



## **“Diabetic Kidney Disease”**

*The Medicine Cabinet Series*

Diabetic kidney disease takes many years to develop. In some people, the filtering function of the kidneys is actually higher than normal in the first few years of their diabetes. This process has been called hyperfiltration.

Over several years, people who are developing kidney disease will have small amounts of the blood protein albumin begin to leak into their urine. At its first stage, this condition has been called microalbuminuria. The kidney's filtration function usually remains normal during this period. When kidneys are working well, the tiny filters in your kidneys, the glomeruli, keep protein inside your body. You need the protein to stay healthy.

As the disease progresses, more albumin leaks into the urine. Various names are attached to this interval of the disease such as overt diabetic nephropathy or macroalbuminuria. As the amount of albumin in the urine increases, filtering function usually begins to drop. The body retains various wastes as filtration falls. Creatinine is one such waste and a blood test for creatinine can measure the decline in kidney filtration. As kidney damage develops, blood pressure often rises as well.

Overall, kidney damage rarely occurs in the first 10 years of diabetes, and usually 15 to 25 years will pass before kidney failure occurs. For people who live with diabetes for more than 25 years without any signs of kidney failure, the risk of ever developing it decreases.

High blood glucose and high blood pressure damage the kidneys' filters. When the kidneys are damaged, the protein leaks out of the kidneys into the urine. Damaged kidneys do not do a good job of cleaning out waste and extra fluids, so not enough waste and fluids go out of the body as urine. Instead, they build up in your blood.

An early sign of kidney damage is when your kidneys leak small amounts of a protein called albumin (al-BYOO-min) into the urine.

With more damage, the kidneys leak more and more protein. This problem is called proteinuria (PRO-tee-NOOR-ee-uh). More and more wastes build up in the blood. This damage gets worse until the kidneys fail. Diabetic nephropathy (neh-FROP-uh-thee) is the medical term for kidney problems caused by diabetes.

High blood pressure, or hypertension, is a major factor in the development of kidney problems in people with diabetes. Both a family history of hypertension and the presence of hypertension appear to increase chances of developing kidney disease. Hypertension also accelerates the progress of kidney disease where it already exists.

In the past, hypertension was defined as blood pressure exceeding 140 millimeters of mercury-systolic and 90 millimeters of mercury-diastolic. Professionals shorten the name of this limit to 140/90 or "140 over 90." The terms systolic and diastolic refer to pressure in the arteries during contraction of the heart (systolic) and between heartbeats (diastolic). The American Diabetes

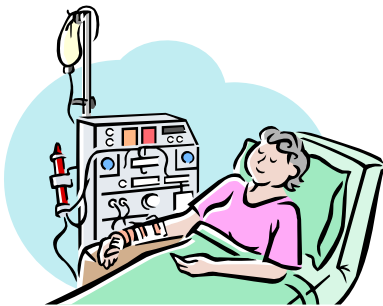
Association and the National Heart, Lung, and Blood Institute recommend that people with diabetes keep their blood pressure below 130/80.

Hypertension can be seen not only as a cause of kidney disease, but also as a result of damage created by the disease. As kidney disease proceeds, physical changes in the kidneys lead to increased blood pressure. Therefore, a dangerous spiral, involving rising blood pressure and factors that raise blood pressure, occurs. Early detection and treatment of even mild hypertension are essential for people with diabetes.

Kidney failure from diabetes happens so slowly that you may not feel sick at all for many years. You will not feel sick even when your kidneys do only half the job of normal kidneys. You may not feel any signs of kidney failure until your kidneys have almost stopped working. However, getting your urine and blood checked every year can tell you if your kidneys are still working.

Once your kidneys fail, you may feel sick to your stomach and feel tired all the time. Your skin may turn yellow. You may feel puffy, and your hands and feet may swell from extra fluid in your body.

First, you will need dialysis treatment. Dialysis is a treatment that does the work your kidneys used to do. There are two types of dialysis. Your doctor and you will decide what type of treatment will work best for you.



1. **Hemodialysis** (HE-mo-dy-AL-ih-sis). In hemodialysis, your blood flows through a tube from your arm to a machine that filters out the waste products and extra fluid. The clean blood flows back to your arm.
2. **Peritoneal dialysis** (PEH-rih-tuh-NEE-ul dy-AL-ih-sis). In peritoneal dialysis, your belly is filled with a special fluid. The fluid collects waste products and extra water from your blood. Then the fluid is drained from your belly and thrown away.

Second, you may be able to have a kidney transplant. This operation gives you a new kidney. The kidney can be from a close family member, friend or someone you do not know. You may be on dialysis for a long time. Many people are waiting for new kidneys. A new kidney must be a good match for your body.

You will know you have kidney problems only if your doctor checks your urine for protein. Do not wait for signs of kidney damage to have your urine checked.

*Taken from the National Diabetes Information Clearinghouse: <http://diabetes.niddk.nih.gov/>*