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TREATMENT OF CKD, HOSPITALIZATION, AND COSTS IN AN INCIDENT CKD POPULATION: A MULTICENTRIC REAL-WORLD STUDY

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Introduction

- Renin-angiotensin-aldosterone system inhibitors (RAASi) and sodium-glucose cotransporter-2 inhibitors (SGLT2i) have proven effective for delaying chronic kidney disease (CKD) progression, cardiorenal events, and death in large outcome trials.[1]
- Real-world data on treatment patterns, outcomes and costs is needed to optimize CKD management.
- This study describes outcomes and costs in newly diagnosed CKD patients in Portugal, based on treatment patterns after one year.

Methods

- Observational, multicentric, retrospective study that used secondary data sources.

CKD definition
Having either:

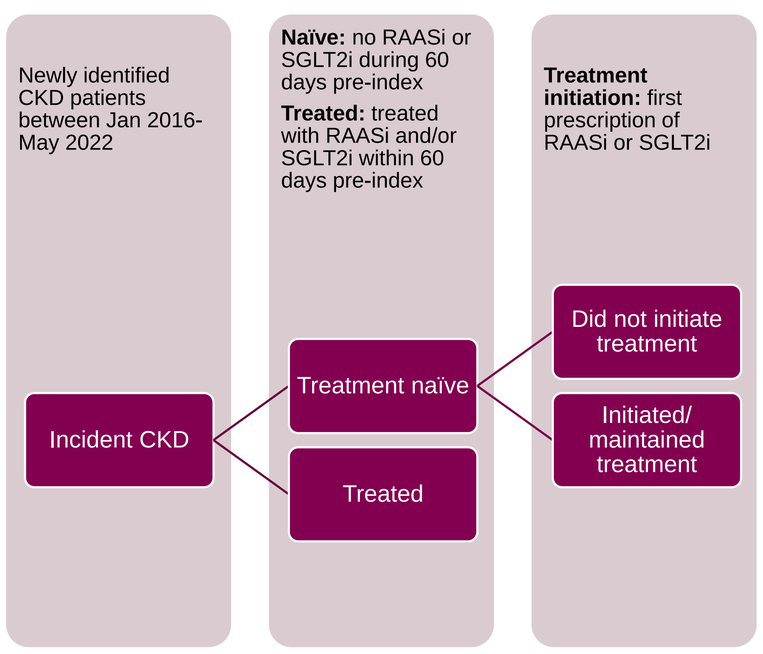
- Biochemical confirmation (≥ 1 **UACR measure of ≥30 mg/g** OR ≥ 2 eGFR measures ≥ 90 days apart, of which the second **eGFR is ≤75 ml/min/1.73m²**)
- CKD diagnosis code (ICD-9/ICD-10/ICPC-2) in medical record

Index date
Date when patients met the CKD definition, on or after 1st January 2016

Inclusion criteria

- ≥ 18 years old
- Meeting CKD definition
- ≥ 3 years look-back prior to index date

Figure 1: Study population flow diagram.



CKD, chronic kidney disease; HCRU, Healthcare resource use; RAASi, renin-angiotensin-aldosterone system inhibitors; SGLT2i, sodium-glucose cotransporter-2 inhibitors.

- All analyses were descriptive, with no formal between-groups comparison.

Results

- A total of **43 888** incident cases of CKD were identified.

Patients' characteristics at baseline

56.9% | Median 69.7 years | Median BMI 27.7 kg/m2

Table 1: Baseline demographic and clinical characteristics of study population, RAASi/SGLT2i naïve and RAASi/SGLT2i treated patients at CKD diagnosis.

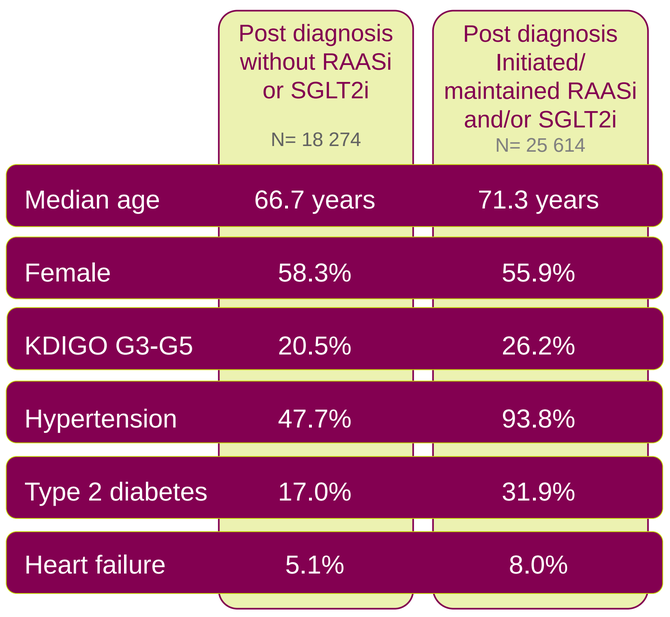
	Incident CKD (n= 43 888)	Baseline Naïve patients (n=29 072)	Baseline Treated patients (n=14 816)
Age, years, median (IQR)	69.7 (17.7)	69.0 (19.0)	70.9 (15.3)
Sex, female (%)	56.9	57.8	55.2
BMI, kg/m², median (IQR)	27.7 (6.3)	27.3 (6.3)	28.4 (6.3)
Hypertension (%)	74.6	64.9	93.9
Type 2 diabetes (%)	25.7	23.1	30.8
ASCVD (%)	10.6	10.1	11.6
Heart failure (%)	6.8	6.4	7.4
KDIGO category (%)			
G1	0.6	0.5	0.7
G2	69.6	70.3	68.3
G3a	13.5	13.3	14.0
G3b	5.6	5.3	6.1
G4	2.1	2.2	2.0
G5	0.8	0.9	0.5
missing	7.8	7.5	8.4
Anti-diabetic drugs (%)	30.0	26.4	37.0
Lipid-lowering drugs (%)	59.5	53.8	70.8

ASCVD, atherosclerotic cardiovascular disease; BMI, body mass index; CKD, chronic kidney disease; IQR, inter-quartile range; N/A, not available; UACR, urine albumin-creatinine ratio.

Patient's characteristics at 1-year FUP

58.4% initiated/maintained RAASi and/or SGLT2i in the first year after CKD diagnosis.

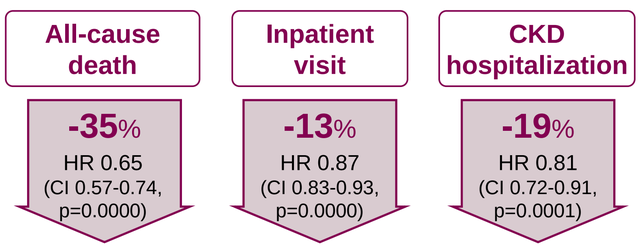
Figure 2: Demographic and clinical characteristics of patients that initiated/maintained and patients that did not initiate kidney-protective treatment in the first year after CKD diagnosis.



RAASi, renin-angiotensin-aldosterone system inhibitors; SGLT2i, sodium-glucose cotransporter-2 inhibitors.

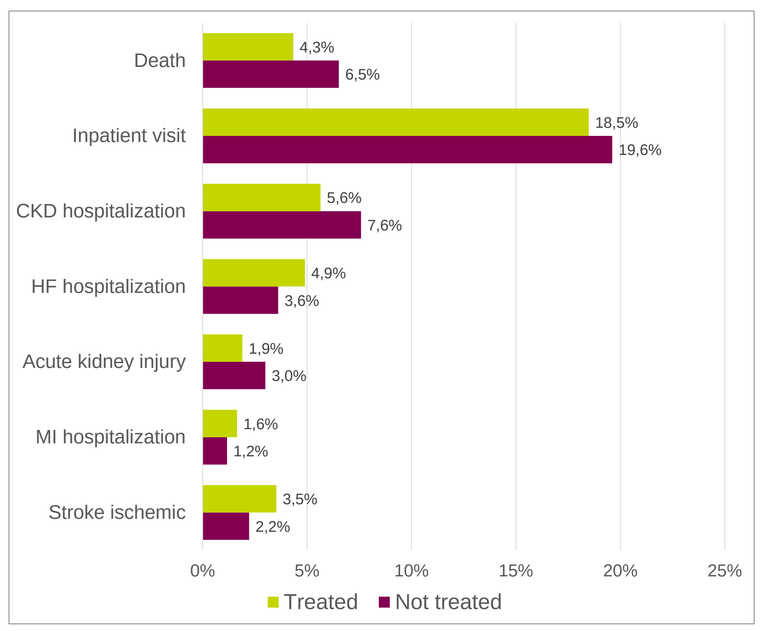
Outcomes at 1-year FUP

Figure 3: All-cause death and events risk in patients that initiated/maintained versus patients that did not initiate kidney-protective treatment, in the first year after CKD diagnosis.



CI, confidence interval; CKD, chronic kidney disease; HR, hazard ratio.

Figure 3: Proportion of patients that experienced events in the first year after CKD diagnosis, according to exposure to kidney-protective treatment.



CKD, chronic kidney disease; HF, heart failure; MI, myocardial infarction.

Costs at 1-year FUP

Table 2: Proportion of costs associated with each category of hospitalization in relation to all-hospitalization costs, in the first year of CKD diagnosis.

	Incident CKD (n= 43 888)
CKD hospitalizations, € (%)	8 214 073 **(31.0)**
HF hospitalizations, € (%)	6 030 877 (22.8)
Acute kidney injury hospitalizations, € (%)	2 796 961 (10.6)
MI hospitalizations, € (%)	1 744 230 (6.6)
Ischemic stroke hospitalizations, € (%)	3 330 519 (12.6)
Other hospitalizations, € (%)	4 339 969 (16.4)

35.0% in not-treated patients

28.0% in treated patients

CKD, chronic kidney disease; HF, heart failure; MI, myocardial infarction.

Conclusions

- About a third of patients don't initiate/maintain kidney-protective treatment within the first year of CKD diagnosis.
- Patients that are treated with RAASi and/or SGLT-2i have a higher median age, higher prevalence of hypertension, type 2 diabetes and heart failure, and lower GFR than patients that were not treated with RAASi and/or SGLT-2i.
- Treatment with either RAASi or SGLT2i in the first year after CKD diagnosis is associated with a reduced risk of all-cause death and hospitalization for CKD, in parallel with a lower proportion of costs with CKD hospitalization from the all-hospitalization costs.
- The results of this study illustrate potential areas of improvement for the management of CKD in real-world clinical practice.

References
1. KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney International (2024) 105 (Suppl 4S), S117–S314

Disclosures
MP, JC, DP and FB are AstraZeneca Portugal employees.

Supported by AstraZeneca

Presented at ISPOR-Europe, Barcelona, 18 November 2024