Patient Information

Taking Control of Chronic Kidney Disease

The kidneys are two bean-shaped organs, each about the size of a fist, located on either side of the spine in the lower middle of the back. Their main job is to remove waste products and excess fluid that the bloodstream carries away from the body's cells. Each kidney contains about one million tiny units, called *nephrons* (**nef**-rahns), that filter fluid and waste from the blood and turn them into urine. The kidneys also release hormones that regulate blood pressure, stimulate the bone marrow to make red blood cells (which carry oxygen throughout the body), and help build strong bones.

The kidneys can do their job even if they become somewhat damaged—in fact, a person can survive with only one healthy kidney if need be. But when the kidneys become so damaged that they don't work properly, serious health problems develop. If the nephrons can't clean the blood, wastes and fluid build up and can hurt the body. And if the kidneys' ability to release hormones is affected, there may be blood pressure problems, weakened bones, and less efficient oxygen distribution.

While kidney damage can be sudden (as in the case of an injury or poisoning), it usually happens very slowly by a process known as chronic kidney disease, or CKD. CKD can't be cured, but it can be controlled with treatment—especially if it is caught early.

How do I know if I'm at risk?

Diabetes and high blood pressure are two of the most common causes of CKD, because they both damage blood vessels in the kidneys. So if you have either of these conditions, you are at greater risk for CKD. You're also more likely to get CKD if one of your family members has had it.

What are the warning signs?

CKD generally causes few or no symptoms in its early stages, which makes it difficult to recognize. Once the disease has progressed, it may cause such symptoms as high blood pressure, more frequent urination (especially at night), swelling of the feet and hands, puffiness around the eyes, nausea or vomiting, weakness, fatigue, and unclear thinking.

What tests do I need?

Although early-stage CKD rarely causes symptoms, an abnormal result on a routine blood or urine test can alert your doctor to the problem. For this reason, it's important to go for your regular checkups and make sure you get tested at these visits.

If your doctor suspects CKD, he or she may order more blood or urine tests to confirm the diagnosis. To check your lungs for fluid, your doctor may also order a chest x-ray. An imaging test, such as an ultrasound, can help your doctor examine your kidneys more closely. And a kidney *biopsy* (**bye**-ahp-see), in which a small sample of kidney tissue is removed using a needle and studied under a microscope, can provide more information about what's wrong.

How can I avoid the problem?

Preventing CKD isn't always possible. Many people are born with or inherit kid-

ney disease. But you can take steps to reduce your risk. If you have diabetes or high blood pressure, follow your doctor's instructions for controlling your blood sugar levels and lowering you blood pressure. Avoid consuming excessive alcohol, and use medications only as directed by your doctor or pharmacist, since some drugs (including many pain relievers) can increase the risk of CKD. Stay away from toxic chemicals as much as possible.

How is it treated?

CKD treatment focuses on slowing the disease's progress, relieving symptoms, and preventing other health problems. In addition to treating diabetes, high blood pressure, or other underlying conditions, your doctor may recommend that you eat less protein and cholesterol, since these substances make the kidneys work harder. Smoking is especially dangerous for people with CKD, so if you smoke, ask your doctor to help you quit. Many problems caused by CKD, such as a low number of red blood cells, can be treated with medication.

If your kidneys become so damaged that they begin to fail, you are said to have end-stage kidney disease, which is a life threatening condition. At this point, you must either begin a treatment called *dialysis* (die-**al**-uh-suhs) or have a kidney transplant.

Dialysis is an artificial way of doing the kidneys' work for them. In a procedure called *hemodialysis* (hee-mo-die-**al**-uh-suhs), your blood is removed through a needle, sent through a machine that filters out waste and fluid, and then returned to your body (through a second needle or another opening in the first needle). Generally, hemodialysis is performed in a doctor's office or clinic, in three- to five-hour sessions that are scheduled three times a week. *Peritoneal* (per-uht-uhn-**ee**-uhl) dialysis is a treatment that you may be able to perform yourself—at home, at work, or even on trips. Before this treatment begins, a doctor implants a tube, called a *catheter* (**kath**-uht-uhr), into your abdomen. Once the catheter is in place, you can remove waste and fluid from your body by putting a special solution into the catheter, leaving it there for several hours, and then draining it out. One type of peritoneal dialysis allows you to go about your daily activities with the solution inside your catheter, although you must drain and refill the catheter four times a day. Another type uses a machine to perform the draining and refilling automatically, usually while you sleep.

If you are a candidate for a kidney transplant, your doctor will try to find the best matching kidney for you—either from a living donor or from someone who has died recently. Usually, the best match comes from a blood relative, especially a sibling. After the transplant, you will need to take medication to keep your body from rejecting the new kidney.

For more information about CKD, visit the National Institutes of Health's National Kidney and Urologic Diseases Information Clearinghouse web site (http://kidney.niddk.nih.gov/kudiseases/pubs/yourkidneys/index.htm#rate). ●

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