

# For Patients

## If You Have Diabetes, Do You Have Kidney Disease?



People with type 2 diabetes are at risk for kidney disease, a condition known as diabetic nephropathy.<sup>1</sup> In fact, diabetes is the leading cause of kidney failure.<sup>2</sup> More than 9 million people with diabetes—about 40%—also have kidney disease, but very few are aware of it.<sup>3,4</sup> More than half of people with the most serious form of kidney disease, end-stage renal disease, do not know they have it.<sup>4</sup>

### HOW DOES DIABETES CAUSE KIDNEY DISEASE?

The kidneys are bean-shaped organs located just below the rib cage on either side of the spine that act as a filtering system to keep the body healthy.<sup>5</sup> Each kidney contains millions of tiny blood vessels that remove extra fluid and waste products from the blood to form urine, which is excreted by the bladder.

Useful materials such as proteins that are too large to be filtered are returned to the blood. The kidneys also help to regulate blood pressure.

Diabetes can damage this filtering system.<sup>1,6</sup> High levels of sugar in the blood put a strain on the tiny blood vessel filters. Over time, the filters begin to leak a useful protein (albumin) into the urine, a condition called microalbuminuria. With many years of this extra work, the kidneys gradually lose their function and excrete larger amounts of albumin (macroalbuminuria). Eventually this may lead to end-stage renal disease, a serious condition that requires a kidney transplant or dialysis.

### COULD I HAVE KIDNEY DISEASE?

Often, there are no symptoms of the kidney damage caused by diabetes until most of the kidney function has been lost.<sup>2</sup> The best way to learn if you have kidney disease is to have your doctor check a sample of your urine for microalbuminuria—first when you are diagnosed with diabetes, and then once a year after that. It is very important to see your doctor regularly for this test, because more than 40% of people with diabetes have microalbuminuria.<sup>7</sup>

The doctor can also check how well your kidneys are functioning by taking a sample of your blood and using a formula to find how well the kidneys are filtering waste products from the blood.<sup>5,8</sup> This formula is called the estimated glomerular filtration rate.

### CAN KIDNEY DISEASE BE PREVENTED?

There are several steps you can take to prevent or delay kidney disease. The best way is to keep your blood sugar and blood pressure within a healthy range (**Sidebar**).<sup>9</sup> Controlling your blood sugar can reduce your risk for developing microalbuminuria and slow the progression to macroalbuminuria.<sup>9,10</sup> Controlling both your blood sugar and blood pressure also lowers your risk of heart disease and death from heart attack or stroke.<sup>7,11,12</sup>

Not all drugs used to treat diabetes can be taken by people with kidney disease.<sup>7</sup> Your doctor will know which diabetes drugs are best if you develop kidney disease. Certain drugs that

## Steps to Prevent or Delay Kidney Disease

- Control your blood sugar levels
  - 70 mg/dL to 130 mg/dL when you wake up and before meals
  - Below 180 mg/dL 2 hours after starting a meal
- Control your blood pressure
- Take medications as the doctor prescribed
- See your health care provider regularly
- Have your urine albumin levels checked once a year
- Have your blood tested for kidney function at least once a year

American Diabetes Association. *Diabetes Care*. 2012;35 (suppl 1):S11-S63.

lower blood pressure are recommended for most people with diabetes, high blood pressure, and kidney disease.<sup>7,9</sup> These include angiotensin-converting enzyme (ACE) inhibitors and angiotensin receptor blockers (ARBs).<sup>7</sup>

Losing weight and getting regular exercise,

in addition to taking any medications your doctor may prescribe, are other ways to control your blood sugar and blood pressure.

## ARE THERE TREATMENTS FOR KIDNEY DISEASE?

If you already have kidney disease, there are ways you can prevent it from worsening. Keeping control of your blood sugar and blood pressure with diet, exercise, and medications is important to slow the rate at which the disease progresses.<sup>6,7,9</sup> Lowering the amount of salt in your diet helps lower blood pressure, and eating fewer foods rich in protein (meat, chicken, fish) protects the kidneys.<sup>6</sup>

Once the kidneys fail, dialysis or a kidney transplant is needed to maintain a healthy body.<sup>1,6</sup> Decisions should be made with your team of specialists, who can make appropriate changes to how you manage your diabetes.

## REFERENCES

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