



## Diabetes and the Kidney

Sharon Parmet; Cassio Lynn; Richard M. Glass

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# Diabetes and the Kidney

**D**iabetes mellitus is a disease in which the body either fails to produce enough **insulin** or is unable to use insulin properly. Insulin is a hormone that is needed to convert sugar, starches, and other food into energy used for daily life. If there is not enough insulin, blood **glucose** (sugar) levels can become high. High levels of glucose in the bloodstream for long periods can damage a number of body organs and systems, including the kidneys. The June 25, 2003, issue of *JAMA* includes an article about kidney complications in patients with diabetes.

## KIDNEY FUNCTION

The kidneys filter wastes and water from the blood, creating **urine**. Urine passes from the kidneys through 2 tubes called **ureters** to the **urinary bladder** and is then eliminated from the body.

## DIABETES AND KIDNEY FAILURE

Diabetes is the most common cause of kidney failure. Over time, high levels of blood sugar in the body lead to permanent kidney injury. When the kidneys lose most of their function, waste products and fluids build up in the blood. If untreated, this ultimately leads to death.

Leakage into the urine of **albumin**, one of the main proteins that circulate in the blood, is an early sign of kidney damage due to diabetes. This is called **albuminuria**. Aggressive control of blood glucose levels and blood pressure can slow the progression to kidney failure. It is very important for anyone with diabetes to have regular medical checkups to assess control of their diabetes and to identify any complications from it, such as kidney damage or damage to the eyes and nerves.

## PREVENTING KIDNEY FAILURE

- Control blood glucose levels with diet, medications, or insulin as prescribed by your doctor.
- Control high blood pressure with diet, exercise, and prescribed medication.
- Exercise regularly.

## TREATMENTS FOR KIDNEY FAILURE

- **Peritoneal dialysis**—filtering the blood by passing a solution into the abdomen, drawing wastes and excess water from the blood through the **peritoneal membrane** (the lining of the abdomen), which then acts as an artificial kidney
- **Hemodialysis**—filtering the blood by passing it through an artificial kidney machine
- **Kidney transplant**—obtaining a healthy and biologically compatible kidney from a living donor or someone who recently died

## FOR MORE INFORMATION

- American Diabetes Association  
800/DIABETES (342-2383)  
[www.diabetes.org](http://www.diabetes.org)
- National Institute of Diabetes & Digestive & Kidney Diseases  
800/891-5390  
[www.niddk.nih.gov](http://www.niddk.nih.gov)
- National Kidney Foundation  
800/622-9010  
[www.kidney.org](http://www.kidney.org)

## INFORM YOURSELF

To find this and other Patient Pages, go to the Patient Page link on *JAMA*'s Web site at [www.jama.com](http://www.jama.com). A Patient Page on kidney failure was published in the December 12, 2001, issue.

Sources: National Institute of Diabetes & Digestive & Kidney Diseases, National Diabetes Association, American Association of Diabetes Educators

Sharon Parmet, MS, Writer

Cassio Lynn, MA, Illustrator

Richard M. Glass, MD, Editor

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