

## The Food Groups

Before moving on it is important to know a few things about the individual food groups. What foods are in each of the groups and what nutrients do each of the groups contain?



**Dairy:** The Dairy group contains foods that are high in protein, calcium, and riboflavin. Most of the foods in this group are either some form of milk or are products which are made primarily from milk. Foods include milk, yogurt, ice cream, cheese, and cottage cheese. It does NOT contain items such as butter, cream cheese or sour cream. Even though these products are made from milk they are only made from the fat part of the milk. As a result they do not contain much protein or calcium. Products like cheese food or cheese product are made with smaller amounts of milk than natural cheese. They often contain less calcium. This is why WIC does not allow participants to purchase cheese food or cheese product as part of their WIC food package. Products such as sherbet are made with little or no milk and are, therefore, not included in this group.

**Meat or Meat Alternative Group:** This group contains foods that are high in protein, zinc, vitamin B6, iron, thiamin, and niacin. Included in this group are meat, fish, and poultry as well as eggs, peanut butter, nuts and seeds, and tofu. There are some foods which may seem like they should be in this group, but they are not. Sausage links and bacon are NOT part of this group. Sausage links and bacon are primarily fat, therefore they do not contain the high levels of nutrients that other meat and meat alternative products contain.

**Breads and Cereals Group:** This group contains foods that are made from grains particularly wheat (flour) and rice. Foods included here are breads, cereals, rice, noodles, pasta, tortillas, pitas, rolls, muffins, and popped corn (regular corn like fresh corn, frozen or canned corn are listed as a vegetable). These foods are good sources of riboflavin, thiamin, niacin, iron, protein, and fiber (they contain fiber only if they are whole grain). While breads and cereals are good sources of iron and protein it would be incorrect to think that a person could eat breads and cereals to get all the protein and iron they need in their diets without eating any meat or meat alternatives. The amounts of iron and protein are not nearly as great as that found in meat and meat alternatives. For a pregnant or breast-feeding woman, an infant or a growing child, breads and

WIC juices all contain a specified level of vitamin C that make them a high vitamin C fruit or vegetable. On 24-hour Diet Recalls or Food Frequencies WIC juices should be considered a fruit or vegetable high in vitamin C.

Fruit drinks that are not 100% juice should not be considered a fruit or vegetable when recording dietary information.

Phytochemicals: Naturally occurring compounds found in plants. Many phytochemicals found in fruits and vegetables that have been shown to be beneficial to health. They may help prevent cancer and other diseases from occurring.

- Even though apples and apple pie provide many of the same nutrients, apple pie should never be counted as a serving of fruit or vegetable. When apples are made into apple pie large amounts of sugar and fat are added, so the end product has relatively low amounts of nutrients. Pumpkin pie is the only type of pie that should be considered a fruit and vegetable. This is because pumpkin pie contains very high amounts of vitamin A (and therefore is considered a high vitamin A fruit and vegetable).
- French fries should not be considered a fruit or vegetable. While they are made from potatoes which are a vegetable, the frying process decreases the vitamin C content and adds substantial amounts of fat and calories. Steak fries (large, thick french fries) may be considered an “other” vegetable. Because of their large size they tend to retain more vitamin C and pick up less oil.

cereals do not supply adequate protein on their own. Combined with meat or meat alternatives, however, breads and cereals can make a substantial protein and iron contribution towards a healthy diet.

Fruit and Vegetable Group: The fruit and vegetable group is divided into three groups, those high in vitamin C, those high in vitamin A and “other fruits and vegetables.” While most vegetables and fruits contain some vitamin C and many contain at least small amounts of vitamin A, certain fruits and vegetables are very high in vitamin C or A. Because vitamins C and A are nutrients that are often deficient in diets the fruit and vegetable group has been divided to help assure that people will get enough A and C. If a person eats a food from one of the high A or C groups they are likely to get adequate amounts of the corresponding vitamin in their diet.

If a person eats one high vitamin C and one high vitamin A fruit or vegetable each day they are still in need of more servings of “other” fruits and vegetables in their diets. Fruits and vegetables contain vitamins, minerals, fiber, and other substances called phytochemicals which are important in long term health. Research consistently shows that people who eat more fruits and vegetables as part of their diet are healthier. Fruits and vegetables are also a low calorie food that provides variety, color, and flavor to a diet.

Other Foods: If you look at the Food Guide Pyramid, which shows the food groups arranged a little differently, you will note one extra group at the top of the pyramid labeled “Fats and Sweets.” When assessing diets we refer to this group as “Other” (not to be confused with “other fruits and vegetables”). The foods in this group contribute some nutrients to the diet, but they also contain large numbers of calories. They are not “required” in the diet because the nutrients they contain are generally found in the other food groups with far fewer calories. For example, both apple pie (an “Other”) and apples (an “other fruit or vegetable”) provide some of the same nutrients, but an apple provides the nutrients in 100 calories while the pie provides the nutrients in 375 calories. “Other” foods are not “bad” foods. They offer variety and flavor to our diets. When eaten in moderation they make diets more interesting and enjoyable. In excess they contribute to obesity and other health problems.

## The Nutrients

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**Vitamin C** (also called ascorbic acid): Vitamin C is found naturally only in fruits, vegetables, and human breast milk. Citrus fruits like oranges or grapefruit contain particularly high amounts of vitamin C. Vitamin C has a number of important functions in the human body. Without adequate vitamin C over time a person can develop a disease characterized by bleeding gums, loose teeth, muscle and bone pain, frequent infections, and other symptoms. Vitamin C is needed by the body every day. Vitamin C does NOT prevent or cure the common cold in otherwise healthy people despite what many people believe.

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If you could remove the dark green color from spinach you would find that underneath, spinach is orange. The dark green color just hides the orange color of vitamin A (for example if you mixed orange Kool-Aid with very dark green Kool-Aid the resulting Kool-Aid would be dark green).

**Vitamin A:** It comes in two forms, one is called retinol and the other is called beta-carotene. The form of vitamin A we usually eat is called beta-carotene. Beta-carotene is bright orange in color, hence most of the foods that are bright orange in color are good sources of vitamin A. Think of pumpkin, cantaloupe, apricots, carrots, and mangos. Oranges and peaches have some vitamin A, but are not particularly good sources. They are the exception to the rule. They get their orange color from another compound. Foods that are dark green are also good sources of vitamin A. Most dark green vegetables like spinach, broccoli, and “greens” are good sources of vitamin A. Vitamin A is very important in your body for healthy skin, bones, resistance to infections, and eye sight. When you were small you may have learned that carrots were good for your eyes? That is because of the vitamin A they contain. Vitamin A deficiency is a major cause of blindness in less developed countries.

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Osteoporosis is a disease of the bones that is characterized by porous bones that have been gradually losing calcium. It is common in older adults and results in bones that break easily. A person usually does not know they have osteoporosis until their bones are weak enough that they break. Osteoporosis is thought to be caused partly by a lifelong diet that is low or marginal in calcium. This is one of the reasons it is important for people to get adequate calcium at all times and not just when they are young or old.

**Calcium:** Calcium is a mineral. It makes stuff hard. If you “calcify” something it becomes very rigid and hard. Bones are made up of large amounts of calcium. Without calcium, bones are like rubber and bend from the weight of the body. This sometimes happens to infants who do not get enough calcium. As the infant gets older the bones sometimes retain their bent shape and end up being bowed. If adults do not get enough calcium their bones gradually become porous and start to thin. This makes their bones brittle and weak. Porous and thin bones break easily. Calcium is also used by nerves and muscles in very small amounts to make them work properly.

Milk and other foods made from milk (like cheese) are the best sources of calcium. Some vegetables contain calcium but not nearly as much. Broccoli is sometimes said to be a good source of calcium. To get as much calcium as is in one cup of milk, however, a person would have to eat about three cups of cooked broccoli. Tofu is a good source of calcium. Soy milk and orange juice can be good sources of calcium **if they are fortified with calcium**. A person would need to read the label of the soy milk or orange juice to see if it has been fortified with calcium. WIC approved orange juices are NOT fortified with calcium.

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**The B vitamins:** Thiamin, riboflavin, niacin, biotin, pantothenic acid, folic acid, vitamin B6, and vitamin B12, are names of the B vitamins. There are 8 of them. They are sometimes referred to as the B complex. These vitamins all work by helping the body to process food to be used as energy. Without them the body would have no energy and eventually would become sick and die. Each of the B vitamins also has its own special function and, as a result, has its own deficiency signs. For example, a deficiency of folate will make a person feel very tired and will also make the person anemic.

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Need a little roughage? Is iceberg lettuce a good source of vitamins, minerals, and roughage? While consumption of any fruit or vegetable is a good idea when it comes to iceberg lettuce the benefit may be marginal. People often eat iceberg lettuce (the pale green kind in heads at the store) because they say they need roughage (fiber). Interestingly, iceberg lettuce is very low in fiber. It is also low in vitamin C, vitamin A, folate, and most other nutrients that are commonly found in vegetables. Iceberg lettuce is sometimes called "crunchy water" by nutritionists. Considering that it is 98% water and has few nutrients, maybe it is "crunchy water." It is better to eat darker green vegetables like romaine lettuce, broccoli, and spinach. Because of the green color they are more likely to be good sources of vitamins A, C, and folate as well as better sources of minerals like magnesium.

**Iron:** The nutrient most likely to be deficient in a WIC participant's diet is iron. Iron deficiency is the number #1 nutrient deficiency in the world. Iron is very important in the body for making healthy blood, growing new tissues (as in growth and pregnancy), helping the brain to develop and work properly, and helping the immune system to function properly. When people do not get enough iron in their diets they make fewer red blood cells and as a result their hematocrits decrease (hematocrit is a measure of the number of red blood cells a person has in their blood). When a hematocrit reading falls below a certain level a person is said to be anemic. Anemia can be very serious. A person will feel very tired, cold, and may not be able to think well. For a pregnant woman it can mean premature delivery and difficult labor. For a child or infant it can mean poor growth and mental development. Some of the symptoms of iron deficiency correct very quickly when a person is given iron. Other symptoms can remain for life. There is good evidence that an infant or child who is iron deficient for a significant period of time will show decreased mental development the rest of their life.

This is why WIC considers it so important that formula-fed infants get iron- fortified formula. One word of caution: too much iron can be very toxic. Iron supplements should be taken only as directed. Pregnant women should keep their iron supplements in a safe place out of the reach of children.



**Leach:** When nutrients are drawn out of foods by water. This happens during cooking when large amounts of water are used. It results in less-nutritious foods.

### *Canned, frozen or fresh?*

Sometimes people ask if fresh fruits and vegetables are more nutritious than canned or frozen. It depends. The longer a fruit or vegetable is attached to the plant when it is growing the more nutrition it generally contains. For example, a tomato that is picked ripe has more nutrition than one that is picked while it is green. Once a tomato is picked it does not increase its nutritional value. Tomatoes that are picked for canning are generally picked when they are completely ripe. Those that are sold as fresh tomatoes are generally picked while they are somewhat green and allowed to ripen as they go to market. Therefore tomatoes that are canned start out with more vitamin C than those that are picked to be fresh tomatoes.

The canning or freezing process used to preserve fruits and vegetables destroys some nutrients, but because the food generally starts out with more nutrients the net result is that canned, fresh, and frozen all have about the same nutritional quality. What is most important in terms of nutrients is how the food is handled and cooked once it is purchased from the store. If fresh fruits and vegetables are allowed to wilt they lose a great deal of their nutrients (which do not come back when made crisp with water and ice). Over-cooking food also destroys large amounts of nutrients. The longer a food is heated on the stove (and the more intense the heat) the more nutrients are lost. Also the amount of water used for cooking makes a difference. Nutrients can be leached into cooking water and then lost when the water is poured off. That is why it is better to steam vegetables than to boil them in water.

**#2 Practice!**



Next to each food listed below indicate the food group to which it belongs. Use the **Daily Food Guide Screening Tools** in the appendix to guide your decisions. Some foods are not in any of the regular Food Groups and should be put in the group called “Other”(sweets and fats). If a food is in the fruits and vegetables group be sure to indicate if it is also belongs in the Vitamin C or Vitamin A group.

Answers to the Practice!  
are at the back of the module.

Food Item	Food Group	Food Item	Food Group
Pickle		Buttermilk	
Yogurt		Mashed Potatoes	
Peanut Butter		Green Pepper	
Tortilla		Strawberry Jelly	
Pancake		Apricot	
Cantaloupe		Spaghetti Noodles	
Broccoli		Egg	
Sweet Potato		Cottage Cheese	
Rice		Cream Cheese	
Avocado		Sunflower Seeds	
Green Beans		Kidney Beans	
Sausage		Popped Corn	

2. Vegetables that are high in Vitamin A are one of two colors. What are those colors?
3. Use the letters below and answer each of the following questions:
  - a. Dairy
  - b. Meat and Meat alternatives
  - c. Breads and Cereals
  - d. Fruits and Vegetables
  - e. Other Foods

\_\_\_\_\_ Food group that is a good source of calcium.

\_\_\_\_\_ Food group that contains vitamin C.

\_\_\_\_\_ Food groups that can be good sources of fiber (2).

\_\_\_\_\_ Food group that contains tofu.

\_\_\_\_\_ Food group that contains bacon.

\_\_\_\_\_ Food groups that are good sources of iron (2).

## Portion/Serving Sizes

When evaluating a diet for adequacy it is also important to know the portion size that determines one serving of a food group. One-half cup of cooked green beans is considered one serving of a fruit or vegetable for an adult. If a woman were to eat 1 cup of cooked green beans the green beans would be considered two servings. Standard portion sizes that equal a serving can be found on the **Daily Food Guide Screening Tools** and on the **Index of Mixed Dishes**. It is important to note that the standard serving size for women is different than it is for a child. In general the child's standard serving is one half the size of a woman's standard serving.

Knowing standard serving size is essential for completing a 24-hour Food Recall. Each food on the 24-hour Food Recall must be assigned to the correct food group and then be converted to the number of standard servings eaten. This information is also important to know when analyzing a Food Frequency form. In general, it is assumed that participants eat standard age appropriate serving sizes of the foods they record on the form. Milk and "other foods eaten", however, must be converted to standard serving sizes for diet analysis. Also, any foods which the participant voluntarily reports were consumed in unusual portion sizes need to be calculated into standard serving sizes. More on this topic later.

### #3 Practice!

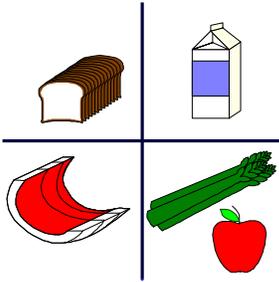


1. For the following foods indicate the correct food group and the number of standard servings it represents for a woman and then for a child.

Food	Food Group	Number of Servings	
		Woman	Child
2 eggs			
1 cup cooked cereal			
3/4 cup cooked green beans			
2 pancakes (5")			
1/4 cup tuna salad			
2 tablespoons peanut butter			
1 ounce natural cheese			
1 1/2 cup orange juice			

Answers to the Practice!  
are at the back of the module.

## Foods With Mixed Identities



Sometimes a food item belongs to more than one food group. This usually happens when a food item is actually a mixture of other foods. An example is macaroni and cheese. Macaroni belongs to the breads and cereals group while cheese belongs to the dairy group. In the appendix of this module is a table called **Index of Mixed Dishes**. This table lists food items that are mixtures of foods. Notice that the number of servings for each group is listed for adults and for children. This is necessary because portion sizes are different for adults and children.

Looking at the **Index of Mixed Dishes** 1½ cups of macaroni and cheese is 2 servings of breads and cereals (listed as “grains” on the Index) and 1 serving of dairy for an adult, or 4 servings of breads and cereals and 2 servings of dairy for a child.

When analyzing a diet it is best to use the **Index of Mixed Dishes** unless the food is substantially different from what is described in the **Index**. For example, if a mother reports that her child ate 1 cup of lasagna for lunch, the analysis should be listed as 2 dairy, 1 meat, 2 grain, 2 F&V unless the mother reports that she makes lasagna without any dairy products. In that case a notation should be made on the diet form and the analysis adjusted to 1 meat, 2 grain, 2 F&V.

**#4 Practice!**



1. Using the **Index of Mixed Dishes** indicate which food groups and the numbers of servings that are contained in each food below.

<b>Food Item</b>	<b>D</b>	<b>M</b>	<b>B/C</b>	<b>F/V</b>	<b>A</b>	<b>C</b>
Chili (1 cup)(child)						
Bean Burrito with Green Chili Sauce (1 burrito)(adult)						
Chicken McNuggets (½ serving)(child)						
Spaghetti with meat sauce (¾ cup)(child)						
Cheese pizza (1/8 medium)(2 slices)(adult)						
Taco (1 taco)(child)						

Answers to the Practice!  
are at the back of the module.