
Nutrition Fact Sheet



End Stage Renal Disease

End Stage Renal Disease (ESRD) is a complete or near complete failure of the kidneys to remove waste products, drugs, and other toxins from the blood, regulate electrolytes, maintain normal pH balance of blood, produce vitamin D and hormone erythropoietin needed for red blood cell production, and concentrate urine. At this point the kidney has lost >90% of its function and without dialysis or kidney transplantation death will occur.

Although there is no one specific cause of ESRD, it is most commonly caused by diabetes (nephropathy), Chronic Kidney Disease, uncontrolled high blood pressure, lupus, excessive use of over-the-counter medications or illicit drug use.

Symptoms of End Stage Renal Disease

- Unintentional weight loss
- Greatly decreased or no urine output
- Decreased alertness
- Muscle twitching or cramps
- Nail abnormalities
- Skin may appear yellow or brown
- May have blood in vomit or stools
- Easy bruising or bleeding
- Frequent hiccup

Nutrition & ESRD

Since the kidney is unable to remove waste products and toxins adequately, nutrition therapy is a very important aspect of managing ESRD. Limiting your intake of restricted foods and eating enough of the right kind of foods can help control waste build up in the blood. As mentioned above, one treatment method for End Stage Renal Disease is dialysis. Dialysis is a way to clean the blood to rid your body of wastes, extra salt and water, and control your blood pressure. The dialysis diet controls the intake of protein, fluid, potassium, sodium, and phosphorus. The controlled amounts of each of the nutrients are based on the person's blood levels before and immediately following treatment. There are two different types of dialysis, hemodialysis (HD) and peritoneal dialysis (PD). Dietary needs for both vary slightly and it is important to know the difference.

Protein:

Protein is needed to keep tissues healthy, it helps them grow and repairs damaged tissues. Protein is also important for preventing infection. Patients on dialysis need a high protein intake to maintain adequate nutrition.

On hemodialysis: 1.0 – 1.2 grams per kilogram

A man 5'6" tall and 145 pounds (66 kilos) on hemodialysis:

1.0 grams x 66 kilos = 66 grams of protein per day

For more information:

God's Love We Deliver, Nutrition Department

212-294-8103 or 800-747-2023

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1.2 grams x 66 kilos = 79 grams of protein per day
This man would need to consume 66-79 grams of protein per day.

On Peritoneal dialysis: 1.2 – 1.5 grams per kilogram
A man 5'6" tall and 145 pounds (66 kilos) on Peritoneal dialysis:
1.2 grams x 66 kilos = 79 grams of protein per day
1.5 grams x 66 kilos = 99 grams of protein per day
This man would need to consume 79-99 grams of protein per day.

Here are some samples of protein in foods:

1 egg = 7 grams protein	1 slice of bread = 2 grams protein
1 chicken thigh = 14 grams protein	1 hotdog = 7grams protein
1 cup cooked rice = 4 grams protein	3 ounces of salmon = 21 grams of protein
½ cup corn = 2 grams protein	1 slice of American cheese = 7grams protein
8 ounces of milk = 8 grams protein	3 ounces hamburger = 21 grams of protein

Fluids:

Healthy kidneys maintain fluid balance and prevent swelling of the feet, ankles, hands, or face. As kidney function decreases it is harder to get rid of the extra fluid that can cause high blood pressure, make it hard to breath, and cause strain on the heart. Most dialysis patients urinate very little or not at all, and therefore fluid restriction between treatments is very important. Without urination, fluid will accumulate in the body and cause excess fluid in the heart, lungs, and ankles. Fluid intake needs to be limited with both hemodialysis and peritoneal dialysis, although peritoneal is not as restricted. Fluid includes anything that is liquid at room temperature - water, juice, coffee, tea, ice, ice cream, soups, and Jell-O. The fluid allowance for HD is determined by the amount of urine produced in a 24-hour period. Normally HD patients are limited to 700-1000 mililiters of fluid per day plus urine output.

For example, if you urinate 600 cc, your total daily fluid allowance would be 1300 cc (600 + 700).

Tips:

- Use smaller glasses for drinking.
- Drink small portions during the day, rather than large ones all at once.
- Make ice cubes from your favorite drinks to suck on. This way you will take in less fluid.
- Colder drinks quench thirst better than warm.
- Suck on sugar-free hard candy or chew sugar-free gum.
- Avoid salty foods.

Potassium:

Potassium helps regulate fluids and mineral balance in and out of body cells, maintains your normal blood pressure, transmits nerve impulses, and helps your muscles contract. Potassium is found in a wide range of foods, especially fruits, vegetables, and fresh meat, fish and poultry. People with ESRD are unable to get rid of excess potassium that could lead to heart failure or death.

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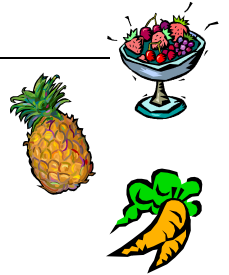
Limit intake of these High Potassium Foods:

Bananas	Prunes / Prune Juice	Potatoes
Cantaloupe	Nuts / Peanut Butter	Spinach
Tomatoes	Chocolate	Kiwi
Okra	Dried peas	Avocado
Oranges / Orange Juice	Beans	Whole milk

***Of note, you can remove some of the potassium from vegetables by peeling them and soaking them in a large amount of water for several hours. Drain and rinse before cooking.*

Enjoy these Low Potassium Foods:

Apples	Canned Pears	Sweet Peppers
Fruit Cocktail	Carrots	Cucumbers
Pineapples	Eggplant	
Berries	Cabbage	



Sodium:

Sodium helps regulate the movement of body fluids in and out of your body cells, transmit nerve impulses, regulate your blood pressure, and helps your muscles relax including your heart. Sodium is mainly found in processed foods and table salt. The amount of sodium allowed in HD and PD is the same. It is important to avoid or limit the intake of table salt, cured meats, canned meats, canned vegetables, and frozen meals. Try to season foods with Mrs. Dash or dried and fresh spices.

Phosphorus:

Phosphorus helps generate energy in every cell of your body, acts as the main regulator of energy metabolism in your body's organs, serves as part of the DNA and RNA, which are your body's master plan for cell growth and repair, and is a major component of bones and teeth. High levels of phosphorus in the blood can cause calcification of eyes, heart, skin, and joints. Phosphorus is limited for people on both HD and PD. In addition to controlling the phosphorus in your diet, you may need to take phosphorus binders with meals that act as a sponge, soaking up phosphorus in the stomach, preventing it from reaching the bloodstream.

Limit intake of these High Phosphorus Foods

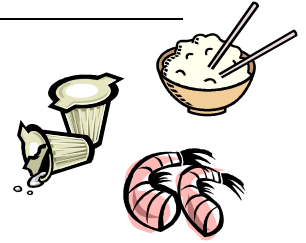
Milk (any kind)	Nuts	Sardines
Beans (red, black, or white)	Chocolate	Desserts made from Milk (ice cream, pudding)
Black eyed peas	Yogurt	
Lima beans	Cheese	
	Liver	

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Enjoy these Low Phosphorus Foods

Milk Substitutes (Coffeemate, Cremora) or non-dairy creamers	Barley Couscous Extra lean ground beef	String beans Gelatin Rice cakes Sorbet
Non-cola drinks	Egg whites	
White rice	Shrimp	



Iron:

Since red blood cell production is hindered with kidney disease it is common to develop anemia. Iron rich foods should be encouraged to improve anemia, a common symptom of ESRD. Also, an iron supplement should be taken if it is not being provided intravenously during dialysis treatment. Iron is available in most foods but to increase its absorption cook with a cast iron skillet, consume vitamin C rich foods (i.e. pineapples, broccoli, green pepper, cranberries) with meal and avoid coffee and tea at meals.

Vitamins/Minerals:

Water-soluble vitamins are lost during treatments therefore all dialysis patients should receive supplementation. Vitamin D usually is supplemented intravenously during treatment depending on calcium, phosphorus, and parathyroid blood levels.

Calcium is monitored and supplementation is based on blood levels. A supplement can be provided or it can be provided intravenously during treatment.

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