



ASSURE® BRILLIANCE

COMPREHENSIVE SERVICE & SUPPORT PROGRAM

Diabetes and Kidney Failure

According to the Centers for Disease Control and Prevention (CDC), an estimated 29.1 million people—or 9.3 percent of the U.S. population—have diabetes. Of that number, 8.1 million are undiagnosed.

Diabetes can contribute to a number of associated medical conditions and complications including stroke, heart disease, blindness and diabetic kidney disease, also known as diabetic nephropathy. In 2011, 44 percent of all newly diagnosed cases of kidney failure were the result of diabetes and nearly 50,000 people were treated for diabetes-induced kidney disease. Even more staggering—because of the severity of their kidney conditions—nearly 230,000 people began regular dialysis or had to undergo kidney transplants.¹ Kidney disease occurs when the organ's filtering system, which removes waste from the body, breaks down. Such leads to the shutdown of the organ.²

Microalbuminuria and Macroalbuminuria

Uncontrolled diabetes can put a toll on the body's system, especially on the kidneys. High blood glucose levels create stress on the kidneys by filtering an increased amount of blood. Over time, such filters begin to leak causing the loss of useful protein in the urine. Small amounts of protein in the urine are called *microalbuminuria*. When kidney disease is diagnosed early—during the *microalbuminuria* phase—treatments may keep kidney disease from getting worse.

When larger amounts of protein are present in the urine, *macroalbuminuria* occurs. When kidney disease is caught later, when *macroalbuminuria* exists, end-stage renal failure usually follows.^{2,3}

Risk Factors and Medications

The typical risk factors for developing kidney disease in an individual with diabetes include genetics, uncontrolled blood glucose levels and/or high blood pressure. Antihypertensive medications can significantly lower blood pressure readings and have shown to slow the progression of kidney disease. There are two types of antihypertensive medications recommended for this purpose:

Angiotensin-Converting Enzyme (ACE) inhibitors and **Angiotensin Receptor Blockers (ARBs)**. Most people require more than one medication to control their blood pressure. In addition to an ACE inhibitor or an ARB, they may require a diuretic to remove fluid from the blood. At times, individuals also need antihypertensive medications including beta-blockers and calcium channel blockers.^{2,3}

In addition to controlling their blood pressure, it is imperative that individuals with diabetes manage their blood glucose

readings by following a healthy diet and exercising. A dietitian or another healthcare provider may prescribe the Dietary Approaches to Stop Hypertension (DASH) eating plan. This nutritional plan encourages fruits, vegetables, whole grains and other cardio-protective foods that have low sodium levels. The DASH plan also promotes low-fat and cholesterol food items; fat-free or low-fat milk and dairy products; fish, poultry and nuts; limited red meats; and fewer sweets including sweetened beverages. It is critical that individuals with kidney disease monitor their protein intake.³

Early-stage diabetic kidney disease often does not produce symptoms. Over time, however, signs may develop that include edema or swelling, which is the result of excess fluid and salt collection within the body. Edema can occur in the ankles, legs and feet, and less often in the face or hands. As the disease progresses, the following symptoms can occur.^{2,4}

- Insomnia
- Poor concentration
- Fatigue
- Vomiting
- Anemia
- Decreased appetite
- Itching
- Nausea
- Muscle cramps

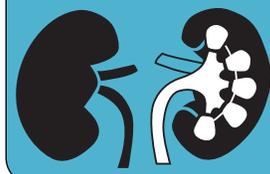
Individuals with diabetes should receive regular screenings for kidney disease. The National Kidney Disease Education Program recommends the following screenings:³

- Urine albumin-to-creatinine ratio measured at least annually in persons with Type 2 diabetes and individuals who have had Type 1 diabetes for five or more years
- eGFR calculated at least annually in all persons with Type 1 or Type 2 diabetes (DKD)

In summary, it is important to try to prevent or slow the progression of diabetic kidney disease in persons with diabetes. Adhering to the following regimens could help with diabetes disease management.

- Control blood glucose levels
- Follow a healthy diet
- Manage blood pressure levels
- Be physically active
- Control weight
- Annual physical examination

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