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IN KIDNEY DISEASE PATIENTS, LOW BLOOD PRESSURE INCREASES STROKE RISK

Washington, DC (Wednesday, February 12, 2007) — For patients with chronic kidney disease (CKD), the risk of stroke is increased with low blood pressure as well as high blood pressure, reports a study in the March Journal of the American Society of Nephrology.

"Our study confirmed that individuals with CKD and elevated blood pressure are at increased risk of stroke," comments Dr. Daniel E. Weiner of Tufts-New England Medical Center, Boston. "Further, we found that individuals with the lowest systolic blood pressures and moderate kidney disease are also at risk of stroke—even compared to CKD patients with slightly higher blood pressure."

Using data on more than 20,000 Americans participating in a long-term study of heart disease risk factors, the researchers looked at how CKD and blood pressure affect the risk of stroke. Based on a standard test of kidney function, 7.6 percent of subjects had CKD: a condition generally associated with progressive loss of kidney function. In addition to permanent loss of kidney function requiring dialysis or kidney transplantation, CKD has been linked to an increased risk of cardiovascular (heart and blood vessel) diseases.

People with CKD were at increased risk of stroke, even after accounting for traditional risk factors. At a median follow-up of one year, just over five percent of CKD patients had a stroke. Compared to those without kidney disease, stroke risk was 22 percent higher for subjects with CKD.

With or without CKD, high blood pressure was also an independent risk factor for stroke. For each 10-mm Hg increase in systolic blood pressure, stroke risk increased by 18 percent. (Systolic blood pressure is the first, higher number in the blood pressure measurement. Normal blood pressure is 120/80 mm Hg [millimeters of mercury]).

However, in CKD patients, stroke risk was also increased at lower-than-normal blood pressures. Among patients with moderate CKD, the stroke rate was more than doubled for those

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whose systolic blood pressure was less than 120 mm Hg, compared to patients with similar CKD but blood pressure of 120 to 129 mm Hg.

"This effect was most significant in individuals receiving drugs to lower blood pressure," Dr. Weiner notes. "The fact that this was an observational study rather than a randomized controlled trial precludes any comment about possible harm related to treating patients to lower blood pressure goals, but it's an area that may benefit from further investigation."

Stroke is one of the leading causes of death and disability in the United States. CKD is also extremely common—millions of Americans have kidney function in the range of the kidney disease population studied. The study was designed to address unanswered questions about the interplay between high blood pressure, kidney disease, and stroke.

"This research points out how little we truly know about the best way to treat individuals with CKD," says Dr. Weiner. Although the exact nature of the relationship between blood pressure, kidney disease, and stroke risk is still unclear, the results suggest several possibilities. "Most likely, low blood pressure identifies individuals with weak hearts or with stiff blood vessels that are unable to compensate to increase blood flow when needed or individuals who have a high pre-existing burden of vascular disease. However, it is possible that low blood pressure itself may be directly harmful in patients with kidney disease due to decreased blood supply to the brain."

The study entitled, "Lowest Systolic Blood Pressure is Associated with Stroke in Stage 3-4 Chronic Kidney Disease," will be available online at www.jasn.org, under JASN Express, beginning on Wednesday, February 14 and in print in the March issue of the *Journal of the American Society of Nephrology*.

The ASN is a not-for-profit organization of 9,500 physicians and scientists dedicated to the study of nephrology and committed to providing a forum for the promulgation of information regarding the latest research and clinical findings on kidney diseases.

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