Supplementary Material

Clinical Profile and Treatment Patterns in Individuals With Type 2 Diabetes and Chronic Kidney Disease Who Initiate a GLP-1 Receptor Agonist: A Multinational Cohort Study

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Appendix A: Description of Data Sources

Danish National Health Registers (DNHR), Denmark

Administrative data were used from the Danish Health Care System. Denmark has 5.8 million inhabitants and is divided into 5 administrative regions. The tax-supported Danish National Health Service provides free of charge primary and secondary healthcare services to all Danish residents in all regions. Data on primary and secondary healthcare utilization is recorded in several Danish databases [1].

The Danish National Patient Registry records information on hospital-related diagnosis codes, surgical procedures, and discharge dates from inpatient hospitals in Denmark since 1977 and on outpatient clinics, emergency department, and psychiatric wards since 1995. Diagnoses are classified according to the *International Statistical Classification of Diseases, Tenth Revision* (ICD-10) since 1994, whereas surgical procedures have been coded according to the Danish version of the Nordic Medico-Statistical Committee Classification of Surgical Procedures since 1996 [2]. For this study, we used all primary and secondary diagnosis codes related to an inpatient, outpatient, and emergency department encounter.

The Danish National Prescription Registry records information on all reimbursed drug prescriptions from local pharmacies since 1995. The database contains information on dispensing details, such as name, date, ATC code, volume according to defined daily dosage, size of package, strength, and form [3].

The Danish Civil Registration System records daily updated individual-level data on civil status, vital status, and migration since 1968, allowing complete follow-up [4].

The Nationwide Register of Laboratory Results for Research contains information on biochemistry data from routinely collected blood tests covering hospitals and GPs for the entire Danish population. The database started recording laboratory data in 2013 for most Danish administrative regions and is considered complete nationwide from October 2015 onwards [5,6]. Thus, related to the current study, there will be missing laboratory data in the study period before 2015 for some Danish regions.

The Danish National Health Service Register contains statistical information about the activities of health professionals contracted with the tax-funded public healthcare system (GPs, medical specialists, physiotherapists, etc.). These activities include a broad spectrum of healthcare services provided in the primary care setting, allowing the study of healthcare utilization patterns [7].

PHARMO Data Network

The PHARMO Data Network is a population-based data source with combined anonymous electronic healthcare data from different primary and secondary healthcare settings in The Netherlands [8]. The different data sources, including data from GPs, in- and outpatient pharmacies, clinical laboratories, hospitals, the cancer registry, pathology registry, and perinatal registry, are linked on a patient level through validated algorithms. The data are collected, processed, linked, and anonymized by STIZON, an ISO/IEC 27001 and NEN 7510 certified foundation, compliant to the General Data Protection Regulation (GDPR). STIZON acts as a trusted third party between the data sources and users of the anonymized data, which can request proportional study-specific datasets, in accordance with the GDPR.

The longitudinal nature of the PHARMO Data Network system enables to follow-up more than 10 million persons of a well-defined population in The Netherlands for an average of 12 years. Currently, the PHARMO Data Network covers over 7 million active persons out of 17 million inhabitants of The Netherlands. Data collection period, catchment area, and overlap between data sources differ. All electronic patient records in the PHARMO Data Network include information on age, sex, socioeconomic status, and mortality. Other information available is dependent on the data source. The PHARMO Data Network is updated yearly in Q4 with a lag of 1 to 1.5 years. To address the objectives of the present study, the PHARMO data described in the following paragraphs were used.

Outpatient pharmacy data

The outpatient pharmacy data comprise GP or specialist prescribed healthcare products dispensed by outpatient pharmacies, including community pharmacies as well as hospital-based outpatient pharmacies. The dispensing records include information on type of product, date, strength, dosage regimen, quantity, route of administration, prescriber specialty, and costs. Drug dispensings are coded according to the World Health Organization (WHO) ATC Classification System [9]. Outpatient pharmacy data cover a catchment area representing 4.2 million residents.

General practitioner data

The GP data comprise electronic patient records registered by GPs. The records include information on diagnoses and symptoms, laboratory test results, referrals to specialists, and healthcare product/drug prescriptions. The prescription records include information on type of product, prescription date, strength, dosage regimen, quantity, and route of administration. Drug prescriptions are coded according to the WHO ATC Classification System [9]. Diagnoses and symptoms are coded according to the International Classification of Primary Care (ICPC) [10],

which can be mapped to ICD codes, but also can be entered as free text. General practitioner data cover a catchment area representing 3.2 million residents.

Hospital data

The hospital data comprise datasets containing data on hospital admissions, ambulatory consultations, and high-cost medicines. For the present study, hospital admissions were used. Hospital data are collected and maintained by the Dutch Hospital Data Foundation [11] and comprise records from nearly all hospitals in The Netherlands. With permission from each hospital, the data are linked for research purposes with the PHARMO Data Network by the trusted third party.

This dataset comprises hospital admissions for more than 24 hours and admissions for less than 24 hours for which a bed is required (i.e., inpatient records). The records include information on hospital admission and discharge dates, discharge diagnoses, and procedures. Diagnoses are coded according to the WHO International Classification of Diseases [12] and procedures are coded according to the Dutch Hospital Data Foundation registration system for procedures [13], which links to the Dutch Healthcare Authority (NZa) declaration codes [14] and the Dutch Classification of Procedures [15]. Currently, the PHARMO Institute has access to data from 1998 onwards and for over 80% of the hospitals.

Valencia Health System Integrated Database

The Valencia Health System Integrated Database (**VID**) is a set of multiple, public, population-wide electronic databases for the Valencia region, the fourth most populated Spanish region, with ~5 million inhabitants, representing 10.7% of the Spanish population and approximately 1% of the European population. **VID** provides exhaustive longitudinal information, including

sociodemographic and administrative data (sex, age, nationality, etc.), clinical (diagnoses, procedures, diagnostic tests, imaging, etc.), pharmaceutical (prescription, dispensation), and healthcare utilization data from hospital care, emergency departments, specialized care (including mental and obstetrics care), primary care, and other public health services. All the information in **VID** databases can be linked at the individual level through a single personal identification code.

Coding and registry in the relevant databases in VID for FINEGUST

The Population Information System (SIP) (Sistema de información Poblacional) is a region-wide database that provides basic information on VHS coverage (dates and causes of VHS entitlement or disentitlement, insurance modality, pharmaceutical copayment status, assigned Healthcare Department, Primary Healthcare District and primary care doctor, etc.) and also some sociodemographic data, such as sex, date of birth, nationality, country of origin, previous year income strata, employment status, risk of social exclusion, geographic location, address, and other administrative data. Importantly, SIP includes the date of death captured from the Mortality Registry. SIP is paramount to **VID** as it is the source of the individual, exclusive, and permanent identification number associated with each individual (the SIP number), which is then used throughout the rest of the databases, allowing data linkage across the multiple databases in the network.

The Ambulatory Medical Record (ABUCASIS) was implemented in 2006 as the electronic medical record for primary and specialized outpatient activity, reaching 96% population coverage in 2009. ABUCASIS is integrated by 2 main modules: the Ambulatory Information System (SIA) (Sistema de Información Ambulatoria) and the pharmaceutical module (GAIA) (Gestor Integral de la Prestación Farmacéutica), including pediatric and adult primary care,

mental healthcare, prenatal care and specialist outpatient services, as well as providing information about dates, visits, procedures, lab test results, diagnoses, clinical and lifestyle information. It also includes information on several health programs (healthy children, vaccines, pregnancy, notifiable diseases, etc.), the primary care nurse clinical record, and the health-related social assistance record. The SIA module uses the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) and the ICD-10-ES (a Spanish translation of the *International Classification of Diseases, Tenth Revision, Clinical Modification* [ICD-10-CM]) systems for coding. The SIA also uses the Clinical Risk Groups system (3M) to stratify the morbidity of the entire population.

The GAIA pharmaceutical module stores data on all outpatient pharmaceutical prescriptions and dispensations, including both primary care and outpatient hospital departments, using the ATC classification system and the National Pharmaceutical Catalogue, which allow the identification of the exact content of each dispensation. In-hospital medication is not included. GAIA provides detailed information on prescriptions issued by physicians, such as the duration of treatment and dosage. GAIA includes a comprehensive e-prescription paper-free system connected to all community pharmacies in the region that permits the linkage of individual prescriptions and dispensations through a specific prescription identification number. This results in a competitive advantage with regard to other pharmaceutical databases that usually have dispensation information only from pharmacy claims and enables a refined estimation of common and relevant research features, such as medication adherence.

The Hospital Medical Record (ORION) has been in implementation since 2008 and provides comprehensive information covering all areas of specialized care from admission, outpatient consultations, hospitalization, emergencies, diagnostic services (laboratory tests, imaging,

microbiology, pathology, etc.), pharmacy, surgical block (including day surgery), critical care, prevention and safety, social work, at-home hospitalization, and day hospitalization. ORION is currently in the process of being integrated for the whole region, with several databases already fully integrated and available for all hospitals, including the Minimum Basic Data Set at Hospital Discharge (MBDS) and the Accident & Emergency Department (AED) clinical record.

The MBDS is a synopsis of clinical and administrative information on all hospital admissions and major ambulatory surgery in the VHS hospitals, including public–private partnership hospitals (approximately 450,000 admissions per year in the region). The MBDS includes admission and discharge dates, age, sex, geographical area and zone of residence, main diagnosis at discharge, up to 30 secondary diagnoses (comorbidities or complications), clinical procedures performed during the hospital episode and the Diagnosis Related Groups assigned at discharge. The MBDS uses the ICD-9-CM system for coding until December 2015 and the ICD-10-ES thereafter. The MBDS was extended in 2015 to include the "present on admission" diagnosis marker and information on tumor morphology, as well as information on admissions from private hospitals.

The AED clinical record was launched in 2008 and collects triage data, diagnoses, tests, and procedures performed in public emergency departments. As with the MBDS, the coding system used was ICD-9-CM until December 2015 and ICD-10-ES thereafter. Diagnosis codification has been increasing from about 45% of all emergency department visits between 2008 and 2014 up to approximately 75% in 2017, basically due to the progressive incorporation of hospital coding.

Data lags in VID database

In all databases in **VID**, individual data are collected daily as part of the routine clinical care provided to patients. Accordingly, data sets are updated daily and hence data may be available for research up to the same day data are extracted. Only in some cases, such as the MBDS and the AED records, are data subject to a consolidation and quality-check process before data are available for research; in these situations, data from the last quarter before the data extraction may be missing or not consolidated.

Japan Chronic Kidney Disease Database Extension (J-CKD-DB-Ex)

The J-CKD-DB-Ex is a large-scale, nationwide comprehensive clinical database of patients with CKD based on EHR data from 5 participating university hospitals. The data were automatically extracted from records of all patients treated at participating university hospitals aged 18 years or older with CKD (proteinuria ≥ 1+ [dipstick test] and/or eGFR < 60 mL/min/1.73 m^2). Initiated in January 2014, the database contains information on all inpatient and outpatient encounters, prescriptions, diagnosis codes, and laboratory measurements. In principle, both diagnosis codes and diagnosis name are available in the database. J-CKD-DB-Ex contains longitudinal data with approximately 250,000 patients. The data are updated once per year, at the end of each calendar year.

Optum's de-identified Clinformatics® Data Mart Database (CDM)

CDM is a database comprising administrative health claims for members of large commercial and Medicare Advantage health plans with service dates beginning January 2007 to the present. The population is geographically diverse, spanning all 50 states plus the District of Columbia and covering approximately 3% to 4% of the US population. The database includes

approximately 15 to 20 million annual covered lives, for a total of approximately 68 million unique lives over the available period.

Pharmacy claims include drug name, dosage form, drug strength, fill date, days' supply, financial information, and de-identified patient and prescriber information, allowing longitudinal tracking of medication refill patterns and changes in medications. Medical claims or encounter data are collected from all available healthcare sites (e.g., inpatient hospital, outpatient hospital, emergency department, physician's office, surgery center) for virtually all types of provided services, including specialty, preventive, and office-based treatments. These administrative claims are submitted for payment by providers and pharmacies and are verified, adjudicated, adjusted, and de-identified prior to inclusion in CDM. Data are included for only those covered lives with both medical and prescription drug coverage to enable users to evaluate claims related to the complete healthcare experience. The data are ICD-10-CM compliant.

Additionally, the CDM includes results for outpatient laboratory tests processed by large national vendors under contract with the managed care organization. In addition to medical claims, pharmacy claims, and laboratory test results, CDM includes data tables related to member inpatient confinements, member enrollment, and provider data.

The data are updated quarterly, with a lag time of approximately 9 months.

Appendix Table A1. Summary of Characteristics of Participating Data Sources

Feature	Denmark, DNHR	The Netherlands, PHARMO	Spain, VID	Japan, J-CKD-DB-Ex	US, CDM
General information					
Country population	5,964,059 [a]	17,407,585 [b]	Valencia, 5,218,840 [c]	125,710,000 [d]	336 million [e]
Database population	5.8 million	4 million	5 million	--	68 million (15-20 million annual covered lives)
Database type	National health record databases capable of linkage with other databases through a unique personal identification number	Primary healthcare electronic medical record database plus partial linkage to other data	Regional health record databases capable of linkage with other databases through a unique personal identification number	Hospital-based, longitudinal electronic medical record database	Administrative health claims from commercial health plan and Medicare Advantage members
Drug dictionary codes/ therapeutic classification	ATC	ATC	ATC	National drug codes in Japan, HOT codes	NDC codes
Capture of medication information	Outpatient pharmacy prescriptions in Danish National Prescription Registry	Dispensing records in Outpatient Pharmacy Database	Prescription and dispensation information linked at the individual level. Prescription data were used to define the index date and dispensing data to estimate days covered with the medication.	Prescriptions from hospital and outpatient encounters. Under Japanese regulation, any new medication should be renewed every 2 weeks during the first year that the medication is on the market, and for longer periods (e.g., 30 days) thereafter.	Outpatient pharmacy dispensing records

Feature	Denmark, DNHR	The Netherlands, PHARMO	Spain, VID	Japan, J-CKD-DB-Ex	US, CDM
Disease and procedure coding system(s)	ICD-10 Procedure codes: NCSP	ICD-9-CM/ICD-10 WHO, ICPC	ICD-9-CM, ICD-10-ES	ICD-10 Disease name code	ICD-9-CM/ICD-10-CM CPT, HCPCS
Data privacy standards	Cell frequencies (categorical variables) of less than 5 are not reported, and related cells have additional masking, if needed, to prevent back calculation; for continuous variables, 1st and 99th percentiles are reported instead of minimum and maximum values.	If the number of observations or patients is <5 per stratum, these are not specified further.	Categorical variables with low counts, or low frequencies for a specific level of a categorical variable, are not reported. Masking may occur to prevent back calculation of low counts. For continuous variables, the 1st and 99th percentiles are reported instead of minimum and maximum values.	Categorical variables with low counts are not reported. For continuous variables, the 1st and 99th percentiles are reported instead of minimum and maximum values. Masking may occur to prevent back calculation of low count events.	CDM was designed to fully comply with HIPAA Privacy Rules. Techniques used to de-identify data include: ▪ Removing all direct identifiers for an individual, including name, street address, social security number, phone numbers, and date of birth ▪ Reducing the number of data elements that might be matched with an external data source or censoring their content ▪ Restrictions from data-use agreements with clients
Study-specific information					
Definition of T1D	<30 years old at first diabetes record (hospital diagnosis or medication prescription); if first diabetes record is on or	At least 1 diagnosis code for T1D in the GP data or single insulin dispensing, or aged <30 years at first insulin dispensing	ICD codes (recorded diagnosis in the index date in the electronic medical record in VID	ICD-10 codes	Recorded diagnoses from medical claims for encounter data from all available healthcare sites (e.g., inpatient hospital,

Feature	Denmark, DNHR	The Netherlands, PHARMO	Spain, VID	Japan, J-CKD-DB-Ex	US, CDM
	after 1995, mandatory use of insulin around first record is required.	recorded on or before the index date.	covering primary and secondary care).		outpatient hospital, emergency department, physician's office, surgery center) for all types of provided services. At least 2 diagnosis codes for T1D during the baseline period [− all available, 0 days) were required.
Definition of T2D	Redemption of prescription for a glucose-lowering medication from community pharmacy or a hospital contact with a T2D diagnosis.	Recorded diagnosis of T2D in the GP data or ≥2 consecutive dispensings of noninsulin drugs used in diabetes (ATC code A10B) within 6 months.	ICD codes (recorded diagnosis in the index date in the electronic medical record in VID covering primary and secondary care).	ICD-10 codes	Recorded diagnoses from medical claims for encounter data from all available healthcare sites (e.g., inpatient hospital, outpatient hospital, emergency department, physician's office, surgery center) for all types of provided services. One diagnosis code for T2D during the baseline period (all available, 0 days) was required.
Medical conditions	Diagnosis coded on or before the index date during an inpatient, outpatient, or emergency	Recorded diagnoses in primary care or inpatient hospital setting.	ICD codes (recorded diagnosis in the index date in the electronic medical record in VID	Recorded diagnoses in inpatient and outpatient settings in hospital care.	Recorded diagnoses from medical claims for encounter data from all available healthcare sites

Feature	Denmark, DNHR	The Netherlands, PHARMO	Spain, VID	Japan, J-CKD-DB-Ex	US, CDM
	department visit using both primary and secondary diagnosis as recorded in the Danish National Patient Registry.		covering primary and secondary care).		(e.g., inpatient hospital, outpatient hospital, emergency department, physician's office, surgery center) for all types of provided services.
Estimation of days' supply of index medication	Actual days of supply not available. Estimated from the upper quartile of the times between prescriptions.	Calculated by dividing the amount supplied by the prescribed dose.	Days covered with a medication is estimated from prescription information (e.g., presentation, dosing schedule).	Days covered with a medication is obtained from dispensing data.	Estimated day count the drug supply should last is reported in the data set.
Obesity	BMI not available; obesity defined by diagnosis codes.	BMI available; obesity defined by diagnosis codes.	BMI available, but may be affected by registration bias or selective reporting.	BMI not available; obesity defined by diagnosis codes.	BMI not available; obesity defined by diagnosis codes.

ATC = Anatomical Therapeutic Chemical classification system; BMI = body mass index; CDM = Optum's de-identified Clinformatics® Data Mart Database; CPT = Current Procedural Terminology; DNHR = Danish National Health Registers; GP = general practitioner; HCPCS = Healthcare Common Procedure Coding System; HIPAA = Health Insurance Portability and Accountability Act; HOT = standard master codes for pharmaceutical products (http://www2.medis.or.jp/master/hcode/); ICD-10 = *International Classification of Diseases, Tenth Revision*; ICD-10-CM = *International Classification of Diseases, Tenth Revision, Clinical Modification*; ICD-10-ES = *International Classification of Diseases, Tenth Revision, Spanish Version*; ICD-9-CM = *International Classification of Diseases, Ninth Revision, Clinical Modification*; ICPC = International Classification of Primary Care; J-CKD-DB-Ex = Japan Chronic Kidney Disease Database Extension; NCSP = NOMESCO Classification of Surgical Procedures; NDC = National Drug Code; PHARMO = PHARMO Data Network; T1D = type 1 diabetes; T2D = type 2 diabetes; US = United States; VID = Valencia Health System Integrated Database; WHO = World Health Organization.

[a] Population of Denmark from Statistics Denmark December 2023. Available at: Population figures - Statistics Denmark (dst.dk).

[b] Population data from Eurostat. Population data for European countries. 2021. Available at: https://ec.europa.eu/eurostat/statistics-explained/images/8/83/Population_and_population_change_statistics_YB2020.xlsx, except for the Valencia region of Spain.

[c] Population of Spain in 2023 by autonomous community (https://www.statista.com/statistics/445549/population-of-spain-by-autonomous-community/).

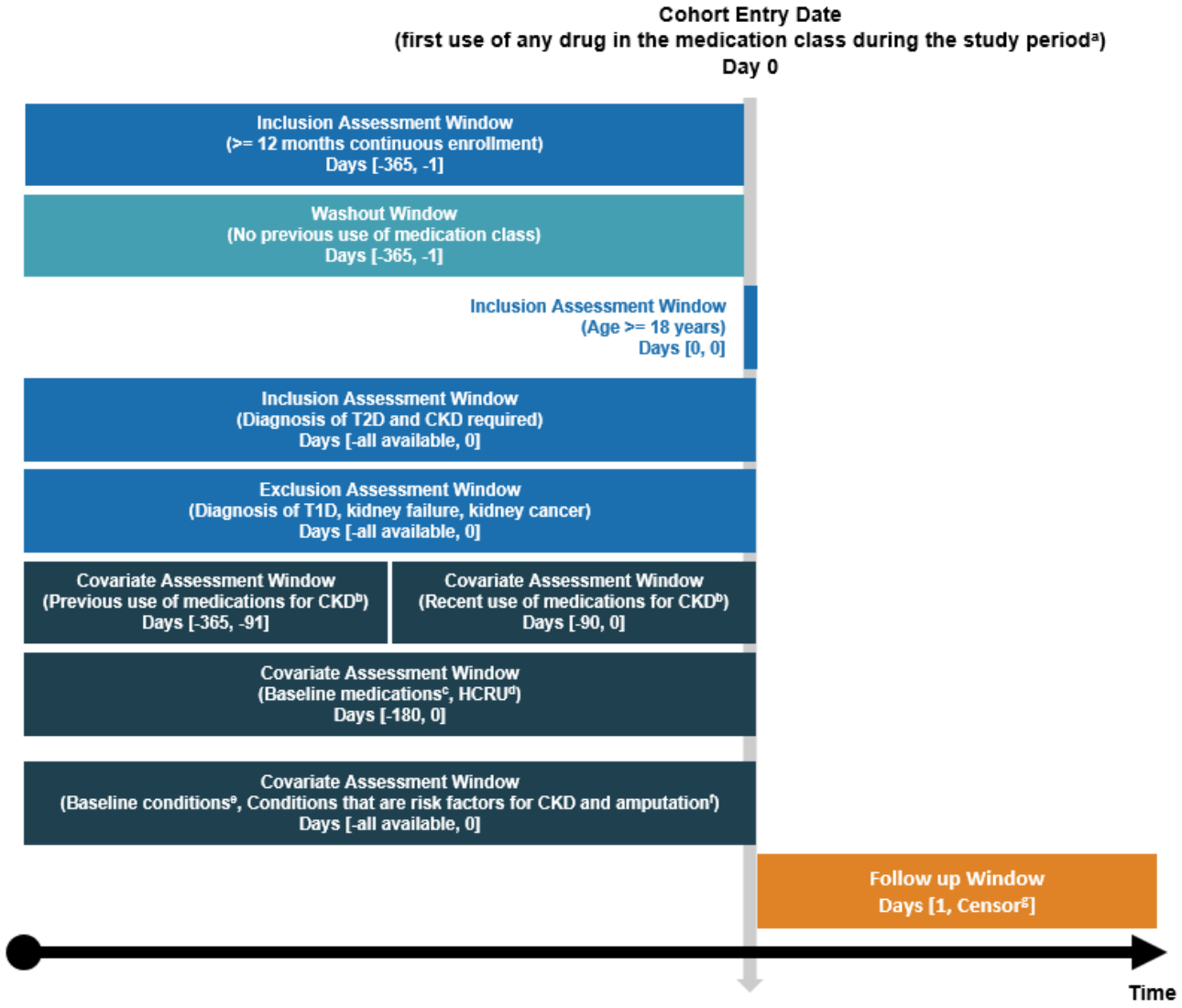
[d] Population data from Statistics Bureau of Japan (https://www.stat.go.jp/english/index.html).

[e] Population data from the 2023 US census (https://www.census.gov/popclock/).

Appendix B: Variable Assessment and Classification of Index Medications

Variable Assessment Window

Figure B1. Variable Assessment Windows Relative to the Study Index Date for the GLP-1 RA Cohorts



ACEi = angiotensin-converting enzyme inhibitors; ARB = angiotensin receptor blocker; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; CVD = cardiovascular disease; GLP-1 RA = glucagon-like peptide-1 receptor agonist; GP = general practitioner; HCRU = healthcare resource use; HIV = human immunodeficiency virus; MRA = mineralocorticoid receptor antagonist; SGLT2i = sodium-glucose cotransporter 2 inhibitors; T1D = type 1 diabetes; T2D = type 2 diabetes.

[a] Study period: 1 January 2012 through 30 June 2021.

[b] SGLT2i, GLP-1 RA, other nonsteroidal MRA, ACEi, ARB.

[c] Cardiovascular medications (antihypertensives, beta-blockers, direct renin inhibitors, angiotensin receptor-neprilysin inhibitor, lipid-lowering medications, anticoagulants, aspirin and other antiplatelets [e.g., clopidogrel, ticlopidine, prasugrel], digoxin, nitrates), anti-inflammatory drugs, antibiotics, other (acetaminophen, anticonvulsants, antifungals, antituberculars, chemotherapeutic agents).

[d] HCRU measures: GP visits, hospital visits, hospitalizations, specialist visits, emergency department visits.

[e] Baseline conditions: chronic CVD, hypertension, diabetes severity and complications, hyperlipidemia, lifestyle CVD risk factors (obesity), stage of CKD, other kidney disorders, liver disease, HIV infection, dementia, COPD, and malignancies (other than kidney).

[f] Conditions predisposing individuals to CKD include hypertension, glomerulonephritis, renovascular disease, polycystic kidney disease, and autoimmune disease; amputations refer to amputations of the lower extremities.

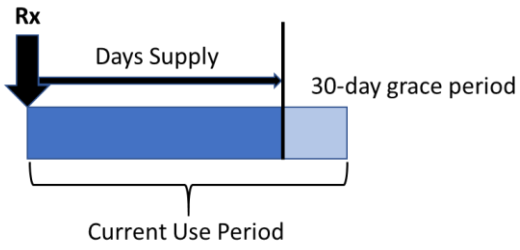
[g] Censored at the earliest of date of death, disenrollment, developing kidney cancer, kidney failure, or end of the study period.

Classification of Index Medications

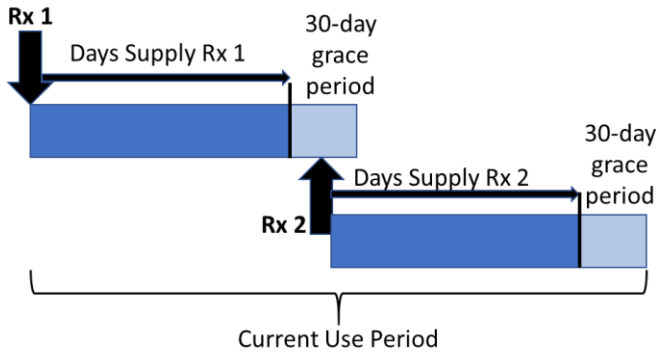
Definition of Current Use

The date of the first observed prescription record or prescription dispensing for a GLP-1 RA during the study period was the *index date,* and follow-up started the day after. Any medication within the GLP-1 RA class was eligible. Patients without use of the study drug or any drug in that class in the 365 days before the index date (e.g., a washout period) were considered new users of the study drug.

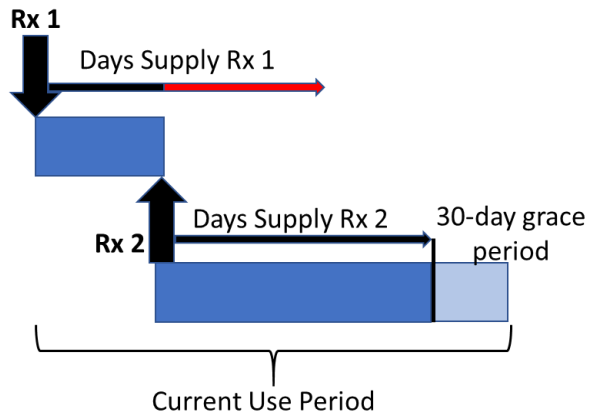
Current-use periods of the study drug were defined as starting on the day after the index date to the end of presumed supply for consecutive prescriptions plus a grace period of 30 days.



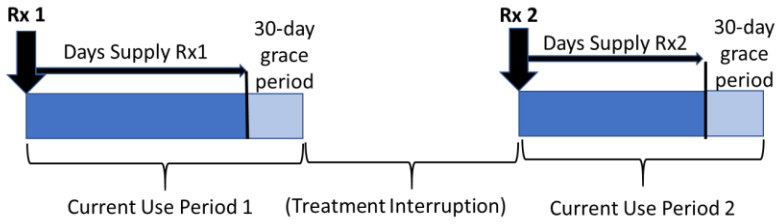
For consecutive prescriptions of the study medication separated by gaps of 30 days or less, the time from current use included the gaps between prescriptions.



Regarding stockpiling" or "banking" of unused drugs: In some situations, patients may be issued a renewed prescription or new dispensing of the index drug before the days' supply of the previous prescription has been exhausted. In this situation, we assume that any drug supply on hand automatically resets to zero and that the current days' supply takes on the value of the new prescription. For example, the portion of days' supply from prescription 1 (red arrow below) will not be counted.



Patients could have multiple current-use periods during follow-up if their treatment was interrupted and then restarted after a gap of more than 30 days. Treatment interruption was defined by the date corresponding to the end of current use.



Note: When handling fixed-dose combinations, each individual study drug used in the combination was considered as a separate prescription/dispensing with the associated days' supply. For example, a combined preparation of exenatide and liraglutide with a 30-day supply given on 1 January 2022 was treated as follows:

- A prescription/dispensing for GLP-1 RA (exenatide) on 1 January 2022 with a 30-day supply
- A prescription/dispensing for liraglutide RA on 1 January 2022 with a 30-day supply

Therefore, a single prescription/dispensing was treated using the individual parts (2 separate prescriptions/dispensings), as shown in our example when identifying periods of current use and in the classification of the index medications.

Appendix C: Additional Results

Table C1. List of GLP-1 RA Drugs by Drug Substance and ATC Code

Drug substance	ATC code
Exenatide	A10BJ01
Liraglutide	A10BJ02
Lixisenatide	A10BJ03
Albiglutide	A10BJ04
Dulaglutide	A10BJ05
Semaglutide	A10BJ06
Lixisenatide and insulin glargine	A10AE54
Liraglutide and insulin degludec	A10AE56

ATC = Anatomical Therapeutic Chemical; GLP-1 RA = glucagon-like peptide-1 receptor agonist.

Table C2. Attrition of Cohorts of GLP-1 RA Uses by Data Source

	DNHR, N (%)	PHARMO, N (%)	VID, N (%)	J-CKD-DB-Ex, N (%)	CDM, N (%)
All patients in the current database build	NE	1,695,731	309,477	251,659	NE
All patients with recorded study drug use	103,787	3,983	46,382	2,991	1,094,916
Total number of potential index dates	2,536,406	62,110	1,628,298	6,134	10,858,407
Potential index dates reported outside the study period	408,883 (16.1)	4,117 (6.6)	0 (0)	0 (0)	4,656,928 (42.9)
Total number of potential index dates during the study period	2,127,523	57,993	1,628,298	6,134	6,201,479
Patients with <12 months of lookback time at the potential index date	43,488 (2.0)	2,778 (4.8)	2,871 (0.2)	1,990 (32.4)	325,306 (5.2)
Had a recorded prescription/dispensing of any GLP-1 RA during the 12 months before the potential index date	2,040,032 (95.9)	54,408 (93.8)	1,579,971 (97.0)	2,944 (48.0)	5,554,474 (89.6)
Patients aged <18 years at the potential index date	435 (<0.1)	0 (0)	244 (<0.1)	4 (0.1)	518 (<0.1)
No diagnosis of T2D recorded on or before the potential index date	0 (0)	145 (0.3)	68,115 (4.2)	1,736 (28.3)	359,660 (5.8)
No diagnosis of CKD recorded on or before the potential index date	1,453,664 (68.3)	48,920 (84.4)	1,133,100 (69.6)	3,072 (50.1)	4,673,351 (75.4)
Patients with potential index dates meeting the inclusion criteria	20,673	536	13,005	708	84,553
Patients with T1D identified on or before the potential index date	240 (1.2)	14 (2.6)	0 (0)	236 (33.3)	5,015 (5.9)

	DNHR, N (%)	PHARMO, N (%)	VID, N (%)	J-CKD-DB-Ex, N (%)	CDM, N (%)
Kidney cancer recorded on or before the potential index date	232 (1.1)	8 (1.5)	121 (0.9)	42 (5.9)	1,298 (1.5)
Kidney failure recorded on or before the potential index date[a]	193 (0.9)	5 (0.9)	373 (2.9)	137 (19.4)	4,522 (5.3)
Number of patients with potential index dates eligible for study inclusion	20,023	510	12,518	339	74,368
Subsequent index dates removed due to inclusion of an earlier eligible index date	1,094 (5.5)	34 (6.7)	720 (5.8)	9 (2.7)	4,210 (5.7)
Final patient sample used for analyses	18,929	476	11,798	329	70,158

CDM = Optum's de-identified Clinformatics® Data Mart Database; CKD = chronic kidney disease; DNHR = Danish National Health Registers; GLP-1 RA = glucagon-like peptide-1 receptor agonist; J-CKD-DB-Ex = Japan Chronic Kidney Disease Database Extension; NE = not estimable; T1D = type 1 diabetes; T2D = type 2 diabetes; VID = Valencia Health System Integrated Database.

Note: Cohort selection involved evaluating multiple potential index dates per patient.

[a] Patients may have had more than 1 indicator for kidney failure.

Table C3. Baseline Markers of Severity of Kidney Dysfunction for New Users of GLP-1 RA by Data Source

	DNHR (N = 18,929)	PHARMO (N = 476)	VID (N = 11,798)	J-CKD-DB-Ex (N = 329)	CDM (N = 70,158)
Duration of CKD at the index date (based on all available data)					
Mean (SD)	4.0 (3.6)	7.1 (4.6)	2.7 (2.6)	3.0 (2.4)	3.6 (2.8)
Median	3.2	6.8	2.0	2.5	2.8
1st, 99th percentiles	0, 17	0, 18	0, 10	0, 9	0, 12
CKD stage based on diagnosis only[a,b], n (%)					
Stage 1: eGFR ≥90, normal or high	0 (0%)	2 (0.4%)	55 (0.5%)	0 (0%)	1,398 (2.0%)
Stage 2: eGFR 60-89, mildly decreased	72 (0.4%)	2 (0.4%)	288 (2.4%)	0 (0%)	8,997 (12.8%)
Stage 3: mildly to severely decreased	455 (2.4%)	15 (3.2%)	731 (6.2%)	15 (4.6%)	4,048 (5.8%)
Stage 3a: eGFR 45-59, mildly to moderately decreased	0 (0%)	8 (1.7%)	0 (0.0%)	0 (0%)	1,000 (1.4%)
Stage 3b: eGFR 30-44, moderately to severely decreased	0 (0%)	6 (1.3%)	0 (0.0%)	0 (0%)	787 (1.1%)
Stage 3 without specification of substage	455 (2.4%)	1 (0.2%)	731 (6.2%)	15 (4.6%)	2,261 (3.2%)
Stage 4: eGFR 15-29, severely decreased	207 (1.1%)	4 (0.8%)	220 (1.9%)	7 (2.1%)	3,491 (5.0%)
Stage 5: eGFR <15 OR treated by dialysis; kidney failure	0 (0%)	0 (0%)	0 (0.0%)	0 (0%)	0 (0%)
Unspecified stage	1,055 (5.6%)	NA	NA	NA	11,543 (16.5%)
No diagnosis code in the year before the index date	17,140 (90.5%)	453 (95.2%)	7,678 (65.1%)	307 (93.3%)	40,681 (58.0%)
CKD stage based on eGFR only[b], n (%)					
Stage 1: eGFR ≥90, normal or high	6,077 (32.1%)	34 (7.1%)	2,494 (21.1%)	21 (6.4%)	5,965 (8.5%)
Stage 2: eGFR 60-89, mildly decreased	5,237 (27.7%)	148 (31.1%)	3,123 (26.5%)	111 (33.7%)	14,293 (20.4%)
Stage 3: mildly to severely decreased	6,720 (35.5%)	194 (40.8%)	4,776 (40.5%)	155 (47.1%)	19,729 (28.1%)

	DNHR (N = 18,929)	PHARMO (N = 476)	VID (N = 11,798)	J-CKD-DB-Ex (N = 329)	CDM (N = 70,158)
Stage 3a: eGFR 45-59, mildly to moderately decreased	4,109 (21.7%)	134 (28.2%)	2,698 (22.9%)	83 (25.2%)	12,229 (17.4%)
Stage 3b: eGFR 30-44, moderately to severely decreased	2,611 (13.8%)	60 (12.6%)	2,078 (17.6%)	72 (21.9%)	7,500 (10.7%)
Stage 3 without specification of substage	0 (0%)	NA	NA	NA	NA
Stage 4: eGFR 15-29, severely decreased	666 (3.5%)	16 (3.4%)	706 (6.0%)	37 (11.2%)	1,892 (2.7%)
Stage 5: eGFR <15 OR treated by dialysis, kidney failure	NR	1 (0.2%)	26 (0.2%)	5 (1.5%)	416 (0.6%)
No assessment of eGFR in the year before the index date	NR	83 (17.4%)	673 (5.7%)	0 (0%)	27,863 (39.7%)
CKD stage based on eGFR[b] test result or diagnosis code[a], n (%)					
Stage 1: eGFR ≥90, normal or high	6,071 (32.1%)	49 (10.3%)	2,463 (20.9%)	21 (6.4%)	6,015 (8.6%)
Stage 2: eGFR 60-89, mildly decreased	5,202 (27.5%)	169 (35.5%)	3,059 (25.9%)	110 (33.4%)	17,872 (25.5%)
Stage 3: mildly to severely decreased	6,684 (35.3%)	229 (48.1%)	4,869 (41.3%)	155 (47.1%)	19,345 (27.6%)
Stage 3a: eGFR 45-59, mildly to moderately decreased	4,103 (21.7%)	149 (31.3%)	2,677 (22.7%)	83 (25.2%)	11,239 (16.0%)
Stage 3b: eGFR 30-44, moderately to severely decreased	2,541 (13.4%)	80 (16.8%)	2,018 (17.1%)	71 (21.6%)	6,376 (9.1%)
Stage 3 without specification of substage	40 (0.2%)	0 (0%)	174 (1.5%)	1 (0.3%)	1,730 (2.5%)
Stage 4: eGFR 15-29, severely decreased	743 (3.9%)	24 (5.0%)	818 (6.9%)	38 (11.6%)	3,590 (5.1%)
Stage 5: eGFR <15 OR treated by dialysis, kidney failure	NR	2 (0.4%)	26 (0.2%)	5 (1.5%)	343 (0.5%)
Unspecified stage	NR	NA	229 (1.9%)	NA	7,763 (11.1%)
No assessment of GFR or diagnosis code any time before or on the index date	211 (1.1%)	3 (0.6%)	334 (2.8%)	0 (0%)	15,230 (21.7%)

	DNHR (N = 18,929)	PHARMO (N = 476)	VID (N = 11,798)	J-CKD-DB-Ex (N = 329)	CDM (N = 70,158)
CKD stage based on urine ACR[b], n (%)					
A1: urine ACR <30, normal to mildly increased	4,847 (25.6%)	108 (22.7%)	2,433 (20.6%)	78 (23.7%)	7,159 (10.2%)
A2: urine ACR 30-300, moderately increased (formerly 'microalbuminuria')	8,035 (42.4%)	57 (12.0%)	3,946 (33.5%)	78 (23.7%)	7,967 (11.4%)
A3: urine ACR >300, severely increased (includes nephrotic syndrome, >~2,000)	2,447 (12.9%)	2 (0.4%)	1,378 (11.7%)	48 (14.6%)	3,691 (5.3%)
No assessment of urine ACR recorded in year before the index date	3,600 (19.0%)	309 (64.9%)	4,041 (34.3%)	125 (38.0%)	51,341 (73.2%)
"Any historical use" of drug classes (>365 days before the index date)					
Drug classes used, n (%)					
SGLT2i and fixed-dose combinations	4,530 (23.9%)	41 (8.6%)	3,641 (30.9%)	92 (28.0%)	9,769 (13.9%)
GLP-1 RA and fixed-dose combinations	3,092 (16.3%)	31 (6.5%)	947 (8.0%)	34 (10.3%)	9,249 (13.2%)
ACEi or ARB	17,065 (90.2%)	423 (88.9%)	10,436 (88.5%)	208 (63.2%)	61,102 (87.1%)
Number of drug classes used, n (%)					
0	1,230 (6.5%)	43 (9.0%)	829 (7.0%)	NA	7,307 (10.4%)
1	9,446 (49.9%)	304 (63.9%)	6,337 (53.7%)	131 (39.8%)	42,704 (60.9%)
2	6,293 (33.2%)	113 (23.7%)	3,690 (31.3%)	88 (26.7%)	16,766 (23.9%)
3	1,737 (9.2%)	16 (3.4%)	866 (7.3%)	19 (5.8%)	3,186 (4.5%)
4	223 (1.2%)	0 (0%)	76 (0.6%)	2 (0.6%)	195 (0.3%)
>4	0 (0%)	0 (0%)	0 (0.0%)	0 (0%)	0 (0%)
"Any previous use" of drug classes (365-91 days before the index date)					
Drug classes used, n (%)					
SGLT2i and fixed-dose combinations	5,019 (26.5%)	36 (7.6%)	4,022 (34.1%)	89 (27.1%)	9,255 (13.2%)
ACEi or ARB	14,827 (78.3%)	378 (79.4%)	9,346 (79.2%)	176 (53.5%)	57,027 (81.3%)

	DNHR (N = 18,929)	PHARMO (N = 476)	VID (N = 11,798)	J-CKD-DB-Ex (N = 329)	CDM (N = 70,158)
Number of drug classes used, n (%)					
0	2,851 (15.1%)	84 (17.6%)	1,451 (12.3%)	NA	10,842 (15.5%)
1	10,708 (56.6%)	308 (64.7%)	6,478 (54.9%)	123 (37.4%)	47,715 (68.0%)
2	4,938 (26.1%)	78 (16.4%)	3,519 (29.8%)	71 (21.6%)	11,073 (15.8%)
3	432 (2.3%)	6 (1.3%)	350 (3.0%)	9 (2.7%)	528 (0.8%)
≥4	0 (0%)	0 (0%)	0 (0.0%)	0 (0%)	0 (0%)
"Any recent use" of drug classes (in the 90 days before the index date)					
Drug classes used, n (%)					
SGLT2i RA and fixed-dose combinations	4,183 (22.1%)	23 (4.8%)	4,165 (35.3%)	93 (28.3%)	7,895 (11.3%)
ACEi or ARB	11,257 (59.5%)	358 (75.2%)	9,125 (77.3%)	177 (53.8%)	50,855 (72.5%)
Number of drug classes used, n (%)					
0	5,757 (30.4%)	103 (21.6%)	1,596 (13.5%)	NA	16,339 (23.3%)
1	9,701 (51.2%)	308 (64.7%)	6,339 (53.7%)	141 (42.9%)	45,059 (64.2%)
2	3,235 (17.1%)	62 (13.0%)	3,513 (29.8%)	65 (19.8%)	8,424 (12.0%)
3	236 (1.2%)	3 (0.6%)	350 (3.0%)	9 (2.7%)	336 (0.5%)
≥4	0 (0%)	0 (0%)	0 (0.0%)	0 (0%)	0 (0%)
Clinical conditions associated with risk of CKD[a]					
Hypertension, n (%)	15,204 (80.3%)	359 (75.4%)	11,000 (93.2%)	293 (89.1%)	65,828 (93.8%)
Glomerulonephritis (all causes), n (%)	430 (2.3%)	16 (3.4%)	582 (4.9%)	67 (20.4%)	1,515 (2.2%)
Renovascular disease, n (%)	76 (0.4%)	0 (0%)	157 (1.3%)	9 (2.7%)	661 (0.9%)
Autoimmune disease, n (%)	933 (4.9%)	6 (1.3%)	902 (7.7%)	99 (30.1%)	4,525 (6.4%)
Polycystic kidney disease, n (%)	97 (0.5%)	0 (0%)	45 (0.4%)	0 (0%)	329 (0.5%)
Gout or hyperuricemia, n (%)	1,023 (5.4%)	13 (2.7%)	3,858 (32.7%)	117 (35.6%)	8,193 (11.7%)
Hospitalizations for acute kidney injury in the previous year					

	DNHR (N = 18,929)	PHARMO (N = 476)	VID (N = 11,798)	J-CKD-DB-Ex (N = 329)	CDM (N = 70,158)
n (%)	128 (0.7%)	22 (4.6%)	331 (2.8%)	0 (0.0%)	941 (1.3%)
Mean (SD)	1.1 (0.3)	1.0 (0.0)	0.0 (0.2)	0.0 (0.1)	1.1 (0.3)
Median	1	1	0	0	1
1st, 99th percentiles	1, 3	1, 1	0, 1	0, 0	1, 2

ACEi = angiotensin-converting enzyme inhibitors; ACR = albumin-to-creatinine ratio; ARB = angiotensin receptor blocker; CDM = Optum's de-identified Clinformatics® Data Mart Database; CKD = chronic kidney disease; DNHR = Danish National Health Registers; eGFR = estimated glomerular filtration rate; GFR = glomerular filtration rate; GLP-1 RA = glucagon-like peptide-1 receptor agonist; J-CKD-DB-Ex = Japan Chronic Kidney Disease Database Extension; NA = not applicable; NR = not reported; SD = standard deviation; SGLT2i = sodium-glucose cotransporter 2 inhibitors; VID = Valencia Health System Integrated Database.

Note: Recent use is defined as use in the 90 days before the index date (study days [−90, −1]); Previous use is defined as use within the remaining time of the previous year (study days [−365, −91]); Any historical use is defined as use before the year before the index date (study days [−∞, −366]).

[a] Lookback period for these variables is any time before or on the index date (study days [−∞, 0]).

[b] Lookback period for these variables is the year before or on the index date (study days [−365, 0]).

Table C4. Selected Characteristics of New Users of GLP-1 RA, Stratified by Whether an Albumin-To-Creatinine Ratio Test Was Recorded in the Year Before or on the Index Date by Data Source

	DNHR		PHARMO		VID		J-CKD-DB-Ex		CDM	
Variable	ACR (N = 15,329)	No ACR (N = 3,600)	ACR (N = 167)	No ACR (N = 309)	ACR (N = 7,757)	No ACR (N = 4,041)	ACR (N = 204)	No ACR (N = 125)	ACR (N = 48,612)	No ACR (N = 21,546)
Age group (years) at index date										
<40	2.4	1.7	0.0	0.3	1.2	0.7	5.9	2.4	1.0	0.7
40-49	7.0	5.5	6.6	1.6	5.9	4.0	7.4	8.8	4.3	4.1
50-59	18.3	15.3	17.4	16.5	20.3	13.9	20.1	19.2	14.5	14.3
60-69	29.8	26.1	40.7	38.8	33.0	30.6	23.0	23.2	32.7	31.0
70-79	33.2	35.7	30.5	38.2	30.6	37.6	29.9	28.0	38.0	37.1
≥80	9.3	15.6	4.8	4.5	9.2	13.2	13.7	18.4	9.5	12.8
Median age (years) at index date	67.0	70.0	66.0	67.0	67.2	70.2	67.1	69.0	69.0	69.0
Sex										
Male	61.4	51.2	59.9	39.5	57.0	52.6	59.3	60.0	48.8	46.0
Female	38.6	48.8	40.1	60.5	43.0	47.4	40.7	40.0	51.2	54.0
Unknown	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	0.0
Obesity	31.4	34.6	84.4	82.8	90.3	89.8	17.6	12.0	54.6	49.6
Medications for T2D ever prescribed in the 180 days before or on the index date[a]										
SGLT2i	28.8	24.1	6.6	6.5	43.6	37.3	56.4	47.2	14.2	11.5
Metformin	78.0	69.4	88.0	77.0	66.6	59.6	72.5	40.8	53.8	49.9
Sulfonylureas	13.5	12.7	57.5	56.0	9.6	7.4	39.7	27.2	38.7	33.8

Variable	DNHR		PHARMO		VID		J-CKD-DB-Ex		CDM	
	ACR (N = 15,329)	**No ACR (N = 3,600)**	**ACR (N = 167)**	**No ACR (N = 309)**	**ACR (N = 7,757)**	**No ACR (N = 4,041)**	**ACR (N = 204)**	**No ACR (N = 125)**	**ACR (N = 48,612)**	**No ACR (N = 21,546)**
Dipeptidyl peptidase-4 inhibitors	35.9	32.1	15.0	12.6	64.4	60.0	83.3	68.0	25.1	22.4
Insulin use 180 days before or on the index date	39.0	37.2	38.0	20.2	52.6	53.9	82.4	90.4	45.7	42.7
Diabetes Severity Complications Index Score[b]										
Mean (SD)	2.5 (1.7)	2.6 (1.9)	2.3 (1.6)	2.1 (1.6)	4.3 (2.1)	4.7 (2.1)	4.1 (2.2)	4.1 (2.2)	3.1 (2.2)	3.0 (2.2)
Median	2	2	2	2	4	4	4	4	3	3
1st, 99th percentile	0, 7	0, 8	1, 8	1, 8	2, 10	2, 11	0, 9	0, 9	0, 9	0, 9
CKD stage based on GFR[c] or diagnosis code[d]										
Stage 1: ≥90, normal or high	35.0	19.8	15.0	7.8	26.5	10.2	9.3	1.6	10.2	5.0
Stage 2: 60-89, mildly decreased	27.8	26.1	35.3	35.6	28.9	20.3	35.8	29.6	27.0	21.9
Stage 3: mildly to severely decreased	33.0	45.3	46.1	49.2	38.3	47.1	47.1	47.2	29.0	24.3
Stage 4: 15-29, severely decreased	3.8	4.4	3.0	6.1	6.1	8.6	7.4	18.4	5.5	4.4
Stage 5: <15 OR treated by dialysis, kidney failure	NR	NR	0.6	0.3	0.2	0.3	0.5	3.2	0.5	0.5
Unspecified stage	NR	NR	NA	NA	0.1	5.6	NA	NA	10.0	13.5
Medical conditions associated with risk of CKD[d]										

	DNHR		PHARMO		VID		J-CKD-DB-Ex		CDM	
Variable	ACR (N = 15,329)	No ACR (N = 3,600)	ACR (N = 167)	No ACR (N = 309)	ACR (N = 7,757)	No ACR (N = 4,041)	ACR (N = 204)	No ACR (N = 125)	ACR (N = 48,612)	No ACR (N = 21,546)
Hypertension	80.1	81.1	72.5	77.0	92.1	95.4	91.2	85.6	94.6	92.0
Glomerulonephritis (all causes)	2.4	1.6	5.4	2.3	4.4	5.9	18.1	24.0	2.5	1.4
Renovascular disease	0.4	0.4	0.0	0.0	1.2	1.5	3.4	1.6	1.0	0.8
Autoimmune disease	4.8	5.6	0.6	1.6	7.3	8.3	28.4	32.8	6.6	6.0
Polycystic kidney disease	0.5	0.5	0.0	0.0	0.3	0.5	0.0	0.0	0.5	0.4
Gout or hyperuricemiad	5.2	6.4	4.2	1.9	30.3	37.3	35.8	35.2	12.1	10.8
Other medical conditions[d]										
Coronary heart disease	28.7	32.2	35.3	31.7	24.5	31.4	59.8	60.0	32.6	34.1
Cerebrovascular disease	11.9	15.9	10.8	10.7	11.6	14.6	54.9	47.2	12.1	13.1
Peripheral vascular disease	15.7	18.8	13.8	13.6	24.7	27.8	21.6	22.4	29.1	27.9
Hypercholesterolemia	33.2	34.8	33.5	38.2	81.3	81.9	88.2	78.4	91.1	84.6
CHD	11.7	18.2	15.0	15.5	4.3	7.5	58.3	60.0	19.3	24.0
Severe liver disease	0.4	1.1	6.6	3.9	5.8	7.0	3.4	7.2	1.0	1.0
HIV infection	0.2	0.2	0.0	0.3	0.2	0.6	4.9	4.8	0.5	0.4
Dementia	1.0	2.9	2.4	1.3	1.9	3.3	6.4	5.6	2.9	6.5

	DNHR		PHARMO		VID		J-CKD-DB-Ex		CDM	
	ACR	No ACR	ACR	No ACR	ACR	No ACR	ACR	No ACR	ACR	No ACR
Variable	**(N = 15,329)**	**(N = 3,600)**	**(N = 167)**	**(N = 309)**	**(N = 7,757)**	**(N = 4,041)**	**(N = 204)**	**(N = 125)**	**(N = 48,612)**	**(N = 21,546)**
COPD	9.5	13.3	16.8	16.5	16.3	19.4	28.9	36.8	19.0	21.7
Malignancy (other than kidney cancer and nonmelanoma skin cancers)	12.1	13.8	19.2	21.7	21.8	27.8	31.4	26.4	11.9	11.9
Medications other than glucose-lowering drugs in the 180 days before or on the index date										
Thiazide-like diuretics	16.4	13.8	29.3	23.3	5.6	6.0	10.3	5.6	33.3	31.7
Loop diuretics	26.2	36.7	16.8	25.6	27.8	39.9	12.7	20.8	24.7	27.4
Potassium-sparing diuretics	0.8	1.1	3.0	2.3	1.2	1.8	0.0	0.0	2.4	2.5
ACEi	36.4	32.4	47.3	34.3	19.7	19.4	3.9	10.4	41.6	39.0
ARB	44.3	39.9	43.7	47.9	64.4	63.2	61.8	44.0	52.6	48.5
Beta-blockers	39.4	43.1	54.5	57.3	35.7	44.7	23.0	28.8	50.6	50.4
Direct renin inhibitors	NR	NR	0.6	1.0	0.3	0.2	0.5	0.0	0.1	0.1
Angiotensin receptor-neprilysin inhibitors	0.3	0.7	0.6	0.0	1.1	2.6	0.0	0.0	0.8	1.1
Calcium channel blockers	41.3	33.7	38.9	30.4	29.2	30.2	50.5	58.4	34.5	32.3
Other antihypertensives	0.0	0.0	4.2	2.9	15.5	17.5	10.8	8.8	7.1	6.8
Statins	77.9	71.2	79.6	77.0	79.0	79.0	50.0	46.4	78.6	71.7
Anticoagulants	15.8	19.8	16.2	14.9	17.4	23.3	6.9	16.0	10.2	13.0

	DNHR		PHARMO		VID		J-CKD-DB-Ex		CDM	
Variable	ACR (N = 15,329)	No ACR (N = 3,600)	ACR (N = 167)	No ACR (N = 309)	ACR (N = 7,757)	No ACR (N = 4,041)	ACR (N = 204)	No ACR (N = 125)	ACR (N = 48,612)	No ACR (N = 21,546)
Digoxin	4.2	5.9	4.2	1.6	2.1	2.8	0.0	0.8	1.6	1.9
Nitrates and other vasodilators	6.0	7.6	7.8	8.7	5.8	8.9	9.3	7.2	8.3	8.6
Aspirin and other antiplatelet agents	41.0	39.8	34.1	43.4	42.5	45.6	35.8	29.6	13.2	13.6
Lipid-lowering drugs other than statins	6.1	4.3	9.6	10.0	25.9	23.0	24.5	13.6	17.7	15.6
Anti-inflammatory drugs (NSAIDs)	13.1	13.3	11.4	12.3	22.0	19.9	9.8	8.0	17.0	18.6
Acetaminophen	41.0	48.2	7.2	12.9	36.5	40.6	15.7	30.4	19.8	21.2
Anticonvulsants	1.9	2.8	0.0	0.6	2.3	2.5	2.0	1.6	3.7	5.1
Antibacterial agents	24.7	31.4	24.6	31.1	37.3	41.1	24.0	32.0	29.4	30.8
Antifungal agents	3.0	3.9	1.2	0.6	2.8	2.4	2.0	7.2	7.2	7.8
Chemotherapeutic agents	0.1	0.2	1.2	0.6	0.5	0.6	3.9	2.4	2.9	3.0
Bronchodilators	12.8	17.0	24.6	20.7	19.8	23.3	5.9	4.8	15.2	17.4

ACEi = angiotensin-converting enzyme inhibitors; ACR = albumin-creatinine ratio; ARB = angiotensin receptor blocker; CDM = Optum's de-identified Clinformatics® Data Mart Database; CHD = coronary heart disease; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; CVD = cardiovascular disease; DNHR = Danish National Health Registers; GFR = glomerular filtration rate; GLP-1 RA = glucagon-like peptide-1 receptor agonist; HIV = human immunodeficiency virus; J-CKD-DB-Ex = Japan Chronic Kidney Disease Database Extension; NA = not applicable; NR = not reported; NSAID = nonsteroidal anti-inflammatory drug; OR = odds ratio; PHARMO = PHARMO Data Network; SD = standard deviation; SGLT2i = sodium-glucose cotransporter 2 inhibitors; T2D = type 2 diabetes; VID = Valencia Health System Integrated Database.

Note: Values are %, unless otherwise specified.

[a] The medications listed include the drug alone and in fixed-dose combinations.

[b] Score is based on key diagnoses: retinopathy, nephropathy, neuropathy, cerebrovascular disease, CVD, peripheral vascular disease, and metabolic complications.

[c] Lookback period for these variables is the year before or on the index date (study days [−365, 0]).

[d] Lookback period for these variables is any time before or on the index date (study days [−∞, 0]).

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