch portion size – An average fast food meal can run as high as 1000 calories or more, so choose a smaller portion size, order a side salad instead of fries, and don’t supersize anything. At a typical restaurant, a single serving provides enough for two meals. Take half home or divide the portion with a dining partner. Sharing might make dessert (or something else indulgent) more of an option.

Watch your salt. Fast food restaurant food tends to be very high in sodium, a major contributor to high blood pressure. Don’t add insult to injury by adding more salt.

http://helpguide.org/life/fast_food_nutrition.htm
Healthy Eating on the Run: A Month of Tips

You probably eat out a lot—most Americans do. People are looking for fast, easy and good-tasting foods to fit a busy lifestyle. Whether it’s carry-out, food court, office cafeteria or sit-down restaurant, there are smart choices everywhere. Here are 30 tips to help you eat healthy when eating out.

1. Think ahead and plan where you will eat. Consider what meal options are available. Look for restaurants or carry-out with a wide range of menu items.

2. Take time to look over the menu and make careful selections. Some restaurant menus may have a special section for “healthier” choices.

3. Read restaurant menus carefully for clues to fat and calorie content. Menu terms that can mean less fat and calories: baked, braised, broiled, grilled, poached, roasted, steamed.

4. Menu terms that can mean more fat and calories: batter-fried, pan-fried, buttered, creamed, crispy, breaded. Choose these foods only occasionally and in small portions.

5. Order the regular or child-size portion. Mega-sized servings are probably more than you need. For a lighter meal, order an appetizer in place of a main course.

6. It’s OK to make special requests, just keep them simple. For example, ask for a baked potato or side salad in place of French fries; no mayonnaise or bacon on your sandwich; sauces served on the side.

7. Hunger can drive you to eat too much bread before your meal arrives. Hold the bread or chips until your meal is served. Out of sight, out of mind.

8. Think about your food choices for the entire day. If you’re planning a special restaurant meal in the evening, have a light breakfast and lunch.

10. Tempted by sweet, creamy desserts? Order one dessert with enough forks for everyone at the table to have a bite.

11. Split your order. Share an extra large sandwich or main course with a friend or take half home for another meal.

12. Boost the nutrition in all types of sandwiches by adding tomato, lettuce, peppers or other vegetables.
13. A baked potato offers more fiber, fewer calories and less fat than fries if you skip the sour cream and butter. Top your potato with broccoli and a sprinkle of cheese or salsa.

14. At the sandwich shop, choose lean beef, ham, turkey or chicken on whole grain bread. Ask for mustard, ketchup, salsa or lowfat spreads. And, don’t forget the veggies.

15. In place of fries or chips, choose a sidesalad, fruit or baked potato. Or, share a regular order of fries with a friend.

16. Enjoy ethnic foods such as Chinese stir fry, vegetable-stuffed pita or Mexican fajitas. Go easy on the sour cream, cheese and guacamole.

17. At the salad bar, pile on the dark leafy greens, carrots, peppers and other fresh vegetables. Lighten up on mayonnaise-based salads and high-fat toppings. Enjoy fresh fruit as your dessert.

18. Eat your lower-calorie food first. Soup or salad is a good choice. Follow up with a light main course.

19. Ask for sauces, dressings and toppings to be served “on the side.” Then you control how much you eat.

20. Pass up all-you-can-eat specials, buffets and unlimited salad bars if you tend to eat too much.

21. If you do choose the buffet, fill up on salads and vegetables first. Take no more than two trips and use the small plate that holds less food.

22. Load up your pizza with vegetable toppings. If you add meat, make it lean ham, Canadian bacon, chicken or shrimp.

23. Look for a sandwich wrap in a soft tortilla. Fillings such as rice mixed with seafood, chicken, or grilled vegetables are usually lower in fat and calories.

24. Build a better breakfast sandwich: replace bacon or sausage with Canadian bacon or ham and order your sandwich on a whole grain English muffin or bagel.

25. Be size-wise about muffins, bagels, croissants and biscuits. A jumbo muffin has more than twice the fat and calories of the regular size.

26. Try a smoothie made with juice, fruit and yogurt for a light lunch or snack.

27. Refrigerate carry-out or leftovers if the food won’t be eaten right away. Toss foods kept at room temperature for more than two hours.

28. Grabbing dinner at the supermarket deli? Select rotisserie chicken, salad-in-a-bag and freshly baked bread. Or, try sliced lean roast beef, onion rolls, potato salad and fresh fruit.

29. Always eating on the go? Tuck portable, nonperishable foods in your purse, tote, briefcase or backpack for an on-the-run meal. Some suggestions are peanut butter and crackers, granola bars, a piece of fresh fruit, trail mix, single serve packages of whole grain cereal or crackers.

30. For desk-top dining, keep single-serve packages of crackers, fruit, peanut butter, soup, or tuna in your desk for a quick lunch.

For a referral to a registered dietitian and for additional food and nutrition information visit www.eatright.org.

The American Dietetic Association is the world’s largest organization of food and nutrition professionals. ADA is committed to improving the nation’s health and advancing the profession of dietetics through research, education and advocacy.

This tip sheet is provided by:

Au‌thored by American Dietetic Association staff registered dietitians.


©2009 ADA. Reproduction of this tip sheet is permitted for educational purposes. Reproduction for sales purposes is not authorized.
HCCI 7th Grade Health Unit

Lesson #6 Is Diet Related to Disease?

Lesson Plan Suggested time: 2 class periods

I. Goal: To inform students about several diet related diseases and to focus on lifestyle prevention strategies for these diseases: obesity, diabetes, hypertension & heart disease, cancer, arthritis, osteoporosis, dental disease, and eating disorders.

II. Objectives: After completing this lesson, students will be able to:

1. List at least 4 diet related diseases.

2. List at least 4 diet and lifestyle prevention strategies.

3. Work in groups to create diet and disease posters for each disease studied.

III. Procedures

A. Pre-Test

B. Introduction/Motivation

What do obesity, diabetes, hypertension & cardiovascular disease, cancer, osteoporosis, osteoarthritis, eating disorders, and dental disease have to do with YOU?

A lot....science tells us that these diseases all take many years to develop into full blown illnesses and that means that some of you may have already begun the disease process. For example heart disease may actually begin around age 6-8, but it gets worse as we grow older, especially if a young person makes poor lifestyle choices and continues bad habits with diet, exercise, weight control, smoking and drinking. Some people inherit the chance of developing a disease such as diabetes. Passing down diseases from one generation to the next is called genetics. We cannot change what disease traits our parents pass along to us any more than we can change our eyes from blue to brown. However, we can make good food choices and exercise habits and other healthy lifestyle behaviors that can prevent or prolong the onset of many diseases. In this lesson we will learn about several diseases that are directly related to what we eat and how we
can prevent them.

Ask: How many of you know someone with type 2 diabetes, high blood pressure, cancer, or heart disease? What do you think it is like to have a disease like this? Allow a few minutes for discussion and comments about different diseases and people they know.

C. Study/Learning

1. Give students an overview of the following diet related diseases. Disease definitions/diet problems/prevention:

**Diet Related Disease**—any disease where poor diet is a risk factor for development of the disease

**Obesity**—excessive fat deposits in the body that lead to health problems, caused by taking in too many calories. BMI > 95th % for teens. Prevention: Reach & maintain healthy weight through good nutrition and exercise. If weight is a problem, start making healthy choices NOW!

The longer people remain overweight or obese, the more likely diet related diseases will develop.

**Type 2 Diabetes**—the kind of diabetes that is usually seen in overweight or obese adults and children. In cases of diabetes, the body is not able to get glucose into the cells for energy due to a lack of insulin (the hormone released from the pancreas that carries glucose into the cells).

Prevention: Reach and maintain healthy weight, eat sensible portions from all food groups, make half your grains whole, limit sweets and junk food to help control weight, exercise daily.

**Cardiovascular Disease/Hypertension**—another name for heart disease caused by the build-up of fatty plaque or crud inside the blood vessels. Over time blood vessels become partially or totally blocked causing hypertension (high blood pressure), heart attack or stroke. High saturated (animal fats) and trans fats, salt, and excessive calorie intake contribute to this disease.

Prevention: Eat a diet rich in fruits and vegetables, fish, fat-free dairy, whole grains and low in total fat (especially saturated and trans fats), and low in sodium (salt) and exercise daily.

**Cancer**—abnormal cell growth which may be life-threatening or not. There are many types and
may be found anywhere in the body. Being overweight or obese and a lack of antioxidants (protective agents) in diet are associated with colon, breast, and prostate cancer as well as others. Prevention: Reach and maintain healthy weight, diet low in total fat (especially saturated and trans fats), diet high in fruits, vegetables and whole grains, and exercise regularly.

Osteoarthritis-inflammation and pain in a person’s joints often caused by the pressure of excess body weight over a period of years. Prevention: Reach and maintain healthy body weight by cutting calories and exercise daily.

Osteoporosis- brittle bones caused from calcium loss from the long bones over years. A long-term lack of calcium and excessive intake of sodas and protein in the diet often contribute to this disease. Prevention: Weight bearing exercise like walking, diet rich in fat-free dairy (calcium & Vit.D), moderate protein intake, restrict sodas.

Dental Disease-cavities are the most common type of dental problem and are actually infections in which acids produced by bacteria cause the teeth to decay; often caused by poor oral hygiene and frequently eating sticky carbohydrate foods. Prevention: Eat cheese, yogurt, and milk for a protective effect against cavities; limit concentrated sweets and brush teeth regularly, especially after eating carbohydrates.

Eating Disorders- psychological diseases that involve extremely unhealthy eating behaviors like anorexia nervosa, bulimia, and compulsive overeating.

2. Activity

Divide the class into 8 groups. Assign each group one of the diet related diseases above.

Give each group a mini-poster sheet, markers and the “Disease Information Packet” for each group’s particular disease.* Have each group research the info and create a poster about their disease. Make sure they include prevention measures for each disease. If time permits, have each group choose a spokesperson and let him/her present the info on the group’s disease poster to the rest of the class. Then display posters around the room or on a
school bulletin board.

*Note: If computers and internet are available, this could be a two day activity allowing
groups to research their diseases on-line for the first day and preparing/presenting the
posters on the next day.

D. Culmination

In closing, ask the students: “What did you find surprising about all the different
diseases discussed?” Give time for answers. See if students can name 4 of the diseases studied
today and prevention strategies for each one. Emphasize the fact that the healthy habits they
develop NOW in 7th grade will pay off for the rest of their lives...as they graduate from high
school, go to college, get jobs, raise a family, and play with grandchildren. No one wants to
miss out on the fun of living healthy at any stage of life!

E. Follow-Up/Extension

Assign students the task of interviewing a person they know with any of the chronic diseases
mentioned in the lesson. This person could be a parent, aunt, grandparent, church friend or
teacher. Have the students write the answers to the questions on a piece of paper and write a
paragraph about what they learned in the interview. Sample interview questions:

-What is the name of your disease?

-When were you diagnosed?

-What symptoms or ailments did you have?

-How do you treat your disease?

-Are you supposed to follow a special diet?

-How has your disease changed your life?

F. Post-Test

HCCI Lesson #6 Pre/Post-Test answers: 1. c  2. d  3. a  4. a  5. B

Materials: 60 Pre/Post-Tests* markers* 8 mini-poster sheets, 8 disease information packets (1 per
group)
ACTIVITIES
Preventing Diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) suggests these steps to prevent or control type 2 diabetes:

- **Reach and maintain a reasonable body weight**—Losing even a few pounds can help reduce your risk of developing type 2 diabetes because it helps your body use insulin more effectively. People who lose between 5 and 7 percent of their body weight significantly reduce their risk of type 2 diabetes. For example, if you weigh 200 pounds, losing only 10 pounds could make a difference.

- **Avoid crash diets.** Instead, eat less of the foods you usually have. Limit the amount of fat you eat.

- **Increase your physical activity.** Aim for at least 30 minutes of exercise most days of the week.

- **Set a reasonable weight-loss goal, such as losing 1 pound a week.**

- **Take a hard look at the serving sizes of the foods you eat.** Reduce serving sizes of main courses (such as meat), desserts and foods high in fat. Increase the amount of fruits and vegetables. Limit your fat intake to about 25 percent of your total calories. Your doctor or dietitian can help you with a meal plan that emphasizes weight loss.

- **Keep a food and exercise log.** Write down what you eat, how much you exercise—anything that helps keep you on track.

- **Take your prescribed medications.** Some people need medication to help control their blood pressure or cholesterol levels. If you do, take your medicines as directed. Ask your doctor whether there are any medicines you can take to prevent type 2 diabetes.

Read More "A Relentless Illness—Fighting Diabetes" Articles
A Relentless Illness—Fighting Diabetes [Index: &type=20.html] / Types of Diabetes [Index: &type=21.html] / Preventing Diabetes / Type 2 Diabetes Widespread in Adults [Index: &type=13.html]
Diabetes Public Health Resource

2007 National Diabetes Fact Sheet

Return to the Table of Contents (factsheet07.htm#contents)

General Information

What is diabetes?

Diabetes is a group of diseases marked by high levels of blood glucose (definitions.htm#Blood glucose) resulting from defects in insulin (definitions.htm#Insulin) production, insulin (definitions.htm#Insulin) action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.

Types of diabetes

**Type 1 diabetes** was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin (definitions.htm#Insulin) that regulates blood glucose (definitions.htm#Blood glucose). To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. Several clinical trials for preventing type 1 diabetes are currently in progress or are being planned.

**Type 2 diabetes** was previously called non–insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin (definitions.htm#Insulin) resistance, a disorder in which the cells do not use insulin (definitions.htm#Insulin) properly. As the need for insulin (definitions.htm#Insulin) rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders.

**Gestational diabetes** is a form of glucose intolerance (definitions.htm#Glucose intolerance) diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. It is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose (definitions.htm#Blood glucose) levels to avoid complications in the infant. Immediately after pregnancy, 5% to 10% of women...
with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 40% to 60% chance of developing diabetes in the next 5–10 years.

**Other types** of diabetes result from specific genetic conditions (such as **maturity-onset diabetes of youth** (definitions.htm#Maturity-onset diabetes of the young)), surgery, medications, infections, pancreatic disease, and other illnesses. Such types of diabetes account for 1% to 5% of all diagnosed cases.

---

**Treating diabetes**

Diabetes can lead to serious complications, such as blindness, kidney damage, cardiovascular disease, and lower-limb amputations, but people with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids.

- Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Some people with type 2 diabetes may also need insulin to control their blood glucose.
- To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump.
- Among adults with diagnosed diabetes (type 1 or type 2), 14% take insulin only, 13% take both insulin and oral medication, 57% take oral medication only, and 16% do not take either insulin or oral medication. Medications for each individual with diabetes will often change during the course of the disease.
- Many people with diabetes also need to take medications to control their **cholesterol** (definitions.htm#cholesterol) and **blood pressure** (definitions.htm#Blood pressure).
- Self-management education or training is a key step in improving health outcomes and quality of life. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions.

---

![Pie chart showing treatment with insulin or oral medication among adults with diagnosed diabetes, United States, 2004–2006](figuretext07.htm#fig1)

Source: 2004–2006 National Health Interview Survey
Prediabetes: Impaired glucose tolerance and impaired fasting glucose

Prediabetes is a condition in which individuals have blood glucose levels higher than normal but not high enough to be classified as diabetes. People with prediabetes have an increased risk of developing type 2 diabetes, heart disease, and stroke.

- People with prediabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT). Some people have both IFG and IGT.
- IFG is a condition in which the fasting blood sugar level is 100 to 125 milligrams per deciliter (mg/dL) after an overnight fast. This level is higher than normal but not high enough to be classified as diabetes.
- IGT is a condition in which the blood sugar level is 140 to 199 mg/dL after a 2-hour oral glucose tolerance test. This level is higher than normal but not high enough to be classified as diabetes.
- In 1988–1994, among U.S. adults aged 40–74 years, 33.8% had IFG, 15.4% had IGT, and 40.1% had prediabetes (IGT or IFG or both). More recent data for IFG, but not IGT, are available and are presented below.

Prevalence of impaired fasting glucose in people younger than 20 years of age, United States, 2007

- In 1999–2000, 7.0% of U.S. adolescents aged 12–19 years had IFG.

Prevalence of impaired fasting glucose in people aged 20 years or older, United States, 2007

- In 2003–2006, 25.9% of U.S. adults aged 20 years or older had IFG (35.4% of adults aged 60 years or older). Applying this percentage to the entire U.S. population in 2007 yields an estimated 57 million American adults aged 20 years or older with IFG, suggesting that at least 57 million American adults had prediabetes in 2007.
- After adjusting for population age and sex differences, IFG prevalence among U.S. adults aged 20 years or older in 2003–2006 was 21.1% for non-Hispanic blacks, 25.1% for non-Hispanic whites, and 26.1% for Mexican Americans.

Prevention or delay of diabetes

- Progression to diabetes among those with prediabetes is not inevitable. Studies have shown that people with prediabetes who lose weight and increase their physical activity can prevent or delay diabetes and return their blood glucose levels to normal.
- The Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, showed that lifestyle intervention reduced developing diabetes by 58% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.
HCCI Lesson #6 Hypertension & Cardiovascular Disease

Information Packet

(High Blood Pressure)

Group 2
Preventing Diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) suggests these steps to prevent or control type 2 diabetes:

- **Reach and maintain a reasonable body weight**—Losing even a few pounds can help reduce your risk of developing type 2 diabetes because it helps your body use insulin more effectively. People who lose between 5 and 7 percent of their body weight significantly reduce their risk of type 2 diabetes. For example, if you weigh 200 pounds, losing only 10 pounds could make a difference.
- **Avoid crash diets.** Instead, eat less of the foods you usually have. Limit the amount of fat you eat.
- **Increase your physical activity.** Aim for at least 30 minutes of exercise most days of the week.
- **Set a reasonable weight-loss goal,** such as losing 1 pound a week.
- **Take a hard look at the serving sizes of the foods you eat.** Reduce serving sizes of main courses (such as meat), desserts and foods high in fat. Increase the amount of fruits and vegetables. Limit your fat intake to about 25 percent of your total calories. Your doctor or dietitian can help you with a meal plan that emphasizes weight loss.
- **Keep a food and exercise log.** Write down what you eat, how much you exercise—anything that helps keep you on track.
- **Take your prescribed medications.** Some people need medication to help control their blood pressure or cholesterol levels. If you do, take your medicines as directed. Ask your doctor whether there are any medicines you can take to prevent type 2 diabetes.

Read More "A Relentless Illness—Fighting Diabetes" Articles
A Relentless Illness—Fighting Diabetes [Fall08gg010-13.html] / Types of Diabetes [Fall08gg011.html] / Preventing Diabetes / Type 2 Diabetes Widespread in Adults [Fall08gg013.html]
Diabetes Public Health Resource

2007 National Diabetes Fact Sheet

Return to the Table of Contents (factsheet07.htm#contents)

General Information

What is diabetes?

Diabetes is a group of diseases marked by high levels of blood glucose (definitions.htm#Blood glucose) resulting from defects in insulin (definitions.htm#Insulin) production, insulin (definitions.htm#Insulin) action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.

Types of diabetes

**Type 1 diabetes** was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin (definitions.htm#Insulin) that regulates blood glucose (definitions.htm#Blood glucose). To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. Several clinical trials for preventing type 1 diabetes are currently in progress or are being planned.

**Type 2 diabetes** was previously called non–insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin (definitions.htm#Insulin) resistance, a disorder in which the cells do not use insulin (definitions.htm#Insulin) properly. As the need for insulin (definitions.htm#Insulin) rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders.

**Gestational diabetes** is a form of glucose intolerance (definitions.htm#Glucose intolerance) diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. It is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose (definitions.htm#Blood glucose) levels to avoid complications in the infant. Immediately after pregnancy, 5% to 10% of women
with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 40% to 60% chance of developing diabetes in the next 5–10 years.

Other types of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth (definitions.htm#Maturity-onset diabetes of the young)), surgery, medications, infections, pancreatic disease, and other illnesses. Such types of diabetes account for 1% to 5% of all diagnosed cases.

Treating diabetes

Diabetes can lead to serious complications, such as blindness, kidney damage, cardiovascular disease, and lower-limb amputations, but people with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids.

- Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Some people with type 2 diabetes may also need insulin to control their blood glucose.
- To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump.
- Among adults with diagnosed diabetes (type 1 or type 2), 14% take insulin only, 13% take both insulin and oral medication, 57% take oral medication only, and 16% do not take either insulin or oral medication. Medications for each individual with diabetes will often change during the course of the disease.
- Many people with diabetes also need to take medications to control their cholesterol (definitions.htm#cholesterol) and blood pressure (definitions.htm#Blood pressure).
- Self-management education or training is a key step in improving health outcomes and quality of life. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions.

<table>
<thead>
<tr>
<th>Treatment with insulin or oral medication among adults with diagnosed diabetes, United States, 2004–2006</th>
</tr>
</thead>
</table>

- Insulin only
- Insulin and oral medication
- Oral medication only
- No medication

Source: 2004–2006 National Health Interview Survey
Prediabetes: Impaired glucose tolerance and impaired fasting glucose

Prediabetes is a condition in which individuals have blood glucose levels higher than normal but not high enough to be classified as diabetes. People with prediabetes have an increased risk of developing type 2 diabetes, heart disease, and stroke.

- People with prediabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT). Some people have both IFG and IGT.
- IFG is a condition in which the fasting blood sugar level is 100 to 125 milligrams per deciliter (mg/dL) after an overnight fast. This level is higher than normal but not high enough to be classified as diabetes.
- IGT is a condition in which the blood sugar level is 140 to 199 mg/dL after a 2-hour oral glucose tolerance test. This level is higher than normal but not high enough to be classified as diabetes.
- In 1988–1994, among U.S. adults aged 40–74 years, 33.8% had IFG, 15.4% had IGT, and 40.1% had prediabetes (IGT or IFG or both). More recent data for IFG, but not IGT, are available and are presented below.

Prevalence of impaired fasting glucose in people younger than 20 years of age, United States, 2007

- In 1999–2000, 7.0% of U.S. adolescents aged 12–19 years had IFG.

Prevalence of impaired fasting glucose in people aged 20 years or older, United States, 2007

- In 2003–2006, 25.9% of U.S. adults aged 20 years or older had IFG (35.4% of adults aged 60 years or older). Applying this percentage to the entire U.S. population in 2007 yields an estimated 57 million American adults aged 20 years or older with IFG, suggesting that at least 57 million American adults had prediabetes in 2007.
- After adjusting for population age and sex differences, IFG prevalence among U.S. adults aged 20 years or older in 2003–2006 was 21.1% for non-Hispanic blacks, 25.1% for non-Hispanic whites, and 26.1% for Mexican Americans.

Prevention or delay of diabetes

- Progression to diabetes among those with prediabetes is not inevitable. Studies have shown that people with prediabetes who lose weight and increase their physical activity can prevent or delay diabetes and return their blood glucose levels to normal.
- The Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, showed that lifestyle intervention reduced developing diabetes by 58% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.
HCCI Lesson #6 Eating Disorders

Group 3
Preventing Diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) suggests these steps to prevent or control type 2 diabetes:

- Reach and maintain a reasonable body weight—Losing even a few pounds can help reduce your risk of developing type 2 diabetes because it helps your body use insulin more effectively. People who lose between 5 and 7 percent of their body weight significantly reduce their risk of type 2 diabetes. For example, if you weigh 200 pounds, losing only 10 pounds could make a difference.
- Avoid crash diets. Instead, eat less of the foods you usually have. Limit the amount of fat you eat.
- Increase your physical activity. Aim for at least 30 minutes of exercise most days of the week.
- Set a reasonable weight-loss goal, such as losing 1 pound a week.
- Take a hard look at the serving sizes of the foods you eat. Reduce serving sizes of main courses (such as meat), desserts and foods high in fat. Increase the amount of fruits and vegetables. Limit your fat intake to about 25 percent of your total calories. Your doctor or dietitian can help you with a meal plan that emphasizes weight loss.
- Keep a food and exercise log. Write down what you eat, how much you exercise—anything that helps keep you on track.
- Take your prescribed medications. Some people need medication to help control their blood pressure or cholesterol levels. If you do, take your medicines as directed. Ask your doctor whether there are any medicines you can take to prevent type 2 diabetes.

Read More "A Relentless Illness—Fighting Diabetes" Articles
A Relentless Illness—Fighting Diabetes (http://medlineplus.gov/ency/0192.html) / Types of Diabetes (http://genetics.od.nih.gov/GENETICS/Conditions/Type2DiabetesWidespreadInAdults/htm) / Preventing Diabetes / Type 2 Diabetes Widespread in Adults (http://genetics.od.nih.gov/GENETICS/Conditions/Type2DiabetesWidespreadInAdults/)
2007 National Diabetes Fact Sheet

Return to the Table of Contents (factsheet07.htm#contents)

General Information

What is diabetes?

Diabetes is a group of diseases marked by high levels of blood glucose (definitions.htm#Blood glucose) resulting from defects in insulin (definitions.htm#Insulin) production, insulin (definitions.htm#Insulin) action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.

Types of diabetes

Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin (definitions.htm#Insulin) that regulates blood glucose (definitions.htm#Blood glucose). To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. Several clinical trials for preventing type 1 diabetes are currently in progress or are being planned.

Type 2 diabetes was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin (definitions.htm#Insulin) resistance, a disorder in which the cells do not use insulin (definitions.htm#Insulin) properly. As the need for insulin (definitions.htm#Insulin) rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders.

Gestational diabetes is a form of glucose intolerance (definitions.htm#Glucose intolerance) diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. It is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose (definitions.htm#Blood glucose) levels to avoid complications in the infant. Immediately after pregnancy, 5% to 10% of women
with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 40% to 60% chance of developing diabetes in the next 5–10 years.

Other types of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth (definitions.htm#Maturity-onset diabetes of the young)), surgery, medications, infections, pancreatic disease, and other illnesses. Such types of diabetes account for 1% to 5% of all diagnosed cases.

Treating diabetes

Diabetes can lead to serious complications, such as blindness, kidney damage, cardiovascular disease, and lower-limb amputations, but people with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids.

- Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Some people with type 2 diabetes may also need insulin to control their blood glucose.
- To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump.
- Among adults with diagnosed diabetes (type 1 or type 2), 14% take insulin only, 13% take both insulin and oral medication, 57% take oral medication only, and 16% do not take either insulin or oral medication. Medications for each individual with diabetes will often change during the course of the disease.
- Many people with diabetes also need to take medications to control their cholesterol (definitions.htm#cholesterol) and blood pressure (definitions.htm#Blood pressure).
- Self-management education or training is a key step in improving health outcomes and quality of life. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions.

Treatment with insulin or oral medication among adults with diagnosed diabetes, United States, 2004–2006

[Diagram showing the percentage of adults using insulin only, insulin and oral medication, oral medication only, and no medication.]

Source: 2004–2006 National Health Interview Survey
Prediabetes: Impaired glucose tolerance and impaired fasting glucose

Prediabetes is a condition in which individuals have blood glucose levels higher than normal but not high enough to be classified as diabetes. People with prediabetes have an increased risk of developing type 2 diabetes, heart disease, and stroke.

- People with prediabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT). Some people have both IFG and IGT.
- IFG is a condition in which the fasting blood sugar level is 100 to 125 milligrams per deciliter (mg/dL) after an overnight fast. This level is higher than normal but not high enough to be classified as diabetes.
- IGT is a condition in which the blood sugar level is 140 to 199 mg/dL after a 2-hour oral glucose tolerance test. This level is higher than normal but not high enough to be classified as diabetes.
- In 1988–1994, among U.S. adults aged 40–74 years, 33.8% had IFG, 15.4% had IGT, and 40.1% had prediabetes (IGT or IFG or both). More recent data for IFG, but not IGT, are available and are presented below.

Prevalence of impaired fasting glucose in people younger than 20 years of age, United States, 2007

- In 1999–2000, 7.0% of U.S. adolescents aged 12–19 years had IFG.

Prevalence of impaired fasting glucose in people aged 20 years or older, United States, 2007

- In 2003–2006, 25.9% of U.S. adults aged 20 years or older had IFG (35.4% of adults aged 60 years or older). Applying this percentage to the entire U.S. population in 2007 yields an estimated 57 million American adults aged 20 years or older with IFG, suggesting that at least 57 million American adults had prediabetes in 2007.
- After adjusting for population age and sex differences, IFG prevalence among U.S. adults aged 20 years or older in 2003–2006 was 21.1% for non-Hispanic blacks, 25.1% for non-Hispanic whites, and 26.1% for Mexican Americans.

Prevention or delay of diabetes

- Progression to diabetes among those with prediabetes is not inevitable. Studies have shown that people with prediabetes who lose weight and increase their physical activity can prevent or delay diabetes and return their blood glucose levels to normal.
- The Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, showed that lifestyle intervention reduced developing diabetes by 58% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.
Preventing Diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) suggests these steps to prevent or control type 2 diabetes:

- **Reach and maintain a reasonable body weight**—Losing even a few pounds can help reduce your risk of developing type 2 diabetes because it helps you use insulin more effectively. People who lose between 5 and 7 percent of their body weight significantly reduce their risk of type 2 diabetes. For example, if you weigh 200 pounds, losing only 10 pounds could make a difference.
- **Avoid crash diets.** Instead, eat less of the foods you usually have. Limit the amount of fat you eat.
- **Increase your physical activity.** Aim for at least 30 minutes of exercise most days of the week.
- **Set a reasonable weight-loss goal, such as losing 1 pound a week.**
- **Take a hard look at the serving sizes of the foods you eat.** Reduce serving sizes of main courses (such as meat), desserts and foods high in fat. Increase the amount of fruits and vegetables. Limit your fat intake to about 25 percent of your total calories. Your doctor or diettian can help you with a meal plan that emphasizes weight loss.
- **Keep a food and exercise log.** Write down what you eat, how much you exercise—anything that helps keep you on track.
- **Take your prescribed medications.** Sometimes people need medication to help control their blood pressure or cholesterol levels. If you do, take your medicines as directed. Ask your doctor whether there are any medicines you can take to prevent type 2 diabetes.

Read More "A Relentless Illness—Fighting Diabetes" Articles
A Relentless Illness—Fighting Diabetes (fall06sep10-13.html) / Types of Diabetes (fall06sep11.html) / Preventing Diabetes / Type 2 Diabetes Widespread in Adults (fall06aug1.html)
2007 National Diabetes Fact Sheet

General Information

What is diabetes?

Diabetes is a group of diseases marked by high levels of blood glucose (definitions.htm#Blood glucose) resulting from defects in insulin (definitions.htm#Insulin) production, insulin (definitions.htm#Insulin) action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.

Types of diabetes

**Type 1 diabetes** was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin (definitions.htm#Insulin) that regulates blood glucose (definitions.htm#Blood glucose). To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. Several clinical trials for preventing type 1 diabetes are currently in progress or are being planned.

**Type 2 diabetes** was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin (definitions.htm#Insulin) resistance, a disorder in which the cells do not use insulin (definitions.htm#Insulin) properly. As the need for insulin (definitions.htm#Insulin) rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders.

**Gestational diabetes** is a form of glucose intolerance (definitions.htm#Glucose intolerance) diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. It is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose (definitions.htm#Blood glucose) levels to avoid complications in the infant. Immediately after pregnancy, 5% to 10% of women
with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 40% to 60% chance of developing diabetes in the next 5–10 years.

Other types of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth (definitions.htm#Maturity-onset diabetes of the young)), surgery, medications, infections, pancreatic disease, and other illnesses. Such types of diabetes account for 1% to 5% of all diagnosed cases.

Treating diabetes

Diabetes can lead to serious complications, such as blindness, kidney damage, cardiovascular disease, and lower-limb amputations, but people with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids.

- Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Some people with type 2 diabetes may also need insulin to control their blood glucose.
- To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump.
- Among adults with diagnosed diabetes (type 1 or type 2), 14% take insulin only, 13% take both insulin and oral medication, 57% take oral medication only, and 16% do not take either insulin or oral medication. Medications for each individual with diabetes will often change during the course of the disease.
- Many people with diabetes also need to take medications to control their cholesterol (definitions.htm#cholesterol) and blood pressure (definitions.htm#Blood pressure).
- Self-management education or training is a key step in improving health outcomes and quality of life. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions.

<table>
<thead>
<tr>
<th>Treatment with insulin or oral medication among adults with diagnosed diabetes, United States, 2004–2006</th>
</tr>
</thead>
</table>

- Insulin only
- Insulin and oral medication
- Oral medication only
- No medication

Source: 2004–2006 National Health Interview Survey
Prediabetes: Impaired glucose tolerance and impaired fasting glucose

Prediabetes is a condition in which individuals have blood glucose levels higher than normal but not high enough to be classified as diabetes. People with prediabetes have an increased risk of developing type 2 diabetes, heart disease, and stroke.

- People with prediabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT). Some people have both IFG and IGT.
- IFG is a condition in which the fasting blood sugar level is 100 to 125 milligrams per deciliter (mg/dL) after an overnight fast. This level is higher than normal but not high enough to be classified as diabetes.
- IGT is a condition in which the blood sugar level is 140 to 199 mg/dL after a 2-hour oral glucose tolerance test. This level is higher than normal but not high enough to be classified as diabetes.
- In 1988–1994, among U.S. adults aged 40–74 years, 33.8% had IFG, 15.4% had IGT, and 40.1% had prediabetes (IGT or IFG or both). More recent data for IFG, but not IGT, are available and are presented below.

Prevalence of impaired fasting glucose in people younger than 20 years of age, United States, 2007

- In 1999–2000, 7.0% of U.S. adolescents aged 12–19 years had IFG.

Prevalence of impaired fasting glucose in people aged 20 years or older, United States, 2007

- In 2003–2006, 25.9% of U.S. adults aged 20 years or older had IFG (35.4% of adults aged 60 years or older). Applying this percentage to the entire U.S. population in 2007 yields an estimated 57 million American adults aged 20 years or older with IFG, suggesting that at least 57 million American adults had prediabetes in 2007.
- After adjusting for population age and sex differences, IFG prevalence among U.S. adults aged 20 years or older in 2003–2006 was 21.1% for non-Hispanic blacks, 25.1% for non-Hispanic whites, and 26.1% for Mexican Americans.

Prevention or delay of diabetes

- Progression to diabetes among those with prediabetes is not inevitable. Studies have shown that people with prediabetes who lose weight and increase their physical activity can prevent or delay diabetes and return their blood glucose levels to normal.
- The Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, showed that lifestyle intervention reduced developing diabetes by 58% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.
HCCI Lesson #6 Osteoporosis Information Packet

Group 5
The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) suggests these steps to prevent or control type 2 diabetes:

- **Reach and maintain a reasonable body weight**—Losing even a few pounds can help reduce your risk of developing type 2 diabetes because it helps your body use insulin more effectively. People who lose between 5 and 7 percent of their body weight significantly reduce their risk of type 2 diabetes. For example, if you weigh 200 pounds, losing only 10 pounds could make a difference.

- **Avoid crash diets**. Instead, eat less of the foods you usually have. Limit the amount of fat you eat.

- **Increase your physical activity**. Aim for at least 30 minutes of exercise most days of the week.

- **Set a reasonable weight-loss goal**, such as losing 1 pound a week.

- **Take a hard look at the serving sizes of the foods you eat**. Reduce serving sizes of main courses (such as meat), desserts and foods high in fat. Increase the amount of fruits and vegetables. Limit your fat intake to about 25 percent of your total calories. Your doctor or dietitian can help you with a meal plan that emphasizes weight loss.

- **Keep a food and exercise log**. Write down what you eat, how much you exercise—anything that helps keep you on track.

- **Take your prescribed medications**. Some people need medication to help control their blood pressure or cholesterol levels. If you do, take your medicines as directed. Ask your doctor whether there are any medicines you can take to prevent type 2 diabetes.
2007 National Diabetes Fact Sheet

General Information
What is diabetes?
Diabetes is a group of diseases marked by high levels of blood glucose (definitions.htm#Blood glucose) resulting from defects in insulin (definitions.htm#Insulin) production, insulin (definitions.htm#Insulin) action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.

Types of diabetes
**Type 1 diabetes** was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body’s immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin (definitions.htm#Insulin) that regulates blood glucose (definitions.htm#Blood glucose). To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. Several clinical trials for preventing type 1 diabetes are currently in progress or are being planned.

**Type 2 diabetes** was previously called non–insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin (definitions.htm#Insulin) resistance, a disorder in which the cells do not use insulin (definitions.htm#Insulin) properly. As the need for insulin (definitions.htm#Insulin) rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders.

**Gestational diabetes** is a form of glucose intolerance (definitions.htm#Glucose intolerance) diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. It is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose (definitions.htm#Blood glucose) levels to avoid complications in the infant. Immediately after pregnancy, 5% to 10% of women...
with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 40% to 60% chance of developing diabetes in the next 5–10 years.

Other types of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth (definitions.htm#Maturity-onset diabetes of the young)), surgery, medications, infections, pancreatic disease, and other illnesses. Such types of diabetes account for 1% to 5% of all diagnosed cases.

Treating diabetes
Diabetes can lead to serious complications, such as blindness, kidney damage, cardiovascular disease, and lower-limb amputations, but people with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids.

- Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Some people with type 2 diabetes may also need insulin to control their blood glucose.
- To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump.
- Among adults with diagnosed diabetes (type 1 or type 2), 14% take insulin only, 13% take both insulin and oral medication, 57% take oral medication only, and 16% do not take either insulin or oral medication. Medications for each individual with diabetes will often change during the course of the disease.
- Many people with diabetes also need to take medications to control their cholesterol (definitions.htm#cholesterol) and blood pressure (definitions.htm#Blood Pressure).
- Self-management education or training is a key step in improving health outcomes and quality of life. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions.

Treatment with insulin or oral medication among adults with diagnosed diabetes, United States, 2004–2006

![Pie chart showing the distribution of treatments among adults with diagnosed diabetes.](figuretext07.htm#fig1)

Source: 2004–2006 National Health Interview Survey
Prediabetes: Impaired glucose tolerance and impaired fasting glucose

Prediabetes is a condition in which individuals have blood glucose levels higher than normal but not high enough to be classified as diabetes. People with prediabetes have an increased risk of developing type 2 diabetes, heart disease, and stroke.

- People with prediabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT). Some people have both IFG and IGT.
- IFG is a condition in which the fasting blood sugar level is 100 to 125 milligrams per deciliter (mg/dL) after an overnight fast. This level is higher than normal but not high enough to be classified as diabetes.
- IGT is a condition in which the blood sugar level is 140 to 199 mg/dL after a 2-hour oral glucose tolerance test. This level is higher than normal but not high enough to be classified as diabetes.
- In 1988–1994, among U.S. adults aged 40–74 years, 33.8% had IFG, 15.4% had IGT, and 40.1% had prediabetes (IGT or IFG or both). More recent data for IFG, but not IGT, are available and are presented below.

Prevalence of impaired fasting glucose in people younger than 20 years of age, United States, 2007

- In 1999–2000, 7.0% of U.S. adolescents aged 12–19 years had IFG.

Prevalence of impaired fasting glucose in people aged 20 years or older, United States, 2007

- In 2003–2006, 25.9% of U.S. adults aged 20 years or older had IFG (35.4% of adults aged 60 years or older). Applying this percentage to the entire U.S. population in 2007 yields an estimated 57 million American adults aged 20 years or older with IFG, suggesting that at least 57 million American adults had prediabetes in 2007.
- After adjusting for population age and sex differences, IFG prevalence among U.S. adults aged 20 years or older in 2003–2006 was 21.1% for non-Hispanic blacks, 25.1% for non-Hispanic whites, and 26.1% for Mexican Americans.

Prevention or delay of diabetes

- Progression to diabetes among those with prediabetes is not inevitable. Studies have shown that people with prediabetes who lose weight and increase their physical activity can prevent or delay diabetes and return their blood glucose levels to normal.
- The Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, showed that lifestyle intervention reduced developing diabetes by 58% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.
HCCI Lesson #6 Osteoarthritis Information Packet

Group 6
Preventing Diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) suggests these steps to prevent or control type 2 diabetes:

- **Reach and maintain a reasonable body weight**—Losing even a few pounds can help reduce your risk of developing type 2 diabetes because it helps your body use insulin more effectively. People who lose between 5 and 7 percent of their body weight significantly reduce their risk of type 2 diabetes. For example, if you weigh 200 pounds, losing only 10 pounds could make a difference.
- **Avoid crash diets.** Instead, eat less of the foods you usually have. Limit the amount of fat you eat.
- **Increase your physical activity.** Aim for at least 30 minutes of exercise most days of the week.
- **Set a reasonable weight-loss goal, such as losing 1 pound a week.**
- **Take a hard look at the serving sizes of the foods you eat.** Reduce serving sizes of main courses (such as meat), desserts and foods high in fat. Increase the amount of fruits and vegetables. Limit your fat intake to about 25 percent of your total calories. Your doctor or dietitian can help you with a meal plan that emphasizes weight loss.
- **Keep a food and exercise log.** Write down what you eat, how much you exercise—anything that helps keep you on track.
- **Take your prescribed medications.** Some people need medication to help control their blood pressure or cholesterol levels. If you do, take your medicines as directed. Ask your doctor whether there are any medicines you can take to prevent type 2 diabetes

Read More "A Relentless Illness—Fighting Diabetes" Articles

A Relentless Illness—Fighting Diabetes [fall06awp013.html] / Types of Diabetes [fall06awp014.html] / Preventing Diabetes / Type 2 Diabetes Widespread in Adults [fall06awp015.html]
Diabetes Public Health Resource

2007 National Diabetes Fact Sheet

Return to the Table of Contents (factsheet07.htm#contents)

General Information

What is diabetes?

Diabetes is a group of diseases marked by high levels of blood glucose (definitions.htm#Blood glucose) resulting from defects in insulin (definitions.htm#Insulin) production, insulin (definitions.htm#Insulin) action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.

Types of diabetes

**Type 1 diabetes** was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin (definitions.htm#Insulin) that regulates blood glucose (definitions.htm#Blood glucose). To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. Several clinical trials for preventing type 1 diabetes are currently in progress or are being planned.

**Type 2 diabetes** was previously called non–insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin (definitions.htm#Insulin) resistance, a disorder in which the cells do not use insulin (definitions.htm#Insulin) properly. As the need for insulin (definitions.htm#Insulin) rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders.

**Gestational diabetes** is a form of glucose intolerance (definitions.htm#Glucose intolerance) diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. It is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose (definitions.htm#Blood glucose) levels to avoid complications in the infant. Immediately after pregnancy, 5% to 10% of women
with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 40% to 60% chance of developing diabetes in the next 5–10 years.

**Other types** of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth [Maturity-onset diabetes of the young]), surgery, medications, infections, pancreatic disease, and other illnesses. Such types of diabetes account for 1% to 5% of all diagnosed cases.

---

**Treating diabetes**

Diabetes can lead to serious complications, such as blindness, kidney damage, cardiovascular disease, and lower-limb amputations, but people with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids.

- Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Some people with type 2 diabetes may also need insulin to control their blood glucose.
- To survive, people with type 1 diabetes must have insulin delivered by injection or a pump.
- Among adults with diagnosed diabetes (type 1 or type 2), 14% take insulin only, 13% take both insulin and oral medication, 57% take oral medication only, and 16% do not take either insulin or oral medication. Medications for each individual with diabetes will often change during the course of the disease.
- Many people with diabetes also need to take medications to control their cholesterol and blood pressure.
- Self-management education or training is a key step in improving health outcomes and quality of life. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions.

---

**Treatment with insulin or oral medication among adults with diagnosed diabetes, United States, 2004–2006**

![Pie chart](figuretext07.htm#fig1)

Source: 2004–2006 National Health Interview Survey
Prediabetes: Impaired glucose tolerance and impaired fasting glucose

Prediabetes is a condition in which individuals have blood glucose levels higher than normal but not high enough to be classified as diabetes. People with prediabetes have an increased risk of developing type 2 diabetes, heart disease, and stroke.

- People with prediabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT). Some people have both IFG and IGT.
- IFG is a condition in which the fasting blood sugar level is 100 to 125 milligrams per deciliter (mg/dL) after an overnight fast. This level is higher than normal but not high enough to be classified as diabetes.
- IGT is a condition in which the blood sugar level is 140 to 199 mg/dL after a 2-hour oral glucose tolerance test. This level is higher than normal but not high enough to be classified as diabetes.
- In 1988–1994, among U.S. adults aged 40–74 years, 33.8% had IFG, 15.4% had IGT, and 40.1% had prediabetes (IGT or IFG or both). More recent data for IFG, but not IGT, are available and are presented below.

Prevalence of impaired fasting glucose in people younger than 20 years of age, United States, 2007

- In 1999–2000, 7.0% of U.S. adolescents aged 12–19 years had IFG.

Prevalence of impaired fasting glucose in people aged 20 years or older, United States, 2007

- In 2003–2006, 25.9% of U.S. adults aged 20 years or older had IFG (35.4% of adults aged 60 years or older). Applying this percentage to the entire U.S. population in 2007 yields an estimated 57 million American adults aged 20 years or older with IFG, suggesting that at least 57 million American adults had prediabetes in 2007.
- After adjusting for population age and sex differences, IFG prevalence among U.S. adults aged 20 years or older in 2003–2006 was 21.1% for non-Hispanic blacks, 25.1% for non-Hispanic whites, and 26.1% for Mexican Americans.

Prevention or delay of diabetes

- Progression to diabetes among those with prediabetes is not inevitable. Studies have shown that people with prediabetes who lose weight and increase their physical activity can prevent or delay diabetes and return their blood glucose levels to normal.
- The Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, showed that lifestyle intervention reduced developing diabetes by 58% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.
HCCI Lesson #6 Dental Health Information Packet

Group 7
Preventing Diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) suggests these steps to prevent or control type 2 diabetes:

- **Reach and maintain a reasonable body weight**—Losing even a few pounds can help reduce your risk of developing type 2 diabetes because it helps your body use insulin more effectively. People who lose between 5 and 7 percent of their body weight significantly reduce their risk of type 2 diabetes. For example, if you weigh 200 pounds, losing only 10 pounds could make a difference.

- **Avoid crash diets.** Instead, eat less of the foods you usually have. Limit the amount of fat you eat.

- **Increase your physical activity.** Aim for at least 30 minutes of exercise most days of the week.

- **Set a reasonable weight-loss goal, such as losing 1 pound a week.**

- **Take a hard look at the serving sizes of the foods you eat.** Reduce serving sizes of main courses (such as meat), desserts and foods high in fat. Increase the amount of fruits and vegetables. Limit your fat intake to about 25 percent of your total calories. Your doctor or dietitian can help you with a meal plan that emphasizes weight loss.

- **Keep a food and exercise log.** Write down what you eat, how much you exercise—anything that helps keep you on track.

- **Take your prescribed medications.** Some people need medication to help control their blood pressure or cholesterol levels. If you do, take your medicines as directed. Ask your doctor whether there are any medicines you can take to prevent type 2 diabetes

---

Read More "A Relentless Illness—Fighting Diabetes" Articles

A Relentless Illness—Fighting Diabetes [fulltext.html] / Types of Diabetes [fulltext.html] / Preventing Diabetes / Type 2 Diabetes Widespread in Adults [fulltext.html]
Diabetes Public Health Resource

2007 National Diabetes Fact Sheet

Return to the Table of Contents (factsheet07.htm#contents)

General Information

What is diabetes?

Diabetes is a group of diseases marked by high levels of blood glucose (definitions.htm#Blood glucose) resulting from defects in insulin (definitions.htm#Insulin) production, insulin (definitions.htm#Insulin) action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.

Types of diabetes

Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin (definitions.htm#Insulin) that regulates blood glucose (definitions.htm#Blood glucose). To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. Several clinical trials for preventing type 1 diabetes are currently in progress or are being planned.

Type 2 diabetes was previously called non–insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin (definitions.htm#Insulin) resistance, a disorder in which the cells do not use insulin (definitions.htm#Insulin) properly. As the need for insulin (definitions.htm#Insulin) rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders.

Gestational diabetes is a form of glucose intolerance (definitions.htm#Glucose intolerance) diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. It is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose (definitions.htm#Blood glucose) levels to avoid complications in the infant. Immediately after pregnancy, 5% to 10% of women...
with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 40% to 60% chance of developing diabetes in the next 5–10 years.

**Other types** of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth [definitions.htm#Maturity-onset diabetes of the young]), surgery, medications, infections, pancreatic disease, and other illnesses. Such types of diabetes account for 1% to 5% of all diagnosed cases.

---

**Treating diabetes**

Diabetes can lead to serious complications, such as blindness, kidney damage, cardiovascular disease, and lower-limb amputations, but people with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids.

- Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Some people with type 2 diabetes may also need insulin to control their blood glucose.
- To survive, people with type 1 diabetes must have insulin (definitions.htm#insulin) delivered by injection or a pump.
- Among adults with diagnosed diabetes (type 1 or type 2), 14% take insulin only, 13% take both insulin and oral medication, 57% take oral medication only, and 16% do not take either insulin or oral medication. Medications for each individual with diabetes will often change during the course of the disease.
- Many people with diabetes also need to take medications to control their cholesterol (definitions.htm#cholesterol) and blood pressure (definitions.htm#Blood pressure).
- Self-management education or training is a key step in improving health outcomes and quality of life. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions.

---

**Treatment with insulin or oral medication among adults with diagnosed diabetes, United States, 2004–2006**

![Image](figuretext07.htm#fig1)

*Source: 2004–2006 National Health Interview Survey*
Prediabetes: Impaired glucose tolerance and impaired fasting glucose

Prediabetes is a condition in which individuals have blood glucose levels higher than normal but not high enough to be classified as diabetes. People with prediabetes have an increased risk of developing type 2 diabetes, heart disease, and stroke.

- People with prediabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT). Some people have both IFG and IGT.
- IFG is a condition in which the fasting blood sugar level is 100 to 125 milligrams per deciliter (mg/dL) after an overnight fast. This level is higher than normal but not high enough to be classified as diabetes.
- IGT is a condition in which the blood sugar level is 140 to 199 mg/dL after a 2-hour oral glucose tolerance test. This level is higher than normal but not high enough to be classified as diabetes.
- In 1988–1994, among U.S. adults aged 40–74 years, 33.8% had IFG, 15.4% had IGT, and 40.1% had prediabetes (IGT or IFG or both). More recent data for IFG, but not IGT, are available and are presented below.

Prevalence of impaired fasting glucose in people younger than 20 years of age, United States, 2007

- In 1999–2000, 7.0% of U.S. adolescents aged 12–19 years had IFG.

Prevalence of impaired fasting glucose in people aged 20 years or older, United States, 2007

- In 2003–2006, 25.9% of U.S. adults aged 20 years or older had IFG (35.4% of adults aged 60 years or older). Applying this percentage to the entire U.S. population in 2007 yields an estimated 57 million American adults aged 20 years or older with IFG, suggesting that at least 57 million American adults had prediabetes in 2007.
- After adjusting for population age and sex differences, IFG prevalence among U.S. adults aged 20 years or older in 2003–2006 was 21.1% for non-Hispanic blacks, 25.1% for non-Hispanic whites, and 26.1% for Mexican Americans.

Prevention or delay of diabetes

- Progression to diabetes among those with prediabetes is not inevitable. Studies have shown that people with prediabetes who lose weight and increase their physical activity can prevent or delay diabetes and return their blood glucose levels to normal.
- The Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, showed that lifestyle intervention reduced developing diabetes by 58% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.
Preventing Diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) suggests these steps to prevent or control type 2 diabetes:

1. Reach and maintain a reasonable body weight—Losing even a few pounds can help reduce your risk of developing type 2 diabetes because it helps your body use insulin more effectively. People who lose between 5 and 7 percent of their body weight significantly reduce their risk of type 2 diabetes. For example, if you weigh 200 pounds, losing only 10 pounds could make a difference.

2. Avoid crash diets. Instead, eat less of the foods you usually have. Limit the amount of fat you eat.

3. Increase your physical activity. Aim for at least 30 minutes of exercise most days of the week.

4. Set a reasonable weight-loss goal, such as losing 1 pound a week.

5. Take a hard look at the serving sizes of the foods you eat. Reduce serving sizes of main courses (such as meat), desserts and foods high in fat. Increase the amount of fruits and vegetables. Limit your fat intake to about 25 percent of your total calories. Your doctor or dietitian can help you with a meal plan that emphasizes weight loss.

6. Keep a food and exercise log. Write down what you eat, how much you exercise—anything that helps keep you on track.

7. Take your prescribed medications. Some people need medication to help control their blood pressure or cholesterol levels. If you do, take your medicines as directed. Ask your doctor whether there are any medicines you can take to prevent type 2 diabetes.

Read More "A Relentless Illness—Fighting Diabetes" Articles
A Relentless Illness—Fighting Diabetes/health99/t2dhtml/ Types of Diabetes /health99/d2.html/ Preventing Diabetes / Type 2 Diabetes Widespread in Adults /health99/d2.html

Fall 2006 Issue: Volume 1 Number 1 Page 12

Diabetes Public Health Resource

2007 National Diabetes Fact Sheet
Return to the Table of Contents (factsheet07.htm#contents)

General Information

What is diabetes?
Diabetes is a group of diseases marked by high levels of blood glucose (definitions.htm#Blood glucose) resulting from defects in insulin (definitions.htm#Insulin) production, insulin (definitions.htm#Insulin) action, or both. Diabetes can lead to serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.

Types of diabetes

Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin (definitions.htm#Insulin) that regulates blood glucose (definitions.htm#Blood glucose). To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump. This form of diabetes usually strikes children and young adults, although disease onset can occur at any age. In adults, type 1 diabetes accounts for 5% to 10% of all diagnosed cases of diabetes. Risk factors for type 1 diabetes may be autoimmune, genetic, or environmental. There is no known way to prevent type 1 diabetes. Several clinical trials for preventing type 1 diabetes are currently in progress or are being planned.

Type 2 diabetes was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. In adults, type 2 diabetes accounts for about 90% to 95% of all diagnosed cases of diabetes. It usually begins as insulin (definitions.htm#Insulin) resistance, a disorder in which the cells do not use insulin (definitions.htm#Insulin) properly. As the need for insulin (definitions.htm#Insulin) rises, the pancreas gradually loses its ability to produce it. Type 2 diabetes is associated with older age, obesity, family history of diabetes, history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Native Hawaiians or Other Pacific Islanders are at particularly high risk for type 2 diabetes and its complications. Type 2 diabetes in children and adolescents, although still rare, is being diagnosed more frequently among American Indians, African Americans, Hispanic/Latino Americans, and Asians/Pacific Islanders.

Gestational diabetes is a form of glucose intolerance (definitions.htm#Glucose intolerance) diagnosed during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans, and American Indians. It is also more common among obese women and women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose (definitions.htm#Blood glucose) levels to avoid complications in the infant. Immediately after pregnancy, 5% to 10% of women...
with gestational diabetes are found to have diabetes, usually type 2. Women who have had gestational diabetes have a 40% to 60% chance of developing diabetes in the next 5–10 years.

**Other types** of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth [definitions.htm#Maturity-onset diabetes of the young]), surgery, medications, infections, pancreatic disease, and other illnesses. Such types of diabetes account for 1% to 5% of all diagnosed cases.

### Treating diabetes

Diabetes can lead to serious complications, such as blindness, kidney damage, cardiovascular disease, and lower-limb amputations, but people with diabetes can lower the occurrence of these and other diabetes complications by controlling blood glucose, blood pressure, and blood lipids.

- Many people with type 2 diabetes can control their blood glucose by following a healthy meal plan and exercise program, losing excess weight, and taking oral medication. Some people with type 2 diabetes may also need insulin to control their blood glucose.
- To survive, people with type 1 diabetes must have insulin (definitions.htm#Insulin) delivered by injection or a pump.
- Among adults with diagnosed diabetes (type 1 or type 2), 14% take insulin only, 13% take both insulin and oral medication, 57% take oral medication only, and 16% do not take either insulin or oral medication. Medications for each individual with diabetes will often change during the course of the disease.
- Many people with diabetes also need to take medications to control their cholesterol (definitions.htm#cholesterol) and blood pressure (definitions.htm#Blood pressure).
- Self-management education or training is a key step in improving health outcomes and quality of life. It focuses on self-care behaviors, such as healthy eating, being active, and monitoring blood sugar. It is a collaborative process in which diabetes educators help people with or at risk for diabetes gain the knowledge and problem-solving and coping skills needed to successfully self-manage the disease and its related conditions.

---

### Treatment with insulin or oral medication among adults with diagnosed diabetes, United States, 2004–2006

- **14%** Insulin only
- **57%** Insulin and oral medication
- **13%** Oral medication only
- **16%** No medication

*Source: 2004–2006 National Health Interview Survey*
Detailed information (figuretext07.htm#fig1) about this graph is available.

**Prediabetes: Impaired glucose tolerance and impaired fasting glucose**

Prediabetes is a condition in which individuals have blood glucose levels higher than normal but not high enough to be classified as diabetes. People with prediabetes have an increased risk of developing type 2 diabetes, heart disease, and stroke.

- People with prediabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT). Some people have both IFG and IGT.
- IFG is a condition in which the fasting blood sugar level is 100 to 125 milligrams per deciliter (mg/dL) after an overnight fast. This level is higher than normal but not high enough to be classified as diabetes.
- IGT is a condition in which the blood sugar level is 140 to 199 mg/dL after a 2-hour oral glucose tolerance test. This level is higher than normal but not high enough to be classified as diabetes.
- In 1988–1994, among U.S. adults aged 40–74 years, 33.8% had IFG, 15.4% had IGT, and 40.1% had prediabetes (IGT or IFG or both). More recent data for IFG, but not IGT, are available and are presented below.

---

**Prevalence of impaired fasting glucose in people younger than 20 years of age, United States, 2007**

- In 1999–2000, 7.0% of U.S. adolescents aged 12–19 years had IFG.

---

**Prevalence of impaired fasting glucose in people aged 20 years or older, United States, 2007**

- In 2003–2006, 25.9% of U.S. adults aged 20 years or older had IFG (35.4% of adults aged 60 years or older). Applying this percentage to the entire U.S. population in 2007 yields an estimated 57 million American adults aged 20 years or older with IFG, suggesting that at least 57 million American adults had prediabetes in 2007.
- After adjusting for population age and sex differences, IFG prevalence among U.S. adults aged 20 years or older in 2003–2006 was 21.1% for non-Hispanic blacks, 25.1% for non-Hispanic whites, and 26.1% for Mexican Americans.

---

**Prevention or delay of diabetes**

- Progression to diabetes among those with prediabetes is not inevitable. Studies have shown that people with prediabetes who lose weight and increase their physical activity can prevent or delay diabetes and return their blood glucose levels to normal.
- The Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, showed that lifestyle intervention reduced developing diabetes by 58% during a 3-year period. The reduction was even greater, 71%, among adults aged 60 years or older.
- Interventions to prevent or delay type 2 diabetes in individuals with prediabetes can be feasible and cost-effective. Research has found that lifestyle interventions are more cost-effective than medications.
HANDBOUTS
HCCI Lesson #6 Is Diet Related to Disease? Pre/Post Test

Name ____________________________

_____ 1. Which of the following is NOT a "diet related disease"?
   a. Type 2 Diabetes
   b. Heart Disease
   c. Chicken Pox
   d. Cavities

_____ 2. Obesity can lead to the development of:
   a. Type 2 Diabetes
   b. Hypertension
   c. Osteoarthritis
   d. All of these

_____ 3. Osteoporosis is commonly linked to the inadequate intake of:
   a. Calcium
   b. B Vitamins
   c. Iron
   d. Don’t know

_____ 4. Foods such as milk, cheese and yogurt help protect against tooth decay and osteoporosis.
   a. true
   b. false

_____ 5. Which mineral should Americans cut back on to help lower blood pressure?
   a. Calcium
   b. Sodium/salt
   c. Potassium
   d. Don’t know
**Diet-Related Diseases**

As adults grow older, they have a greater chance of developing certain diet-related diseases, such as hypertension (high blood pressure), heart disease, cancer, and/or osteoporosis. Older adults are more likely to require diet modification to control disease than younger adults, but the diet should still reflect the preferences of the older adult. For the elderly, the diet should fit the person rather than changing the person's eating behavior. No food should be denied simply because a person is old.

**Hypertension**

It is estimated that 40 to 50% of the adults in the United States are "at risk" of developing high blood pressure. Untreated hypertension can lead to:

- stroke.
- kidney failure.
- heart attack.
- heart failure.

A high sodium intake is generally believed (but not proven) to increase the risk of having high blood pressure. In some people, other risk factors include:

- heredity.
- obesity.
- stress.

Weight loss may help reduce an elevated blood pressure. Some people are able to lower their elevated blood pressure by restricting sodium consumption. Others may significantly decrease their blood pressure by increasing their calcium intake. African Americans and those who are salt sensitive appear to be especially responsive to an increase in calcium intake.

Certain drug-nutrient interactions may result in additional vitamin or mineral requirements of the older adult. For example, some people need to control hypertension with medication, which usually is a diuretic that also wastes potassium (decreases retention). Potassium is important for:

- fluid balance.
- muscle contraction.
- maintenance of a normal heart beat.

Although a physician may prescribe a potassium supplement, it is expensive and unpleasant tasting. The safest way to protect the body's potassium, without supplying more sodium than the diet of a hypertensive patient would allow, is to include plenty of fruit and fruit juices in their diet. Fruits are the only foods which are rich in potassium and usually prepared and eaten without added sodium.

For more information concerning sodium and salt substitutes, see the discussion in the Dietary Guidelines section of ??????
Heart Disease
Heart attacks are the leading cause of death and illness in the United States. At the root of the cause for heart attacks is a disease called “arteriosclerosis,” which is the accumulation of “plaque” or “crud” (cholesterol, fatty deposits, and other substances) on the inner lining of artery walls. This buildup narrows arteries until they become so clogged, blood cannot flow through. This can result in death or damage to part of the heart muscle; a heart attack.

Many factors are associated with heart disease. For example, a smoker has a statistically greater chance of developing cardiovascular disease and dying of a heart attack or stroke than does a nonsmoker; thus, smoking is a “risk factor” for heart disease. Other factors associated with greater risk are:

- gender (being male).
- heredity (includes diabetes).
- high blood pressure.
- lack of exercise.
- obesity.
- stress.
- high blood cholesterol.

The risk factors are powerful predictors of heart disease. Three risk factors have been most intensively studied: smoking, high blood pressure, and high blood cholesterol.

Millions of dollars have been spent and decades of research conducted to determine what exactly causes heart disease. Even though hundreds of researchers have demonstrated positive findings from risk factor research, it is still not possible to pinpoint the exact causes of heart disease. In short, although diet and nutrition are the focus of attention in heart disease, it is important to take a broad view of the problem. Nutrition is not the only factor involved.

In addition, there is recent evidence that arteriosclerosis begins in childhood. Some studies have shown that plaque buildup can slowly progress into coronary heart disease in adulthood.

Cholesterol
Cholesterol is made primarily in the liver and sent through the bloodstream to all parts of the body. Cholesterol is needed by the body to:

- manufacture hormones (such as Vitamin D and the sex hormones).
- mold sheaths that protect nerve fibers.
- make strong cell membranes.

The liver also uses cholesterol to make bile acids needed for digesting fats. In a single day, the liver produces 1,000 milligrams of cholesterol to meet the body’s needs.

The typical American diet supplies approximately 600 milligrams of cholesterol a day over and above what is made by the liver. Even though this is a lot less than the liver makes on its own, it may exceed the body’s ability to hold down the amount of cholesterol circulating in the blood. Blood cholesterol levels, therefore, rise.

Cholesterol is carried through the bloodstream in packages called lipoproteins. High-density lipoproteins, or HDL’s are the “good” type; they carry cholesterol away from body cells and
tissues to the liver for excretion from the body. Low-density lipoproteins, or LDL’s, are the "bad" type responsible for depositing cholesterol on artery walls.

The amount of cholesterol circulating in the body’s blood is affected by more than the amount of cholesterol consumed. It also is influenced by the amount and kinds of fats consumed. Specifically, diets rich in saturated fats tend to raise the level of blood cholesterol, while polyunsaturated fats and monosaturated fats help to lower it.

The more cholesterol there is in a person’s blood, the greater the likelihood that some will build up on the inner walls of the body’s arteries as “plaques.” These plaques become larger and larger. The blood vessel width becomes narrower until eventually the clot completely cuts off any blood flow through the artery. If the artery leads to the heart, a heart attack may result because the heart muscle did not receive the essential supply of oxygen it needed to do its work. If the artery leads to the brain, a stroke may result. Leg arteries also can become clogged; painful muscle spasms from the slightest exercise can result because the muscles are not receiving enough oxygen.

Studies have confirmed that the amounts and kind of fats and the amount of cholesterol consumed does directly influence a person’s risk of dying prematurely of coronary heart disease. There is some evidence that a reversal of arteriosclerosis can occur in people who reduce the amount of saturated fat and cholesterol.

Regular physical exercise can promote a healthier heart in two ways:

- it keeps body weight in a desirable range.
- it can increase the level of “good” cholesterol (HDL’s) in the body.

For more information on dietary fat ?????

Remember that fats and cholesterol are not the only dietary constituents that may influence a person’s risk of developing heart disease. Other factors implicated by research studies include:

- water hardness.
- amount of sugar in the diet.
- amount of dietary fiber in the diet.
- various vitamins.
- caffeine.
- others.

It is not possible to point to a particular individual and predict what effect diet will have on that person’s chances of developing heart disease. An individual’s genetic predisposition influences the extent of damage the environment can do.

**Cancer**
The same high-fat diet associated with heart disease also may increase the risk of developing certain cancers, including two that frequently strike Americans:

- colon cancer, the leading life-threatening cancer in the United States.
- breast cancer, the leading cancer killer of American women.
Obesity is one risk factor associated with a high risk of developing breast and endometrial cancers. Chemical reactions in body fat result in the formation of substances that act similarly to female sex hormones; they may stimulate the growth of breast and endometrial cancers.

Among the Japanese, who eat a little fat of any kind, breast and colon cancers are uncommon. Studies have shown that when a diet contains high amounts of fat and cholesterol, intestinal bacteria break down these foodstuffs into substances that can cause cancer directly or that promote the action of other cancer-causing chemicals. Since such diets usually contain little bulky, fibrous foods, the stool tends to be concentrated and to stay longer than usual in the colon; there is more exposure to carcinogens.

In addition, some of the substances produced from cholesterol by intestinal bacteria may imitate the action of female sex hormones. This may promote cancer growth in hormone-sensitive tissues, such as the breast and endometrium (the lining of the uterus).

Osteoporosis is one of the most common problems among older Americans. It is the primary cause of "shrinkage" in stature and bone fractures among the elderly. Starting in the 20's for women and somewhat later for men, calcium is gradually lost from the bones. It results in a shortening and weakening of the long bones and greatly increases a woman's susceptibility to fractures. This loss of calcium accelerates in women after menopause. Past 50 years of age, 25 to 30% of women and 15 to 20% of men suffer a shortening of the spinal column as a result of osteoporosis.

Osteoporosis afflicts one in four American women past menopause. It causes a loss of height with age because spinal vertebrae collapse, producing the characteristic "dowager's hump." Osteoporosis is the primary cause of debilitating hip and wrist fractures that commonly afflict older women. It also may be a factor in bone loss in the jaws; it leads ultimately to a loss of teeth through periodontal disease.

Women who are three to six years past menopause can help prevent bone loss by increasing their calcium intake in addition to getting plenty of exercise. While large amounts of calcium supplements are used by older women, the evidence shows that such supplements can prevent or stem the progress of osteoporosis in some people, but not all. Dietary calcium (calcium from foods) is much better absorbed and used by the body than supplements. However, no supplement can replace calcium already lost from bones; at best, it can slow down further deterioration. Thus, prevention is so important.

Fluoride also is important to bone strength. Osteoporosis is significantly less common in communities serviced by fluoridated water; this suggests that fluoride protects against the disease and the fractures that accompany it. Fluoride combines with the calcium in the bone and helps to prevent the loss of calcium common after mid-life.

Other factors, besides the amount of calcium consumed, influence how much of this mineral is absorbed by the body. The following is a partial list.

- Vitamin D in an active form is needed for calcium to be absorbed through the intestinal tract; older adults make less of this active form of vitamin D.
- Vitamin C improves calcium absorption, as does lactose (milk sugar).
- Eating too much protein or fat interferes with calcium absorption; it greatly increases the
amount of calcium the body loses.

- Inactivity speeds the loss of calcium; physical exercise throughout life helps prevent bone loss with age.
- Some foods contain substances that bind up calcium these foods contain in a way that prevents the mineral's absorption. These substances include:
  - oxalic acid in spinach, chard, beet greens, and rhubarb; and
  - phytic acid in the bran of whole grains.

However, such binding is not thought to interfere seriously with the amounts of calcium the body obtains.

- Excess phosphorus can increase the need for calcium and, thus, create a shortage even though there is an adequate amount of calcium in the diet. This may be a problem among adults who consume little or no milk products or among teenagers who drink too much soda pop (rich in phosphorus).
- Loss of estrogen at menopause greatly accelerates the loss of calcium from a woman's bones.
*Note to teachers: DSU will provide personnel to conduct blood pressure screening activity. PLEASE contact HCCI office @ 846-4303 or 846-4300 to schedule 1 month prior to teaching Lesson #7.

**HCCI 7th Grade Health Unit Lesson #7**

**What Is Blood Pressure Anyway?**

**Lesson Plan**

* Suggested time: 2 class periods

I. Goal: To give students a general idea of what blood pressure is and the difference between normal blood pressure and high blood pressure.

II. Objectives: After the students complete this lesson they will be able to:

1. Define blood pressure in simple terms.
2. Define hypertension.
3. Listen for heart sounds using stethoscopes and sphygmomanometers.

III. Procedures

A. Pre-test

B. Introduction/Motivation

Ask: Today we are going to learn about blood pressure. How many of you have ever had your blood pressure checked? Where were you? Did you understand what the nurse was doing? Probably not! That is why we are going to focus on blood pressure today. Blood pressure is something we all need to know about because a normal blood pressure is one indicator of a healthy heart. Everyone needs to get regular blood pressure checks to make sure the blood pressure numbers are not going up too high. When blood pressure gets too high, it is dangerous, thus, steps must be taken to get it back to normal like making changes in medication, diet and exercise.

C. Study/Learning

1. Blood pressure is the force of blood against the inside walls of arteries as the blood is pumped
by the heart. A **sphygmomanometer** (sfig-ma'man-om'-it-er) or **blood pressure cuff** (in simple terms) is a device that measures blood pressure. The person measuring the blood pressure uses a **stethoscope** to listen to the blood flow on the skin of inner elbow area. The sounds to listen for are two louder clicks, or thumps while reading the number meter on the outside of the cuff. The first click represents the pressure in the arteries while the heart is contracting and the second click represents the pressure in the arteries while the heart is relaxing between beats. Blood pressure is then recorded as the two numbers when the two louder clicks were heard, one number over the other. For example, if the clicks were heard first at 120 and the second was heard at 80, the person's blood pressure would be written as 120/80. The top number is called the **systolic measure** and the bottom number is called the **diastolic measure**. These terms refer to the different stages in the heart beat; **systolic**=pressure during heart contraction and **diastolic**=pressure during heart relaxation.

Our blood pressure changes throughout a 24 hour period. For example, blood pressure is usually lower when a person rests or sleeps. Blood pressure rises during exercise and excitement and then goes back to normal when we stop. Some people's blood pressure does not ever go back to normal and this situation is called **hypertension** or **high blood pressure**.

So...what's a normal blood pressure for teens? That's a tough question because there is no set answer. Child and **teen blood pressures must be evaluated according to age, height and gender and then compared to percentile charts** similar to plotting your weights on the growth charts. The following tables from Massachusetts General Hospital can be used for estimating teen blood pressures for this classroom lesson; however, if any abnormal blood pressure readings show up, you will be asked to see a doctor for follow-up.

What's so bad about hypertension? High blood pressure is dangerous because it makes the heart work too hard. It also makes the walls of the arteries thicken and harden. High blood pressure increases the risk for heart disease and stroke, the 1st and 3rd leading causes of death.
in the US. High blood pressure can also cause problems like heart failure, kidney disease, and blindness. African Americans are at a higher risk for high blood pressure than other races and usually develop the disease at earlier ages than other groups of people.

2. Give students handout on Risk Factors for Developing Hypertension and discuss:
   * overweight or obesity
   * age (blood pressure often rises with age)
   * gender (men and teenage boys are more likely)
   * family history
   * African American
   * unhealthy lifestyle habits:
     excessive salt intake
     low potassium intake (fruits and vegetables)
     physical inactivity
     smoking
     alcohol consumption

   Ask: Do you have any of these risk factors?

3. Activity

Give the Healthy Campus Community Initiative representatives the floor to explain the steps in taking blood pressures. They will bring several blood pressure cuffs and after the explanation, allow students to practice taking each other’s blood pressure. Try to let all students have an opportunity to hear the blood pressure sounds. The HCCI representatives will check each student’s blood pressures who are waiting for a turn at the hands-on activity. Record the blood pressures and have each student find where they fall on the charts provided. Any high blood pressure readings by HCCI staff must be reported to the school nurse for follow-up.
D. Culmination

To conclude, ask the students what they thought about the activity? Was it difficult to hear the sounds with the stethoscope? Ask who can remember the real name for the blood pressure cuff and if they can spell **Sphygmomanometer** correctly, give them a prize: a granola bar or homework pass.

E. Follow-Up/Extension

Have students research hypertension in their family history. Each student should go home and ask both parents if they have high blood pressure and if any of the grandparents, aunts, or uncles have/had it. Make a list of family members that have/had hypertension. If there are several hypertensive family members, that means the student should start immediately to take action toward prevention since he/she is probably at risk due to genetics.

F. Post-test

**HCCI Lesson#7 Pre/Post-Test answers**

1. a   2. b   3. d   4. c   5. d

**Materials**

60 copies pre/post-tests

Several blood pressure cuffs for class activity

Extra blood pressure charts for teens (to compare blood pressures)

Prize (fruit or homework pass)

HCCI Staff
HCCI Lesson #7 What Is Blood Pressure? Pre/Post-Test

Name

1. High blood pressure occurs more often in African Americans than in whites.
   a. true
   b. false

2. Hypertension means
   a. stressed out
   b. high blood pressure
   c. very energetic and active
   d. don’t know

3. When checking teens’ blood pressures you must consider:
   a. age
   b. gender
   c. height
   d. all of these

4. The two sounds heard when manually checking blood pressure represent
   a. the contraction and relaxation of the heart
   b. the systolic measurement and the diastolic measurement
   c. both a and c
   d. don’t know

5. Untreated high blood pressure can lead to other problems such as:
   a. kidney disease
   b. stroke
   c. heart disease
   d. all of these
ACTIVITIES
Taking Your Blood Pressure Correctly

Your blood pressure can be taken with a mercury blood pressure gauge, an aneroid manometer, or an electronic device for measuring the blood pressure, as long as the device has been recently calibrated and validated. With rare exceptions, blood pressure gauges found in supermarkets or pharmacies aren't properly maintained and shouldn't be used.

Following a few simple rules is important to get an accurate reading:

- First, don't smoke or drink alcohol or coffee within 15 minutes of a blood pressure measurement.
- Second, the length of the bladder on the device should be 80 percent of the circumference of the upper arm. This means that heavy or very muscular people with thick arms need a larger bladder, while children need a smaller bladder.
- Third, your posture is important. Sit with your back supported and your elbow at about the level of your heart with your arm supported. Your legs should not be dangling. It's better if you rest for several minutes in that position before the measurement. Don't talk during the measurement.

To take the reading, follow these steps:

1. Leaving the cuff's lower edge about an inch above the bend of the elbow, place the cuff over your bare arm, close the cuff around the arm, and then stick the Velcro together at the ends of the cuff.

2. Place the earpieces of the stethoscope in your ears and place the stethoscope bell at the side of the cuff away from your heart and over the brachial artery, which is found in the inner area of your bent elbow.

The stethoscope, a convenient device to listen for sounds at various body sites, has a point of contact known as the stethoscope's bell. The two earpieces at the other end of the stethoscope enable the individual taking the measurement to hear the steady "thump" in the brachial artery.

3. Tighten the screw at the side of the rubber bulb and squeeze the bulb.

Air is pumped into the bulb, and thus the cuff expands.
4. The cuff is inflated until the blood flow through your brachial artery stops.

With sufficient compression, the cuff cuts off blood flow through the artery, and no sound is heard in the stethoscope. The pressure in the cuff is increased rapidly to 30 millimeters of mercury above the point that no blood flow is taking place through the cuff when no sound can be heard in the stethoscope or when a pulse can no longer be felt in the wrist.

5. Turn the screw again to loosen the valve in the bulb and to lessen the air pressure.

Pressure is then decreased so that the rate of drop is 2 millimeters per second. When the pressure falls to the point that blood begins to flow through the artery again, the number that the column of mercury has risen to at the first sound heard in the stethoscope is the systolic blood pressure (SBP), the first number in the blood pressure reading.

6. Look at the column of mercury to see the number at that pressure point.

7. When the cuff decompresses to the point that blood flows freely in the artery, the sound is no longer heard in the stethoscope.

The number next to the top of the column of mercury when the sound ceases is the diastolic blood pressure (DBP), the second number in the blood pressure reading.

8. Again, look at the column of mercury to see the number at that pressure point.

9. Record the SBP and the DBP numbers immediately (don't depend on memory), and note the arm (right or left) used for taking the measurement is noted.

10. If the first measurement is elevated, take another measurement in the same arm after 60 seconds. Then the other arm is measured.

The arm that has the higher blood pressure is the one that's used in the future. (They're often the same.) The average of the two measurements in the arm that supplies the more abnormal reading is considered to be the correct blood pressure.

Measure the blood pressure while the patient is in a standing position especially in the event that the patient experiences lightheadedness on standing. If a fall of 20 or more millimeters of mercury occurs in systolic blood pressure or 10 or more in diastolic blood pressure, the
patient is considered to have orthostatic hypotension, an abnormally great fall in blood pressure with standing.

If your blood pressure isn't normal, don't start any treatment on the basis of one office visit. This is treatment for life and should be done only after confirmation at a second and even a third office visit. It may even be that your blood pressure in your doctor's office is not an accurate assessment of your blood pressure despite using entirely correct techniques. A blood pressure reading that's greater than 180/120 millimeters of mercury (mm Hg) requires immediate treatment.

Copyright © 2010 & Trademark by Wiley Publishing, Inc. All rights reserved.
HANDBOOKS
HCCI Lesson #7 What Is Blood Pressure? Pre/Post-Test

Name______________________________________________

_____1. High blood pressure occurs more often in African Americans than in whites.
   a. true
   b. false

_____2. Hypertension means
   a. stressed out
   b. high blood pressure
   c. very energetic and active
   d. don’t know

_____3. When checking teens’ blood pressures you must consider:
   a. age
   b. gender
   c. height
   d. all of these

_____4. The two sounds heard when manually checking blood pressure represent
   a. the contraction and relaxation of the heart
   b. the systolic measurement and the diastolic measurement
   c. both a and c
   d. don’t know

_____5. Untreated high blood pressure can lead to other problems such as:
   a. kidney disease
   b. stroke
   c. heart disease
   d. all of these
HCCI Lesson # 7 Handout- Risk Factors for Hypertension

Circle or highlight the risk factors you have:

- Overweight or obesity
- Age (blood pressure often rises with age)
- Race (hypertension more common in African Americans)
- Family history
- Gender (hypertension more common in men than women and teenage boys than girls)
- Smoking
- Alcohol consumption
- Inactivity
- Excessive salt intake
- Low potassium intake (fruits & vegetables)
High Blood Pressure

High blood pressure or hypertension is a situation when the pressure of the blood in a person’s small blood vessels called arterioles is elevated when compared against the blood pressure of a normal or normotensive individual. In adolescents, normal blood pressure values are defined by gender, age and height.

Although high blood pressure may be tolerated for some years in adolescents, eventually damage may occur to the body. When the blood pressure is elevated, then the heart, or pump, must work harder to push the blood through the vessels due to the resistance brought on by the elevated pressure. When the heart works harder, the heart muscle may enlarge and this in itself can cause damage. Persistent high blood pressure may also cause damage to the blood vessels in the kidneys, brain and eyes.

Blood pressure is described by two numbers—the systolic and the diastolic. These numbers refer to the pressure in millimeters (mm) of mercury (Hg). The systolic number represents the pressure in the artery when the heart contracts and pushes out the blood to the body. The diastolic number represents the pressure in the artery when the heart is in the relaxation phase and blood flows back into the heart.

Studies of adolescents by age, height and gender have established normal values for systolic and diastolic pressures. Values that are less than the ninetieth percentile are considered normal; values between the ninetieth and ninety-fifth percentiles are considered high normal and values at the ninety-fifth percentile or higher are considered high blood pressure. According to the National High Blood Pressure Education Program Working Group on Hypertension Control in Children, National Institutes of Health the following are ranges of blood pressure values for adolescents based on age and gender; the values at ninety-five percent are considered to be high blood pressure:

<table>
<thead>
<tr>
<th>Age</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>90% 116-122</td>
<td>75-78</td>
</tr>
<tr>
<td></td>
<td>95% 120-126</td>
<td>79-82</td>
</tr>
<tr>
<td>13 y</td>
<td>90% 118-124</td>
<td>76-80</td>
</tr>
<tr>
<td></td>
<td>95% 121-128</td>
<td>80-84</td>
</tr>
<tr>
<td>14 y</td>
<td>90% 119-126</td>
<td>77-81</td>
</tr>
</tbody>
</table>

http://www.massgeneral.org/children/adolescenthealth/articles/aa_high_blood_pressure.aspx  5/22/2010
For adults, normal blood pressure is less than 120 systolic and less than 80 diastolic. Prehypertension is 120-139 systolic and 80-89 diastolic.

The range in each group of values is related to the height percentile of the adolescent. For example,
High Blood Pressure

High blood pressure or hypertension is a situation when the pressure of the blood in a person’s small blood vessels called arterioles is elevated when compared against the blood pressure of a normal or normotensive individual. In adolescents, normal blood pressure values are defined by gender, age and height.

Although high blood pressure may be tolerated for some years in adolescents, eventually damage may occur to the body. When the blood pressure is elevated, then the heart, or pump, must work harder to push the blood through the vessels due to the resistance brought on by the elevated pressure. When the heart works harder, the heart muscle may enlarge and this in itself can cause damage. Persistent high blood pressure may also cause damage to the blood vessels in the kidneys, brain and eyes.

Blood pressure is described by two numbers—the systolic and the diastolic. These numbers refer to the pressure in millimeters (mm) of mercury (Hg). The systolic number represents the pressure in the artery when the heart contracts and pushes out the blood to the body. The diastolic number represents the pressure in the artery when the heart is in the relaxation phase and blood flows back into the heart.

Studies of adolescents by age, height and gender have established normal values for systolic and diastolic pressures. Values that are less than the ninetieth percentile are considered normal; values between the ninetieth and ninety-fifth percentiles are considered high normal and values at the ninety-fifth percentile or higher are considered high blood pressure. According to the National High Blood Pressure Education Program Working Group on Hypertension Control in Children, National Institutes of Health the following are ranges of blood pressure values for adolescents based on age and gender; the values at ninety-five percent are considered to be high blood pressure:

<table>
<thead>
<tr>
<th>Age</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>90%</td>
<td>116-122</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>120-126</td>
</tr>
<tr>
<td>13 y</td>
<td>90%</td>
<td>118-124</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>121-128</td>
</tr>
<tr>
<td>14 y</td>
<td>90%</td>
<td>119-126</td>
</tr>
<tr>
<td>Age</td>
<td>Systolic Blood Pressure</td>
<td>Diastolic Blood Pressure</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>115-123</td>
<td>75-79</td>
</tr>
<tr>
<td></td>
<td>119-127</td>
<td>79-83</td>
</tr>
<tr>
<td>13 y</td>
<td>117-126</td>
<td>75-80</td>
</tr>
<tr>
<td></td>
<td>121-130</td>
<td>79-84</td>
</tr>
<tr>
<td>14 y</td>
<td>120-128</td>
<td>76-80</td>
</tr>
<tr>
<td></td>
<td>121-130</td>
<td>80-85</td>
</tr>
<tr>
<td>15 y</td>
<td>123-131</td>
<td>77-81</td>
</tr>
<tr>
<td></td>
<td>127-135</td>
<td>81-86</td>
</tr>
<tr>
<td>16 y</td>
<td>125-134</td>
<td>79-83</td>
</tr>
<tr>
<td></td>
<td>129-138</td>
<td>83-87</td>
</tr>
<tr>
<td>17 y</td>
<td>128-136</td>
<td>81-85</td>
</tr>
<tr>
<td></td>
<td>132-140</td>
<td>85-89</td>
</tr>
</tbody>
</table>

For adults, normal blood pressure is less than 120 systolic and less than 80 diastolic. Prehypertension is 120-139 systolic and 80-89 diastolic.

The range in each group of values is related to the height percentile of the adolescent. For example,
High Blood Pressure

High blood pressure or hypertension is a situation when the pressure of the blood in a person’s small blood vessels called arterioles is elevated when compared against the blood pressure of a normal or normotensive individual. In adolescents, normal blood pressure values are defined by gender, age and height.

Although high blood pressure may be tolerated for some years in adolescents, eventually damage may occur to the body. When the blood pressure is elevated, then the heart, or pump, must work harder to push the blood through the vessels due to the resistance brought on by the elevated pressure. When the heart works harder, the heart muscle may enlarge and this in itself can cause damage. Persistent high blood pressure may also cause damage to the blood vessels in the kidneys, brain and eyes.

Blood pressure is described by two numbers—the systolic and the diastolic. These numbers refer to the pressure in millimeters (mm) of mercury (Hg). The systolic number represents the pressure in the artery when the heart contracts and pushes out the blood to the body. The diastolic number represents the pressure in the artery when the heart is in the relaxation phase and blood flows back into the heart.

Studies of adolescents by age, height and gender have established normal values for systolic and diastolic pressures. Values that are less than the ninetieth percentile are considered normal; values between the ninetieth and ninety-fifth percentiles are considered high normal and values at the ninety-fifth percentile or higher are considered high blood pressure. According to the National High Blood Pressure Education Program Working Group on Hypertension Control in Children, National Institutes of Health the following are ranges of blood pressure values for adolescents based on age and gender; the values at ninety-five percent are considered to be high blood pressure:

### Girls

<table>
<thead>
<tr>
<th>Age</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>90% 116-122</td>
<td>75-78</td>
</tr>
<tr>
<td></td>
<td>95% 120-126</td>
<td>79-82</td>
</tr>
<tr>
<td>13 y</td>
<td>90% 118-124</td>
<td>76-80</td>
</tr>
<tr>
<td></td>
<td>95% 121-128</td>
<td>80-84</td>
</tr>
<tr>
<td>14 y</td>
<td>90% 119-126</td>
<td>77-81</td>
</tr>
<tr>
<td>Age</td>
<td>Systolic Blood Pressure</td>
<td>Diastolic Blood Pressure</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>115-123</td>
<td>75-79</td>
</tr>
<tr>
<td>90%</td>
<td>119-127</td>
<td>79-83</td>
</tr>
<tr>
<td>95%</td>
<td>117-126</td>
<td>75-80</td>
</tr>
<tr>
<td>95%</td>
<td>121-130</td>
<td>79-84</td>
</tr>
<tr>
<td>13 y</td>
<td>120-128</td>
<td>76-80</td>
</tr>
<tr>
<td>90%</td>
<td>121-130</td>
<td>80-85</td>
</tr>
<tr>
<td>95%</td>
<td>123-131</td>
<td>77-81</td>
</tr>
<tr>
<td>95%</td>
<td>127-135</td>
<td>81-86</td>
</tr>
<tr>
<td>14 y</td>
<td>125-134</td>
<td>79-83</td>
</tr>
<tr>
<td>90%</td>
<td>129-138</td>
<td>83-87</td>
</tr>
<tr>
<td>95%</td>
<td>128-136</td>
<td>81-85</td>
</tr>
<tr>
<td>95%</td>
<td>132-140</td>
<td>85-89</td>
</tr>
</tbody>
</table>

For adults, normal blood pressure is less than 120 systolic and less than 80 diastolic. Prehypertension is 120-139 systolic and 80-89 diastolic.

The range in each group of values is related to the height percentile of the adolescent. For example,
High Blood Pressure

High blood pressure or hypertension is a situation when the pressure of the blood in a person’s small blood vessels called arterioles is elevated when compared against the blood pressure of a normal or normotensive individual. In adolescents, normal blood pressure values are defined by gender, age and height.

Although high blood pressure may be tolerated for some years in adolescents, eventually damage may occur to the body. When the blood pressure is elevated, then the heart, or pump, must work harder to push the blood through the vessels due to the resistance brought on by the elevated pressure. When the heart works harder, the heart muscle may enlarge and this in itself can cause damage. Persistent high blood pressure may also cause damage to the blood vessels in the kidneys, brain and eyes.

Blood pressure is described by two numbers—the systolic and the diastolic. These numbers refer to the pressure in millimeters (mm) of mercury (Hg). The systolic number represents the pressure in the artery when the heart contracts and pushes out the blood to the body. The diastolic number represents the pressure in the artery when the heart is in the relaxation phase and blood flows back into the heart.

Studies of adolescents by age, height and gender have established normal values for systolic and diastolic pressures. Values that are less than the ninetieth percentile are considered normal; values between the ninetieth and ninety-fifth percentiles are considered high normal and values at the ninety-fifth percentile or higher are considered high blood pressure. According to the National High Blood Pressure Education Program Working Group on Hypertension Control in Children, National Institutes of Health the following are ranges of blood pressure values for adolescents based on age and gender; the values at ninety-five percent are considered to be high blood pressure:

<table>
<thead>
<tr>
<th>Age</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>90%</td>
<td>116-122</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>120-126</td>
</tr>
<tr>
<td>13 y</td>
<td>90%</td>
<td>118-124</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>121-128</td>
</tr>
<tr>
<td>14 y</td>
<td>90%</td>
<td>119-126</td>
</tr>
</tbody>
</table>

http://www.massgeneral.org/children/adolescenthealth/articles/aa_high_blood_pressure.aspx  5/22/2010
<table>
<thead>
<tr>
<th>Age</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 y</td>
<td>90%</td>
<td>115-123</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>119-127</td>
</tr>
<tr>
<td>13 y</td>
<td>90%</td>
<td>117-126</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>121-130</td>
</tr>
<tr>
<td>14 y</td>
<td>90%</td>
<td>120-128</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>121-130</td>
</tr>
<tr>
<td>15 y</td>
<td>90%</td>
<td>123-131</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>127-135</td>
</tr>
<tr>
<td>16 y</td>
<td>90%</td>
<td>125-134</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>129-138</td>
</tr>
<tr>
<td>17 y</td>
<td>90%</td>
<td>128-136</td>
</tr>
<tr>
<td></td>
<td>95%</td>
<td>132-140</td>
</tr>
</tbody>
</table>

For adults, normal blood pressure is less than 120 systolic and less than 80 diastolic. Prehypertension is 120-139 systolic and 80-89 diastolic.

The range in each group of values is related to the height percentile of the adolescent. For example,
High Blood Pressure

High blood pressure or hypertension is a situation when the pressure of the blood in a person’s small blood vessels called arterioles is elevated when compared against the blood pressure of a normal or normotensive individual. In adolescents, normal blood pressure values are defined by gender, age and height.

Although high blood pressure may be tolerated for some years in adolescents, eventually damage may occur to the body. When the blood pressure is elevated, then the heart, or pump, must work harder to push the blood through the vessels due to the resistance brought on by the elevated pressure. When the heart works harder, the heart muscle may enlarge and this in itself can cause damage. Persistent high blood pressure may also cause damage to the blood vessels in the kidneys, brain and eyes.

Blood pressure is described by two numbers—the systolic and the diastolic. These numbers refer to the pressure in millimeters (mm) of mercury (Hg). The systolic number represents the pressure in the artery when the heart contracts and pushes out the blood to the body. The diastolic number represents the pressure in the artery when the heart is in the relaxation phase and blood flows back into the heart.

Studies of adolescents by age, height and gender have established normal values for systolic and diastolic pressures. Values that are less than the ninetieth percentile are considered normal; values between the ninetieth and ninety-fifth percentiles are considered high normal and values at the ninety-fifth percentile or higher are considered high blood pressure. According to the National High Blood Pressure Education Program Working Group on Hypertension Control in Children, National Institutes of Health the following are ranges of blood pressure values for adolescents based on age and gender; the values at ninety-five percent are considered to be high blood pressure:

<table>
<thead>
<tr>
<th>Age</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>90% 116-122</td>
<td>75-78</td>
</tr>
<tr>
<td></td>
<td>95% 120-126</td>
<td>79-82</td>
</tr>
<tr>
<td>13 y</td>
<td>90% 118-124</td>
<td>76-80</td>
</tr>
<tr>
<td></td>
<td>95% 121-128</td>
<td>80-84</td>
</tr>
<tr>
<td>14 y</td>
<td>90% 119-126</td>
<td>77-81</td>
</tr>
</tbody>
</table>
For adults, normal blood pressure is less than 120 systolic and less than 80 diastolic. Prehypertension is 120-139 systolic and 80-89 diastolic.

The range in each group of values is related to the height percentile of the adolescent. For example,
TEACHER RESOURCES
High Blood Pressure

High blood pressure or hypertension is a situation when the pressure of the blood in a person’s small blood vessels called arterioles is elevated when compared against the blood pressure of a normal or normotensive individual. In adolescents, normal blood pressure values are defined by gender, age and height.

Although high blood pressure may be tolerated for some years in adolescents, eventually damage may occur to the body. When the blood pressure is elevated, then the heart, or pump, must work harder to push the blood through the vessels due to the resistance brought on by the elevated pressure. When the heart works harder, the heart muscle may enlarge and this in itself can cause damage. Persistent high blood pressure may also cause damage to the blood vessels in the kidneys, brain and eyes.

Blood pressure is described by two numbers—the systolic and the diastolic. These numbers refer to the pressure in millimeters (mm) of mercury (Hg). The systolic number represents the pressure in the artery when the heart contracts and pushes out the blood to the body. The diastolic number represents the pressure in the artery when the heart is in the relaxation phase and blood flows back into the heart.

Studies of adolescents by age, height and gender have established normal values for systolic and diastolic pressures. Values that are less than the ninetieth percentile are considered normal; values between the ninetieth and ninety-fifth percentiles are considered high normal and values at the ninety-fifth percentile or higher are considered high blood pressure. According to the National High Blood Pressure Education Program Working Group on Hypertension Control in Children, National Institutes of Health the following are ranges of blood pressure values for adolescents based on age and gender; the values at ninety-five percent are considered to be high blood pressure:

**Girls**

<table>
<thead>
<tr>
<th>Age</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>90% 116-122</td>
<td>75-78</td>
</tr>
<tr>
<td></td>
<td>95% 120-126</td>
<td>79-82</td>
</tr>
<tr>
<td>13 y</td>
<td>90% 118-124</td>
<td>76-80</td>
</tr>
<tr>
<td></td>
<td>95% 121-128</td>
<td>80-84</td>
</tr>
<tr>
<td>14 y</td>
<td>90% 119-126</td>
<td>77-81</td>
</tr>
<tr>
<td>Age</td>
<td>Systolic Blood Pressure</td>
<td>Diastolic Blood Pressure</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y 90%</td>
<td>115-123</td>
<td>75-79</td>
</tr>
<tr>
<td>95%</td>
<td>119-127</td>
<td>79-83</td>
</tr>
<tr>
<td>13 y 90%</td>
<td>117-126</td>
<td>75-80</td>
</tr>
<tr>
<td>95%</td>
<td>121-130</td>
<td>79-84</td>
</tr>
<tr>
<td>14 y 90%</td>
<td>120-128</td>
<td>76-80</td>
</tr>
<tr>
<td>95%</td>
<td>121-130</td>
<td>80-85</td>
</tr>
<tr>
<td>15 y 90%</td>
<td>123-131</td>
<td>77-81</td>
</tr>
<tr>
<td>95%</td>
<td>127-135</td>
<td>81-86</td>
</tr>
<tr>
<td>16 y 90%</td>
<td>125-134</td>
<td>79-83</td>
</tr>
<tr>
<td>95%</td>
<td>129-138</td>
<td>83-87</td>
</tr>
<tr>
<td>17 y 90%</td>
<td>128-136</td>
<td>81-85</td>
</tr>
<tr>
<td>95%</td>
<td>132-140</td>
<td>85-89</td>
</tr>
</tbody>
</table>

For adults, normal blood pressure is less than 120 systolic and less than 80 diastolic. Prehypertension is 120-139 systolic and 80-89 diastolic.

The range in each group of values is related to the height percentile of the adolescent. For example,
for girls at age fourteen years who are in the fifth percentile of height, the ninetieth percentile for systolic blood pressure is 119 and for girls in the 95th percentile in height, the value is 126. There is a modest effect, therefore, of height on the blood pressure values in teens.

**Who is likely to develop high blood pressure?**

Approximately one percent to two percent of adolescents develop consistent elevated blood pressure. This is in contrast to the fifteen percent prevalence of high blood pressure in young adults or the sixty percent prevalence in individuals older than sixty-five years. Most adolescents who develop high blood pressure have no underlying cause and this is termed primary or essential hypertension. An underlying disease process such as kidney problems may cause high blood pressure in adolescents. Treating the primary disease process may lower the blood pressure. Teenage girls who take oral contraceptive pills may have a slight increase in their blood pressure, but this should not be extensive enough to cause high blood pressure.

For most of the teens that develop high blood pressure, however, there is no specific cause. Genetic factors play an important part in essential hypertension. Research studies indicate that genes responsible for blood pressure regulation are located on chromosomes thirteen and eighteen. Studies of twins and families indicate a strong correlation between heredity and blood pressure values. Adolescents who are obese have a higher likelihood of developing high blood pressure since more than half of young people with high blood pressure are obese.

There is debate over the issue of salt and high blood pressure. For most teens, there is little correlation with sodium intake and blood pressure. However, in salt sensitive individuals who have high blood pressure, sodium restriction may be beneficial. There is some feeling that African American teens with high blood pressure have a higher likelihood to be salt sensitive.

Individuals who are anxious or depressed seem to have a higher risk for high blood pressure. Anger does not necessarily correlate with high blood pressure, but suppressed anger may be correlated with hypertension.

Adolescents who smoke may have a higher risk for high blood pressure. Interestingly, high blood pressure may increase during the colder months of the years. Lack of exercise and a sedentary life style may lead to elevated blood pressure. This could be related to increasing weight when a teen is sedentary. Also exercise does have value as an outlet for stress and suppressed anger.

**What are the symptoms of high blood pressure?**

For most adolescents with high blood pressure, there are no symptoms. However, headache may be a symptom for teens with severe hypertension. Dizziness, heart palpitations, easy fatigability and nosebleeds could be associated symptoms. If there is an associated disease such as kidney problems, then there may be symptoms related to that medical problem.

**How is high blood pressure evaluated?**

The adolescent’s blood pressure should be measured properly on several visits and the values compared to the national norms for gender, age and height. If the values are elevated, then the clinician may begin a diagnostic evaluation that should be tailored to the individual adolescent. A comprehensive history, family history and physical examination should establish a baseline. The purpose of the exam is to look at secondary diseases that may cause elevated blood pressure. The
laboratory tests ordered will depend on the individual adolescent. These tests could include urine testing, blood chemistries including lipids and possibly other kidney tests. An electrocardiogram and chest x-ray may be performed to evaluate the size of the heart. Some teens may be referred to a specialist in hypertension, cardiology, endocrinology or kidney disease.

**How is high blood pressure treated?**

The treatment for high blood pressure consists of non-drug therapy or lifestyle changes and drug therapy. Weight loss is often helpful in reducing blood pressure. For those individuals who are more than ten percent above ideal body weight, then weight loss may be effective in reducing mild high blood pressure to normal. Regular physical exercise may help reduce weight and stress. Some experts feel that regular and moderate aerobic exercise can reduce blood pressure by ten mm.

Experts feel that avoidance of excess salt may reduce blood pressure by between 2.6 to 4.9 mm. Foods high in sodium are often popular with teens. These foods include the following:

- A-1 Sauce
- Soy Sauce
- Corn chips
- Pickles
- Potato chips
- Salted popcorn
- Salted peanuts
- Coke
- Mountain dew
- Hot dogs
- Pizza

Eliminating the use of table and cooking salt in itself may be beneficial. Most salt however, comes in the form of processed or commercial foods that are popular with adolescents.

Any teen with high blood pressure should quit smoking. A few cups of coffee or a caffeinated beverage is probably acceptable on a daily basis. Needless to say, teens should not be drinking alcohol. In adults high alcohol intake may adversely affect the blood pressure.

Stress reduction and psychological therapy may be helpful adjuncts in reducing high blood pressure. Some authors feel that religious faith and activity may be helpful in moderating blood pressure while others feel that transcendental meditation, a relaxation technique may be helpful.

There are many approaches to the pharmacological treatment of high blood pressure. The decision to treat adolescents who have high blood pressure with medication should be done carefully and thoughtfully. The adolescent and his or her family should be involved in and fully informed about the side effects of the medication.

There is no ideal medication for high blood pressure and many experts recommend a step-by-step care program. Medications include diuretics, which cause a reduction of sodium and water in the blood vessels, and this in turns lowers the blood pressure. Side effects include increased urination and possible depression and changes in the sexual drive. Beta-blockers affect the force and frequency of the heart beat thus lowering the workload of the heart. Fatigue, depression, memory loss and vivid dreams may be potential side effects.
Other medications include the angiotensin converting enzyme inhibitors the so-called ACE inhibitors. These medications block the effects of the angiotensin-renin-aldosterone system, which can increase the blood pressure and affect the heart and blood vessels. Some patients report an irritating cough or excessive drop in blood pressure that could be signaled by lightheadedness. Calcium-channel blockers immediately reduce the blood pressure by relaxing the smooth muscle around blood vessels. The resistance in the blood vessels is lowered, so the work of the heart or pump is reduced also. The side effects may include constipation, fatigue or impotence.

**How is high blood pressure prevented?**

Since most adolescents who have high blood pressure have no disease causing the problem, then prevention will depend on lifestyle changes. These changes include having an appropriate weight for height, a reasonable sodium intake and moderate aerobic physical activity. Stress reduction techniques including yoga may help reduce anxiety and this in turn may lower blood pressure in some individuals. Also, good sleep habits are important. In one study, individuals who had a sleep-deprived night had a higher blood pressure and heart rate the morning after compared to the blood readings the morning after a full night of sleep.

**Related topics:**

Anger, chronic illness, coffee, depression, diuretics, exercise, headaches, obesity, oral contraceptives, smoking and tobacco, yoga

Copyright © 2010 Massachusetts General Hospital
Adolescents who smoke may have a higher risk for high blood pressure. Interestingly, high blood pressure may increase during the colder months of the year. Lack of exercise and a sedentary life style may lead to elevated blood pressure. This could be related to increasing weight when a teen is sedentary. Also exercise does have value as an outlet for stress and suppressed anger.

What are the symptoms of high blood pressure?

For most adolescents with high blood pressure, there are no symptoms. However, headache may be a symptom for teens with severe hypertension. Dizziness, heart palpitations, easy fatigue and nosebleeds could be associated symptoms. If there is an associated disease such as kidney problems, then there may be symptoms related to that medical problem.

How is high blood pressure evaluated?

The adolescent’s blood pressure should be measured properly on several visits and the values compared to the national norms for gender, age, and height. If the values are elevated, then the clinician may begin a diagnostic evaluation that should be tailored to the individual adolescent. A comprehensive history, family history and physical examination should establish a baseline. The purpose of the exam is to look at secondary diseases that may cause elevated blood pressure. The laboratory tests ordered will depend on the individual adolescent. These tests could include urine testing, blood chemistry including lipids and possibly other kidney tests. An electrocardiogram and chest x-ray may be performed to evaluate the size of the heart. Some teens may be referred to a specialist in hypertension, cardiology, endocrinology or kidney disease.

How is high blood pressure treated?

The treatment for high blood pressure consists of non-drug therapy or lifestyle changes and drug therapy. Weight loss is often helpful in reducing blood pressure. For those individuals who are more than ten percent above ideal body weight, then weight loss may be effective in reducing mild high blood pressure to normal. Regular physical exercise may help reduce weight and stress. Some experts feel that regular and moderate aerobic exercise can reduce blood pressure by ten mm.

Experts feel that avoidance of excess salt may reduce blood pressure by between 2.6 to 4.9 mm. Foods high in sodium are often popular with teens. These foods include the following:

- A-1 Sauce
- Soy Sauce
- Corn chips
- Pickles
- Potato chips
- Salted popcorn
- Salted peanuts
- Coke
- Mountain Dew
- Hot dogs
- Pizza

Eliminating the use of table and cooking salt in itself may be beneficial. Most salt however, comes in the form of processed or commercial foods that are popular with adolescents.

Any teen with high blood pressure should quit smoking. A few cups of coffee or a caffeinated beverage is probably acceptable on a daily basis. Needless to say, teens should not be drinking alcohol. In adults high alcohol intake may adversely affect the blood pressure.

Stress reduction and psychological therapy may be helpful adjuncts in reducing high blood pressure. Some authors feel that religious faith and activity may be helpful in moderating blood pressure while others feel that transcendental meditation, a relaxation technique may be helpful.

There are many approaches to the pharmacological treatment of high blood pressure. The decision to treat adolescents who have high blood pressure with medication should be done carefully and thoughtfully. The adolescent and his or her family should be involved in and fully informed about the side effects of the medication.

There is no ideal medication for high blood pressure and many experts recommend a step-by-step care program. Medications include diuretics, which cause a reduction of sodium and water in the blood vessels, and this in turn lowers the blood pressure. Side effects include increased urination and possible depression and changes in the sexual drive. Beta-blockers affect the force and frequency of the heart beat thus lowering the workload of the heart. Fatigue, depression, memory loss and vivid dreams may be potential side effects.

Other medications include the angiotensin converting enzyme inhibitors the so-called ACE inhibitors. These medications block the effects of the angiotensin-renin-aldosterone system, which can increase the blood pressure and affect the heart and blood vessels. Some patients report an irritating cough or excessive drop in blood pressure that could be signaled by lightheadedness. Calcium-channel blockers immediately reduce the blood pressure by relaxing the smooth muscle around blood vessels. The resistance in the blood vessels
is lowered, so the work of the heart or pump is reduced also. The side effects may include constipation, fatigue or impotence.

How is high blood pressure prevented?

Since most adolescents who have high blood pressure have no disease causing the problem, then prevention will depend on lifestyle changes. These changes include having an appropriate weight for height, a reasonable sodium intake and moderate aerobic physical activity. Stress reduction techniques including yoga may help reduce anxiety and this in turn may lower blood pressure in some individuals. Also, good sleep habits are important. In one study, individuals who had a sleep-deprived night had a higher blood pressure and heart rate the morning after compared to the blood readings the morning after a full night of sleep.

Related topics:

Anger, chronic illness, coffee, depression, diuretics, exercise, headaches, obesity, oral contraceptives, smoking and tobacco, yoga
High Blood Pressure

Who Is At Risk for High Blood Pressure?

In the United States, about 72 million people have high blood pressure (HBP). This is about 1 in 3 adults.

Certain traits, conditions, or habits are known to raise the risk for HBP. These conditions are called risk factors. This section describes the major risk factors for HBP.

Older Age

Blood pressure tends to rise with age. If you're a male older than 45 or a female older than 55, your risk for HBP is higher. Over half of all Americans aged 60 and older have HBP.

Isolated systolic hypertension (ISH) is the most common form of HBP in older adults. ISH occurs when only systolic blood pressure (the top number) is high. About 2 out of 3 people over age 60 who have HBP have ISH.

HBP doesn't have to be a routine part of aging. You can take steps to keep your blood pressure at a normal level. (For more information, see "How Is High Blood Pressure Treated?")

Race/Ethnicity

HBP can affect anyone. However, it occurs more often in African American adults than in Caucasian or Hispanic American adults. In relation to these groups, African Americans:

- Tend to get HBP earlier in life
- Often have more severe HBP
- Are more likely to be aware that they have HBP and to get treatment
- Are less likely than Caucasians and about as likely as Hispanic Americans to achieve target control levels with HBP treatment
- Have higher rates than Caucasians of premature death from HBP-related complications, such as coronary heart disease, stroke, and kidney failure

HBP risks vary among different groups of Hispanic American adults. For instance, Puerto Rican American adults have higher rates of HBP-related death than all other Hispanic groups and Caucasians. But, Cuban Americans have lower rates than Caucasians.

Overweight or Obesity
You're more likely to develop prehypertension or HBP if you're overweight or obese. Overweight is having extra body weight from muscle, bone, fat, and/or water. Obesity is having a high amount of extra body fat.

**Gender**

Fewer adult women than men have HBP. But, younger women (aged 18–59) are more likely than men to be aware of and get treatment for HBP.

Women aged 60 and older are as likely as men to be aware of and treated for HBP. However, among treated women aged 60 and older, blood pressure control is lower than it is in men in the same age group.

**Unhealthy Lifestyle Habits**

A number of lifestyle habits can raise your risk for HBP, including:

- Eating too much sodium (salt)
- Drinking too much alcohol
- Not getting enough potassium in your diet
- Not doing enough physical activity
- Smoking

**Other Risk Factors**

A family history of HBP raises your risk for the condition. Long-lasting stress also can put you at risk for HBP.

You're also more likely to develop HBP if you have prehypertension. Prehypertension means that your blood pressure is in the 120–139/80–89 mmHg range.

**Risk Factors for Children and Teens**

Overweight is on the rise in youth younger than 18 years. As a result, prehypertension and HBP also are becoming more common in this age group.

African American and Mexican American youth are more likely to have HBP and prehypertension than Caucasian youth. Also, boys are at higher risk for HBP than girls.

Like adults, children and teens need to have routine blood pressure checks. This is even more important if a young person is overweight.
Who Can Develop High Blood Pressure?

High blood pressure is common. About 65 million American adults — nearly 1 in 3 — have high blood pressure. It is very common in African Americans, who may get it earlier in life and more often than whites. Many Americans tend to develop high blood pressure as they get older, but this is not a part of healthy aging. Middle-aged Americans face a 90% chance of developing high blood pressure during their lives. Others at risk for developing high blood pressure are the overweight, those with a family history of high blood pressure, and those with prehypertension (120–139/80–89 mmHg).

African Americans

High blood pressure occurs more often among African Americans than whites. It begins at an earlier age and is usually more severe. Further, African Americans have a higher death rate from stroke and kidney disease than whites. The good news is, treatment can control high blood pressure. In addition, lifestyle changes can prevent and control high blood pressure. These include losing weight if overweight (losing 10 lbs can help), increasing physical activity (walking 30 minutes per day can help), following a healthy eating plan, that emphasizes fruits, vegetables, and lowfat dairy foods, choosing and preparing foods with less salt and sodium, and if you drink alcoholic beverages, drinking in moderation. If lifestyle changes alone are not effective in keeping your blood pressure controlled, there are many blood pressure medications to help you.

Back to High Blood Pressure Page
HCCI Lesson # 7 Handout- Risk Factors for Hypertension

Circle or highlight the risk factors you have:

- Overweight or obesity
- Age (blood pressure often rises with age)
- Race (hypertension more common in African Americans)
- Family history
- Gender (hypertension more common in men than women and teenage boys than girls)
- Smoking
- Alcohol consumption
- Inactivity
- Excessive salt intake
- Low potassium intake (fruits & vegetables)
HCCI 7th Grade Health Unit

Lesson #8 Show Me the Salt

Lesson Plan

Suggested time: 2 class periods

I. Goal: To teach students the relationship of excess sodium intake and high blood pressure by actively measuring and visualizing the amount of sodium/salt in foods.

II. Objectives: Upon completion of this lesson the students will be able to

1. Differentiate between sodium and salt.
2. State that excessive sodium intake increases the risk of developing high blood pressure.
3. Estimate and convert mg of sodium into teaspoons of salt
4. Measure the amounts of salt in foods and create a display for the class.

III. Procedures:

A. Pre-Test

B. Introduction/Motivation

Today we are going to learn about the salt in our foods and how it affects our bodies. Most Americans eat way too much salt in a day’s time. For instance the recommended daily limit for sodium is about 2,400 mg or 1 tsp of salt which includes the salt in foods, the salt we add in cooking, and the salt we add at the table. When you think of the high salt content of fast foods, salty snack foods, and convenience foods, our daily salt intake adds up quickly! Many Americans eat 2-3 times the daily limit of sodium/salt. Are you one of them? All this extra sodium is not healthy, so let’s see why...

C. Study/Learning

1. Definitions

Sodium-a mineral the body needs in small amount to help regulate fluid balance, muscle contractions, and nerve conduction. It is found in combination with many other minerals and
compounds to preserve and flavor our foods.

Salt- a combination of sodium and chloride which is the most common form we get sodium in our foods.

DASH Diet- Dietary Approaches to Stop Hypertension- an eating plan that has been shown to reduce blood pressure in people with hypertension. It is also a healthy plan of eating for people wanting to prevent or prolong the onset of hypertension. The plan emphasizes fruits & vegetables (show “High Potassium Foods” here), low-fat dairy foods, low saturated fat, total fat and cholesterol. It also promotes eating whole grains, poultry, fish, and nuts but is low in sodium, fats, red meats, sweets and sugared beverages.

milligrams- the metric units of measure for sodium content on food labels and in nutrient analysis books.

Label reading terms:

Salt Free, Sodium Free, Zero Sodium, & No Sodium < 5 mg sodium per svg

Low in Sodium < 140 mg sodium per svg

Reduced Sodium, Less Sodium at least 25% less sodium than orig. item

Light in Sodium 50% less sodium than the orig. item

No Added Salt, Unsalted no ADDED salt in processing; may contain sodium at start

2. Lesson Narrative

Ok, now you know that too much salt can lead to high blood pressure, but why? What does excess sodium do in the body to have this effect? First of all, in simple terms, “water follows salt in biology”. When we eat too much salt, our kidneys think they are supposed to hold onto more water, thus the extra fluid increases the volume of blood in our blood vessels. The added blood volume causes the heart to work harder to pump the extra blood throughout the body. As
the heart has to pump harder, blood pressure rises. Another thing that excess salt does is cause certain blood vessels called arterioles to constrict (get smaller). Again, this causes extra resistance for the heart because it makes it harder for the blood to move through the blood vessels. Think of water from a faucet running through a garden hose. If the hose is normal size, the water will flow through the hose easily. Now imagine that same amount of water from the faucet trying to move through a hose the size of drinking straw. It would be much harder, wouldn’t it? That is an exaggeration, but basically the same thing happens in our blood vessels. Eating a lot of salty food (ex. movie popcorn & large sodas) could mean that an increased amount of blood has to flow through smaller blood vessels causing the heart to work harder making blood pressure go up. Another thing to consider is that some people are more sensitive to salt than others, meaning that the salt has a greater effect on the body and causes more drastic rises in blood pressure. Some people are more salt sensitive than others meaning that they do not tolerate extra salt well at all and their blood pressure is more affected.

The safest thing to do is live by the old saying: “Less is more” when it comes to salt. Less salt has more health benefits!”

One other way people can get high blood pressure is from the build-up of fatty deposits on the inside walls of the blood vessels called plaque. A diet high in cholesterol and saturated fats may contribute to this condition where blood vessels become blocked with plaque causing blood pressure to rise.

3. So which foods have the most sodium? Table salt, of course, is one of the worst things, but sodium is also hidden during the processing, preserving, and flavoring of foods. In order to know how much sodium is in foods, we must read food labels, as well as check out the fast foods we eat. Use the handout “High Sodium Foods” and discuss the high sodium foods listed:

Processed meats: hot dogs, deli meats, bacon, sausage

Canned foods: canned soups, vegetables, meats
Convenience items: frozen meals, boxed combination foods like mac & cheese, Hamburger Helper, Ramen Noodles, pizza, fast foods, etc.

Pickled items: dill pickles, olives, peppers, okra, etc.

Snacks: Chips, salted crackers, nuts and popcorn (any food on which you can SEE the SALT)

Seasonings: with "salt" on the end like garlic salt, seasoning salt, etc.

Sodas: Cokes, Mountain Dew & others

4. Activity

Divide the class into 6 groups. Give each group a set of measuring spoons, a paper cup of salt, "Nutrition in the Fast Lane" Booklets, marker, ½ piece of poster board. The groups can share a stapler. Assign each group a different fast food chain to find the salt content for 4 items they like.

Put the following information on the board to help the students convert mg sodium into teaspoons of salt:

2400 mg sodium= 1 tsp salt; 1800 mg sodium= ¾ tsp salt;

1200 mg sodium= ½ tsp salt; 600 mg sodium= ¼ tsp salt;

300 mg sodium= 1/8 tsp salt

Ask the students to find the amount of sodium in mg for one serving of 4 fast food items and convert the mg of sodium into teaspoons of salt. Then measure that amount of salt and pour into small ziplock bags. Staple the ziplock to the poster board and write the food item under it on the poster board. Ask students to give their display poster a title. Ex. If an item contains 980 mg of sodium, this would be between ¼ and ½ tsp. So the student should fill the ½ tsp more than half full.

D. Culmination

Have students place their work around the room or in the hallway, and allow time for students to move around to see the other groups' work.
E. Follow-Up/Extension

1. Have the students make a list of the high sodium foods they eat and write a healthier food they could substitute for each one.

2. Post-test

HCCI Pre/Post-Test answers:

1. c  2. d  3. b  4. a  5. a

Materials

- 60 Pre/Post-Tests
- 30 Handouts “Hidden Salts”
- 30 Handouts “High Potassium Foods”
- 6 (small poster board or 3 large cut in halves)
- 6 paper cups (6-8 oz. for salt)
- 24 tiny zip lock bags
- 30 “Nutrition in the Fast Lane” booklets
- 1 box salt
- 6 sets of measuring spoons with 1/8 tsp spoon
- Tape, markers, and staplers
HCCI Lesson #8 Show Me the Salt  Pre/Post-Test

Name__________________________________________

_____1. Salt is made of:
   a. sodium + potassium
   b. sodium + calcium
   c. sodium + chloride
   d. don't know

_____2. Long term intake of excess sodium can lead to:
   a. cancer
   b. arthritis
   c. weight gain
   d. hypertension

_____3. Which of these foods is NOT a high sodium food?
   a. chips
   b. low-fat yogurt
   c. fast foods
   d. smoked sausage

_____4. The DASH diet stands for Dietary Approaches to Stop Hypertension.
   a. true
   b. false

_____5. Eating a diet rich in _____ and _____ helps lower blood pressure:
   a. fruits and vegetables
   b. meats and eggs
   c. ham and cheese
   d. all of these
Potassium

Foods High in Potassium

- **Dried Fruits**
  - Raisins
  - Prunes
  - Apricots
  - Dates

- **Canned Fruit Juices**
  - Grapefruit
  - Prune
  - Apricot

- **Fresh Vegetables**
  - Beets
  - Greens
  - Spinach
  - Peas
  - Tomatoes
  - Mushrooms

- **Fresh Fruits**
  - Bananas
  - Strawberries
  - Watermelon
  - Cantaloupe
  - Oranges

- **Fresh Meats**
  - Turkey
  - Fish
  - Beef

- **Dried Vegetables**
  - Beans
  - Peas

- **Juices**
  - Fresh Orange Juice
How much salt do you eat?

The popular foods shown in this chart have a lot of salt. Your body only needs about a teaspoon of salt a day to keep you healthy. Many of us eat much more than this.

Eating too much salt makes blood pressure go up. High blood pressure can cause major health problems — especially if you have diabetes.

To avoid health problems from eating too much salt:

- Don't use table salt.
- Avoid or limit eating fast-foods. They may be cheap and tasty, but they often have a lot of "hidden salt."
- Use spices, onions, or garlic to flavor foods.

Look for food labels that say "10% or less sodium" when you shop.

No-salt and low-salt foods are good for the whole family!

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Sodium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macaroni and cheese, 1 cup</td>
<td>1,340</td>
</tr>
<tr>
<td>Canned chili with beans, 1 cup</td>
<td>1,340</td>
</tr>
<tr>
<td>Canned chicken noodle, 11 ounces</td>
<td>1,320</td>
</tr>
<tr>
<td>Corned beef brisket, 3 ounces</td>
<td>960</td>
</tr>
<tr>
<td>Canned sauerkraut, 1 cup</td>
<td>940</td>
</tr>
<tr>
<td>Pickle, 1 large</td>
<td>830</td>
</tr>
<tr>
<td>Chicken bouillon, one 4-gram cube</td>
<td>740</td>
</tr>
<tr>
<td>Deli ham meat, 2 ounces</td>
<td>740</td>
</tr>
<tr>
<td>Hot dog (beef), one</td>
<td>580</td>
</tr>
<tr>
<td>Fresh Baked Biscuit, 3 inches</td>
<td>540</td>
</tr>
<tr>
<td>Cup-A-Soup (chicken), one</td>
<td>540</td>
</tr>
<tr>
<td>Pasta sauce, 1/2 cup</td>
<td>520</td>
</tr>
<tr>
<td>American cheese, 1 ounce</td>
<td>410</td>
</tr>
<tr>
<td>Canned peas, 1 cup</td>
<td>430</td>
</tr>
</tbody>
</table>

* All numbers are rounded to the nearest whole number.

...A Grain of Salt and a Grain of Sense?...

Many factors are responsible for high blood pressure and one frequently mentioned in this context is salt. Is there a connection?

Where does the salt come from in our diet?

About 10% of dietary sodium (table salt is made of sodium chloride) is naturally present in foods; 15% of it is added during cooking or at the table [so-called discretionary salt] and about 75% is incorporated during manufacture and processing.

Since the dawn of civilisation salt has been a valuable food ingredient used as a flavour, for food preservation and the inhibition of microbiological spoilage. It is also indispensable in the preparation of many foods which have distinctive flavours and textures.

in the body?

These are dietary essentials but, unlike most nutrients, there are rarely problems associated with a dietary shortage.

Particularly in the case of sodium, the problem lies in excessive intakes. Together with other determinants of blood pressure, these ions maintain the blood volume or extracellular fluid in the body, electrophysiological activity in muscles and nerves, osmotic pressure and acid-base balance - all essential for life.

What are the risk factors for high blood pressure?

The management of high blood pressure, or hypertension, is important because it is the major risk factor for stroke. Risk of stroke rises as the level of blood pressure rises and there is widespread recognition that there is an increased risk of cardiovascular disease from even slightly elevated blood pressures.

Several key risk factors are involved including family history, low levels of physical activity, smoking, being overweight or obese, excessive intakes of alcohol and excessive dietary salt intake. In recent years attention has been focused on the relationship between dietary sodium and hypertension, and the international scientific community has recommended that a reduction of sodium intake of about one-third could be beneficial to health.

Over the last few years, research studies have provided a wealth of data which has fuelled the debate between those that would advocate salt restriction for the population as a whole and those who would target dietary interventions to those groups of individuals who are hypertensive or who are susceptible or sensitive to dietary salt intake. There is no doubt that some people are genetically susceptible to hypertension and potentially more vulnerable from high intakes of salt. A promising area of research is to develop genetic and other screening technologies which could identify "at risk" groups.

What can we do to maintain healthy blood pressure?

As scientists continue to disentangle the complex genetic, dietary and lifestyle factors which influence hypertension, salt restriction can be recommended for older hypertensives. For the majority of the population, it is sensible to cut out smoking, maintain a healthy bodyweight, moderate alcohol consumption, increase physical activity, increase consumption of fruit and vegetables and whole-grain foods as well as moderate salt intake.

References

FOOD TODAY 01/2001

Source: European Food Information Council
Salt, potassium and the control of blood pressure

Salt is the common name we use for sodium chloride (NaCl). Salt is essential for life and for good health. High blood pressure is a risk factor for cardiovascular disease, and stroke. It is related to high sodium and low potassium intakes, but can recommendations to reduce our salt intakes make a difference?

The importance of salt

Salt, or sodium chloride, is used to preserve and flavour food. It is also present naturally in all food. As a rough guide, 1 g sodium is equivalent to 2.5g salt.

Sodium and chloride help to regulate blood pressure, control fluid balance and maintain the right conditions for muscle and nerve functioning. Sodium facilitates absorption of nutrients such as glucose and amino acids.

An average adult man's body contains about 90g sodium of which half is in blood and other body fluids, over a third in bone and the rest inside the body's cells.

Average sodium intakes range from 2 to 6g per day, although health in adults can be maintained on less than 0.5g. Requirements increase when losses are high such as during menstruation, lactation and heavy sweating.

Salt intake is of high priority in the public health response to hypertension because of the potential to shift downwards the blood pressure distribution in the entire population.

Potassium

Potassium is naturally present in most foods, fruits and vegetables being especially good sources.

In our body, potassium is mainly found inside the cells. It has important roles throughout the body and is involved in the same functions as sodium but with a complementary role and the balance between the two elements is critical.

Blood pressure – contrasting effects of sodium and potassium

The kidney’s ability to excrete or conserve sodium is a key factor for blood pressure regulation.

Most studies show that a reduction in salt intake reduces blood pressure, the effect being greatest in those with high blood pressure, the obese and the elderly. Response to salt reduction is highly variable between individuals and may not provide measurable benefits to people already within normal ranges.

In contrast, reduced blood pressure is linked to increased potassium intakes which may be due to potassium's ability to increase sodium excretion and the vasoactive effects of potassium on blood vessels.

Foods High in Potassium, Low in Sodium

The best sources of potassium are fresh foods with limited processing, because processing can impact the potassium level. On the other hand, raw foods are naturally low in sodium and processed foods are our main dietary source of sodium.
Table 1 indicates food sources high in potassium and low in sodium.

Table 1 : A selection of Foods High In Potassium, Low in Sodium (when unprocessed)

<table>
<thead>
<tr>
<th>Avocado, apricot &amp; other stone fruit</th>
<th>Banana</th>
<th>Beans as lentils, kidney beans, split peas</th>
<th>Dates, raisins &amp; other dried fruits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herbs &amp; spices e.g. parsley and chilli : fresh or dried</td>
<td>Kale, spinach, lettuce and other green leafy vegetables</td>
<td>Fish such as cod, sardines, trout, tuna</td>
<td>Mushrooms : fresh or dried</td>
</tr>
<tr>
<td>Orange and other citrus fruits &amp; juices</td>
<td>Melon, watermelon, apple, and other seeded fruits</td>
<td>Peanuts, walnuts and other nuts</td>
<td>Potato and sweet potato</td>
</tr>
<tr>
<td>Red and white meat</td>
<td>Soy beans, curd, milk</td>
<td>Tomato and tomato products</td>
<td>Yoghurt &amp; low fat dairy (except cheese)</td>
</tr>
</tbody>
</table>

The biggest effect on blood pressure is our lifestyle

Obesity, low levels of physical activity and low intakes of potassium have greater effects on blood pressure than high sodium intakes. Low calcium and magnesium intakes and a high ratio of saturated fats to n-3 polyunsaturated fats have also been implicated. Most recent interest has been in the benefits of the DASH (Dietary Approaches to Stop Hypertension) diet, rich in fruits, vegetables and grain products (to increase potassium and fibre) and including low fat dairy products, fish, legumes, poultry and lean meats. When salt intake was kept constant, blood pressure fell significantly.

Table 2 illustrates potential benefits to blood pressure of various lifestyle modifications.

Table2: Potential blood pressure benefits, by lifestyle change

<table>
<thead>
<tr>
<th>Modification</th>
<th>Recommendation</th>
<th>Approximate Systolic Blood Pressure Reduction (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Reduction</td>
<td>Maintain normal body weight (body mass index 18.5 – 24.9 kg/m2)</td>
<td>5 -20 mmHg/10 kg weight loss</td>
</tr>
<tr>
<td>Adopt DASH Eating Plan</td>
<td>Consume a diet rich in fruits, vegetables and low-fat dairy products with a reduced content of saturated and total fat</td>
<td>8 – 14 mmHg</td>
</tr>
<tr>
<td>Dietary Sodium Reduction</td>
<td>Reduce dietary sodium intake to no more than 2.4g sodium or 6 g salt per day</td>
<td>2 – 8 mmHg</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>Engage in regular aerobic physical activity such as brisk walking (at least 30 min per day, most days of the week)</td>
<td>4 – 9 mmHg</td>
</tr>
<tr>
<td>Moderation of Alcohol Consumption</td>
<td>Limit consumption to maximum 3 units of alcohol per day in men and 2 units of alcohol per day for women and lighter weight men. (1 unit of alcohol = 10 gr of pure alcohol = 1 glass of beer (25 cl) or wine (10 cl) or whiskey (3 cl))</td>
<td>2 – 4 mmHg</td>
</tr>
</tbody>
</table>

Experts recommend reductions in salt intake

The evidence linking dietary salt to blood pressure has been exhaustively reviewed in the scientific literature over the past two decades, and the public health policy implications of this evidence have been carefully considered by expert committees in many countries worldwide, including the UK and the USA. As we do not need our current high intakes, reductions to 5-6g salt (2-2.4g sodium) per day are recommended. It is also recommended to consume 5 portions of fruit and vegetables per day which has been shown to have many health benefits including increasing potassium intake.
Practical implications

The body can adapt to reduced sodium intakes from salt; acceptance of a sodium intake half of that accustomed to takes 2-3 months. We are turning to alternative ways of flavouring foods with greater use of pepper, fresh and dried herbs and spices. Salt substitutes, based on potassium compounds, can help too whilst also contributing to an increased potassium intake. Although taste and a lower food preservative value compared with salt have limited their usage, more recently products have been developed by the food industry to overcome these problems.

Further Information

High Blood Pressure

High blood pressure or hypertension is a situation when the pressure of the blood in a person’s small blood vessels called arterioles is elevated when compared against the blood pressure of a normal or normotensive individual. In adolescents, normal blood pressure values are defined by gender, age and height.

Although high blood pressure may be tolerated for some years in adolescents, eventually damage may occur to the body. When the blood pressure is elevated, then the heart, or pump, must work harder to push the blood through the vessels due to the resistance brought on by the elevated pressure. When the heart works harder, the heart muscle may enlarge and this in itself can cause damage. Persistent high blood pressure may also cause damage to the blood vessels in the kidneys, brain and eyes.

Blood pressure is described by two numbers—the systolic and the diastolic. These numbers refer to the pressure in millimeters (mm) of mercury (Hg). The systolic number represents the pressure in the artery when the heart contracts and pushes out the blood to the body. The diastolic number represents the pressure in the artery when the heart is in the relaxation phase and blood flows back into the heart.

Studies of adolescents by age, height and gender have established normal values for systolic and diastolic pressures. Values that are less than the ninetieth percentile are considered normal; values between the ninetieth and ninety-fifth percentiles are considered high normal and values at the ninety-fifth percentile or higher are considered high blood pressure. According to the National High Blood Pressure Education Program Working Group on Hypertension Control in Children, National Institutes of Health the following are ranges of blood pressure values for adolescents based on age and gender; the values at ninety-five percent are considered to be high blood pressure:

<table>
<thead>
<tr>
<th>Age</th>
<th>Systolic Blood Pressure</th>
<th>Diastolic Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>90% 116-122</td>
<td>75-78</td>
</tr>
<tr>
<td></td>
<td>95% 120-126</td>
<td>79-82</td>
</tr>
<tr>
<td>13 y</td>
<td>90% 118-124</td>
<td>76-80</td>
</tr>
<tr>
<td></td>
<td>95% 121-128</td>
<td>80-84</td>
</tr>
<tr>
<td>14 y</td>
<td>90% 119-126</td>
<td>77-81</td>
</tr>
<tr>
<td>Age</td>
<td>Systolic Blood Pressure</td>
<td>Diastolic Blood Pressure</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td>mm Hg</td>
<td>mm Hg</td>
</tr>
<tr>
<td>12 y</td>
<td>90% 115-123</td>
<td>75-79</td>
</tr>
<tr>
<td></td>
<td>95% 119-127</td>
<td>79-83</td>
</tr>
<tr>
<td>13 y</td>
<td>90% 117-126</td>
<td>75-80</td>
</tr>
<tr>
<td></td>
<td>95% 121-130</td>
<td>79-84</td>
</tr>
<tr>
<td>14 y</td>
<td>90% 120-128</td>
<td>76-80</td>
</tr>
<tr>
<td></td>
<td>95% 121-130</td>
<td>80-85</td>
</tr>
<tr>
<td>15 y</td>
<td>90% 123-131</td>
<td>77-81</td>
</tr>
<tr>
<td></td>
<td>95% 127-135</td>
<td>81-86</td>
</tr>
<tr>
<td>16 y</td>
<td>90% 125-134</td>
<td>79-83</td>
</tr>
<tr>
<td></td>
<td>95% 129-138</td>
<td>83-87</td>
</tr>
<tr>
<td>17 y</td>
<td>90% 128-136</td>
<td>81-85</td>
</tr>
<tr>
<td></td>
<td>95% 132-140</td>
<td>85-89</td>
</tr>
</tbody>
</table>

For adults, normal blood pressure is less than 120 systolic and less than 80 diastolic. Prehypertension is 120-139 systolic and 80-89 diastolic.

The range in each group of values is related to the height percentile of the adolescent. For example,
laboratory tests ordered will depend on the individual adolescent. These tests could include urine testing, blood chemistries including lipids and possibly other kidney tests. An electrocardiogram and chest x-ray may be performed to evaluate the size of the heart. Some teens may be referred to a specialist in hypertension, cardiology, endocrinology or kidney disease.

**How is high blood pressure treated?**

The treatment for high blood pressure consists of non-drug therapy or lifestyle changes and drug therapy. Weight loss is often helpful in reducing blood pressure. For those individuals who are more than ten percent above ideal body weight, then weight loss may be effective in reducing mild high blood pressure to normal. Regular physical exercise may help reduce weight and stress. Some experts feel that regular and moderate aerobic exercise can reduce blood pressure by ten mm.

Experts feel that avoidance of excess salt may reduce blood pressure by between 2.6 to 4.9 mm. Foods high in sodium are often popular with teens. These foods include the following:

- A-1 Sauce
- Soy Sauce
- Corn chips
- Pickles
- Potato chips
- Salted popcorn
- Salted peanuts
- Coke
- Mountain dew
- Hot dogs
- Pizza

Eliminating the use of table and cooking salt in itself may be beneficial. Most salt however, comes in the form of processed or commercial foods that are popular with adolescents.

Any teen with high blood pressure should quit smoking. A few cups of coffee or a caffeinated beverage is probably acceptable on a daily basis. Needless to say, teens should not be drinking alcohol. In adults high alcohol intake may adversely affect the blood pressure.

Stress reduction and psychological therapy may be helpful adjuncts in reducing high blood pressure. Some authors feel that religious faith and activity may be helpful in moderating blood pressure while others feel that transcendental meditation, a relaxation technique may be helpful.

There are many approaches to the pharmacological treatment of high blood pressure. The decision to treat adolescents who have high blood pressure with medication should be done carefully and thoughtfully. The adolescent and his or her family should be involved in and fully informed about the side effects of the medication.

There is no ideal medication for high blood pressure and many experts recommend a step-by-step care program. Medications include diuretics, which cause a reduction of sodium and water in the blood vessels, and this in turns lowers the blood pressure. Side effects include increased urination and possible depression and changes in the sexual drive. Beta-blockers affect the force and frequency of the heart beat thus lowering the workload of the heart. Fatigue, depression, memory loss and vivid dreams may be potential side effects.
Other medications include the angiotensin converting enzyme inhibitors the so-called ACE inhibitors. These medications block the effects of the angiotensin-renin-aldosterone system, which can increase the blood pressure and affect the heart and blood vessels. Some patients report an irritating cough or excessive drop in blood pressure that could be signaled by lightheadedness. Calcium-channel blockers immediately reduce the blood pressure by relaxing the smooth muscle around blood vessels. The resistance in the blood vessels is lowered, so the work of the heart or pump is reduced also. The side effects may include constipation, fatigue or impotence.

How is high blood pressure prevented?

Since most adolescents who have high blood pressure have no disease causing the problem, then prevention will depend on lifestyle changes. These changes include having an appropriate weight for height, a reasonable sodium intake and moderate aerobic physical activity. Stress reduction techniques including yoga may help reduce anxiety and this in turn may lower blood pressure in some individuals. Also, good sleep habits are important. In one study, individuals who had a sleep-deprived night had a higher blood pressure and heart rate the morning after compared to the blood readings the morning after a full night of sleep.

Related topics:

Anger, chronic illness, coffee, depression, diuretics, exercise, headaches, obesity, oral contraceptives, smoking and tobacco, yoga

Copyright © 2010 Massachusetts General Hospital
High Sodium Foods List

Pickles, olives, pickled okra, and pickled peppers

Processed meats: bacon, sausage, ham, deli meats, hot dogs, salt pork

Canned foods: soups, vegetables, meats

Snacks: chips, crackers, popcorn, nuts, pretzels, pork skins

Cheeses

Fast food

Sodas

Gatorade type drinks

Pizza

Chinese food

Seasonings like soy sauce, A-1, seasoning salts
NOTE to TEACHERS: HCCI staff are required for the screening portion of this lesson. PLEASE call the HCCI office to schedule assistance 1 month prior to teaching the lesson @ 846-4303 or 846-4300.

HCCI 7th Grade Health Unit

Lesson #9 What Is Diabetes Anyway?

Lesson Plan

Suggested time-2 class periods

I. Goal: To introduce students to the basic concepts of type 2 diabetes, blood sugar and the role diet plays in both.

II. Objectives: After completion of this lesson, students will be able to:

1. Define type 2 diabetes in simple terms.
2. Identify at least two kinds of treatments for type 2 diabetes.
3. Name 3 risk factors for type 2 diabetes.
4. Identify high sugar foods by measuring the sugar content.

III. Procedures

A. Pre-test

B. Introduction/Motivation

Ask: What do you know about diabetes? Do you know anyone who has this disease? Does anyone in this class have diabetes? Give students a few minutes to answer. There are 3 types of diabetes and each type can cause serious problems if not controlled: type 1, type 2, and gestational (jes-tay'-shun-ul). Today we are going to focus on type 2 diabetes because this is the type that more and more teenagers are getting.

C. Study/Learning

1. Definitions:

   Pancreas- a small organ behind the stomach and liver that makes and releases insulin

   Insulin- a hormone that helps glucose move from the blood into the cells; similar to a key that
unlocks the door to a room

**Blood Glucose** — another name for **blood sugar** which is the amount of sugar in the blood that comes from the food we eat

**Fasting Blood Glucose Test**— this is one way to test for diabetes; it means the amount of sugar in the blood is measured first thing in the morning before the person has had anything to eat or drink

**Type 1 Diabetes**— this is when a person’s pancreas does not produce ANY insulin, so the person has to depend completely on insulin from outside the body through shots or a pump every day.

**Type 2 Diabetes**— this is when the pancreas may make a little insulin but not enough to keep blood sugar levels in a normal range or the small amount of insulin cannot take enough blood sugar into the cells; it is often related to being overweight or obese. Fasting blood sugar level >126 usually means a person has diabetes.

**Pre-Diabetes**—if a person’s fasting blood sugar is between 100-125, this person does not have diabetes, but is at risk for developing it. Approximately 1 in 6 overweight teens are pre-diabetic. Improving diet and increasing exercise to lose weight (even 5-10 per cent of body weight) can often prevent the onset of diabetes.

**Gestational Diabetes**— when a woman develops diabetes during pregnancy; after the baby is born, the woman usually goes back to normal and no longer has diabetes. It can be harmful to the baby if the mother does not control her blood sugar during the pregnancy.

**Screening**—when a person is tested for a particular substance in their blood or urine or other measurements such as BMI (body mass index). The purpose of screening is to catch people early enough to prevent diseases or prevent bad side effects of the disease.

**Carbohydrates**—(carbs) the body’s first choice for daily energy; found in foods like grains, milk, fruits, vegetables, and sweets. Carbs affect blood sugar levels more than other foods like protein or fats.
2. Let's begin at the very beginning! Where does blood sugar (glucose) come from in our bodies? Simply put... from the foods we eat. Carbohydrates are the main foods that affect our blood sugar levels. **Simple carbohydrates** found mainly in fruits, dairy products, and sweets raise blood sugar much faster than **complex carbohydrates** such as cereals, grains and vegetables. It is best to follow the MyPyramid and eat a balance of both kinds of carbohydrates. After eating a meal, the body eventually breaks down all the carbohydrates into tiny molecules of glucose. This glucose moves from the intestines into the blood stream to travel to all the cells in the body. All cells need glucose for energy, but the glucose cannot get into the cells without insulin to "unlock the door." Since diabetics don't make enough insulin, too much glucose ends up staying in the blood and damaging blood vessels and organs such as the heart, kidneys, eyes, and nerves.

So, what can a person with type 2 diabetes do to keep his blood sugar within normal limits (<110)? There are several ways to manage the problem of high blood sugar: 1) healthy diet, increased exercise, and weight loss 2) medications by mouth in tablet form 3) daily insulin shots 4) insulin pump 5) any combination of these. No matter which treatment is recommended by the doctor, diet & exercise need to be part of the plan. **The better blood sugar control a person maintains, the less likely that type 2 diabetes will lead to heart disease, stroke or kidney failure.**

3. Activity: **The HCCI staff must be on hand for this blood sugar screening activity.** Allow them a few minutes to explain the technique and reassure kids the test does not hurt. Ask the HCCI staff to explain the test they will be doing is a "random glucose test" and is not the one used to **diagnose diabetes.** If the results are very high, they will be asked to do the "fasting glucose test" in a doctor's office. Next have the students get their blood sugar checked 1 row at a time. While the other students are waiting their turn, ask them to complete the worksheets "Fill in the Blank Mystery" and "Topsy Turvey." If needed they can do the worksheet puzzle "See
More, Eat More.” Any student with an elevated random glucose test result will be referred to the school nurse for follow-up.

D. Culmination:

Have the HCCI staff conduct a short question and answer session with the students about type 2 diabetes and prevention.

E. Follow-Up

1. Post-test

2. For homework, have the students write a paragraph about what they learned from today’s lesson and screening activity.

HCCI Lesson # 9 Pre/Post-Test answers:


Materials & Notes

Call HCCI staff to plan a date for the Activity: Blood Sugar Screening

846-4304 or 846-4300

60 copies Pre/Post Test

30 copies each worksheets: “Fill in the Blank Mystery,” “Topsy Turvey,” and “See More, Eat More”

30 copies “Tips for Teen: Lower Your Risk for Type 2 Diabetes”- Color NDEP Brochures

Scissors and tape
HANDOUTS
HCCI Lesson #9 What Is Diabetes Pre/Post-Test

Name ____________________________________________

True/False

_____ 1. Obesity is the greatest risk factor for type 2 diabetes.

_____ 2. Diabetes increases the risk for stroke and heart disease.

_____ 3. Diabetes is caused by eating too many sugary foods.

_____ 4. A weight loss of 5-10 percent can reduce the risk of type 2 diabetes.

_____ 5. Everyone with diabetes must take insulin shots to control their blood sugar.
Fill in the Blank Mystery

Eating gives us the fuel we need to live. But that's only part of the story. Fill in the blanks in these sentences with words that have to do with diabetes. Then move the letters from each circle to the spaces near the bottom of the page. They will spell out the answer to the question.

**HINT: One word is used twice.**

When you ____, you not only feed your hunger, but you feed your body.

From your head to your toes, your body is made up of millions and millions of ____. To do their work, your body's cells need a fuel called ____. The sugar comes from the ____ we eat.

Another name for this sugary fuel is ____. But to be able to eat, the cells need to unlock their walls with a key called ____. Insulin is made in a part of your ____.

The pancreas is a small organ, about six inches long, behind your ____. Special cells in the pancreas, called ____ cells, make insulin.

When juvenile diabetes happens, the pancreas stops making ____. ___, all need insulin to live.

**Question:**

What do people living with diabetes hope for?

_____!

---

**Want to see a cell?**

With a lollipop stick or flat toothpick, gently scrape the inside of your cheek. Put the cells on a slide with a little saliva. (Optional: add a drop of iodine solution to color cells.) Put slide under microscope.

**Cells look like this:**

![Cells Image]
Topsy Turvy: Where Does the Food Go?

Oh dear! The body on the right is all mixed up. Cut out the body parts on the right. Put them in the correct order. Be careful, some parts are upside down!

You chop food with your teeth.
Your stomach turns it into a soupy goop.
The good stuff—sugar—is squeezed out and flows through your blood to feed all the cells of your body. But the cells can't eat the sugar without a special key called insulin. Insulin is made in the pancreas.

MEET YOUR PANCREAS

Your pancreas makes insulin. When diabetes happens, most of the pancreas still works, just not the part that makes insulin. So, people with diabetes have to take insulin to keep their cells fed, working and strong.

Color the pancreas and cut it out. Tape it onto your body, where your real pancreas is.
See More, Eat More!

Studies show that the larger the serving size, the more a person will eat. But eating too much can be very unhealthy — for people with and without diabetes.

In the menus below, cross out all the lower case letters. The “leftovers” will spell out some healthy eating tips for eating out!

**The Pizza Parlor**
- meatballs
- ketchup
- olives
- fontina
- olive oil
- shrimp
- spinach
- pesto
- mushrooms
- peppers

**Café Italiano**
- olives
- pepperoni
- diced cheese
- rigatoni
- salami
- tomato
- linguini
- eggplant
- sauce
- tiramisu
- pizza
- parmesan

**Manny’s Diner**
- salad
- pizza
- slush
- fries
- hot dogs
- shakes
- donuts
- cookies
- hamburgers

**Hamburger Heaven**
- egg
- cream
- hot dogs
- salad
- fried onions
- cheese sandwich
- coleslaw
- yellow lemonade

Use these tips and other healthy eating messages to create posters to display in your school.
TEACHER RESOURCES
DIABETES:
Why Many Teens Are at Risk

DVD Version

EXECUTIVE PRODUCER
Anson W. Schloat

PRODUCER
John O'Neill

TEACHER'S RESOURCE BOOK
Karin Rhines
Former Program Director,
Westchester County (NY) Department of Health

Copyright 2009
Human Relations Media, Inc.
DIABETES: WHY MANY TEENS ARE AT RISK

TABLE OF CONTENTS

DVD Menu i
Introduction 1
Learning Objectives 2
Program Summary 3

Student Activities

1. Pre/Post Test 5
2. Assess Your Risk 7
3. Type 1 or Type 2? 12
4. Complications 14
5. Match 'Em 16
6. Community Resources 18

Fact Sheets

1. Diabetes 19
2. Food Tips for Losing or Maintaining Weight 20
3. Exercise Tips 21
4. Sugar, Energy, Insulin and Diabetes 22
5. Testing Blood 23
6. Be a Friend 24
7. Resources 25
Other Programs from Human Relations Media 27
MAIN MENU

PLAY

CHAPTER SELECTION
From here you can access many different paths of the DVD, beginning with the introduction and ending with the credits.

1. Introduction
2. Type 2
3. Pre-Diabetes
4. Type 1
5. Warning Signs
6. Conclusion

TEACHER’S RESOURCE BOOK
A file of the accompanying Teacher’s Resource Book is available on the DVD. To open the file you need to load the DVD onto a computer that has a DVD-ROM and Adobe Acrobat Reader. Right click on the DVD icon and then double click on the file titled “Teacher’s Resource Book.”
The threat of diabetes in teens is becoming a major public health concern. Until recently teens with diabetes had type 1, the type of diabetes that develops in young children. Type 2 diabetes was seen almost exclusively in adults over 40. Now, however, doctors are beginning to diagnose type 2 diabetes in teens.

Currently there are about 186,000 cases of type 1 and type 2 diabetes in children and teens under 20: about one-quarter of one percent of this population. But about 12 million of the estimated 32 million teens are overweight or obese, a risk factor for diabetes. Of these overweight teens, two million—or one in six—are pre-diabetic. This is a condition in which the blood sugar is above normal, but does not yet meet the criteria for diabetes. There are no outward symptoms, but it can be detected by a routine blood test. When pre-diabetes is not diagnosed, it may lead to type 2 diabetes. The good news is that lifestyle changes can reduce the risk of progressing to diabetes. With regular exercise and weight loss—as little as five to ten percent—individuals can improve their blood sugar levels.

Obesity—and its role in diabetes and a variety of other diseases—has become a hot issue in the popular media that is often oversimplified. It is, in fact, a complex issue for which medical science offers conflicting information and advice. Clearly there is a behavioral component. Too many calories and too little activity definitely contribute. So does genetics. Each individual inherits not only stature, but also metabolic traits such as how efficiently food is converted to fuel and utilized by the body.

Social factors also play a role in obesity. However, this component is often glossed over or underestimated. It should not come as a surprise that there is a strong correlation between obesity and poverty. In poor neighborhoods it can be difficult to find affordable fresh foods essential to a healthful diet. Safety issues may reduce opportunities for outside exercise.

As a culture, we often see obesity as a failure of character or self-indulgence. For teens who are already experiencing the self-consciousness of adolescence, being obese adds to their anxiety and may encourage behaviors that make the problem even worse. In teaching about diabetes and obesity, the discussion must remain supportive and non-judgmental.

A summer 2008 article in the Archives of Internal Medicine can help bring some perspective to the obesity and diabetes discussion. A study was conducted on more than 5,400 adults for cardiovascular risk factors, including blood pressure, blood glucose, LDL cholesterol and assessment of insulin resistance. It was discovered that just over half of those who were overweight and just under a third of those who were obese were healthy by these standards. The study also found that about a quarter of normal-weight individuals were unhealthy by these standard indicators. In other words, a person can be overweight or even obese and still be fit and a person of normal weight can be unfit.

Diabetes: Why Many Teens Are at Risk was created to offer viewers factual information about this common disease, and identify ways that it can be avoided or managed successfully.
After watching the video *Diabetes: Why Many Teens Are at Risk* and participating in the class activities included in this Teacher’s Resource Book, your students will be able to:

- explain what diabetes is and distinguish between type 1, type 2 and pre-diabetes
- identify risk factors for diabetes
- assess their own risk for diabetes
- understand the role of diet and exercise in preventing and controlling diabetes
- identify diet and exercise changes they can make to reduce their own risk of diabetes
- describe what they can do to help a friend with diabetes who is experiencing low blood sugar
- identify complications of diabetes and understand the steps that can reduce the risk of these complications
Diabetes: Why Many Teens Are at Risk explores type 1 and type 2 diabetes and pre-diabetes through the eyes of six young people who are living with diabetes or are at risk for it. Amanda, now 22, was diagnosed when she was in first grade, while 14-year-old Richard was recently diagnosed. Dr. Susan Ratzan, a diabetes specialist, explains what this illness is and the role of insulin in it. She uses a key analogy to help viewers understand how insulin “opens” the cell to allow sugar to move from the bloodstream into the cell where it is used for energy.

Dr. Ratzan adds more information about symptoms and possible complications as the young people tell their stories. They describe their early symptoms and getting diagnosed. They explain their treatment—some take insulin, others are trying to control the disease with diet and exercise.

Amanda and Thomas discuss how frequently they test their blood sugar and demonstrate how the monitor is used. Both use insulin pumps rather than injecting themselves with insulin and they show their pumps. Amanda talks about the challenge of maintaining the proper balance between blood sugar and insulin and describes the symptoms of low blood sugar.

Richard talks about being at risk because he is overweight and has a family history of diabetes. Cody is pre-diabetic and overweight. Both describe the changes they are making in diet and activity and how they are succeeding.

The video ends with a recap of how teens can reduce their risk of diabetes.
This page left blank intentionally.
STUDENT ACTIVITIES
Pre/Post Test

Decide whether the following statements are true or false.

1. **TRUE or FALSE:** Diabetes is a disease of people over 40.

2. **TRUE or FALSE:** Diabetes increases the risk of stroke and heart disease.

3. **TRUE or FALSE:** Type 1 diabetes occurs when the body produces little or no insulin.

4. **TRUE or FALSE:** Obesity is the greatest risk factor for type 2 diabetes in teens.

5. **TRUE or FALSE:** Everyone with pre-diabetes will eventually develop type 2 diabetes.

6. **TRUE or FALSE:** Everyone with diabetes must take insulin to control their blood sugar.

7. **TRUE or FALSE:** Diabetes is caused by eating too many sugary foods.

8. **TRUE or FALSE:** A weight loss of five to ten percent can reduce the risk of type 2 diabetes.

9. **TRUE or FALSE:** A healthy diet and moderate exercise help control diabetes.

10. **TRUE or FALSE:** When people with diabetes have low blood sugar, they need to eat a high-protein snack.

*The Answer Key for this activity appears on the next page.*
Answer Key

1. **TRUE or FALSE:** Diabetes is a disease of people over 40.  
   
   **FALSE**

2. **TRUE or FALSE:** Diabetes increases the risk of stroke and heart disease.  
   
   **TRUE**

3. **TRUE or FALSE:** Type 1 diabetes occurs when the body produces little or no insulin.  
   
   **TRUE**

4. **TRUE or FALSE:** Obesity is the greatest risk factor for type 2 diabetes in teens.  
   
   **TRUE**

5. **TRUE or FALSE:** Everyone with pre-diabetes will eventually develop type 2 diabetes.  
   
   **FALSE**

6. **TRUE or FALSE:** Everyone with diabetes must take insulin to control their blood sugar.  
   
   **FALSE**

7. **TRUE or FALSE:** Diabetes is caused by eating too many sugary foods.  
   
   **FALSE**

8. **TRUE or FALSE:** A weight loss of five to ten percent can reduce the risk of type 2 diabetes.  
   
   **TRUE**

9. **TRUE or FALSE:** A healthy diet and moderate exercise help control diabetes.  
   
   **TRUE**

10. **TRUE or FALSE:** When people with diabetes have low blood sugar, they need to eat a high-protein snack.  
    
    **FALSE**
PART ONE: Body Mass Index (BMI)

Until recently it was unusual for anyone under 40 to have type 2 diabetes. In the past few years an increasing number of teens are being diagnosed with this condition, and even more are being diagnosed as pre-diabetic. Most of them have something in common—they are greatly overweight.

In this activity, you can begin to assess your own risk for developing type 2 diabetes. You don’t need to share this activity sheet with anyone—this is for your benefit.

The BMI is used to categorize weight as normal, underweight, overweight or obese. (Obese is the category for seriously overweight.) A formula uses height and weight to calculate BMI. In this activity you will calculate your own BMI and find out more about the BMI categories.

The formula is:

\[
\frac{\text{weight} \times 730}{\text{height in inches} \times \text{height in inches}}
\]

Let’s look at a person 5’6” who weighs 150 pounds. Before beginning, convert the height to inches: 5’ = 60”; 60”+6”=66”. Now we’re ready.

\[
\frac{150 \times 730}{66 \times 66} = \frac{109500}{4356} = 25.1
\]

This person’s BMI is 25.1.

From the Internet or reference books, find the numbers to complete this chart.

<table>
<thead>
<tr>
<th>Category</th>
<th>BMI range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td></td>
</tr>
<tr>
<td>Normal weight</td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td></td>
</tr>
<tr>
<td>Obese (risk for diabetes)</td>
<td></td>
</tr>
</tbody>
</table>

Find out where your BMI is on this chart. What does it say about your risk for diabetes?

Calculate your BMI if your weight were five pounds heavier. Calculate it again with your weight five pounds less than you currently weigh.

What effect does gaining and losing weight have on your risk for diabetes?

There are many websites that let you input your height and weight and your BMI will be calculated for you.

*This activity is continued on the next page.*
PART TWO: Diet
Most people can only guess at how much they eat in a day. It's easy to underestimate how big a portion we take or forget that extra brownie or bag of chips. Keeping a food diary is one way to get a better idea of what you are eating.

Use the form on the next page to track everything you eat for at least a full day. Just fill in the Food and Amount columns. The next step is to figure out the calories. You can do this with a calorie-counting book or at many sites on the Internet. Finally, identify the food groups—grains, dairy, fruits, vegetables, meats and beans and oils. This tells you if your diet is balanced.

So, how did you do? Moderately active teens need around 2,000 calories a day. Were you above, below, or on target?

What about foods from all the food groups? Don't cheat—potato chips don't count as a vegetable. You need about three servings of milk, 5 1/2 ounces of meat and beans, two to three servings of vegetables, two servings of fruit and six servings of cereals and grains—every day.

Are there ways you can improve your diet? List them here.

1. 

2. 

3. 

4. 

5. 

Here's a website that can help you: <www.mypyramid.gov>. It is run by the U.S. Department of Agriculture. The food pyramid is designed with recommendations of how many servings of each should be eaten each day. This site also lets you put in your height, weight, gender and physical activity. With this information it will tell you how many calories you need each day. It also lets you plan meals. You may not find all of your favorite foods, but this site can give you tips for improving your diet.

For more food tips, check out the Food Tips for Losing or Maintaining Weight fact sheet.

*This activity is continued on the next page.*
### Food Diary

<table>
<thead>
<tr>
<th>Date:</th>
<th>Food</th>
<th>Amount</th>
<th>Calories</th>
<th>Food Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This activity is continued on the next page.
PART THREE: Exercise
Exercise is another factor that reduces your risk for diabetes and a host of other diseases. How much exercise should someone your age get? The general recommendation for exercise is 30-60 minutes a day at least five days a week for teens and adults.

If you’re an athlete, you probably get this easily during your sport’s season. But what about the rest of the year? And what if you aren’t an athlete?

When you think of exercise you probably think of walking, running, cycling and swimming. These are all good. But don’t forget work around the house or an after-school job. Cleaning house or mowing the lawn with vigor is good exercise. So is stocking shelves and walking the dog.

How much exercise do you get?
Use the form on the next page to track your activity for at least one day.

Add up the minutes of exercise. How did you do? Did you reach the 30-60 minute level? How many days a week are you doing this much activity?

If you’re getting the recommended amount of exercise, how can you keep getting it?

If you need to add activity, list ways you might do this.

1. ____________________________________________
2. ____________________________________________
3. ____________________________________________
4. ____________________________________________
5. ____________________________________________

For more on exercise, check out the Exercise Tips fact sheet.

This activity is continued on the next page.
## Exercise Diary

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity/Exercise</th>
<th>How many minutes?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In the video you learned about two types of diabetes. Complete the chart below to show the similarities and differences in type 1 and type 2 diabetes.

<table>
<thead>
<tr>
<th></th>
<th>Type 1 Diabetes</th>
<th>Type 2 Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can often be managed by diet and exercise alone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin must be injected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can result in blindness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most common in older adults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usually diagnosed in young children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body produces little or no insulin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Must test blood sugar regularly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body does not respond to the insulin present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An increasing problem among teens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity increases its risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be present without obvious symptoms</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This activity is continued on the next page.
# Answer Key

<table>
<thead>
<tr>
<th></th>
<th>Type 1 Diabetes</th>
<th>Type 2 Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can often be managed by diet and exercise alone.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Insulin must be injected</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Can result in blindness</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Most common in older adults</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Usually diagnosed in young children</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Body produces little or no insulin</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Must test blood sugar regularly</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Body does not respond to the insulin present</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>An increasing problem among teens</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Obesity increases its risk</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Can be present without obvious symptoms</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Diabetes can lead to serious health complications, especially if it isn’t managed properly. Choose one of the complications listed below and do research to find out:

1. how it is related to diabetes
2. how common it is among people with diabetes
3. how people with diabetes can reduce their risk of having the complication

**Complications of diabetes:**

- heart disease
- stroke
- blindness
- nerve damage
- hypertension (high blood pressure)
- kidney disease

Use the Resource Tracker on the next page to record the sources of your information.

*This activity is continued on the next page.*
<table>
<thead>
<tr>
<th>Title of book or article:</th>
<th>Title of book or article:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Author(s):</td>
<td>Author(s):</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Published by:</td>
<td>Published by:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Copyright date:</td>
<td>Copyright date:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject covered:</td>
<td>Subject covered:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Quote(s):</td>
<td>Quote(s):</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes:</td>
<td>Notes:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Match the terms in column A with their functions in column B

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. glucose</td>
<td>a. used to control type 2 diabetes</td>
</tr>
<tr>
<td>2. type 1 diabetes</td>
<td>b. complications of diabetes</td>
</tr>
<tr>
<td>3. insulin</td>
<td>c. type of diabetes usually seen in young children</td>
</tr>
<tr>
<td>4. pre-diabetes</td>
<td>d. sugar used by the body to make energy</td>
</tr>
<tr>
<td>5. blood testing</td>
<td>e. type of diabetes on the rise in teens</td>
</tr>
<tr>
<td>6. type 2 diabetes</td>
<td>f. risk factor for type 2 diabetes</td>
</tr>
<tr>
<td>7. pancreas</td>
<td>g. organ that makes insulin</td>
</tr>
<tr>
<td>8. obesity</td>
<td>h. hormone necessary for glucose to get into cells</td>
</tr>
<tr>
<td>9. blindness and kidney disease</td>
<td>i. way for people with diabetes to measure sugar</td>
</tr>
<tr>
<td>10. exercise and diet</td>
<td>j. higher than normal blood sugar that may lead to diabetes</td>
</tr>
</tbody>
</table>

The Answer Key for this activity appears on the next page.
Answer Key

1. d
2. c
3. h
4. j
5. i
6. e
7. g
8. f
9. b
10. a
According to the American Diabetes Association <www.diabetes.org/home.jsp>, almost 24 million people in the United States have diabetes. That’s two out of every 25 men, women and children. In about a quarter of these cases, the affected person doesn’t know that he or she has the condition. In addition to these people, an estimated two million adolescents aged 12-19 have pre-diabetes, a condition of higher than normal blood sugar that can lead to diabetes.

Find out what resources your community has to address diabetes. Look for services that:

Provide education about preventing diabetes

Provide blood tests to detect diabetes and pre-diabetes

Provide support and information to people who have a new diagnosis of diabetes

Provide support for people who have been living with diabetes

Good diet and regular exercise are two things that help reduce the risk of diabetes. What programs in your community provide diet counseling and exercise opportunities for teens?
Diabetes occurs when the body is unable to use sugar (glucose) properly because it lacks or cannot respond to the hormone insulin. Sugar builds up in the blood because, without the help of insulin, it cannot get inside cells where the body can use it.

Diabetes is diagnosed with a fasting blood test. All this means is that blood is taken for testing first thing in the morning before any food is eaten. Normal fasting blood sugar levels are less than 100. Levels above 126 suggest diabetes.

Let’s look at the different types of diabetes.

**Type 1 Diabetes**
Type 1 diabetes is also called juvenile-onset diabetes or insulin-dependent diabetes. This condition is usually diagnosed in children and sometimes in young adults. It occurs when the body produces only small amounts of insulin or no insulin at all. People with type 1 diabetes take insulin to replace what their body fails to make.

**Type 2 Diabetes**
Type 2 diabetes occurs when cells no longer respond to the insulin in the body. It is the most common type of diabetes and, until recently, was most often seen in adults over 40. Being overweight and/or having a family member with diabetes increases a person’s risk of developing type 2 diabetes. It is also called adult-onset diabetes or non-insulin-dependent diabetes.

**Gestational Diabetes**
Late in pregnancy some women with no history of diabetes develop high blood sugar, a condition known as gestational diabetes. It can affect both the pregnant woman and her developing fetus if it is not treated. Treatment begins with diet and exercise. If this doesn’t bring the blood sugar down, she may need to take insulin and test her blood sugar regularly. Usually, the woman will return to normal blood sugar levels after delivering the baby, but she will have a high risk of gestational diabetes with future pregnancies.

**Pre-Diabetes**
If a person’s fasting blood sugar level is 100-125, the person is said to have pre-diabetes. He or she does not have diabetes, but is at risk of getting it. An estimated one in six overweight teens is pre-diabetic. Improving diet and increasing physical activity can reduce this risk by decreasing weight and improving overall health.
For people with diabetes, a healthy diet is a must. It is one of the ways they can gain control over their condition. But, of course, a healthy diet is a good idea for everyone. Since obesity is a major risk factor for diabetes, maintaining a BMI between 22.5 and 25.0 can reduce the risk of getting diabetes. So what can you do to lose weight or maintain a healthy weight? For now, let’s just start with a few simple tips.

**DON’T** go on a quick weight-loss diet. Frequently, people who go on these diets gain it all back when they stop dieting.

**DO** change your diet little by little. If you usually have a sandwich and French fries for lunch, try substituting a salad for the fries one or two days a week at first, more as you go forward. It may take longer, but the results are usually longer lasting because you’re developing new food habits.

**DON’T** eliminate everything you like. This will just make you want those donuts, chips and sodas more and make it more difficult to eat properly. You’ll also be more likely to cheat.

**DO** substitute more healthy foods for the less healthy ones you have been eating. If you can’t live without chips, try baked ones rather than fried ones. If you have to have a soda in the afternoon, switch to diet. And just think about foods like apples and bananas. Try one, you might like it.

**DON’T** overeat. No matter how good it tastes, stop eating when your hunger is satisfied.

**DO** use tricks to reduce the amount you eat. Use a smaller plate—it makes it look like you’re getting more than you are. Take small portions to begin with, and then, if you’re still hungry, go back for seconds. Put snacks into a small bowl rather than eating out of a large container.

**DO** keep a food diary. This can really help you understand your food patterns.

**DO** learn more about nutrition. The U.S. Department of Agriculture hosts a website on nutrition called MyPyramid <www.mypyramid.gov>. This is an interactive site where you can input your diet and get tips for improving it.

These tips don’t mean you can never have another double chocolate brownie with sprinkles. Just don’t have one—or two or three—every day. Save it for a special occasion.
Exercise not only helps people lose weight, it also improves overall health. Exercise strengthens the heart and bones. It can improve blood chemistry—that includes things like cholesterol levels and blood sugar.

There are different types of exercise. **Aerobic exercise** raises your heart rate for long periods and includes walking, running and cycling. **Flexibility exercise** is slow stretching that is good for your joints and tendons. Yoga and tai chi are good flexibility exercises. **Weight training** is lifting weights to strengthen muscles. People with diabetes are encouraged to use a combination of all three types of exercise. Here are some tips to get you up and keep you moving.

1. If you have any medical problems, check with your doctor before you start regular exercise.

2. Find a friend or two who will exercise with you. Find an activity or activities you both like.

3. Start slow. If most of your activity has been walking from the computer or TV to the refrigerator, you are not ready for a five-mile hike. Even 10 minutes of exercise will provide benefits.

4. Too embarrassed to exercise in public? Your public library probably has exercise videos you can check out to use at home.

5. Keep an exercise diary where you list date, activity and length of time you did it. This is a great way for you to see your progress. Remember to include cleaning your room.

6. If you start getting bored, vary your routine. If you're walking, change your route. If you're tired of walking, try yoga.

7. Have a plan for alternate exercise for days when you can't follow your usual routine—like a rainy period when you can't be outdoors.

8. Set reasonable goals—have reasonable expectations. Goals help you see progress in your exercise diary. But goals that are too ambitious can actually set you back if you get discouraged.

9. See how many easy ways you can find to increase your activity. Get off the bus a stop early and walk. Take steps instead of an elevator. Jump rope during TV commercials.
When we say that the body uses sugar for energy, we really mean that the cells of the body use sugar for energy. And they use a specific simple sugar called glucose. Glucose is broken down inside cells to release the energy we use for all of our activities, including just staying alive.

**Where does glucose come from?**
Glucose comes from the foods we eat. It is a simple carbohydrate present in many foods, especially fruits, vegetables, dairy products and honey. Glucose is also present in complex carbohydrates like cereals, grains, and vegetables, but its form is different. In these foods long chains of glucose molecules form starches. During digestion, enzymes in the digestive system break down the starch into individual glucose molecules that the cells can use.

Foods rich in the simple sugar glucose release the sugar into the blood quickly. Foods rich in carbohydrates require more digestion so they release glucose into the blood more slowly. A balanced diet—that contains both simple carbohydrates and complex carbohydrates—helps make sure that a steady supply of glucose is released into the bloodstream.

**What does insulin do?**
Cells need a steady supply of glucose to work properly, but glucose can’t get into cells by itself. This is where the hormone insulin comes in. It acts like a key to unlock a door. Insulin attaches to cells and “unlocks” them, so to speak, letting glucose move from the bloodstream into the cells.

**What happens in diabetes?**
In type 1 diabetes, the body either makes no insulin or only small amounts. Without insulin, glucose cannot get into cells. In type 2 diabetes, it’s kind of like someone changed the lock. Insulin, the key, is present, but cells don’t recognize it. The result is that glucose doesn’t get inside the cells. With both types of diabetes, blood sugar rises and the cells can become starved for energy. Over time the high blood sugar can cause damage to the kidneys, eyes, heart and other body organs.
If you have a friend with diabetes you may have seen them prick their finger and draw blood onto a test strip. You may have wondered what they’re doing. Well, they’re testing their blood sugar. It is important for a person with diabetes to do this at least once a day. Several times is even better. A person with diabetes needs to keep his or her blood sugar from going too high or too low and they keep track by testing.

When people are first diagnosed with diabetes, they are shown how to do a blood sugar test and record the information. They also work with their medical provider on how often they should test. They want to keep blood sugar high enough to be active, but low enough that they don’t have complications. Before a meal they’re looking for a number of 70-130 and after a meal the number should stay below 180. If they do strenuous physical activity that takes a lot of energy, like sports, they may need to test before the activity so they know that their blood sugar isn’t too low. If it is low, they can take glucose tablets or other sweets to raise their blood sugar.

**Why record the results?**
Everyone is different and responds differently to treatment. By keeping a log of blood sugar levels during the day, people with diabetes can work with their medical provider to understand what situations make their blood sugar go up and what makes it go down. This helps them make changes in treatment that give them greater control over their diabetes. It also helps them make better decisions about how often and under what circumstances they need to test their blood. For some people, testing once a day is enough, but others need to test many times.

**Does it hurt?**
Pricking a finger with a special needle called a lancet can hurt. In the past, many people with diabetes didn’t test as often as they should because they didn’t like the pain. Today, however, testing can be done with less blood, making testing a little less painful. Many people with diabetes report that they get used to the finger pricks after a while.

Most people with diabetes use special meters to measure their blood sugar. They prick their finger and place a tiny blood sample on a special test strip in the device. The results are displayed on a small screen. Many of these meters also store the results with time and date information and even allow the user to download information into a computer.
People with diabetes take insulin or other medications and sometimes the medication gets out of balance with the amount of food that has been eaten and/or the activity level. When this happens the blood sugar can drop too low, a condition called an insulin reaction. The person experiencing an insulin reaction may need help. If an insulin reaction isn’t treated promptly, it can lead to serious consequences, including diabetic coma.

If you know the signs and what to do, you can provide the help that is needed.

**How will I know?**

A person having an insulin reaction may have one or more of these symptoms:

> shakiness or weakness
> poor coordination
> inability to concentrate
> drowsiness

**What should I do?**

Ask if their blood sugar might be low and if they have their meter with them. If they have their meter, urge them to test.

If they don’t have their meter, ask if they have something sweet with them to treat the low blood sugar. In this situation, they need a fast-acting carbohydrate—something sweet. Most people with diabetes carry something with them—a juice box or raisins or blood glucose tablets—to use in situations like this. If they don’t have anything, get them juice or even a soda.

Stay with them so they don’t wander off or run away.

After 15 minutes have them test their blood sugar again, if they have their meter. If their blood sugar is less than 70, have them take more carbohydrates. If it is normal, have them eat a snack such as string cheese and crackers, peanut butter and crackers or low-fat yogurt. If they’ll be eating a meal within a half hour, they can skip the snack.

**Is that all?**

That’s all there is to it. It’s just a matter of being alert and knowing what to do.
The resources below can help you find almost any information you want to know or need to find out about diabetes.

**Hotline**

1-800-DIABETES  
Hotline of the American Diabetes Association

**Websites**

**American Diabetes Association**  
<www.diabetes.org>  
This website provides a wealth of information about the different types of diabetes, how they are treated and complications that can result. It also provides tips on living with diabetes.

**American Association of Diabetes Educators**  
<www.diabeteseducator.org>  
This site provides a way to find registered diabetes educators in any area of the United States.

**Children with Diabetes**  
<www.childrenwithdiabetes.org>  
This site provides chat rooms for people affected by diabetes, forums, reference material and has a special section devoted to schools and children with diabetes.

**National Diabetes Information Clearinghouse**  
In addition to a lot of good information about diabetes, this site has publications that can be downloaded, including several specifically for teens.

**The Eagle’s Nest**  
<www.cdc.gov/diabetes/eagle/index.html>  
The Eagle’s Nest is a site designed for children to learn about healthy living and diabetes, including how to avoid diabetes. It includes many links to activity pages.

**Centers for Disease Prevention and Control**  
<www.cdc.gov/diabetes/>  
This is a webpage with links to a wide range of resources to assist people living with diabetes.
There are thousands of books about diabetes and even more articles. This selected bibliography focuses on recent books written for young adults.

**Diabetes for Dummies**, Alan L. Rubin, MD, 2004, For Dummies

This easy-to-understand book has sections on newly diagnosed diabetes, how it affects the body, how to manage diabetes and thrive with it. This book is also available in Spanish.

**The Diabetes and Heart Healthy Cookbook 2**, American Diabetes Association, 2008

This book was created as a joint project between the American Diabetes Association and the American Heart Association to meet the need for tasty low-fat, low-carbohydrate recipes suitable for both people with diabetes and heart disease.

**Living with Diabetes (Teen's Guides)**, Katrina Parker, 2008, Checkmark Books

Specifically written for teens, this book clearly explains what diabetes is and describes symptoms, diagnosis and treatment.

**Preventing Type 2 Diabetes: Beyond Diet and Exercise**, Dr. Gabriel Hilkovitz, 2008, Belvista Publishers


This is a practical guide of essential information that lays out simple steps to reduce the risks of developing diabetes.


Although written for adults, the tips on getting started with exercise and hints on how to add exercise to everyday routines are useful to readers of any age, with or without diabetes.

**Living with Diabetes: Nicole Johnson, Miss America 1999**, Nicole Johnson, 2001, Lifeline Press

This is a story of hope told by a young woman who pursued her dream while living with diabetes.


This book addresses common concerns of teens living with diabetes.
### OTHER PROGRAMS
FROM HUMAN RELATIONS MEDIA

<table>
<thead>
<tr>
<th><strong>STDs: Just the Facts</strong></th>
<th>PowerPoint presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparing for Marriage</strong></td>
<td>PowerPoint presentation</td>
</tr>
<tr>
<td><strong>Contraception Options</strong></td>
<td>PowerPoint presentation</td>
</tr>
<tr>
<td><strong>Understanding HIV and AIDS</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Understanding Fetal Alcohol Syndrome</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Lifestyle Diseases and How to Avoid Them</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Nutrition Myths and Facts</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Do You Have an Eating Disorder?</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Straight Talk: The Truth about STDs</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Parenthood: Are You Prepared?</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>No Safe Amount: Women, Alcohol and Fetal Alcohol Syndrome</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>From A to ZZZs: What Teens Need to Know about Sleep</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Curriculum in a Box: Human Sexuality and Responsibility</strong></td>
<td>Video/DVD/print curriculum</td>
</tr>
<tr>
<td><strong>Systems of the Body: Digestion</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Systems of the Body: Muscle and Bone</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Systems of the Body: The Nervous System</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>This Is Your Brain on Tobacco: A Research Update</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Pharm Parties: A Lethal Mix</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>Teen Depression: Signs, Symptoms and Getting Help</strong></td>
<td>Video/print or DVD/print</td>
</tr>
<tr>
<td><strong>The Five Essential Habits of Healthy Teens</strong></td>
<td>Video/print or DVD/print</td>
</tr>
</tbody>
</table>

Visit our website for detailed descriptions of the above programs.

Available from
Human Relations Media
41 Kensico Drive
Mount Kisco, NY 10549

Phone: 800 / 431-2050
Fax: 914 / 244-0485
Web: www.hrmedia.com
HCCI 7th Grade Health Unit

Lesson #10 Show Me the Sugar!

Lesson Plan

Suggested time: 2 class periods

I. Goal: To teach students the importance of eating a balance of carbohydrates “carbs” for good health and weight control.

II. Objectives: Upon completion of this lesson the students will be able to

1. Identify why the body needs carbohydrates

2. Recognize the relationship between excessive intake of simple carbs, weight gain, and increased risk for type 2 diabetes

3. Categorize foods into simple carbs vs. complex carbs

4. Plan a balanced meal using a “carb counting” method

5. Convert grams of sugars on labels into stacked sugar cubes for visualization

III. Procedures

A. Pre-Test

B. Introduction/Motivation

Ask: As you already know, carbs are found in grains like breads, cereals, pasta, rice, corn; fruits like apples, grapes, bananas, fruit juices; and vegetables like sweet and white potatoes, beans and peas; dairy such as milk, yogurt, ice cream; and dessert, candies, and sweetened drinks. Our bodies depend on carbohydrates for daily energy, not to mention vitamins, minerals, and fiber! On the other hand, some carbs do not provide much nutritional value at all, except CALORIES! In this lesson we will learn about healthy carbs and the not so healthy ones, too!

C. Study/Learning

1. Definitions

Carbohydrates- a major nutrient class that includes both sugars and starches which our bodies
need for energy. One gram of carbohydrate contains about 4 calories.

Complex carbohydrate-found in starchy foods like whole grain breads, beans, peas, corn, rice, pasta and potatoes that take longer to digest and release energy more slowly. Complex carbs contain lots of vitamins, minerals and fiber. Most Americans need to eat more complex carbohydrates.

Simple carbohydrates- found in sugars in sweets & junk foods. Fruits and milk are simple carbs, too, but they have great nutritional value. Simple carbs are easy to digest and release energy quickly. Most Americans eat too many simple carbohydrates from junk food.

Sugar-a simple carbohydrate which can be added to foods & drinks in many ways. Other names for sugar are often used on food labels. These are a few other names for sugar: glucose solids or syrup, dextrose, sucrose, fructose, maltose, concentrated fruit juices, and honey. Excess sugar intake is likely to lead to weight gain & tooth decay.

2. Content

Some of you may have heard that eating sugar causes diabetes. Well this is NOT true! Concentrate on this sequence of statements to understand the confusion:

a) After digestion, both simple and complex carbohydrates are broken down to glucose (sugar).

b) The body needs a daily supply of carbohydrates, but only a certain amount.

c) When we eat more carbs than our bodies need, the extra glucose is stored as fat.

d) Extra body fat causes us to be overweight or obese.

e) Being overweight can cause insulin to work poorly at getting blood sugar (from food) into the cells for energy.

f) After years of eating too many carbs and being overweight, a person becomes at risk for developing type 2 diabetes.

So, what exactly is a healthy balance of carbohydrates? Well, everybody is a little different, but some general guidelines are: (write on board)
Minimum of 130 gm carbohydrates per day
Average recommended intake for teen girls 225 gm/day; teen boys 275 gm/day
No more than 60-65 gm/day from high sugar foods
Make most of your carbs from whole grains, vegetables, fruits and low fat milk
An average meal should contain about 45-60 carbohydrates

Complex carbohydrates are one of the body’s best sources of energy, vitamins and minerals such as many B vitamins, Vitamins A, C, & E, iron, potassium and fiber. We just need to cut out most of the empty calorie carbs to help with weight control and therefore, reduce our risk of type 2 diabetes.

3. Activity “How Does the Sugar Stack Up?”
Divide class into 6 groups. Give each group ½ box of sugar cubes in a plastic bowl and a large chinette plate. Give each group “Nutrition In the Fast Lane” Booklets and assign each group a different fast food chain. Ask the groups to look up the gms. of sugar for 3 desserts & 1 large or biggie soft drink or shake they like. Put the following note on the board: 1 sugar cube = 4 gm sugar. Next ask the groups to figure out how many sugar cubes would be in each of the foods items they chose.
Have them stack the sugar cubes and label the stacks on the plate in front of each stack.

D. Culmination
Say: Did you know the average American eats about 170 pounds of sugar per year? Ask if anyone in the class weighs close to this amount and ask him to come forward so the students can see what 170 pounds looks like!
Allow students to walk around and look at the other groups’ sugar stacks to get a visual picture of how much sugar we eat without even thinking about it!
Buy several different diet drinks and have the students do some taste testing to see if they find sugar free soda they like.

E. Follow-Up/Extension
1. Post-Test
2. Ask students to plan a carb balanced meal (45-60 gm) using the “Carbohydrate Content of Foods” handout for homework
3. OR Assign students the worksheets/puzzles for this lesson

HCCI Lesson #10 Pre/Post-Test answers: 1.b  2.a  3.c  4.d  5.d

Materials:

60 Pre/Post-Tests

30 copies each of Handouts #1,#2,#3,#4

3 boxes sugar cubes

markers

6 large chinette plates

6 plastic bowls

“Ntr. in the Fast Lane” booklets to look up desserts at different fast food chains

Kroger gift card to buy diet sodas: get 3 cans of 4 different types (Diet Coke, Diet Sprite, Diet Dr. Pepper, Diet Mountain Dew)

1 box (3oz) bathroom size paper cups to taste diet drinks
ACTIVITIES
Sugar Stacks

Would you eat a stack of 16 sugar cubes?

A label can tell you there are 39 grams of sugar in your soda, but what does that much sugar look like?

Check out our blog and follow us on Twitter.

![Image showing sugar cubes stacked to represent grams of sugar]

39g 65g 108g

Yikes! That's a lot of sugar!

We've used regular sugar cubes (4 grams of sugar each) to show how the sugars in your favorite foods literally stack up, gram for gram.

Compare foods, find out where sugar is hiding, and see how much of the sweet stuff you're really eating:

Beverages
Desserts
Snacks
Fruits
Vegetables
Low Fat Snacks
Thanksgiving

Candy
Cookies
Sauces
Breakfast Foods
Shakes & Smoothies
Acai Berry
HANDBOUTS
HCCI Lesson #10 Show Me the Sugar! Pre/Post-Test

Name ________________________________

_____ 1. Carbohydrates are unhealthy and need to be restricted as low as possible.
   a. True
   b. False

_____ 2. Sugar is an example of a ______ carbohydrate.
   a. Simple
   b. Complex
   c. Fiber
   d. I don't know

_____ 3. American teens need to eat more complex carbohydrates like:
   a. whole wheat bread
   b. vegetables
   c. both a and b
   d. neither are complex carbs

_____ 4. The main health problem that excess sugar may cause is:
   a. diabetes
   b. heart disease
   c. cancer
   d. obesity

_____ 5. The average American consumes about ____ of sugar per year.
   a. 16 oz.
   b. 5 lbs.
   c. 70 lbs.
   d. 170 lbs.
CRAZY CRACKERS

Whole wheat crackers inBagel, 6 slices
Graham crackers, 2 1/2 in square
Animal crackers

STARCHY VEGETABLES

Rice, white or brown
Beets
Broccoli, frozen
American (mexican) noddles
Garbanzo beans
Cilantro
Chili, low-fat
Couscous
Cornmeal (di)
Cereals, ready-to-eat
Cereals
Brown bread

STARCHY FOODS PREPARED WITH FAT

Beans and peas (pinto, kidney, black-eyed)
Yam, sweet potato, plantain
Squash, butternut (acorn, butternut)
Plantain
Peas, garden
Mixed vegetables with corn, peas, or pasta
Corn on cob, medium

BREAD

Each serving = 15 grams of carbohydrate

Lesson 10: Handout #1
Grains of Carbohydrates to eat at:

Breakfast

Am Snack

Lunch

Dinner

Bedtime

4 1/2 cups

Watermelon

1 slice (1 3/4 oz) or 1 1/2 cups

Tangerine, small

2 (2 1/2 oz)

Strawberries

1 1/4 cups whole berries

Broccoli

1 cup

Raisins

2 1/2 cups

Prunes, dried

1/2 cup

Plums, canned

1/2 cup

Pineapple, canned

3/4 cup

Pears, canned

1/2 cup

Peaches, canned

1/2 cup

Peach, medium, fresh

1/2 cup

1/2 fruit (6 oz) or 1 cup pieces

Orange, small

1 1/2 cups

Nectarine, small

1 cup

Mango, small

1/2 cup

Watermelon, canned

1/2 cup

1/2 fruit (5 oz) or 1 cup pieces

Kiwifruit

1 1/2 (3 oz)

Honeydew melon

1 slice (1 1/2 oz) or 1 cup pieces

Grapes, small

1 1/2 (2 3/4 oz)

Grapefruit sections, canned

1/2 cup

Grapefruit, fresh

1/2 cup

1/2 cup

Diet

1/2 cup

Cherries, sweet, canned

1/2 (2 3/4 oz)

Cantaloupe, small

1/3 cup (1 oz)

1/3 cup (1 oz)

1/2 cup

1/2 cup

1/2 cup

8 halves

4 pieces of

4 1/2 cups

Apples, dried

1/2 cup

Apples, unsweetened

1 cup

Apples, unsweetened, small

14 (4 oz)

FRUIT

Orange juice

1/2 cup

Pineapple juice

1/2 cup

Orange juice

1/2 cup

Grapefruit juice

1/2 cup

Grape juice

1/3 cup

Fruit juice blends, 100% juice

1/3 cup

Cranberry juice cocktail, reduced-calorie

1 cup

Cranberry juice cocktail

1 1/2 cup

Apple juice/cider

1/2 cup

FRUIT JUICE

Canned with aspartame or with a nonnutritive sweetener

Nonfat or low-fat flavored yogurt, sweetened

1/2 cup

Nonfat yogurt

1/2 cup

Evaporated skim milk

1/2 cup

Non-fat or low-fat buttermilk

1/2 cup

2 % milk

1 cup

1 % milk

1 cup

Skin milk

1 cup

SKIN AND VERY LOW-FAT MILK

Whole-wheat crackers, no fat added

2 1/2 (3 1/4 oz)

Whole-grain crackers, low-fat

1 5/2 (3 1/4 oz)

Sliced lean meat

6

Rice cakes, 4 in. across

2

Popcorn (popped, no fat added or low-fat microwave)

3 1/4 oz
Spot the different types of sugar

It is often very difficult to find out how much sugar there is in a product. Different types of sugar have lots of different names, making it difficult to spot sugars in the ingredients list. Put a tick by any of the following ingredients that you think are a type of sugar, or which are sweet enough to make food taste more sugary.

Hint: You might want to check the website: http://www.chewonthis.org.uk/glossary.htm

- Sucrose
- Concentrated apple juice
- Skimmed milk
- Honey
- Monosodium glutamate
- Fructose
- Glucose
- Vegetable oil
- Citric acid
- Dextrose
- Concentrated grape juice
- Modified starch

Answer: Sucrose, concentrated apple juice, honey, fructose, glucose, dextrose, and concentrated grape juice are all forms of sugar used to sweeten foods.

This activity sheet can be copied for educational not-for-profit purposes. Produced by the Food Commission Research Charity, campaigning for healthier food for everybody. Find out more at the website: www.chewonthis.org.uk
How much sugar do you need?

A teenage boy aged between 11 and 14 should aim to eat no more than 65 grams (65g) sugar in one day (about 13 teaspoons). A teenage girl aged between 11 and 14 should aim to eat no more than 54g sugar in one day (just under 11 teaspoons). Girls are often a bit smaller than boys, so don’t need quite as much energy.

But look how easy it would be to eat too much in just one or two products:
- A normal can of cola contains about 35g of sugar.
- A medium bottle of fizzy drink can contain between 50g and 70g of sugar.
- A normal bottle of ‘energy drink’ can contain about 68g of sugar.
- A bowl of high-sugar cereal contains about 12g of sugar.
- A normal bar of chocolate contains about 30g of sugar.

However, many food companies, including soft drinks companies, sweet makers and chocolate companies, continue to argue that it is safe to eat more sugar.

Why do you think the food companies say that?

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

This activity sheet can be copied for educational not-for-profit purposes. Produced by the Food Commission Research Charity, campaigning for healthier food for everybody. Find out more at the website: www.chewonthis.org.uk
Find out about sugar and energy

Food manufacturers know that too much sugar that we like the sweet taste of sugar. By adding extra sugar or other sweetening ingredients, they can increase the sales of their food and drink products. Some manufacturers try to justify all the added sugar by explaining that it provides us with energy, but do we really need all that extra energy? Won't it just end up getting stored in our bodies as extra fat?

What happens to energy your body doesn't use up?

A: Your body stores the energy as fat
B: You burn off the extra energy by getting hotter
C: Your body can't store extra energy, so it goes straight through you and into the toilet

One company claims that its drink 'provides glucose, the brain and body's naturally preferred energy source. A single bottle of the company's drink contains 12 teaspoons of sugar. How many of the statements (shown on the right) do you think are true?

A: This drink could make you brainier
B: This drink could encourage weight gain
C: This drink could encourage tooth decay

When doing school work you use about 25 kcals of energy every 20 minutes. If an 'energy' drink provides roughly 240 kcals of energy, how much school work will you have to do to use up this energy?

A: Between 1 and 2 hours of school work
B: Between 2 and 3 hours of school work
C: Over three hours of school work

Answers: (1), (2), (3) and (C) Drinking sugary drinks might give you a sugar rush, but it won't make you brainier. (3) C.
TEACHER RESOURCES
Carbohydrates and Nutrition

1. Introduction

There have been major advances in the understanding of how carbohydrates influence human nutrition and health in recent years. Progress in scientific research has highlighted the diverse functions of carbohydrates in the body and their importance in the promotion of good health. In fact, there is so much good news that it is time to take a closer look at carbohydrates.

2. Importance of carbohydrates

Carbohydrates take the form of sugars, oligosaccharides, starches and fibres and are one of the three major macro-nutrients which supply the body with energy (fat and protein being the others). There is now good evidence that at least 55% of our daily calories should come from carbohydrates. Whereas it is important to maintain an appropriate balance between calorie intake and expenditure, scientific studies suggest that:

- A diet containing an optimum level of carbohydrates may help prevent body fat accumulation;
- Starch and sugars provide readily accessible fuel for physical performance;
- Dietary fibre, which is a carbohydrate, helps keep the bowel functioning correctly.

Apart from the direct benefits of carbohydrates for the body, they are found in a wide range of foods which themselves bring a variety of other important nutrients to the diet. For this reason it is recommended that carbohydrates be supplied from diverse food sources to ensure that the overall diet contains adequate nutrients.

It is also important to remember that carbohydrates contribute to the taste, texture and appearance of foods and help to make the diet more varied and enjoyable.

3. What are carbohydrates?

The building blocks of all carbohydrates are sugars and they can be classified according to how many sugar units are combined in one molecule. The table below shows the major types of dietary carbohydrates.

<table>
<thead>
<tr>
<th>Classification of Dietary Carbohydrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monosaccharides</td>
</tr>
<tr>
<td>Disaccharides</td>
</tr>
<tr>
<td>Polysaccharides</td>
</tr>
<tr>
<td>Oligosaccharides</td>
</tr>
<tr>
<td>Polysaccharides</td>
</tr>
<tr>
<td>Polysaccharides</td>
</tr>
</tbody>
</table>

3.1. Sugars

Glucose and fructose are simple sugars or monosaccharides and can be found in fruits, berries, vegetables and honey. When two simple sugars combine, they form disaccharides. Table sugar or sucrose is a combination of glucose and fructose and occurs naturally both in sugar beet, sugar cane and fruits. Lactose is the main sugar in milk and dairy products and maltose is a disaccharide occurring in malt.

Polysaccharides are so-called sugar alcohols. They do occur naturally but most are made commercially by the transformation of sugars. Isomalt is the most commonly used polysaccharide and is derived from sucrose. Polysaccharides are sweet and can be used in foods in a similar way to sugars although they can have a laxative effect when
3.2. Oligosaccharides

When 3-9 sugar units combine they form oligosaccharides. Maltodextrins contain up to 9 glucose units and are produced commercially by the partial hydrolysis (or breakdown) of starch. They are less sweet than mono- or disaccharides. Raffinose, stachyose and fructo-oligosaccharides are found only in small amounts in certain pulses, grains and vegetables.

3.3. Polysaccharides

More than 10 and sometimes even up to several thousand sugar units are needed to form polysaccharides. Starch is the main energy reserve in root vegetables and cereals. It comprises long chains of glucose and occurs as granules whose size and shape vary according to the plant in which it is contained.

Non-starch polysaccharides are the main components of dietary fibre. They include; cellulose, hemicelluloses, pectins and gums. Cellulose is the major component of plant cell walls and consists of several thousand glucose units. The separate components of dietary fibre have different physical structures and properties.

4. Carbohydrates In The Body

The main function of carbohydrates is to provide energy, but they also play an important role in:

- The construction of the body organs and nerve cells
- The definition of a person’s biological identity such as their blood group

4.1. Energy source and storage

Starches and sugars are the main energy-providing carbohydrate sources and supply 4 kilocalories (17 kilojoules) per gram.

Simple sugars are absorbed directly by the small intestine into the bloodstream, where they are then transported to their place of use. Disaccharides are broken down by digestive enzymes into simple sugars. The body also needs the help of digestive enzymes to break down the long chains of starches into their constituent sugars which are then absorbed into the bloodstream.

The human body uses carbohydrates in the form of glucose. Glucose can also be converted to glycogen, a polysaccharide similar to starch, which is stored in the liver and the muscles and is a readily available source of energy for the body. The brain needs to use glucose as an energy source, since it cannot use fat for this purpose. It is for this reason that the level of glucose in the blood must be constantly maintained above at optimum level. Glucose may come directly from dietary carbohydrates or from glycogen stores. Several hormones, including insulin, work rapidly to regulate the flow of glucose to and from the blood to keep it at a steady level.

4.2. The glycaemic index

When a carbohydrate food is eaten there is a corresponding rise and subsequent decrease in blood glucose level known as the glycaemic response. This response is relevant, for example, to appetite control, sports nutrition and those with diabetes. A number of factors influence the rate and duration of the glycaemic response. It depends on:

The specific food:

- The type of the sugar that forms the carbohydrate
- The nature and the form of the starch as some are more digestible than others
- The cooking and processing methods used
- Other nutrients in the food such as fat or protein

The individual person:

- their metabolism
- the time of day the carbohydrate is ingested

The impact of different carbohydrate-containing foods on the glycaemic response of the body is classified according to a standard food, such as white bread or glucose. This measurement is called the glycaemic index (GI).
THE GLYCAEMIC INDEX OF SOME COMMON FOODS
(using glucose as standard)

Foods with a low G.I. Factor (G.I. less than 55)
Noodles and pasta
Lentils
Apples/apple juice
Pears
Oranges/orange juice
Grapes
Low fat yoghurt
Fruit bread
Baked beans
Chocolate

Foods with an intermediate G.I. factor (G.I. 55-70)
Basmati rice
Banana
Rolled oats
Soft drinks
Sweet corn
Pineapple
White sugar

Foods with a high G.I. factor (G.I. > 70)
Bread (white or wholemeal)
Baked potato
Cornflakes
French Fries
Honey
Mashed potatoes
White rice (low amylase or "sticky rice")


4.3. Gut function and dietary fibre

The body is unable to digest dietary fibre and some oligosaccharides in the small intestine. Fibre helps to ensure good gut function by increasing the physical bulk in the bowel and stimulating the intestinal transit.

Once the indigestible carbohydrate passes into the large intestine, some types of fibre such as gums and pectins and the oligosaccharides are fermented by the gut microflora. This also increases the overall mass in the bowel and has a beneficial effect on the make up of this microflora.

5. Body Weight Regulation

People eating a diet high in carbohydrates are less likely to accumulate body fat compared with those who follow a low carbohydrate/high-fat diet. The reasons for this observation are threefold:

- It could be due to the lower energy density of high carbohydrate diets, as carbohydrates have less calories weight for weight than fat. Fibre-rich foods also tend to be bulky and physically filling.
- Studies have found that carbohydrates both in the form of starch and sugars work quickly to aid satiety and that those consuming high carbohydrate diets are therefore less likely to overeat. The inclusion of plenty of carbohydrate rich foods appears to help regulate the appetite. Many foods with a lower glycaemic index may be particularly satisfying as they are slowly digested.
- It has also been confirmed that very little dietary carbohydrate is converted to body fat mainly because it is a very inefficient process for the body. Instead carbohydrate tends to be preferentially burnt for fuel.

It is now more and more evident that diets high in carbohydrate, as compared with those high in fat, reduce the likelihood of developing obesity.

6. Diabetes

Diabetes is a metabolic disorder whereby the body cannot regulate blood glucose levels properly. There is no evidence that sugar consumption is linked to the development of any type of diabetes. However there is
now good evidence that obesity and physical inactivity increase the likelihood of developing non-insulin dependent diabetes, which usually occurs in middle age.

Weight reduction is usually necessary and is the primary dietary aim for people with non-insulin dependent diabetes. Consuming a wide range of carbohydrate foods is an acceptable part of the diet of all diabetics, and the inclusion of low glycaemic index foods is beneficial as they help regulate blood glucose levels. Most recommendations for the dietary management of diabetes allow a modest amount of ordinary sugar as the inclusion of sugar with a meal has little impact on either blood glucose or insulin concentrations in people with diabetes.

7. Dental Health

Foods containing sugars or starch can be broken down by the enzymes and bacteria in the mouth to produce acid which attacks the enamel of the teeth. After an acid challenge, saliva provides a natural repair process which rebuilds the enamel. When carbohydrate-containing foods are consumed too frequently, or nibbled over time, this natural repair process is overwhelmed and the risk of tooth decay is increased.

However in recent years the availability of fluoride and the widespread use of good oral hygiene practices have been widely heralded as responsible for the low rate of tooth decay in today’s children and adolescents. This improvement has happened independent of any change in sugar or fermentable carbohydrate intake. Keeping plaque bacteria at bay and strengthening the teeth with fluoride reduces the risk of decay.

The research now available in the 1990’s allows a more rational approach to the role of sugar and other carbohydrates in dental caries. It is now recommended that programmes to prevent dental caries focus on fluoridation, adequate oral hygiene and a varied diet, and not on sugar intake alone.

8. Getting Active

There is now substantial evidence that carbohydrates can improve the performance of athletes. During high intensity exercise, carbohydrates are the main fuel for the muscles. By consuming high levels of carbohydrate before, during and after training or an event, glycogen stores are kept well stocked. These stocks help the athlete to perform for longer and help their bodies sustain the effort. The vital role of physical activity in maintaining health and fitness in the general population is now recognised. For those who want to keep fit and active, a well-balanced high-carbohydrate diet is recommended. To know more about physical activity.

9. Carbohydrate Recommendation

Carbohydrates in all shapes and forms are good for your health. They can help to control body weight, especially when combined with exercise, are vital for proper gut function and are an important fuel for the brain and active muscles. Neither starch nor sugar have been found to have any special role in the development of serious diseases such as diabetes, and the role of sugar in the development of tooth decay is less important in today’s fluoride and oral hygiene aware populations. The recent report from the World Health Organisation and the Food and Agriculture Organisation of the United Nations on Carbohydrates in Human Nutrition makes many recommendations for health professionals and research scientists, but the most important messages for the public are:

- That the many health benefits of dietary carbohydrates should be recognised and promoted. Carbohydrates provide more than energy alone.
- An optimum diet contains at least 55% of energy from carbohydrates and 20-35 g dietary fibre/day for all those over two years of age.
- A wide range of carbohydrate-containing foods should be consumed so that the diet is sufficient in essential nutrients and dietary fibre.

Bibliography


Source: European Food Information Council
Carbohydrates: The 55% Majority Winner...

Carbohydrates add taste, texture and variety to our food. They are the single most important source of food energy in the diet. Carbohydrates in the form of sugars, starches, oligo- and polysaccharides and fibres form one of the three major macro-nutrients that supply the human body with energy. A landmark report recommends that at least 55 percent of daily energy intake should come from a variety of carbohydrate sources - cereals, sugars, fruits, vegetables and legumes.

Good news for carbohydrates. The Food and Agriculture Organisation of the United Nations and the World Health Organisation (FAO/WHO) recently published a report on Carbohydrates in Human Nutrition. It reviews, for the first time in nearly 20 years, the role of all forms of carbohydrates in health and disease. The way carbohydrates enhance nutrition and influence health is now more fully understood. This is due to better awareness of carbohydrate digestion, absorption and metabolism.

Carbohydrates and Health

Whereas it is important to maintain an appropriate balance between energy intake and expenditure, research suggests that people who eat a high carbohydrate diet are less likely to accumulate body fat compared to those on a low-carbohydrate/high-fat diet. The reasons for these observations include:

- The lower energy density of high-carbohydrate diets, as carbohydrates have less calories weight for weight than fat. Fibre-rich foods also tend to be bulky and therefore physically filling.
- Studies have found that carbohydrates work quickly to aid satiety, therefore those consuming high carbohydrate diets are less likely to overeat.
- It has also been suggested(2) that very little dietary carbohydrate is converted to body fat mainly because it is a very inefficient process for the body. Instead, carbohydrate tends to be preferentially used by the body for energy.

With regards to dental health, research from recent years allows a more rational approach to the role of sugars and other carbohydrates in dental caries. It is now recommended that programmes to prevent dental caries focus on fluoridation, adequate oral hygiene and a varied diet, and not on sugar intake alone (1).

Carbohydrate Recommendations

In promoting the benefits of carbohydrates, the report makes many recommendations for health professionals and research scientists, but the most important messages for the public are:

- The many health benefits of dietary carbohydrates should be recognised and promoted.
- Carbohydrates provide more than energy alone.
- An optimum diet contains at least 55% of energy from carbohydrates for all those over two years of age.
- A wide range of carbohydrate-containing foods should be consumed so that the diet is sufficient in essential nutrients and dietary fibre.

Carbohydrates in all shapes and forms are good for one's health. For those who want to stay active and fit, a well-balanced, high carbohydrate diet is recommended.

Major Dietary Carbohydrates

<table>
<thead>
<tr>
<th>Class</th>
<th>Sub-Group</th>
<th>Components</th>
<th>Foods</th>
</tr>
</thead>
</table>

References:
1. [Source](http://www.eunic.org/education/health/15/1503.html) - Carbohydrates 55% of energy intake.
2. [Source](http://www.eunic.org/education/health/15/1503.html) - Effect of Carbohydrates on Energy Balance.
<table>
<thead>
<tr>
<th>Sugars</th>
<th>Monosaccharides Disaccharides</th>
<th>Glucose, galactose, fructose Sucrose, lactose</th>
<th>Honey, Fruit Table Sugar, Milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oligosaccharides</td>
<td>Malto-oligosaccharides Other oligosaccharides</td>
<td>Maltodextrins Raffinose, stachyose fructo-oligosaccharides</td>
<td>Soya, Artichokes, Onions</td>
</tr>
<tr>
<td>Polysaccharides</td>
<td>Starch</td>
<td>Amylose, amylpectin</td>
<td>Rice, Bread, Potatoes, Pasta All Vegetables and Fruits</td>
</tr>
<tr>
<td></td>
<td>Non-starch polysaccharides</td>
<td>Cellulose, hemicelluloses pectins, hydrocolloids</td>
<td></td>
</tr>
</tbody>
</table>


FOOD TODAY 02/1999

Source: European Food Information Council
In view of the increasing prevalence of overweight and obesity in Europe, the role of certain carbohydrates, like sugar, is often controversially discussed. Here are some facts about the role of carbohydrates, sugars and sugar in our diet.

Carbohydrates, sugars and sugar

The two main types of carbohydrates are sugars and starch. Sugars and starch provide the same energy per gram (4kcal). Carbohydrates provide less energy than fat (9kcal per gram) or alcohol (7kcal per gram). Fibre is a type of carbohydrate. Unlike other carbohydrates, it is not absorbed in the small intestine to provide energy, although some metabolism occurs in the large bowel. At least half the energy in our diets should come from carbohydrates, mostly as starchy carbohydrates.

Starch is found in cereals (rice, maize, wheat, etc) and their derived products (bread, pasta, etc), potatoes and legumes. Sugars include sucrose (or table sugar, that we will call 'sugar'), glucose, fructose, lactose and maltose and are naturally found in foods such as fruits, vegetables and milk products. Manufacturers also add many of these sugars to foods during processing to perform important functions. Sugars provide sweet taste, texture, structure and consistency to foods. The texture has an important influence on palatability and thus on the acceptance of foods. Other functions of sugars include preserving jams and jellies, aiding in the fermentation of yeast and playing a role in the browning and flavouring of baked goods.

Sucrose (table sugar, a disaccharide consisting of the building blocks glucose and fructose) is a sweet tasting carbohydrate. It is produced by plants from carbon dioxide (CO2) and water with the help of light energy via the photosynthesis process. Large quantities are formed in sugar beet and sugar cane. Sucrose extracted from sugar cane or sugar beet is a natural product, which does not differ in its properties from the sugar present in fruits and vegetables.

Energy for brain and muscles

Carbohydrates are important for the functioning of our body. The brain is almost exclusively dependent on a constant supply of glucose from the blood stream. An adult brain uses about 140 g of glucose per day, and this can represent up to half of the total dietary carbohydrate consumed.

There are a few studies in adults, which have shown that the consumption of a carbohydrate meal or a sugar-sweetened drink is associated with improved mental efficiency, including improved memory, reaction times, attention span and arithmetic ability. Eating carbohydrate rich meals or having a snack or a sugar-sweetened beverage has been found to induce beneficial cognitive effects, and to contribute to reducing feelings of fatigue.1,2 Adults under the conditions of a driving performance test in an automobile simulator over a long-term distance of 120 km had significantly lower error rates while consuming sugar-sweetened beverages before and during the test compared to persons who had only consumed water.3 As studies differ in relation to the type of sugar, amount and total food composition, results are not totally consistent.

As the body's glycogen stores (short-term energy storage made from glucose) in liver and muscle are limited, the glycogen depletion of muscle is the main cause of fatigue during anaerobic, intensive and long-duration physical activity (60-90 minutes). Sports drinks, containing sugars and electrolytes, as well as water, can prevent dehydration, delay fatigue and protect body's glycogen stores from depletion, as the sugars ingested and released into the blood stream are preferentially used by the muscles. In the case of high intensity activity, the glycogen can be mobilised at a later stage if physical demands continue.

With respect to replenishment of depleted glycogen stores, which is particularly important for elite athletes, carbohydrates that are quickly digested and absorbed by our body are stored much faster as glycogen than carbohydrates that have a low glycaemic index (GI). The GI effectively reflects the extent to which foods raise blood sugar levels after eating.
Sugar and body weight

A substantial number of epidemiological studies (looking at factors affecting the health of populations) in adults, adolescents and children repeatedly found a clear inverse relationship between sucrose intake and body weight or BMI as well as sucrose intake and total fat intake.4,5 In other words, individuals who consume a higher percentage of their energy needs (calories) as sugar are generally less overweight than individuals consuming a lower percentage of calories as sugar. Often there is an inverse relationship between the level of sugar intake and the level of fat intake (high sugar consumers tend to eat less fat). However, some individuals may exceed their energy needs by over consuming calories from both fat and sugar, which may result over time in weight gain. In addition, carbohydrates, including sugars, are recognised by the body’s appetite regulatory system and help promote satiety.6

The Health Behaviour in School-Aged Children Study (HBSC-Study) of WHO Europe, conducted during the years 2001-2002 with about 140,000 adolescents in the age range 10-16 years from 34 (mostly European) countries, compared overweight and obesity prevalence and their relationships with physical activity and dietary patterns.5 A significant negative correlation between the consumption of sweets and chocolate, and the BMI of adolescents from 31 out of 34 countries was reported. A higher intake of sweets was associated with a lower odds ratio for overweight and there was also no association between the consumption of soft drinks and overweight.5 These findings could be partially due to confounding factors; overweight and obese children may have already reduced their intake of sweets and chocolate because of weight concerns; they tend to underreport their consumption and may actually consume more of those foods. In a more recent UK study, based on data from 3-day dietary records for over 1000 children aged 5 and 7 years, sugar-sweetened beverages accounted for 3% of total energy intake, and no association was noted between their consumption and adiposity at the age of 9.7 Other studies, mainly from the US, have shown that a higher intake of sweetened soft drinks and fruit juice is linked to higher BMI or weight gain.8 The equivocal evidence on this topic makes it difficult to draw firm conclusions about a direct link between the consumption of sugar-sweetened soft drinks and an increase in body weight.

Weight gain occurs when energy intake from food and beverages is greater than the energy burnt through metabolism or activity. It is thus difficult to establish links between obesity and the consumption of a single food, nutrient or ingredient. Eating too many calories, no matter what the source is, can lead to overweight if they are not expended through activity. This is true for all types of foods and drinks: if they contribute to an excessive energy intake relative to energy needs, then they contribute to weight gain.

Vitamin and mineral supply

There is a popular belief that adding sugar would displace other foods from the diet and would lead to reduced intakes of vitamin and minerals. However, research has shown that added sugar intake can be compatible with a healthy diet, and there is no evidence to support a displacement of micronutrients caused by sugar.9 The nutritional quality of the diet of children even with the highest sugar intake was adequate with respect to vitamin and mineral intakes.

Dental health

People frequently point to sucrose as the only cause of cavities (dental caries). However, all food carbohydrates are capable of being involved in tooth decay. Research has shown that not only sugar, sweets or honey but also fruits, as well as non sweet-tasting carbohydrate-rich foods, like wholegrain bread, potatoes, and crisps, are potentially caries-promoting. Cavities occur when bacteria in dental plaque ferment starches and sugars to produce acids that destroy the teeth. Good oral hygiene and the use of fluoride containing toothpaste are now considered the main factors responsible for preventing dental caries and promoting good oral health. Caries prevalence has declined substantially in children and adolescents since the 1970’s despite unchanged sugar consumption and increasing between-meal snacking. Nowadays, the majority of 12 year olds have caries-free dentition.10 Caries can be prevented if the teeth are cleaned twice a day with fluoride toothpaste, and if drinking or eating occasions are limited to 6 times per day avoiding continuous sipping and nibbling.11

Diabetes

Type 2 diabetes has a strong genetic base and the onset of symptoms is linked to age, obesity and lack of physical activity. There are no causal links between sugar intake and diabetes. Nowadays, moderate amounts of sugars, as a part of a balanced diet, are approved in the diets of well-controlled diabetics.12

References


Further information on EUFIC's carbohydrates backgrounder
/article/en/page/BARCHIVE/expid/basics-carbohydrates/

FOOD TODAY 11/2007

Source: European Food Information Council