Comparative analysis of mortality, cancer, hip fracture, & infectious event rates in dialysis, CKD, transplant & general populations

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Introduction

• Understanding the comorbidity burden of the chronic kidney disease (CKD) and end-stage renal disease (ESRD) populations may provide insight into the high mortality rates among these groups.
• This study compared morbidity and mortality among ESRD, CKD, and non-CKD patients.

Methods

• The study cohort included Medicare dialysis, transplant, CKD, and non-CKD patients (N = 191,287, 22,673, 44,941, and 1,378,122, respectively) in the United States.
• Patients were prevalent on January 1, 2002, and followed for a maximum of two years, until December 31, 2003.

Results

• The CKD and non-CKD cohorts were obtained from the 5% Medicare database.
• Diabetes and CKD status were defined during a one-year entry period in 2001.
• Events studied included pneumonia, bacteremia/septicemia, hip fracture, and cancer.
• Events were identified by the first inpatient ICD-9-CM diagnosis code for the disease during followup.
• For each cohort, mortality and event rates were calculated using the model-based adjustment method.
• Rates were presented by age and adjusted for gender, race, and diabetic status.
• The reference cohort consisted of all included patients.

- Generally, mortality and event rates showed the following pattern:
  - Dialysis > CKD > transplant > non-CKD.
  - The increase in event rates with older age was steeper in dialysis patients than in the other three cohorts.
  - With the exception of cancer, event rates for the youngest group of dialysis patients exceeded those of the oldest group of non-CKD patients.
  - Compared to non-CKD, mortality rates were 6 to 9 times higher in dialysis patients and 3 to 5 times higher in the CKD cohort.
  - For dialysis versus CKD, mortality rates were nearly twice as high; pneumonia, bacteremia/septicemia, and hip fracture rates were 2 to 4 times higher; and cancer rates were slightly lower.
  - Among transplant patients, mortality, hip fracture, and cancer rates approached the lower rates of non-CKD patients, while infectious rates were closer to those of CKD patients.

Conclusions

• The risk of serious medical conditions appears to be multiplied by the presence and severity of CKD.
• Recently revised ICD-9-CM diagnosis codes will allow future comparison of the comorbidity burden among the specific stages of CKD.
• The complexity of the dialysis population is demonstrated by extraordinarily high event rates.
• The distinctly and consistently poor outcomes of the dialysis cohort illustrate why it may be difficult to notably reduce all-cause mortality with a single intervention.