

CHRONIC KIDNEY DISEASE

KEEPING THE KIDNEYS HEALTHY

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FOR FURTHER INFORMATION--ASK YOUR DOCTOR ABOUT KIDNEY REPLACEMENT THERAPY CLASS HELD EACH MONTH

Early Treatment is Best

EARLY TREATMENT IS BEST

Most of us think of dialysis and transplant when thinking about kidney disease. These treatments are used at the last stage of kidney disease. What happens before this stage?

Kidney failure is often preceded by a condition known as chronic kidney disease (CKD). With CKD your kidneys' ability to filter waste products and excess fluid from your blood is progressively less effective over the years. Also, like many other chronic diseases, many of the symptoms are often overlooked, because the ability to produce urine, is typically not affected until much later in the disease process. It is estimated that between 10 and 20 million Americans have CKD. The

good news is the decline of kidney disease can be slowed or stopped with treatment, if detected early enough.

How can you know if you or your family is at risk for kidney disease?

- Ask your primary physician about testing for kidney disease if you're over 60 or have risk factors for kidney disease.

If you have kidney disease:

- Your blood pressure needs to be less than 130/80
- Your blood sugar needs to be tightly controlled

You may not be able to undo the kidney damage already done, but you can decrease your chances of needing dialysis or transplant.



YOUR KIDNEY

DID YOU KNOW?

- You can lose 75% of your total kidney function before you may even realize anything is wrong with your kidneys.
- Kidney damage does not mean that your urine production will become less. In fact, during early stages of kidney disease urine production may increase.
- With End Stage Kidney Failure, when dialysis is required, some people produce no urine, while others may continue producing normal amounts.
- You can be born with only one kidney or donate one for transplant and still live a normal life.

DO YOU KNOW YOUR KIDNEY FUNCTION?

GFR or Glomerular Filtration Rate is a mathematical calculation based on creatinine, age, sex and race

What do the Kidneys Really Do?

Your kidneys are like large filters. Each time your heart beats, 20% of the blood goes into your kidneys. Waste products are removed and the concentrations of water, salts and other substances in your body are balanced before the blood goes back to the heart. So, every day, 50 gallons of blood is pumped through your

kidneys and about half of a gallon of waste products and excess water are drained by your bladder as urine. Each of your kidneys has about 1 million of filtering units called nephrons. These filters remove:

- Creatinine: a waste product of muscle use

OTHER RESPONSIBILITIES OF THE KIDNEYS

- Help to make red blood cells
- Help to regulate blood pressure
- Help absorption of calcium into your bones

- Urea: a waste product of protein breakdown
- Sodium or water, whichever needs to be removed to maintain fluid balance in the body
- Minerals such as phosphorus, calcium & potassium
- Excess acids

WHY THINGS GO WRONG

Chronic kidney disease is the gradual destruction of the small nephrons, usually over a number of years. As we get older, some loss of kidney function is normal, but other causes of kidney damage include:

- Type 1 and Type 2 Diabetes: Causes damage to the small blood vessels inside the kidneys. It is the leading cause of kidney failure in America.
- High Blood Pressure: 2nd

most common cause of kidney disease

- Inflammation of glomeruli: (glomerulonephritis): causes include: autoimmune diseases such as systemic lupus erythematosus, vasculitis (inflammation of blood vessels), or infections such as hepatitis
- Inherited diseases: such as sickle cell disease, polycystic kidney disease (PKD-where fluid filled cysts form

throughout the kidneys)

- Obstruction of urine flow: due to stones, tumor, or enlarged prostate can cause a backflow or pressure on kidneys
- The arteries leading to the kidney can become clogged or hardened by fatty deposits and cause reduced blood flow to the kidneys.
- Certain medications used for arthritis can cause permanent kidney damage such as:

Ibuprofen: Advil & Motrin
Naproxen: (Aleve & Naprosyn)
Celebrex & Vioxx

ASK YOUR KIDNEY DOCTOR BEFORE TAKING ANY NEW OR OVER-THE-COUNTER MEDICATIONS INCLUDING HERBS AND VITAMINS.

EARLY SIGNS

The first signs and symptoms of kidney disease most commonly develop when your kidneys are working at about 20 percent of their normal capacity. Most people describe the symptoms as similar to having the flu. Specific symptoms are related to the buildup of toxins and excess fluid that would normally be filters

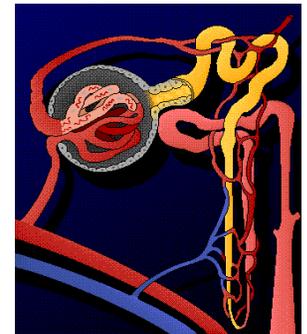
from the blood.

Fluid buildup may cause:

- Swollen ankles and feet-
- Puffiness around your eyes or abdomen

Some problems related to the buildup of toxins (uremia) may affect any organ system and include:

- Fatigue and weakness
- Itching
- Poor appetite, nausea, vomiting or metallic taste
- Sudden weight gain
- Difficulty concentrating or remembering



The functional working unit of the kidneys called the nephron

END STAGE KIDNEY DISEASE TREATMENTS

If your kidneys are unable to remove enough waste and fluids, kidney replacement, either by dialysis or transplant is required. When that becomes necessary will vary from person to person. It is usually needed when the kidney function falls below 10-15%.

The options for kidney replacement therapy include:

KIDNEY TRANSPLANT

When thinking of the quality of life and long term survival transplant is the best option. Only one kidney is needed for transplant and can be obtained from a living or deceased donor. If the kidney is from a

living donor the wait time can be much less. After a kidney is surgically implanted, it usually begins working immediately. Your old kidneys are usually not removed. You will need to visit the transplant team for medication adjustments of the immune-suppressing drugs you will take for the rest of your life and to check on the function of your kidneys by having blood drawn at regular intervals.

DIALYSIS

Over 400,000 Americans are currently on dialysis. Dialysis can serve as a "bridge" until a suitable donor can be found for transplant. The two forms of dialysis are:

HEMODIALYSIS—This is the most commonly known form of dialysis. It uses an artificial kidney called a dialyzer to remove waste and water from the bloodstream using a dialysis machine to pump the blood through the artificial kidney. Before hemodialysis can take place a surgeon must create an "access" often in your arm, for your blood to leave and re-enter your body. This typically is performed as outpatient surgery and usually made in anticipation of dialysis as it can take 2-4 months to heal and use. Hemodialysis is usually performed 3 days a week on average 4 hours per treatment.

Sometimes hemodialysis can be performed at home or at night.

PERITONEAL DIALYSIS—This dialysis relies on the filtering ability of the lining of your inner abdomen (peritoneal membrane). A tube is surgically implanted into your abdomen so that it can be filled with a special solution. Wastes and fluids pass through this membrane from the blood vessels and into the fluid. The fluid is then drained out. Peritoneal dialysis is done at home during the day and at night with a machine. Often a combination of both are used.

CONTROLLING HIGH BLOOD PRESSURE

One of the factors in addressing kidney disease is controlling one of the possible causes. One of the causes is high blood pressure. Even if you don't have high blood pressure early in kidney disease blood pressure can eventually rise. The target range for blood pressure is below 130/80. Depending on other factors or conditions you have your doctor may even want your blood pressure lower. Many people wonder if either number is most important. Both numbers if

high can cause problems for the kidneys as well as other organ systems as well.

Your doctor may prescribe several different types of medications to control blood pressure. They are: diuretics, calcium channel blockers or beta blockers. ACE inhibitors (examples: Prinivil, zestril) and ARB's (diovan, atacand, avapro & cozaar) help control blood pressure and they reduce the amount of proteins that can leak

into the urine. When the kidneys leak less protein, the rate of kidney disease can be slowed. Because of this effect, these medications can be used on people with diabetes who don't have high blood pressure yet.



EATING LESS SALT (SODIUM)

Most doctors recommend limiting the amount of salt (sodium) in your diet to 2000 mg per day. Here are a few tips to assist you in doing this:

- Eat more fresh foods and fewer boxed, convenient or processed foods
- Read Nutrition Facts labels to learn the amount of sodium per serving. Also be aware of other sources of sodium such as: mono-

sodium glutamate (MSG), baking soda or baking powder

- Don't add salt to your food when cooking or at the table
- Add flavor to your food by cooking with fresh or dried herbs, herb blends and spices. Be aware that "salt substitutes" often contain other substances that can be harmful to some patients with kidney disease
- Ask for low salt options at restaurants or ask for gravies, sauces or condiments on the side
- Salt is an acquired taste. You must unlearn it over time by gradually using less
- More questions? Ask your doctor to refer you to a dietitian
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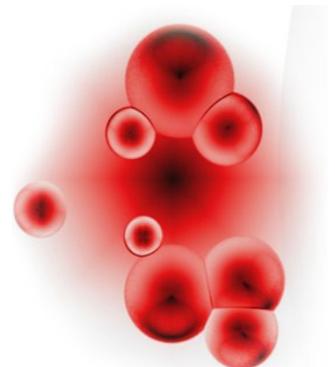


TREATING ANEMIA

Most doctors check your blood cell count also. The red cells carry oxygen throughout your whole body. Your kidneys produce a hormone called erythropoietin which triggers red blood cell production by the bones. Kidney damage can cause a diminished production of erythropoietin. This causes a lowered amount of red blood cells also

known as anemia. Anemia can make you feel very tired and sensitive to cold. In addition to feeling poorly, anemia puts added stress on the heart which can raise your risk of heart problems. Anemia can be treated with a man made form of erythropoietin in an injection or with iron therapy if needed. Treating anemia improves quality of life and can help

reduce the risk of death from heart problems.



DIET AND LIFESTYLE CHANGES

Special diets for people with chronic kidney disease consist of a balance of nutrients and limiting some substances that may be detrimental to your health due to kidney disease. Dietary needs are often different for each individual so working with a dietitian and your physician is recommended. Some general dietary guides can include:

1. Restriction of sodium (salt) which helps control high blood pressure and reduces fluid buildup
2. Some studies show restriction (not elimination) of protein may help limit the buildup of urea (a waste product of protein breakdown) ask your doctor or dietitian the amount of protein that is right for you
3. It's often necessary to restrict potassium as kidney disease advances. Buildup of potassium can lead to heart rhythm problems.

Consult your physician for recommendations for low potassium diet if needed.

4. Fluids should be taken enough to quench your thirst rather than to force fluids. Some people may need to restrict fluids. Consult your kidney doctor and your dietitian.



Lifestyle factors can affect the health of your kidneys. Factors that may damage your kidneys and your overall health include smoking, having high cholesterol levels and eating a high fat diet. Taking prescribed cholesterol-lowering medications may help when eating less fat and cholesterol, eating more fiber and losing weight don't lower cholesterol levels enough. Limiting portion size is also necessary for weight loss. When considering portion size, check food labels for portion sizing per serving.

Working to lose weight, reducing excessive alcohol consumption, and getting more exercise are good for overall heart health. Changing these factors may not directly prevent or slow chronic kidney disease but it can help other factors that do affect kidney disease prevention such as high blood pressure and diabetes.

BONE HEALTH

Bones can become weak with kidney disease due to:

- Buildup of excess phosphorus
- Low levels of calcitriol (an active form of vitamin D produced by the kidneys)
- Excessive production of parathyroid hormone can also cause weak bones

Your doctor may recommend a diet lower in phosphorus, special phosphorus binding medications or medications for vitamin D replacement. Consult your doctor for questions regarding bone health.

