

## FOCUS

### Chronic Kidney Disease: A Silent Threat

Chronic kidney disease (CKD), which decreases the kidney's ability to perform its vital functions of removing impurities from the blood and regulating blood pressure, presents a major, though largely unrecognized, health threat to Americans. Should damage reach the point that kidney function becomes insufficient to support life, kidney failure, also known as end-stage renal disease (ESRD), occurs. Death is then certain unless dialysis, a mechanical cleansing of the blood, replaces natural kidney function or the person receives a kidney transplant. CKD also increases the risk of cardiovascular disease. Timely treatment, however, can greatly slow the progression of CKD and delay or prevent the onset of ESRD.

In its early stages, CKD has no symptoms, and many affected people do not realize they have kidney disease. The total number of affected people therefore cannot be known, but estimates are as high as 20 million in the United States. An estimated 8 million people or more have moderate or severe CKD, approximately 5.9 million of whom are age 65 and older. But only about 3 million persons have been diagnosed.

The majority of the people who develop ESRD first have CKD, which is often undetected for years before their kidneys fail. Just under 100,000 persons began ESRD treatment in the United States in 2001. In all, 400,000 were treated for ESRD in that year, and an additional 114,000 persons were living with functional transplanted kidneys. ESRD, however, killed almost 80,000 persons in 2000, as many Americans as breast and prostate cancer combined.

CKD occurs in people of all ages and both genders. The following factors increase an individual's risk for CKD:

- Diabetes, either type 1 or type 2
- High blood pressure
- Inherited genes for certain disorders such as polycystic kidney disease
- Having a relative who has kidney disease
- Injury caused by a direct blow to the kidneys

Diabetes and high blood pressure together account for 70 percent of CKD cases.

As CKD advances, it can produce symptoms such as fatigue, itching, swelling or numbness of the hands or feet, nausea, vomiting, cramps, and difficulty concentrating. The progression of CKD to ESRD causes significant burdens. Patients with ESRD face frequent dialysis or surgery for a kidney transplant. Dialysis recipients must devote several days a week to their treatment, and only a small minority can work. A transplant requires finding a donor, undergoing major surgery, and taking medications over the long term. In 2001, care of persons with ESRD cost Medicare and other healthcare plans a total of \$22.8 billion.

CKD affects some population groups much more severely than others, with African Americans facing almost four times the risk of kidney failure as whites. For African Americans with diabetes, the risk rises to six times that of whites. The greatest disparity occurs among men aged 25 to 44 years, with African American males facing 20 times the risk of kidney failure as their white counterparts. In addition, American Indians are almost three times as likely to develop ESRD as whites, and Asians are 1.6 times as

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likely. Persons of Mexican descent also appear to be at elevated risk for ESRD.

### Prevention Opportunities

Because the two major causes of kidney damage—diabetes and high blood pressure—can generally be controlled, there are great opportunities to prevent CKD and keep it from progressing to ESRD. The key to prevention is early diagnosis and prompt treatment before damage becomes extensive. Early CKD, however, can only be detected by laboratory tests that need to be part of routine medical care, especially for persons with known risk factors. At present, however, CKD receives inadequate recognition and treatment. In many medical practices, fewer than one-tenth of Medicare patients known to have diabetes receive kidney screening. And many CKD patients, particularly African American men, do not receive referrals to kidney specialists, known as nephrologists, until late in their disease.

Diabetes causes the blood to collect excessive amounts of a sugar called glucose, which, over time, damages the tiny blood vessels involved in the kidney's filtering action. CKD has no known cure, but a 10-year study has shown that keeping diabetics' glucose levels close to normal through a regimen of diet, exercise, and medication cuts by one-half the development and progression of early CKD; the regimen is known as intensive management. Other studies confirm the benefit of tight glucose control.

Excessive blood pressure also damages blood vessels, including those in the kidneys, and is especially harmful when combined with diabetes. To control blood pressure and prevent kidney damage, individuals should maintain a normal weight, eat a diet low in sodium and fat, and limit consumption of alcohol and caffeine. Medications known as angiotensin-converting enzyme (ACE) inhibitors and angiotensin-receptor blockers (ARBs) also help control blood pressure. The medications slow the loss of kidney function in persons who do not have diabetes and help to protect the kidneys in people who do. At present, however, only one-third of people diagnosed with CKD receive ACE inhibitors.

## SPOTLIGHT

Given the high rate of undiagnosed chronic kidney disease (CKD) in the United States, increasing awareness ranks among the most powerful tools to keep kidney disease from progressing to ESRD. The National Kidney Disease Education Program, an initiative of the National Institutes of Health (NIH), aims to reduce suffering and death from kidney disease through a major public information campaign called "You Have the Power To Prevent Kidney Disease." The effort aims to inform high-risk populations, the healthcare professionals who provide their primary care, and policymakers and health coverage providers about the vital need for widespread kidney disease screening and the prompt use of the most effective treatments. In collaboration with more than 30 partners—including medical specialty societies, government agencies, patient advocacy groups, and service organizations—the National Institute of Diabetes and Digestive and Kidney Diseases, an element of NIH, began work on the program in 2000.

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### Key Facts About Chronic Kidney Disease

- An estimated 8 million Americans have CKD, but many do not know it.
- CKD can lead to kidney failure (also known as end-stage renal disease or ESRD), which causes death unless the person receives dialysis or a kidney transplant.
- CKD raises the risk of cardiovascular disease.
- CKD can occur at any age and affects both males and females.
- Testing can detect CKD in its early stages.
- African Americans face almost four times the CKD risk of whites.
- Diabetes and high blood pressure together account for 70 percent of CKD.
- Controlling diabetes and blood pressure can prevent or slow CKD.

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The first target population is the one at highest risk—African Americans with diabetes, high blood pressure, and a family history of kidney disease—along with their primary healthcare and health coverage providers. Over time, the campaign will be expanded to other high-risk ethnic and racial groups and will make special efforts to reach persons with low incomes and other challenges such as illiteracy and impaired hearing and vision.

Clear, science-based messages tailored to each audience will be spread through brochures, posters, Web sites, public service announcements, and even hand-held fans bearing kidney health slogans. An optimistic, upbeat tone will emphasize each informed individual's potential impact on kidney disease.

Between April 2003 and April 2004, pilot projects tested the elements of the campaign in Atlanta, Georgia; Baltimore, Maryland; Cleveland, Ohio; and Jackson, Mississippi. In each city, local coalitions organized, carried out, and evaluated an array of approaches to raising kidney disease awareness. "You Have the Power To Prevent Kidney Disease" is slated to go national in summer 2004.

### **Survey Finds Low Public Awareness of Kidney Disease Risk**

Many persons at high risk greatly underestimate their chances of developing CKD, according to a 2004 survey. Only 15 percent of African Americans, for example, believed their risk to be higher than that of the general population. Only 13 percent of respondents knew that the early stages of CKD cause no symptoms. "Such misunderstandings are dangerous," said Janice Lea, M.D., of the National Kidney Disease Education Program Coalition. "People find themselves in the emergency room, on dialysis, before they even know they have a problem. That's why it is so important to . . . have your blood and urine regularly tested for kidney disease once you know you are at risk."

## **RESOURCES**

The National Institute of Diabetes and Digestive and Kidney Diseases, the nation's leading kidney research agency, provides information on the kidneys and kidney disease through the National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC) at <http://kidney.niddk.nih.gov/about/>. NKUDIC answers questions about kidney disease and provides free publications, referrals to healthcare providers, and information about organizations that aid kidney patients and their families. Free, personalized service is available by phone between 8:30 a.m. and 5 p.m. eastern time, Monday through Friday, at 1-800-891-5390 or 301-654-4415, by fax at 301-907-8906, by e-mail at [nkudic@info.niddk.nih.gov](mailto:nkudic@info.niddk.nih.gov), or by regular mail at NKUDIC, 3 Information Way, Bethesda, MD 20892-3580.

Other groups serving kidney patients include the following:

American Association of Kidney Patients, a membership organization, has chapters in various cities, an annual convention offering educational sessions, and print and online publications covering treatment options, news from Washington, DC, of interest to kidney patients, and more at [www.aakp.org](http://www.aakp.org).

American Kidney Fund ([www.akfinc.org/](http://www.akfinc.org/)) provides direct financial assistance to kidney patients in need as well as providing resources to educational programs, community service programs, and support for clinical research.

Children's Kidney Disease Support Group ([www.childrenskidneydisease.org](http://www.childrenskidneydisease.org)) provides resources for parents of children with kidney disease, including online support group meetings.

Kidney and Urology Foundation of America ([www.kidneyurology.org/homepage.htm](http://www.kidneyurology.org/homepage.htm)), a nonprofit organization, provides information and services for patients, including referrals to healthcare providers, emergency grants, and various scholarship and awards to assist kidney patients in completing their education and attaining other goals.

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Life Options at [www.lifeoptions.org](http://www.lifeoptions.org) is a nonprofit organization providing a variety of resources to inform and support kidney patients, their families, and friends; these resources include an online community and Kidney School, an interactive educational program online at [www.kidneyschool.org](http://www.kidneyschool.org).

The National Kidney Foundation ([www.kidney.org](http://www.kidney.org)) provides a wide range of information for kidney patients and their families, as well as several electronic message boards discussing kidney disease.

The Renal Support Network ([www.renalnetwork.org](http://www.renalnetwork.org)) provides many resources for dealing with medical and nonmedical aspects of kidney disease, including the Find-a-Friend program, which places families affected by kidney disease in touch with one another.

RenalNet ([www.renalnet.org/renalnet/renalnet.cfm](http://www.renalnet.org/renalnet/renalnet.cfm)) provides a wide range of Internet-accessible information resources about kidney disease, including chat rooms covering various renal healthcare topics.

## Activities

The Kidney Cars Program offers an easy way to donate your car, van, truck, or boat. Proceeds from Kidney Cars are used in the communities in which they are raised to fund a variety of National Kidney Foundation organ donation programs, public education, patient and community services, research, and professional education. For more information and stories from actual Kidney Cars donors, visit [www.kidney.org/funds/kidneycars/index.cfm](http://www.kidney.org/funds/kidneycars/index.cfm).

The American Kidney Fund's (AKF's) Calendar Contest is an opportunity for pediatric kidney patients younger than age 18 to showcase their drawings in AKF's annual "Kid"ney Calendar, which is sent to donors in appreciation of their support. The 13 winning artists and their parents are rewarded with a fun-filled visit to Washington, DC. Click on [www.akfinc.org/Programs/ProgramsContentCalendar.htm](http://www.akfinc.org/Programs/ProgramsContentCalendar.htm) to enter the contest or to order one of these imaginative "Kid"ney calendars.

The NephCure Foundation will honor 50 kidney donors during the Elpis Awards on Saturday, October 30, 2004, at the Independence Seaport Museum at Penn's Landing in Philadelphia. This Academy Awards-style event will pay tribute to these donors for the hope they have provided to kidney patients seeking a healthy life. Elpis is the Greek word for hope. The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) will match 100 percent of the funds raised. Call 610-540-0186, ext. 23, or visit [www.nephcure.org/Events\\_elpisawards1.htm](http://www.nephcure.org/Events_elpisawards1.htm) to nominate a donor or for more information.

NIDDK's National Kidney Disease Education Program has developed the "You Have the Power To Prevent Kidney Disease" campaign. Because blacks are four times more likely to develop kidney failure than whites, the campaign focuses on black adults who are at risk and on primary care providers who play an important role in detecting and managing kidney disease. To check out radio and print public service announcements—as well as other pertinent facts, statistics, and survey findings—visit [www.nkdep.nih.gov/news/nationalcampaign/index.htm](http://www.nkdep.nih.gov/news/nationalcampaign/index.htm).

An estimated 20 million people have chronic kidney disease, and another 20 million are at risk. The National Kidney Foundation offers a way to help reduce these rates by sponsoring the Kidney Walk. This event presents an occasion for dialysis patients, organ transplant recipients, donor families, medical communities, and the general public to celebrate life. The Kidney Walk is a noncompetitive walk focusing on education and the prevention of kidney and urinary tract diseases as well as awareness of the need for organ donation. For registration and location information, visit [www.kidney.org/funds/kidneywalk/index.cfm](http://www.kidney.org/funds/kidneywalk/index.cfm).

The second annual Seattle 100—Racing Towards a Cure for Kidney Disease will take place on September 8, 2004. The event will raise money to further the NephCure Foundation mission to support research seeking the cause of nephrotic syndrome and FSGS (focal segmental glomerulosclerosis), two types of kidney disease that can lead to the need for a kidney

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transplant. The Seattle 100 is not a motorcycle race but a road course endurance event for charity. For more information (or to plan a fundraiser like this one in your area), visit [www.nephcure.org/Events\\_secondseattle100.html](http://www.nephcure.org/Events_secondseattle100.html).

## In the Literature

**The Importance of Family History on the Development of Renal Disease.** Satko, S.G., and Freedman, B.I. *Current Opinion in Nephrology and Hypertension* 13(3) (May 2004): 337–341. Family members of individuals with chronic kidney disease are disproportionately affected by unrecognized nephropathy (a disease or abnormality of the kidney). This observation has led to the search for a genetic component of this susceptibility. Screening of these high-risk relatives will probably lead to successful treatment of nephropathy and slow the growing worldwide epidemic of end-stage renal disease.

**Morbid Obesity Is Not a Contraindication to Kidney Transplantation.** Marks, W.H., et al. *American Journal of Surgery* 187(5) (May 2004): 635–638.

Historically, concern that morbidly obese kidney transplant recipients have worse outcomes than nonmorbidly obese recipients has led many transplant centers to deny transplantation to the former group. However, these researchers have found that morbidly obese persons have 3-year graft and patient survivals similar to those of nonobese persons. Although the obese patients have more serious complications and spend more days in the hospital, the authors believe that these reasons are not sufficient to deny this population the advantages of kidney transplantation.

**New Insights Into Protein Intake and Progression of Renal Disease.** Lentine, K., and Wrone, E.M. *Current Opinion in Nephrology and Hypertension* 13(3) (May 2004): 333–336.

For several decades, restricting protein in the diet has been accepted as a strategy to slow renal disease progression. Recently, a National Kidney Foundation advisory board incorporated recommendations for supervised low-protein diets into guidelines for the

care of nondialyzed patients with chronic kidney failure. However, the clinical usefulness of dietary modification is still controversial. New research supports the view that high-protein diets accelerate renal disease progression and that different protein sources have different consequences.

**Physical and Sexual Function in Women With Chronic Kidney Disease.** Kurella, M., et al. *American Journal of Kidney Disease* 43(5) (May 2004): 868–876.

In a large cohort of women enrolled in the Heart and Estrogen/Progestin Replacement Study, the authors studied possible associations between chronic kidney disease (CKD), physical function, and sexual function. They found that CKD is associated with impaired physical function and that a decline in estimated glomerular filtration rate is associated with a decline in physical function but not with the psychosocial aspects of sexual function.

**Willingness of Patients To Switch From Conventional to Daily Hemodialysis: Looking Before We Leap.** Halpern, S.D., et al. *American Journal of Medicine* 116(9) (May 2004): 606–612. Although daily dialysis (six 2- to 3-hour in-center treatments per week) has received widespread support from funding agencies, lawmakers, and nephrologists, 44 percent of the 126 patients interviewed in this study would not choose daily dialysis regardless of its health benefits. The remaining 56 percent indicated that they would consider switching if daily hemodialysis was shown to yield certain health benefits.

**The Role of Physician Assistants in Improving Renal Care.** Smith, G.O., Jr. *Nephrology News & Issues* 18(5) (April 2004): 51–56.

There is currently only a small group of nephrology physician assistants (PAs); recruiting and training more PAs in the field is an absolute necessity. The number of individuals with kidney disease in the United States is increasing at a rate that outpaces our ability to develop and train nephrologists. Well-trained PAs can provide closer monitoring of patients and help prevent potential major problems in the outpatient arena.

## Meetings

**13th Congress of the International Pediatric Nephrology Association.** Adelaide, Australia. Visit [www.hartleymgt.com.au/ipna](http://www.hartleymgt.com.au/ipna). **August 29–September 2, 2004.**

**31st Annual Convention of the American Association of Kidney Patients.** Bal Harbour, FL. Visit [www.aakp.org/AAKP/convention.htm](http://www.aakp.org/AAKP/convention.htm). **September 2–5, 2004.**

**National Renal Administrators Association's Annual Conference: Inaugural National Patient Meeting.** Denver, CO. Visit [www.ikidney.com/iKidney/Calendar/2004/September/30/HealthHappinessHope.htm](http://www.ikidney.com/iKidney/Calendar/2004/September/30/HealthHappinessHope.htm). **September 30–October 2, 2004.**

**37th Annual Meeting and Scientific Exposition of the American Society of Nephrology.** St. Louis, MO. Visit [www.asn-online.org/education\\_and\\_meetings/Renal%20Week/renal\\_week.aspx](http://www.asn-online.org/education_and_meetings/Renal%20Week/renal_week.aspx). **October 29–November 1, 2004.**

**58th Annual Fall Conference and Scientific Sessions of the Council for High Blood Pressure Research in Association With the Council on the Kidney in Cardiovascular Disease.** Chicago, IL. Visit [www.americanheart.org/presenter.jhtml?identifier=3015752](http://www.americanheart.org/presenter.jhtml?identifier=3015752). **October 9–12, 2004.**