

Journal View

More Preventive Care Lowers Cardiovascular Risk in CKD Patients

Among patients with chronic kidney disease (CKD), those receiving more recommended preventive care measures have lower rates of cardiovascular events and death, reports a study in the *Journal of the American Society of Nephrology*.

The analysis used three-year rolling cohorts of Medicare patients, including approximately 1.2 million patients per year. In year 1, CKD and diabetes status was assessed. Adherence to preventive health-care recommendations (based on Kidney Disease Outcomes Quality Initiative guidelines) was assessed in year 2 and atherosclerotic heart disease outcomes in year 3.

Eighty percent of CKD patients received at least two serum creatinine measurements, but only 11 percent underwent recommended parathyroid hormone testing. Cumulative incidence of any atherosclerotic heart disease event was 11 percent for patients without pre-existing cardiovascular disease and 25 percent for

those with prevalent disease.

For most measures, meeting preventive care recommendations was linked to a lower risk of atherosclerotic heart disease outcomes the following year. Undergoing calcium-phosphorus assessment was associated with a 43 percent reduction in risk the following year. For patients undergoing influenza vaccination and two or more A1c measurements, risk decreased by 13 percent. The exception was serum creatinine measurement—patients undergoing two or more tests were at 13 percent higher risk the next year.

The greater the number of preventive measures in patients with CKD, the lower the risk of atherosclerotic heart disease outcomes. In the full study sample, receiving most or all preventive measures would avoid about 75,000 events per year [Snyder JJ, Collins AJ: Association of preventive health care with atherosclerotic heart disease and all-cause mortality in CKD. *J Am Soc Nephrol* 2009; 20: 1614–1622]. ●

Many Missed Dialysis Sessions after Katrina, Study Finds

More than 40 percent of New Orleans hemodialysis patients missed one or more dialysis sessions in the wake of Hurricane Katrina, suggests a study in *Kidney International*.

The researchers performed phone interviews with 386 patients from nine New Orleans dialysis units regarding their Katrina experiences, including how the disaster affected their dialysis schedule. Forty-four percent of patients said they missed at least one dialysis session, while 17 percent missed three or more sessions.

Multiple missed sessions were more likely for patients with certain characteristics: being on dialysis for less than two years (compared to five years or longer); having 38 or fewer billed dialysis sessions; and being unaware of their dialysis center's emergency plan. Risk was also higher for patients who lived alone before

Katrina, who did not evacuate before the storm made landfall, and who were placed in a shelter. For patients missing three or more sessions, the adjusted odds ratio for hospitalization was 2.16, compared to those who did not miss any sessions.

The results show the high rate and serious consequences of missed dialysis sessions for victims of a natural disaster. The findings help to identify groups at particularly high risk. Disaster preparedness plans should emphasize patient awareness of their dialysis center's emergency plan, as well as early activation of the plan [Anderson AH, Cohen AJ, Kutner NG, Kopp JB, Kimmel PL, Muntner P: Missed dialysis sessions and hospitalization in hemodialysis patients after Hurricane Katrina. *Kidney Int* 2009; 75:1202–1208]. ●

Risk of VTE Increases with Microalbuminuria

Microalbuminuria is an independent risk factor for venous thromboembolism (VTE), reports a study in *The Journal of the American Medical Association*.

The investigators analyzed data on 8574 Dutch adults participating in a community cohort study. Microalbuminuria, defined as albumin level of 30 to 300 mg per 24-h urine collection, was assessed as a risk factor for deep vein thrombosis and/or pulmonary embolism. At an average follow-up of 8.6 years, the annual incidence of VTE was 0.14 percent.

As urinary albumin excretion (UAE) increased, so did the incidence of VTE: 0.12 percent at UAE under 15 mg/24 h, 0.20 percent at 15 to 29 mg/24 h, 0.40 percent at 30 to 300 mg/24 h, and 0.56 percent at more than 300 mg/24 h. On adjusted analysis, hazard ratios for VTE at the different levels of UAE were

1.40 at 15 to 29 mg/24 h, 2.20 at 30 to 300 mg/24 h, and 2.82 at more than 300 mg/24 h. The hazard ratio for VTE among patients with microalbuminuria was 2.00. One additional case of VTE would occur each year for each 388 people with microalbuminuria.

The results suggest that microalbuminuria is associated not only with arterial thromboembolism, but also with VTE. Risk of VTE increases at higher UAE levels, even short of microalbuminuria. More study will be needed to determine whether treatment for microalbuminuria can influence VTE risk [Mahmoodi BK, Gansevoort RT, Veeger NJGM, Matthews AG, Navis G, Hillege HL, van der Meer J, for the Prevention of Renal and Vascular End-stage Disease (PREVEND) Study Group. *J Am Med Assoc* 2009; 301:1790–1797]. ●

For Older Adults, High Risk of Death While Waiting for a Kidney

Projections suggest that close to half of patients aged 60 or older currently on the waiting list for kidney transplantation will die before receiving a cadaver organ, according to a study in the *Clinical Journal of the American Society of Nephrology*.

The investigators reviewed national registry data on transplant patients including nearly 55,000 patients over age 60 who were listed for a single-kidney transplant from 1995 to 2007. Survival models suggested that 46 percent of over-60 patients wait-listed in 2006 or 2007 would die before undergoing deceased donor kidney transplantation.

For certain groups of patients, the risks of dying without a transplant were even higher, including rates of 62 percent for African Americans, 61 percent for diabetics, and 52 percent for patients aged 70 or older. Risk was 71 percent for patients with blood type B and 60 percent for

those with type O, 68 percent for highly sensitized patients, and 52 percent for those on dialysis at wait-listing. By UNOS region, the risk of dying on the waiting list varied from 6 percent (region 6) to 81 percent (region 5).

The increase in waiting times to deceased donor transplantation has a particularly large impact on older patients. The risk of dying before receiving a kidney transplant is high for patients over 60 and varies between regions. Disseminated to patients, this information could have an important impact on decision-making, including the decision to seek a living donor [Schold JD, Srinivas TR, Sehgal AR, Meier-Kreische HU: Half of kidney transplant candidates over the age of sixty now wait listed will die prior to receiving a deceased donor transplant. *Clin J Am Soc Nephrol* 2009; 4:1239–1245]. ●

New Insights into Effects of Dual RAAS Blockade in CKD

In patients with chronic kidney disease (CKD), the acute response to a potassium challenge may predict chronic changes in potassium level while receiving dual renin-angiotensin-aldosterone (RAAS) blockade, reports a study in *Hypertension*.

The randomized, crossover trial included 18 patients with hypertension and CKD with a glomerular filtration rate of 25 to 65 mL/min. In random order, the patients received four weeks of treatment with dual RAAS blockade, consisting of lisinopril 40 mg/dL and spironolactone 25 mg/dL, and four weeks of placebo. After each treatment, dynamic renal potassium excretion and serum potassium were assessed after a 35 mmol oral potassium challenge.

Ambulatory potassium concentrations were 4.87 mmol/L after four weeks on lisinopril/spironolactone versus 4.37 mmol/L after four weeks on placebo. After lisinopril/spironolactone treatment, a small 0.44 mmol/h drop in potassium excretion was accompanied by a 0.67 mmol/L increase in serum potassium,

suggesting impairment of extrarenal/transcellular potassium disposition. The increase in serum potassium after potassium challenge was a significant predictor of the increase in ambulatory potassium on lisinopril/spironolactone.

Dual RAAS blockade can improve cardiovascular and renal outcomes in patients with hypertension. However, in patients with CKD, it can lead to hyperkalemia. In this trial, lisinopril/spironolactone increases serum potassium concentration not only through reduced potassium excretion, but also through impairment of extrarenal potassium disposition. Changes in dynamic potassium handling may become useful in predicting changes in ambulatory potassium concentration in response to this drug treatment strategy [Preston RA, Afshartous D, Garg D, Medrano S, Alonso AB, Rodriguez R: Mechanisms of impaired potassium handling with dual renin-angiotensin-aldosterone blockade in chronic kidney disease. *Hypertension* 2009; 53:754–760]. ●

Rare Genetic Disease Lends Insights into Renal Salt Handling

Studies of a rare mutation of the potassium-channel gene *KCNJ10* suggest that this gene may play an important role in renal salt handling and blood pressure regulation, according to a study in *The New England Journal of Medicine*.

The report describes five children from two consanguineous families with a syndrome of epilepsy, ataxia, sensorineural deafness, and tubulopathy, which the authors designate “EAST syndrome.” The salt-losing tubulopathy was associated with a hypokalemic metabolic alkalosis, without high blood pressure. Genetic studies traced the autosomal recessive disorder to two mutations of *KCNJ10*, which encodes a potassium channel expressed in the brain, inner ear, and kidney. Further studies linked the mutations

to significant and specific reductions in potassium currents. In mice with deletions of the gene *Kcnj10*, dehydration and renal salt wasting were observed.

Studies of rare inherited renal tubular diseases have provided new insights into renal salt and water handling, with implications for the management of hypertension. The new findings suggest that *KCNJ10* could play a key role in renal salt handling, and thus in maintenance and regulation of blood pressure. The authors suggest re-evaluating data from genome-wide association studies to examine this possibility [Bockenbauer D, Feather S, Stanescu HC, Bandulik S, et al.: Epilepsy, ataxia, sensorineural deafness, tubulopathy, and *KCNJ10* mutations. *N Engl J Med* 2009; 360:1960–1970]. ●