Mortality, Hospitalization Lower When KDOQI Targets Reached

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June 25, 2007 (Barcelona) — Achievement of targets for bone mineral metabolism established by the Kidney Disease Outcomes Quality Initiative (KDOQI) is associated with lower rates of morbidity and mortality, according to interim findings from a large, multinational study.

The data come from Current Management of Secondary Hyperparathyroidism: A Multicentre Observational Study (COSMOS), which ultimately will gather information on 5700 randomly selected hemodialysis patients recruited from 285 facilities in 21 countries, said Jose Luis Fernández-Martín, MD, who presented the findings here at the 44th European Renal Association–European Dialysis and Transplantation Association Congress. The sites, which also were randomly chosen, include a mix of medium-to-large hospitals and satellite units. Patients will be assessed at 6-month intervals.

The analysis presented at the congress included data on 1469 men and 1026 women who have been followed for 18 months to date. Diabetes, hypertension, and glomerulonephritis were the most common causes of chronic kidney disease (CKD). Of the 2495 patients, 931 (37 %) were lost to follow-up, including 568 (23%) who died; 337 (14%) who underwent transplantation, changed hemodialysis units, or switched to peritoneal dialysis; and 26 (1%) whose status was undefined. Of the deaths, 269 (47%) were related to cardiovascular causes.

The investigators assessed outcomes in relation to the percentage of patients who fell within KDOQI target ranges for serum calcium, phosphorous, calcium–phosphorus multiplication product (CaxP), and parathyroid hormone. That goal was achieved by 53.5%, 52.2%, 75.6%, and 32.4% of the participants, respectively.

All-cause mortality was significantly higher among patients who exceeded the calcium target range of 8.4 to 9.5 mg/dL or fell below the target range for phosphorous of 3.5 to 5.5 mg/dL or parathyroid hormone of 150 to 300 pg/mL ($P < .006$ for all comparisons). Similar patterns were seen in all-cause hospitalization rates, except that it was also increased in patients who exceeded the CaxP target value of 55 mg$^2$/dL$^2$ ($P < .006$).

Patients who exceeded the calcium target range also had a significantly increased risk of death or hospitalization from cardiovascular causes. Hospitalization for cardiovascular disease also was increased among people who exceeded the targets for phosphorous and CaxP.

When the data were analyzed according to a Cox proportional hazard model, patients who exceeded the calcium target or fell short of the targets for phosphorous or parathyroid hormone had an all-cause mortality hazard ratio of 2. Similar risk increases were also seen for cardiovascular mortality when patients exceeded the calcium or CaxP targets. The hazard ratio for all-cause hospitalization was about 1.5 when patients exceeded the targets for calcium or CaxP and about 2 among those whose serum parathormone levels were high. Hazard ratios for cardiovascular hospitalization ranged from about 1.7 to about 1.9 when patients exceeded the targets for calcium, phosphorous, and CaxP.

Andrzej Wiececk, MD, head of the department of nephrology, endocrinology, and metabolic diseases at Silesian University School of Medicine in Katowice, Poland, who was not involved in this study, pointed out that some studies have shown an association between vitamin D therapy and greater survival in hemodialysis patients. The analysis presented at the congress did not include vitamin D use, said Dr. Fernández-Martín, of the Bone
and Mineral Research Unit, Instituto Reina Sofia, Hospital Universitario Central de Asturias, Oviedo, Asturias, Spain, "but I can tell you that these results in the different groups, according to the KDOQI levels, are independent of the vitamin D values."

These findings suggest that achievement of KDOQI targets for hemodialysis patients does seem to result in lower rates of mortality and hospitalization for all and cardiac causes, said Dr. Fernández-Martín. However, he cautioned that this preliminary analysis included less than half of the expected patient population and that the patients were followed for only half of the planned study time. "Once the recruitment and follow-up period is completed, COSMOS will provide important information about the European dialysis population."

Neither Dr. Fernández-Martín nor Dr. Wiececk report any relevant financial relationships.