Comorbidity Burden and Medication Use in Stage 4-5 CKD Patients

Introduction
- Patients with advanced-stage CKD have higher hospitalization and mortality rates than earlier stage patients, and are at greater risk of advancing to ESRD.
- Historically, these patients have suboptimal treatment patterns leading into the ESRD transition.
- This study aimed to characterize the disease burden, healthcare utilization and treatments in stage 4-5 CKD patients using the Truven Health MarketScan Databases.

Methods
- Among all participants, CKD was defined as present if there was at least one inpatient claim or two outpatient claims with ICD-9-CM CKD diagnosis codes between 10/1/2009 and 9/30/2010.
- CKD stage 4-5 patients were identified if they met above CKD definition and had an eGFR < 30 mL/min/1.73m² among those with available serum creatinine data, eGFR was calculated using CKD-EPI equation.
- Each patient was followed for one year period from day 91 of the initial diagnosis. The following were examined during the follow-up period:
  - Comorbidities
  - Hospitalization
  - Fracture and tendon rupture
  - Lab tests
  - Transfusion
  - Medications
- Other inclusion criteria were:
  - 20-64 years of age at baseline
  - No ESRD
  - Enrolled in fee for service plan
  - Survived through end of follow-up

Results
- Among approximately 13 million participants aged 20-64 years in the database, 8,684 were identified with stage 4-5 CKD. The mean age was 55.4 years, and 48.6% were female.
- The most common comorbidities were hypertension (54.2%), diabetes (43.2%), and anemia (32.1%).
- 21.3% of patients were hospitalized at least once; among those patients, the mean total LOS during follow-up was 11.3 days. CHF was the most common reason for hospitalization (11.4%).
- Lab tests with the smallest proportion of results in normal range were urine albumin, PTH, and hemoglobin/HCT.
- Fracture was relatively uncommon (2.9%) in the population, and tendon rupture was rare (0.8%).
- 65% of patients had hemoglobin levels below the normal range, and 19.2% of patients had values above the normal range.
- 20.9% of patients received vitamin D, 12.3% received ESAs and 3.0% received phosphate binders. Cinacalcet use was rare (0.7%).

Conclusions
- Advanced-stage CKD patients carry a high comorbidity burden, and in 5 are hospitalized at least once a year.
- The most common reasons for hospitalization are related to CHF and fluid overload, infection, and cardiovascular disease.
- Both anemia and mineral and bone disorder are common in this population.
- Identification and management of this population with significantly reduced kidney function is important to reduce the risk of mortality and progression to ESRD.