A Nutrition Module:

BASIC NUTRITION AND HYDRATION

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LEARNING THE BASICS!

What’s so important about nutrition? Isn’t it enough to know that there are different food groups, and that if you eat some foods from each group you’ll end up with a balanced diet? Well, consider these facts from the Department of Health & Human Services:

- Only 25% of adults eat enough fruits and vegetables every day.
- Most Americans eat too much fat every day, and some eat way too much fat. This trend has contributed to an alarming statistic: nearly 65% of Americans are overweight!
- More than 85% of older adults have chronic diseases that might get better if they learned more about basic nutrition.

The foods we eat affect how we grow and how well our brains work. Also, healthy food choices help us fight off disease and keep us strong and youthful, even as senior citizens. The more you know about basic nutrition, the more you can help your clients make healthy food choices. And, by practicing good nutrition in your own lives, you’ll be stronger and have more energy for your work.

Hydration has to do with the amount of fluid we have in our bodies. You don’t have to think about your clients’ hydration status unless they have a fluid restriction or you are ordered to record intake and output, right? Wrong. As you study this inservice, remember these facts:

- Fluids are more important to our bodies than food. We can survive for weeks without eating food, but for only days without drinking water.
- Our bodies are made up of at least 50% water! It only takes a 2% drop in our body’s water to trigger signs of dehydration.
- Every cell in our bodies needs water to survive and to do its job.
Did You Know That...

**NUTRITION** is the science of food, how the body uses it, and how food keeps the body healthy.

**NUTRIENTS** are chemical substances in food that help the body grow and function. There are six *essential* nutrients that our bodies must have to be healthy. These include carbohydrates, fats, protein, vitamins, minerals and water. Nutrients have three different jobs. One job is to build and repair tissues in the body. A second job is to give the body energy. And, the third job is to help the body do its work (such as digesting food or circulating blood).

**A BALANCED DIET** means that the body is getting the right amount of each of the six important nutrients and that the body is using these nutrients effectively.

**CARBOHYDRATES** are the main source of energy for the body. They include starchy and sugary foods. Except for milk, all carbohydrates come from plants.

**PROTEIN** is used for cell and tissue growth. Most of the protein we eat comes from animal sources like meat and eggs, but protein is found in plant sources, too, such as dried beans.

**MINERALS** are inorganic elements that are part of nature—they are not “man made”. *(Inorganic means that minerals are found in nonliving things like rocks and dirt, as well as in living things.)* We need minerals in our bodies in tiny amounts to help us build tissues and to keep our bodies working as they should.

Our bodies need *small* amounts of organic substances called **VITAMINS** in order to grow and stay healthy. *(Organic means vitamins are found only in living things.)* Vitamins are found in small amounts in foods, but can be easily destroyed if food is cooked for a long time at a high temperature.

**FIBER** is the part of a food that is left after digestion has taken place. Fiber helps carry the digested food though the intestinal tract quickly. This exercises the intestinal muscles and helps prevent constipation.

**CHOLESTEROL** is a fat-like substance found only in animal foods like eggs and red meat. It causes a fatty layer to build up in our arteries and can cause heart disease, stroke and other major problems.

The surface of the tongue is covered with thousands of tiny mushroom-shaped bumps called papillae. There are tiny **TASTE BUDS** at the base and on the sides of the papillae. These taste buds can identify four basic tastes: salty, sweet, sour and bitter.

**WATER** is the most common nutrient in our bodies. A newborn baby is at least 77% water. Children are about 60% water. And adults are between 50 and 70% water.

**HOMEOSTASIS** is a fancy name for the balance between water and minerals. Our bodies try to stay balanced. For example, if you eat a bag of salty potato chips, your body senses that you have *too much* sodium. You are *not* in homeostasis—you are out of balance. It tries to get back in balance by holding on to extra water. This might make you “swell up” or feel bloated.
Essential Nutrient #1: Carbohydrates

Carbohydrates are sugars and starches. There are two kinds of carbohydrates: simple and complex. Simple carbohydrates, such as a piece of candy, give only a short burst of energy. Complex carbohydrates, such as a piece of whole wheat toast, take longer to digest and give us energy for a longer time.

Sugars are usually simple carbohydrates. While they taste good, they tend to be “empty” calories. This means they give the body a little energy, but that’s all. Empty calories provide no vitamins, no minerals, and no fiber.

Starches can be simple or complex carbohydrates. For example, a piece of bread made with white flour is a simple carbohydrate, but a piece of bread made with whole wheat flour is a complex carbohydrate.

Essential Nutrient #2: Fat

Fats are a condensed source of energy. A teaspoon of any kind of fat provides at least twice the calories of a teaspoon of sugar. Fats are digested more slowly than carbohydrates, so after a meal, your body will use the energy from the carbohydrates first. The fat calories may not get used up right away, so your body saves them for later.

Fats provide us with this extra supply of energy—stored away until we need it. The first place that fat gets stored is in the liver. But our livers can only hold so much fat. Once the liver is full, fat gets stored throughout the rest of the body, especially under the skin. This body fat is what many people try to lose during a diet.

Foods that contain fat include butter, lard, cream, oil, margarine, mayonnaise, nuts, olives, meats, cheese and eggs. And, healthy foods like fish, chicken and vegetables can become high fat foods if they are cooked with a lot of fat.

Some fats contain cholesterol. A little bit of cholesterol is needed by our bodies, but many people have too much cholesterol in their blood, causing a build up in the arteries. So, you might hear people talk about “good” fats and “bad” fats. The “good” fats, like vegetable oil, are low in cholesterol. The “bad” fats, like lard, are high in cholesterol. Plants and fish are the best sources of good fat. It is essential to consume a small amount of good fat every day to maintain healthy cell function throughout the entire body.
Essential Nutrient #3: Protein

Protein is the second most common nutrient in our bodies. All of our tissues, bones and nerves are made up of mostly protein. Protein also helps us build muscles, blood, skin, hair, nails and internal organs like the heart and the brain. Our bodies can’t store protein for later, so we have to eat some every day.

If children don’t get enough protein, they may grow too slowly. If adults don’t get enough protein, they may be tired, weak, slow thinking and get sick a lot. However, in America, most people get plenty of protein. In fact, many people eat too much protein. This causes stress on the kidneys. It may also lead to heart disease and colon cancer. If your plate is mostly covered by meat, you may be eating too much protein.

One legume that has gotten a lot of attention lately is the soybean, which is low in fat and about 42% protein. In fact, the soybean is the only complete plant protein. This means it provides all the essential “building blocks” needed by the body. In addition, soybeans contain minerals, like iron, and are rich in isoflavones—substances that may help lower cholesterol, protect against some cancers, decrease blood pressure and build bone.

Essential Nutrient #4: Water

Water is the most common nutrient in our bodies. It is also the nutrient that we need the most—without it, we’ll die in about 5 days (sooner in hot weather).

Think about this: blood is 83% water; our kidneys are 82% water; our muscles are 75% water; the brain is 74% water; and our even our bones are 22% water.

Every one of our bodily functions use water. For example, water helps our bodies stay at about 98.6 degrees. If we get too hot, our sweat glands produce sweat (which is 99% water) to get rid of some body heat. Water helps the body keep our eyes, nose and mouth moist and keep our skin soft. Our bodies even use water each time we take a breath!

That’s why we need to drink 8 to 10 glasses of fluid (preferably water) a day. We can also get water from the foods we eat. Fruits and vegetables are more than 90% water. Even dry foods, like bread, are 35% water.

It is possible to drink too much water, leading to something called “water intoxication”. However, this condition is very rare since people with healthy kidneys can process fifteen quarts of fluid every day.

If you are well-hydrated, it means you have a healthy amount of water in your body. If you are dehydrated, it means your body needs more water to keep working properly. Children, elderly people and sick people can easily become dehydrated. In fact, dehydration is a common cause of hospitalization for people over age 65. Signs of dehydration include thirst, dry mouth and skin, headache, fever, fast breathing and heart rate and dizziness.
Essential Nutrient # 5: Vitamins

Vitamins are very important to our health. Our bodies can make some vitamins themselves, but most of our vitamins need to come from the foods we eat or from vitamin pills. There are 20 vitamins that are important to our nutritional health. Here are the most common ones:

Vitamin A
- Builds and repairs the skin. (You may notice skin creams advertising that they contain Vitamin A.)
- Protects our mucous membranes from infection.
- Helps with digestion of food.
- Keeps our eyesight strong.

*Vitamin A is found in:*
- Milk, cheese, butter and eggs.
- All meats.
- Spinach, squash, cantaloupe, broccoli, cabbage and carrots. (Have you ever heard that eating carrots will improve your eyesight? People say this because of the Vitamin A.)

Vitamin B Complex
* (8 different B vitamins)
- Gives the body energy by working with carbohydrates.
- Keeps the nervous system strong and healthy.
- Keeps the intestinal muscles strong.
- Builds strong skin, hair, eyes, mouth and liver.

The B Vitamins are found in:
- Yeast.
- Liver and beef.
- Fish.
- Sunflower seeds.
- Whole grain breads and cereals.

Vitamin C
- Fights off infections, including a cold or the flu.
- Builds ligaments and bones.
- Helps to heal wounds and burns.
- Builds red blood cells.

*Vitamin C is found in:*
- Citrus fruits like oranges and grapefruits.
- Broccoli and sweet peppers.
- Our bodies (we make some Vitamin C ourselves).

Vitamin D
- Helps the nervous system and heart work properly.
- Helps the blood clot.
- Keeps bones and teeth strong. (If children don’t get enough Vitamin D, their bones and teeth will not grow properly. This is why Vitamin D is added to the milk we buy.)

*Vitamin D is found in:*
- Milk and egg yolks.
- Fish.
- Liver.
- And...our bodies absorb it from sunshine.
Essential Nutrient #5: Vitamins (continued)

Vitamin E
- Helps with urination and can decrease edema and high blood pressure.
- Allows all our cells to use oxygen and get the nourishment they need.
- Keeps blood flowing to the heart better.
- May slow the aging process. (Have you ever seen a face cream with Vitamin E that is supposed to keep you from getting wrinkles?)

Vitamin E is found in:
- Whole grains.
- Vegetable oils.
- Enriched flour.
- Leafy greens and other vegetables.

Vitamin K
- Clots the blood. (Its nickname is the “Band-Aid” because Vitamin K is needed for a scab to form on a scrape or cut. This is why people who take blood thinners shouldn’t eat foods high in Vitamin K. Doctors don’t want their blood to clot quickly.)

Vitamin K is found in:
- Leafy green vegetables, especially spinach.
- Milk and egg yolks.
- Eating yogurt helps the body make its own supply of Vitamin K.

Remember that it is best to get vitamins from foods rather than vitamin pills. People who eat a balanced diet usually get most of the vitamins they need from their food. However, sometimes a vitamin supplement is needed. These should be taken according to the advice of a physician, a nurse or a dietician.

More Facts About Vitamins
- Vitamins are divided into two categories, according to the way the body absorbs them.
  - Fat-soluble vitamins—such as Vitamin A, D, E and K—make up one category. These vitamins are absorbed with the help of fats in the diet. They are also stored in body fat.
  - The other category is water-soluble vitamins. These vitamins do not need fat for them to be absorbed, but, as a result, they are not stored very long in the body. Instead, any “excess” is flushed through the body rapidly and eliminated quickly in the urine.
- Except for vitamin D, and a bit of vitamin K, the human body cannot make vitamins. So, if a client’s diet is lacking one or more vitamins, his or her body will feel the effects of these missing essentials.
- An ongoing shortage of vitamins can cause people to lose the ability to fight off disease. Severe shortages can even lead to death.
Essential Nutrient #6: Minerals

Minerals are especially important for bones, teeth, soft tissue, muscle, blood and nerve cells. There are 17 minerals that our bodies must have, including these common ones:

Calcium
- Keeps bones and teeth strong. (Calcium is the most common mineral in the body, with 99% of it found in our bones and teeth. Many people, especially women, benefit from taking calcium pills since it's hard for adults to get enough calcium from foods.)
- Helps muscles—including the heart—work properly.

Calcium is found in:
- Milk and other dairy products (except cottage cheese has very little calcium).
- Canned sardines and salmon.
- Almonds.
- Asparagus, cabbage and mustard greens.
- Molasses.
- Prunes.
- Whole wheat bread.
- You can also buy juices that have added calcium.

Iron
- Carries oxygen in the cells, especially blood cells. (Iron is present in every living cell.)
- Builds strong blood.
- Fights off diseases.
- Gives energy.

Iron is found in:
- Liver.
- Oysters.
- Leafy green vegetables.
- Whole grains.
- Legumes (dried beans and peas).
- Raisins and prunes.
- Molasses.

Potassium
- Helps regulate water balance in the body (along with sodium).
- Helps the nerves and muscles work properly.
- Keeps skin healthy.
- Helps the blood pressure remain stable.
- Because potassium helps with the body's water balance, people who take diuretics (or water pills) may need to take extra potassium pills to keep the right balance.

Potassium is found in:
- All vegetables.
- Orange juice.
- Whole grains.
- Poultry and legumes.
- Raisins and apricots.
- Bananas.

Sodium
- Helps keep the balance of water in the body (along with potassium).
- Is found in every cell in the body.
- Keeps the lymph system healthy (including the tonsils, the spleen and the lymph glands).

Sodium is found in:
- Nearly all foods, and especially table salt.
- Plant foods have less sodium than animal foods.
- There is a lot of sodium in seafood, milk, poultry, soy sauce, baking soda and baking powder.
- Most foods already contain sodium, so if you add table salt, you are getting a “double dose” of sodium.
- Having too much sodium in your diet can make your blood pressure too high and can cause other health problems.
Explore the My Plate Food Guidelines

- Do you remember seeing the old “food pyramid” which showed the foods that make up a healthy diet? In June, 2011, the USDA replaced that standard pyramid with the “My Plate” graphic you see to the left.

- The idea behind the graphic is to show people how to “build” a plate of healthy food at every meal. As you can see, portions of fruits and proteins should take up the same amount of space on the plate. The portions of grains and vegetables should also be the same size. The portion of dairy is smaller than the other food groups.

- The USDA offers additional guidelines on their new website: www.choosemyplate.gov.

TIP: MAKE HALF THE PLATE FRUITS AND VEGETABLES

- Go for a variety of colors when choosing fruits and vegetables—including red, orange, yellow and dark-green. For example, healthy side dishes for five lunches during the week might be tomatoes, sweet potatoes, bananas, broccoli and plums.

- Instead of snacking on candy, cookies or chips, eat fruit, vegetables or unsalted nuts when you need a little something in between meals.

TIP: MAKE AT LEAST HALF YOUR GRAINS WHOLE-GRAIN

- Look for 100% whole-grain cereals, breads, crackers, rice and pasta.

- If you check the ingredients list on the foods you buy/serve, you can see which ones contain whole grains.

TIP: VARY YOUR PROTEIN CHOICES

- A healthy diet should include seafood as the protein choice at least twice a week.

- Keep meat and poultry portions small and lean.

- Add beans to your menu—including chick peas, kidney beans, black-eyed peas and many more! They are a natural source of protein and fiber.

TIP: SWITCH TO SKIM OR 1% MILK

- Skim milk offers the same amount of calcium and nutrients as whole milk—with less fat and calories.

- Want an alternative to dairy? Try calcium-fortified soy products like soy milk.
Understanding Serving Sizes and Eating Right

The new USDA My Plate guidelines give daily food suggestions in terms of ounces or cups rather than number of servings. However, it’s still good to have a general idea of how much food makes up a serving, especially since Americans tend to pile too much food on their plates. To get the right amount of nutrients—without overeating—it’s may help to think about the following:

**GRAINS**
- One serving of bread weighs about one ounce and is the size of a plastic CD case.
- Two ounces of cooked brown rice is the size of half of a tennis ball.
- Remember that if you have a sandwich with two pieces of bread, you are eating two servings from the Grains section.

**VEGETABLES**
- One serving of broccoli is the size of a light bulb.
- One serving of sweet potato is the size of a computer mouse.
- Keep in mind that two cups of leafy greens counts as a “one cup” serving of vegetables.

**FRUITS**
- One serving of fruit is the size of a tennis ball.
- If you have a cup of applesauce, you’re eating two servings of fruit.

**OILS**
- A teaspoon of butter or margarine is the size of a postage stamp.

**MILK**
- A cup of milk or yogurt is about the size of your fist.
- A serving of hard cheese is the size of your thumb.

**MEATS & BEANS**
- Three ounces of cooked meat is about the size of your palm or a deck of cards.
- Two ounces of peanut butter is about the same size as a ping pong ball.
- **If you have a 16 ounce steak, you’re eating two or three days worth of protein!**

**GENERAL TIPS**
- Oils are fats that are liquid at room temperature, like the vegetable oils used in cooking. Oils come from different plants, nuts and from fish. Oils are not a food group, but they do provide essential nutrients.
- To get a balanced diet, be sure to eat the recommended amounts in each section—based on your age, gender and activity level. You can find out what the USDA recommends for you by exploring this website: [www.choosemyplate.gov](http://www.choosemyplate.gov). In general, remember to fill half your plate with fruits and vegetables.
- Try not to eat the same foods every day. By eating different foods, you give your body a variety of the vitamins and minerals it needs.
- Try to stay at a healthy weight for you—not too heavy and not too thin.
- Watch your use of salt. Adding salt at the table is a bad habit that can affect your health.
- If you drink alcohol, stick to 2 drinks or less per day. Alcohol doesn’t give your body any nutrients—just calories.
- Watch out for high fat foods. Check the label on the foods you buy. If a food has more than 3 grams of fat for every 100 calories, it is a high fat food.
- Avoid foods that list “trans fat” on the nutrition label. Eating foods that contain trans fat puts you at high risk for atherosclerosis and heart disease.
Nutritious “Super Foods”!

You may have heard people talk about “super foods”. These are foods that contain vitamins, nutrients and/or minerals that are believed to prevent disease and help us live long, healthy lives. If appropriate, you may want to encourage your clients to consume super foods, which include:

Spinach
- This dark leafy green is loaded with iron and a variety of other nutrients including calcium and potassium—making it one of the healthful vegetables to eat.
- Studies have shown that eating spinach may help protect your eyesight and your cardiovascular health.

Garlic
- While it may cause bad breath, garlic packs a powerful nutritional punch. Studies have shown that garlic may protect the body against heart disease, parasites, cancer and diabetes!
- Keep in mind that if garlic is cooked too long, it loses its nutritional benefits.

Broccoli
- A serving of broccoli contains twice the vitamin C of an orange and almost as much calcium as a glass of whole milk. Broccoli is also a good source of fiber.
- A number of studies have shown that eating broccoli regularly may reduce the risk of breast, colon and stomach cancers.

Salmon
- This delicious fish contains “good” fats that help fight heart disease.
- Studies have shown that salmon may help protect against many health concerns, including obesity and dementia.

Nuts
- Nuts are a good source of protein, but remember that some people find them difficult to digest or are allergic to them.
- While nuts are “fatty”, they contain the good type of fats that help raise the HDL (the healthy cholesterol in the blood).
- Studies have shown that eating a moderate amount of nuts can help ward off heart disease and cancer.

Oats
- Oat bran helps lower cholesterol and blood pressure.
- Oats are a great source of fiber and help keep the blood sugar level stable.
- When you eat oats, you’re getting protein, potassium, magnesium and a number of other nutrients—all for one low price!

Blueberries
- This little blue fruit contains healthy substances called antioxidants which help protect against heart disease and cancer.
- Blueberries also help to ward off urinary tract infections by preventing bacteria from sticking to the wall of the bladder.

Sweet Potatoes
- This vegetable is not related to the potato, but is actually in the same plant family as the morning glory flower.
- Each sweet potato has more than the daily requirement of vitamin A and half the daily dose of vitamin C.
More On the Importance of Water

- Water is essential to every cell in the body. Just like a car can’t run without gas, the body can’t run without water. For example, water:
  - Serves as a lubricant throughout the body.
  - Provides the mouth with saliva.
  - Forms the fluids that cushion the joints.
  - Regulates body temperature.
  - Prevents constipation.
  - Maintains the metabolism.

- On top of all the “regular” jobs performed by water, it also helps prevent disease, including bladder cancer.

- Did you know that 75% of Americans have mild, chronic dehydration? All it takes is a 2% drop in the body’s water supply to trigger mild dehydration and symptoms like fuzzy memory, trouble with basic math, difficulty reading small print and daytime fatigue.

- Water is cheap. On average, someone can drink 4000 glasses of city tap water for the price of a six-pack of soda.

- Speaking of soda, it is not a good replacement for water—especially if it contains caffeine. Consuming caffeine can cause dehydration because caffeine is a diuretic.

- Remember that your clients will lose more water from their bodies during warm weather. Be sure to encourage them to drink plenty of fluids during the heat of the day.

- Some prescription medications can cause dehydration as a side effect. This is especially true of diuretics (like Lasix, for example), antihistamines and steroids. If your clients take these medications, be sure to watch their hydration status.

- What’s a quick way to know if your clients are well-hydrated? Check their urine. If it is clear or pale yellow, they are probably getting enough fluids. Dark yellow urine may be a sign that the body is concentrating the urine in order to conserve its water supply. Be sure to report incidents of concentrated urine to your supervisor.

If you have internet access and want more information about nutrition and hydration, check out these web sites:

www.choosemyplate.gov
This USDA site has all the information you could ever want about the newest recommendations for healthy eating and exercise guidelines. It is very “user friendly”.

http://myfoodapedia.gov
This fun site lets you enter any food and find out its nutritional value, including the calories and which portion of your “plate” the food fits in. Try it and see!

http://www.hsph.harvard.edu/nutritionsource
The Harvard School of Public Health nutrition website offers lots of information on healthy eating. You can subscribe to email updates to receive new information about nutrition.
Meeting the Nutrition/Hydration Needs of Your Clients

- Remember that fats and proteins take longer to digest than carbohydrates. If your client says he’s hungry an hour after breakfast, ask him what he ate. If he ate a piece of toast, he’ll be hungrier sooner than if he ate scrambled eggs.

- If your clients are eating poorly, try to find out why. Is the food too hot or too cold? Are their dentures not fitting properly? Are they afraid of choking on the food? Do they prefer a big meal at noon instead of in the evening? Remember that a poor appetite is only one reason someone may not be eating.

- Be sure to report any change in your clients’ eating habits to your supervisor, whether or not you can figure out why it’s happening.

- Your clients may eat a better meal if they are prepared first by washing their hands and face and helping them with appropriate mouth/denture care.

- Remember that fats can be visible in foods like butter, cream, oil and bacon. Fat can also be invisible in foods such as whole milk, egg yolks, pastry, nuts and olives. If your client is on a low fat diet, be sure you keep these “invisible” fats in mind.

- Without water, nutrients can’t work in the body. So, if your clients aren’t drinking enough water, their bodies won’t get the full benefit of healthy food choices.

- Sick and/or elderly people often lose their sense of thirst. This may keep them from drinking enough fluids throughout the day. Be sure to encourage your clients to drink plenty of fluids (unless the physician has ordered a fluid restriction).

- Remember that vitamin and mineral pills should be taken as recommended by a physician or a nutritionist. However, if a client takes too many vitamin pills, it may make her sick. (Although “extra” vitamins usually get passed out in the urine. Since vitamins are expensive, this is truly money “down the drain”!)

- Remember that people who stick to the diets prescribed by their physicians—such as a low fat diet, a low sodium diet or a diabetic diet—may get sick less often. They may also stay out of the hospital and be able to take fewer medications. If your clients have special diets ordered by the physician, be sure to help them make the right food choices.

- Recent studies have shown that eating just 8% fewer calories can help people live longer because it reduces stress on the liver. For someone on a 2000 calorie diet, that means eating 160 calories less each day.

- Keep in mind that many Americans eat too many calories—and too much fat, sugar, salt and alcohol. Following the government’s My Plate guidelines will help improve nearly anyone’s nutritional status.

For additional helpful information, ask your supervisor about In the Know’s inservices:

- Understanding Commonly Prescribed Diets
- Feeding Your Clients
- Food Preparation & Safety
- Personal Wellness