ASSOCIATION BETWEEN RELATIVE ESTIMATED GLOMERULAR FILTRATION RATE CHANGES AND DAYS OUT OF THE HOME AND COST OUTCOMES IN PATIENTS WITH TYPE 2 DIABETES

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Introduction: A ≥40% relative decline in estimated glomerular filtration rate (eGFR) has been supported for use as a surrogate endpoint for clinical outcomes. However, the associations between this change and resulting days that a patient spends out of their primary ambulatory residence (e.g., during inpatient admissions and nursing facility stays) and cost outcomes are limited. The purpose of this analysis was to evaluate the associations of relative changes in eGFR with days out of the home and with cost outcomes in patients with type 2 diabetes mellitus (T2DM).

Methods: This was a retrospective cohort study conducted using administrative claims data. Patients enrolled in a Medicare Advantage and Prescription Drug Plan, 65-89 years of age, with T2DM and without initial stage V chronic kidney disease (CKD) or end stage kidney disease (ESKD) were included. Patients must have had an index estimated glomerular filtration rate (eGFR) of 25-89 ml/min/1.73m² in 2008-2017 with at least one serum creatinine test result available for calculation of eGFR and a second value within 3-24 months of the index value. The primary exposure of interest was relative decline in eGFR of ≥40% in up to a 2 year period (landmark time). Baseline demographic, clinical, healthcare resource use and costs were included as variables in the models. Outcomes included days out of the home and all-cause total costs for 12 months post-landmark date. Days out of the home was modeled as a binary variable (≥7 days vs. <7 days out of the home) using logistic regression. The cost outcome was modeled on a per-patient per month (PPPM) basis using a generalized linear model with a log link. All costs were standardized to 2019 US dollars.

Results: A total of 288,170 patients were included. There were 90,990 patients with a first eGFR of 25-59 ml/min/1.73m² and 197,180 with a first eGFR of 60-89 ml/min/1.73m². Overall, 1.6% (n=4,581) of patients had a relative eGFR decline of ≥40%. There were statistically significant differences in all-cause total PPPM costs and the proportion of patients with ≥7 days out of the home in the crude and adjusted models between patients with a ≥40% relative decline as compared to those with a <40% relative eGFR decline. In the adjusted models, patients with a ≥40% relative decline had 2.23 and 1.82 higher all-cause PPPM costs and higher odds of ≥7 days out of the home, respectively, as compared to those with a <40% relative eGFR decline. This translated to an adjusted mean 27.9% of patients with ≥7 days out of the home for those with a ≥40% relative decline (12.6 percentage points). The adjusted mean PPPM cost was $1,463 for patients with a ≥40% relative decline as compared to $1,554 for patients with a <40% relative decline (difference of $1,910 PPPM). The results for the subgroups were generally similar. The adjusted days out of the home and PPPM all-cause total costs for the overall patient population and subgroups are provided in Figure 1.

Conclusions: A relative eGFR decline of ≥40% may be a valid indicator for increased healthcare resource utilization and costs. Preventing or delaying CKD progression may reduce healthcare resource utilization, thereby allowing patients more time in their homes, and lower costs to the healthcare system.

Conflict of Interest: This study was funded by Bayer AG.

DEVELOPMENT AND TESTING OF THE EARLY-STAGE CHRONIC KIDNEY DISEASE SELF-MANAGEMENT (esCKD-SM) QUESTIONNAIRE

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Introduction: Interventions to slow chronic kidney disease (CKD) progression through improved self-management in early stage CKD are increasingly common. However, valid self-report instruments to evaluate outcomes of self-management interventions in CKD are limited. We sought to develop and conduct preliminary psychometric testing of a patient-informed questionnaire to assess early stage CKD self-management (esCKD-SM).

Methods: We developed the esCKD-SM questionnaire in three stages (Figure 1). First, potential items were identified based on existing general self-efficacy measures, self-management theories, and topics previously identified by patients as important to CKD self-management. Second, the draft questionnaire was reviewed by a Canadian expert panel (including patients, nephrologists, nurses, and researchers) using content validity index (CVI) to determine acceptance and finalize the items. Finally, we tested the questionnaire with patients using an electronic survey. We evaluated preliminary psychometric properties (internal consistency and content validity) as well as free-text responses relating to understandability, phrasing/wording, and missing topics considered important to self-management.

We are currently undertaking the fourth stage of development. Analysis will include a second round of internal consistency measurement, instrument reliability assessment (test-retest using intraclass correlation coefficient), and simultaneous administration of a previously validated generic self-efficacy instrument, the Chronic Disease Self-Efficacy Scale (CDSES), for comparison (convergent validity).

Results: We completed two rounds of expert review in February 2020. Of the 24 items retained in the final version of the questionnaire, 21 had greater than 85% acceptance (9 of which had 100% acceptance) and 3 had 75% acceptance. The items covered content relating to knowledge and confidence to engage in CKD self-management, blood pressure targets, laboratory measurements, non-prescription medications, symptoms, diet, lifestyle factors and information seeking behavior.
Thirty patients from across Canada participated in the pilot testing from April to May 2020. Approximately half were male (53%) and less than 50 years of age (40%). Approximately 40% had an estimated glomerular filtration rate (eGFR) <30mls/min/1.73m², and the rest had an eGFR ≥30 ml/min/1.73m² or did not know their eGFR. Internal consistency reliability (Cronbach’s alpha) was 0.915. Participants were satisfied with the content, wording and design. A common comment was need for a question that more explicitly addressed mental health; consequently, we included an additional item relating to mental health in the final instrument.

Conclusions: We used self-management theories, patient-identified self-management needs, expert review, and conducted preliminary psychometric testing to finalize an early-stage CKD self-management questionnaire (esCKD-SM). Results from stage 4 (additional internal consistency measurements, test-retest reliability, and convergent validity) will be available in February 2021. Once finalized, the esCKD-SM questionnaire has the potential to contribute to our understanding of self-management among those in the earliest stages of CKD.

No conflict of interest

POS-347

PREVALENCE OF POLYCYSTIC KIDNEY DISEASE IN THE MID WEST OF IRELAND AND CANDIDACY FOR TOLVAPTAN THERAPY

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Introduction: Tolvaptan is a vasopressin V2-receptor antagonist that inhibits cyst growth and slows the decline of kidney function in polycystic kidney disease (PKD). TEMPO 3:4 and REPRISE Trials showed that tolvaptan slows the decline in renal function and increase in kidney size. We aim to study the prevalence of polycystic kidney disease in the Mid-West region of Ireland and their candidacy for tolvaptan therapy.

Methods: A cross-sectional study was performed across the Mid-West for year ending 2019 to identify patients with polycystic kidney disease who attend the Renal Clinic by using the Renal Database in University Hospital Limerick. Suitability for tolvaptan therapy was determined using EDTA criteria.

Results: 147 patients with PKD were identified in the Mid-West; mean age 55 (17-92), 47.6% male and including 52 patients with end-stage kidney disease; 26 (50%) on haemodialysis, 2 (3.8%) on peritoneal dialysis and 24 (46.2%) with kidney transplants. There are 95 patients with chronic kidney disease (CKD), of whom 77 had blood test performed in 2019. Among these 77 patients, 24 (31.2%) have Stage 1, 26 (33.8%) have Stage 2, 11 (14.3%) have Stage 3a, 4 (5.2%) have Stage 3b, 8 (10.4%) have Stage 4 and 4 (5.2%) have Stage 5 CKD. Rapid progressors were defined as a decline in eGFR by ≥ 2.5ml/min/1.73m²yearly over 5 years, or ≥ 5ml/min/1.73m²over one year; 47/77 (55.8%) rapid progressors were identified of whom 29 (67.4%) have CKD G3b-5 admitted from home to a tertiary hospital in North West UK with hip fracture between Jun 2013 and Dec 2019 were included. Parameters assessed on hospital admission for each patient included Clinical Frailty Scale (CFS), Charlson’s Co-morbidity Index (CCI), Chronic Kidney Disease Frailty Index Laboratory Score (CKD FI-LAB), Karnofsky Performance Status Scale, Serum Creatinine, Nottingham Hip Fracture Score, Estimated VO2 Peak, ASA Physical Status Classification System Score and Abbreviated Mental Test Score. Patients who did not directly return home after hospitalization following hip fracture were discharged to a residential home, nursing home, specialist rehabilitation unit in the region or another district general hospital for ongoing rehabilitation needs. Receiver Operating Characteristic (ROC) curve analyses were performed to evaluate the ability of individual scoring tools to predict non-home discharge following hip fracture in patients with CKD admitted from home.

Results: A total of 225 patients met study inclusion criteria. The mean age was 81.6±10.1 yrs and the female:male ratio was 1.7:1. 33 patients (14.7%) were on long-term dialysis. 30-day in-hospital mortality was 5.9%. Following hip fracture hospitalization, 117 patients (52.0%) directly returned home on discharge. 13 patients (5.8%) were discharged to residential home, 51 patients (22.7%) to nursing home, 22 patients (9.8%) to a specialist rehabilitation unit in the region and 12 patients (5.3%) were rehospitalized to a district general hospital closer to the patient’s pre-admission residence. Difference in 1-year mortality rate between the non-home discharge cohort and those directly discharged home from hospital was +16.2% (p<0.001). Area under a curve (AUC) values from ROC analyses are shown in the table.

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PREDICTING DIFFICULTIES WITH DIRECT HOME DISCHARGE FOLLOWING HIP FRACTURE FOR PATIENTS LIVING WITH CKD: INSIGHTS FROM A 6-YEAR PROSPECTIVE STUDY

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Introduction: Patients with chronic kidney disease (CKD) are at higher risk of falls and sustaining hip fractures compared to those without CKD. Worse clinical outcomes are observed in CKD groups, exacerbated by frailty, sarcopenia and other co-morbidities. Arranging discharge to own home following hip fracture is often difficult for older patients living with CKD. Patients with CKD usually have markedly deteriorated functional status following acute trauma and basic rehabilitation requirements cannot be holistically supported within a home environment. The most useful clinical assessment tool to predict for non-home discharge in patients with CKD following hospitalization with hip fracture remains unknown.

Methods: Patients with CKD G3b-5 admitted from home to a tertiary hospital in North West UK with hip fracture between Jun 2013 and Dec 2019 were included. Parameters assessed on hospital admission were performed to evaluate the ability of individual scoring tools to predict non-home discharge following hip fracture in patients with CKD admitted from home.

Results: A total of 225 patients met study inclusion criteria. The mean age was 81.6±10.1 yrs and the female:male ratio was 1.7:1. 33 patients (14.7%) were on long-term dialysis. 30-day in-hospital mortality was 5.9%. Following hip fracture hospitalization, 117 patients (52.0%) directly returned home on discharge. 13 patients (5.8%) were discharged to residential home, 51 patients (22.7%) to nursing home, 22 patients (9.8%) to a specialist rehabilitation unit in the region and 12 patients (5.3%) were rehospitalized to a district general hospital closer to the patient’s pre-admission residence. Difference in 1-year mortality rate between the non-home discharge cohort and those directly discharged home from hospital was +16.2% (p<0.001). Area under a curve (AUC) values from ROC analyses are shown in the table.

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<tr>
<th>Predictor</th>
<th>AUC Value</th>
<th>95% CI</th>
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<td>Clinical Fraility Scale</td>
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<td>Charlson’s Co-morbidity Index</td>
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<td>0.85-0.99</td>
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<td>Chronic Kidney Disease Frailty Index</td>
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<td>Laboratory Score</td>
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<td>Karnofsky Performance Status Scale</td>
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<td>Sernbo Score</td>
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<tr>
<td>Nottingham Hip Fracture Score</td>
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<td>Estimated VO2 Peak</td>
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<td>Abbreviated Mental Test Score</td>
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Conclusions: Frailty and co-morbidity assessment tools (CFS, CCI and CKD FI-LAB) displayed the best predictive ability for non-home discharge following hip fracture in patients with CKD. Difficulty with direct home discharge is associated with significant mortality over the short term. Future research should explore holistic, multi-modal and multi-disciplinary interventions that aim to improve outcomes of