Module A:
Basic Nutrition

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Overview

Introduction

This module contains basic nutrition you will need at WIC.

The module does NOT cover everything about nutrition. For more information, you may want to take college courses, refer to websites such as www.eatright.org or www.myplate.gov and review a college textbook on basic nutrition. Ask your agency's dietitian for suggestions.

Learning Objectives

After completing this module, you will be able to:

- Describe the role of nutrition in health and well being
- Describe the major functions of food in the body
- Describe how the body digests foods
- List the six nutrients and common sources of each
- List the five WIC "targeted nutrients" and
    - their roles in the body
    - good food sources of each, and
    - the WIC foods which provide them
- Describe the six food groups and assign foods to them
- Describe factors influencing food habits and choices

The Role of Nutrition

Definition

Nutrition is the process by which humans take in and use food.

Why is Nutrition Important?

Healthy eating is important during all stages of life.

Healthy eating is especially important for:

- Growth and development
- Preventing health problems such as iron-deficiency anemia and tooth decay
- Lowering the risk of developing diseases such as heart disease, certain cancers, diabetes, and osteoporosis

Nutritional Status

Nutritional status is the health condition of the body as influenced by diet.

Good nutritional status results when a person's diet meets her/his body's needs for energy, maintenance, and/or growth.

Food

Definition

Food is anything eaten or drunk that helps meet the body's need for energy, growth, maintenance, repair, and regulation of body functions.

Sources

Plant sources include:

- Grains
- Fruits and Vegetables
- Nuts, Seeds and Legumes

Animal sources include:

- Meat, Poultry and Seafood
- Eggs
- Milk and milk products (such as yogurt)

Major Functions of Food

Function	Description
Energy	Food gives the body energy to do such activities as: • Breathing • Digesting food • Any movement in which your muscles are used
Growth	Food helps our bodies develop, gain weight, and grow taller (childhood).
Maintenance & Repair	Almost all cells in our body eventually die and must be replaced with new cells. Food is needed to rebuild cells such as: • Red blood cells • Cells lining our intestines • Cells in our skin
Regulation	Food is needed for regulation of body functions such as: • Control of body temperature • Balance of fluids • Blood clotting

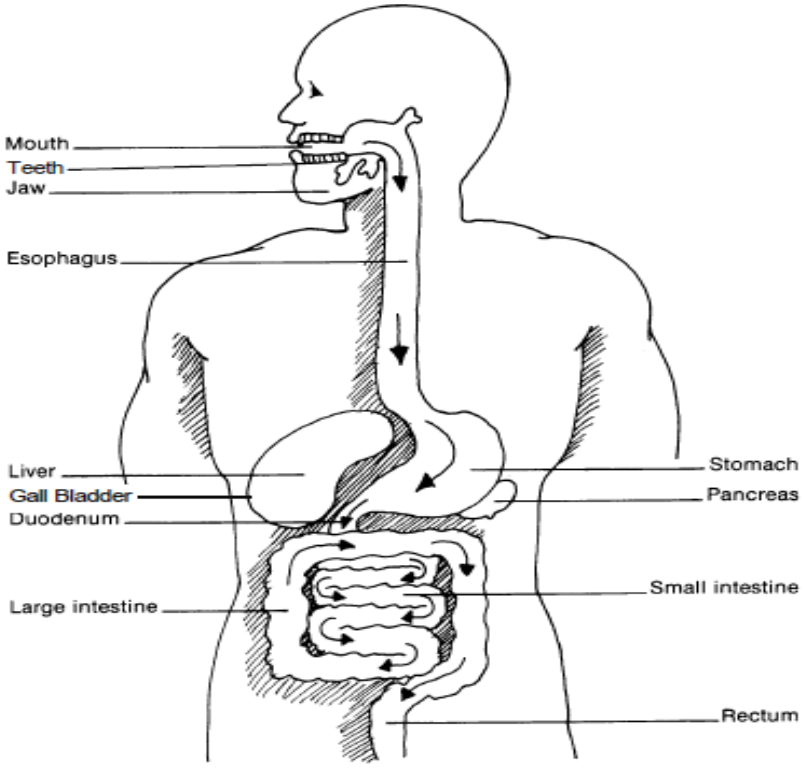
Digestion

Definition Digestion is the process in which the body breaks down food and absorbs nutrients into the bloodstream and cells.

Digestive Process Digestion takes place in the digestive tract.

Diagram of Digestive Tract The diagram below shows the parts of the digestive tract.

Chart of Digestion The chart on the next page describes the parts of the digestive system



Digestion *(continued)*

Description of Digestion

Part	Description
Mouth	• Digestion starts here • Teeth break the food down into small pieces • Saliva mixes with the food and breaks down some starches
Esophagus	• Passageway from the mouth to the stomach • Food goes through this after being swallowed
Stomach	• Breaks food down into smaller pieces with acids and with muscle contractions
Small Intestine	• Digestive enzymes break down foods: o carbohydrates are broken down into simple sugars o proteins are broken down into amino acids o fats are broken down into fatty acids • Nutrients are absorbed into bloodstream
Pancreas	• Makes and releases digestive enzymes and hormones (i.e. insulin)
Liver	• Makes bile to help the small intestine digest fat
Gall Bladder	• Located behind the liver • Stores bile for digestion
Large Intestine	• Absorbs water and some minerals into the bloodstream • Contains many species of microbes that continue to digest nutrients and forms nutrients such as vitamin K • Eliminates undigested "leftover" foods, bacteria and waste materials

Nutrient Groups

Nutrient

A nutrient is a substance needed by the body for energy, growth, maintenance, repair, and/or regulation

Major Nutrient Groups

There are six major nutrient groups. They are:

- Proteins
- Carbohydrates
- Fats
- Vitamins
- Minerals
- Water

Protein

Proteins

Protein is a substance needed by the body to build, maintain, and repair cells. Protein is made up of long chains of amino acids.

Where is Protein Found in the Body?

Every cell in our body contains protein.

Blood, skin, bones, muscles, teeth, brain, and hair all are made up mostly of protein.

Functions

Protein is needed to:

- Build, maintain, and repair cells of the body
- Regulate body functions
- Fight infection
- Provide energy

Charts

The charts on the next two pages list:

- The functions of protein
- Some food sources of protein

Protein *(continued)*

Functions of Protein

Function	Description
Build, Maintain, and Repair Cells of Body	The body builds new cells: • In a pregnant or breastfeeding woman or growing child • When wounds heal • When hair and nails grow • When new blood is made Protein is also needed to replace worn-out cells such as: • Red blood cells which are replaced about every three months • Cells in the intestinal lining which are replaced every week
Regulate Body Processes	Enzymes: Are proteins which help chemical reactions take place in the body. Hormones: Are messenger proteins which help direct certain body activities, including growth and development. Examples include insulin and oxytocin.
Regulate Body Fluids	Proteins in the cell wall have the unique ability to regulate the amount of fluid within a cell.
Fight Infection	Certain proteins called antibodies defend the body by destroying or weakening harmful germs such as bacteria or viruses.
Provide Energy	• Limiting or restricting food will cause our bodies to use protein for energy. • Using protein for energy limits its other more import functions in the body. • Eating excess amounts of protein leads to increased fat stores.

Protein *(continued)*

Food Sources of Protein

Protein	Food Sources
Animal Protein	• Poultry • Seafood • Meat • Eggs • Milk Products (such as milk, cheese, and yogurt)
Plant Protein	Legumes such as: • Pinto beans • Garbanzo beans • Kidney beans • Split peas • Lentils • Black-eyed peas • Lima beans • Soy beans (including tofu) • Peanuts (including peanut butter) Grains such as: • Oats • Wheat • Rice • Corn Nuts such as: • Walnuts • Cashews • Almonds Seeds such as: • Sunflower seeds • Sesame seeds

Carbohydrates

Carbohydrates

Carbohydrates are substances containing sugar, starch, or fiber.

Functions

Carbohydrates are needed by the body for:

- Energy
- Fuel for the brain
- Adding sweetness to foods
- Regulates bowel movements (Fiber portion of carbohydrates)

Sugar

Sugars are also called simple carbohydrates.

Common Sugars are:

- Lactose (the sugar in milk)
- Fructose (the sugar in fruit)
- Sucrose (table sugar)

During digestion, sugars are broken down into glucose. Glucose is absorbed into the blood and is carried to the body cells to be used for energy.

Refined sugar has been purified from plants (such as beets and sugar cane) until only the sugar remains.

- It is added to foods such as jam, jelly, candy, soda, and desserts
- Avoid or limit refined sugar, it can lead to dental cavities and weight gain
- Excess body weight can result in diabetes and heart disease

Starch

Starches are also called complex carbohydrates because of the long chains of multiple glucose molecules linked together.

During digestion, starch is first broken down into simple carbohydrates and then into glucose.

Carbohydrates *(continued)*

Fiber

Fiber is also a type of complex carbohydrate.
Fiber is the part of the plant foods the body cannot digest.
There are several types of fiber. The chart below lists sources of fiber.

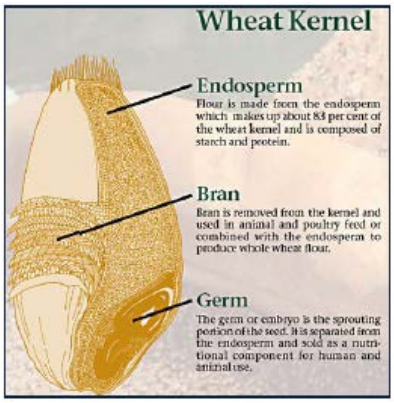
Sources of Fiber
Fruits
Vegetables
Cereals
Whole grains

Benefits of dietary fiber:

- Regular bowel movements
- Feel full after eating
- Controls blood sugar (glucose)
- Lowers blood cholesterol levels
- Reduces risk for certain types of chronic diseases

Where is the Fiber?

The following pictures show the fiber parts of plants. The fiber is in the bran of wheat kernel and the seeds of the strawberries.



Carbohydrates *(continued)*

Sources for Carbohydrates

Carbohydrate	Food Source
Fructose	• Fruit (fresh, frozen or dried) and fruit juice • Processed foods with added sugar (cookies, cakes, pastries and sweet drinks)
Glucose	• Grains (pasta, bread, rice and tortillas) • Beans and Lentils • Starchy vegetables (such as potatoes, corn and winter squash) • Processed foods and drinks with added sugar
Lactose*	• Dairy Foods (milk, yogurt and cheese) • Breast milk and formula

***Lactose Intolerance**	Lactose is a sugar found in dairy products, breast milk* and formula*. The amounts of lactose vary by food. Lactose intolerance is a condition caused by low levels of the digestive enzyme lactase. Therefore, the body cannot break down lactose resulting in symptoms such as diarrhea, abdominal cramps, nausea, bloating and excess gas. <u>Recommendations:</u> **Avoid:** Milk, ice cream, and processed cheeses **Eat/Drink:** Hard cheeses, cottage cheese, cream cheese, and low lactose or lactose free milk **Substitutions:** Soy milk, almond milk, and tofu *Note: Lactose intolerance becomes more common as people get older. It is *very* rare for an infant to be lactose intolerant.

Fats

Definition

Fats in foods provide flavor, energy, essential fatty acids, a feeling of fullness after eating and carry nutrients throughout the body.

Functions

Fats are needed by the body to:

- Provide energy
- Provide the essential fatty acids
- Help our body store nutrients such as fat-soluble vitamins A, D, E, and K
- Give satiety (a feeling of fullness) and flavor to food

Types of Fats

There are three kinds of fats:

- Saturated
- Unsaturated
- Trans Fats

Unsaturated fats are usually **liquid** at room temperature and come from plant sources. They can be monounsaturated or polyunsaturated. Monounsaturated fats help decrease the risks of heart disease.

Omega 3 and Omega 6 fats are polyunsaturated fats. They are essential to the body. This means you need to consume them through food sources because the body does not manufacture them and humans will not survive without them.

Saturated fats are usually **solid** at room temperature and usually come from animal sources.

Trans fats are formed by adding hydrogen to vegetable oils through a process called hydrogenation. This makes the fat more solid and less likely to spoil.

Certain saturated fats and trans fats **increase a person's risk for coronary heart disease.** Limit intake of foods high in these fats.

The chart on the next page identifies food sources of fats.

Fats *(continued)*

Sources of Fats

Type of Fat	Food Source
Unsaturated Fats	**Monounsaturated** • Avocado • Olives and olive oil • Nuts and legumes (pistachios, almonds, walnuts, peanuts) • Canola oil • Salad dressings made with these oils
	Polyunsaturated Sources of omega 6 fats • Oils (safflower, sunflower, corn, cottonseed, soybean, and sesame) • Salad dressings made with these oils • Special margarines containing a high percentage of liquid oil Sources of omega 3 fats • Walnuts, pumpkin, flax and chia seeds • Soy beans and tofu • Any omega 3 fortified foods • Fatty fish (salmon, mackerel, and tuna) and algal oil are especially high in EPA and DHA omega 3 fatty acids
Saturated Fats	• Butter and cream • Whole milk • cheese • Egg yolks • Meat and meat fat (such as bacon and lard) • Coconut and palm oil
Trans Fats	• Shortening • Margarine (with hydrogenated oils) • Cookies, pastries, other snack foods (with hydrogentated oils) • Dairy products (trace amounts naturally occur)

Vitamins and Minerals

Definition

Vitamins are substances needed by the body in tiny amounts to assist in body processes and functions.

Minerals are substances needed by the body in small amounts to form part of the body's structure or regulate chemical reactions in the body.

Important Vitamins and Minerals for WIC

There are numerous vitamins/minerals important for health. However, the following vitamins and minerals are the focus for WIC.

Vitamins	Minerals
Vitamin A Vitamin C Folic Acid (folate)	Calcium Iron

Vitamins and Minerals *(continued)*

Function, Deficiency, Excess & Sources of WIC Targeted Vitamins

VITAMIN A		
Function	**Deficiency & Excess**	**Food Sources**
1. Two forms of vitamin A: **Retinol:** The active form found in fortified and animal sources of foods as well as supplements. **Carotenoids (i.e. beta-carotene):** Found in plant sources of foods. 2. Develops healthy eyes (makes night vision possible), skin, and mucous membranes. 3. Helps prevent infections. 4. Helps develop bones and teeth	**Deficiency:** • Night blindness and eye changes leading to blindness • Greater chance of infections • Dry, scaly skin **Excess:** (Retinol) • Birth defects • Miscarriage • Severe headaches • Nausea, loss of appetite • Itchy skin *Excess cannot be caused by food intake alone.*	Orange-red vegetables: • carrots • peppers • sweet potatoes Dark green vegetables: • leafy greens (spinach, kale) • broccoli Dark orange fruits: • mango • papaya • cantaloupe Milk/cheese Egg yolk

VITAMIN C		
Function	**Deficiency & Excess**	**Food Sources**
1. Increases iron absorption 2. Helps heal wounds 3. Develops healthy gums and teeth 4. Helps prevent infection 5. Strengthens blood vessels	**Deficiency:** • Scurvy • Weakness • Poor wound healing/bruising • Loss of appetite/poor growth • Bleeding gums • Painful joints **Excess:** Rare • Scurvy may occur if excess intake suddenly stops	Citrus fruits and juices Strawberries Kiwi Cantaloupe Mango Broccoli Brussel Sprouts Cabbage Snow Peas Peppers

FOLIC ACID (FOLATE)		
Function	**Deficiency & Excess**	**Food Sources**
1. Helps make new cells (i.e. blood) 2. Aids in the formation of genetic material within every body cell 3. Allows nerves to function properly	**Deficiency:** • Birth defects such as spinal bifida • Anemia • Sore tongue • Diarrhea **Excess:** Masks B12 deficiency	Leafy green vegetables Oranges/orange juice Whole grains Beans Nuts Asparagus Broccoli

Vitamins and Minerals *(continued)*

Function, Deficiency, Excess & Sources of WIC Targeted Minerals

Calcium		
Function	**Deficiency & Excess**	**Food Sources**
1. Forms bones and teeth 2. Helps blood to clot 3. Helps nerves send messages 4. Helps muscles contract	**Deficiency:** • Poor bone and tooth development • Bone weakening **Excess:** • Constipation • Kidney stones *Excess cannot be caused by food intake alone.*	Calcium-fortified foods: • cereal • corn tortillas • tofu and soy milk Dairy products Canned salmon Canned fish with bones Greens (kale, collards) Broccoli Legumes

Iron		
Function	**Deficiency & Excess**	**Food Sources**
1. Part of hemoglobin in red blood cells 2. Part of myoglobin in muscle cells 3. Carries oxygen in blood to all cells of body	**Deficiency:** • Anemia • Weakness, tiredness • Irritability, headache • Loss of appetite • High risk for infections • Decreased attention span • Poor growth (with extended deficiency) • Confusion • Decreased ability to learn **Excess:** • Infections • Liver injury • Acidosis • Bloody stools • Shock *Excess cannot be caused by food intake alone.*	Meats (especially red) Poultry Fish Dried beans/peas Dried fruit Leafy green vegetables Iron-fortified cereals

Water

Water

Water is the body's most important nutrient.

Our bodies are about 50-70% water. The percent of water in adults is related to the amount of muscle. More muscle mass = higher amounts of water. (Average amount for infants is 70% and adults 50%).

Functions

Water is needed by our bodies:

- To regulate body temperature
- As the major component of:
  - blood
  - fluid inside the cells
  - fluid lubricating the joints, eyes and mucous membranes

Loss of Water

Our bodies lose water through:

- Urine
- Stools
- Skin
- Lungs (breathing)

Intake of Water

The amount of water a person needs depends on:

- Body size
- Temperature and humidity of the environment
- Level of physical activity
- Health status*

* Pregnancy, lactation, fever and other illness increases need

Adults lose about 2-3 quarts of water each day. Drinking about 6-8 cups of water per day, in addition to the foods we eat, will replenish this loss.

Sources

Besides consuming water as a beverage, it is also available in:

- Other beverages (milk, tea, coffee, sodas, energy drinks)
- Soups/broths
- Foods (especially fruits and vegetables)

Dehydration

When the body loses too much water it becomes dehydrated.

During dehydration, the body overheats more easily leaving the person feeling weak or dizzy and maybe a headache. These symptoms can progress rapidly to delirium and end in death if not treated quickly.

Dehydration occurs more often in:

- Infants and young children since they:
  - Have a greater portion of their body weight as water
  - Require relatively more water than adults to excrete waste products
- The elderly since their thirst sensation is less reliable.
- Sick people if they have frequent vomiting, diarrhea, sweating, and/or fever.

Caffeine

Caffeine

Caffeine is a stimulant found in many foods, beverages and some medications.

- Caffeine is naturally produced by a variety of plants and is added to some foods and beverages.
- Women who are pregnant or breastfeeding are recommended to limit their caffeine intake to about 200 mg/day (about one 12 oz. cup of coffee).
    - Due to risk of miscarriage and transfer through breast milk.
- Some sources of caffeine are coffee, teas, sodas, chocolate, and energy drinks.

Food Groups

Definition

A food group is a grouping of foods with similar nutrients.

6 Food Groups

Nutritionists have divided foods into six food groups. These groups are:

1. Grains (breads, cereal, rice, pasta)
2. Fruits
3. Vegetables
4. Milk products (milk, yogurt and cheese)
5. Protein foods (meat, poultry, fish, dry beans, eggs and nuts)
6. Fats, oils and sweets

Contents of the Food Groups

Most foods fit in one or more of the food groups. The chart on the next page lists some common foods for each of the food groups.

Food Groups *(continued)*

The Six Food Groups

Grains	• Whole grains including whole wheat, bulgur, spelt, quinoa, brown rice and oats • Processed grains including bread, pasta, white rice, cereal, tortillas
Vegetables	• Fresh, frozen and canned including leafy greens, peppers, carrots, sweet potatoes, tomatoes and broccoli • Vegetable juices
Fruits	• Fresh, frozen, canned and dried including oranges, apples, bananas, pineapple, grapes, peaches and pears • Fruit juices
Milk/Dairy Products	• Milk, yogurt and cheese • Milk substitutes including soymilk
Protein Foods	• Meat, pork, poultry, fish • Eggs • Dry beans/peas • Nuts • Soy products including tofu
Fats, Oils, Sweets	• Butter/margarine • Lard • Oils • Candy • Cakes/pastries • Sodas

Food Groups *(continued)*

Choice A choice is the portion or amount used to measure the quantity of food recommended for eating.

Chart The *Food Group Choices and Serving Size Guidelines* below show appropriate servings for children and adults.

Food Group/Food	1-3 years old	4-5 years old	Adult
Grains	6-10 per day	4-5 per day	6-8 per day
Bread, tortilla, roll, muffin, pancake, waffle	1/2	1	1
Dry cereal	1/2 cup	1 cup	1 cup
Pasta, rice, quinoa, cooked cereal (oats)	1/4 cup	1/2 cup	1/2 cup
Crackers	2-3 small	6 small	4
Vegetables	Total amount per day		
Cooked or raw	1- 1 1/2 cups	1 1/2- 2 cups	3 cups
Fruits	Total amount per day		
Fresh, canned or frozen	1-1 1/2	1-1 1/2	2 cups
Juice	<1/2 cup	<3/4 cup	3/4 cup
Milk Products	4 per day	3-4 per day	3-4 per day
Milk or breast milk	1/2 cup	3/4 cup	1 cup
Cheese	3/4 oz.	1 oz.	1 1/2 oz.
Yogurt, pudding, custard	1/2 cup	3/4 cup	1 cup
Protein Foods	2-4 per day	3-5 per day	6 per day
Meat, chicken, turkey, fish	2 Tbsp. or 1 oz.	2 Tbsp. or 1 oz.	1 oz.
Egg	1	1	1
Cooked dry beans, lentils, tofu	1/4 cup	1/4 cup	1/2 cup
Peanut butter	1 Tbsp.	1 Tbsp.	1 Tbsp.
Key: oz.= ounce Tbsp.= Tablespoon			

2015 Dietary Guidelines for Americans

Definition

The *Dietary Guidelines for Americans* provide science based advice to promote health and reduce risk for major chronic diseases through diet and physical activity. They were developed for Americans over two years of age, including those at an increased risk of chronic disease.

Dietary Guidelines

The *Dietary Guidelines for Americans* suggest:

- Follow a healthy eating pattern across the lifespan.
- Focus on variety, nutrient density, and amount.
- Limit calories from added sugars and saturated fats and reduce sodium intake.
- Shift to healthier food and beverage choices.
- Support healthy eating patterns for all.

Compatibility with the WIC Foods

The WIC food list aligns with the *Dietary Guidelines for Americans* in its recommendations to:

- Increase vegetables and fruits
- Increase whole grains and fiber
- Decrease saturated fat
- Decrease juice

Key Recommendations

BALANCING CALORIES TO MANAGE WEIGHT

Prevent and/or reduce overweight and obesity through improved eating and physical activity behaviors.

- Control total calorie intake to manage body weight
- For individuals who are overweight or obese, this will mean consuming fewer calories from food and beverages
- Increase physical activity and reduce time spent in sedentary behaviors
- Maintain appropriate calorie balance during each stage of life- childhood, adolescence, adulthood, pregnancy, breastfeeding, and older age

Find more specific information at www.health.gov/dietaryguidelines

2015 Dietary Guidelines for Americans *(continued)*

Key Recommendations

FOODS AND NUTRIENTS TO INCREASE

Individuals should meet the following recommendations as part of a healthy eating pattern while staying within their calorie needs:

- Consume fruits, especially whole fruits
- Eat a variety of vegetables from all of the subgroups, especially dark-green, red and orange, legumes (beans and peas), starchy, and other
- Consume grains, at least half of which are whole grains
- Consume fat-free or low-fat dairy, including milk, yogurt, cheese and/or fortified soy beverages
- A variety of protein foods, including lean meats, seafood, poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products
- Use oils to replace solid fats where possible

Recommendations for Specific Population Groups

Women capable of becoming pregnant

- Choose foods with heme iron (such as meat) which are more readily absorbed by the body. Non-heme sources from plants, although not as readily absorbed, also provides iron and is better absorbed with vitamin C-rich foods.
- Consume 400 micrograms (mcg) per day of synthetic folic acid (from fortified foods and/or supplements) in addition to folate rich foods.

2015 Dietary Guidelines for Americans *(continued)*

Recommendations for Specific Populations

Women who are pregnant or breastfeeding

- Consume 8-12 ounces of seafood per week from a variety of types.
- Seafood choices high in EPA and DHA but lower in methyl mercury are encouraged. These include salmon, anchovies, herring, shad, sardines, pacific oysters, trout, and Atlantic and Pacific mackerel.
- Obstetricians and pediatricians should provide guidance on how to make healthy food choices that include seafood.

BUILDING HEALTHY EATING PATTERNS

- Choose an eating pattern to meet nutrient needs over time while being mindful of an appropriate calorie level.
- Account for all foods and beverages consumed and assess how they fit within a total healthy eating pattern.
- Follow food safety recommendation when preparing and eating foods to reduce the risk of foodborne illnesses.

FOODS AND FOOD COMPONENTS TO REDUCE

- Reduce daily sodium intake to less than 2,300 milligrams (mg) and further reduce intake to 1,500 mg among persons who are 51 and older and those of any age who are African American or have hypertension, diabetes, or chronic kidney disease. The 1,500 mg recommendation applies to about half of the U.S. population, including children, and the majority of adults.
- Consume less than 10 percent of calories from saturated fatty acids by replacing them with monounsaturated and polyunsaturated fatty acids.
- Consume less than 10 percent of calories per day form added sugars

2015 Dietary Guidelines for Americans *(continued)*

- Limit the dietary intake of foods made with refined grains, especially those containing solid fats, added sugars, and sodium.
- If alcohol is consumed, it should be consumed in moderation- up to one drink per day for women and two drinks per day for men- and only by adults of legal drinking age.

Review this Food Label *Compare the 2015 Dietary Recommendations to this food.*

Start here with Serving Size

Check calories

Quick guide to % DV
- **5% or less is low**
- **20% or more is high**

Get enough of these:
- **Dietary Fiber**
- **Potassium**
- **Vitamins A & C**
- **Calcium & Iron**

Limit these:
- **Saturated Fat**
- **Trans Fat**
- **Cholesterol**
- **Sodium**
- **Sugars**

Nutrition Facts

Serving Size 1 cup (228g)
Servings Per Container 2

Amount Per Serving

Calories 250	Calories from Fat 110
	% Daily Value*
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 1.5g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

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

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

U.S. Departments of Health and Human Services and Agriculture. "2015-2020 Dietary Guidelines for Americans." Health.gov, January 7, 2016. http://health.gov/dietaryguidelines/2015/guidelines/

Energy

Energy

Our bodies use energy to:

- Carry out important life processes (including the heartbeat, breathing, building new cells, metabolism, and maintaining body temperature).
- Fuel the body movements and physical activity

Macronutrients

Our bodies use three nutrients for energy:

- Carbohydrates
- Fats
- Protein

Carbohydrates are usually the best source of energy. We can use fat for energy, but much more slowly. If we use protein for energy it may not be available for other necessary body functions.

Calories

Calories are units we use to measure the amount of energy:

- Used by our bodies
- Supplied by foods

The number of calories supplied by a food will depend on the amount of carbohydrates, protein, and fats it contains.

Nutrient	Calories/Gram
Carbohydrate	4
Protein	4
Fat	9

Energy Balance

A person's body is in "energy balance" when the number of calories s/he eats is the same as the number of calories s/he uses.

Energy *(continued)*

Energy Needs Vary

Energy needs vary from person to person. Energy needs will depend on a person's:

- Body size
- Age
- Gender
- Level of physical activity
- Health status
- Other factors (such as pregnancy and breastfeeding needs)

Pica

Pica is a condition where a person craves or eats non-food items. Pregnant women and children may crave and eat non-foods like dirt, clay, ice, laundry starch, cigarette butts, paint chips, glue, soap, toothpaste, carpet fibers, ash, etc. Some of the health problems related to consuming these items include:

- Iron deficiency anemia
- Lead poisoning
- Digestive problems
- Interference with absorbing important nutrients
- Choking

Accurate Information

A WIC nutrition educator can talk to participants about various topics based on your local agency protocol. It is very important to provide accurate information to WIC participants. Giving out inaccurate information is dangerous if the participant begins or continues with unhealthy or harmful behaviors leading to injury or illness.

Food Safety

Play it Safe

Food handling risks at home are more common than most people think. The four easy lessons of **CLEAN, SEPARATE, COOK** and **CHILL** can help prevent harmful bacteria from causing foodborne illness in your family.

CLEAN:

Bacteria can spread throughout the kitchen but frequent cleaning can keep germs in check.

- Wash your hands with warm water and soap for 20 seconds before and after handling food.
- Wash the cutting boards, dishes, utensils and counter tops with hot soapy water after preparing each food item and before going on to the next food.
- Consider using paper towels to clean up kitchen surfaces. If you use cloth towels, wash them in hot cycle of the washer.
- Rinse fresh fruits and vegetables under running tap water, including those with uneaten skins and rinds.
- Hand rub firm-skin fruits and vegetables or scrub with a clean vegetable brush while rinsing under running tap water.

SEPARATE:

Cross contamination is how bacteria spread. Keep raw meat, poultry and seafood and their juices away from ready to eat foods.

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

Food Safety *(continued)*

Play it Safe

COOK:

For all cooks, even experiences ones, improper heating and preparation of food means bacteria can survive.

- Use a food thermometer to measure the internal temperature of cooked foods. Make sure meat, poultry, egg dishes, casseroles and other foods are cooked to the correct internal temperature.
- Cook ground meat or 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.
- Bring sauces, soups and gravy to a boil when reheating.

CHILL:

Bacteria spreads fastest at temperatures between 41°F and 135°F, so chilling food properly is one of the most effective ways to decrease the risk of foodborne illness.

- Chill leftovers and takeout foods within 2 hours. Keep the fridge at 40°F or below and use an appliance thermometer to check the temperature.
- Refrigerate or freeze meat, poultry, eggs and other perishables as soon as possible after grocery shopping.
- Never defrost food at room temperature. There are three safe ways to defrost food: in the refrigerator, in running cold water, and in the microwave. Food thawed in cold water or in the microwave should be cooked immediately.

HIGH RISK FOODS:

The following foods may have harmful microorganisms and should not be fed to infants, young children or pregnant women:

- Raw eggs or fish
- Unpasteurized milk and dairy products
- Undercooked meats and tofu
- Deli meats or hot dogs (OK if heated until steaming hot)

Progress Check

1. List at least three reasons why the body needs food:

_____

_____

_____

2. Healthy eating can prevent or lower the risk of developing what health problems? List at least three.

_____

_____

_____

3. Put a check mark (√) before all of the true statements about food.

____ Food, when consumed, is anything which helps meet the body's need for energy, maintenance, repair, and/or growth.

____ Food is digested completely in the mouth.

____ Food helps control our body temperature.

____ During digestion food is broken down into simple sugars, amino acids or fatty acids.

4. Match the body part involved in the digestion of food with its main function.

	Body Part	**Function**
____	Esophagus	A. Chewing
____	Large Intestine	B. Breaking down food using muscle action and acid
____	Small Intestine	C. Eliminating waste materials
____	Mouth	D. Provides passageway to stomach
____	Stomach	E. Digesting and absorbing nutrients

Progress Check *(continued)*

5. Match the major nutrients with their functions.

	Nutrient	**Function**
____	Proteins	A. Provide energy for the body
____	Carbohydrates	B. Help the body regulate processes
____	Fats	C. Build, maintain and repair cells
____	Vitamins	D. Form part of body's structures
____	Minerals	E. Provide essential fatty acids and carry other nutrients
____	Water	F. Make up body fluids

6. Fill in the chart below by writing in the six food groups and at least three common foods for each group.

Food Group	Common Foods

Progress Check *(continued)*

7. What are the five key **nutrients** on which WIC focuses? List five examples of foods for each key nutrient.

8. List at least five recommendations from the 2015 *Dietary Guidelines for Americans.*

_____

_____

_____

_____

_____

9. For each of the nutrients listed below, write in the number of calories provided by one gram.

Nutrient	Calories/Gram
Carbohydrate	
Protein	
Fat	