

Unit 6: Nutrition Basics



Outcomes

Checklist - 4 Items (Including Introduction)

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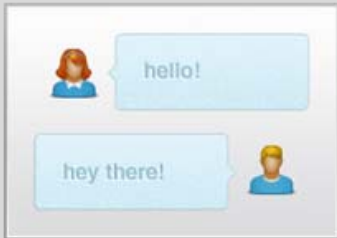
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Nutrition Basics

Good nutrition is vital to healthy living. Have you heard the saying, “You are what you eat?” Healthy eating patterns help maintain good health, help manage certain health conditions, and help overcome sickness. Good nutrition is important for all ages, sexes, races, and ethnicities. Poor nutrition sometimes manifests itself immediately, and other times it does not become apparent for a long time. The CHERP’s job is not necessarily to become a dietitian, but to help people understand the importance of good nutrition, regardless of their current situation, and to help people get and understand reliable nutrition information.



Let's talk about nutrition...



Conversation

Conversation - 6 Steps (Including Introduction)

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Dictionary

Tabs - 13 Tabs (Including Introduction)

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Dictionary 2

Tabs - 5 Tabs (Including Introduction)

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NUTRIENT

A substance that must be consumed for growth, maintenance, and repair of body tissues.



Six Classifications of Nutrients

Carbohydrate

Fat

Protein

Vitamins

Minerals

Water

Energy-yielding nutrients

Non-energy-yielding nutrients

Please select all of the following that are energy yielding i.e. produce energy.

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

question 1

Quiz - 5 questions

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Carbohydrate

Monosaccharide



Glucose, **Fructose**, Galactose

Disaccharide



Sucrose

Polysaccharide



Starch





Question about Carbohydrates

Quick Choice - 4 Choices

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Is Brown Sugar Healthier Than White Sugar?

NO – only trace amounts of vitamins and minerals are found in all refined sugars

Nutritive Value of Carbohydrates (per 100 kcal)					
CARBOHYDRATE	Vit B (mg)	Ca⁺⁺ (mg)	Iron (mg)	Na⁺ (mg)	K⁺ (mg)
Refined Carbohydrates					
White Sugar	-----	-----	Trace	-----	Trace
Brown Sugar	0.45	22.8	0.9	8.0	92
Honey	0.16	1.6	0.2	1.6	17.2
Corn Syrup	-----	15.8	0.5	-----	-----
Maple Syrup	-----	66	0.4	6.0	52
Natural Carbohydrate					
Broccoli	316	175	3.3	100	1192

What is Fiber?



Click on video to play

That reminds me of a story

Web Video

Click on video to play

Fats

Fats can be in solid form or liquid form. Common solid fats are butter, lard, margarine, grease, and spreads. Liquid fats are any type of oils. Foods that are high in fat are obviously foods that contain a lot of solid fats or oils. Like carbohydrates, fats are composed of carbon, hydrogen and oxygen atoms; but fats contain a lower ratio of oxygen to carbon atoms than found in carbohydrates. There are several different types of fats and fats can be classified into different categories. The types of fat we are most concerned with in regard to nutrition and health are lipoproteins, cholesterol, saturated fatty acids, unsaturated fatty acids, and trans fatty acids.

Definition of Saturated and Unsaturated Fatty Acids

A fatty acid is just a string of carbon atoms linked together by chemical bonds. The more carbon atoms, the longer the fatty acid string. Attached to the carbon atoms are hydrogen and oxygen. If the fatty acid has the maximum number of hydrogen atoms attached to its carbons, then the fatty acid is a saturated fatty acid, meaning it is saturated with hydrogens. A fatty acid becomes unsaturated when two carbons share a double bond between each other, rather than sharing a single bond between themselves and a single bond with hydrogen. In order to share a double bond, the carbons have to give up bonding to the hydrogen atom. Therefore, the fatty acid is not bound to the maximum number of hydrogens possible, meaning it is not saturated with hydrogen. Another way to define it is that a saturated fatty acid has no double bonds and an unsaturated fatty acid has one or more double bonds. Obviously, polyunsaturated means more than one double bond. It is not necessary to understand the chemistry of fatty acids, just remember that saturated fatty acids are saturated with hydrogens and have no double bonds.



Example of foods which contain saturated fats

Types of Fats

Saturated fats are typically solid at Room temperature (70°F) butter, lard, margarine, grease, spreads, animal fat, drippings



Unsaturated fats are typically liquids at room temperature (70°F)

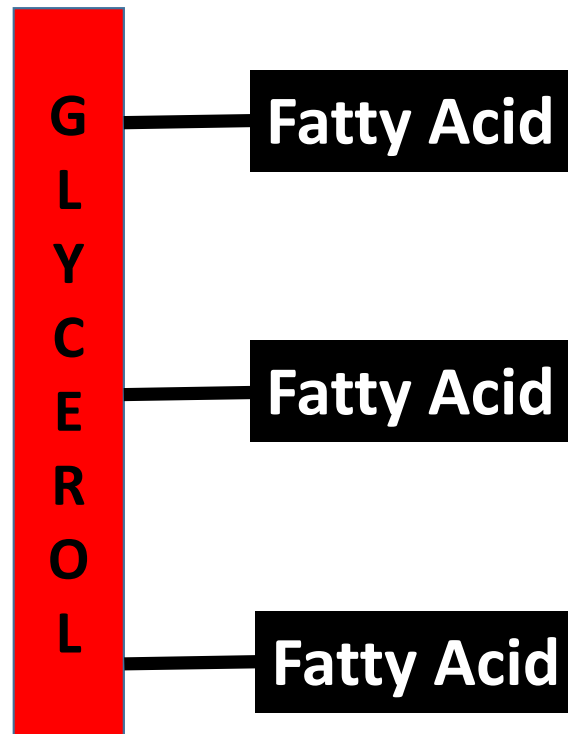


Trans Fatty Acids

Artificially heating liquid vegetable oils with metal catalysts and hydrogen to make the fat solid.

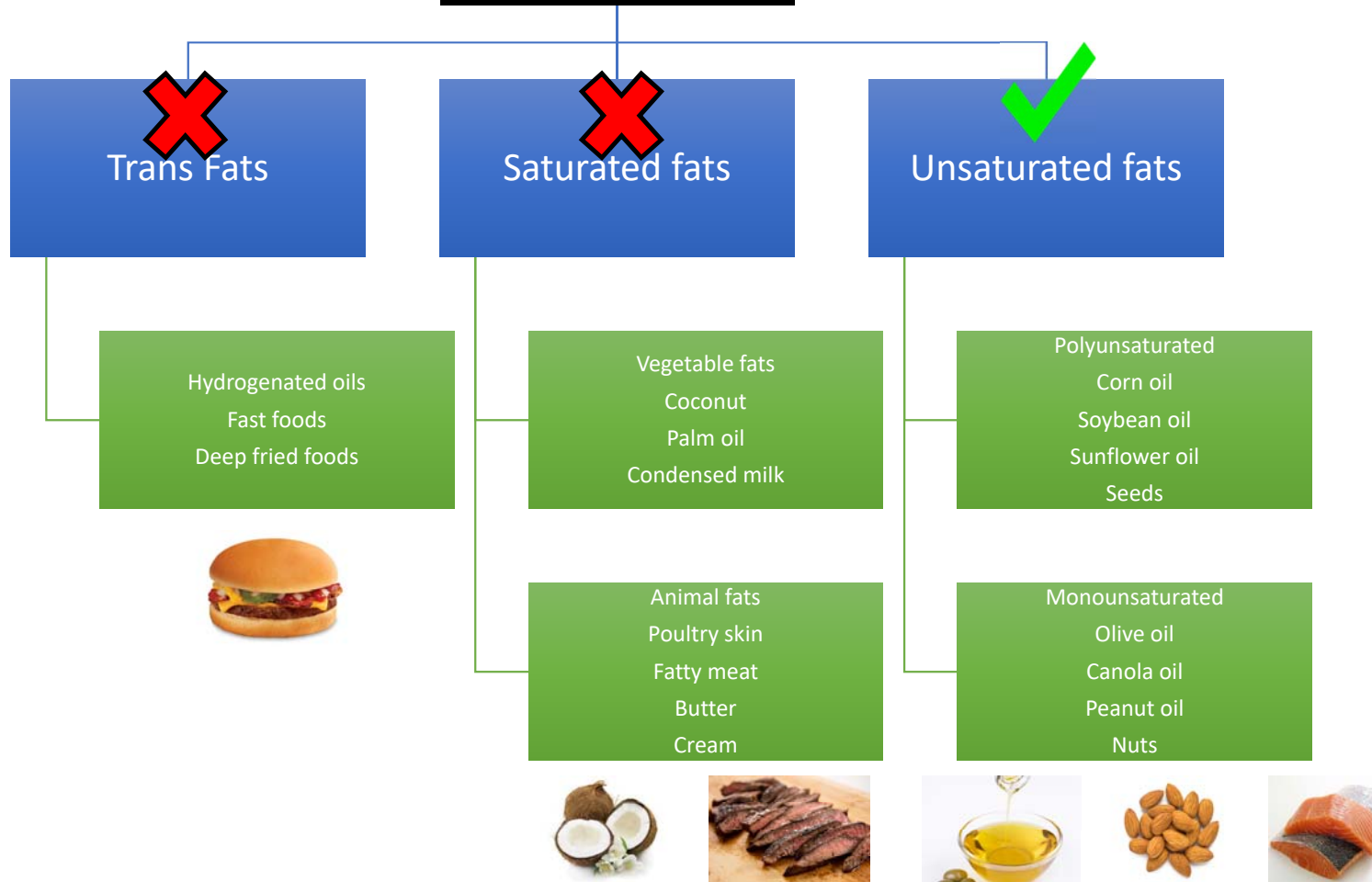
Partial hydrogenation results in the formation of trans-fatty acids.

Types of Fat in our Diet - Triglycerides



Fatty acids may be either saturated or unsaturated fatty acids. Unsaturated fatty acids are healthier than saturated fatty acids.

Fats



Cholesterol

Cholesterol is a type of fat produced only by animals, therefore, dietary cholesterol is obtained only through animal products. Although we generally think that cholesterol is unhealthy, cholesterol is necessary for the body to function properly. In fact, the body can make its own cholesterol if there is not enough cholesterol in the diet. The same chemical structure seen in cholesterol, is also the base structure for the hormones testosterone, estrogen, and cortisol. These hormones regulate growth and development, regulate blood sugar levels, and help with the breakdown of fat, protein, and carbohydrate for energy.

Although cholesterol is required for optimal health, too much cholesterol in the circulation can cause heart and circulatory diseases. Since low-density lipoproteins contain a lot of cholesterol and high-density lipoproteins contain much less cholesterol, people often call the high-density lipoproteins the good cholesterol and the low-density lipoproteins the bad cholesterol. Lab reports will often abbreviate these as HDL-cholesterol and LDL-cholesterol.



Eggs contain cholesterol

Foods Typically High in Trans Fatty Acids	Foods High in Saturated Fat	High Cholesterol Foods	Oils High in Monounsaturated and Polyunsaturated Fat
Cakes Chicken Nuggets Chips Cookies Crackers French Fries Frozen Dinners Hard Taco Shells Microwave Popcorn Muffins Pizza Vegetable Shortening	Animal Fat Butter Cheese Coconut Oil Dark Chocolate Lard Nuts Palm Oil Processed Meats Sour Cream Whipped Cream	Butter Chicken Skin Egg Yolks Liver Lobster Macaroni and Cheese Many Fast Food Sandwiches Processed Meats Some Cheeses	Canola Oil Corn Oil Flax Seed Oil Grape Seed Oil Olive Oil Peanut Oil Safflower Oil Soybean Oil Sunflower Oil

Graphic: The table above shows examples of how foods in our diet are classified based on the different types of fatty acids.

Fats and Water Don't Mix

Fat and water do not mix. A large portion of the blood is water, so fat needs to be packaged into something that will allow it to be transported in the cardiovascular system. Fat that is attached to proteins is more easily dissolved in the blood.

A combination of fat and protein that is transported through the cardiovascular system is called a **lipoprotein**. There are many types of lipoproteins. Each lipoprotein is distinguished by its size, density, and the composition of its fatty core. As the amount of fat in the lipoprotein core drops and the amount of protein rises, the lipoprotein becomes denser. **High-density lipoproteins (HDL)** have a small core with less fat than **low-density lipoproteins (LDL)**, which have a larger core with more fat.



Circle diagram of lipoproteins, click on each lipoprotein.

Circle Diagram - 3 Layers, 4 Segments (Including Introduction)

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Proteins

The third nutrient we can use for energy is protein. However, proteins do not make a major contribution to our daily energy needs. Generally, proteins are used for energy when our carbohydrate stores are low. Proteins can be converted into carbohydrate (sugar) when our blood sugar is low and when carbohydrate stores in the body are low. Proteins are converted to sugar when a person is fasting and when a person is performing prolonged exercise. In these situations, the sugar coming from protein breakdown is used to maintain blood glucose levels. The major uses for proteins are to build and maintain tissue structures and for controlling internal body processes. Most people are aware that muscles are made of protein, and that organs like the liver, heart, and intestines contain a lot of protein. Proteins make up hormones, and assist hormones in doing their job. On the cellular level, proteins regulate chemical reactions and what can pass through membranes like cell walls.



Protein

- 20 amino acids combine in any number or ratio to form a protein
- The body can make 11 of the amino acids, non-essential amino acids
- The body cannot make 9 of the amino acids, essential amino acids



Protein

Complete proteins or whole protein foods...

Contain all of the 9 essential amino acids, in proportions and amounts needed by the body

Examples of complete protein food groups include:

- Red Meat
- Poultry
- Fish
- Eggs
- Milk
- Cheese
- Yogurt
- Soybeans
- Quinoa

Complementary Proteins

Beans	Tortillas
Beans	Rice
Lentils	Rice
Black-eyed peas	Rice
Chickpeas	Rice
Tofu	Rice
Pea Soup	Bread or Crackers
Chickpeas	Sesame Paste
Beans	Pasta
Hummus	Pita Bread
Lentil Soup	Bread
Baked Beans	Bread



Graphic: The table above lists beans and legumes on the left side, and grains and rice on the right side. When combined together, the two proteins make a complete protein, which provides all nine essential amino acids.

Vitamins

- 13 Vitamins
- Basic Functions:
 - Assist in biochemical reactions in the body
 - Keep the immune system strong
- Fat-soluble vitamins – A, D, E, K
 - Found in fat of food, absorbed with fat
 - Stored in the body for months to 3 years
 - Can reach toxic levels easy
 - Deficiency not that common
- Water-soluble vitamins – all the rest
 - Digested and absorbed like carbohydrate & fat
 - Excess is lost in urine
 - Hard to get toxic levels
 - Deficiency easy



Antioxidants

- Vitamin A, beta carotene
 - Vitamin E
 - Vitamin C
-
- Free radicals made in cells
 - Free radicals need an electron
 - Free radicals attack cell components
 - Antioxidants give up an electron
 - Antioxidants protect cells



Minerals

Major minerals and trace minerals are defined by amount not importance

Sodium – cell membranes and water balance – blood pressure

Calcium – bones and muscle contraction – osteoporosis

Iron – carries oxygen in the blood - anemia

Water

- The body is composed of 60% water
- The blood is about 50% water
- Body water reaches equilibrium in 4 hours
- Water regulates body temperature
- Water helps chemical reactions
- Water is the most important nutrient



Match each choice with the correct description. Use your mouse and drag the item on the right column to match the appropriate item in the left column.

An example of carbohydrates	Pasta Noodles
An example of fats	Cooking oil
An example of proteins	Beans
An example of a vitamin	Vitamin K
A food which contains lots of vitamin C	Orange juice
Contains a lot of calcium	Milk
Iron is	a mineral

question 2


Quiz - 1 Question

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Nutrition Needs

Now that we have defined the six basic nutrients, it is important for us to talk about the nutritional needs of children, adolescents, and adults are all different. The nutritional needs of males and females are also significantly different during various phases of life. The Level 1 CHERP does not need to know all the ins and outs of nutrition for all ages of both sexes. The Level 1 CHERP just needs to know some of the basic nutritional needs people have throughout life so he or she can give basic advice to community members and direct them to a professional when particular needs arise.

Child and Adolescent Nutrition

- Breast Feed for at least 6 months (Vitamin D, Iron Supplements)
- No juices, sodas, or sport drinks in bottles
- Limit fast food consumption
- Limit packaged food consumption (microwave)
- Encourage healthy snacking
- Encourage physical activity



Child Nutrition

Once the child is weaned, he or she can get a nutritious diet from the general food supply. However, the problem with modern day society is that unhealthy foods are abundantly available at a low cost, and the family structure has changed to where both parents are working outside the home. Consequently, nutritious home-prepared meals have often been replaced with packaged microwaveable foods, fast food restaurants, and snack foods; most of which are high in fat, sugar, salt, and calories. The result of our deteriorating family nutrition is an increase in childhood obesity and diabetes.



Adolescent Nutrition

When children become adolescents, they face a new set of challenges to good nutrition. Adolescents often fall prey to irregular meals, frequent snacking, fast food availability, and harmful eating disorders. Parental modeling and as much parental control of family meals as possible can make a big difference in an adolescent's nutritional health. On the other hand, parents who are uninformed or apathetic on nutrition can endanger an adolescent's health and possibly associated emotional development.

The effective CHERP should work with parents and caregivers to increase awareness of the importance of good family nutrition, and to strategize for improving family nutrition where improvements can be made.



Fast food contains large amounts of saturated fats, high cholesterol, salt, and added sugars

Nutrition During Pregnancy

- Start with a nutrition assessment
- Encourage prenatal care
- Stop smoking
- Stop drinking alcohol
- Encourage a folate supplement
- Do not attempt weight loss
- Encourage exercise
 - 30 minute sessions
 - low to moderate intensity



Nutrition for the Older Adult

Older adults have their own nutritional needs that differ from younger adults. Things that complicate healthy eating for older adults are diseases such as heart disease, diabetes, hypertension, and stroke. These diseases may require special diets or may make it difficult for the older adult to obtain and prepare healthy foods. Older adults should work with their healthcare provider in determining their nutritional needs, especially if the older adult has a chronic disease or condition. In addition to health problems that make it difficult for older adults to eat healthy, some folks may have other barriers to healthy eating, like economic problems, social isolation, the inability to grocery shop, and depression.

A CHERP working with older adults should spend the time learning as much as possible about the older adult and what resources and barriers he or she has to healthy eating. The CHERP should also become aware of nutrition assistance programs in the community such as *Meals on Wheels*.




Nutrition for Older Adults

Barriers to eating healthy?

Solutions?

The list discussed here by no means addresses all the possible barriers and solutions for older adults. Perhaps you have listed other barriers and solutions.

- 
1. Cost of Healthy Food
 - Plan your meals
 - Get best price possible
 - Compare and contrast
 - Buy in Bulk
 - Buy in season
 - Frozen foods and meals
 - Foods easy on wallet
 - Cook once a week
 - Get create with leftovers
 - Eating out
 2. Time to prepare healthy food
 3. I don't know how to prepare healthy food.
 4. I don't like the taste of healthy food

Sports Nutrition

The last general area of nutrition the CHERP should be familiar with is sports nutrition. Many adolescents, children, adults, and older adults participate in recreational sports and exercise programs today. These avid exercisers are often looking for nutritional aids to boost performance. These people must be cautious when purchasing weight loss supplements, vitamin supplements, herbs, pills, and kitchen appliances that will work miracles in sports nutrition.

As a general rule, two recommendations will answer most of the nutrition questions community members will ask CHERPs about sports nutrition: 1) maintain adequate water intake before, during, and after exercise. Sports drinks are not necessary unless the exercise bout lasts more than one consecutive hour. 2) Vitamin and mineral supplements do not improve performance, unless there is a dietary deficiency in the first place. Helpful information on how to evaluate nutrition marketing is given later in this learning module.



Sports Nutrition

- ✓ Stay hydrated
 - Water alone for 60 minutes
- ✓ Supplements don't work!



Which of the following food(s) contains carbohydrates?
(Select all that apply)

- Pasta noodles
- Milk
- Vegetable Oil
- Butter

Module Review

Quiz - 5 questions

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