

2019 4-H Healthy Lifestyles Invitational

The 4-H Healthy Lifestyles Invitational will provide youth the opportunity to participate in a competitive event and utilize the knowledge and skills gained through participation in 4-H healthy lifestyles programs. Please refer to the Texas 4-H Roundup Guide for more details on contest date and location, as well as registration requirements.

Participation:

- The 4-H Healthy Lifestyles Invitational will be open to youth in the intermediate and senior age divisions.
- 4-H members do **not** have to qualify to participate in this invitational contest.
- 4-H members may enter as an individual or a member of a county team. Teams shall be made up of 3-4 youth within the same age division.
- 4-H members entered as individuals will be randomly grouped with other individuals to form a team for the team presentation portion of the contest. Best efforts will be made by the contest planning team to group individuals into 4-member teams. However, this is not a guarantee. **Note:** It is a possibility that there will not be enough participants entered as individuals to make up teams. If that is the case, individuals will still be grouped with others to make a team of two or must compete as an individual. If teams of 3-4 cannot be made, the participants will only be eligible for individual awards.

Contest Format:

Judging

- Each participant works individually to place/rank eight classes, each of which consists of a scenario and four options related to a healthy lifestyles topic. For each class, the individual participant will rank the four options based on the given situation. Some classes may also include a multiple choice and/or true/false quiz. Six minutes are allowed for each class, with one minute in between classes to allow for rotation to the next class.
- Participants will use the **Universal Form A Scantron** to indicate class placings.
- Each of the eight classes is worth 50 points.
- The eight classes will provide a situation on various healthy lifestyles topics, with class topics being:
 1. Altering recipes
 2. **NEW** Food Packaging and Labeling
 3. Food safety
 4. **NEW** Hydration/Sports Drinks
 5. Insect repellent
 6. Physical activity
 7. Sun safety
 8. Teens & safe driving habits

Group Presentation

- Teams will be randomly assigned an order for team presentations.
- Each team will be presented with a scenario and have 10 minutes to evaluate it, decide on a solution and prepare a presentation.
- Each team will then have 3 minutes to present their solution to the problem/scenario, to a panel of judges.
- The scenario topic for the group presentation will tie back to one of the eight healthy lifestyles topics listed above.
- Visual aids may not be used during the team presentations.
- The team presentation is worth a maximum of 50 points.
- Judging of presentations is based upon:
 - Presentation (well organized, points clearly stated, logical sequence)
 - Information Presented (accurate, up-to-date, complete)
 - Delivery (voices clear, correct use of grammar, eye contact, appearance)
 - Teamwork (all team members participate)

Please note: Based upon the number of participants, facilities and logistics, some teams may judge the eight classes first and then give the team presentation, while other teams may give the team presentation first and then judge classes.

Information and resources for the 2019 4-H Healthy Lifestyles Invitational Contest are available online at: <https://texas4-h.tamu.edu/events/roundup/>



TEXAS A&M AGRI LIFE EXTENSION



Altering Recipes for Good Health

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Artful Recipe Altering

For several years, health professionals have advised Americans to eat less fat, sugar, and salt, and to eat more fiber. The USDA's ChooseMyPlate.gov website, based on the *Dietary Guidelines for Americans* (2010), reflects these recommendations.



To make an eating plan or healthy diet that follows the *Dietary Guidelines for Americans*, take the following actions:

- emphasize fruits, vegetables, whole grains, and fat-free or low-fat dairy and milk products;
- include lean meats, poultry, fish, beans, eggs, and nuts; and
- keep it low in saturated fats, trans fats, cholesterol, salt (sodium), and added sugars.

Visit ChooseMyPlate.gov to help you in selecting an eating plan based on current eating patterns, health status, daily exercise plan, and potential risk for health problems linked to diet, such as obesity, diabetes, or heart disease. Perhaps a change to some cooking methods may be in order.

Recipes = Chemical Formulas

Recipes specify the ingredients, proportions, and methods necessary to produce a quality product. Companies and publishers spend time and money testing recipes for consumer use. Any change made in the recipe will produce a slightly different product from the one that was tested and published. Some changes you may like and others you may not.



Recipes for combined foods, such as casseroles and soups, are more flexible than others. A cookie recipe is more adaptable than a cake recipe. Recipes for most baked products can be altered, but recipes for any preserved product, such as pickles, salsa, jellies, or candies should not be changed at all.

Modifying a recipe may produce a product that doesn't meet your expectations. For example, a cake made with less fat will not have the same flavor or texture as the high-fat version. Cookies with less sugar or fat will still be acceptable but might not look or taste the same as those made by the original recipe. Substituting skim milk for whole milk in puddings, soups, and sauces will give a product that is less rich and creamy but has less fat and calories.

Ingredients that can Be Changed

Most people either fail to notice much difference or accept the difference that results when the following kinds of changes are made.

Reduce sugar by one-third. For example, if a recipe says to use 1 cup of sugar, use $\frac{2}{3}$ cup. This change works best in canned and frozen fruits and in making puddings and custards. In cookies and cakes, try using $\frac{1}{2}$ cup sugar per cup of flour. For quick breads and muffins, use 1 tablespoon sugar per cup of flour. To enhance the flavor when sugar is reduced, add vanilla, cinnamon, or nutmeg.



Reduce fat by one-third. For example, if a recipe calls for $\frac{1}{2}$ cup of fat, use $\frac{1}{3}$ cup. This method works best in gravies, sauces, puddings, and some cookies. For cakes and quick breads, use 2 tablespoons fat per cup of flour.

Omit salt or reduce by one-half. For example, if a recipe calls for $\frac{1}{2}$ teaspoon salt, use $\frac{1}{4}$ teaspoon. This method may be more acceptable if you gradually reduce the amount of salt each time you make the recipe. Herbs, spices, or salt-free seasoning mixes can also be used as flavor enhancers. Do not eliminate salt from yeast bread or rolls; it is essential for flavor and helps the texture.

Substitute whole grain and bran flours. *Whole wheat flour* can replace from one-fourth to one-half of the all-purpose flour. For example, if a recipe has 3 cups all-purpose flour, use $1\frac{1}{2}$ cups whole wheat flour and $1\frac{1}{2}$ cups all-purpose flour.

Oat bran or oatmeal (that has been ground to flour consistency in a food processor or blender) can replace up to one-fourth of the all-purpose flour. For example, if a recipe has 3 cups all-purpose flour, use $\frac{3}{4}$ cup oat bran or ground oatmeal and $2\frac{1}{4}$ cups all-purpose flour.

Bran cereal flour is made by grinding a ready-to-eat cereal such as Bran Buds® or 100% Bran® in a blender or food processor for 60 to 90 seconds. It can replace up to one-fourth of the all-purpose flour. For example, if a recipe calls for 2 cups all-purpose flour, use $\frac{1}{2}$ cup bran flour and $1\frac{1}{2}$ cups all-purpose flour.

Detect Fat

All fats and oils are high in calories, but you can make a healthier choice by selecting those with less saturated fat. Some sources of saturated fat include animal products and tropical oils such as palm kernel or coconut oil. Another fat of concern is trans fatty acids or trans fats (partially hydrogenated vegetable oil). Trans fatty acids are found in stick margarine, vegetable shortening, and some prepared foods such as cakes, cookies, crackers, and commercially fried foods. Trans fats occur naturally in small quantities in meats (beef, pork, lamb), butter, and milk. Since 2006, trans fats have had to be identified on the food label. Likewise, when you use lower-fat dairy products, you reduce fat, calories, and cholesterol.

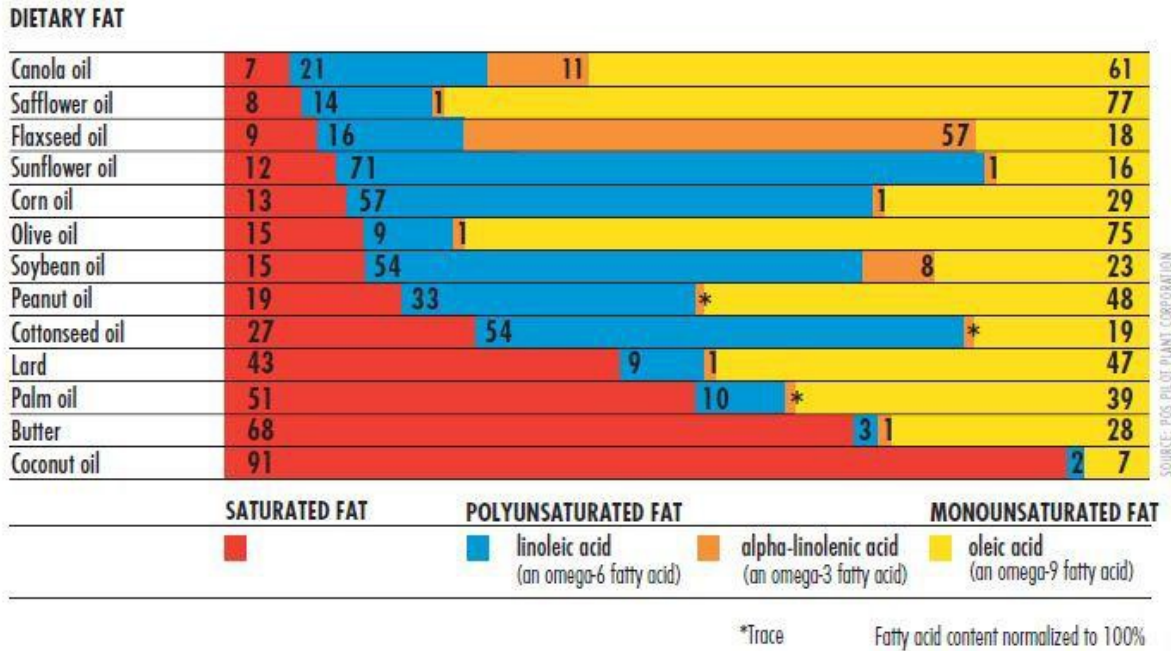
Fat and Oil Comparison

Type of fat or oil	Cholesterol (mg/Tbsp.)	Saturated fat or oil
Coconut oil	0	77%
Butter	33	54%
Palm oil	0	51%
Beef fat	14	51%
Animal fat shortening	0	44%
Lard	12	41%
Cottonseed oil	0	27%
Vegetable shortening (Crisco)	0	26%
Margarine	0	18%
Soybean oil	0	15%
Olive oil	0	14%
Peanut oil	0	13%
Corn oil	0	13%
Sunflower oil	0	11%
Safflower oil	0	9%
Canola oil	0	6%



From *Small Steps Make a Big Fat Difference*, Puritan Oil, Proctor and Gamble, 2000. This chart provides only the amounts of cholesterol and saturated fats that may cause blood cholesterol levels to increase.

Comparison of Dietary Fats



Canola Oil Council of Canada, 2012, https://canola-council.merchantsecure.com/canola_resources/product45.aspx. This chart provides the amounts of saturated fat, polyunsaturated fat (linoleic and alpha-linolenic acids), and monounsaturated fat (oleic acid).

Fats are not always interchangeable, as shown in the examples below:

- Oil is 100 percent fat; margarine is an emulsion containing 80 percent fat and 20 percent water (“lite” margarine-type spreads contain a higher proportion of water). Substituting 1 cup oil for 1 cup margarine adds more fat than the recipe intended. Consequently, cookies will feel and taste greasy.
- A well-textured cookie depends on thorough creaming of the fat and sugar. Oil cannot be creamed, so substituting it for a solid shortening is likely to change both texture and volume.
- Can lite margarine-type spreads be substituted for solid shortening when baking? It is possible, but it cannot be a direct substitution. Since lite or diet margarines have more water, the amount of liquid in the recipe also must be reduced. Rather than substituting reduced-fat margarines, try using less of the regular margarine. You won’t have to alter the amount of liquid, and you will save calories.

Milk Product Comparison

(Values are approximations for general comparisons; check the labels for specific values.)

Milk products (1 cup)	Calories	Fat (g)	Cholesterol (mg)
Whipping cream (Heavy cream, fluid)	832	90	336
Medium cream (25% fat)	590	61	208
Light cream	470	46	159
Half and half (half milk, half cream)	315	28	89
Whole milk	150	8	33
2 percent milk	120	5	18
1 percent milk	100	3	10
Skim milk	85	trace	4
Evaporated whole milk	340	19	74
Evaporated skim milk	200	1	9

From *Food Values of Portions Commonly Used*, 19th edition. New York: Harper and Row. 2009.

Did You Know?

You can use reduced-fat sour cream, low-fat or non-fat yogurt, or cottage cheese instead of regular sour cream in sauces and dips. Skim milk can be used instead of whole milk in most recipes. Evaporated milk can be substituted for whipping cream, and evaporated skim milk can be substituted for regular evaporated milk in some recipes.

Ingredient Substitutions that Are Heart-Smart

By making a few substitutions and changes, you can still prepare your favorite recipes and reduce your intake of calories, fat, and cholesterol.



INSTEAD OF	TRY	BEST CHOICE
Butter	60/40 margarine - butter blend	Margarine or reduced calorie margarine
Sour cream	Lite sour cream	Mock Sour Cream
2 whole eggs	1 whole egg plus 2 egg whites	4 egg whites, commercial egg substitute, or Homemade Egg Substitute
Whole milk	2% milk	Skim milk
Cream	Evaporated milk	Evaporated skim milk
Cream cheese	Light cream cheese or Neufchâtel®	Yogurt Cheese
Whipped cream or non-dairy whipped topping	Non-fat whipped topping	Non-fat whipped topping or non-fat whipped topping
Cheddar, Colby, Swiss Cheese	Cut down on the amount you usually eat	Select part-skim mozzarella, reduced-fat natural cheese, farmer cheese, or low-fat processed cheese
Cottage cheese	Low-fat cottage cheese	Non-fat ricotta or cottage cheese
Baking chocolate (1 ounce)	3 tablespoons powdered cocoa plus 1 tablespoon cooking oil	3 tablespoons powdered cocoa plus 1 tablespoon cooking oil
Mayonnaise	Lite mayonnaise	Half cholesterol-free mayonnaise and half non-fat yogurt
Salad dressing	Reduced-fat dressing	Fat-free dressing
Chicken with skin	Remove skin <i>after</i> cooking	Remove skin <i>before</i> cooking
Regular ground beef	Lean ground beef	Use extra lean ground beef or lean ground turkey

Recipes for Reduced Fat Substitutes

To save money as well as calories, make your own low-fat substitutes by using the recipes that follow.

No-Fat Whipped Topping

1 tablespoon unflavored gelatin
2 tablespoons boiling water
½ cup non-fat dry milk powder
¼ cup ice water
2 tablespoons lemon juice
3 tablespoons sugar
1 teaspoon vanilla



1. Dissolve gelatin in boiling water.
2. In a thoroughly chilled small bowl, beat milk and ice water.
3. Beat in lemon juice.
4. Add sugar and vanilla, and beat to soft peaks.
5. Add gelatin mixture and beat.

Yield: about 1½ cups

Calories: 12 per tablespoon

Mock Sour Cream

1 cup lowfat cottage cheese*
2 tablespoons skim milk
1 tablespoon lemon juice

Combine all ingredients using a blender or food processor.

Yield: about 1 cup

	Sour Cream	Mock Sour Cream
	<i>Per Tablespoon</i>	
Calories	26.0	14
Fat, grams	2.5	0
Cholesterol, mg	5.0	1

*Use non-fat cottage cheese, if available.

Another option is to use a blender to combine equal amounts of low-fat or non-fat cottage cheese with low fat or non-fat plain yogurt.

Casserole Sauce Mix

Use this recipe instead of canned cream soups in casserole recipes. It has about one-third the calories.

2 cups non-fat dry milk powder
¾ cup cornstarch
¼ cup instant reduced sodium chicken or beef bouillon
½ teaspoon dried crushed thyme
½ teaspoon dried crushed basil
¼ teaspoon pepper

1. Combine all ingredients using a blender or food processor. Store in an airtight container.
2. To prepare a substitute for one can of condensed cream soup in recipes, stir together a cup dry mix and 1¼ cups water in a saucepan.
3. Cook and stir until thickened.

Yield: Equivalent to 9 cans condensed soup

Calories: 107 per cup of dry mix

Fat: 1 gram

Homemade Egg Substitute (for Cooked Products Only):

Because this recipe contains raw eggs, do not use it in uncooked products such as eggnog and ice cream.

¼ cup non-fat dry milk powder
1 teaspoon vegetable oil
6 egg whites

1. Combine all ingredients (using a blender or electric mixer) until the mixture is smooth.
2. Store in covered container in the refrigerator for up to 2 days, or freeze in ¼ cup portions; thaw overnight in the refrigerator.

Yield: 1 cup; ¼ cup is equivalent to 1 egg.

	Large Egg	Homemade Egg Substitute
Calories	79.0	70.0
Fat, grams	5.6	3.5
Cholesterol, mg	213.0	<1.0

Yogurt Cheese

Use this recipe as a substitute for cream cheese in spreads or in desserts and frostings. Make your own spreads by mixing with cinnamon, orange peel, dried fruit, jam, or herbs.

32 ounces plain non-fat or low-fat yogurt made without stabilizers or gelatin

1. Line a strainer with a double layer of cheesecloth or with a paper coffee filter; place it over a bowl.
2. Pour yogurt into the lined strainer. Cover it with plastic wrap and refrigerate.
3. Allow it to drain for 8 to 24 hours, until the liquid has drained into the bowl and the yogurt is thick and spreadable. The longer it drains, the more whey is expressed and the firmer the cheese.
4. Remove the cheese from the cloth and refrigerate in an airtight container.

	Cream cheese	<i>Per tablespoon</i>	Yogurt cheese
Calories	49.0		5
Fat, grams	4.9		0
Cholesterol, mg	15.5		0

Did You Know?

The amount of saturated fat in the diet has a much greater effect on blood cholesterol than does the amount of cholesterol in the diet.

Remove the Fat

Healthy eating involves recognizing habits that may not be so healthy and then taking steps to change them. For example, think about the foods you ate yesterday. Which ones contained fat? Write them down in the left column below. What lower-fat foods could you have chosen instead? Write them down in the right column.



Foods eaten		Lower fat choices
	Breakfast	
	Snack	
	Lunch	
	Snack	
	Dinner	
	Snack	

Fat Substitute Facts

Some consumers are interested in lowering their fat intake with the use of fat substitutes. Fat substitutes help reduce the intake of high-fat foods with reduced fat substitutes of familiar foods. These fat substitutes do contain about the same number of calories as carbohydrates and protein, so they should be eaten within the context of a healthful diet using moderation and variety.

Fat Substitutes in Processed Foods

Modified foods may be labeled as light (lite), reduced calorie, or reduced fat. These foods may be made from a fat-reduced formula or contain a commercial fat substitute with fewer calories per gram than fat. Two major types of fat substitutes are carbohydrate-based and protein-based.

- **Carbohydrate-based fat substitutes** such as modified starches, dextrins, cellulose, and gums work by combining with water to provide a thicker texture and appearance, as in fat-free salad dressings.
- **Protein-based fat substitutes** made of skim milk protein provide the sensation of creaminess as well as improving appearance and texture. Low-fat cheese made with a protein-based substitute has an appearance and texture close to full-fat cheese.

Both types of fat substitutes contribute some calories, although less than that contributed by fat. Often, a combination of ingredients is used to create higher quality reduced-fat products.

What Types of Foods Use Fat Substitutes?

Foods commonly high in fat such as margarines, salad dressings, mayonnaise, cheese, sour cream, and frozen desserts have used fat substitutes with varying degrees of success. Now you can buy low-fat ice creams with either a protein-based fat substitute or a combination of starches and gums. Many baked goods and some candies are also made using fat substitutes to help reduce their fat.

Cutting Fat in Foods

	Traditional Recipe (grams of fat)	Made Using Fat Substitute (grams of fat)
Margarine, 1 tablespoon	7-12	0-6
Salad dressing		
Creamy, 2 tablespoons	11-21	0-8
Clear, 2 tablespoons	5-20	0-6
Mayonnaise, 1 tablespoon	11	0-5
Cheese		
Hard, 1 ounce	8-11	4-5
Processed, 1 ounce	7-9	0-4
Cream cheese, 2 tablespoons	9-10	0-5
Sour cream, 1 tablespoon	2-5	0-1
Ice cream, ½ cup	7-26	0.3-2

Source: Pennington, J.A.T. Bowes & Church's Food Values of Portions Commonly Used, 19th edition. Philadelphia: J.B. Lippincott Company, 2009; and Facts about Fat Substitutes Nutrition Fact Sheet, National Center for Nutrition and Diabetes, 2004.

What Are Some Fat Substitutes on the Market Today that Are Approved by the Food And Drug Administration?

- Simplese® = protein-based fat substitute
- Olestra® = synthetic triglyceride modifications with sugar molecules containing long chain fatty acids

Recipes for Using Fat Substitutes

To find recipes for baking or for other food preparation using fat substitutes, contact consumer information at the following numbers:

- Simplese® Fat, CP Kelco Company: 1-678-247-7300 or 1-800-535-2687
<http://www.cpkelco.com/products/index.html>
- Olean® (Olestra®), Proctor and Gamble Consumer Hotline: 1-800-477-8899 or e-mail at <http://www.pgfoodingredients.com/>
- For all others, contact the company directly for consumer information about the products' use in food preparation.

Three contacts about the safety of using fat substitutes:

- Academy of Nutrition and Dietetics' (ANAD) Hotline: 1-800-366-1655; 1-800-877-1600; www.eatright.org
- American Heart Association 1-800-AHA-USA; 1-800-(242-8721)
<http://www.americanheart.org>
- Food and Drug Administration, Consumer Inquiries: 1-888-INFO-FDA (463-6332),
<http://www.fda.gov>



Detect Sugar

At least 21 different forms of simple carbohydrates are identified as sugars. All provide calories, but there are few nutrients. Sugar is a necessary ingredient in many products because it provides sweetness and bulk.



What Health Concerns Are Related to Sugar?

Health concerns about sugar consumption are not as strong as they were 20 years ago. The only health problem strongly linked to sugar is tooth decay. Studies have found that most people consume small to moderate amounts of sugar within the context of healthful meals.

Sugar is not “bad” in terms of being harmful. But its use should be monitored because it contains more calories than nutrients. Eating too many sugary foods can cause individuals to bypass more nutritious foods or to take in more calories than needed and thus lead to weight gain. Weight gain and/or obesity lead to degenerative diseases such as cardiovascular disease, diabetes, hypertension, and it may aggravate other diseases such as arthritis.

What about Sugar Substitutes?

Sugar substitutes make the food sweeter with few calories and no nutrients. They don't have the functional properties of sugar, and some are adversely affected by heat. The five alternate sweeteners, approved by the U.S. Food and Drug Administration (FDA), on the market today are: saccharin, aspartame, acesulfame-K, sucralose, and neotame. Neotame is available only in processed foods and not for table use to date (2007). The more purified forms of Stevia – Purevia®, and Truvia® – received the Generally Recognized As Safe (GRAS) rating from FDA (2009).

Fruit juices, honey, and molasses are offered as sugar substitutes for baking and cooking. However, the sugar they provide is no more nutritious than other forms of sugar. The amounts used are seldom enough to provide meaningful vitamins or minerals.

To Reduce Sugar

- To cut down on sugar, try new recipes or adjust old ones by using one-third less. To add flavor, use more vanilla or spice.
- Satisfy your longing for something sweet with fruits for snacks and desserts. Eat baked sweets and candies less frequently and/or in smaller portions.
- Read labels of commercially prepared products; many are high in sugar. Whenever possible, substitute home-prepared items made with less sugar.
- Recognize that the following are names of sugars: sucrose, sorbitol, maple syrup, corn syrup, high fructose corn syrup, glucose, fructose, mannitol, molasses, dextrose, maltose, honey, and lactose.
- If you are trying to lose weight and/or have diabetes, then select alternate or non-caloric sweeteners, such as: saccharin (Sweet'N'Low®), aspartame (Equal® or NutraSweet®), acesulfame-K (SweetOne®), or sucralose (Splenda®). Saccharin, sucralose, or acesulfame-K can be used for cooking because they are not destroyed by heat. Aspartame is a protein-derivative and is destroyed by heat, losing its flavor.



To find recipes for baking, cooking, or preserving food and other techniques regarding the use of these products, contact the company's consumer representative:

- **Saccharin - Sweet'N'Low®** Hotline: 1-800-231-1123; 1-800-221-1763
- **Aspartame, Neotame - NutraSweet® or Equal®**: 1- 800-323-5316 (**Equal®**); or 1-800-323-5321 (**NutraSweet®**)
- **Acesulfame-K - SweetOne®**: 1-800-544-8610; or **Sunette®** 1-800-344-5807
- **Sucralose - Splenda®**: 1-800-777-5363

For all other questions about non-nutritive sweeteners, contact the following organizations:

- Academy of Nutrition and Dietetics' (ANAD) Hotline: 1-800-366-1655; 1-800-877-1600; www.eatright.org
- American Diabetes Association's Hotline 1-800-232-3472 or 1-800-342-2383
<http://www.diabetes.org>
- American Heart Association 1-800-AHA-USA; 1-800-242-8721
<http://www.americanheart.org>
- Food and Drug Administration, Consumer Inquiries: 1-888-INFO-FDA (463-6332),
<http://www.fda.gov>

Non-Nutritive Sweetener Conversion Chart

Sugar	2 teaspoons	¼ cup	a cup	½ cup	1 cup
Non-nutritive Sweeteners					
Saccharin					
Sweet N’ Low ® packet	1	3	4	6	12
Sweet N’ Low ® bulk	1	1 tsp.	1¼ tsp.	2 tsp.	4 tsp.
Sweet N’ Low ® liquid	20 drops	½ tsp.	2 tsp.	1 Tbsp.	2 Tbsp.
*for other brands, see food label for sugar equivalents					
Aspartame					
Equal®/NutraSweet® packet	1	Not in bulk packages Not recommended for cooking/baking			
Acesulfame-K					
SweetOne® packet	1	3	4	6	12
*Sugar Twin®, Weight Watchers®, Sucaryl®, Adolphs®, and Sweet 10®					
Sucralose					
Splenda®: (equivalent of sugar)	2 teaspoons	¼ cup	a cup	½ cup	1 cup

Detect Fiber

Dietary fiber is the undigested material left after nutrients are absorbed from food. Both insoluble fibers (such as in wheat, fruits, and vegetables) and soluble fibers (such as in oats, legumes, apples, and citrus fruits) are important. Study the high fiber choices in this section and use your imagination to find ways to include them more often. Here are three general reminders.

1. Fruits, vegetables, and grains have fiber; animal products do not.
2. The closer a fruit, vegetable, or grain is to its original, natural state the more fiber it will have. An apple has more fiber than applesauce, which has more fiber than apple juice.
3. Substitute a high-fiber food for a low-fiber one to increase your daily fiber supply.

Fiber Substitutes

Instead of	Try	For
Chinese noodles canned onion rings croutons/bacon bits	bran cereal	casserole toppings
cornflakes graham crackers bread crumbs	crushed bran cereal wheat or oat bran	dessert crusts and crumb toppings, in meatloaf, for chicken/fish coatings
white rice	brown rice barley, wheat kernels	casseroles, soup, stir fry, side dishes
chocolate chips	half chips & half raisins	cookies, bars

Add bran cereals, oat bran, and wheat bran to streusel toppings, chili, sloppy joes, sandwich spreads, and spaghetti sauce; or use as a topping for baked potatoes and salads. Bran cereal flour can be substituted for up to one-fourth of the all-purpose flour to increase fiber content. Bran cereals can contain 30 grams of fiber or more per cup. Check labels for exact amounts.

Look on the **Ingredients Listing** on a label for whole grains, cellulose, and other fiber sources such as cellulose, wheat gluten, or starch, etc. Look at the **Nutrition Facts** on a label to find the amount of both total carbohydrates and dietary fiber. As a general rule, a food is considered a **good source of fiber** if it has between 3 to less than 5 grams of fiber, or **high-fiber** if it has 5 or more grams of fiber.

Do You Know which Food Groups Provide the Most Fiber?

Take a look at these foods and the relative amount of fiber each group provides.

Food Groups	Grams Fiber per Serving
breads	1-3
whole fruits, cereals and grains	2
starchy vegetables	3
nonstarchy vegetables	1B4
beans, peas, and lentils	6

Know Your Flours

When a recipe lists flour as an ingredient, we assume it means all-purpose flour. To increase your success rate when substituting other flours, we need to review why flour is used.

The gluten that is formed when protein from wheat flour is combined with liquid gives dough its elasticity and baked products their structure. Flours from other grains have little or no gluten-forming protein. Using specialty flours may result in a reduced volume and a “heavier” finished product, as well as changes in color, flavor, and nutritional value. When using specialty flours:

- Stir whole-grain flours with a spoon before measuring but do not sift. Spoon into the measuring cup and level with a metal spatula.
- Decrease the oven temperature by 25 °F, and increase the baking time because the dough is likely to be more compact.
- For yeast breads, add all of the specialty flour first. Then work the all-purpose or bread flour into the dough. The doughs are mixed and kneaded for a shorter time because of the higher proportion of non-gluten-forming materials. The dough also requires a shorter rising time.

Flour Substitutes

As a thickening: 1 tablespoon flour = ½ tablespoon cornstarch, potato starch, rice starch, or arrowroot starch
or = 1 tablespoon quick-cooking tapioca
or = 2 teaspoons tapioca

Self-rising flour: Add 1½ teaspoons of baking powder and ½ teaspoon of salt per cup of all-purpose flour

How Much Fiber Is in Flour?

All-purpose flour is a highly refined ingredient; consequently, it has very little fiber. If you want to increase fiber in home-baked products, you can substitute other flours in many products. Here’s how some flour choices compare in fiber content:

LEAST FIBER		MOST FIBER	
All Purpose Flour	Medium Rye Flour	Cornmeal Oat Flour*	Whole Wheat Flour

** To make oat flour, put oatmeal in the blender, and blend about 60 seconds. Store in the refrigerator or freezer because of its high-fat content.*

To ensure that whole-wheat fiber (not caramel coloring nor molasses) is present, read labels on bread products. By law, a product labeled “whole wheat” must be made from 100 percent whole-wheat flour. Wheat bread may have varying proportions of enriched white flour and whole-wheat flour. The type of flour present in the largest amount is listed first on the ingredient label.

Allergies to Wheat?

Replacement substitutes for one cup of flour are:

• Barley flour	½ cup	OR	½ cup rye flour + ½ cup potato flour
• Corn flour	1 cup		or
• Corn meal	¾ cup		b cup rye flour + a cup potato flour
• Potato starch flour	e cup		or
• Rolled oats	1a cup		e cup rye flour + a cup rye flour
• Rice flour	1¼ cup		(10 tablespoons)
• Rye flour*	1¼ cup		or
• Rye meal*	1 cup		1 cup soy flour + ¾ cup potato starch flour

***NOTE:** Some individuals who are allergic to wheat may also be sensitive to gluten, a protein found in wheat and other grains. Grains that contain gluten are barley (and malt), rye, oats, wheat, and triticale. If a person is allergic to wheat, it is a good idea to check with his or her health care provider to see if foods that contain gluten should also be eliminated from the diet.

Detect Salt

Salt, the traditional seasoning of choice, has been linked to high blood pressure. Eat no more than 2300 mg/day or no more than 700 milligrams (mg.) per meal. For persons with hypertension or those who are more sensitive to the effects of sodium (such as blacks and middle-aged and older adults), eat even less sodium during the day (around 1500 milligrams) as advised by the *Recommended Dietary Guidelines for Americans*, 2010.

Have you been told to cut down on sodium? Then you will find the information on labels very helpful. When you're buying packaged foods, always check the labels to make sure the product does not contain too much sodium.

Do you know what to look for to help you cut sodium in your meal plan when selecting foods in the grocery store? Here's how you do it. Select single foods with no more than 400 milligrams of sodium in a single serving; entrees should have no more than 800 milligrams of sodium.

As a result of many people needing to reduce the sodium content of their meals, many no-salt and low-salt seasoning mixes are now on the market. Also, by using the following herb and spice guides and recipes for low-sodium seasonings, you can make them at home.

Herb and Spice Guide

Spices and herbs can be used to enhance the flavor of a fat- or sodium-reduced food. Experiment with small amounts to find an acceptable seasoning level. Powdered herbs are stronger than crumbled, and dried herbs are stronger than fresh herbs. If a recipe calls for ¼ teaspoon powdered herb, you can use ¾ to 1 teaspoon crumbled or flaked, or 2 teaspoons fresh herb.

What's the Difference between an Herb and a Spice?

- Herb (ûrb,hûrb) n. leaves of plants and shrubs with non-woody stems
- Spice (spis) n. comes from bark, roots, fruit, seeds, or flowers of plants

When adding herbs or spices, take a tip from professional recipe developers. Start with 1 teaspoon of a mild herb (dried) or spice (such as oregano, basil, cumin, and cinnamon) per six servings. Use only ¼ teaspoon of a strong herb or spice (such as rosemary, cloves, nutmeg, ginger, mustard, allspice) per six servings. Try these herbs and spices with the following foods:

Beef (see also Meat Loaf): allspice, basil bay leaf, caraway seed, chervil, chili powder, cinnamon, cloves, coriander, cumin, curry powder, dill, fennel, garlic, ½ Greek seasoning to ½ pepper, ginger, lemon pepper, marjoram, oregano, paprika, pepper, rosemary, savory, tarragon

Breads: anise, caraway seed, cardamom, cinnamon, coriander, dill, fennel, nutmeg, parsley, poppy seed

Cheeses: basil, caraway seed, cayenne, celery seed, chervil, chives, coriander, cumin, dill, jalapeño pepper, marjoram, oregano, parsley, pepper, sage, thyme

Dips: cayenne, chili powder, chives, curry powder, dill, oregano, parsley, pepper, sage

Eggs: basil, cayenne, celery seed, chervil, chili powder, chives, cumin, curry powder, dill, marjoram, mustard seed, oregano, paprika, parsley, pepper, rosemary, saffron, sage, savory, tarragon, thyme, turmeric

Fish: basil, bay leaf, cayenne, celery seed, chervil, cumin, curry powder, dill, ginger, lemon pepper, marjoram, mustard seed, oregano, paprika, parsley, pepper, saffron, sage, savory, tarragon, thyme, turmeric

Fruits: allspice, anise, basil, cardamom, cinnamon, cloves, curry powder, fennel, ginger, mace, mint, nutmeg, rosemary, poppy seed

Grains: basil, celery seed, chili powder, cumin, curry powder, dill, marjoram, mint, oregano, parsley, pepper, rosemary, saffron, savory, thyme

Jams and Jellies: allspice, bay leaf, cardamom, cinnamon, mace, mint, nutmeg

Lamb: basil, bay leaf, chervil, cinnamon, cloves, cumin, curry powder, dill, garlic cloves, lemon pepper, marjoram, mint, nutmeg, oregano, parsley, pepper, rosemary, saffron, sage, savory, thyme

Lentils: basil, bay leaf, caraway seed, chives, tarragon, thyme, turmeric

Liver: basil, bay leaf, caraway seed, chives, tarragon, thyme, turmeric

Marinades: allspice, bay leaf, cayenne, celery seed, chili powder, cloves, ginger, mustard seed, oregano, parsley, rosemary, tarragon, turmeric

Meat Loaf: chili powder, cumin, curry powder, marjoram, nutmeg, oregano, parsley, pepper, sage, savory, thyme

Pasta: basil, oregano, parsley, pepper, poppy seed

Pickled vegetables: allspice, bay leaf, cardamom, cinnamon, cloves, coriander, dill, ginger, mint, mustard seed, pepper, tarragon, turmeric

Pork: allspice, basil, bay leaf, caraway seed, chervil, cinnamon, cloves, coriander, fennel, ginger, marjoram, nutmeg, pepper, rosemary, sage, savory, thyme

Poultry: basil, bay leaf, chervil, coriander, curry powder, dill, ginger, lemon pepper, marjoram, paprika, parsley, pepper, rosemary, saffron, sage, savory, tarragon, thyme, turmeric

Relishes: allspice, cayenne, chili powder, cloves, coriander, ginger, mace, tarragon

Salad Dressings: caraway seed, celery seed, chervil, chili powder, chives, coriander, curry powder, dill, ginger, mint, mustard seed, paprika, parsley, pepper, poppy seed, tarragon, turmeric

Shellfish: basil, bay leaf, cayenne, curry powder, marjoram, oregano, paprika, parsley, saffron, sage, savory, tarragon, thyme

Soups and Stews: allspice, basil, bay leaf, caraway seed, cayenne, celery seed, chervil, chili powder, chives, cloves, coriander, curry powder, dill, ginger, marjoram, oregano, paprika, parsley, pepper, rosemary, saffron, tarragon, thyme

Stuffings: basil, marjoram, oregano, pepper, rosemary, sage, savory, tarragon, thyme

Vegetables:

Artichoke: bay leaf, coriander, parsley, savory, thyme

Asparagus: chives, lemon pepper, marjoram, mustard seed, parsley, tarragon, thyme, turmeric

Beans, dried: allspice, bay leaf, celery seed, chili powder, cloves, cumin, jalapeño pepper, mint, mustard seed, oregano, sage, savory, tarragon, turmeric

Beans, lima: cumin, dill, marjoram, mustard seed, oregano, sage, savory, tarragon, thyme

Beans, snap: basil, caraway seed, chili powder, dill, marjoram, mustard seed, savory, tarragon, thyme

Beets: allspice, anise, bay leaf, caraway seed, cinnamon, dill, fennel, ginger, mustard seed, savory, tarragon, thyme

Broccoli: caraway seed, dill, mustard seed, oregano, tarragon

Brussels sprouts: basil, caraway seed, dill, mustard seed, sage, thyme

Cabbage: caraway seed, celery seed, cumin, dill, fennel, mustard seed, nutmeg, oregano, paprika, savory, tarragon, turmeric

Carrots: allspice, anise, bay leaf, caraway seed, cinnamon, cloves, dill, fennel, ginger, mace, marjoram, mint, nutmeg, parsley, rosemary, sage, thyme

Cauliflower: caraway seed, celery seed, coriander, dill, mace, nutmeg, paprika, parsley

Corn: chili powder, chives, oregano, parsley, sage, savory

Cucumber: basil, chives, cinnamon, cloves, dill, mint, parsley, pepper, tarragon

Eggplant: basil, marjoram, oregano, parsley, sage, thyme

Greens, dark leafy: allspice, basil, mace, marjoram, nutmeg, oregano, tarragon

Greens, salad: basil, celery seed, chervil, chives, dill, lemon pepper, marjoram, oregano, parsley, pepper, sage, savory, tarragon

Mushrooms: chives, dill, marjoram, parsley, tarragon, thyme

Onions: caraway seed, curry powder, mustard seed, nutmeg, oregano, parsley, sage, thyme, turmeric

Parsnips: chervil, dill, marjoram, parsley, rosemary, sage, thyme

Peas: allspice, basil, chervil, chives, dill, marjoram, mint, oregano, poppy seed, rosemary, sage, savory, tarragon, thyme

Potatoes, sweet: allspice, cardamom, cinnamon, cloves, ginger, mace, nutmeg

Potatoes, white: basil, bay leaf, caraway seed, celery seed, chives, dill, lemon pepper, mustard seed, oregano, parsley, pepper, poppy seed, rosemary, savory, tarragon, thyme

Pumpkin: allspice, cardamom, cinnamon, cloves, ginger, mace, nutmeg

Squash, summer: chervil, lemon pepper, marjoram, parsley, pepper, savory

Squash, winter: allspice, basil, cardamom, cinnamon, cloves, fennel, ginger, mace, mustard seed, nutmeg, rosemary

Squash, zucchini: lemon pepper, marjoram, oregano, parsley

Tomatoes: basil, bay leaf, celery seed, chervil, chili powder, dill, lemon pepper, oregano, parsley, sage, savory, tarragon, thyme

Turnips: allspice, dill, mace, nutmeg, paprika, thyme

Vegetable juices: basil, bay leaf, oregano, parsley, pepper, tarragon

Seasonings without Salt

One teaspoon of salt has about 2,000 mg of sodium. Substantially reduce your sodium intake by substituting. Any of the following seasonings can be used.



Zesty Herb Seasoning

Sodium: 47 milligrams per teaspoon

- Grated peel of 1 lemon
- 2 tablespoons ground cinnamon
- 1 tablespoon ground mace
- 1 tablespoon dried basil leaves, crushed
- 1 tablespoon dried thyme leaves, crushed
- 1 tablespoon dried rosemary leaves, crushed
- 2 teaspoons paprika
- 1 teaspoon salt and potassium chloride mixture (a purchased product with half the sodium of table salt)
- 1 teaspoon pepper
- 1 teaspoon ground cloves
- ½ teaspoon ground nutmeg
- ½ teaspoon ground allspice

1. Combine all ingredients. Refrigerate in covered container.
2. Sprinkle as desired over meat, poultry, or fish before broiling or baking.

Oriental Spice

Sodium: About 1.6 milligrams per teaspoon

- 1 teaspoon fresh grated lemon peel
- ¼ teaspoon anise seed, crushed
- ¼ teaspoon fennel seed, crushed
- ¼ teaspoon ground cinnamon
- ¼ teaspoon ground cloves
- ¼ teaspoon ground ginger

1. Combine all ingredients. Refrigerate in covered container.
2. To use, sprinkle as desired over poultry or meat stir-fry dishes.

Herbed Seasoning

Sodium: 0.65 milligrams per teaspoon

- 2 tablespoons dried dill weed or basil leaves, crumbled

- 2 tablespoons onion powder
- 1 teaspoon dried oregano leaves, crumbled
- 1 teaspoon dried celery seed
- ½ teaspoon lemon pepper (sodium-free)

1. Combine all ingredients in small bowl and blend well.
2. Spoon into shaker and use with poultry and fish.
3. Store in cool, dry place.

Spicy Blend

Sodium: 0.59 milligram per teaspoon

- 2 tablespoons dried savory, crushed
- 1 tablespoon dry mustard
- 2½ teaspoons onion powder
- 1¾ teaspoons curry powder
- 1¼ teaspoons ground pepper
- 1¼ teaspoons ground cumin
- ½ teaspoons garlic powder

1. Mix thoroughly and place in shaker. Store in cool, dry place.
2. Use with main dishes.

Shaker Spice Blend

Sodium: 1.78 milligrams per teaspoon

- 5 teaspoons onion powder
- 2½ teaspoons garlic powder
- 2½ teaspoons paprika
- 2½ teaspoons dry mustard
- 1¼ teaspoons thyme leaves, crushed
- ½ teaspoon ground pepper
- ¼ teaspoon celery seed

1. Mix thoroughly and place in shaker.
2. Use at table on main dishes, vegetables, soups or salads.

Did You Know?

Health professionals recommend a daily sodium intake below 2,300 milligrams (mg). About one third of the average intake of sodium comes from salt added to food during cooking or at the table. Read the ingredients listing and nutrition information on food labeling in all processed food.



Modifying Recipes

Reason for ingredient		Amount usually used	Result of reducing ingredient
Candies			
Fat	Adds to rich flavor and helps prevent large crystals from forming.	Amount varies widely.	May be coarser in texture.
Sugar	Needed for crystallization, proper consistency, texture, and flavor.	About 3 cups sugar per cup liquid.	Do not change recipe. May drastically affect the volume, texture, and consistency.
Salt	Helps balance and round out the flavor.	Amount varies widely.	May change flavor.
Cakes			
Fat	Contributes to tenderness, fine grain, and texture.	2 to 4 tablespoons fat per cup of flour.	May seem less moist and flavorful.
Sugar	Contributes to tenderness, flavor, texture, moistness, and browning.	½ to 1⅓ cup sugar per cup of flour	Flavor may be less sweet; becomes stale faster. May have paler crust, less color, more open texture, more rounded top, and be drier.
Salt	Adds flavor.	Variable.	Little effect.
Canned and Frozen Fruit			
Sugar	Helps to preserve firm texture and bright color.	½ to 1⅓ cups sugar per cup water for syrup; ¼ to ⅓ cup sugar per pint of frozen fruit (dry pack).	Texture may be less firm. Flavor may be less sweet. Color may be less bright.
Canned Vegetables			
Salt	Adds flavor.	1 teaspoon salt per quart.	Flavor may change.
Cooked Fruits			
Sugar	Helps retain fruit shape and texture during cooking. Increases transparency so brighter.	½ cup sugar per cup water (too much sugar causes fruits to shrink and become firm).	Texture likely to be softer; color likely to be less bright; flavor will be less sweet.
Cookies			
Fat	Increases tenderness.	¼ to ½ cup fat per cup flour.	May make cookies less tender.
Sugar	Contributes to sweetness, browning, and tenderness. Melts during baking so cookie spreads out.	⅓ to 1⅓ cups sugar per cup flour.	Flavor will be less sweet; cookie will be tougher and paler. With less sugar to melt, cookie won't spread as much.
Salt	Adds flavor.	¼ to ½ teaspoon salt per cup flour.	May alter flavor slightly.

Reason for ingredient		Amount usually used	Result of reducing ingredient
Custards and Puddings			
Fat	Causes eggs to coagulate at higher temperature so consistency is softer.	1½ to 3 tablespoons sugar per cup milk.	Consistency will be firmer, and baking time may be shorter.
Salt	Adds flavor.	⅛ teaspoon salt per cup milk.	Flavor may change.
Ice Cream			
Fat	Fat (in cream) helps make a smooth texture and aids incorporation of air during freezing; also gives a rich flavor.	Liquid is usually about half milk and half cream.	Using a milk product that is lower in fat reduces the richness, creaminess, and smoothness of the ice cream.
Sugar	Lowers freezing point and lengthens freezing time so ice cream will be softer at a given temperature. Contributes to smooth texture. Adds sweetness.	½ cup sugar to each cup of milk or cream.	Texture may be coarser. Ice cream will be harder and less sweet. Freezing time will be shorter.
Salt	Adds flavor.	Amount varies.	Little effect.
Main Dishes			
Salt	Adds flavor.	1 teaspoon salt per 4 to 6 servings. 1 teaspoon salt to each pound ground beef.	Little effect.
Pasta, Rice, Legumes			
Salt	Adds flavor.	1 teaspoon salt to each cup of uncooked pasta, rice, legumes.	May change flavor.
Pickles			
Sugar	Contributes to crisp texture. May act as a preservative if enough is used.	Highly variable	Never change recipe. May cause texture changes and/or spoilage.
Salt	Essential in brine to permit growth of desirable micro-organisms and produce acid for preventing spoilage.	Highly variable	Never change recipe. May cause texture changes and/or spoilage.
Quick Breads			
Fat	Increases tenderness.	1 to 4 tablespoons fat per cup of flour.	May be less tender and less moist.
Sugar	Contributes to sweetness, tenderness, browning, moistness, and volume.	1 to 4 tablespoons sugar per cup of flour.	May result in a less sweet, less tender product with a greater tendency to dry out.
Salt	Adds flavor.	¼ to ½ teaspoon salt per cup of flour.	May affect flavor slightly.

Reason for ingredient		Amount usually used	Result of reducing ingredient
Sauces and Gravies			
Fat	Separates the flour or starch granules to prevent lumpiness.	1 to 3 tablespoons fat per cup liquid.	Smooth sauces can be made with less fat. If no fat is used, blend starch or flour with cold liquid. Flavor will be milder.
Salt	Adds flavor.	$\frac{1}{4}$ teaspoon salt per cup liquid.	Little effect.
Sweet Spreads (Jellies, Jams, Preserves, Butters)			
Sugar	Essential for jelling and protecting against spoilage.	Highly variable.	Do not change recipes for sweet spreads unless they are to be frozen or refrigerated. They are carefully balanced to produce a high-quality product that will not spoil.
Yeast Breads and Rolls			
Fat	Increases tenderness and enhances keeping quality. Large amounts decrease volume.	1 to 3 teaspoons fat per cup of flour in bread; 1 to 4 tablespoons fat per cup flour in rolls.	May reduce keeping quality.
Sugar	Contributes to a soft texture, sweet flavor, and brown crust. Provides food for yeast during fermentation. Small amounts of sugar increase the rate of fermentation; large amounts of sugar depress yeast action.	Up to 1 tablespoon sugar per cup of flour in bread; $\frac{1}{2}$ to 2 tablespoons sugar per cup flour in rolls.	May affect rate of fermentation. May not be as tender or moist. Rolls may not brown as quickly.
Salt	Inhibits yeast fermentation. Improves texture. Adds flavor. Has a slight toughening effect on the gluten.	$\frac{1}{4}$ to $\frac{1}{2}$ teaspoon salt per cup flour.	May cause yeast to grow too rapidly, resulting in a poor texture. Satisfactory bread needs some salt.

Understanding Food Packaging and Marketing Claims

Do You Know What You're Eating?

"Non-GMO" or "GMO-Free"

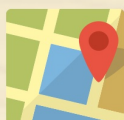
- Used by the food industry to advertise that a food is free from genetically modified organisms. This is a VOLUNTARY label

"Natural"

- Generally means that a product has nothing artificial or synthetic added to it

"Local"

- Produced and processed within a particular area (e.g. within an undefined # of miles, commonly considered to be less than 400 miles from its origin, or within the State in which it is produced)



"Fresh"

- Food is unprocessed and has not been frozen or subjected to any form of thermal processing or any other form of preservation
- NOTE: This definition still allows for wax coatings, post harvest use of approved pesticides, application of mild chlorine wash, and treatment with ionizing radiation

*Terms in **RED** do NOT have a formal definition right now...Stay tuned!



"Made with Organic _____"

- Used when a product contains at least 70% organic ingredients (excluding salt and water)

"Organic"

- any product that contains a minimum of 95% organic ingredients (excluding salt and water)

"100% Organic"

- Any product that contains 100% organic ingredients (excluding salt and water)

"USDA Certified Organic"

- Grown and processed using strict guidelines
- NO genetically modified organisms
- Produce: no synthetic fertilizers/pesticides
- Meat: animals raised in living conditions that reflect their natural behavior, fed 100% organic feed and forage, and not given antibiotics or hormones
- Packaged foods: no artificial preservatives, colors, or flavors; ingredients are organic with a few exceptions (ex: baking soda, pectin, etc.)

Grain Terms

"Whole Grains"

- Whole grains contain the bran, germ, and endosperm (examples of whole grains: brown rice, oatmeal, corn)

Egg and Chicken Terms



"100% or All-Natural"

- Only means nothing was added to the egg (coloring, flavoring)
 - Does NOT indicate how the chicken was raised

"USDA Organic"

- Certified organic eggs are from uncaged hens that have free range of their houses and access to outdoor spaces. They are also fed an organic diet

"Vitamin Enhanced"

- Hens are given a special diet that helps them produce eggs with a higher vitamin content (e.g. Vitamin E)

"Omega-3 Enriched"

- Hens are fed a diet that includes flaxseed, algae or fish oils to increase the Omega-3 fatty acid content of the eggs



"No Antibiotics"

- Hens are raised without any antibiotics of any type

"No added Hormones"

- NO eggs have added hormones (regardless of what the package says) because the use of hormones is NOT allowed in hog or poultry production
- If you see "No added hormones" on a package, it must be followed by the statement: "Federal regulations prohibit the use of hormones"

"Free-range"

- Hens are cage free with continuous access to the outdoors during their laying cycle

"Cage-free"

- Hens are raised in an enclosed structure with unlimited access to food and water. They are NOT required to have access to the outdoors

"No rBST (or rBGH)"

- rBST and rBGH are growth hormones that are given to cows to increase milk production

"Ultrapasteurized (UHT)" Milk

- Milk has been heated to at least 280 degrees F for 2 seconds. This increases shelf life, but may cause a "cooked" flavor

"USDA Organic"

- Cows have year round access to outdoors/pasture. No hormones are used. Cows are fed an organic diet (grains, forage)

"Grass-fed Beef"

- 100% Grass Fed means an animal is fed forage 100% (no grain crops) after being weaned from their mother's milk



Milk and Beef Terms

Be a BAC Fighter

Make the meals and snacks from your kitchen as safe as possible. **CLEAN**: wash hands and surfaces often; **SEPARATE**: don't cross-contaminate; **COOK**: to safe temperatures, and **CHILL**: refrigerate promptly. Be a BAC Fighter and reduce your risk of food borne illness!



Visit "Ask Karen" at FoodSafety.gov to ask a food safety question

Call the USDA Meat & Poultry Hotline:
1-888-MPHotline (1-888-674-6854)

FDA Food Information Line
1-888-SAFEFOOD (1-888-723-3366)

See www.fightbac.org for free downloadable brochures, fact sheets, stickers, and other great stuff! Materials for educators can be ordered through the on-line BAC store!

The mission of the non-profit Partnership for Food Safety Education is to end illness and death from food borne infection.

Please go to www.fightbac.org for more information on how you can get involved and to sign up to receive food safety e-cards!

Apply the heat... and Fight BAC!®

Cooking food to the safe temperature kills harmful bacteria. So *Fight BAC!*® by thoroughly cooking your food as follows:

SAFE MINIMAL INTERNAL TEMPERATURES	
<i>As measured with a food thermometer</i>	
Beef, pork, veal and lamb (roast, steaks and chops)	145°F with a 3-minute "rest time" after removal from the heat source.
Ground Meats	160°F
Poultry (whole, parts or ground)	165°F
Eggs and egg dishes	160°F Cook eggs until both the yolk and the white are firm. Scrambled eggs should not be runny.
Leftovers and casseroles	165°F
Fin Fish	145°F
<i>Guidelines for Seafood</i>	
Shrimp, Lobster, Crabs	Flesh pearly and opaque
Clams, Oysters and Mussels	Shells open during cooking
Scallops	Milky white, opaque and firm

2011 PFSE



FIGHT FOODBORNE BACTERIA

Four Simple
Steps to
Food Safety

www.fightbac.org

Sign up to be a BACFighter at www.fightbac.org



BAC (foodborne bacteria) could make you and those you care about sick. In fact, even though you can't see BAC—or smell him, or feel him—he and millions more like him may have already invaded the food you eat. But you have the power to *Fight BAC!*®.

Foodborne illness can strike anyone. Some people are at a higher risk for developing foodborne illness, including pregnant women, young children, older adults and people with weakened immune systems. For these people the following four simple steps are critically important:



CLEAN: Wash hands and surfaces often

Bacteria can be spread throughout the kitchen and get onto hands, cutting boards, utensils, counter tops and food. To *Fight*

BAC!®, always:

- Wash your hands with warm water and soap for at least 20 seconds before and after handling food and after using the bathroom, changing diapers and handling pets.
- Wash your cutting boards, dishes, utensils and counter tops with hot soapy water after preparing each food item and before you go on to the next food.
- Consider using paper towels to clean up kitchen surfaces. If you use cloth towels wash them often in the hot cycle of your washing machine.
- Rinse fresh fruits and vegetables under running tap water, including those with skins and rinds that are not eaten.
- Rub firm-skin fruits and vegetables under running tap water or scrub with a clean vegetable brush while rinsing with running tap water.



SEPARATE: Don't cross-contaminate

Cross-contamination is how bacteria can be spread. When handling raw meat, poultry, seafood and eggs, keep these foods and their juices away from ready-to-eat foods. Always start with a clean scene—wash hands with warm water and soap, and wash cutting boards, dishes, countertops and utensils with hot water and soap.

- Separate raw meat, poultry, seafood and eggs from other foods in your grocery shopping cart, grocery bags and in your refrigerator.
- Use one cutting board for fresh produce and a separate one for raw meat, poultry and seafood.
- Never place cooked food on a plate that previously held raw meat, poultry, seafood or eggs.



COOK: Cook to safe temperatures

Food is safely cooked when it reaches a high enough internal temperature to kill the harmful bacteria that cause illness. Refer to the chart on the back of this brochure for the proper internal temperatures.

- Use a food thermometer to measure the internal temperature of cooked foods. Make sure that meat, poultry, egg dishes, casseroles and other foods are cooked to the internal temperature shown in the chart on the back of this brochure.
- Cook ground meat or ground poultry until it reaches a safe internal temperature. Color is not a reliable indicator of doneness.
- Cook eggs until the yolk and white are firm. Only use recipes in which eggs are cooked or heated thoroughly.
- When cooking in a microwave oven, cover food, stir and rotate for even cooking. Food is done when it reaches

the safe internal temperature as measured with a food thermometer.

- Bring sauces, soups and gravy to a boil when reheating.



CHILL: Refrigerate promptly

Refrigerate foods quickly because cold temperatures slow the growth of harmful bacteria. Do not over-stuff the refrigerator.

Cold air must circulate to help keep food safe. Keeping a constant refrigerator temperature of 40°F or below is one of the most effective ways to reduce the risk of foodborne illness. Use an appliance thermometer to be sure the temperature is consistently 40°F or below. The freezer temperature should be 0°F or below.

- Refrigerate or freeze meat, poultry, eggs and other perishables as soon as you get them home from the store.
- Never let raw meat, poultry, eggs, cooked food or cut fresh fruits or vegetables sit at room temperature more than two hours before putting them in the refrigerator or freezer (one hour when the temperature is above 90°F).
- Never defrost food at room temperature. Food must be kept at a safe temperature during thawing. There are three safe ways to defrost food: in the refrigerator, in cold water, and in the microwave. Food thawed in cold water or in the microwave should be cooked immediately.
- Always marinate food in the refrigerator.
- Divide large amounts of leftovers into shallow containers for quicker cooling in the refrigerator.
- Use or discard refrigerated food on a regular basis. Check USDA cold storage information at www.fightbac.org for optimum storage times.

Insect Repellent

Lyme. West Nile. Zika. The list of insect-borne diseases to worry about seems to get longer - and scarier - every year. Whether you're enjoying the great outdoors in your own backyard or on a tropical island, when you apply insect repellent, you want the best, most effective protection from biting bugs.

Ratings provided by Consumer Reports¹ identify which products work best against the Aedes mosquitoes (the aggressive mosquitoes that tend to bite during the day and that can spread Zika) as well as against Culex mosquitoes (night-time biters that can spread West Nile) and deer ticks (which can carry Lyme and other diseases). And choosing the right repellent matters.

Prevention and Control³:

In order to avoid mosquito bites, one should:

- Use insect repellents when you go outdoors. Repellents containing DEET, picaridin, IR3535, and some oil of lemon eucalyptus and para-menthane-diol products provide longer-lasting protection.
- When weather permits, wear long sleeves, long pants, and socks when outdoors. Mosquitoes may bite through thin clothing, so spraying clothes with repellent containing permethrin or another EPA-registered repellent will give extra protection. Don't apply repellents containing permethrin directly to skin.
- Take extra care during peak mosquito biting hours. Be sure to use repellent and protective clothing from dusk to dawn or consider avoiding outdoor activities during these times.

Ingredient Information:

Around half of the respondents who use insect repellent during the summer (which is more than a third of all adult Americans) in Consumer Reports' most recent nationally representative survey of more than 2,000 U.S. adults said they don't read the ingredients on insect repellents before they buy them. That's a mistake, because the active ingredient and concentration matters, in terms of both effectiveness and safety.

Products with any one of these three active ingredients - deet, oil of lemon eucalyptus, and picaridin - work well. And all are safe, even for pregnant women, when used appropriately. Here's what you need to know about each.

- **DEET:** Many people assume that the more DEET (N, N-diethyl-meta-toluamide) a product contains, the better. A higher concentration does not mean that the product will work better. It means that it will be effective for a longer period of time. Additionally, tests have found that products with 15 to 30 percent DEET can provide long-lasting protection against mosquitoes and ticks. And some research suggests that higher concentrations and excessive doses can pose risks, including rashes and possibly even disorientation and seizures. That's why it's recommended to avoid repellents with more than 30 percent DEET, and not use it at all on babies younger than two months. Infants should be protected from mosquito bites by using a carrier draped with mosquito netting with an elastic edge for a tight fit. Also, make sure you don't go too low on DEET concentration. Products with just 7 percent DEET have shown not to work well, especially against Aedes (daytime) mosquitoes.

- **Picaridin:** This is a synthetic repellent modeled after a compound that occurs naturally in the black pepper plant. In Consumer Reports’¹ study, a 20-percent picaridin product was the top repellent overall - and the only one to ward off both species of mosquitoes, plus ticks, for at least eight hours.

But concentration matters: Another picaridin product, this one just 5 percent, was the second-lowest scoring insect repellent. And while picaridin seems safe, even for use on infants, it can irritate your skin and eyes, so use it carefully.

- **Oil of Lemon Eucalyptus:** This is a naturally occurring compound, extracted from the gum eucalyptus tree; products that contain 30 percent oil of lemon eucalyptus (OLE) have proven to ward off mosquitoes and ticks for at least seven hours.

All the other products with plant oils - including cedar, cinnamon, citronella, clove, geranium, lemongrass, rosemary, or peppermint – have shown to provide little protection, often failing in tests within a half hour, especially against *Aedes* (daytime) mosquitoes. OLE also appears to be relatively safe when used properly, though it can cause temporary eye injury, and the Food and Drug Administration recommends against using it on children under three.

- **IR3535 and 2-Undecanone:** Tests have shown that products with these two ingredients are less effective (compared to DEET, picaridin, and OLE), offering limited protection. IR3535 is a man-made compound that is structurally similar to a naturally-occurring amino acid, and 2-Undecanone is a synthesized version of a compound found in rue, wild tomatoes, and several other plants.

The IR3535 product we tested worked well against ticks and *Culex* mosquitoes, but offered only three hours of protection against *Aedes* mosquitoes. And the repellent with 2-Undecanone worked for only about three hours against all three insects. Both products appear relatively safe but, as with all repellents, should be used with caution, especially on children.

The Buzz: Things to Think About

Be Wary of "Natural" Repellents:

Several makers of “natural” insect repellents (which typically contain essential plant oils like cedar, citronella, lemongrass, and rosemary) claim that their products can help ward off mosquitoes, including those that carry the Zika virus. However, tests show that was true only for products tested with oil of lemon eucalyptus.

Don’t Combine Sunscreen and Bug Repellent:

Products that combine sunscreen and repellent are not recommended because sunscreen may need to be reapplied more often and in larger amounts than needed for the repellent component to provide protection from biting insects. In general, the recommendation is to use separate products, applying sunscreen first and then applying the repellent. Due to the decrease in SPF when using a DEET-containing insect repellent after applying sunscreen, travelers may need to reapply the sunscreen more frequently.

The Right Way to Spray:

To optimize safety and effectiveness, repellents should be used according to the label instructions. Proper application and use is essential, both for maximum protection and to avoid possible side effects, including skin or eye irritation. That means:

- Apply repellent only to exposed skin or clothing (as directed on the product label). Never put it on under clothing.
- Use just enough to cover and only for as long as needed; heavier doses don't work better and can increase risks.
- Don't apply repellents over cuts, wounds, or irritated skin.
- When applying to your face, spray first on your hands, then rub in, avoiding your eyes and mouth, and using sparingly around ears.
- Don't let young children apply. Instead, put it on your own hands, then rub it on. Limit use on children's hands, because they often put their hands in their eyes and mouths.
- Don't use near food, and wash hands after application and before eating or drinking.
- At the end of the day, wash treated skin with soap and water, and wash treated clothing in a separate wash before wearing again.

References:

¹Consumer Reports (2016). Insect Repellent Buying Guide. Taken from:

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Taken from: <http://www.cdc.gov/westnile/prevention/index.html> on October 26, 2016.

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LESSON TWO:

Hydration Station

Objectives

1. Students will be able to determine whether they are adequately hydrated.
2. Students will be able to explain why water is important to the body and its functions.
3. Students will be able to describe when it is preferable to drink water rather than a sports drink.

Materials needed

Ingredients for sports drink in Activity #1

Copies of word find activity sheets

Assorted prizes for game winners

Supplies for Activity #2 (optional)

Getting started

This lesson can be started with a lecture or with the word find activity. Pass out copies of the word find activity sheet and let the students complete them. If desired, give prizes to those who finish first, second and third. Prizes appropriate for this lesson include water bottles, cups, or allowing the winning students to make the homemade sports drink for the rest of the class. After the students have completed the activity, discuss the terms used in the word find (with the help of the glossary) and their relationship to proper hydration.

Instruction

Hydration before, during and after competition

Fluid intake is vital before and during physical activity. When your body is properly hydrated, nutrients are transported easily and you maintain a healthy body temperature. In addition, fluids protect the body's organs and tissues during physical activity.

When you don't drink enough fluids your body becomes dehydrated. We all know that during physical activity fluids are lost through the skin as sweat. Did you know that you also lose water through your lungs when you breathe and through your urine? Without the proper amount of fluids, the body will not work to its full potential. For athletes, this means their performance will not be at its peak.



Replacing fluids to stay hydrated is important no matter what type of physical activity you do. Before you begin your activity, start drinking water. Keep drinking during your activity to ensure that you stay at your peak performance. Do not wait until you feel thirsty to drink; thirst is one of the first signs of dehydration!

There are several factors that affect fluid loss:

1. High altitudes increase fluid loss.
2. High temperature can increase fluid loss.
3. Some athletes sweat more than others; sweating increases fluid loss.
4. Longer periods of exercise and your level of endurance can affect fluid loss.

Schedule your water breaks

When you're doing rigorous physical activity, schedule your water breaks. Of course you may not always be able to stop during a game or practice for water, but you should try to stick to this schedule as much as possible. And don't forget to begin hydration several hours before an event.

When	How much to drink
Weigh yourself before physical activity	
2 hours before physical activity	2 cups of water
15 minutes before physical activity	1 to 2 cups of fluid
Every 15 minutes during activity	½ to 1 cup of fluid
Weigh yourself again after the activity	3 cups of fluid for each pound of body weight lost

On warm, humid days, sweat does not evaporate quickly, so you may need to drink more!

Signs of dehydration

The easiest way to know whether or not you are dehydrated is to check the color, volume and odor of your urine. If you have a small volume of urine that is dark and has a strong odor, it is a sign that you are dehydrated. In this case, drink water until the urine volume is normal and it is a pale yellow color with no odor. The color of your urine when you are well hydrated is like the color of light lemonade. When you are dehydrated, urine color compares to apple juice.

Here are some other signs of dehydration:

- Thirst, dry mouth, flushed skin
- Fatigue
- Headache

- Dizziness, weakness
- High body temperature
- Increased breathing rate, rapid pulse
- Skin that stays in a pinched position

If you have any of these symptoms, replace lost fluids immediately. If your symptoms persist or worsen, see your doctor.

Sports drinks vs. water

Nutrition experts seem to agree that water is the best thing to drink for physical activity lasting less than 60 minutes. For activities lasting longer than 60 minutes, sports drinks may be beneficial. Sports drinks provide carbohydrates, or fuel, for muscles, and the sodium and glucose in sports drinks can help the body absorb fluids. If your physical activity lasts longer than 60 minutes, sports drinks may enhance your athletic performance.

Although research suggests that people may drink more (and stay better hydrated) when they have flavored beverages, don't forget that some sports drinks tend to have lots of calories. If weight management is one of your goals, try diluting your sports drink with water. It will still be flavorful, but you will be adding more water to your body and decreasing the number of calories you consume.

The right balance

When comparing sports drinks, experts recommend that you consider the following:

1. **The right amount of carbohydrates.** Look for a range of 4 to 8 percent. Sports drinks containing more than 8 percent carbohydrates will not be absorbed as quickly and could upset your stomach. To determine the percent of carbohydrates in a drink, use the formula below.

$$\frac{\text{\# grams of carbohydrates}}{\text{\# of milliliters}} \times 100 = \% \text{ carbohydrates}$$

Note: 1 cup = 240 milliliters, ½ cup = 120 milliliters

Example: 1 cup of soda (not diet) has 27 grams of carbohydrates

$$\frac{27 \text{ grams}}{240 \text{ milliliters}} \times 100 = 11.25 \% \text{ carbohydrates}$$

Because of its high carbohydrate content, soda would not make a good sports drink.

2. **The right type of carbohydrate.** High levels of fructose can upset the stomach, so look for beverages that contain more sucrose and glucose and less fructose. This information will be printed on the Nutrition Facts panel on the food label.

3. **No carbonation and no caffeine.** Carbonated beverages, like soda, can upset the stomach.
4. **Lightly sweetened, lightly flavored.** Sports drinks contain sodium to make them taste better. Unless you are active for a very long time, extra sodium is not necessary for good hydration.

Facts about energy drinks

Energy drinks are becoming very popular, especially among young people. Most young people turn to energy drinks when they aren't getting enough sleep. When you're tired from being up late studying or when you've been out too late with friends, you might think an energy drink would be a quick fix. An athlete might have an energy drink to get an instant burst of energy and a competitive edge.

But remember that energy drinks usually have double or triple the amount of caffeine in carbonated soda. Although caffeine affects everyone differently, it usually boosts heart rate and blood pressure, it may cause an upset stomach, and it may prevent sleep. We really don't know how caffeine affects teen athletes. Few published studies are available. So use energy drinks cautiously and don't let them replace more nutritious beverages.

Activity #1

Make your own sports drink

We all know that sports drinks are not cheap! Some can cost more than 28¢ per 8 ounces. That adds up quickly! As mentioned earlier, sports drinks are also loaded with calories. In this activity, you will make your own sports drink that is low in calories and costs very little.

Supplies:

- 1 cup of sugar
- 1 teaspoon salt
- 1 cup boiling water
- 1 cup orange juice
- 15 cups cold water

Instructions:

Put the sugar, salt and boiling water in a plastic pitcher and stir until the sugar is dissolved. Add the juice and cold water and stir. Chill. Makes 1 gallon. Each 8-ounce glass contains 12 grams of carbohydrate (5 percent glucose) and about 55 calories and costs about 7¢ to make using store-brand products.

As the students are enjoying their sports drink, have them name it and design a label for it. The label should include the nutrition information. Have the students use the formula to calculate the percentage of carbohydrate.

Other sports drink recipes to try:

Alternate Recipe 1

Mix together:

- ½ cup honey
- ½ teaspoon light salt
- ¼ cup lemon juice
- 2 liters water

Alternate Recipe 2

Mix together:

- 10 tablespoons sugar
- ¾ teaspoon light salt
- 1 pkg. unsweetened powdered drink mix
- 2 liters water

Supplemental activities

1. Ask a local company or organization to donate water bottles for the students. Have students attach the labels they design to the bottles.
2. Purchase a few different sports drinks and fruit juices. Have students compare the amounts of fructose and glucose they contain.
3. Purchase four different beverages (water, juice drink, soda, energy drink, etc.) and have students decide which would be best for a sports drink, giving their reasons.

Activity #2

How much sugar is in my drink?

Supplies:

- Sugar
- Measuring spoons (teaspoons, at least three)
- Colored paper or colored plates (paper or plastic)
- Sturdy paper for table tents
- 1 12-ounce Coke®
- 1 20-ounce Gatorade®
- 1 12-ounce Red Bull®
- 1 16-ounce Borden® whole chocolate milk
- 1 16-ounce Minute Maid® orange juice
- Optional: Purchase the poster “Rethink Your Drink” from Health Edco. Cut out the pictures of the drinks.
- Table

Instructions:

Make table tents; put the name of a drink or a picture of the drink on one side and the number of teaspoons of sugar it contains on the other side. Place the table tents on a table, with the names or pictures facing away from students so they can't see them. Place the colored paper or plates in front of the table tents. Have students measure the amount of sugar indicated on each table tent onto the paper or plate in front of it. Show students the various types of beverages and ask them to work as a group to place each drink in front of the plate where they think it belongs. Then turn the table tents to reveal the names of the drinks. Compare the students' choices with the actual amount of sugar in each drink.

MEASUREMENTS

12-oz Coke® = 9 ½ teaspoons

20-oz Gatorade® = 8 ½ teaspoons

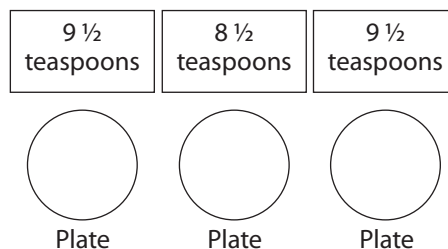
12-oz Red Bull® = 9 ½ teaspoons

16-oz Borden® whole chocolate milk = 12 teaspoons

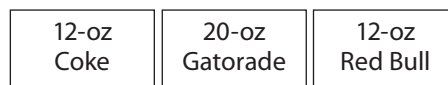
16-oz Minute Maid® orange juice = 12 teaspoons

EXAMPLE

Step 1:



Step 2:



Resources

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Preventing Dehydration: Sports Drinks or Water, Bob Murray, June 2008
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Hydration Station...Keys to Keeping Athletes Hydrated

Hydration is a key factor in a solid athletic performance. To ensure proper hydration, you need to drink fluids before, during and after a game or workout. Don't rely on thirst to tell you it is time to drink more; keep to a hydration schedule!

2 hours before a workout	Weigh yourself. Drink 2 cups of water
15 minutes before workout	Drink 1 to 2 cups of fluid.
During the workout	Try to drink ½ to 1 cup of fluid every 15 minutes.
After the workout	Weigh yourself. For every pound lost, drink 3 cups of fluid.

Note: 1 cup = 8 ounces

Make sure you are adequately hydrated with normal or above normal urine production and light yellow urine.

Water vs. Sports Drinks

Water is a great source of fluid when exercising for less than 60 minutes, but for activities lasting more than an hour a sports drink might be a better choice. Sports drinks provide fuel for muscles and the sodium and glucose in the beverage can help the body absorb the fluids.



When choosing a sports drink, look for:

- 12 to 15 grams of carbohydrates per 8-ounce serving
- Sucrose and glucose as the carbohydrate source (fructose may cause stomach upset)
- No carbonation, no caffeine, and no alcohol
- Lightly sweetened, light flavor

Make Your Own Sports Drink

- 4 tablespoons sugar
- ¼ teaspoon salt
- ¼ cup boiling water
- ¼ cup orange juice OR 2 tablespoons lemon juice
- 3 ¾ cups cold water

Put the sugar, salt and boiling water in a plastic pitcher. Stir until the sugar is dissolved. Add the juice and cold water, then chill in the refrigerator. Makes 1 quart. Each 8-ounce glass of this sports drink contains 12 grams of carbohydrate (5 percent glucose) and 55 calories and costs about 7¢ to make.

Energy Drinks Ups and Downs

Energy drinks may sound like a good way for a sluggish athlete to perk up, but be careful! Energy drinks are often full of sugar, caffeine and other ingredients. Most energy drinks have double or triple the amount of caffeine in a soda. Caffeine can boost heart rate and blood pressure and prevent sleep. To make sure you are alert and ready for a game, get plenty of sleep, eat a proper diet, drink plenty of water or sports beverages, and skip the energy drink!



Skin Cancer Prevention and Early Detection

Skin cancer is the most common cancer in the United States. In fact, more skin cancers are diagnosed in the US each year than all other cancers combined. The number of skin cancer cases has been going up over the past few decades.

The good news is that you can do a lot to protect yourself and your family from skin cancer, or catch it early so that it can be treated effectively. Most skin cancers are caused by too much exposure to ultraviolet (UV) rays. Most of this exposure comes from the sun, but some may come from man-made sources, such as indoor tanning beds and sun lamps.

You don't need any x-rays or blood tests to find skin cancer early – just your eyes and a mirror. If you have skin cancer, finding it early is the best way to make sure it can be treated with success.

What is skin cancer?

Skin cancer starts in the cells of the skin. Some other types of cancer start in other parts of the body and can spread to the skin, but these are not skin cancers.

There are 3 main types of skin cancers:

- ☐ Basal cell skin cancers (basal cell carcinomas)
- ☐ Squamous cell skin cancers (squamous cell carcinomas)
- ☐ Melanomas

Basal and squamous cell cancers

Basal and squamous cell skin cancers are by far the most common cancers of the skin. Both are found mainly on parts of the body exposed to the sun, such as the head and neck. These cancers are strongly related to a person's sun exposure.

Basal and squamous cell cancers are much less likely than melanomas to spread to other parts of the body and become life threatening. Still, it's important to find and treat them early. If left alone, they can grow larger and invade nearby tissues and organs, causing scarring, deformity, or even loss of function in some parts of the body. Some of these cancers (especially squamous cell cancers) can spread if not treated, and in some cases they can even be fatal.

These cancers are discussed in more detail in *Skin Cancer: Basal and Squamous Cell*.

Melanomas

Melanomas are cancers that develop from melanocytes, the cells that make the brown pigment that gives skin its color. Melanocytes can also form benign (non-cancerous) growths called *moles*. (Your doctor might call the mole a *nevus*.)

Melanomas can occur anywhere on the body, but are more likely to start in certain areas. The trunk (chest and back) is the most common place in men. In women, the legs are the most common site. The neck and face are other common places for melanoma to start.

Melanomas are not as common as basal cell and squamous cell skin cancers, but they can be far more serious. Like basal cell and squamous cell cancers, melanoma is almost always curable in its early stages. But if left alone, melanoma is much more likely to spread to other parts of the body, where it can be very hard to treat.

Melanomas are discussed in more detail in *Melanoma Skin Cancer*.

Other skin cancers

There are many other types of skin cancers as well, but they are much less common:

- ☐ Merkel cell carcinoma
- ☐ Kaposi sarcoma
- ☐ Cutaneous (skin) lymphoma
- ☐ Skin adnexal tumors (tumors that start in hair follicles or sweat and oil glands)
- ☐ Various types of sarcomas

Together, these types account for less than 1% of all skin cancers.

It's important for doctors to tell the types of skin cancer apart, because they are treated differently. It's also important for you to know what skin cancers look like. This can help you find them at the earliest possible stage, when they are cured most easily.

What is ultraviolet (UV) radiation?

Exposure to ultraviolet (UV) radiation is a major risk factor for most skin cancers. Sunlight is the main source of UV rays. Tanning lamps and beds are also sources of UV rays. People who get a lot of UV exposure from these sources are at greater risk for skin cancer.

Even though UV rays make up only a very small portion of the sun's rays, they are the main cause of the sun's damaging effects on the skin. UV rays damage the DNA of skin cells. Skin cancers start when this damage affects the DNA of genes that control skin cell growth.

There are 3 main types of UV rays:

- ☐ **UVA rays** age skin cells and can damage their DNA. These rays are linked to long-term skin damage such as wrinkles, but they are also thought to play a role in some skin cancers. Most tanning beds give off large amounts of UVA, which has been found to increase skin cancer risk.
- **UVB rays** have slightly more energy than UVA rays. They can damage skin cells' DNA directly, and are the main rays that cause sunburns. They are also thought to cause most skin cancers.
- **UVC rays** have more energy than the other types of UV rays, but they don't get through our atmosphere and are not in sunlight. They are not normally a cause of skin cancer.

Both UVA and UVB rays can damage skin and cause skin cancer. UVB rays are a more potent cause of at least some skin cancers, but based on what's known today, there are *no* safe UV rays.

The strength of the UV rays reaching the ground depends on a number of factors, such as:

- ☐ **Time of day:** UV rays are strongest between 10 am and 4 pm.
- ☐ **Season of the year:** UV rays are stronger during spring and summer months. This is less of a factor near the equator.
- ☐ **Distance from the equator (latitude):** UV exposure goes down as you get further from the equator.
- ☐ **Altitude:** More UV rays reach the ground at higher elevations.
- ☐ **Cloud cover:** The effect of clouds can vary. Sometimes cloud cover blocks some UV from the sun and lowers UV exposure, while some types of clouds can reflect UV and can increase UV exposure. What is important to know is that UV rays can get through, even on a cloudy day.
- ☐ **Reflection off surfaces:** UV rays can bounce off surfaces like water, sand, snow, pavement, or grass, leading to an increase in UV exposure.

The amount of UV exposure a person gets depends on the strength of the rays, the length of time the skin is exposed, and whether the skin is protected with clothing or sunscreen.

People who live in areas with year-round, bright sunlight have a higher risk of skin cancer. Spending a lot of time outdoors for work or recreation without protective clothing and sunscreen increases your risk.

The pattern of exposure may also be important. For example, frequent sunburns in childhood may increase the risk for some types of skin cancer many years or even decades later.

Skin cancers are one result of getting too much sun, but there are other effects as well. Sunburn and tanning are the short-term results of too much exposure to UV rays, and are signs of skin damage. Long-term exposure can cause early skin aging, wrinkles, loss of skin elasticity, dark patches (lentigos, sometimes called *age spots* or *liver spots*), and pre-cancerous skin changes (such as dry, scaly, rough patches called *actinic keratosis*).

The sun's UV rays increase a person's risk of cataracts and certain other eye problems, too. They can also suppress the skin's immune system. Darker-skinned people are generally less likely to get skin cancer than light-skinned people, but they can still get cataracts and immune suppression.

The UV Index

As noted above, the amount of UV light reaching the ground in any given place depends on a number of factors, including the time of day, time of year, elevation, and cloud cover. To help people better understand the strength of UV light in their area on a given day, the National Weather Service and the Environmental Protection Agency (EPA) have developed the UV Index. It gives people an idea of how strong the UV light is in their area, on a scale from 1 to 11+. A higher number means greater risk of exposure to UV rays and a higher chance of sunburn and skin damage that could ultimately lead to skin cancer.

The UV Index is given daily for regions throughout the country. Many newspaper, television, online, and smartphone weather forecasts include the projected UV Index. Further information about the UV Index, as well as your local UV Index forecast, can be found on the EPA's website at www.epa.gov/sunwise/uvindex.html. Smartphone apps are available from the EPA at www.epa.gov/enviro/mobile. As with any forecast, local changes in cloud cover and other factors could change the actual UV levels experienced.

Are some people more likely to get skin damage from the sun?

Everyone's skin and eyes can be affected by the sun and other forms of ultraviolet (UV) rays. People with light skin are much more likely to have sun damage, but darker-skinned people, including people of any ethnicity, can also be affected.

For some people, the skin tans when it absorbs UV rays. The tan is caused by an increase in the activity and number of melanocytes, the cells that make the pigment melanin. Melanin helps block out damaging UV rays up to a point, which is why people with naturally darker skin are less likely to get sunburned, while people with lighter skin are more likely to burn. Sunburns can increase your risk of skin cancer, including melanoma. But UV exposure can raise skin cancer risk even without causing sunburn.

Aside from skin tone, other factors can also affect your risk of damage from UV light. You need to be especially careful in the sun if you:

- ☐ Had skin cancer before
- ☐ Have a family history of skin cancer, especially melanoma
- ☐ Have many moles, irregular moles, or large moles
- ☐ Have freckles and burn before tanning
- ☐ Have fair skin, blue or green eyes, or blond, red, or light brown hair
- ☐ Live or vacation at high altitudes (the strength of UV rays increases the higher up you are)
- ☐ Live or vacation in tropical or subtropical climates
- ☐ Work indoors all week and then get intense sun exposure on weekends
- ☐ Spend a lot of time outdoors

- Have certain autoimmune diseases, such as systemic lupus erythematosus (SLE, or “lupus”)
- ☐ Have certain inherited conditions that increase your risk of skin cancer, such as xeroderma pigmentosum (XP) or nevoid basal cell carcinoma syndrome (Gorlin syndrome).
- ☐ Have a medical condition that weakens your immune system, such as infection with HIV (the virus that causes AIDS)
- ☐ Have had an organ transplant
- ☐ Take medicines that lower or suppress your immune system
- ☐ Take medicines that make your skin more sensitive to sunlight

Ask your doctor, nurse, or pharmacist if you are taking any medicines that could increase your sensitivity to sunlight.

How do I protect myself from UV rays?

People who get a lot of exposure to ultraviolet (UV) rays are at greater risk for skin cancer.

Sunlight is the main source of UV rays, but you don’t have to avoid the sun completely. And it would be unwise to stay inside if it would keep you from being active, because physical activity is important for good health. But getting too much sun can be harmful. There are some steps you can take to limit your exposure to UV rays.

Some people think about sun protection only when they spend a day at the lake, beach, or pool. But sun exposure adds up day after day, and it happens every time you are in the sun.

Simply staying in the shade is one of the best ways to limit your UV exposure. If you are going to be in the sun, “Slip! Slop! Slap!® and Wrap” is a catchphrase that can help you remember some of the key steps you can take to protect yourself from UV rays:

- ☐ Slip on a shirt.
- ☐ Slop on sunscreen.
- ☐ Slap on a hat.
- ☐ Wrap on sunglasses to protect the eyes and skin around them.

Seek shade

An obvious but very important way to limit your exposure to UV light is to avoid being outdoors in direct sunlight too long. This is particularly important between the hours of 10 am and 4 pm, when UV light is strongest. If you are unsure how strong the sun’s rays are, use the shadow test: if your shadow is shorter than you are, the sun’s rays are the strongest, and it’s important to protect yourself.

UV rays reach the ground all year, even on cloudy or hazy days, but the strength of UV rays can change based on the time of year and other factors. UV rays become more intense in the spring, even before temperatures get warmer. People in some areas may get sunburned when the weather

is still cool because they may not think about protecting themselves if it's not hot out. Be especially careful on the beach or in areas with snow because sand, water, and snow reflect sunlight, increasing the amount of UV radiation you get. UV rays can also reach below the water's surface, so you can still get a burn even if you're in the water and feeling cool.

Some UV rays can also pass through windows. Typical car, home, and office windows block most UVB rays but a smaller portion of UVA rays, so even if you don't feel you're getting burned your skin may still get some damage. Tinted windows help block more UVA rays, but this depends on the type of tinting. (If you do have your car windows tinted, check local laws, as some states regulate this.) UV radiation that comes through windows probably doesn't pose a great risk to most people unless they spend long periods of time close to a window that gets direct sunlight.

If you plan to be outdoors, you may want to check the UV Index for your area. The UV Index usually can be found in local newspaper, TV, radio, and online forecasts. It's also on the EPA's website at www.epa.gov/sunwise/uvindex.html and in many smartphone apps (see www.epa.gov/enviro/mobile).

Protect your skin with clothing

When you are out in the sun, wear clothing to cover as much skin as possible. Clothes provide different levels of UV protection. Long-sleeved shirts, long pants, or long skirts cover the most skin and are the most protective. Dark colors generally provide more protection than light colors. A tightly woven fabric protects better than loosely woven clothing. Dry fabric is generally more protective than wet fabric.

Be aware that covering up doesn't block out all UV rays. If you can see light through a fabric, UV rays can get through, too.

Some companies now make clothing that's lightweight, comfortable, and protects against UV exposure even when wet. It tends to be more tightly woven, and some have special coatings to help absorb UV rays. These sun-protective clothes may have a label listing the UV protection factor (UPF) value (the level of protection the garment provides from the sun's UV rays, on a scale from 15 to 50+). The higher the UPF, the higher the protection from UV rays.

Newer products, which are used like laundry detergents in a washing machine, can increase the UPF value of clothes you already own. They add a layer of UV protection to your clothes without changing the color or texture. This can be useful, but it's not exactly clear how much it adds to protecting you from UV rays, so it's still important to follow the other steps listed here.

Use sunscreen

Sunscreen is a product that you put on your skin to protect it from the sun's UV rays. But it's important to know that sunscreen is just a filter – it does not block all UV rays. Sunscreen should not be used as a way to prolong your time in the sun. Even with proper sunscreen use, some UV rays get through, which is why using other forms of sun protection is also important.

Sunscreens are available in many forms – lotions, creams, ointments, gels, sprays, wipes, and lip balms, to name a few.

Some cosmetics, such as moisturizers, lipsticks, and foundations, are considered sunscreen products if they have sunscreen. Some makeup contains sunscreen, but you have to check the label – makeup, including lipstick, without sunscreen does not provide sun protection.

Read the labels

When choosing a sunscreen product, be sure to read the label. Sunscreens with broad spectrum protection (against both UVA and UVB rays) and with sun protection factor (SPF) values of 30 or higher are recommended.

Sun protection factor (SPF): The SPF number is the level of protection the sunscreen provides against UVB rays, which are the main cause of sunburn. A higher SPF number means more UVB protection (although it says nothing about UVA protection). For example, when applying an SPF 30 sunscreen correctly, you get the equivalent of 1 minute of UVB rays for each 30 minutes you spend in the sun. So, 1 hour in the sun wearing SPF 30 sunscreen is the same as spending 2 minutes totally unprotected. People often do not apply enough sunscreen, so they get less actual protection.

Sunscreens labeled with SPFs as high as 100+ are available. Higher numbers do mean more protection, but many people don't understand the SPF scale. SPF 15 sunscreens filter out about 93% of UVB rays, while SPF 30 sunscreens filter out about 97%, SPF 50 sunscreens about 98%, and SPF 100 about 99%. The higher you go, the smaller the difference becomes. No sunscreen protects you completely.

Sunscreens with an SPF lower than 15 must now include a warning on the label stating that the product has been shown only to help prevent sunburn, not skin cancer or early skin aging.

Broad spectrum sunscreen: Sunscreen products can only be labeled "broad spectrum" if they have been tested and shown to protect against both UVA and UVB rays. Some of the chemicals in sunscreens that help protect against UVA rays include avobenzone (Parsol 1789), ecamsule, zinc oxide, and titanium dioxide.

Only broad spectrum sunscreen products with an SPF of 15 or higher can state that they help protect against skin cancer and early skin aging if used as directed with other sun protection measures.

Water resistant sunscreen: Sunscreens are no longer allowed to be labeled as "waterproof" or "sweatproof" because these terms can be misleading. Sunscreens can claim to be "water resistant," but they have to state whether they protect the skin for 40 or 80 minutes of swimming or sweating, based on testing.

Expiration dates: Check the expiration date on the sunscreen to be sure it's still effective. Most sunscreen products are good for at least 2 to 3 years, but you may need to shake the bottle to remix the sunscreen ingredients. Sunscreens that have been exposed to heat for long periods, such as if they were kept in a glove box or car trunk through the summer, may be less effective.

Be sure to apply the sunscreen properly

Always follow the label directions. Most recommend applying sunscreen generously. When putting it on, pay close attention to your face, ears, neck, arms, and any other areas not covered by clothing. If you're going to wear insect repellent or makeup, put the sunscreen on first.

Ideally, about 1 ounce of sunscreen (about a shot glass or palmful) should be used to cover the arms, legs, neck, and face of the average adult. Sunscreen needs to be reapplied at least every 2 hours to maintain protection. Sunscreens can wash off when you sweat or swim and then wipe off with a towel, so they might need to be reapplied more often. Be sure to read the label. And don't forget your lips; lip balm with sunscreen is also available.

Some sunscreen products can irritate your skin. Many products claim to be hypoallergenic or dermatologist tested, but the only way to know for sure if a product will irritate your skin is to try it. One common recommendation is to apply a small amount to the soft skin on the inside of your elbow every day for 3 days. If your skin does not turn red or become itchy, the product is probably OK for you.

Sunless tanning products, such as bronzers and extenders (described in the section "What about tanning pills and other tanning products?"), give skin a tan or golden color. But unlike sunscreens, these products provide very little protection from UV damage.

Wear a hat

A hat with at least a 2- to 3-inch brim all around is ideal because it protects areas that are often exposed to intense sun, such as the ears, eyes, forehead, nose, and scalp. A dark, non-reflective underside to the brim can also help lower the amount of UV rays reaching the face from reflective surfaces such as water. A shade cap (which looks like a baseball cap with about 7 inches of fabric draping down the sides and back) also is good, and will provide more protection for the neck. These are often sold in sports and outdoor supply stores. If you don't have a shade cap (or another good hat) available, you can make one by wearing a large handkerchief or bandana under a baseball cap.

A baseball cap protects the front and top of the head but not the neck or the ears, where skin cancers commonly develop. Straw hats are not as protective as hats made of tightly woven fabric.

Wear sunglasses that block UV rays

UV-blocking sunglasses are important for protecting the delicate skin around the eyes, as well as the eyes themselves. Research has shown that long hours in the sun without protecting your eyes increase your chances of developing certain eye diseases.

The ideal sunglasses should block 99% to 100% of UVA and UVB rays. Before you buy, check the label to make sure they do. Labels that say "UV absorption up to 400 nm" or "Meets ANSI UV Requirements" mean the glasses block at least 99% of UV rays. Those labeled "cosmetic" block about 70% of UV rays. If there is no label, don't assume the sunglasses provide any UV protection.

Darker glasses are not necessarily better because UV protection comes from an invisible chemical in or applied to the lenses, not from the color or darkness of the lenses. Look for an ANSI label.

Large-framed and wraparound sunglasses are more likely to protect your eyes from light coming in from different angles. Children need smaller versions of real, protective adult sunglasses – not toy sunglasses.

Ideally, all types of eyewear, including prescription glasses and contact lenses, should protect against UV rays. Some contact lenses are now made to block most UV rays. But because they

don't cover the whole eye and surrounding areas, they are not sufficient eye protection when used alone.

Avoid tanning beds and sun lamps

Many people believe the UV rays of tanning beds are harmless. This is not true. Tanning lamps give out UVA and usually UVB rays as well. Both UVA and UVB rays can cause long-term skin damage, and can contribute to skin cancer. Tanning bed use has been linked with an increased risk of melanoma, especially if it's started before a person is 30. Most skin doctors and health organizations recommend not using tanning beds and sun lamps.

If you want a tan, one option is to use a sunless tanning lotion, which can provide a darker look without the danger. (See the section "What about tanning pills and other tanning products?")

Small UV lamps are also used in nail salons (or at home) to dry some types of nail polish. These lamps give off UVA rays. The amount given off is much lower than from tanning beds, and the risk of skin cancer from these lamps is thought to be low. Still, to be safe, some expert groups recommend applying sunscreen to the hands before using one of these lamps.

Protect children from the sun

Children need special attention. They tend to spend more time outdoors, can burn more easily, and may not be aware of the dangers. Parents and other caregivers should protect children from excess sun exposure by using the steps above. It's important, particularly in sunnier parts of the world, to cover your children as fully as is reasonable. You should develop the habit of using sunscreen on exposed skin for yourself and your children whenever you go outdoors and may be exposed to large amounts of sunlight. Children need to be taught about the dangers of too much sun exposure as they become more independent. If you or your child burns easily, be extra careful to cover up, limit exposure, and apply sunscreen.

Babies younger than 6 months should be kept out of direct sunlight and protected from the sun using hats and protective clothing. Sunscreen may be used on small areas of exposed skin only if adequate clothing and shade are not available.

A word about sun exposure and vitamin D

Doctors are learning that vitamin D has many health benefits. It might even help lower the risk for some cancers. Your skin makes vitamin D naturally when you are in the sun. How much vitamin D you make depends on many things, including how old you are, how dark your skin is, and how strong the sunlight is where you live.

At this time, doctors aren't sure what the optimal level of vitamin D is. A lot of research is being done in this area. Whenever possible, it's better to get vitamin D from your diet or vitamin supplements rather than from sun exposure because dietary sources and vitamin supplements do not increase skin cancer risk, and are typically more reliable ways to get the amount you need.

What about tanning pills and other tanning products?

Several products claim to give a tan without exposing a person to ultraviolet (UV) radiation. Some may be safe and effective, but others might not work, and some could even be harmful.

Tanning pills and accelerators

Tanning pills contain color additives similar to beta-carotene, the substance that gives carrots their orange color. Once swallowed, the additives are deposited throughout the body, especially the skin, turning it an orange-like color. Although the US Food and Drug Administration (FDA) has approved some of these additives for coloring food, they are not approved for use in tanning agents. They may be harmful at the high levels that are used in tanning pills. The main ingredient in most sunless tanning pills, canthaxanthin, can show up in your eyes as yellow crystals, which may cause injury and impair vision. There have also been reports of liver and skin problems.

Tanning accelerators, such as lotions or pills that contain the amino acid tyrosine or its derivatives, do not work and may be dangerous. Marketers say these products stimulate the body's own tanning process, but most evidence suggests they don't work. The FDA considers them unapproved new drugs that have not been shown to be safe and effective.

No tanning pills have been approved by the FDA.

Bronzers and extenders

Two other sunless tanning products, bronzers and extenders, are considered cosmetics for use on the skin. They are not thought to be harmful when used properly.

Bronzers, made from color additives approved by the FDA for cosmetic use, stain the skin for a short time when applied and can be washed off with soap and water.

Extenders (also known as *sunless tanners* or *self-tanners*) are applied to the skin as lotions or creams, where they interact with proteins on the surface of the skin to produce a darker color. Like a tan, the color tends to wear off after a few days. The only FDA-approved color additive for extenders is dihydroxyacetone (DHA).

Applying these products by hand can sometimes lead to uneven coloring, so some tanning salons have begun to offer whole body sprays in tanning booths. A concern here is that DHA is approved for external use only and should not be inhaled or sprayed in or on the mouth, eyes, or nose. People who choose to get a DHA spray tan should make sure to protect these areas.

These products can give skin a darker color (although in some people it may have a slight orange tinge), but they don't offer much protection from the damaging effects of UV radiation. Even if they contain sunscreen, it would only be effective for a couple of hours. You should read the label carefully to determine whether or not a product provides any protection, but in most cases it's safest to continue to use sunscreen and wear protective clothing when going outside.

Skin exams

Most skin cancers can be found early with skin exams. Regular exams by your doctor and checking your own skin frequently can help find cancers early, when they are easier to treat.

Regular skin exams are especially important for people who are at higher risk of skin cancer, such as people with reduced immunity, people who have had skin cancer before, and people with a strong family history of skin cancer. Talk to your doctor about how often you should have your skin examined.

Get your skin checked by your doctor

Your doctor should check your skin carefully as part of a routine cancer-related check-up. They should be willing to discuss any concerns you might have about this exam.

Check your own skin

It's important to check your own skin, preferably once a month. A skin self-exam is best done in a well-lit room in front of a full-length mirror. You can use a hand-held mirror to look at areas that are hard to see, such as the backs of your thighs. A spouse or close friend or family member may be able to help you with these exams, especially for those hard-to-see areas like your back or scalp.

The first time you examine your skin, spend time carefully going over the entire surface. Learn the pattern of moles, blemishes, freckles, and other marks on your skin so that you'll notice any changes next time. Be sure to show your doctor any areas that concern you.

Follow these step-by-step instructions to examine your skin:

Face the mirror



Check your face, ears, neck, chest, and belly.
Women will need to lift their breasts to check the skin underneath.

Check your underarm areas, both sides of your arms, the tops and palms of your hands, in between your fingers, and your fingernails.



Sit down



Check the front of your thighs, shins, tops of your feet, in between your toes, and your toenails.

Now use a hand mirror to look at the bottoms of your feet, your calves, and the backs of your thighs, first checking one leg and then the other.





Use the hand mirror to check your buttocks, genital area, lower and upper back, and the back of the neck and ears. Or it may be easier to look at your back in the wall mirror using a hand mirror.

Use a comb or hair dryer to part your hair so that you can check your scalp.



The best time to do this simple monthly exam is after a bath or shower. Check any moles, blemishes, or birthmarks from the top of your head to your toes. If you look at your skin regularly, you will know what's normal for you.

What should I look for on a skin self-exam?

Skin cancers can show up in many shapes and sizes. Be sure to show your doctor any areas that concern you, especially if they have just appeared or have changed recently.

Basal and squamous cell cancers

Basal cell cancers and squamous cell cancers are most often found in areas that get exposed to a lot of sun, such as the head, neck, and arms, but they can develop anywhere on the body. Look for new growths, spots, bumps, patches, or sores that don't heal after several weeks. Shaving cuts that don't heal in few days sometimes turn out to be skin cancers, which often bleed easily. (They are not caused by shaving.)

Basal cell carcinomas can appear in a number of different ways:

- Flat, firm, pale or yellow areas, similar to a scar
- Raised reddish patches that might be itchy
- Small, pink or red, translucent, shiny, pearly bumps, which might have blue, brown, or black areas
- Pink growths with raised edges and a lower area in their center, which might contain abnormal blood vessels

- Open sores (which may have oozing or crusted areas) that don't heal, or that heal and then come back

Squamous cell carcinomas can appear as:

- Rough or scaly red patches, which might crust or bleed
- Raised growths or lumps, sometimes with a lower area in the center
- Open sores (which may have oozing or crusted areas) that don't heal, or that heal and then come back
- Wart-like growths

Both of these types of skin cancer may develop as a flat area showing only slight changes from normal skin.

Actinic keratosis, also known as *solar keratosis*, is a skin condition that can sometimes progress to squamous cell cancer (although most of them do not).

Actinic keratoses are caused by too much sun exposure. They are usually small (less than ¼ inch across), rough or scaly spots that may be pink-red or flesh-colored. Usually they start on the face, ears, backs of the hands, and arms, but they can occur on other sun-exposed areas of skin. People with one actinic keratosis usually develop many more.

Some can grow into squamous cell cancers, while others may stay the same or even go away on their own. But it can be hard sometimes even for doctors to tell them apart from true skin cancers. These areas should be looked at by a doctor, who can help decide if they should be treated.

Moles and melanomas

Normal moles

A normal mole is usually an evenly colored brown, tan, or black spot on the skin. It can be either flat or raised. It can be round or oval. Moles are generally less than 6 millimeters (about ¼ inch) across (about the width of a pencil eraser). Some moles can be present at birth, but most appear during childhood or young adulthood. New moles that appear later in life should be checked by a doctor.

Once a mole has developed, it will usually stay the same size, shape, and color for many years. Some moles may fade away with age.

Most people have moles, and almost all moles are harmless. But it's important to notice changes in a mole – such as in its size, shape, or color – because this may be a sign that melanoma is developing.

Possible signs and symptoms of melanoma

The most important warning sign for melanoma is a new spot on the skin or a spot that's changing in size, shape, or color. Another important sign is a spot that looks different from all of the other spots on your skin. If you have any of these warning signs, have your skin checked by a doctor.

The **ABCDE rule** is another guide to the usual signs of melanoma. Be on the lookout and tell your doctor about spots that have any of the following features:

- **A is for Asymmetry:** One half of a mole or birthmark does not match the other.
- **B is for Border:** The edges are irregular, ragged, notched, or blurred.
- **C is for Color:** The color is not the same all over and may include shades of brown or black, or sometimes with patches of pink, red, white, or blue.
- **D is for Diameter:** The spot is larger than 6 millimeters across (about ¼ inch – the size of a pencil eraser), although melanomas can sometimes be smaller than this.
- **E is for Evolving:** The mole is changing in size, shape, or color.

Some melanomas do not fit the rules described above, so it's important to tell your doctor about any changes or new spots on the skin, or growths that look different from the rest of your moles.

Other warning signs are:

- A sore that does not heal
- Spread of pigment from the border of a spot into surrounding skin
- Redness or a new swelling beyond the border
- Change in sensation – itchiness, tenderness, or pain
- Change in the surface of a mole – scaliness, oozing, bleeding, or the appearance of a bump or nodule

To see some examples of skin cancers and other skin conditions, visit our [Skin Cancer Image Gallery](#).

What if I find something suspicious on a skin exam?

Be sure to show your doctor any area that concerns you. If your doctor suspects you might have skin cancer, he or she will do exams and tests to find out. If you can't see your doctor right away, you might want to take good close-up photos of the area so your doctor can see if the area is changing when you do get an appointment.

Medical history and physical exam

Usually the doctor's first step is to take your medical history. The doctor will ask when the mark first appeared, if it has changed in size or appearance, and if it's causing any symptoms (such as pain, itching, or bleeding). You might also be asked about past exposures to causes of skin cancer (including sunburns and tanning practices) and if you or anyone in your family has had skin cancer.

During your physical exam, your doctor will note the size, shape, color, and texture of the area in question, and if it is bleeding, oozing, or crusting. The rest of your body may be checked for moles and other spots that could be related to skin cancer.

The doctor may also feel the lymph nodes (bean-sized collections of immune system cells) under the skin near the suspicious area. Some skin cancers spread to lymph nodes. When this happens, the affected lymph nodes may become larger and firmer than usual.

If you are being seen by your primary doctor and skin cancer is suspected, you may be referred to a dermatologist, a doctor who specializes in skin diseases, who will look at the area more closely.

Along with a standard physical exam, many dermatologists use *dermoscopy* (also known as *epiluminescence microscopy [ELM]*, *surface microscopy*, or *dermatoscopy*) to see spots on the skin more clearly. The doctor uses a dermatoscope, which is a special magnifying lens and light source held near the skin. Sometimes the doctor will use a thin layer of alcohol or oil with this instrument. The doctor may take a digital photo of the spot.

When used by an experienced dermatologist, this test can improve the accuracy of finding skin cancers early. It can often help tell whether a spot on the skin is likely to be benign (not cancer) without doing a biopsy.

Skin biopsy

If the doctor thinks that a suspicious area might be skin cancer, a sample of skin from that area will be removed and looked at under a microscope. This is called a *skin biopsy*. There are many ways to do a skin biopsy. The doctor will choose one based on the suspected type of skin cancer, where it is on the body, the size of the affected area, and other factors. For more detailed information on skin biopsies, see our documents *Melanoma Skin Cancer* or *Skin Cancer: Basal and Squamous Cell*.

If a spot is found to be cancer or a pre-cancer, your doctor may want to do more tests or treat it. If the spot is small and localized, a more extensive biopsy (to remove more tissue) or some type of surgery may be all that's needed. For cancers that might be more widespread (especially melanomas), imaging tests might be done to see if the cancer has spread, and treatment such as immunotherapy, targeted therapy, chemotherapy, or radiation might be needed. Again, to learn more, see our skin cancer information.

Additional resources

More information from your American Cancer Society

Here is more information you might find helpful. You also can order free copies of our documents from our toll-free number, 1-800-227-2345, or read them on our website, www.cancer.org.

Melanoma Skin Cancer (also in Spanish)

Skin Cancer: Basal and Squamous Cell (also in Spanish)

Ultraviolet (UV) Radiation

Why You Should Know About Melanoma (also in Spanish)

Skin Cancer Image Gallery

A Parent's Guide to Skin Protection (also in Spanish)

Sun Basics: Skin Protection Made Simple (brochure for children aged 8 to 14)

National organizations and websites*

Along with the American Cancer Society, other sources of information and support include:

American Academy of Dermatology (AAD)

Toll-free number: 1-888-462-3376 (1-888-462-DERM)

Website: www.aad.org

Spot Skin Cancer website: www.aad.org/spot-skin-cancer

For information on melanoma, a skin cancer risk assessment, a locator for free skin cancer screenings, and a dermatologist locator

Environmental Protection Agency (EPA)

Website: www.epa.gov/sunwise

Has free sun safety information and a UV Index app that you can check using your zip code

Melanoma Research Foundation

Toll-free number: 1-877-673-6460

Website: www.melanoma.org

For more on melanoma and chat rooms, patient stories, and bulletin boards – all to support and educate anyone affected by melanoma

National Cancer Institute

Toll-free number: 1-800-422-6237 (1-800-4-CANCER)

TTY: 1-800-332-8615

Website: www.cancer.gov

Offers accurate, up-to-date information about cancer to patients, their families, and the general public

Skin Cancer Foundation

Toll-free number: 1-800-754-6490 (1-800-SKIN-490)

Website: www.skincancer.org

Has pictures and descriptions of skin cancers, information and educational materials, and newsletters

**Inclusion on this list does not imply endorsement by the American Cancer Society.*

No matter who you are, we can help. Contact us anytime, day or night, for information and support. Call us at **1-800-227-2345** or visit www.cancer.org.

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For additional assistance please contact your American Cancer Society
1-800-227-2345 or www.cancer.org

Nighttime and Drowsy Driving

The single biggest risk factor

Fifty-eight percent of teen crash deaths occur between 6pm and 6am (Insurance Institute for Highway Safety). As reported by a [2010 study by Texas A&M Transportation Institute](#), this is primarily due to a combination of the visibility challenges caused by dark conditions, slower response time brought about by fatigue, and a lack of experience driving under such conditions. It is largely for these reasons that most states include a nighttime driving restriction in Graduated Driver License (GDL) laws. In most states with a GDL law, the nighttime restriction and a limit on the number of passengers allowed are the most widely implemented features of that law.



The problem of visibility:

- The average person's field of vision is smaller without the aid of light, and glare from oncoming headlights can further limit the ability to see clearly and avoid hazards¹.
- High Intensity lights are becoming more common. These lights are brighter to on-coming traffic and require your eyes to adjust faster².
- It is more difficult to judge other vehicle's speeds and distances at night.
- Dusk is the most dangerous time since your eyes are constantly having to adjust to more darkness³.
- Rural roadways can be especially dangerous at night due to higher numbers of unlit roadways.
- On average, 62% of fatal teen crashes occurred on rural roadways and an average of 53% of the fatal crashes occurred between 6 pm – 6 am⁴.

What to do about poor visibility:

- As always, wear your seat belt. The danger of driving at night should not be multiplied by being unsecured.
- Keep distractions to a minimum to keep your eyes and attention on the road.
- Turn headlights on at dusk and observe night driving safety as soon as the sun goes down³.
- Reduce your speed and increase your following distances. Don't overdrive your headlights. You should be able to stop inside the illuminated area. If you can't, you are creating a blind crash area in front of your vehicle³.
- Keep your headlights and windshield clean. A thin film of debris on your headlights can reduce your visibility significantly².
- If an oncoming vehicle's lights are too high, avoid glare by watching the right edge of the road and using it as a steering guide³.
- Have your headlights properly aimed. Misaimed headlights blind other drivers and reduce your ability to see the road³.

The problem of drowsy driving:

- Research suggests that teens should have 8 to 10 hours of sleep each night. Most teens do not get enough sleep — one study found that only 15% reported sleeping 8 1/2 hours on school nights⁵.
- Being awake for 18 hours is similar to having a blood alcohol concentration of .05 and .10 after 24 hrs. .08 is legally intoxicated for adults over 21⁵.
- Young drivers have a higher risk of falling asleep behind the wheel ⁵.
- Sleepiness or fatigue causes the following⁶:
 - Impaired reaction time, judgment, and vision
 - Problems with information processing and short-term memory
 - Decreased performance, vigilance, and motivation
 - Increased moodiness and aggressive behaviors
- A recent study (2015) found that individuals who have slept less than 2 hours in the prior 24 hours are too sleep deprived to get behind the wheel of a vehicle⁶.
- A recent survey found that teens report being “reluctant to miss out” and have an “always-on lifestyle” that can contribute to drowsy driving as they are getting less than six hours of sleep each night⁷.
 - 70% of teens surveyed admitted to driving tired
 - 50% reported actually falling asleep or nearly falling asleep at the wheel citing:
 - A busy schedule: 43%
 - Staying up late to do homework: 32%
 - Staying up late for social activities: 24%
 - Working late hours during the week: 20%
 - Being tired or hung over from drinking/partying the night before: 10%

What to do about drowsy driving:

- Here are some signs of being tired and it's time to pull over⁸:
 - Difficulty focusing, frequent blinking and/or heavy eyelids
 - Difficulty keeping daydreams at bay
 - Trouble keeping your head up
 - Drifting from your lane, swerving, tailgating and/or hitting rumble strips
 - Inability to clearly remember the last few miles driven
 - Missing exits or traffic signs
 - Yawning repeatedly
 - Feeling restless, irritable, or aggressive

- Before you drive, consider whether you are ⁸:
 - Sleep-deprived or fatigued (6 hours of sleep or less triples your risk)
 - Suffering from sleep loss (insomnia) or poor quality sleep
 - Driving long distances without proper rest breaks
 - Driving through the night or when you would normally be asleep
 - Taking medications that make you tired (cold tablets, antihistamines)
 - Studying a lot or attending more activities than usual, which may be decreasing your sleep time
 - Drinking even small amounts of alcohol
 - Driving alone or on a long, rural, dark or boring road
- What you can do to prevent falling asleep while driving ⁸:
 - Get a good night's sleep before you hit the road. You'll want to be alert for the drive, so be sure to get adequate sleep the night before you go
 - Don't be too rushed to arrive at your destination. Many drivers try to maximize the holiday weekend by driving at night or without stopping for breaks
 - It's better to allow the time to drive alert and arrive alive
 - Use the buddy system. Just as you should not swim alone, avoid driving alone for long distances. A buddy who remains awake for the journey can take a turn behind the wheel and help identify the warning signs of fatigue
 - Take a break every 100 miles or 2 hours. Do something to refresh yourself like getting a snack, switching drivers, or going for a run
 - Take a nap—find a safe place to take a 15 to 20-minute nap, if you think you might fall asleep. Be cautious about excessive drowsiness after waking up
 - Avoid alcohol and medications that cause drowsiness as a side-effect
 - Avoid driving at times when you would normally be asleep
 - Consume caffeine. The equivalent of two cups of coffee can increase alertness for several hours

Sources:

1. Texas A&M Transportation Institute
2. AAA Foundation
3. National Safety Council
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Speeding and Street Racing

Teens do not consider driving 5 to 10 miles above the speed limit to be dangerous

The problem of speeding:

- About 33 percent of young driver and passenger deaths occur in speed-related crashes¹.
- In a high-speed crash, a passenger vehicle cannot withstand the force of the crash and maintain the passenger compartment. Also, as crash speeds get very high, restraint systems such as airbags and seat belts cannot keep the forces on occupants below severe injury levels².
- Speed influences the risk of crashes and crash injuries in three basic ways²:
 - It increases the distance a vehicle travels from the time a driver detects an emergency to the time the driver reacts, so by the time you realize you need to react, you've traveled closer to the danger.
 - It increases the braking distance. For example, If you double your speed – say from 30 mph to 60 mph – your braking distance does not become twice as long. It becomes four times as far. Traveling at 55 mph, it will take about 6 seconds to stop your vehicle. The vehicle will travel approximately 302 feet before coming to a stop. That is longer than the length of a football field³.
 - It increases the crash energy by the square of the speeds. For example, when impact speed increases from 40 to 60 mph (a 50 percent increase), the energy that needs to be managed increases by 125 percent.
- The total stopping distance of your vehicle depends on four things³:
 - Your perception time
 - Your reaction time
 - Your vehicle reaction time
 - Your vehicle braking capability
- Teens are more likely than older drivers to speed and allow shorter headways (the distance from the front of one vehicle to the front of the next)⁴.
- Speeding has been found to be more prevalent among teenagers who reported more risky friends, particularly among those who reported lower perceived risk for risky driving⁵
- Those with exclusive access to a vehicle were more likely to speed than those who shared a vehicle and more likely to speed at night and with passengers⁶.



What to do about speeding:

- Know with every mile per hour increase you also increase your reaction travel time, braking distance and crash energy².
- High speed wrecks compromise your car's safety features ².
- When you speed, you also decrease the judgment of other drivers to be able to gauge your distance and speed.
- Understand speed limits are set with safety in mind. They are based on roadside environment, roadway design and pedestrian traffic².
- Speeding to keep up with the flow of traffic is not legal and you can still be ticketed.
- Speeding decreases your fuel efficiency.
- You should always be able to stop within the distance you can see ahead.
- Consider road conditions, weather and road design and slow down accordingly.
- It is easier to lose traction when speeding around a curve and the high center of gravity makes it easier to roll over. Slow down before curves.
- Remember to use the two-second rule to keep a safe distance between you and the car ahead of you.

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Low Safety Belt Use

 t-driver.com/know-the-risks/high-school/low-seat-belt-use/

6/24/2011

Safety belt use continues to be lowest with 16- to 24-year-olds

The problem of low safety belt use:

- Roughly 2 out of every 5 teenagers involved in a fatal crash were not wearing a seat belt including drivers and passengers¹.
- Passengers between the ages of 18-19 years old had the highest percentage of unbelted passengers involved in fatal crashes².
- In 2013, the use of seat belts in passenger vehicles saved an estimated 12,584 lives. Seat belts have saved nearly 63,000 lives during the 5-year-period from 2008 to 2012³.
- You can be ticketed for not wearing a safety belt – even if you are sitting in the back seat. If you are in a state that does not have a primary seat belt law (police can't pull you over just for not wearing a seat belt) check to verify if there is a law that requires anyone under the age of 18 to be buckled up. [Visit here for more seatbelt laws](#).
- A safety belt does not protect you when it's not worn properly³.
- Overall seat belt use is improving among teens. In 2013, 7.6% of teens reported never or rarely wearing a seat belt when driving with someone else within the last 30 days compared to 25.9% in 1991⁴.



What to do about safety belts:

- When referring to safety belts, “properly worn” means with both straps snugly fitted to transfer
- the impact of the collision to the parts of your body that can take it – your hipbones and shoulder bones. With just the shoulder strap on, you can slide out from under the seat belt and be strangled, while the lap belt alone doesn’t keep your face from hitting the steering wheel⁵.
- A safety belt is your best and last protection if you are in an accident
- During a crash, being buckled up helps keep you safe and secure inside your vehicle. Being thrown out of a vehicle is almost always deadly³.
- Air bags are designed to work with safety belts, not replace them. In fact, if you don’t wear your seat belt, you could be thrown into an opening airbag and be injured or even killed².
- Get in the habit of always putting your safety belt on every time you get into a vehicle. No matter where you are sitting or the distance you are going.
- Ask your passengers to buckle up also. You are responsible for their safety.

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Impaired Driving

Drivers between 16-20 are 17 times more likely to die in a crash when they have a blood alcohol content (BAC) of .08% compared to when they have not been drinking

The problem of driving under the influence:

- Young drivers are less likely than adults to drive after drinking alcohol, but their crash risk is substantially higher when they do. This is especially true at low and moderate blood alcohol concentrations (BACs)¹.
- Drivers are less likely to use restraints when they have been drinking³.
- In the most recent survey, 1 out of every 13 high school students 16 and older reported drinking and driving in the past 30 days².
- In 2013, 21.9% of students nationwide had ridden one or more times in a car or other vehicle driven by someone who had been drinking alcohol in the past 30 days⁴.
- In 2014, the amount of 16-17 year older drivers involved in fatal crashes with a BAC greater than .08 increased from 10% to 15%⁵.
- Most of those killed in alcohol-related crashes involving teen drivers are the young drivers themselves and their passengers³.



What to do about driving under the influence of alcohol:

- Driving after even one drink is just not worth it. Ride with a sober friend, ask someone else to drive or call a parent or older sibling.
- Food, coffee or exercise will not reduce the amount of alcohol in your system. Only time decreases the effects of alcohol.
- Don't believe you can "fool" a police officer. They are trained to look for tale-tell signs of a driver who is under the influence.
- If a friend has been drinking and is about to drive, speak up. Offer to drive, take the keys or call a parent.
- Never get in the car with a driver who has been drinking. Everyone reacts to alcohol differently. If you know a friend has been drinking, assume they are unable to drive.

The law and other consequences of driving under the influence:

- Zero tolerance law makes it illegal per se (in and of itself) for persons under the age of 21 to drive with any measurable amount of alcohol in their blood³.
- Violators of underage drinking laws often face a trip to jail, the loss of their driver's license, and dozens of other unanticipated expenses including attorney fees, court costs, and other fines³.

- A DUI conviction follows a teen, so there is the added embarrassment, humiliation, and potential loss and consequence related to academic eligibility, college acceptance, scholarship awards, and more³.
- Increased efforts by local law enforcement make the chances of getting caught even greater³.
- The Texas Department of Transportation conducted a study which found that a first time offender could expect to pay between \$5,000 and \$24,000 for DWI arrest and conviction.

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Distracted Driving

A distraction is anything that takes your mind and attention away from driving

The problem of distractions:

- There are three main types of distraction¹:
 - Visual — taking your eyes off the road
 - Manual — taking your hands off the wheel
 - Cognitive — taking your mind off what you're doing
- A recent survey by [Liberty Mutual and SADD \(Students Against Destructive Decisions\)](#) found that teens felt pressure to stay connected or “always on” contributed to their need to engage with cell phones, even while driving²:
 - 48% of teens reported texting more when alone in their car
 - 55% reported texting while driving to update parents
 - 37% reported texting to coordinate or confirm event details with friends
 - 34% reported taking their eye off the road when receiving an app notification
- Most popular apps teens report using behind the wheel include²:
 - Snapchat: 38%
 - Instagram: 20%
 - Twitter: 17%
 - Facebook: 12%
 - Youtube: 12%



Cell phones:

- Drivers who use hand-held devices are four times as likely to get into crashes serious enough to injure themselves³.
- Hand-held cell phone use while driving continues to be highest among female drivers and drivers ages 16-24 years of age⁴.
- Engaging in visual-manual subtasks (such as reaching for a phone, dialing and texting) associated with the use of hand-held phones and other portable devices increased the risk of getting into a crash by three times⁵.
- 10% of drivers of all ages under the age of 20 involved in fatal crashes were reported as distracted at the time of the crash and *represents the greatest portion of distracted drivers*⁶.

- Texting and driving causes reaction time to double and those drivers have a harder time staying in their lane and maintaining a consistent speed⁷.

Passengers:

- More fatal teen crashes occur when passengers (often other teens) are in the car⁴.
- Over two out of four teens that died as passengers are in vehicles driven by other teens³.
- Research has shown that crash risk and risk of being killed in a crash increases as the number of young passengers in the vehicle increases. One study found a 44% increase in crash risk adding one passenger; two passengers doubled the risk of being killed and 3 passengers quadrupled the risk of dying in a crash⁸.
- Additionally, crash risk was shown to be decreased when the passenger was older than 35 highlighting the safety factor of supervised driving for teens⁸.

What to do about distracted driving:

- Focus on the road. When you are driving is not the time to multi-task.
- Keep distractions out of the car. If you know you will be tempted to look at or use your phone, lock it in the trunk or turn it off.
- Ask passengers to obey your rules while they are in the car, meaning buckle up and don't distract you.
- Designate a texter. If you have a passenger, hand over your phone so they can do your texting or talking for you.
- Be a good passenger by not distracting the driver.
- Know that as a driver, you have the responsibility to yourself and others. A vehicle is heavy machine and should be treated with respect.
- Set your music/radio before you take your car out of Park.
- Never use headphones while driving. It's illegal and dangerous.
- Keep passengers to a minimum. If every person doesn't have a seat belt, you have too many passengers.
- If you don't feel well or emotionally able to drive – don't. Ask for a ride or wait until you are able.
- Know your limitations. Driving experience comes with time. It's ok to not be ready for certain driving conditions. Never feel pressured to drive dangerously or beyond your experience.

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