ESRD Network # 12 Patient Newsletter

Providing kidney patients and their families information on diet, health, and kidney disease.

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Nephron News & You

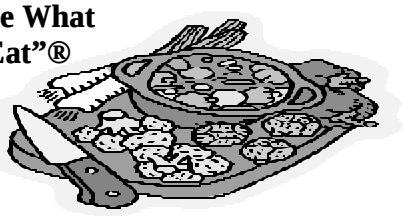
Food for Thought

How important is the food you eat in relationship to how you feel? Research is showing what patients eat or do not eat has an effect on their length of life. Nutrition is an important clue in the health of the patient. This article will provide some information on the nutritional needs of dialysis patients and related lab values. Secondly, it will also offer suggestions for you to improve your own nutritional status.

"Where's the Beef?"®

"Got Milk?"®

"You are What You Eat"®



A ~ is for albumin.

Albumin is the medical name for blood proteins. Your albumin level provides information to your healthcare team on how well you are eating and can indicate how you may be feeling. Most people on dialysis are encouraged to eat as much protein as they can. The better nourished you are, the healthier you will be. Eating enough protein will also increase your ability to fight infection and assist your healing after surgery or an injury.[1]

Protein helps build muscle and repair tissue. Some sources of protein produce less waste – (urea) than others. These are called high-quality proteins. High-quality proteins come from meat, fish, poultry, and eggs (especially egg whites). Getting most of your protein from these sources can reduce the amount of urea in your blood.[1] (Remember from the last issue, ***Urea Reduction Ratio*** is the *adequacy* of your dialysis treatments. Patients with low albumin levels may not receive enough dialysis and may need a change in treatment time, dialyzer, flow rates, or possibly a new access.)

C ~ is for Calcium

P ~ is for Phosphorus

Calcium and phosphorus are difficult to understand. You may want to consider coming back to this page several times to fully understand the information.

Calcium and phosphorus can be thought of like a married couple holding hands. The hands stay linked and when one goes astray, the other tries to make up the difference. Both calcium and phosphorus play important roles in bone formation.

Phosphorus and calcium hold hands in your bloodstream. As blood passes through working kidneys, phosphorus is removed and the calcium balance in your blood is controlled. Patients that have kidney disease are not able to get rid of the extra phosphorus in their blood, so the level rises. The higher the phosphorus level rises, the more calcium tries to control it. This could be the reason your doctor may have asked you to take Tums®, Renagel®, or Phos-lo®. These three drugs are called "BINDERS" because the "bind" phosphorus to help control the levels in your blood.

What Happens if I Don't Take My Binders?

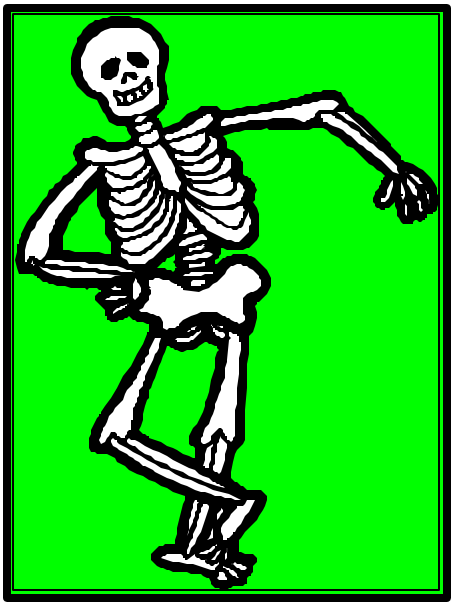
If your doctor has asked you to take "binders" with a meal, it is usually because the phosphorus (from the food you ate) is attracted to the medicine once in your stomach. The two hold hands and when you have a bowel movement the extra phosphorus is removed. When patients forget to take "binders", a chain reaction occurs in the body similar to a car speeding down a hill with no brakes.

Most importantly, the amount of calcium in your blood likes to be maintained at certain levels – (lab value 8.5 – 10.5 typically). If the level of calcium in your blood is too low, (due to not taking "binders", or eating food high in phosphorus) bones begin to breakdown – (called demineralization). Over time, the breaking down of bone can cause the bones to look honeycombed and fragile when compared to solid bones. When the bones break down, calcium is released into the blood. Over time, this leads to "osteoporosis" (ahs-tee-o-por-o-sis), but because the original cause came from kidney disease, it is called "renal osteoporosis", meaning bone disease caused by kidney failure. If this cycle repeats itself over and over, another reaction can occur in the body.

Continued Next Page

Speeding Out of Control

The teetering of high phosphorus levels and low calcium levels causes the parathyroid gland to get involved. This gland dictates calcium's release and absorption to and from the bone. It accomplishes this by releasing a hormone, (PTH – standing for parathyroid hormone). When this hormone level is high, it means the gland is busy working on the phosphorus-calcium couple. If the gland continues to be very busy, over a period of time, the physician may recommend the surgical removal of this gland called a parathyroidectomy. This is not ideal; removing the gland can cause further difficulties in the phosphorus/calcium couple. Without this gland, calcium is no longer instructed to release or absorb.



Building Better Bones

So then, how do we apply the brakes to phosphorus? Unfortunately, there is phosphorus in almost everything we eat. The best way of controlling calcium and phosphorus is by following your doctor and dietitians advice on diet and medications. Tums® and Phos-lo®are forms of calcium, whereas Renagel® prevents the absorption of phosphorus without calcium. Several manufacturers offer patient assistance programs to assist patients in obtaining these medications. Please feel free to contact Network # 12 or speak with your dietitian for assistance.

Lastly, if your physician has asked you to take one of these drugs between meals, it could be to increase the calcium level in your blood. This too is important because calcium is the second electrolyte involved in heart function.

Helpful Hints

One suggestion to decrease the yo-yo cycle of calcium and phosphorus is avoiding foods high in phosphorus. Below is a list of high phosphorus foods to consider avoiding.

Yogurt	**Milk**	**Sardines**	**Spinach**	**Cola drinks**
Corn	**Nuts**	**Bran**	**Biscuits**	**Cheese**
Ice Cream	**Oatmeal**	**Asparagus**	**Dried Beans**	**Sweet Potato**

Albumin Continued

Studies have been conducted on albumin for several years. The results of some of the studies are listed below.

Each time you dialyze, you lose some protein. For this reason, your protein needs are higher than someone not on dialysis. If your diet is lacking in protein, you may begin to break down your muscles for protein. This can lead to weakness, tiredness and you may be more prone to infections.[2]

Middle-age (50 years +) and older dialysis patients may be at greater risk for protein malnutrition than younger dialysis patients.[3]

Peritoneal dialysis patients lose more protein per treatment than hemodialysis patients do. This is due to the shift of fluid and toxins through the peritoneal membrane.

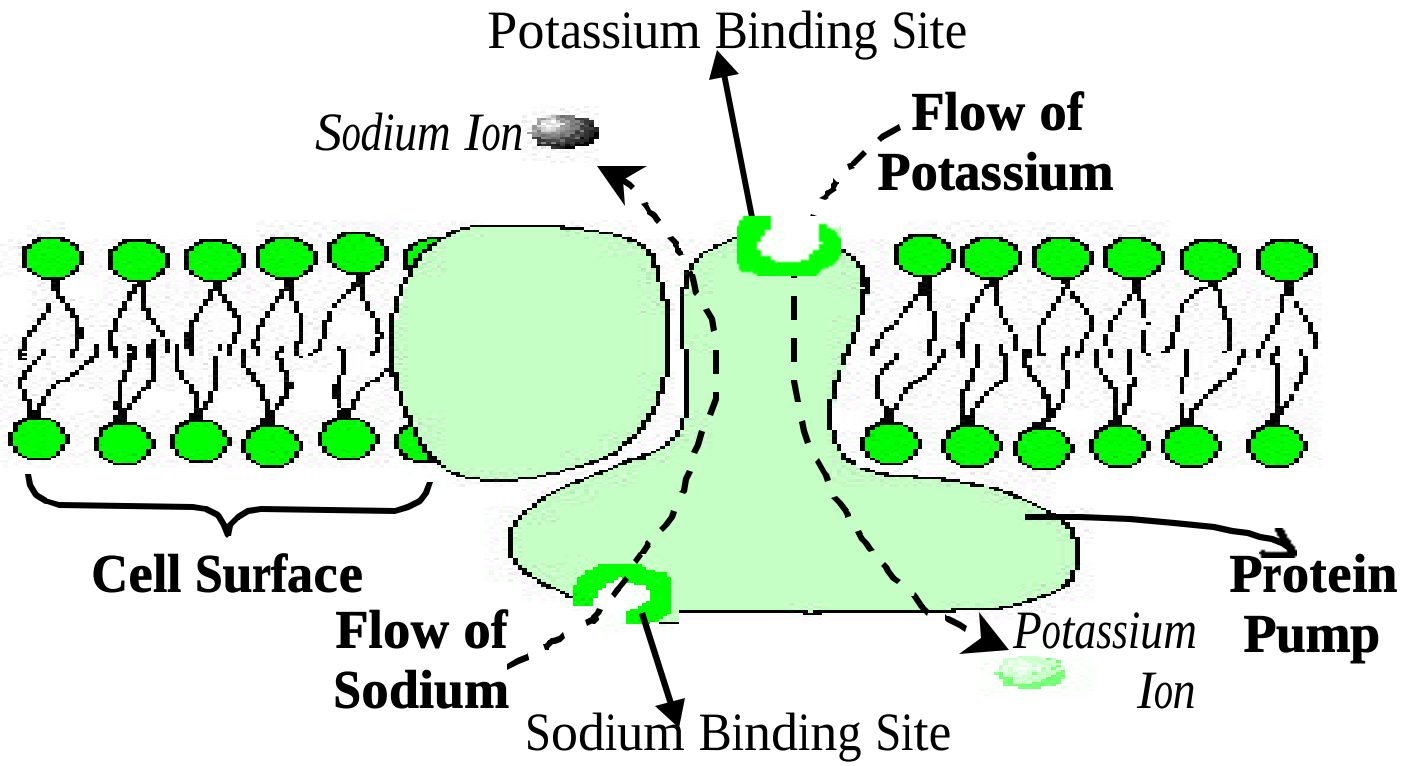
How *MUCH* Protein is Enough?

The following information is a guideline only. Before following this guideline, please check with your dietitian as your needs may differ.

Type of Dialysis	Minimum Protein Requirements	Examples	Protein Content
Hemodialysis	75-95 grams	Breakfast ~ 2 eggs Lunch ~ 4 oz. turkey sandwich Snack ~ ½ cup carrot sticks Dinner ~ tuna casserole - 1 cup pasta, ½ cup tuna and ½ cup peas Snack ~ 2 Tblsps peanut butter on 5 crackers	14 grams 34 grams 1 gram 21 grams 7 grams 3 grams 80 grams
Peritoneal	82-102 grams	Breakfast ~ 2 egg sandwich Lunch ~ 4 oz. turkey pita rollup Snack ~ ½ cup walnut pieces Dinner ~ 4 oz. chicken with ½ cup rice Snack ~ 1 oz. unsalted popcorn	20 grams 34 grams 9 grams 31 grams 3 grams 97 grams

K ~ is for Potassium

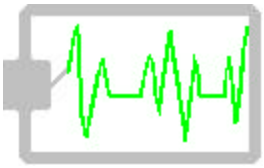
Maintaining the delicate balance of potassium is another task of the kidneys. We will now look at the purpose of potassium in the body and what effects a high potassium level can cause if left untreated.



Potassium is a positively charged ion and the leader in heart function. (The main electrolyte) All ions have electrical charges, some positive, and some negative. Picture a battery, it has a + and a – end. Potassium and Sodium are on the positive end, while other ions are on the negative end. The picture above shows the very basic function caused by the electrical charge made from sodium and potassium flipping in and out of the cell. A shifting of ions controls every heartbeat. When potassium flips out, sodium trips in. When sodium flips out, potassium trips in. The flipping of these ions causes your heart to beat and continue beating. All ions have a specific level they prefer in the bloodstream in order to flip in and out of the cell correctly. For the most part, potassium likes to live between 3.5 and 5.5meq/dl. A potassium level higher than 5.5 can lead to irregular heart beats, weakness, and perhaps a heart attack.

The Beat Goes On

A high potassium level occurs when the level of potassium in the bloodstream is higher than normal. It can be related to the use of salt-substitutes instead of salt. These substitutes are pure potassium and could cause the heart to beat irregularly.



It Could Be a High Potassium Level If…

Dialysis patients are often instructed to limit their intake of potassium. The ultimate result of high potassium levels – (hyperkalemia) can be heart attacks or death. Below is a list of common symptoms of a high blood potassium level and what foods to consider avoiding or eating in moderation. ***It is extremely important to speak with your dietitian regarding potassium intake and restriction***

- Abnormal burning or prickling sensations in the hands, arms, legs, or feet, but may occur in any part of the body – (parasthesia)
- weakness
- Tingling in extremities
- Irregular heartbeats
- Slow or weak pulse
- Lack of a pulse
- Difficulty breathing
- Loss of consciousness

These are
EMERGENCY SYMPTOMS
if they occur, go directly to the
EMERGENCY ROOM!

Vegetable / Potato Dialysis

By following the simple technique below, you may decrease the amount of potassium in your vegetables up to ½ the normal concentration! Soaking the vegetables in water for at least eight hours before you plan to use them does vegetable "dialysis". The recommended amount of water to vegetables is five to one. Cut the vegetables in 1/8 inch slices or small cubes – ½ inch. When vegetables are sliced or cubed, the surface area of the vegetable exposed to water is increased assisting in the removal of some of the potassium. When ready to use the vegetables, rinse the vegetables and cook in clean water. Dialyzed vegetables may also be fried, broiled, or steamed. A little extra effort reaps the benefit of a broader selection of food options.

How You Can Participate

The next page contains a list of high, moderate and low potassium food choices. Consider avoiding the high potassium foods by substituting a low alternative. All selections are based on ½ cup serving size, unless a different measurement is listed.

***HIGH* in Potassium**	**Possible Substitutions**
Apricots	Canned Peaches
Avocado	Cabbage
Banana	Cranberries
Cantaloupe	Fresh Pineapple
Honeydew	Fruit Cocktail
Kiwi	Grapes
Lima Beans	Green Beans
Milk	Non-Dairy Creamer (max. 4 oz/day)
Orange & Orange Juice	Mandarin Oranges
Potatoes	Dialyzed Potatoes (see prev. page)
Prunes	Plum
Spinach	Cucumber
Tomatoes	Red Cabbage
Vegetable Juice	Bell Peppers
***MODERATE* in Potassium**	**Possible Substitutions**
Apple Juice	Cranberry Juice
Asparagus	Wax Beans
Beets	Bamboo Shoots
Blackberries	Blueberries
Broccoli	Boiled Cauliflower
Carrots	10 Radishes
Cherries	Apple
Corn	Water Chestnuts
Green Peas	Green Beans
Leaf-lettuce	Iceberg Lettuce
Mushrooms – fresh	Mushrooms- Canned
Onions	Leeks
Peach	Canned Peaches
Pears	Canned Pears
Pineapple	Fresh Pineapple
Raisins	Crasins®
Raspberries	Frozen Boysenberries
Strawberries	Starfruit
Summer Squash	Jicama
Tangerines	2 Passionfruits

Check with your dietitian or doctor before using any of the substitutions in the table.

Na ~ is for Sodium

Sodium is the third electrolyte involved in heart functioning and fluid status. Do you remember eating potato chips or something salty and the next morning your shoes/rings are tight? There is a saying in medicine that is "where ever sodium goes, water follows." Electrolytes, as we have learned so far, have a small comfort zone. Sodium is no different, it prefers to live in the blood between 135 and 145 – depending on the lab. If people without kidney disease eat foods that are high in sodium, then they retain water. But, if they drink water with high sodium foods, then the water is not retained and rings do not fit tight in the morning. ESRD patients are able to retain water, but getting rid of it is the real difficulty. When a dialysis patients' sodium level in the blood is high, it makes if difficult for the dialysis machine to remove the fluid. (Remember, wherever sodium goes, water follows.) Well with a high sodium level, water naturally wants to stay with the sodium in the blood. Whereas, if the sodium level in the blood is low, patients give fluid up on dialysis easily. High sodium levels in the blood also can cause patients to be thirsty. This is the body's way of trying to dilute the concentration of sodium in the blood.

Another way to think of it is like making gravy. The water in our body is like the broth, milk, water, or whatever liquid you use to make gravy with, sodium is the thickening, be it flour, cornstarch, or arrowroot. When making gravy, you know just how thick or runny your family likes it, right? Let us pretend that you accidentally added too much flour, making the gravy like sludge. The only way to thin it is with a liquid. When we eat salty foods, it is like the thick gravy, the only way our body has to get the sodium level back under control is to dilute it by retaining water. To prevent this, consider watching the sodium content in the foods you eat.

Low blood sodium levels can indicate several different things. One of them as listed above and one of the others depends on the how much fluid you gain in between your treatments. It is safe to say that if a patient gains a lot of weight between treatments, the sodium level could be lower than if he only gained a small amount of weight.

The next page will provide some information on foods to consider avoiding if you are experiencing difficulty with managing your fluids, retaining fluid, or a high sodium level in your blood – (hypernatremia).

Please see your Dietitian or Physician before changing your dietary habits.

Fresh is Best

Limiting salt intake is a difficult task for anyone, but more specifically the dialysis patient. We eat salt because it makes food taste better. It enhances the flavor of almost everything we eat. Yet eating too much salt is dangerous and could be deadly.

The next several pages will provide some guidance on foods to consider avoiding, and seasonings to try in an attempt to regain some of the flavor in the foods you enjoy.

Try to Avoid	Try Substituting
Processed Meats, e.g. bologna, hot dogs, prepackaged meats, canned meat, ham	Fresh fish, tuna packed in spring water, ground turkey, ground beef, chicken
Canned vegetables	Fresh or frozen
Snack foods, e.g. chips, nuts, popcorn, crackers, pretzels	salt-free crackers, air-popped popcorn, vegetable sticks
Canned soups	Home-made broth

The General Rule:

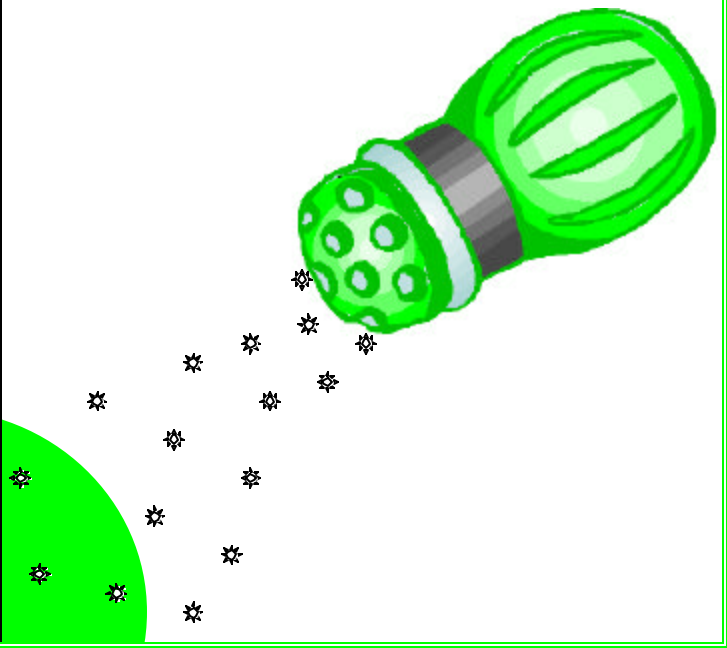
If it comes in a can, try to avoid it.

Salt-Free Herb Blend

You can use this blend on food you would normally use salt. Fill the salt shaker and shake until your heart is content. You can find inexpensive, bulk dried herbs in the produce section of the grocery store.

5 teaspoons onion powder
2-1/2 teaspoons garlic powder
2-1/2 teaspoons sweet paprika
2-1/2 teaspoons dry mustard
1-1/2 teaspoons thyme
1 teaspoon black pepper
1/4 teaspoon celery seed
1 teaspoon cayenne pepper

Yield – 1/3 cup



Gain the **Flavor**, Lose the Salt

Below are several different combinations to boost the flavor of what you are eating without boosting the sodium content.

Combine equal amounts of the ingredients to create flavorful blends. Any of the mixtures can be rubbed onto meat before grilling, baking, or roasting. They may also be used in any sauces you make to add extra flavor. You may want to experiment by mixing your own seasoning rubs and sharing them with your dietitian.

Spice Rubs, Seasonings and Mixes		
Seasoning	**Ingredients**	**Flavor / Comments**
Apple Pie	Cinnamon, ginger, nutmeg, cloves and allspice, pinch of black pepper	Sweet and earthy, the black pepper boosts the flavor of all the spices.
Bar-B-Q	Chili powder, cumin, garlic powder, onion powder, paprika, pinch of sugar or splenda	Spicy – this is not a seasoning for the faint of heart!
Crab/Shrimp	Whole peppercorns, bay leaves, crushed red pepper or red pepper flakes, mustard seed, gingerroot	Just add to boiling water for a real taste of the Bayou!
East Indian	Cardamom, cinnamon, allspice, tumeric, black pepper, white pepper, cloves, coriander, nutmeg, paprika, curry, cayenne pepper	Hot and extra spicey for those that like the extra kick!
Every Day	Rosemary, thyme, black pepper, oregano, basil, marjoram	This all around spice has a wonderful aroma!
Five-Spice	Star anise –(pulverized seeds work well too), cinnamon, ginger, cloves, allspice	Treat yourself to Asian flair without all the MSG!
Indian	Curry powder, tumeric, paprika, cloves	Mild and sweet.
Italian	Oregano, basil, garlic powder, red pepper flakes, onion powder	Pungent and sweet. Great with pasta, or over meats
Poultry	Sage, thyme, marjoram, savory, onion powder, garlic powder, pinch of rosemary, pinch black pepper	Can also be used in stuffing. Savory and musty.
Taco	Cumin, garlic powder, onion powder, chili pepper, black pepper, paprika	Less chili pepper and black pepper yields a milder seasoning

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MALNUTRITION
MEDICARE
MUSCLE
NUTRITION
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PARATHYROID
PHOSPHORUS
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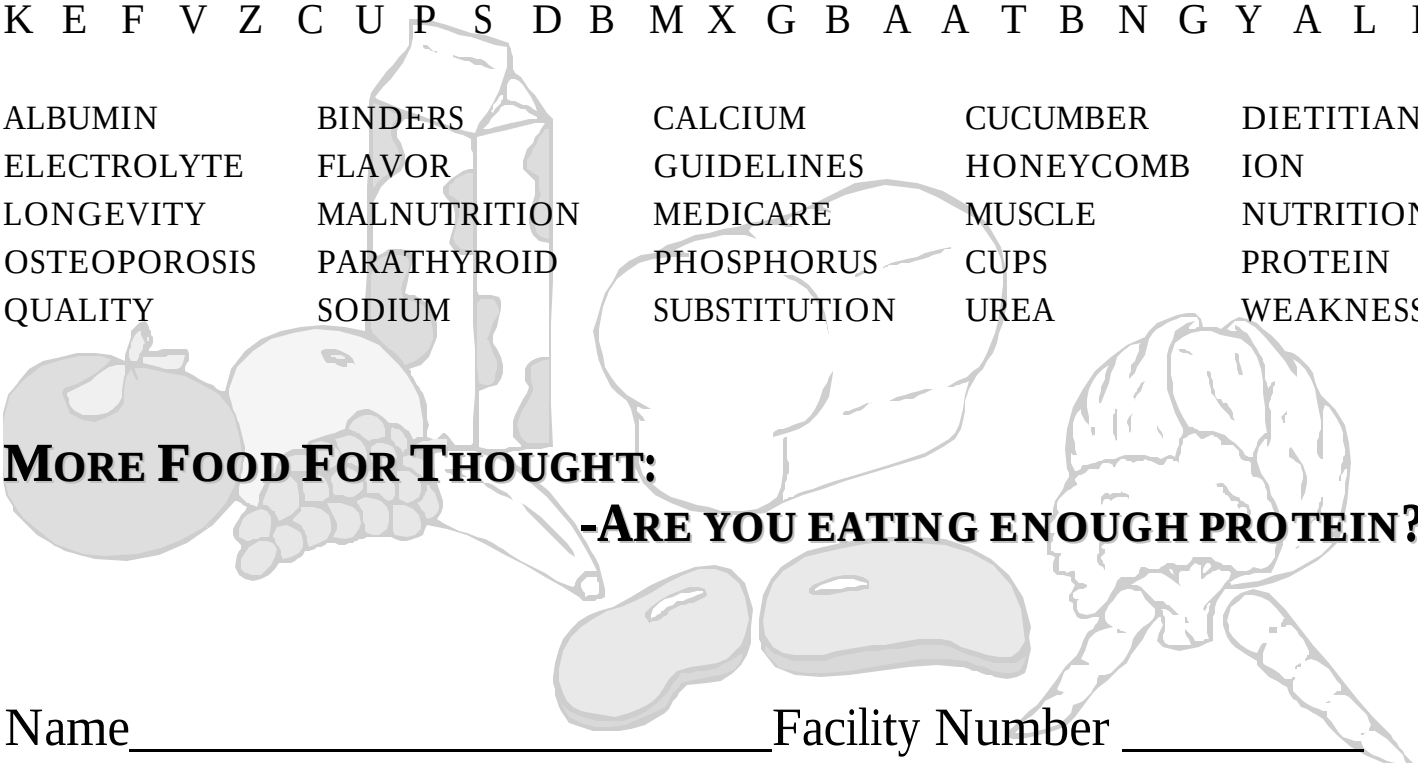

MORE FOOD FOR THOUGHT:

-ARE YOU EATING ENOUGH PROTEIN?

Name_____Facility Number _____

References:

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5. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K., and Watson, J.D., *Molecular Biology of the Cell*, Garland Publishing, Inc., New York, 1983.

How are CMS and Network 12 Involved?

Centers for Medicare & Medicaid Services, (CMS) evaluate key components to the overall care of dialysis and transplant patients. One recommendation from CMS is to encourage facility's to educate patients on the need for adequate nutrition. CMS uses albumin as the indicator for assessing whether or not patients are adequately nourished. Through our contract with CMS, we are working with the facilities to educate, encourage and assist patients regarding nutrition. Research has currently found that adequate nutrition leads to a healthier patient, decreased hospitalizations and a general longer life. ESRD Network # 12 is encouraging the facilities to monitored the albumin values for the patients in their units. We are also encouraging facilities in assisting patients with poor albumin levels. Need more information? Don't hesitate to contact the Network at 1-800-444-9965 for further information

You can NOW visit Network #12 on the web!

WWW.NETWORK12.ORG

Patient Resources

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