



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.

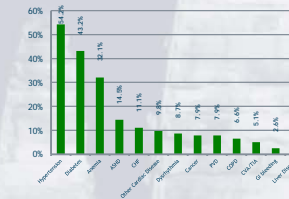
Methods

- 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 ICD-9-CM diagnosis code of 585.4 or 585.5.
- They were also identified if their 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

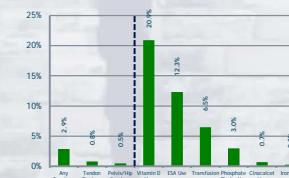
Results

- 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%).
- 21.5% 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 (11.6%).
- 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%). 6.5% of patients received a blood transfusion during the follow-up period.
- 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%).

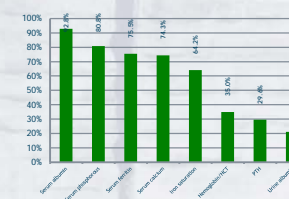
Prevalence of comorbidities during the follow-up period



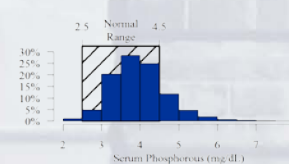
Fracture and drugs/treatments



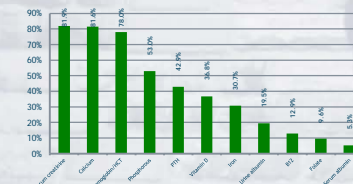
Proportion of patients tested with normal lab values during the follow-up period



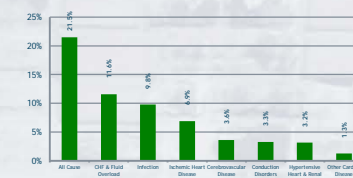
Distribution of serum phosphorus lab results



Proportion of patients with various lab tests during the follow-up period



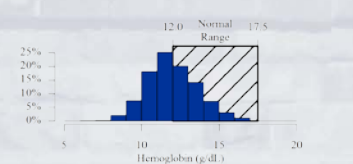
Cause of hospitalization



Normal lab value ranges

Serum Albumin:	3.5-5.0 g/dL
Urine Albumin:	0-2.3 mg/dL
Hemoglobin: (Males)	13.5-17.5 g/dL
Hemoglobin: (Females)	12.0-15.5 g/dL
Serum Calcium:	8.9-10.1 mg/dL
PTH:	15-65 pg/mL
Serum Ferritin:	24-336 ng/mL (males), 11-307 ng/mL (females)
Serum Phosphorus:	2.5-4.5 mg/dL
Iron Saturation:	20-50 %

Distribution of Hemoglobin lab results



Conclusions

- Advanced-stage CKD patients carry a high comorbidity burden, and 1 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.