Study Report

P4-C2-013, P4-C2-014, and P4-C2-021

DARWIN EU® - Determinants for use of GLP-1 receptor agonists – a drug utilisation study

18/11/2026

Version 4.0

Authors: Marta Pineda-Moncusí, Annika Jödicke

Public

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Study title*	DARWIN EU® - Determinants for use of GLP-1 receptor agonists – a drug utilisation study
Study report version	V4.0
Date	20/11/2026
EUPAS number	EUPAS1000000828
Active ingredient	Use of the following glucagon-like peptide-1 receptor agonists (GLP-1 RA) ingredients: exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide, and tirzepatide.
Research question and objectives	Research question This study was a routinely repeated study of a previous DARWIN EU® study (P3-C1-008)* (with substantial adaptations) to answer the research question "What are the patterns of use of GLP-1 RA in 2015–2025?". Objectives The study included the following objectives: 1) To determine the incidence and prevalence of prescriptions of GLP-1 RA (overall, by ingredient, by pre-specified brand) during the last 10 years of available data, stratified separately by age, sex, indication [only for incidence], prescriber speciality (where available) [only for incidence], and by calendar month in each data source. 2) To characterise new drug users of GLP-1 RA (overall and stratified by ingredient, by brand, by indication, by age, sex, initial dose, cumulative dose, and a list of prespecified indications/comorbidities and related comedications for each data source. 3) To describe GLP-1 RA switching of ingredients (exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide, or tirzepatide) among new GLP-1 RA users for each data source [overall study period]. 4) To describe GLP-1 RA within-ingredient switching of strength (for liraglutide, dulaglutide, semaglutide, and tirzepatide) among new users of the respective medicine in each data source [overall study period]. 5) To describe GLP-1 RA switching of ingredients (exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide, or tirzepatide cohorts) among new GLP-1 RA users for each data source between 2015–2020 and annually between 2021 and 2025. 6) To describe GLP-1 RA within-ingredient switching of strength (for liraglutide, dulaglutide, semaglutide, and tirzepatide) among new users of the respective medicine in each data source between 2015–2020 and annually between 2021 and 2025.
Countries of study	Belgium, Croatia, Denmark, Finland, Germany, the Netherlands, Norway, Spain, Sweden, and the United Kingdom.
Authors	Marta Pineda Moncusí, m.pinedamoncusi@darwin-eu.org Annika Jödicke, a.jodicke@darwin-eu.org

**This is a routinely repeated study from P3-C1-008 with EUPAS1000000223.*

LIST OF ABBREVIATIONS

Acronyms/term	Description
ADHD	Attention-Deficit/Hyperactivity Disorder
AIDS	Acquired Immunodeficiency Syndrome
ATC	Anatomical Therapeutic Chemical Classification
BMI	Body Mass Index
CDM	Common Data Model
CIPH	Croatian Institute of Public Health
COPD	Chronic Obstructive Pulmonary Disease
CPRD Aurum	Clinical Practice Research Datalink Aurum
CPRD GOLD	Clinical Practice Research Datalink GOLD
CVD	Cardiovascular Disease
DARWIN EU®	Data Analysis and Real-World Interrogation Network
DK-DHR	Danish Data Health Registries
DKMA	Danish Medicines Agency
DOI	Declaration of Interest
DPP-4 inhibitors	Dipeptidyl Peptidase 4 inhibitors
DQD	Data Quality Dashboard
DRE	Digital Research Environment
DUS	Drug Utilization Study
EHR	Electronic Health Records
EMA	European Medicines Agency
EMC	Erasmus University Medical Center
EU	European Union
EUPAS	EU Post-Authorisation Studies Register
FinOMOP-THL	Finnish Care Register for Health Care
GDPR	General Data Protection Regulation
GIP	Glucose-dependent insulinotropic polypeptide
GLP-1 RA	Glucagon-like peptide-1 receptor agonists
GP	General Practitioner
HI-SPEED	Health Impact - Swedish Population Evidence Enabling Data-linkage
ICD	International Classification of Diseases
IDIAPJGOL	The Information System for Research in Primary Care
InGef RDB	InGef Research Database
IPCI	Integrated Primary Care Information
IQR	Interquartile Range
IQVIA DA Germany	IQVIA Disease Analyzer Germany

Acronyms/term	Description
IQVIA LPD Belgium	IQVIA Longitudinal Patient Database Belgium
IR	Incidence rates
IRB	Institutional Review Board
LADA	Latent Autoimmune Diabetes in Adults
MACE	Major Adverse Cardiovascular Event
MASLD	Metabolic Dysfunction-Associated Steatotic Liver
NA	Not applicable
NAJS	Croatian National Public Health Information System
NLHR	Norwegian Linked Health Registry data
OHDSI	Observational Health Data Sciences and Informatics
OMOP	Observational Medical Outcomes Partnership
Oxford NDORMS	University of Oxford - Nuffield Department of Orthopaedics, Rheumatology, and Musculoskeletal Sciences
PCOS	Polycystic Ovary Syndrome
RMS	Restricted mean survival
RxNorm	Medical prescription normalized
SGLT2 inhibitors	Sodium-Glucose co-Transporter 2 inhibitors
SIDIAP	The Information System for Research in Primary Care
SMPA-GU	Swedish Medical Products Agency - Gothenburg University
T2DM	Type 2 diabetes mellitus
UiO	University of Oslo
WHO	World Health Organization

1. TITLE

DARWIN EU® - Determinants for use of GLP-1 receptor agonists – a drug utilisation study.

2. DESCRIPTION OF THE STUDY TEAM

Study team role	Names	Organisation
Principal Investigator	Marta Pineda Moncusí	University of Oxford
Data Scientist	Xihang Chen Martí Català Sabaté	University of Oxford University of Oxford
Epidemiologists	Annika Jödicke Martí Català Sabaté	University of Oxford University of Oxford
Clinical Domain Expert	Annika Jödicke Anna Saura Lazaro	University of Oxford University of Oxford
Study Manager	Natasha Yefimenko	Erasmus Medical Centre
Data source* P4-C2-013	**Names**	**Data Partner Organisation***
CPRD GOLD	Antonella Delmestri	University of Oxford - Nuffield Department of Orthopaedics, Rheumatology, and Musculoskeletal Sciences (Oxford NDORMS)
DK-DHR	Elvira Bräuner (Lead epidemiologist) Susanne Bruun (Statistical programmer)	Danish Medicines Agency (DKMA)
IPCI	Katia Verhamme Mees Mosseveld	Erasmus University Medical Center (EMC)
IQVIA LPD Belgium IQVIA DA Germany	Ellen Gerritsen Dina Vojinovic Akram Mendez Gargi Jadhav	IQVIA
SIDIAP	Anna Palomar Cros Agustina Giuliodori Picco Irene López Sánchez Laura Granés González	The Information System for Research in Primary Care (IDIAPJGOL)
Data source* P4-C2-014	**Names**	**Data Partner Organisation***
FinOMOP-THL	Laura Salonen Toni Lehtonen Petteri Hovi Terhi Kilpi Tuomo Susi	Finnish Institute for Health and Welfare (THL)
HI-SPEED	Rickard Ljung Marcel Ballin	Swedish Medical Products Agency - Gothenburg University (SMPA-GU)

	Mats Talbäck	
NAJS	Jakov Vukovic Tamara Buble Jelena Dimnjakovic Zeljka Drausnik Danijela Fustin Antea Jezidzic Marko Cavlina	Croatian Institute of Public Health (CIPH)
InGef RDB	Alexander Harms Raeleesha Norris Annika Vivirito	Institute for Applied Health Research Berlin GmbH (InGef RDB)
NLHR	Hedvig Nordeng Saeed Hayati Petrica Ioan Olteanu Marleen van Gelder	University of Oslo (UiO)
CPRD Aurum	Daniel Dedman Zara Cuccu	Clinical Practice Research Datalink (CPRD)

*Data partners do not have an investigator role. Data partners execute code at their data source, review, and approve their results.

3. EXECUTIVE SUMMARY

Glucagon-like peptide-1 receptor agonists (GLP-1 RA) are a group of medicines authorised to treat type 2 diabetes mellitus and for weight management in individuals with obesity. Increased demand for these medicines has contributed to shortages, along with other causes, such as capacity constraints.

This study aimed to provide an overview of the characteristics of patients prescribed with GLP-1 RA and to describe the pattern of use, including switching between GLP-1 RA ingredients and other antidiabetics, as well as dose escalation within brands, across 12 data sources from Belgium, Croatia, Denmark, Finland, Germany, the Netherlands, Norway, Spain, Sweden, and the United Kingdom. The study period spanned 10 years, allowing for the assessment of potential changes in the use, user characteristics, and treatment patterns.

This study included a total of 1,616,163 new GLP-1 RA users (42%–64% females, depending on the data source). Age ranged between 52–63, and body mass index ranged between 33–36 kg/m2 (when information was recorded). Biguanides were the most frequent comedication in most data sources, while cardiovascular disease was the most common comorbidity.

The most frequently used GLP-1 RA ingredient was semaglutide, except in CPRD Aurum (UK), where tirzepatide was the most frequently used. Use of tirzepatide started to be observed from the end of 2023. (**Executive Summary Figure 1**)

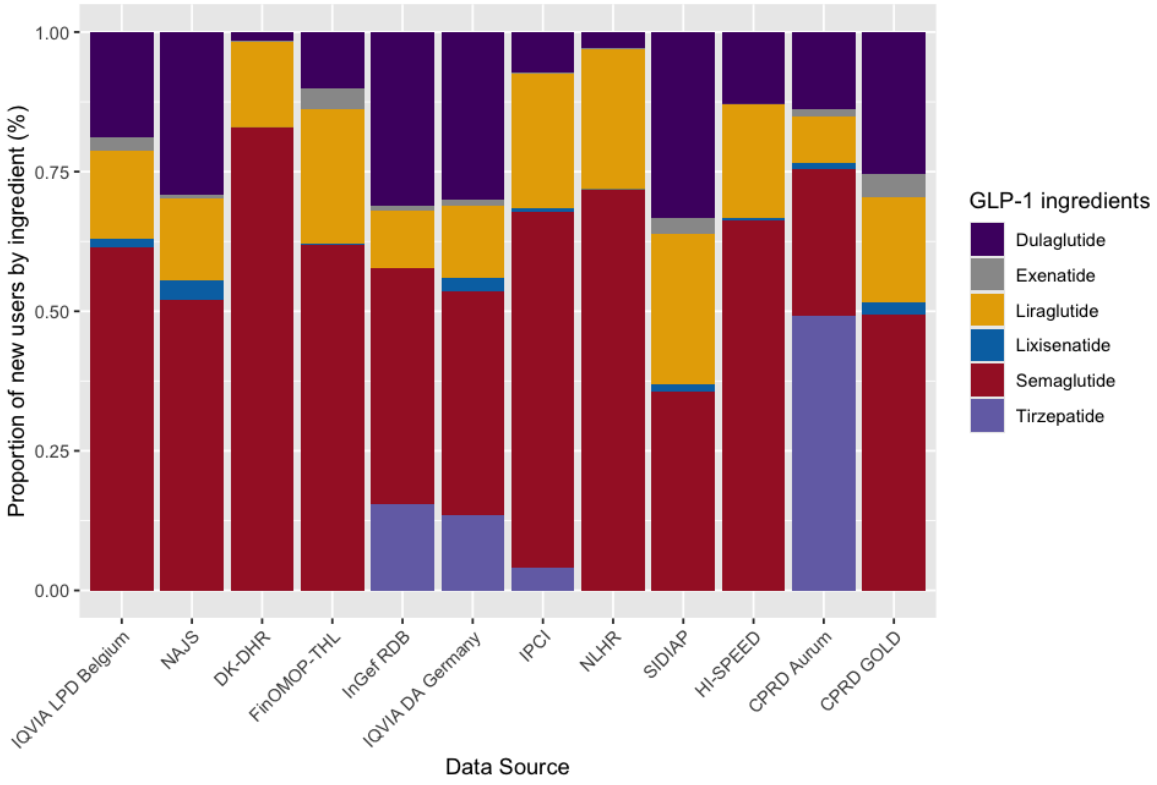
The results show an increase in the use of the GLP-1 RA class, but a closer look at the individual ingredients shows differences across their patterns of use, which could also differ across data sources. For instance, use of dulaglutide increased until 2022 or 2023, followed by a decrease of new prescriptions in the most recent years in some data sources. Similarly, use of semaglutide increased over time, but exhibited fluctuations, such as a spike of use in early 2023 in DK-DHR (Denmark), or an increase in new prescriptions in November 2022, followed by a decrease in FinOMOP-THL (Finland). These fluctuations appeared to align with the shortage warnings reported in the European Medicines Agency shortages catalogue. (**Executive Summary Figure 2**)

Until 2021, the majority of the patients used GLP-1 RA to treat diabetes, with or without obesity. However, from 2021 onwards, there has been an increasing use of GLP-1 RA to treat obesity, led by semaglutide and tirzepatide use. Combined with the frequent use of biguanides and high prevalence of cardiovascular disease, these findings highlight the patients' need to be treated. However, the study also shows changes in how long patients stayed on treatment, with shorter treatment periods observed from 2022 onwards, around the same time as EMA warnings regarding GLP-1 RA shortages.

Among patients starting GLP-1 RA treatment for the first time (over the 10-year study period), the percentage who started with dulaglutide ranged from 0.1% (DK-DHR, Denmark) to 38% (InGef RDB, Germany). The percentage who started with semaglutide ranged from 32% (CPRD Aurum, UK) to 85% (DK-DHR, Denmark). The percentage who started with liraglutide ranged from 5% (CPRD Aurum, UK) to 30% (SIDIAP, Spain). Switching between GLP-1 RA ingredients was observed in half of the data sources (IQVIA LPD Belgium, Belgium; DK-DHR, Denmark; FinOMOP-THL, Finland; InGef RDB, Germany; NLHR, Norway; and HI-SPEED, Sweden).

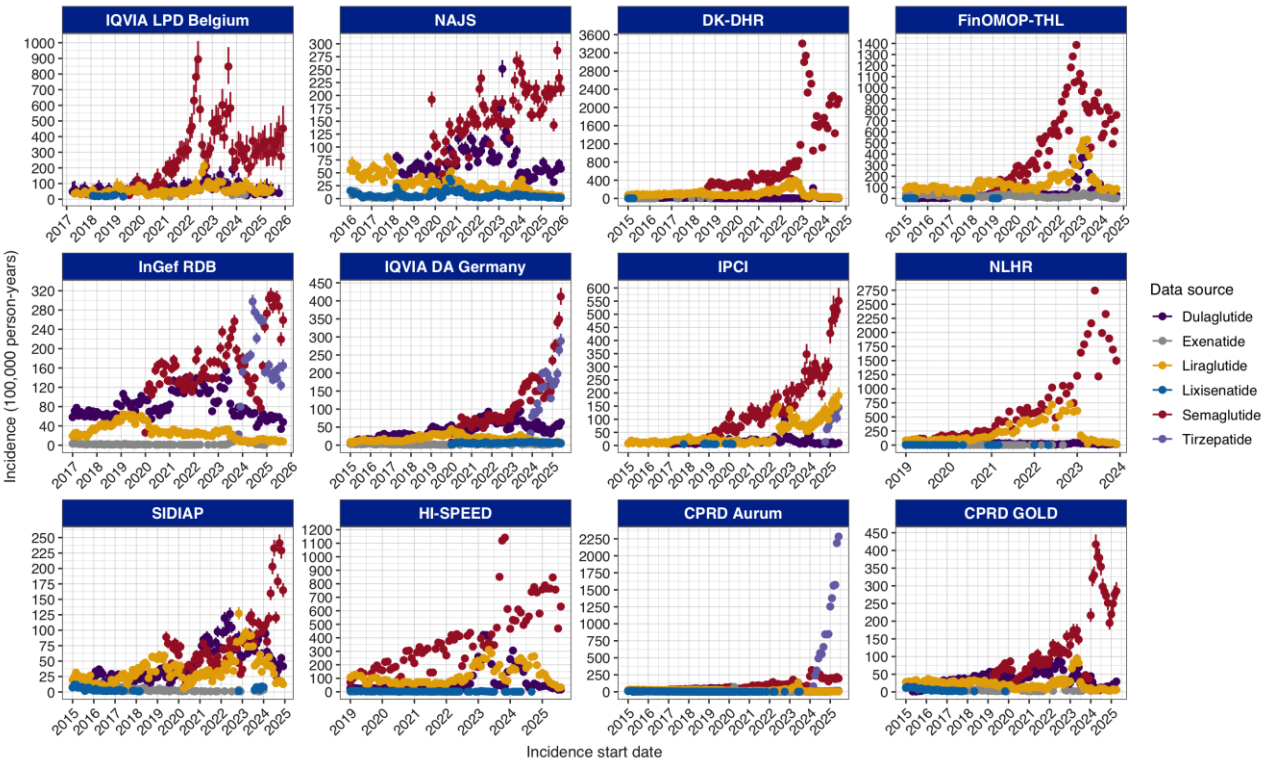
Similarly, dose escalation varied across data sources and ingredients. For example, in CPRD Aurum (UK), 15% of semaglutide users increased their dose from 1.5 mg to 3 mg, of which about a fifth escalated to 4.5 mg. Moreover, 10% of semaglutide users increased their dose from 0.75 mg to 1.5 mg, of which about a sixth escalated to 3 mg. However, 1.5% of new users started with 1.5 mg and then de-escalated to 0.75 mg, of which about three quarters later returned to 1.5 mg. These trajectories likely represent dose adjustment during treatment for optimising response for efficacy and to manage side effects.

Understanding how GLP-1 RAs are used across Europe is important, as demand for these medicines to treat diabetes and obesity has increased, while shortages have also been reported.



Executive Summary Figure 1. Number of new users of GLP-1 RA ingredients.

New users are defined as individuals who used the ingredient of interest (dulaglutide, exenatide, liraglutide, lixisenatide, semaglutide, and tirzepatide) with no previous use of that same ingredient in the previous year. Thus, users may contribute to more than one ingredient in the data source.
CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.



Executive Summary Figure 2. Incidence rates of GLP-1 RA ingredients.

Dots representing <5 cases were removed from the plot.
CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

4. ABSTRACT

Title

DARWIN EU® - Determinants for use of GLP-1 receptor agonists – a drug utilisation study.

Rationale and background

A shortage of medicines containing glucagon-like peptide-1 receptor agonists (GLP-1 RA) has been affecting European Union (EU) Member States since 2022. The products containing GLP-1 RA ingredients are either authorised for the treatment of diabetes or authorised for weight management in patients diagnosed with obesity, with the exception of Mounjaro (tirzepatide), a glucose-dependent insulinotropic polypeptide (GIP) and GLP-1 RA that is authorised for both indications.

Increased demand for these medicines has contributed to this shortage, along with other causes, e.g. capacity constraints. Excessive off-label use for cosmetic weight loss, referring to the use of GLP-1 RA medicines for weight management in individuals without obesity or in individuals with overweight who do not have weight-related health problems, has raised concerns. This use has been a frequently mentioned topic in the news and social media and is exacerbating existing shortages with serious consequences for public health.[1]

This study aimed to provide an overview of the characteristics of patients prescribed with GLP-1 RA and to describe the pattern of use, including switching between GLP-1 RA ingredients and other antidiabetics, as well as switching between selected brands. The study spanned over 10 years, allowing for the assessment of potential changes in incidence of use, user characteristics, and treatment patterns. This would support contextualising what determinants might be driving the demand for GLP-1 RA in relation to the observed shortage of medicines, including exploring comparative trends of prescriptions of other medicinal products used for diabetes and for weight management, as well as patterns of off-label use.[2]

Research question and objectives

Research questions

This study was a routinely repeated study of a previous DARWIN EU® study (P3-C1-008, DARWIN EU® - Drug Utilisation Study on GLP-1 Receptor Agonists, with substantial adaptations) to answer the research question “What are the patterns of use of GLP-1 RA in 2015–2025?”.

Objectives

The study included the following objectives:

1) To determine the incidence and prevalence of prescriptions of GLP-1 RA (overall, by ingredient, by pre-specified brand) during the last 10 years of available data, stratified separately by age, sex, indication [only for incidence], prescriber speciality (where available) [only for incidence], and by calendar month in each data source.
2) To characterise new drug users of GLP-1 RA (overall and stratified by ingredient, by brand, by indication, by age, sex, initial dose, cumulative dose, and a list of prespecified indications/comorbidities and related comedications for each data source.
3) To describe GLP-1 RA switching of ingredients (exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide or tirzepatide) among new GLP-1 RA users for each data source [overall study period].
4) To describe GLP-1 RA within-ingredient switching of strength (for liraglutide, dulaglutide, semaglutide, and tirzepatide) among new users of the respective medicine in each data source [overall study period].

5) To describe GLP-1 RA switching of ingredients (exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide or tirzepatide) among new GLP-1 RA users for each data source between 2015–2020 and annually between 2021 and 2025.

6) To describe GLP-1 RA within-ingredient switching of strength (for liraglutide, dulaglutide, semaglutide, and tirzepatide) among new users of the respective medicine in each data source between 2015–2020 and annually between 2021 and 2025.

Methods

Study design

- Population-level drug utilisation study (Objective 1)
- Patient-level drug utilisation study (Objective 2)
- Patient-level characterisation of GLP-1 RA (Objectives 3 and 5)
- Patient-level characterisation of new liraglutide, dulaglutide, semaglutide, and tirzepatide users (Objectives 4 and 6).

Population

The study population included all individuals present in the respective data sources during the study period: 01/01/2015 up until the latest data available for each data source. For incident (new) users, a minimum of 365 days of data availability and no use of the respective GLP-1 RA (ingredient) during the previous 365 days was required. For Objectives 3 and 5, no use of any GLP-1 RA during the previous 365 days was permitted.

Variables

Exposure:

Overall use of GLP-1 RA, by ingredient (exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide, and tirzepatide), and by pre-specified brands (Wegovy, Ozempic, Rybelsus, Trulicity, Victoza, Saxenda, and Mounjaro).

Cohorts of pre-defined strength-levels within GLP-1 RA ingredients (restricted to liraglutide, dulaglutide, semaglutide, and tirzepatide) and within pre-specified brands (Wegovy, Ozempic, Rybelsus, Trulicity, Victoza, Saxenda, and Mounjaro). Other brands were grouped as ‘other brands/no brand recorded’.

Other second-line antidiabetics at ATC3 (A10B) or ATC4 level class (A10BA, A10BB, A10BD, A10BF, A10BG, A10BH, A10BK), insulin ATC3 level class (A10A), and other weight loss medications ATC3 level class (A08A), for the characterisation of GLP-1 RA switching of ingredients.

Relevant covariates:

For stratification: overall, age, sex, indication cohorts (type 2 diabetes mellitus (T2DM)/obesity), prescriber speciality (where available), calendar month [incidence/prevalence], calendar year.

For characterisation: age, sex, body mass index (BMI), comorbidities, related comedications, initial and cumulative dose, treatment duration, proportion of first prescription records mapped to ingredient level in GLP-1 RA users. Additionally, where possible: ethnicity, geographic stratification, and post-partum for females during the last 12 months before first GLP-1 RA use.

Data sources

1. Belgium: IQVIA Longitudinal Patient Database Belgium (IQVIA LPD Belgium)
2. Croatia: Croatian National Public Health Information System (NAJS)

3. Denmark: Danish Data Health Registries (DK-DHR)
4. Finland: Finnish Care Register for Health Care (FinOMOP-THL)
5. Germany: InGef Research Database (InGef RDB)
6. Germany: IQVIA Disease Analyzer Germany (IQVIA DA Germany)
7. The Netherlands: Integrated Primary Care Information (IPCI)
8. Norway: Norwegian Linked Health Registry data (NLHR)
9. Spain: The Information System for Research in Primary Care (SIDIAP)
10. Sweden: Health Impact - Swedish Population Evidence Enabling Data-linkage (HI-SPEED)
11. The United Kingdom: Clinical Practice Research Datalink Aurum (CPRD Aurum)
12. The United Kingdom: Clinical Practice Research Datalink GOLD (CPRD GOLD)

Study size

No sample size was calculated, as this was an exploratory study that did not test a specific hypothesis. Based on a preliminary feasibility assessment, the expected number of person-counts for the GLP-1 RA ingredients in the data sources included in this study were expected to range from <1,000 (for lixisenatide in IQVIA LPD Belgium, DK-DHR, FinOMOP-THL, HI-SPEED, InGef RDB, IPCI, and NLHR) to >300,000 (for semaglutide in DK-DHR).

Statistical analysis

- Population-level drug utilisation [Objective 1]: Monthly incidence rates/point prevalence with 95% confidence intervals.
- Patient-level drug utilisation [Objective 2]: Characterisation of new GLP-1 RA users based on demographics and relevant covariates stratified by overall GLP-1 RA use, by ingredient, and by pre-specified brand, and assessed overall and by calendar year.
- Patient-level characterisation of GLP-1 RA switching of ingredients and of GLP-1 RA within-ingredient switching of strength [Objectives 3–6]: Switching was reported using Sankey diagrams. Time-to-switch was based on survival analysis. Median time-to-switch, average time-on-treatment, and Kaplan-Meier plots were reported. Analyses were reported for the overall study period [Objectives 3 and 4]; between 2015–2020, and annually between 2021 and 2025 [Objectives 5 and 6].

A minimum count of 5 was applied when reporting results, with any smaller values reported as “<5”.

Results

Our study included a total of 1,616,163 new GLP-1 RA users from 12 data sources, with the number of new GLP-1 RA users ranging between 6,922 in IQVIA LPD Belgium and 319,364 in CPRD Aurum.

Prevalence of GLP-1 RA use among the general population ranged from 0.03% in IQVIA DA Germany (in 01/2015) to 3.21% in DK-DHR (in 07/2024). Prevalence was highest in DK-DHR, NLHR, and HI-SPEED, with point estimates above 1.5%, whilst prevalence in other data sources stayed below 0.9%. Monthly incidence rates (IR) of GLP-1 RA use ranged from 7.6/100,000 person-years in IPCI in 01/2016 to 2,872.7/100,000 person-years in DK-DHR (01/2023), with highest IR (>1,000) reported for DK-DHR, NLHR, CPRD AURUM and FinOMOP-THL. When stratified by indication, incidence was initially higher for patients with T2DM, with or without Obesity. However, in recent years, Obesity became the most common indication in IQVIA LPD Belgium, DK-DHR, FinOMOP-THL, IPCI, and NLHR, which was largely driven by new users of semaglutide and tirzepatide.

Treatment patterns varied among the data sources. For instance, in ingredient switching, the average time-on-treatment of GLP-1 RA decreased after 2021 in most data sources (e.g. from 110 to 52 days in IQVIA LPD Belgium, or from 297 to 240 days in SIDIAP). Conversely, average time-on-treatment of GLP-1 RA increased in DK-DHR between 2021–2023, led by longer treatment durations of new semaglutide users. FinOMOP-THL presented the highest percentages of switching of ingredients, with 7.30% of first-time GLP-1 RA users starting with liraglutide later switching to semaglutide, 1.17% starting with dulaglutide later switching to semaglutide, and 0.65% starting with exenatide later switching to semaglutide. As an example of variation in within-ingredient switching: the average time-on-treatment of dulaglutide was longer for higher strengths in IQVIA LPD Belgium and IQVIA DA Germany, whilst longer treatment durations were observed for lower strength products in InGef RDB. Although dose escalation was observed, frequency varied greatly across data sources (e.g. switching of 1.5 mg to 3 mg among new dulaglutide users occurred in 4.08% in CPRD GOLD vs. 15.90% in SIDIAP).

Discussion

This study showed increased use of GLP-1 RA in Europe, driven by increased dulaglutide, semaglutide, and tirzepatide use across most data sources. Despite the overall increase, fluctuation in the prescribing trends of GLP-1 RA ingredients (i.e. dulaglutide, liraglutide, and semaglutide) and a reduction of the average treatment time was detected, which appeared to align with the shortage warnings reported in the European Medicines Agency (EMA) shortages catalogue. Stratification by indication suggests an increasing use of GLP-1 RA for obesity in recent years. Half of the data sources of the study presented switching of GLP-1 RA ingredients. Moreover, increases and decreases in dose could be observed, which varied among the data sources, representing the different prescription practices, marketing statuses, and mitigation strategies across European countries.

5. AMENDMENTS AND UPDATES

None.

6. MILESTONES

Study deliverable	Timelines (planned*)	Timelines (actual)
Final Study Protocol	February 2026	08 June 2026
Creation of Analytical code	February-March 2026	February – May 2026
Execution of Analytical Code on the data	April 2026	April – June 2026
Draft Study Report	May 2026	04 August 2026
Final Study Report	To be confirmed by EMA	To be confirmed by EMA

*Planned dates are dependent on obtaining approvals from the internal review boards of the data sources and deliverables review rounds.

7. RATIONALE AND BACKGROUND

A shortage of medicines containing glucagon-like peptide-1 receptor agonists (GLP-1 RA) has been affecting European Union (EU) Member States since 2022.[3, 4] The products containing GLP-1 RA ingredients are either authorised for the treatment of diabetes or authorised for weight management in patients diagnosed with obesity,[5, 6] with the exception of Mounjaro (tirzepatide), a glucose-dependent insulinotropic polypeptide (GIP) and GLP-1 RA that is authorised for both indications.[7]

Increased demand for these medicines has contributed to this shortage, along with other causes, e.g. capacity constraints. Excessive off-label use for cosmetic weight loss, referring to the use of GLP-1 RA medicines for weight management in individuals without obesity or in individuals with overweight who do not have weight-related health problems, has raised concerns. This use has been a frequently mentioned topic in the news and social media and is exacerbating existing shortages with serious consequences for public health.[1]

This study aimed to expand on a previous DARWIN EU® study (EUPAS1000000223) and focussed on characterising prescription trends and new users with a GLP-1 RA prescription, as well as to describe the pattern of use, including switching between ingredients and to other antidiabetics, as well as switching between selected brands. The study spanned over up to 10 years, allowing for the assessment of potential changes in incidence of use, user characteristics, and treatment patterns, as well as contextualisation of GLP-1 RA use in relation to the observed shortages, including exploring comparative trends of prescription of other medicinal products used in diabetes and for weight management, and patterns of off-label use.[2]

8. RESEARCH QUESTION AND OBJECTIVES

Research question

This study was a routinely repeated study of a previous DARWIN EU® study (P3-C1-008, with substantial adaptations) to answer the research question “What are the patterns of use of GLP-1 RA in 2015–2025?”.

Objectives

The study included the following objectives:

1) To determine the incidence and prevalence of prescriptions of the GLP-1 RA (overall, by ingredient, by pre-specified brand) during the last 10 years of available data, stratified separately by age, sex, indication [only for incidence], prescriber speciality (where available) [only for incidence], and by calendar month in each data source.

2) To characterise new drug users of GLP-1 RA (overall and stratified by ingredient, by brand, by indication, by age, sex, initial dose, cumulative dose, and a list of prespecified indications/comorbidities and related comedications for each data source.
3) To describe GLP-1 RA switching of ingredients (exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide or tirzepatide cohorts) among new GLP-1 RA users for each data source [overall study period].
4) To describe GLP-1 RA within-ingredient switching of strength (for liraglutide, dulaglutide, semaglutide, and tirzepatide) among new users of the respective medicine in each data source [overall study period].
5) To describe GLP-1 RA switching of ingredients (exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide or tirzepatide) among new GLP-1 RA users for each data source between 2015–2020 and annually between 2021 and 2025.
6) To describe GLP-1 RA within-ingredient switching of strength (for liraglutide, dulaglutide, semaglutide, and tirzepatide) among new users of the respective medicine in each data source between 2015–2020 and annually between 2021 and 2025.

9. RESEARCH METHODS

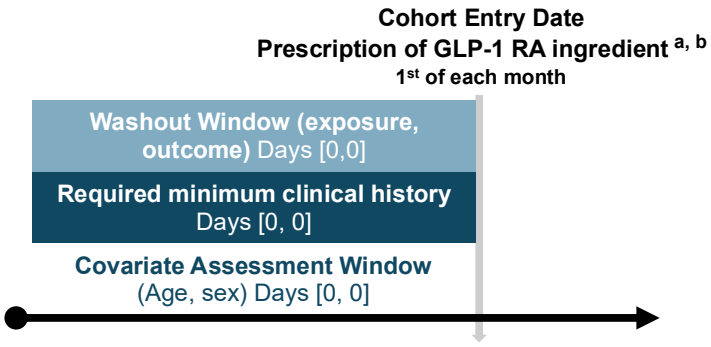
9.1. Study design

A cohort study was conducted using routinely collected health data from 12 data sources from 10 countries across Europe. The study comprised:

- A population-level drug utilisation study to determine the incidence and prevalence of prescriptions of the GLP-1 RA (Objective 1).
- A patient-level drug utilisation study to characterise new GLP-1 RA users (Objective 2).
- A patient-level characterisation study to characterise GLP-1 RA utilisation (and switching) patterns within new users of GLP-1 RA (Objectives 3 and 5), as well as within-ingredient utilisation and switching for liraglutide, semaglutide, dulaglutide, and tirzepatide users (Objectives 4 and 6).

A description of the study design is depicted in **Figure 1**.

A. Prevalent patients (persistent users) [Obj. 1 – Point prevalence]



B. Incident patients (new users of the medicine of interest) [Obj. 1 – Incidence, Obj. 2– 6]

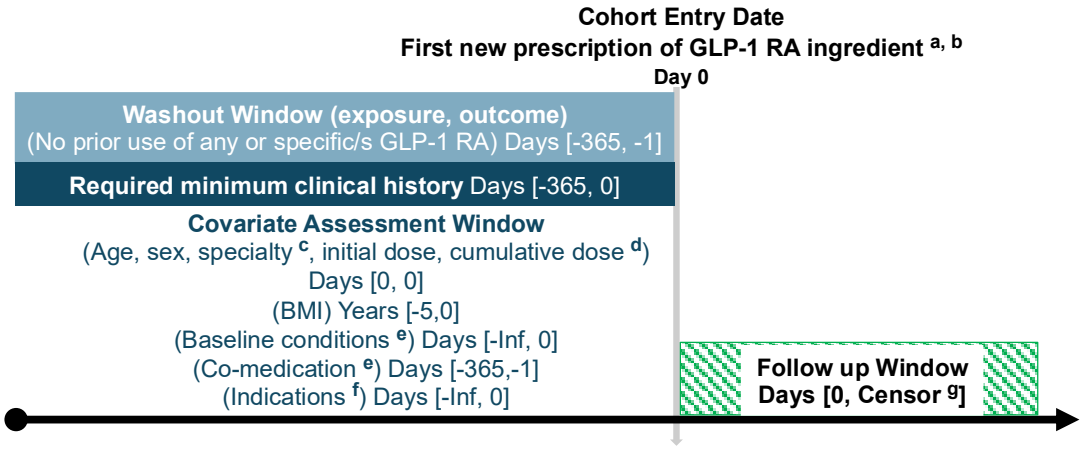


Figure 1. Graphical depiction of the study design.

a. GLP-1 RA ingredients: exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide, and tirzepatide.
b. Treatment episodes were defined by date of prescription and days supply with a stockpiling algorithm when a new prescription occurred before the end of days supply. Gaps of less than 90 days between end of days supply and next prescription were bridged. Thirty days were added to the last prescription's days supply in an exposure episode.
c. Where available (e.g. general practitioner, endocrinologist).
d. Cumulative dose on first continuous treatment episode.
e. Baseline conditions and related comedications included are fully described in **Section 8.6.2**.
f. Indications for GLP-1 RA use included: diagnosis of type 2 diabetes mellitus and obesity.
g. Earliest of: loss to follow-up, death, or the end of observation period (the latest available data). In Objectives 3 and 5, follow-up was additionally censored when switching from a GLP-1 RA drug to a non-GLP-1 RA drug listed in **Table 4**, or due to discontinuation of the GLP-1 RA treatment not followed by any drug listed in **Table 4**. In Objectives 4 and 6, follow-up was additionally censored at discontinuation of the specific GLP-1 receptor agonist ingredient.

BMI = Body mass index; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

9.2. Follow-up

To estimate incidence and prevalence (Objective 1), it was necessary to select the appropriate population and their contributed observation time (i.e. the denominator population):

- For prevalence estimates, study participants in the denominator population began contributing to the denominator on the respective date of the latest of the following: 1) study start date or 2) date at which the observation period started. Participants stopped contributing person time at the earliest date of the following: 1) end of available data in each of the data sources or 2) date at which the observation period of the specific person ended.

An example of entry and exit into the denominator population is shown in **Figure 2**. In this example, person ID 1 and 3 were included as denominators at the study start date as both were being observed in the data source from a prior date. Person ID 2 entered the study at the date of starting their period of observation, which was later than the study start date. Person ID 1 and 2 were followed until the study end date (end of available data in each of the data sources) whilst Person ID 3 left when exiting the data source (the end of observation period). Lastly, person ID 4 had two observation periods in the data source. The first period contributed time from study start until end of observation period, the second started contributing time again on the date of their second observation period start and exited at study end date.

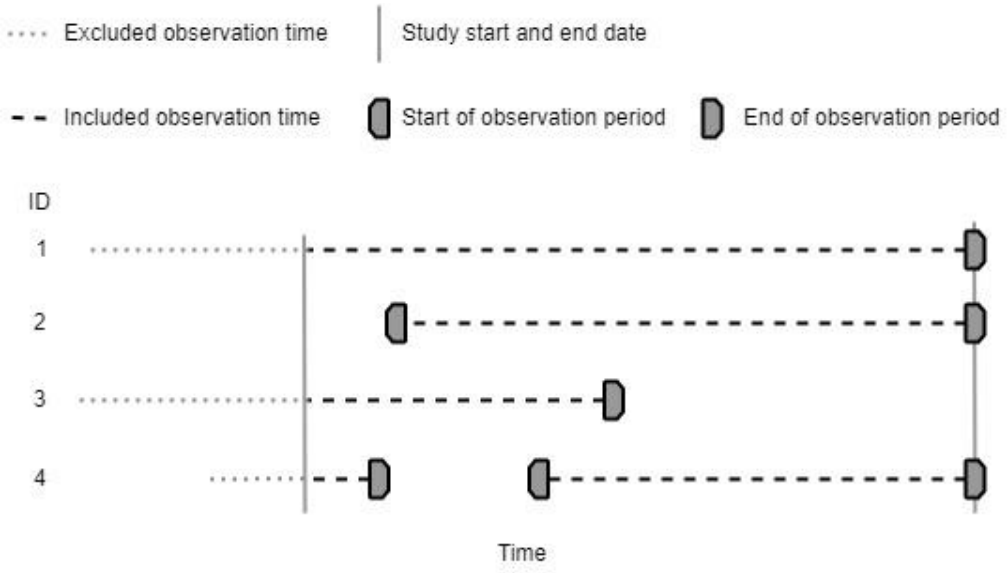


Figure 2. Included observation time for the denominator population in prevalence estimates.

- For incidence rates, an additional criterion was required to ensure that an incident use was captured (i.e. new episode of drug use, with a washout window of the specific GLP-1 RA (class or ingredient) of interest [-365, -1 days]). Thus, follow-up started from the date they reached at least 365 days of data availability. The denominator population began contributing person time on the respective date of the latest of the following: 1) study start date, 2) date at which the observation period had sufficient prior history. Participants stopped contributing person-time at the earliest date of the following: 1) end of available data in each of the data sources or 2) date at which the observation period of the specific person ended. Additionally, when incidence rates were stratified by indication or prescriber speciality, individuals in the denominator stopped contributing person-time from the date of their first prescription for the medicine of interest until one year after their last prescription of that episode. Therefore, if, for example, a patient with an indication for type 2 diabetes mellitus (T2DM) started dulaglutide, they no longer contributed to the denominator of other indication cohorts for dulaglutide from that date onwards until one year after they stopped using dulaglutide, as they were no longer eligible to contribute to the numerator.

  An example of entry and exit into the denominator population is shown in **Figure 3**. In this example, person ID 1 already had sufficient prior history before the study start date, and their observation period ended after the study end date, so they contributed to the entire study period. Person ID 2 and 4 only entered the study when they had sufficient prior history. Person ID 3 stopped contributing time when they exited the data source (the end of their observation period). Lastly, person ID 5 had two observation periods in the data source. During their first observation period, they began contributing at the study start and continued to contribute until the end of the first observation period; the second

contribution time began once sufficient prior history was reached in their second observation period and ended at study end date.

For the characterisation of new GLP-1 RA users (Objective 2), follow-up started on the date of the first GLP-1 RA prescription (with no prior use of the respective GLP-1 RA [class or ingredient] in the prior 365 days) and followed up until the end of the treatment episode, loss to follow-up, death, or end of the observation period (the latest available data).

For the characterisation of the GLP-1 RA utilisation pattern switching between GLP-1 RA ingredients (Objectives 3 and 5), follow-up started on the date of the first prescription of a GLP-1 RA ingredient (with no prior use of any other GLP-1 RA drug in the prior 365 days) and continued until the earliest of loss to follow-up, death, or end of the observation period (the latest available data), after switching to other ATC class level drugs described in **Table 4**, or discontinuation of the GLP-1 RA treatment not followed by other ATC class level drugs, whichever occurred first.

For the characterisation of the GLP-1 RA utilisation pattern within-ingredient switching of strength (Objectives 4 and 6), follow-up started on the date of the first prescription of dulaglutide, semaglutide, liraglutide, tirzepatide, or the brand of interest defined in **Table 5** (with no prior use of their respective GLP-1 RA ingredient in the prior 365 days), and continued until the earliest of loss to follow-up, death, end of the observation period (the latest available data), or discontinuation of use of the specific GLP-1 RA ingredient, whichever occurred first.

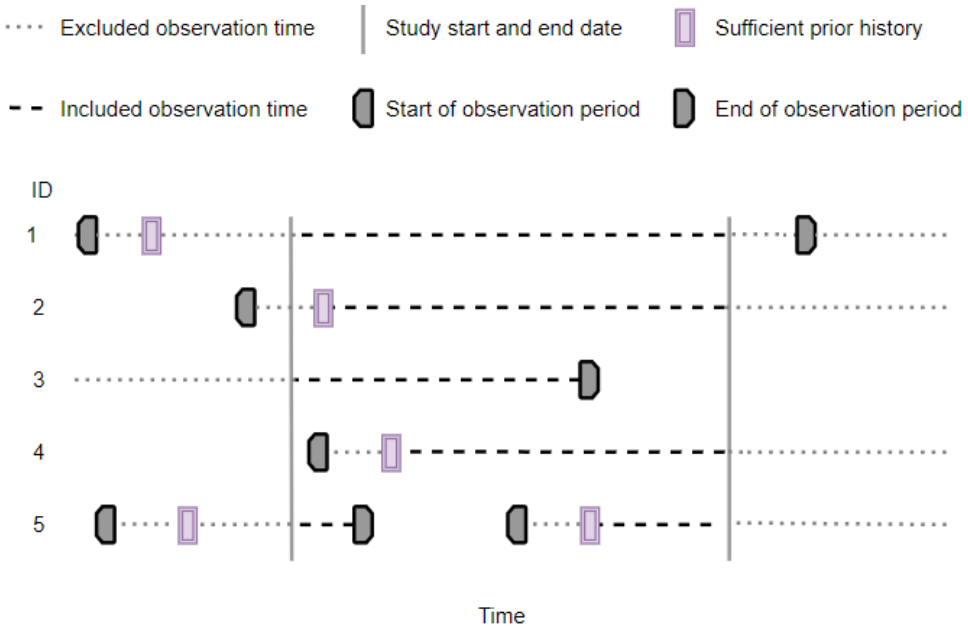


Figure 3. Included observation time for the denominator population in incidence rates.

9.3. Study population with inclusion and exclusion criteria

Individuals with an invalid age (i.e. no valid record of year of birth) and/or missing sex were excluded from the analysis. Specific inclusion and exclusion criteria for each of the study objectives were:

Objective 1: Incidence and prevalence of prescriptions of GLP-1 RA

The study cohort comprised all individuals present in the data source during the study period (i.e. 2015 to the most recent data available).

Additional eligibility criteria for the calculation of incidence rates were applied, where a minimum of 365 days of data availability and no prior use of the respective GLP-1 RA during the previous 365 days were required.

Objective 2: Characterisation of new GLP-1 RA users

All individuals with a first prescription of a GLP-1 RA during the study period, with a minimum of 365 days of data availability, and no prior use of the respective GLP-1 RA class/ingredient during the previous 365 days at the time of the treatment start were included.

Objectives 3 and 5: Characterisation of GLP-1 RA utilisation pattern for GLP-1 RA switching of ingredients

All individuals with a first prescription of a GLP-1 RA during the study period, with a minimum of 365 days of data availability, and no prior use of any type of GLP-1 RA during the previous 365 days at the time of GLP-1 RA treatment were included.

Objectives 4 and 6: Characterisation of GLP-1 RA utilisation pattern for GLP-1 RA within-ingredient switching of strength

All individuals with a first prescription of liraglutide, dulaglutide, semaglutide, or tirzepatide during the study period, with a minimum of 365 days of data availability, and no prior use of the respective GLP-1 RA ingredient/ingredient during the previous 365 days at the time of the treatment start were included.

9.4. Study setting and data sources

This study was conducted using routinely collected data from 12 data sources in the DARWIN EU® Network of Data Partners from 10 European countries. All data were a priori mapped to the Observational Medical Outcomes Partnership Common Data Model (OMOP CDM).

Data sources

1. Belgium: IQVIA Longitudinal Patient Database Belgium (IQVIA LPD Belgium)
2. Croatia: Croatian National Public Health Information System (NAJS)
3. Denmark: Danish Data Health Registries (DK-DHR)
4. Finland: Finnish Care Register for Health Care (FinOMOP-THL)
5. Germany: InGef Research Database (InGef RDB)
6. Germany: IQVIA Disease Analyzer Germany (IQVIA DA Germany)
7. The Netherlands: Integrated Primary Care Information (IPCI)
8. Norway: Norwegian Linked Health Registry data (NLHR)
9. Spain: The Information System for Research in Primary Care (SIDIAP)
10. Sweden: Health Impact - Swedish Population Evidence Enabling Data-linkage (HI-SPEED)
11. The United Kingdom: Clinical Practice Research Datalink Aurum (CPRD Aurum)
12. The United Kingdom: Clinical Practice Research Datalink GOLD (CPRD GOLD)

Data Selection

These data sources fulfilled the criteria required in terms of data quality, completeness, timeliness, and representativeness for the proposed research question while covering different regions of Europe.

To assess the reliability of the data sources, the data partners were asked to describe their internal data quality process on the source data as part of the DARWIN EU® onboarding procedure. To further ensure data quality, we utilised the Achilles tool,[8] which systematically characterises the data and generates data

characteristics such as age distribution, condition prevalence per year, and data density. Data density includes information on 1) monthly record counts by data domain (which offers insights into data collection patterns and the start date of each data source), 2) measurement value distribution (i.e. min, max, quartiles for numeric values per measurement concept and per unit and counts for discrete measurement-value pairs). The latter can be compared against expectations for the data based on predefined standards, historical trends, or known epidemiological patterns to identify potential anomalies or inconsistencies. Additionally, the data quality dashboard (DQD) provides more objective checks (see Section D1.3.5.2 on Complete Data Quality Assurance Package) on plausibility of data completeness, consistency, and conformity across the data sources.

In terms of relevance, the selection of data sources was based on the availability of data on the selected GLP-1 RA ingredients to perform the described analyses. In addition, the data sources were chosen considering their ability to support timely Institutional Review Board (IRB) approvals, thus ensuring alignment with the timeline established by stakeholders for the conduct of this study.

The DARWIN EU® Portal, as well as information from the onboarding documents, was used to assess whether data sources had information on GLP-1 RAs. Data within the DARWIN EU® Portal is kept up to date by extracting the release dates for each data source in the Network and monitoring when data are out-of-date with the expected refresh cycle (typically quarterly or half-yearly). In addition, it is important to have a clear understanding of the time covered by each released data source, as this can vary across different domains. To facilitate this, the *CDMOnboarding* (and *Achilles*) packages [8] contain a 'data density' plot. This plot displays the number of records per OMOP domain monthly. This allows for the obtaining of insights relating to when data collection started, when new sources of data were added, and until when data was included. In addition, at the time of inviting data partners, they were informed about the study objectives and asked whether they could participate in the study.

More general-purpose diagnostic tools, *CohortDiagnostics* [9] and *DrugExposureDiagnostics* [10], have been developed. The *CohortDiagnostics* package provides additional insights into cohort characteristics, record counts, and index event misclassification. The *DrugExposureDiagnostics* package evaluates ingredient-specific attributes and patterns in drug exposure records. Upon finalisation of the study protocol and creation of the disease and drug cohorts of interest by DARWIN EU® Coordination Centre, these packages were executed in each data source by each data partner.

Data source justification and key characteristics

Initiation of GLP-1 RA may be conducted by a specialist. However, GLP-1 RA are often prescribed by primary care practitioners for continued treatment. In line with T2DM patients, users of GLP-1 RA are often followed-up and treated in primary care settings (referring to general practitioners [GPs], nurses, pharmacists, etc., but not specialists). Considering this, the following data sources were selected, which cover the healthcare settings of interest:

IQVIA LPD Belgium, NAJS, DK-DHR, FinOMOP-THL, InGef RDB, IQVIA DA Germany, IPCI, NLHR, SIDIAP, HI-SPEED, CPRD Aurum, and CPRD GOLD were invited to participate.

IQVIA LPD Belgium, IQVIA DA Germany, IPCI, SIDIAP, and CPRD GOLD were included in the original P3-C1-008 study. These data sources captured the relevant data necessary to answer the research questions of this study, cover the healthcare settings where the drugs of interest may be used (i.e. primary care), and have recent data covering the 10-year study period.

In addition, NAJS, DK-DHR, FinOMOP-THL, InGef RDB, NLHR, HI-SPEED, and CPRD Aurum were added, as they also cover the required setting for the study and have an adequate estimated number of individuals with GLP-1 RA records. All data sources, except NLHR and HI-SPEED, had recent data covering the 10-year study period; however, NLHR and HI-SPEED were considered of interest because of the nationwide geographical areas they represent (Norway and Sweden, respectively). The selected data sources fulfilled

the criteria required for a population-level drug utilisation study, as all these data sources had thousands of users for most of the GLP-1 RA treatments and a consistent denominator (except for IQVIA LPD Belgium and IQVIA DA Germany), allowing for accurate incidence estimation and quick approvals/governance, enabling rapid analyses. (**Table 1**)

Information on the data sources used in this study is provided in **Annex I**.

Table 1. Description of the selected data sources.

Country	Name of Data source	Justification for Inclusion	Type of Data	Number of subjects included in the analysis*	Study period covered by each data source	Contributing to the following study objectives
Belgium	IQVIA LPD Belgium	All data sources are population-level (national or regional coverage) that include primary care/outpatient specialist settings where GLP-1 RA are expected to be prescribed.	Outpatient GP Care	1,037,556	01/03/2016 to 31/03/2026**	1 to 6
Croatia	NAJS		Registry	4,834,920	01/01/2015 to 29/01/2026	1 to 6
Denmark	DK-DHR		Registry	6,646,316	01/01/2015 to 07/11/2024	1 to 6
Finland	FinOMOP-THL		Registry	6,352,364	01/01/2015 to 01/10/2024	1 to 6, excluding Time-to-switch within Obj. 3–6.
Germany	InGef RDB		Claims	10,667,160	01/01/2016 to 30/09/2025	1 to 6
	IQVIA DA Germany		Outpatient GP Care	33,898,662	01/01/2015 to 30/09/2025**	1 to 6
The Netherlands	IPCI		Outpatient GP Care	2,554,205	01/01/2015 to 30/06/2025	1 to 6
Norway	NLHR		Registry	6,036,482	01/01/2018 to 31/12/2023	1 to 6
Spain	SIDIAP		Outpatient GP Care	7,605,294	01/01/2015 to 31/12/2024	1 to 6
Sweden	HI-SPEED		Registry, Outpatient GP Care, Inpatient Care	11,680,910	01/01/2018 to 31/08/2025	1 to 6
The United Kingdom	CPRD Aurum		Outpatient GP Care	32,751,325	01/01/2015 to 24/07/2025	1 to 6
The United Kingdom	CPRD GOLD		Outpatient GP Care	8,377,931	01/01/2015 to 20/05/2025	1 to 6

*Number of subjects included in the analyses had been obtained from the prevalence attrition of GLP-1 RA class (i.e. number of distinct individuals included in the denominator population of the GLP-1 RA prevalence estimates).
In IQVIA LPD Belgium and IQVIA DA Germany, the last 3 months of data were removed in the incidence and prevalence analyses to reduce the effect of the artifacts in the denominator (see **Section 11.2 for further details).
GP = general practitioner; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; InGef RDB = InGef Research Database; IQVIA DA Germany = IQVIA Disease Analyzer Germany; NLHR = Norwegian Linked Health Registry data; IPCI = Integrated Primary Care Information; SIDIAP = The Information System for Research in Primary Care; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD.

9.5. Study period

The study period ranged from 01/01/2015 up until the latest data available for each data source. It should be noted that in NLHR and HI-SPEED, the availability of the data began from 2018 and ended in December 2023 and August 2025, respectively. **Table 1** depicts the study period covered by each data source.

9.6. Variables

9.6.1. Exposure

For this study, the exposure of interest was use of GLP-1 RA during the study period (**Table 2**).

Table 2. GLP-1 RA ingredients included.

Ingredient name*	ATC	Concept ID
Exenatide	A10BJ01	1583722
Liraglutide	A10BJ02	40170911
Lixisenatide	A10BJ03	44506754
Dulaglutide	A10BJ05	45774435
Semaglutide	A10BJ06	793143
Tirzepatide	A10BX16	779705

*This study did not include the GLP-1 RA ingredients albiglutide (it is no longer authorised in the European Union (EU), and counts were ≤1,000 users/data source) and beinaglutide (it has not been approved for use in the EU).
ATC = Anatomical Therapeutic Chemical Classification.

Records containing a GLP-1 RA ingredient in combination with additional active ingredient(s) (e.g. liraglutide with insulin) were permitted/included in the study.

Objective 1:

GLP-1 RA were assessed at the class level (i.e. overall GLP-1 RA use), by ingredient (**Table 2**), and by brand (**Table 3**). Brands were classified as Wegovy, Ozempic, Victoza, Saxenda, Rybelsus, Trulicity, and Mounjaro, or "other/not recorded".

Table 3. Brand cohorts for incidence and prevalence analyses.

Ingredient name	Cohorts by brand
Semaglutide	Wegovy
	Ozempic
	Rybelsus
	No brand recorded for semaglutide.
Liraglutide	Victoza
	Saxenda
	Other brands/no brand recorded for liraglutide.
Dulaglutide	Trulicity
	No brand recorded for dulaglutide.
Tirzepatide	Mounjaro
	No brand recorded for tirzepatide.

Objective 2:

Characterisation of new users was done at the class level (i.e. overall GLP-1 RA use), by ingredient (**Table 2**), by indication cohorts, and by brands, as described in **Table 3**.

Objectives 3 and 5:

GLP-1 RA switching of ingredients: switching was described starting from the first prescription of a GLP-1 RA ingredient with no prior use of any other GLP-1 RA in the prior 365 days (ingredients included in **Table 2**), to one of the following pre-defined cohorts:

- Use of other GLP-1 RA ingredients (i.e. exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide, or tirzepatide).
- Use of other antidiabetic medicines, as defined in **Table 4** (i.e. A10BA, A10BB, A10BD, A10BF, A10BG, A10BH, A10BK, Other A10B, A10A, and A08A).
- No further medication: defined as no more antidiabetic medication (neither GLP-1 RA nor antidiabetic ATC classes described in **Table 4**).

Table 4. Other second-line antidiabetics at ATC3 or ATC4 level class, insulin at ATC3 level class, and other weight loss medications at ATC3 class, for the characterisation of GLP-1 RA switching of ingredients.

ATC drug class level	Name
A10BA	Biguanides
A10BB	Sulfonylureas
A10BD	Combinations of oral blood glucose lowering drugs
A10BF	Alpha glucosidase inhibitors
A10BG	Thiazolidinediones
A10BH	DPP-4 inhibitors
A10BK	SGLT2 inhibitors
Other A10B	Other blood sugar-lowering medications (i.e. the remaining drugs in A10B class excluding GLP-1 RA).
A10A	Insulin
A08A	Other weight loss medications, excluding diet products. A08AA62 (bupropion and naltrexone) and A08AA56 (ephedrine, combinations) were excluded

ATC = Anatomical Therapeutic Chemical Classification; DPP-4 = dipeptidyl peptidase 4 inhibitors; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; SGLT2 = sodium-glucose co-transporter 2 inhibitors.

Objective 4 and 6:

GLP-1 RA within-ingredient switching of strength: The analysis of switching between drug strength was restricted to switching within the same ingredient. The strength-level cohorts were generated based on ingredient-strength or based on ingredient-strength-brand (when brand was available), as exemplified in **Table 5**. Brands were limited to Wegovy, Ozempic, Victoza, Saxenda, Rybelsus, Trulicity, and Mounjaro. Other brands were included in the "other brands/no brand recorded" cohort. These analyses were calculated using incident users.

Within the same ingredient, switching was described between specific drug strengths (with brand information, when available) 1) to the same brand with another strength, 2) to another brand with strength information, 3) to another strength with an unknown brand, or 4) to stop of GLP-1 RA treatment.

Table 5 describes the pre-defined strength-levels within each specific ingredient/brand. Cohorts were defined based on the strength recorded in the OMOP vocabulary (v5.0 27-FEB-25).

Table 5. Example of pre-defined cohorts of strength-levels.

Type of pre-defined strength-level cohort	Cohort name	Strength switch
Semaglutide	Wegovy (semaglutide [injection])	- 0.25 mg, 0.5 mg, 1 mg, 1.7 mg, ≥2.4 mg
	Ozempic (semaglutide [injection])	- 0.25 mg, 0.5 mg, 1 mg, ≥2 mg
	Rybelsus (semaglutide [oral]])	- 1.5 mg, 3 mg, 4 mg, 7 mg, 9 mg, ≥14 mg
	No brand recorded for semaglutide.	- Injection: 0.25 mg, 0.5 mg, 1 mg, ≥2 mg - Oral: 3 mg, 5 mg, 7 mg, ≥14 mg
Liraglutide	Victoza (liraglutide)	- 0.6 mg, 1.2 mg, ≥1.8 mg
	Saxenda (liraglutide)	- 0.6 mg, 1.2 mg, 1.8 mg, 2.4 mg, ≥3 mg
	Other brands/no brand recorded for liraglutide.	- 0.6 mg, 1.2 mg, 1.8 mg, 2.4 mg, ≥3 mg
Dulaglutide	Trulicity (dulaglutide)	- 0.75 mg, 1.5 mg, 3 mg, ≥4.5 mg
	No brand recorded for dulaglutide.	- 0.75 mg, 1.5 mg, 3 mg, ≥4.5 mg
Tirzepatide	Mounjaro (tirzepatide)	- 2.5 mg, 5 mg, 7.5 mg, 10 mg, 12.5 mg, ≥15 mg
	No brand recorded for tirzepatide.	- 2.5 mg, 5 mg, 7.5 mg, 10 mg, 12.5 mg, ≥15 mg

This table shows different strengths based on guidelines. Individual cohorts were created for each strength within the specific ingredient/brand based on the individual products prescribed in the individual data sources.

9.6.2. Covariates, including confounders, effect modifiers, intercurrent events, and other variables

Age:

Age at the index date was calculated using January 1st of the year of birth as a proxy for the actual date of birth.

Covariates for stratification in Objective 1 (Incidence/prevalence):

- Age groups [years]: <18, 18–44, 45–54, 55–64, 65+, with assessment window at the index date: [0, 0]
- Sex: male/female, with assessment window at the index date: [0, 0]
- Indication cohorts [only for incidence]:

  Indication for T2DM and obesity were defined as the following:

  - T2DM, defined as a diagnosis of T2DM before new use of GLP-1 RA, with assessment window at the index date: [-Inf, 0].
  - Obesity, defined as diagnosis [based on presence of clinical codes indicating obesity] or measurement, any time during the observation period. Measurements that qualified as obesity were body mass index (BMI) values between 30 and 60 kg/m2 or, as an alternative when height was not available, weight values between 120 to 200 kg or 265 to 440 pounds, with assessment window at the index date: [-Inf, Inf]. In DK-DHR, indications were registered at the index date; therefore, their indications were evaluated at the index date [0,0].

Incidence calculations of each of the GLP-1 RA was also stratified by the combination of type 2 diabetes mellitus (T2DM) and obesity, creating the following four cohorts:

1. T2DM and Obesity: users of GLP-1 RA with diagnosis of T2DM and obesity.
2. T2DM: users of GLP-1 RA with diagnosis of T2DM and excluding obesity.
3. Obesity: users of GLP-1 RA with diagnosis of obesity and excluding T2DM.
4. Other indications: users of GLP-1 RA excluding obesity and T2DM.

- Prescriber speciality [where available and only for incidence]: Prescriber speciality, such as family medicine, endocrinologist, paediatrics, etc., were used to stratify incident users of each of the GLP-1 RA medicines. Assessment window at the index date: [0, 0]
- Calendar month

Covariates for stratification in Objective 2 (Characterisation of new GLP-1 RA users)

- Overall study period and calendar year.
- Indication cohorts (T2DM/obesity), as described above.

Covariates described in Objective 2 (Characterisation of new GLP-1 RA users)

- Age [years] (median, interquartile range [IQR]) and stratified by age groups (number of subjects (%): <18, 18–44,45–54, 55–64, 65+). Assessment window at the index date: [0, 0]
- Sex: male/female, with assessment window at the index date: [0, 0]
- BMI [kg/m2] (median [Q25–Q75], only among those with a BMI record) and stratified by BMI groups (number of subjects (%): ≤26, 27–29, 30–34, 35–39, ≥40 kg/m2 or None [i.e. percentage of individuals with missing BMI]). The most recent record of BMI within the last five years respectively from the index date was used. Values below 10 and over 60 kg/m2 were truncated to diminish the risk of outliers. Assessment window was between 5 years before (and at) the index date: [-5 years, 0]
- Comorbidities (n, %): including hypertension, myocardial infarction[1], stroke, MACE (major adverse cardiovascular event: composed by myocardial infarction and stroke), heart failure[1], atrial fibrillation, peripheral arterial disease, peripheral vascular disease[1] , cerebrovascular disease[1], cardiovascular disease (CVD), chronic kidney disease and renal impairment[1], T2DM, dyslipidaemia (composed of hypercholesterolaemia and hypertriglyceridaemia), thyroid disorders, gallbladder disorders, Alzheimer's disease, neuropsychiatric diseases (i.e. schizophrenia, Parkinson's disease, dementia[1], depression, anxiety, attention-deficit/hyperactivity disorder [ADHD]), asthma, chronic obstructive pulmonary disease (COPD) [1], osteoarthritis, latent autoimmune diabetes in adults (LADA), autoimmune diseases (i.e. rheumatoid arthritis [1], lupus erythematosus[1], psoriasis, psoriatic arthritis, Crohn's disease), peptic ulcer disease[1], liver disease[1], metabolic dysfunction-associated steatotic liver (MASLD), hemiplegia[1], paraplegia[1], sleep disorder, sleep apnoea, polycystic ovary syndrome (PCOS, recently renamed to polyendocrine metabolic ovarian syndrome), eating disorders (composed of anorexia and bulimia), cancer (any excluding non-melanoma skin cancer)[1], pancreatic cancer, human immunodeficiency virus (HIV)[1]. Additionally, we included the individual conditions from the frailty index that were not mentioned above, when those were available in at least one data source: activity limitation, chronic respiratory disease, falls, hearing impairment, housebound, mobility and transfer problems, requirement for care, sleep disturbance, social vulnerability, urinary incontinence, visual impairment, anaemia and haematinic deficiency, arthritis, dizziness, dyspnoea, foot problem, fragility fracture, heart valve disease, hypotension/syncope, ischaemic heart disease, memory and cognitive problems, osteoporosis, skin ulcer, and urinary system disease. Assessment window at index date: [-Inf, 0].

[1]Conditions in Charlson comorbidity score.

For comorbidities with no phenotype available from previous DARWIN EU® studies, the condition was defined through the use of high-level concepts and their respective descendants.

- Related comedications (n, %): use of other second-line antidiabetics and insulin at ATC level class group (as described in **Table 4**). Patients were allowed to contribute to more than one ATC level class group. Assessment window was between 1 year before the index date: [-365, -1].
- Initial dose (milligram), assessment window at the index date: [0, 0]
- Cumulative dose (milligram) for first continuous treatment episode. Assessment window at the index date: [0, end first episode]
- Treatment duration of the first continuous treatment episode: Treatment duration was calculated as the duration of the first continuous exposure episode, with less than a 90-day gap between prescriptions. Estimations of treatment duration were summarised providing the median [IQR] treatment duration. For data sources where duration could not be calculated, due to e.g. missing information on quantity or dosing, treatment duration was not provided. Assessment window at the index date: [0, Inf]
- Proportion of first prescription records mapped to ingredient level in GLP-1 RA users. Assessment window at the index date: [0, 0]
- Additionally, the feasibility of including the following covariates during the execution of the diagnostic tools was evaluated: ethnicity, geographic stratification (e.g. region), and post-partum for females during the last 12 months before first GLP-1 RA use.

Covariates for stratification in Objectives 3 and 4 (Switching)

Analyses were run over the overall study period.

Covariates for stratification in Objectives 5 and 6 (Switching)

Analyses were run in the following time-period stratifications:

- Between 2015–2020
- Annually for the years 2021, 2022, 2023, 2024, and 2025.

9.7. Study size

No sample size was calculated for this study, which did not test a specific hypothesis. The expected number of prescriptions across data sources was expected to be between <1,000 (for lixisenatide in IQVIA LPD Belgium, DK-DHR, FinOMOP-THL, HI-SPEED, InGef RDB, IPCI, and NLHR) and >300,000 (for semaglutide in DK-DHR).

9.8. Data transformation

Analyses were conducted separately for each data source. Before study initiation, test runs of the analyses were performed on a subset of the data sources, and quality control checks were performed. Once all the tests passed (see **Annex II**), the final study codes package was released in the version-controlled Study Repository for execution against all the participating data sources.

The data partners locally executed the analytics against the OMOP CDM in R Studio and reviewed and approved the, by default, aggregated results.

The study results of all data sources were checked, after which they were made available to the team, and the dissemination phase started. All results were locked and timestamped for reproducibility and transparency

9.9. Statistical methods

9.9.1. Main summary measures

The following analyses were conducted for Objectives 1–6 (**Table 6**).

1) Incidence/prevalence (Population-level DUS): *IncidencePrevalence*.[11]

2) New user characterisation (Patient-level DUS): *CohortCharacteristics* and *DrugUtilisation*.[12, 13]

3–6) Switching (Patient-level characterisation): *TreatmentPatterns* (summarising treatment switching) and *CohortSurvival* (time-to-switch from new GLP-1 RA use to other non-GLP-1 RA treatment, and time-to-switch between strengths).[14, 15]

Table 6. Description of study types and types of analysis.

Study	Study classification	Type of analysis
Population-level DUS	Off-the-shelf	- Population-based incidence rates and prevalence estimates
Patient-level DUS	Off-the-shelf	- Characterisation of patient-level features - Frequency and % of comorbidity/es - Estimation of minimum, p25, median, p75, and maximum initially prescribed or dispensed dose/strength - Estimation of minimum, p25, median, p75, and maximum treatment duration
Patient-level characterisation	Off-the-shelf	- Patient-level treatment patterns - Time-to-event (i.e. time to switch): median time-to-switch survival (based on median survival), average time-on-treatment (based on restricted mean survival), and Kaplan-Meier plots.

DUS = drug utilisation studies.

9.9.2. Federated Network analyses

All analyses were conducted separately for each data source and were carried out in a federated manner, allowing analyses to be run locally without sharing patient-level data.

Before sharing the study package, test runs of the analytics were performed on a subset of the data sources and quality control checks were performed. After all the tests were passed (see Quality Control section in **Annex II**), the final package was released in a version-controlled study repository for execution against all the participating data sources.

The data partners locally executed the analytics against the OMOP CDM in R Studio and reviewed and approved the default aggregated results. They then made available to the Principal Investigators and study team in a secure online repository (Data Transfer Zone). All results were locked and timestamped for reproducibility and transparency. The study results of all data sources were checked, after which they were made available to the team, and the Study Dissemination Phase was able to start. All results were locked and timestamped for reproducibility and transparency.

9.9.3. Patient privacy protection

All analyses were conducted separately for each data source and were carried out in a federated manner, allowing analyses to be run locally without sharing patient-level data. Cell counts <5 were suppressed when reporting results to comply with the data source's privacy protection regulations.

9.9.4. Main statistical methods

9.9.4.1. Population-level incidence calculations

New drug users for the different medicines of interest were captured.

Calendar time for incidence calculations was based on monthly periods of the index prescription in the population level analysis (e.g. 01/01/2015–31/01/2015, 01/02/2015–28/02/2015, etc.).

Monthly incidence rates of the medicines of interest were calculated as the number of users per 100,000 person-years of the population at risk of exposure during the period for each calendar year. Those study participants who entered the denominator population then contributed time-at-risk up to their first new use (prescription or dispensation) during the study period. Alternatively, if they did not have a drug exposure, they contributed time-at-risk as described above in **Section 8.2**. Incidence rates are given together with 95% confidence intervals using the exact method.

An illustration of the calculation of incidence use for each of the medicines of interest is shown below in **Figure 4**.

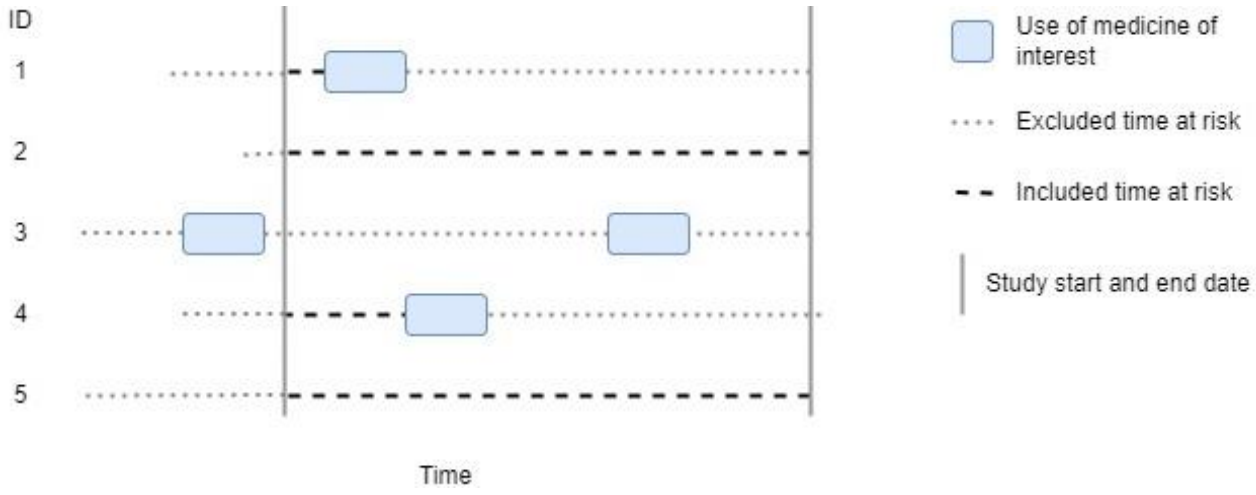


Figure 4. Example for capturing new incidence use of medicines of interest.

Patient ID 1 and 4 contributed time-at-risk between the study start until the point they became incident users of the medicine of interest. Patient ID 2 and 5 contributed time-at-risk between the study start and end date, as no use of medicines of interest was observed between this period nor before the study start date. Patient ID 3 was excluded from the analysis and did not contribute time-at-risk, since a previous use of the same medicine of interest was observed before the study start date.

9.9.4.2. Population-level prevalence calculations

Calendar time for point prevalence calculations was based on the first day of each calendar month in the population level analysis (e.g. 01/01/2024, 01/02/2024).

Monthly point prevalences of the medicines of interest were calculated as the total number of individuals who used the medicine of interest at the start of each calendar month, divided by the population at risk of exposure during that point. Therefore, point prevalence gives the proportion of individuals exposed at the first of each calendar month.

Point prevalence estimates are given together with 95% confidence intervals. Binomial 95% confidence intervals were calculated using the Wilson Score method for binomial distribution.

An illustration of the calculation of point prevalence use for each of the medicines of interest is shown below in **Figure 5**.

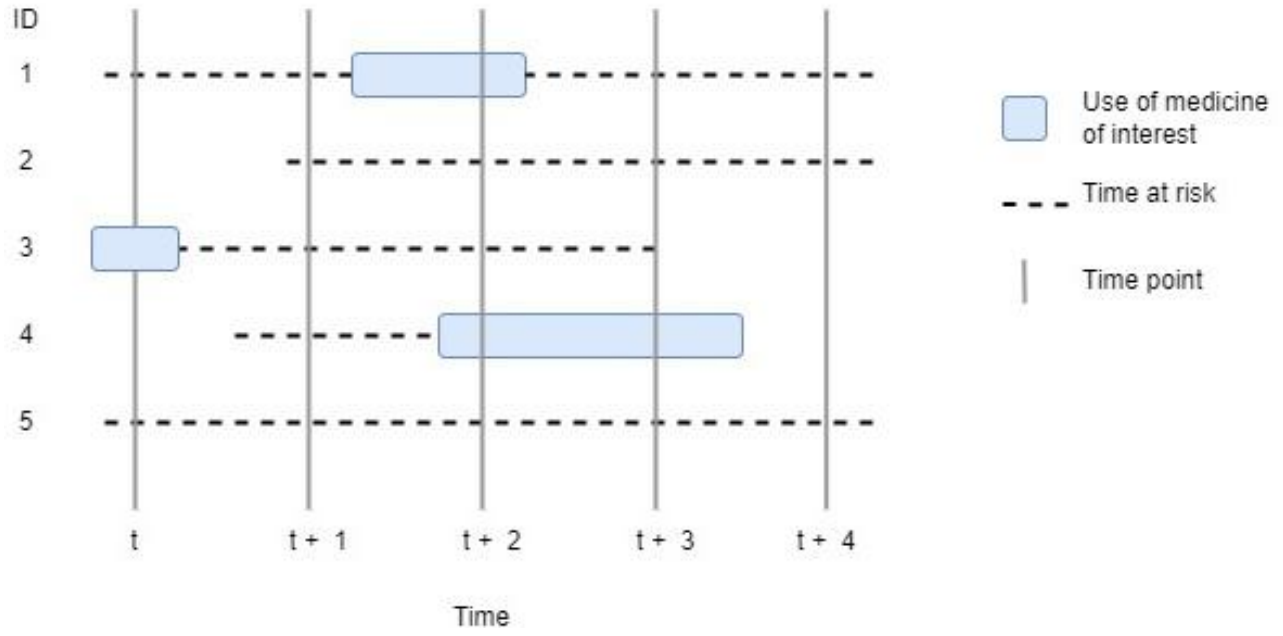


Figure 5. Example for capturing point prevalence use of medicines.

Point prevalence use was captured at the different time points, represented as “t” or “t + n”. In each of the time points, the number of users of the medicine of interest contributed to the numerator. For instance, from the 5 participants, there was only one user for each time point at time “t” and at time “t + 3”, whilst “t + 1” and “t + 4” have no users, and “t + 2” have two users of the medicine of interest. Patient ID 1 and 3 only contributed one time point each: “t” and “t + 2”, respectively. Conversely, Patient ID 4 contributed to two-time points, “t + 2” and “t + 3”, as their use of the medicine of interest continued.

9.9.5. Patient-level characteristics on/before the index date

New drug users of GLP-1 RA stratified by presence or absence of diagnosis of T2DM and/or diagnosis of obesity were characterised by age, sex, body mass index, initial dose, cumulative dose, and a list of prespecified indications/comorbidities and related comedications.

Average age and number of male and female (N, %) at the index date were reported. The list of prespecified indications/comorbidities and related comedications are reported using the number of individuals and percentage (N, %) with a record within the prespecified time windows. BMI is reported as an average and/or as number of individuals and percentage (N, %) among the BMI categories described in **Section 8.6.2**.

The time windows for covariate assessment are described in **Section 8.6.2**.

9.9.5.1. Drug exposure calculations

Drug exposure is the duration of time exposed to a specific ingredient for an individual drug record (i.e. for an individual prescription record, how long that prescription lasted). Conversely, drug era is the timeframe in which an individual is persistently considered to be exposed to a specific ingredient. Each drug era can correspond to one or multiple drug exposures.

For each patient, drug eras were defined as follows: exposure started at date of the first prescription after a washout of 90 days. For each prescription, the estimated duration of use was retrieved from the drug exposure table, using the start and end date of the exposure. Subsequent prescriptions were combined into continuous exposed episodes (drug eras) using the following specifications:

Two drug eras were merged into one continuous drug era if the distance in days between the end of the first era and start of the second era was ≤90 days. The time between the two joined eras was considered as exposed by the first era, as shown in **Figure 6**, first row.

For the calculation of initial and cumulative dose, records with missing dose information (e.g. drug records mapped at ingredient level) are treated as 0 when doses are computed (see **Section 11.2** for further details).

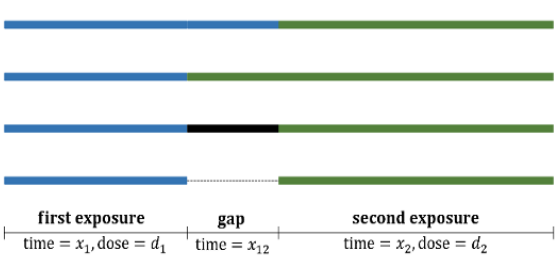
Gap era joint mode	Schematics	Dose in between	Cumulative dose	Cumulative time
"first"		d_1	$d_1 \cdot (x_1 + x_{12}) + d_2 \cdot x_2$	$x_1 + x_{12} + x_2$
"second"		d_2	$d_1 \cdot x_1 + d_2 \cdot (x_2 + x_{12})$	$x_1 + x_{12} + x_2$
"zero"		0	$d_1 \cdot x_1 + d_2 \cdot x_2$	$x_1 + x_{12} + x_2$
"join"		NA	$d_1 \cdot x_1 + d_2 \cdot x_2$	$x_1 + x_2$

Figure 6. Gap era joint mode.

Different drug exposures are differentiated as blue and green. Drug era concatenates different drug exposures based on the gap between them (in this study, two exposures were concatenated when the gap between them was 90 days or less).

9.9.5.2. Switching of ingredients

In Objectives 3 and 5, analysis of switching started at the time of the first new prescription of any GLP-1 RA ingredient with no prior use of any other GLP-1 RA ingredient in the prior 365 days for each individual. In Objectives 4 and 6, analysis of switching started at the time of the first new prescriptions of liraglutide, dulaglutide, semaglutide, and tirzepatide.

The treatment pathway was constructed using the standardised method using the *TreatmentPatterns* R Package. **Figure 7** explains how treatment combination was defined. The minimum overlap of different treatments to be considered as combination treatment (combinationWindow) was 30 days.

The following parameters were defined in this study: **Table 7**. The target cohort refers to the new user cohorts of GLP-1 RA ingredients (**Table 2**), whereas the event(s) refer to treatment(s) of interest.

A Sankey diagram was used to illustrate the treatment pathways. To avoid an overwhelming figure, only treatment pathways representing more than 5% individuals in the entire cohort for Objective 3 and 0.5% for Objective 4, were included. Pathways with less than 5% and 0.5% frequency, respectively, are not reported.

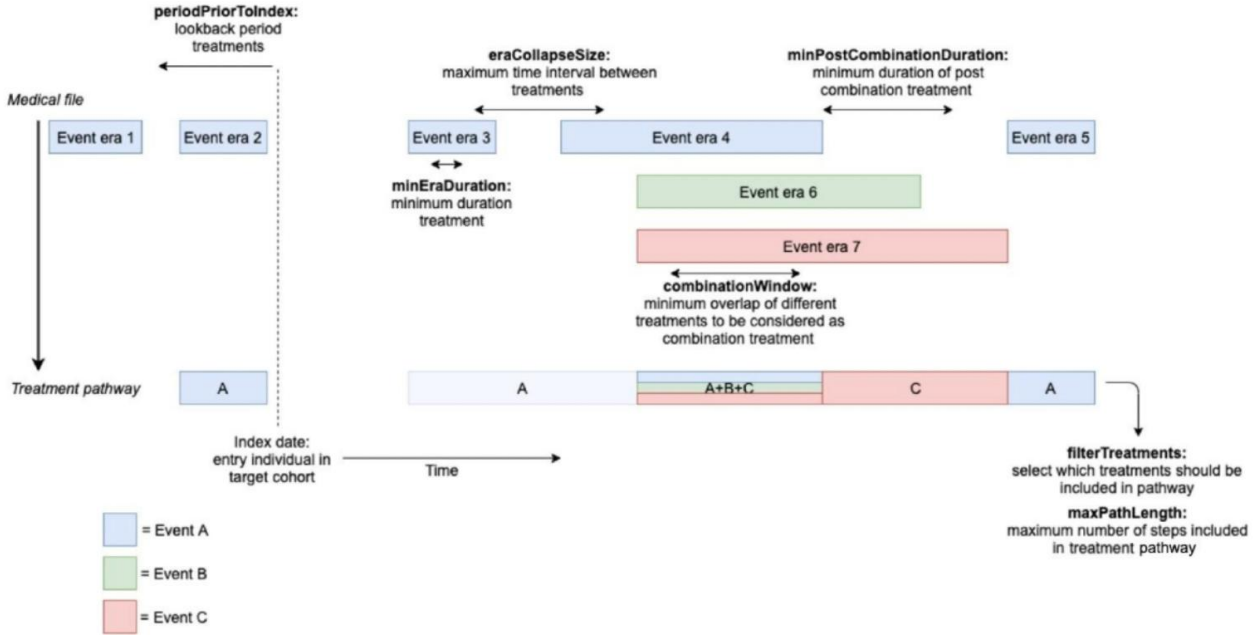


Figure 7. Parameters in *TreatmentPatterns* package.

Table 7. Pathway settings in *TreatmentPatterns*.

Variable in *TreatmentPatterns*	Explanation	Predefined parameter
Individual pathway settings		
periodPriorToIndex	The period (number of days) prior to the index date of the target cohort from which treatments should be included	0 (not relevant, as cohort entry started at treatment initiation)
minEraDuration	Minimum time an event era should last to be included in the analysis	1 day
eraCollapseSize	Maximum gap within two eras of the same event cohort which would still allow the eras to be collapsed into one era	0 days (era collapse was implemented when the cohorts were created)
combinationWindow	Time that two event eras needed to overlap to be considered a combination treatment	30 days
minPostCombinationDuration	Minimum time that an event era lasted before or after a generated combination treatment to be included in the pathway as a separate treatment	30 days
filterTreatments	To select which treatments were included in pathway: first time occurrences of treatments ('First'), remove sequential repeated treatments ('Changes'), all treatments ('All')	First
maxPathLength	Maximum number of treatments included in pathway	10
Aggregate pathway settings		
groupCombinations	To group all non-fixed combinations in one category 'other' in the sunburst plot	TRUE / 10
addNoPaths	To include untreated persons without treatment pathway in the plots	TRUE

9.9.5.3. Time-to-switch

Time-to-switch was assessed as follows:

- Objectives 3 and 5: New GLP-1 RA use with no prior use of any GLP-1 RA in the prior 365 days

Time-to-switch from the new GLP-1 RA use (i.e. from the first episode/drug era) to other medicines were calculated based on survival analysis and reported using median time-to-switch (based on median survival: time when 50% of the patients in the group had switched to another treatment) and average time-on-treatment (based on restricted mean survival: average time patients were alive and still had not changed the treatment over the study period analysed). Additionally, Kaplan-Meier curves are provided in the Shiny app.

Switching was censored at the earliest of loss to follow-up, death, end of the observation period (the latest available data), after switching to other ATC class level drugs, described in **Table 4**, or discontinuation of the GLP-1 RA treatment not followed by other ATC class level drugs, whichever occurred first. In the Sankey plot, treatment "STOP" represents the cessation of the last GLP-1 RA treatment received with no switching to any other of the ATC3 and ATC4 level class cohorts, described in **Table 4**.

- Objectives 4 and 6: Switch of strengths within the same ingredient (liraglutide, dulaglutide, semaglutide, or tirzepatide; and with brand information, when available).

Time-to-switch between strengths (within the same ingredient) was calculated based on survival analysis and reported using median time-to-switch (based on median survival: time when 50% of the patients in the group had switched to another strength) and average time-on-treatment (based on restricted mean survival: average time patients were alive and still had not changed the strength over the study period analyses). Additionally, Kaplan-Meier curves are provided.

Switching was censored at the earliest of loss to follow-up, death, end of the observation period (the latest available data), or discontinuation of use of the specific GLP-1 RA ingredient, whichever occurred first. In the Sankey plot, treatment "STOP" represents cessation of the GLP-1 RA treatment or switch to another GLP-1 RA ingredient.

<u>Differences between restricted mean survival and median survival</u>:

The restricted mean survival is the average event-free survival time over the whole follow-up period (i.e. the average time a patient is alive and free of specific events). In this study, it was the average time patients were treated with a specific GLP-1 RA medication.

The median survival is the time 50% of the group had the specific event (i.e. treatment discontinuation).

The difference between restricted mean survival and median survival is that median survival is the time 50% of the group had the specific event. Thus, there are cases where the median survival result may be null (because it does not reach the 50%), but it was still possible to calculate the restricted mean survival results to understand how many users were still under e.g. "semaglutide treatment" at the end of follow-up.

9.9.6. Missing values

Individuals with missing sex, year of birth, or an invalid age record were excluded from the analysis. Variables used in the study were based on the recorded diagnoses and prescription codes available in the data, where the lack of a record was considered as indicating that the patient was not diagnosed/prescribed with the outcome/condition/drug of interest. For data sources where duration could not be calculated, due to e.g. missing information on quantity or dosing, treatment duration was provided. In case of BMI, the percentage of individuals with missing BMI is reported.

9.9.7. Evidence synthesis

Results from analyses described in **Section 8.9** are presented separately for each data source. No meta-analysis of results was conducted.

9.10. Deviations from the protocol

Deviation number	Protocol version	Date	Section of study protocol	Deviation	Reason
1	V7	31/07/2026	9.8.3.6 Switching of ingredients	Threshold for plotting treatment pathways in Objective 4 was updated to 0.5% (rather than 5%).	Limiting the representation of pathways to 5% was too stringent for Objective 4.

10. RESULTS

The full set of results for this study is available through an interactive Shiny app. Results from objectives 5 and 6 are only displayed in the Shiny app: EUPAS1000000828

10.1. Participants

Table 8A and **B** describe the number of new users of GLP-1 RA included in the overall study period and during the last reported year, respectively. Users could contribute with more than one record (i.e. different new drug episodes) as long as there was no use of the respective GLP-1 RA class or ingredient in the last year. Overall, a total of 1,616,163 new GLP-1 RA users in the twelve data sources of the study were observed. The number of new GLP-1 RA users ranged between 6,922 in IQVIA LPD Belgium and 319,364 in CPRD Aurum (Error! Reference source not found.**Table 8A**). Of all GLP-1 RA users identified, between 6.93% (n=2,320) in CPRD GOLD and 41.11% (n=83,098) in NLHR, were observed in the last reported year (Error! Reference source not found.**Table 8B**).

Table 8. Number of new users of GLP-1 RA: A) in the overall period and B) in the last reported year.

A) Overall period

Cohort name	Variable name	IQVIA LPD Belgium	NAJS	DK-DHR	FinOMOP-THL	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
GLP-1 RA class	Number records	7,961	62,068	306,118	240,885	122,058	81,693	18,332	208,114	59,364	308,378	337,424	36,177
	Number subjects	6,922	56,181	286,452	169,511	108,746	73,134	17,159	202,119	55,038	288,048	319,364	33,489
Dulaglutide	Number records	1,782	23,110	5,628	28,411	51,793	31,654	1,551	6,795	24,958	49,180	57,860	11,600
	Number subjects	1,569	21,537	5,461	22,226	47,689	29,046	1,461	6,657	23,856	48,027	55,556	11,007
Exenatide	Number records	206	485	287	12,367	1,375	1,167	53	493	2,076	162	5,069	1,835
	Number subjects	190	471	280	8,490	1,330	1,107	52	482	2,037	160	4,874	1,787
Liraglutide	Number records	1,501	11,864	55,883	73,126	17,620	13,649	5,164	60,709	20,275	79,844	35,027	8,464
	Number subjects	1,320	10,847	52,203	53,213	16,001	12,475	4,896	59,663	19,226	75,379	33,525	8,114
Lixisenatide	Number records	124	2,794	80	198	0	2,467	140	270	865	1,265	4,240	951
	Number subjects	114	2,623	79	163	0	2,351	124	269	857	1,251	4,168	938
Semaglutide	Number records	5,665	40,918	288,881	174,260	68,895	41,081	13,634	172,845	26,482	261,572	109,757	22,249
	Number subjects	5,112	38,457	279,823	137,012	65,070	38,802	12,967	169,433	25,461	246,365	105,871	21,335
Tirzepatide	Number records	0	0	25	0	23,698	13,137	816	0	0	0	197,643	0
	Number subjects	0	0	25	0	23,673	13,120	816	0	0	0	197,601	0

B) Last reported year

Cohort name	Variable name	IQVIA LPD Belgium	NAJS	DK-DHR	FinOMOP-THL	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
		2025	2025	2024	2024	2025	2025	2025	2023	2024	2025	2025	2025
GLP-1 RA class	Number records	654	9,159	72,151	28,487	17,662	9,995	3,895	83,098	11,023	50,244	130,701	2,320
	Number subjects	654	9,159	72,151	28,487	17,662	9,995	3,895	83,098	11,023	50,244	130,701	2,320
Dulaglutide	Number records	71	2,280	361	1,787	2,576	1,125	41	1,093	3,307	2,120	756	187
	Number subjects	71	2,280	361	1,787	2,576	1,125	41	1,093	3,307	2,120	756	187
Exenatide	Number records	<5	0	0	360	10	<5	0	0	17	0	–	0
	Number subjects	<5	0	0	360	10	<5	0	0	17	0	–	0
Liraglutide	Number records	71	250	1,152	3,415	440	139	918	5,979	1,900	5,037	347	50
	Number subjects	71	250	1,152	3,415	440	139	918	5,979	1,900	5,037	347	50
Lixisenatide	Number records	<5	97	0	0	0	128	<5	5	40	9	–	0
	Number subjects	<5	97	0	0	0	128	<5	5	40	9	–	0
Semaglutide	Number records	582	8,510	74,748	27,073	13,604	6,496	2,870	91,643	9,542	48,118	15,071	2,253
	Number subjects	582	8,510	74,748	27,073	13,604	6,496	2,870	91,643	9,542	48,118	15,071	2,253
Tirzepatide	Number records	0	0	25	0	7,088	4,348	657	0	0	0	126,643	0
	Number subjects	0	0	25	0	7,088	4,348	657	0	0	0	126,643	0

GLP-1 RA class includes use of any GLP-1 RA ingredient.
Last reported year is equivalent to the last calendar year that was observed, which may not be a complete year (see **Table 1** for full details of the study period of each data source). The match between the number of records and number of subjects in the last reported year is due to the requirement of no previous use of a GLP-1 RA ingredient in the previous year (i.e. the -365 days washout period to define a new treatment episode of GLP-1 RA use). Consequently, no more than one treatment episode can be observed per user within the same calendar year.
– = not applicable; CPRD = Clinical Practice Research Datalink; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NA = counts suppressed in CPRD Aurum; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care

10.2. Main results

10.2.1. Objective 1 – Incidence of prescriptions of GLP-1 RA medicines

Figure 8 displays the incidence of GLP-1 RA class use across all data sources.

Further granularity of incidence rates across GLP-1 RA ingredients for each data source is presented in **Figure 9** to **Figure 20**, while incidence rates stratified by both ingredient and indication are shown in **Figure 21** to **Figure 32**.

Incidence of GLP-1 RA

Incidence rates (IR, cases/100,000 person-years) of GLP-1 RA class use ranged from 7.6 in IPCI during January 2016 to 2,872.7 in DK-DHR during January 2023 (excluding months censored due to counts <5). DK-DHR, NLHR, CPRD AURUM, and FinOMOP-THL presented the highest IR (>1,000). (**Figure 8**, **Figure S1**)

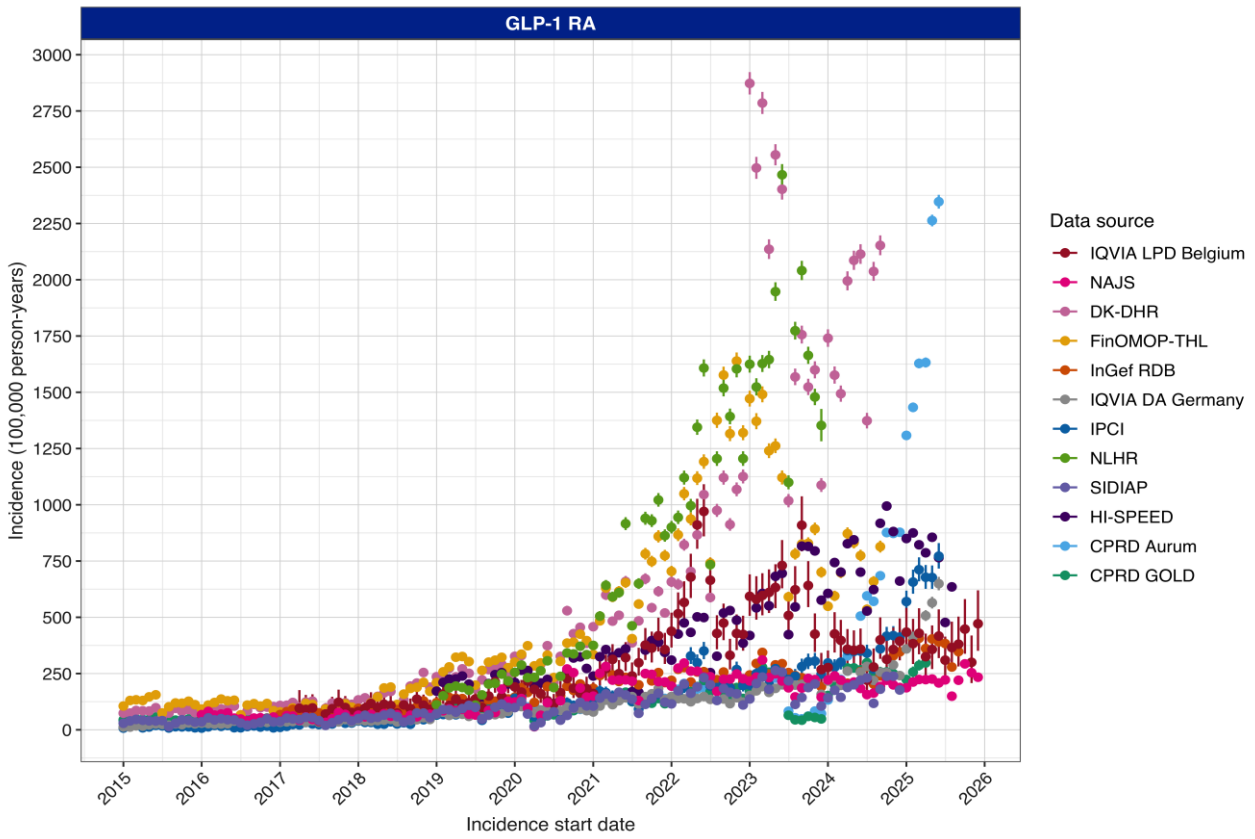


Figure 8. Incidence rates of GLP-1 RA class per data source.

GLP-1 RA class includes use of any GLP-1 RA ingredient. Dots representing <5 cases were removed from the plot.
CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

Incidence of prescriptions of GLP-1 RA ingredients

Across all data sources, incidence of both exenatide and lixisenatide declined over time, reaching a point where no new users were observed in the most recent years. Conversely, tirzepatide use began and increased in some data sources from the end of 2023 onwards.

Figure 9–Figure 20 below illustrate the incidence of all GLP-1 RA ingredients (dulaglutide, exenatide, liraglutide, lixisenatide, semaglutide, and tirzepatide (where available)) for each data source.

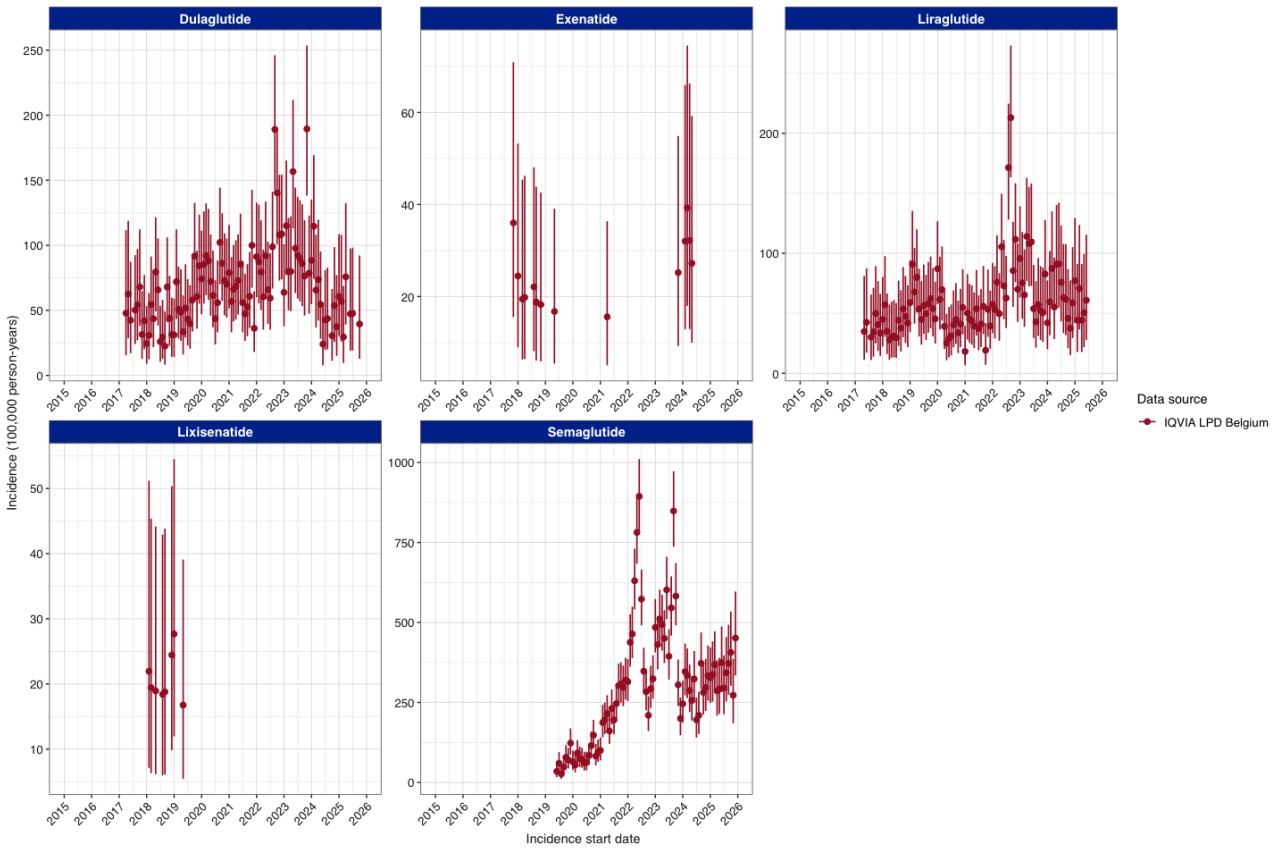


Figure 9. Incidence rates of GLP-1 RA ingredients in IQVIA LPD Belgium.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in IQVIA LPD Belgium (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium.

In IQVIA LPD Belgium, IR of dulaglutide increased from 47.8 [95%CI: 15.5–111.6] in April 2017 to 189.5 [95%CI: 138.2–253.5] in November 2023 and then decreased to 39.5 [95%CI: 12.8–92.2] in October 2025.

IR of liraglutide use varied from 34.8 [95%CI: 11.3–81.2] in May 2017 to 60.8 [95%CI: 27.8–115.4] in June 2025, with a peak in incident use of 213.0 [95%CI: 163.3–273.1] in September 2022. The lowest IR of liraglutide was observed in January 2021 (18.2 [95%CI: 6.7–39.6]).

IR of semaglutide use increased from 34.5 [95%CI: 16.5–63.4] in June 2019 to 451.5 [95%CI: 334.1–597.0] in December 2025. However, fluctuations were observed during this increase: a peak incident use of 894.4 [95%CI: 788.4–1010.7] in June 2022 was followed by a decrease to 209.8 [95%CI: 160.5–269.5] in October 2022, leading to another increase to 848.3 [95%CI: 736.4–972.4] in September 2023 and a decrease to the IR observed in December 2025 (i.e. 451.5 [95%CI: 334.1–597.0]). (**Figure 9**)

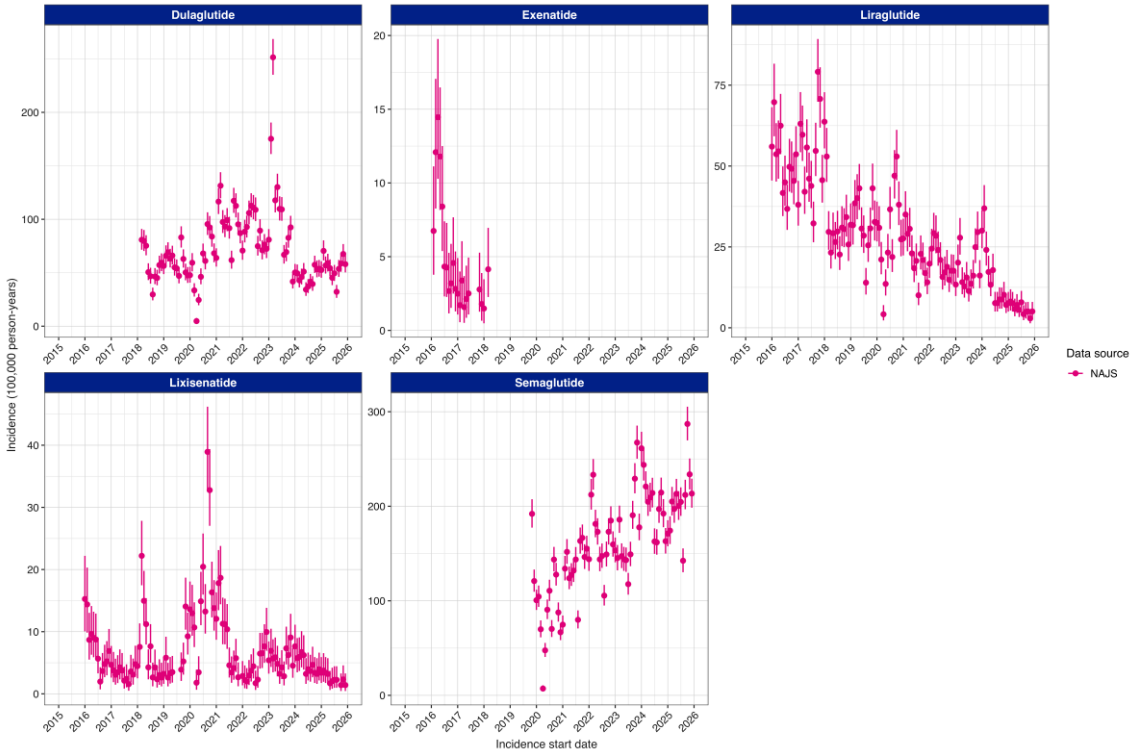


Figure 10. Incidence rates of GLP-1 RA ingredients in NAJS.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in NAJS (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NAJS = Croatian National Public Health Information System.

In NAJS, IR of dulaglutide ranged from 80.8 [95%CI: 71.5–91.0] in March 2018 to 58.0 [95%CI: 50.4–66.5] in December 2025, with a minimum IR observed in April 2020 (4.8 [95%CI: 2.7–7.8]) and a peak observed in March 2023 (251.5 [95%CI: 235.1–268.6]).

IR of liraglutide use decreased from 56.0 [95%CI: 45.5–68.2] in January 2016 to 5.1 [95%CI: 3.0–8.0] in December 2025.

IR of semaglutide use increased from 192.0 [95%CI: 177.4–207.4] in November 2019 to 213.4 [95%CI: 198.5–229.2] in December 2025, with a peak of 287.1 [95%CI: 269.7–305.3] in October 2025. (**Figure 10**)

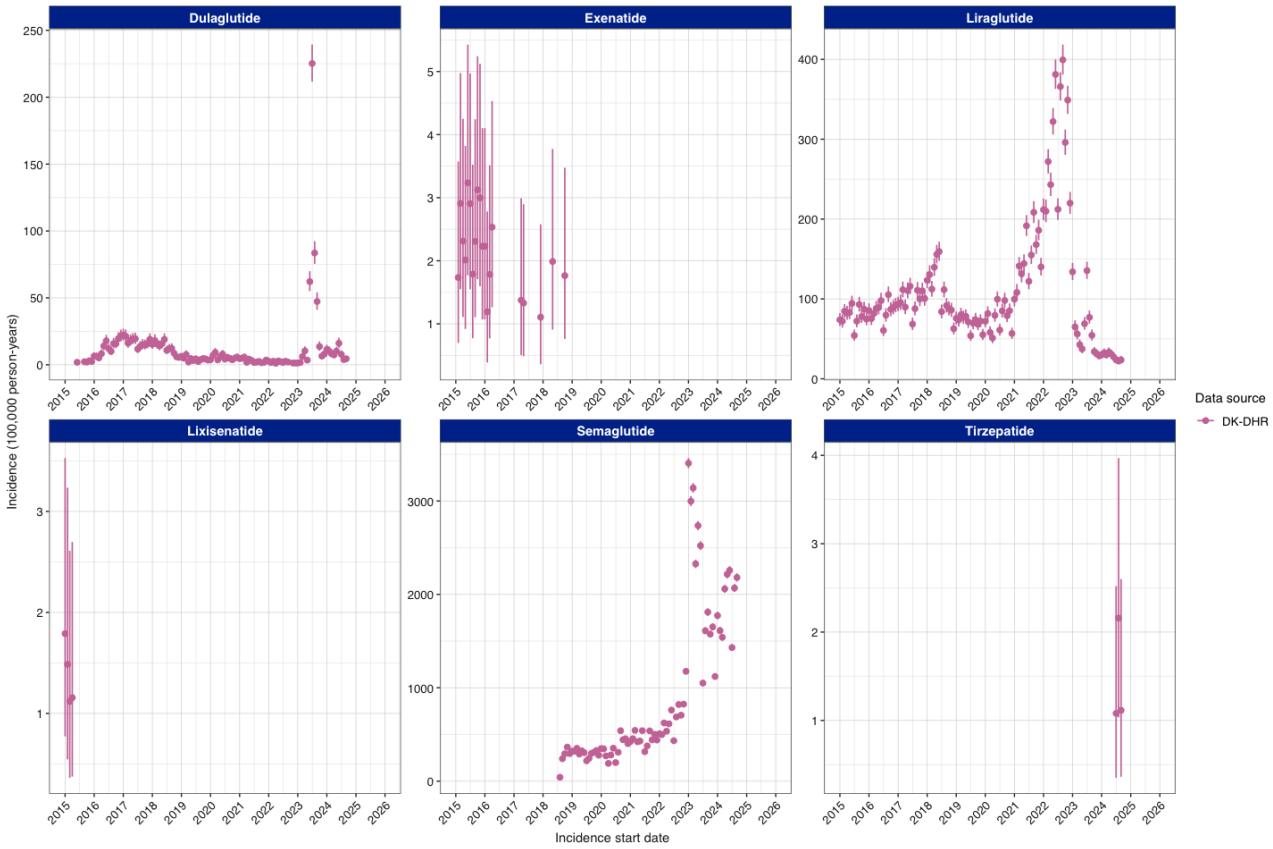


Figure 11. Incidence rates of GLP-1 RA ingredients in DK-DHR.

Dots representing <5 cases were removed from the plot.
DK-DHR = Danish Data Health Registries; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In DK-DHR, IR of dulaglutide use was 1.8 [95%CI:0.8–3.6] in June 2015 and 4.5 [95%CI: 2.7–6.9] in September 2024. During this period, incidence of dulaglutide fluctuated, with IR values below 23 cases/100,000 person-years (i.e. maximum IR of 22.2 [95%CI: 18.1–27.0] in January 2017), except for a period of four months in 2023 (IR: 62.2 [95%CI: 55.1–70.0] in June to 47.3 [95%CI: 41.1–54.1] in September), which peak in July 2023 with an IR of 225.2 [95%CI: 211.7–239.3])

IR of liraglutide use initially increased from 73.9 [95%CI: 66.1–82.3] in January 2015 to 159.4 [95%CI: 147.7–171.7] in June 2018 but then decreased to 51.1 [95%CI: 44.6–58.2] in April 2020. This was followed by a steep increase to 399.4 [95%CI: 381.0–418.5] in September 2022 and a decrease to 22.3 [95%CI: 18.2–27.0] in August 2024.

IR of semaglutide use increased from 42.2 [95%CI: 36.4–48.6] in August 2018 to 2180.7 [95%CI: 2136.7–2225.3] in September 2024, with a peak in January 2023 (3405.0 [95%CI: 3351.4–3459.4]).

Tirzepatide use was first observed in July 2024 and was low until the end of the study period (below 3.0 cases/100,000 person-years, **Figure 11**).

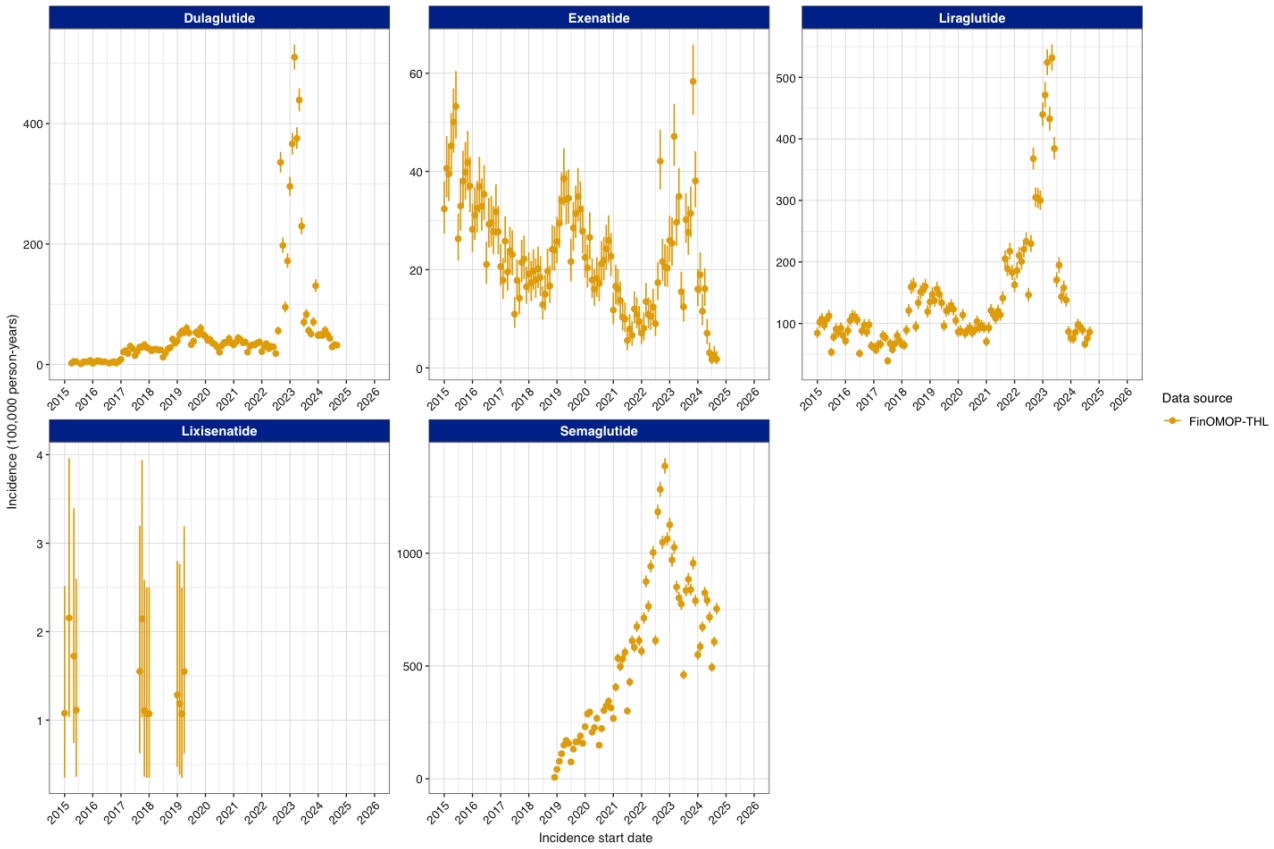


Figure 12. Incidence rates of GLP-1 RA ingredients in FinOMOP-THL.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in FinOMOP-THL (i.e. no use was observed in the data source).
FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In FinOMOP-THL, IR of dulaglutide was 2.2 [95%CI: 1.1–4.1] in April 2015 and 32.1 [95%CI: 27.1–37.8] in September 20240 but fluctuated with a marked increase between September 2022 and June 2023 (with an IR peak of 510.2 [95%CI: 489.9–531.1] in March 2023).

IR of liraglutide use increased from 84.4 [95%CI: 76.2–93.2] in January 2015 to 531.9 [95%CI: 511.1–553.3] in May 2023 and decreased to 86.1 [95%CI: 77.8–95.1] in September 2024.

IR of semaglutide use increased from 6.4 [95%CI: 4.3–9.2] in December 2018 to 1386.6 [95%CI: 1352.3–1421.6] in November 2022 and decreased to 753.6 [95%CI: 728.4–779.5] in September 2024. (**Figure 12**)

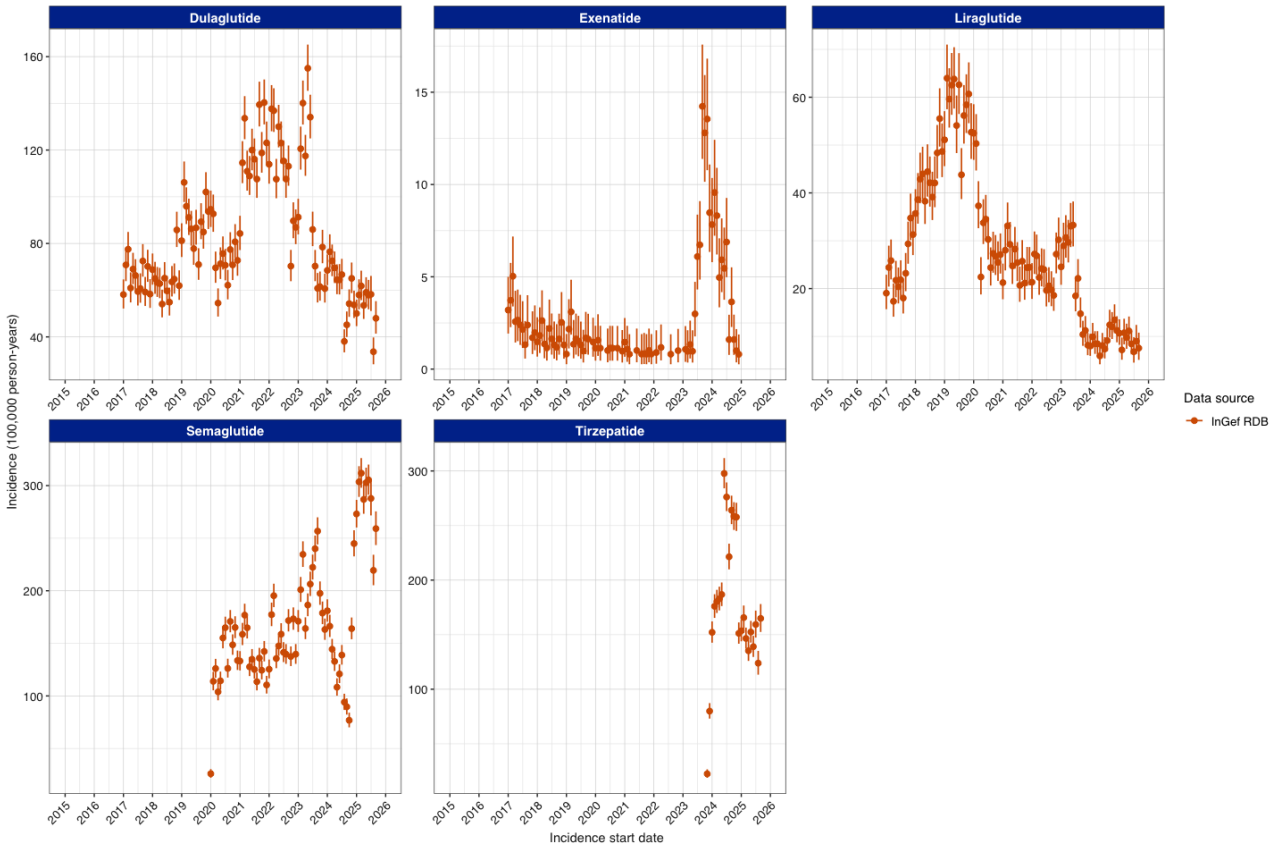


Figure 13. Incidence rates of GLP-1 RA ingredients in InGef RDB.

Dots representing <5 cases were removed from the plot. Lixisenatide was not available in InGef RDB (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; InGef RDB = InGef Research Database.

In InGef RDB, IR of dulaglutide increased from 58.1 [95%CI: 52.2–64.6] in January 2017 to 155.0 [95%CI: 145.4–165.2] in May 2023 (with an observable drop in IR ranging between 62.1–94.6 during 2020) and decreased to 48.0 [95%CI: 41.4–55.3] in September 2025.

IR of liraglutide use increased from 19.0 [95%CI: 15.7–22.9] in January 2017 to 64.0 [95%CI: 57.5–71.0] in February 2019 and decreased to 7.6 [95%CI: 5.1–10.8] in September 2025.

IR of semaglutide use increased from 26.0 [95%CI: 22.2–30.4] in January 2020 to 256.7 [95%CI: 244.1–269.8] in September 2023, decreased to 76.9 [95%CI: 70.1–84.1] in October 2024, and finally increased to 311.8 [95%CI: 298.0–326.2] in March 2025. Last observed IR was 259.1 [95%CI: 243.5–275.5] in September 2025.

Tirzepatide use was first observed in November 2023, and its peak use was in June 2024 (IR: 297.7 [95%CI: 284.1–311.8]), followed by a decrease to 164.9 [95%CI: 152.5–178.0] in September 2025 (**Figure 13**).

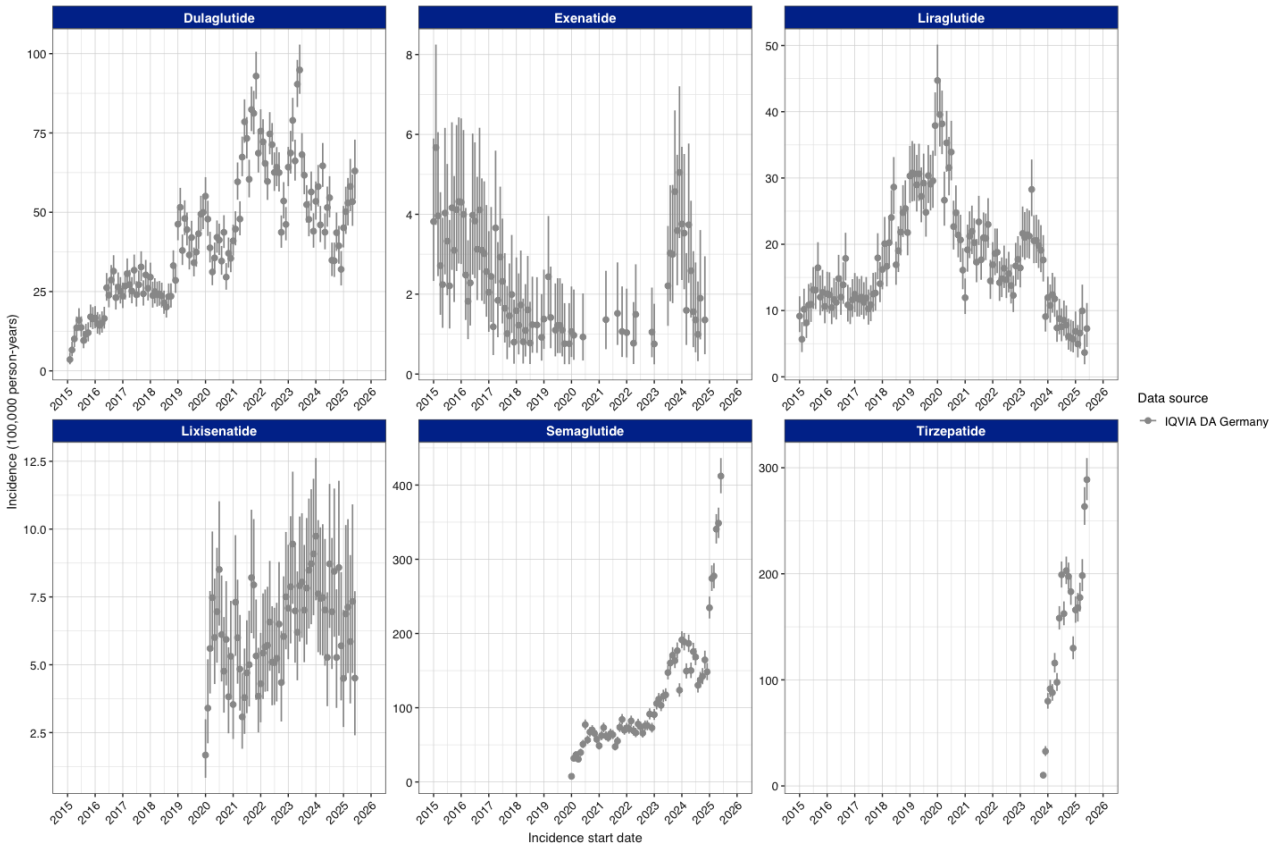


Figure 14. Incidence rates of GLP-1 RA ingredients in IQVIA DA Germany.

Dots representing <5 cases were removed from the plot.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA DA Germany = IQVIA Disease Analyzer Germany.

In IQVIA DA Germany, IR of dulaglutide increased from 3.6 [95%CI: 2.1–5.7] in February 2015 to 92.9 [95%CI: 85.7–100.6] in November 2021. It then decreased to 43.7 [95%CI: 38.8–49.0] in October 2022, recovered to 94.8 [95%CI: 87.3–102.9] in June 2023, and decreased again to 63.0 [95%CI: 54.2–72.9] in June 2025.

IR of liraglutide use increased from 9.2 [95%CI: 6.8–12.2] in January 2015 to 44.7 [95%CI: 39.7–50.1] in January 2020 and decreased to 7.3 [95%CI: 4.5–11.1] in June 2025.

IR of semaglutide use increased from 7.6 [95%CI: 5.6–10.0] in January 2020 to 412.1 [95%CI: 388.9–436.3] in June 2025.

Tirzepatide use was first observed in November 2023, and its peak use was in June 2025 (IR: 288.8 [95%CI: 269.4–309.1], **Figure 14**).

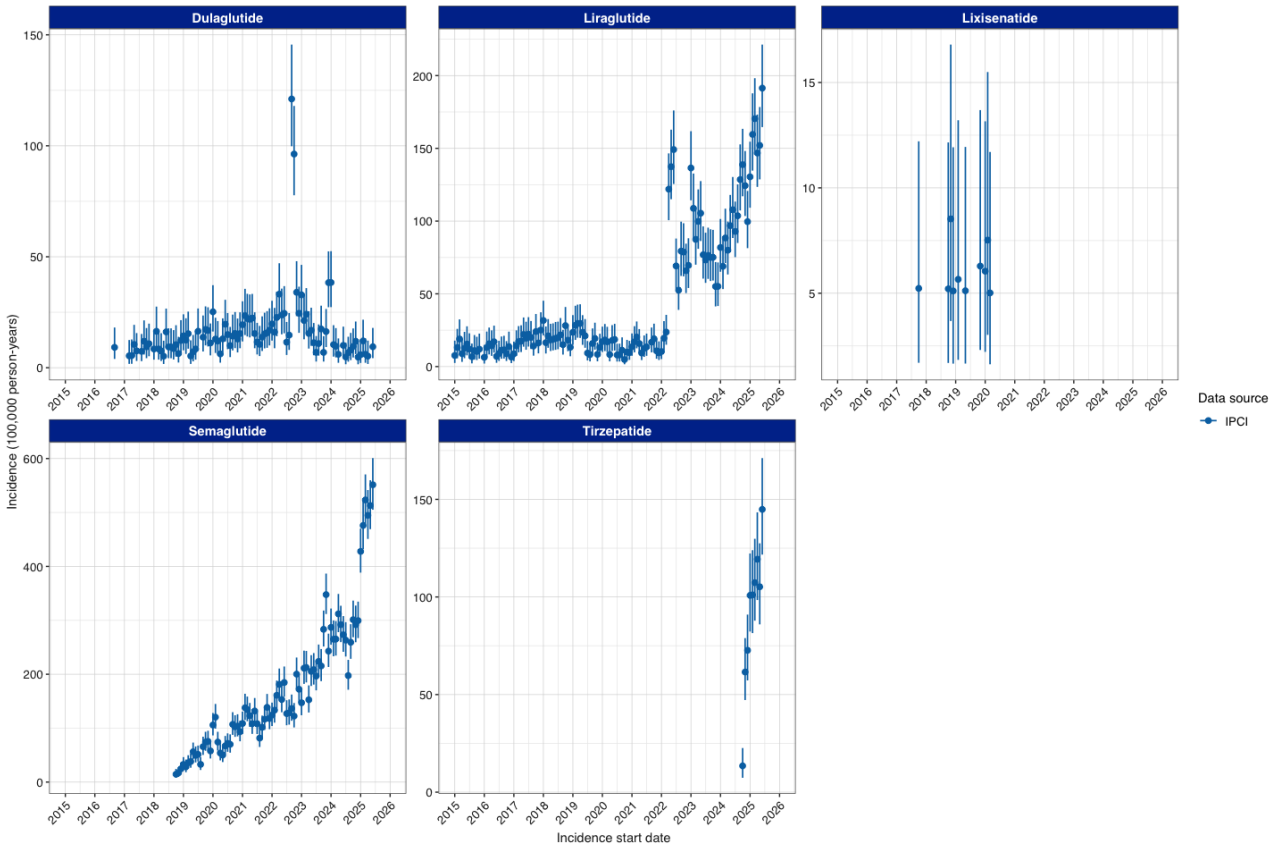


Figure 15. Incidence rates of GLP-1 RA ingredients in IPCI.

Dots representing <5 cases were removed from the plot. Exenatide was not available in IPCI (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IPCI = Integrated Primary Care Information.

In IPCI, IR of dulaglutide was 9.2 [95%CI: 4.0–18.1] in September 2016. During the study period, IR of dulaglutide was below 38.4 [95%CI: 27.3–52.5] (observed in January 2024), except for two months in 2022, where the IR was three times higher: 121.1 [95%CI: 99.8–145.6] in September and 96.3 [95%CI: 77.7–118.0] in October.

Up to March 2022, IR of liraglutide use ranged between 31.7 [95%CI: 21.4–45.3] in January 2018 to 4.8 [95%CI: 1.6–11.3] in October 2020. After March 2022, the IR abruptly increased to values around 122.0–149.2 (April–June 2022), then fluctuated between July 2022 and December 2023 (maximum IR was 136.5 in January 2023 and minimum was 52.5 in August 2022), and finally increased to its highest incidence in June 2025 (191.4 [95%CI: 164.6–221.3].

IR of semaglutide use increased from 14.6 [95%CI: 8.0–24.5] in October 2018 to 551.4 [95%CI: 505.1–600.8] in June 2025.

Tirzepatide use was first observed in October 2024, and its peak use was in June 2025 (IR: 144.9 [95%CI: 121.7–171.1]), **Figure 15**).

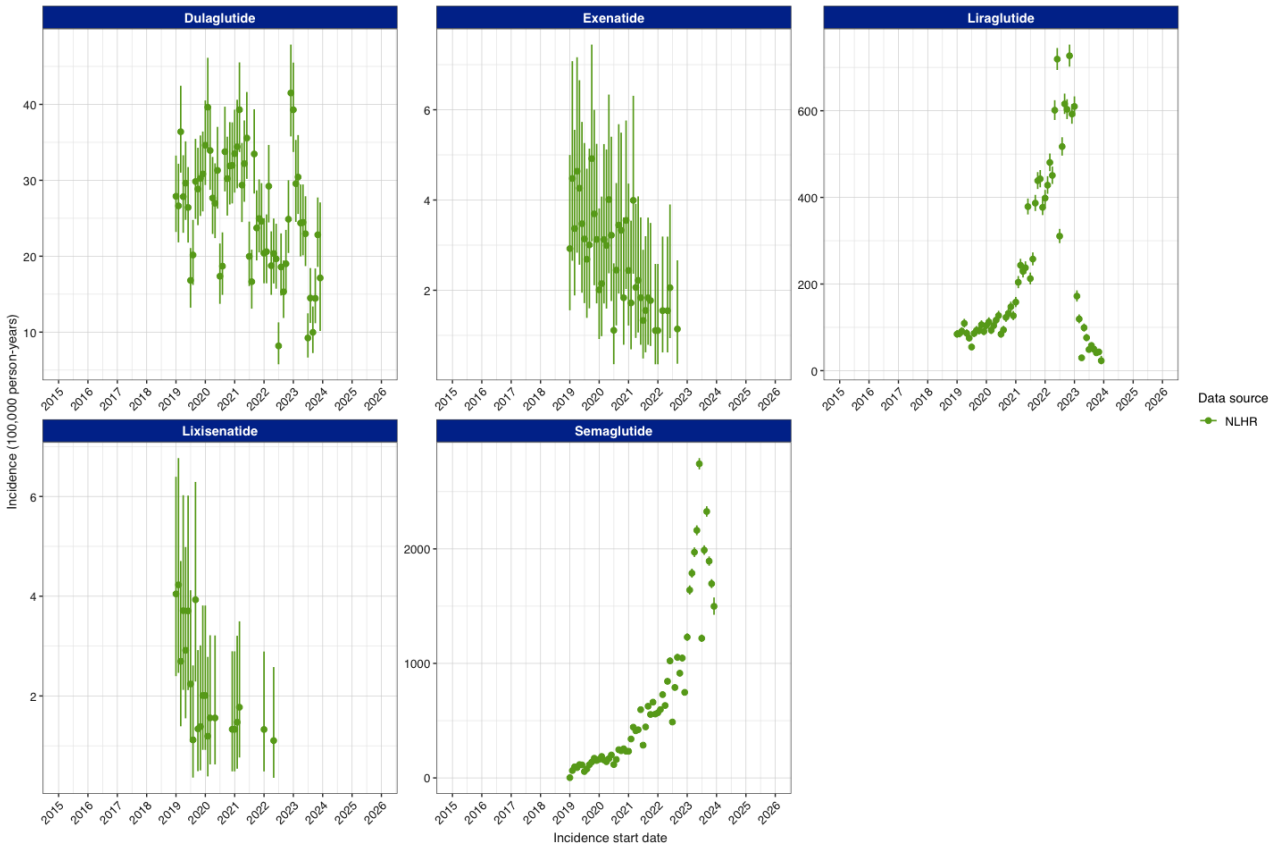


Figure 16. Incidence rates of GLP-1 RA ingredients in NLHR.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in NLHR (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NLHR = Norwegian Linked Health Registry data.

In NLHR, IR of dulaglutide use decreased between January 2019 (27.9 [95%CI: 23.2–33.3]) and December 2023 (17.1 [95%CI: 10.2–27.1]). The lowest dulaglutide incidence was observed in July 2022 (8.2 [95%CI: 5.8–11.3]), whilst the highest was observed in December 2022 (41.5 [95%CI: 35.8–47.9]).

IR of liraglutide use increased from 84.5 [95%CI: 76.2–93.5] in January 2019 to 727.0 [95%CI: 701.8–752.8] in November 2022 and decreased to 23.0 [95%CI: 14.7–34.2] in December 2023.

IR of semaglutide use increased from 2.2 [95%CI: 1.1–4.1] in January 2019 to 2743.0 [95%CI: 2693.8–2792.9] in June 2023 and decreased to 1498.7 [95%CI: 1424.7–1575.5] in December 2023 (**Figure 16**).

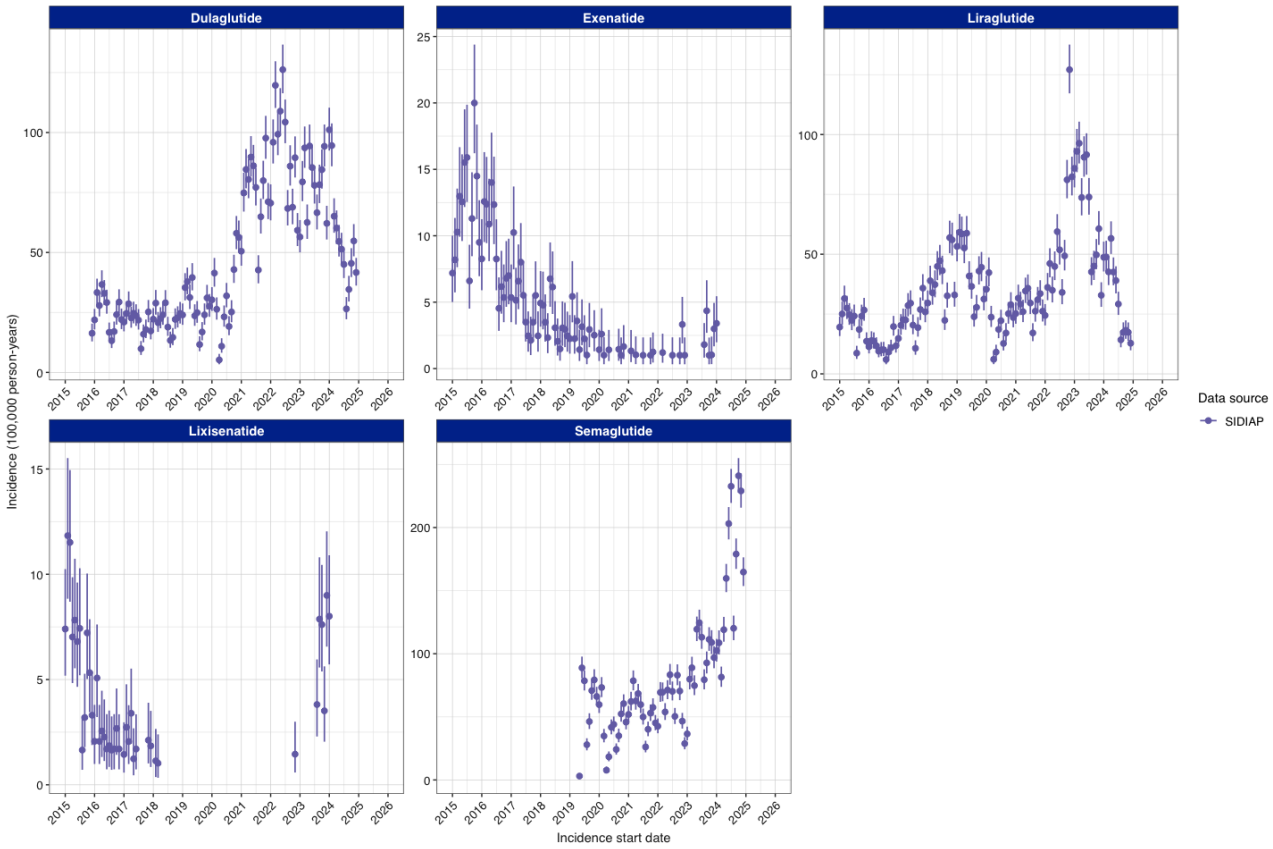


Figure 17. Incidence rates of GLP-1 RA ingredients in SIDIAP.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in SIDIAP (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; SIDIAP = The Information System for Research in Primary Care.

In SIDIAP, IR of dulaglutide use increased from 16.3 [95%CI: 12.9–20.3] in December 2015 to 126.2 [95%CI: 116.4–136.7] in June 2022 and decreased to 41.7 [95%CI: 36.2–47.7] in December 2024.

IR of liraglutide use fluctuated before 2020 (lowest IR was 6.0 [95%CI: 4.0–8.6] August 2016, whilst higher was 59.2 [95%CI: 52.2–66.8] in February 2019). Subsequently, it increased up to 127.1 [95%CI: 117.2–137.6] in November 2022 and decreased to 12.8 [95%CI: 9.9–16.3] in December 2024.

IR of semaglutide use increased from 3.1 [95%CI: 1.7–5.0] in May 2019 to 164.7 [95%CI: 153.6–176.4] in December 2024 (**Figure 17**).

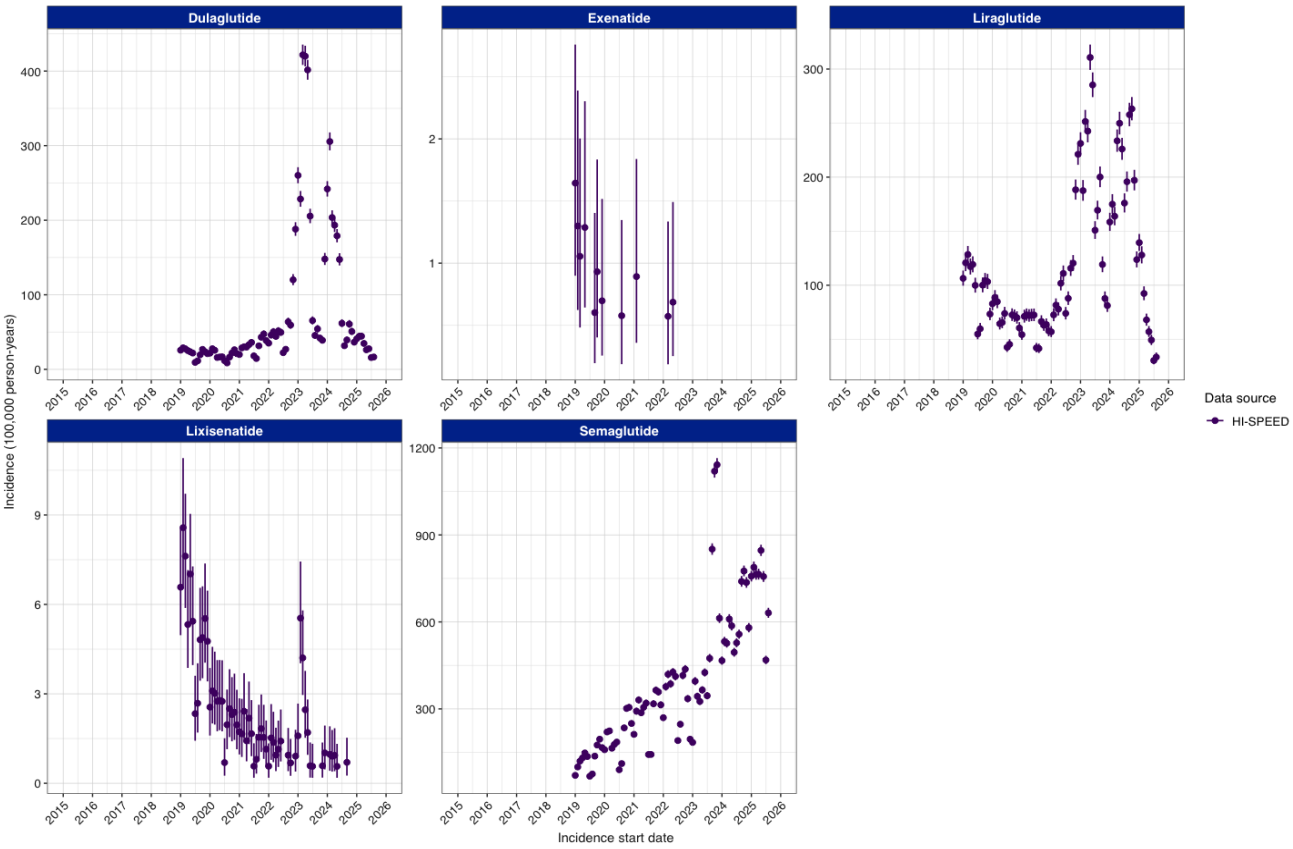


Figure 18. Incidence rates of GLP-1 RA ingredients in HI-SPEED.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in HI-SPEED (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage.

In HI-SPEED, IR of dulaglutide use remained below 66 cases/100,000 person-years, except for the periods between November 2022–June 2023 (IR ranged between 120–422) and December 2023–June 2024 (IR ranged between 147–306). IR of dulaglutide use in August 2025 was 16.6 [95%CI: 13.9–19.6].

IR of Liraglutide use decreased from 106.4 [95%CI: 99.6–113.6] in January 2019 to 42.6 [95%CI: 38.3–47.2] in July 2020. Subsequently, it increased up to 310.7 [95%CI: 299.2–322.6] in May 2023 and decreased to 33.6 [95%CI: 29.7–37.8] in August 2025.

IR of semaglutide use increased from 70.8 [95%CI: 65.3–76.7] in January 2019 to 631.3 [95%CI: 614.1–648.8] in August 2025, with a peak of use of 1142.0 [95%CI: 1119.3–1165.0] in November 2023 (**Figure 18**).

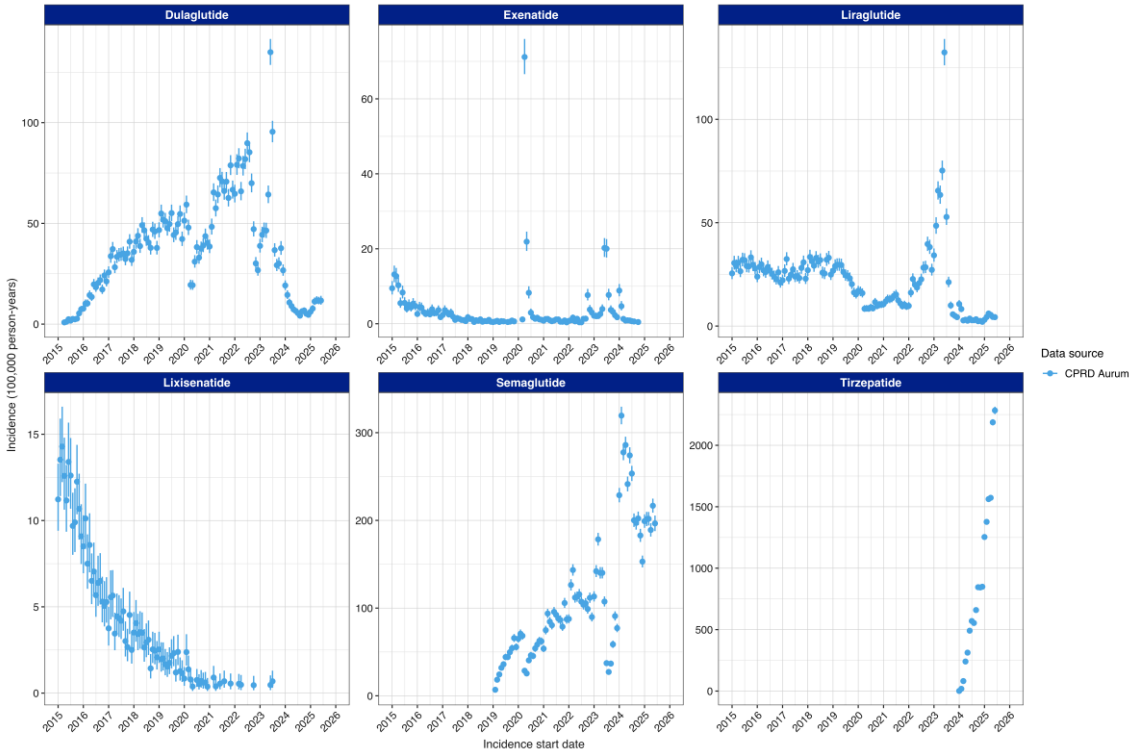


Figure 19. Incidence rates of GLP-1 RA ingredients in CPRD Aurum.

Dots representing <5 cases were removed from the plot.
CPRD Aurum = Clinical Practice Research Datalink Aurum; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In CPRD Aurum, IR of dulaglutide increased from 0.9 [95%CI: 0.4–1.6] in April 2015 to 47.9 [95%CI: 44.2–51.8] in March 2020, followed by a decrease to 19.3 [95%CI: 17.0–21.9] in May 2020. This was followed by increased use to 89.8 [95%CI: 84.7–95.1] in July 2022 and decreased to 11.7 [95%CI: 9.6–14.0] in June 2025. However, during this decrease, a spike in use in June 2023 was observed to 135.0 [95%CI: 128.7–141.5].

IR of Liraglutide use decreased from 25.5 [95%CI: 22.7–28.5] in January 2015 to 8.4 [95%CI: 6.9–10.1] in May 2020, followed by an increase to peak use of 132.4 [95%CI: 126.1–138.9] in June 2023 and a subsequent decrease to 2.0 [95%CI: 1.3–3.0] in December 2024. The last observed IR was 4.3 [95%CI: 3.1–5.8] in June 2025.

IR of semaglutide use increased from 6.9 [95%CI: 5.5–8.6] to 178.4 [95%CI: 171.3–185.8] in March 2023 (with a decrease during the COVID-10 pandemic, with lowest IR at 25.5 [95%CI: 22.8–28.4] in May 2020). After March 2023, IR of semaglutide use decreased to 27.2 [95%CI: 24.5–30.2] in August 2023, increased to its peak use in February 2024 (319.5 [95%CI: 309.6–329.6]), and declined again to 196.5 [95%CI: 187.8–205.5] in June 2025.

Tirzepatide use was first observed in January 2024, and its peak use was in June 2025 (IR: 2283.7 [95%CI: 2253.6–2314.0]) (**Figure 19**).

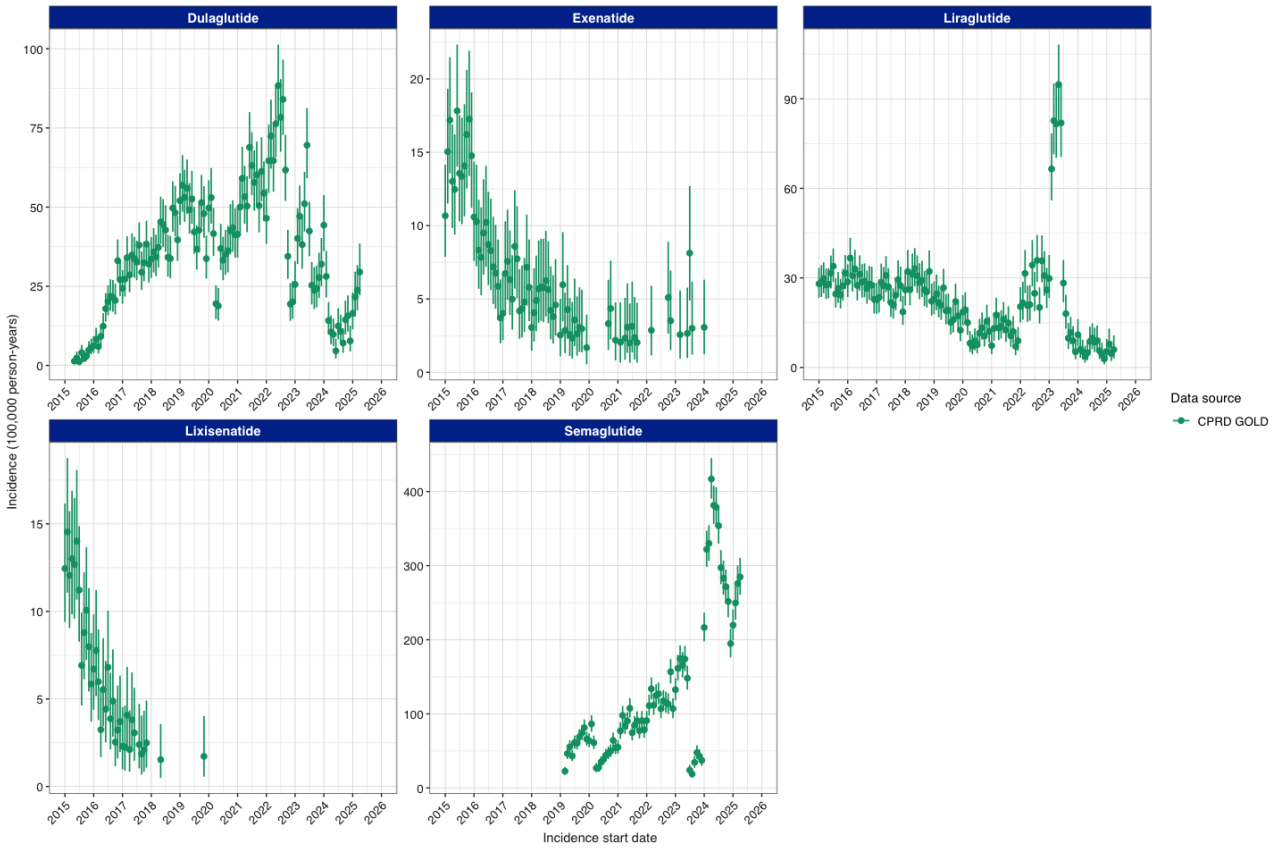


Figure 20. Incidence rates of GLP-1 RA ingredients in CPRD GOLD.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in CPRD GOLD (i.e. no use was observed in the data source).
CPRD GOLD = Clinical Practice Research Datalink GOLD; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In CPRD GOLD, IR of dulaglutide increased from 1.4 [95%CI: 0.5–3.0] in May 2015 to 88.4 [95%CI: 76.7–101.3] in June 2022, with a drop in use in May 2020 (18.8 [95%CI: 14.2–24.5]). After June 2022, it decreased to 4.6 [95%CI: 2.2–8.5] in June 2024 and moderately recovered up to 29.5 [95%CI: 22.2–38.5] in April 2025.

IR of Liraglutide use decreased from 28.0 [95%CI: 23.4–33.4] in January 2015 to 7.1 [95%CI: 4.1–11.3] in November 2021, increased to 94.8 [95%CI: 82.7–108.2] in May 2023, and decreased to 6.0 [95%CI: 3.0–10.7] in April 2025.

IR of semaglutide use increased from 22.6 [95%CI: 17.6–28.5] in March 2019 to 148.1 [95%CI: 132.7–164.9] in June 2023. IR dropped to values between 18–48 during July–December 2023, followed by an increase up to 417.1 [95%CI: 390.4–445.2] in May 2024. This was followed by a decrease down to 194.9 [95%CI: 176.2–214.9] in December 2024 and an increase to 284.8 [95%CI: 260.8–310.4] in April 2025 (**Figure 20**).

Incidence of GLP-1 RA medicines by ingredient and indication

Incidence of GLP-1 RA was stratified by indication (i.e. both T2DM and Obesity; T2DM without obesity; Obesity without T2DM, and Other diagnosis excluding obesity and T2DM) varied over time and by data source (**Figure 21**–**Figure 32**):

Incidence of new GLP-1 RA class users in SIDIAP was consistently higher for patients with T2DM and Obesity, followed by patients with Obesity, and very few new users with T2DM or Other indications. In NAJS, CPRD Aurum, and CPRD GOLD, incidence was consistently higher for patients with T2DM, with or without Obesity, than for patients with Obesity or Other indications. This distribution was also observed in CPRD Aurum and CPRD GOLD during June–December 2023, where the IR of T2DM with or without Obesity declined from ≈75–116 cases/100,000 person-years to IR values <35 cases/100,000 person-years in CPRD Aurum, and from ≈65–100 cases/100,000 person-years to IR values <25 cases/100,000 person-years in CPRD GOLD.

Incidence of new GLP-1 RA class users was also initially higher for patients with T2DM, with or without Obesity, in IQVIA LPD Belgium, DK-DHR, FinOMOP-THL, IPCI, NLHR, and HI-SPEED. However, Obesity became the most frequent indication in the later years in all data sources (e.g. from January 2022 in FinOMOP-THL or from May 2022 in DK-DHR), except HI-SPEED, where it was Other indications from January 2024 onwards. Similarly, Obesity became the second most common indication in IQVIA DA Germany from January 2025 onwards (whereas before it was T2DM and Obesity [i.e. combination of both diagnoses], followed by T2DM alone, and few new users with Obesity or Other).

Conversely, in InGef RDB, largest incidence of new GLP-1 RA class users was observed among the Other indication, followed by T2DM, with or without Obesity.

When explored by individual ingredients, it was observed that changes in the indication cohorts of IQVIA LPD Belgium, DK-DHR, FinOMOP-THL, IPCI, NLHR, and HI-SPEED were led by new users of liraglutide and semaglutide. In IQVIA DA Germany, the observed changes were led by new users of semaglutide and tirzepatide (e.g. the Obesity cohort had the second highest incidence among new tirzepatide users from 2025 onwards).

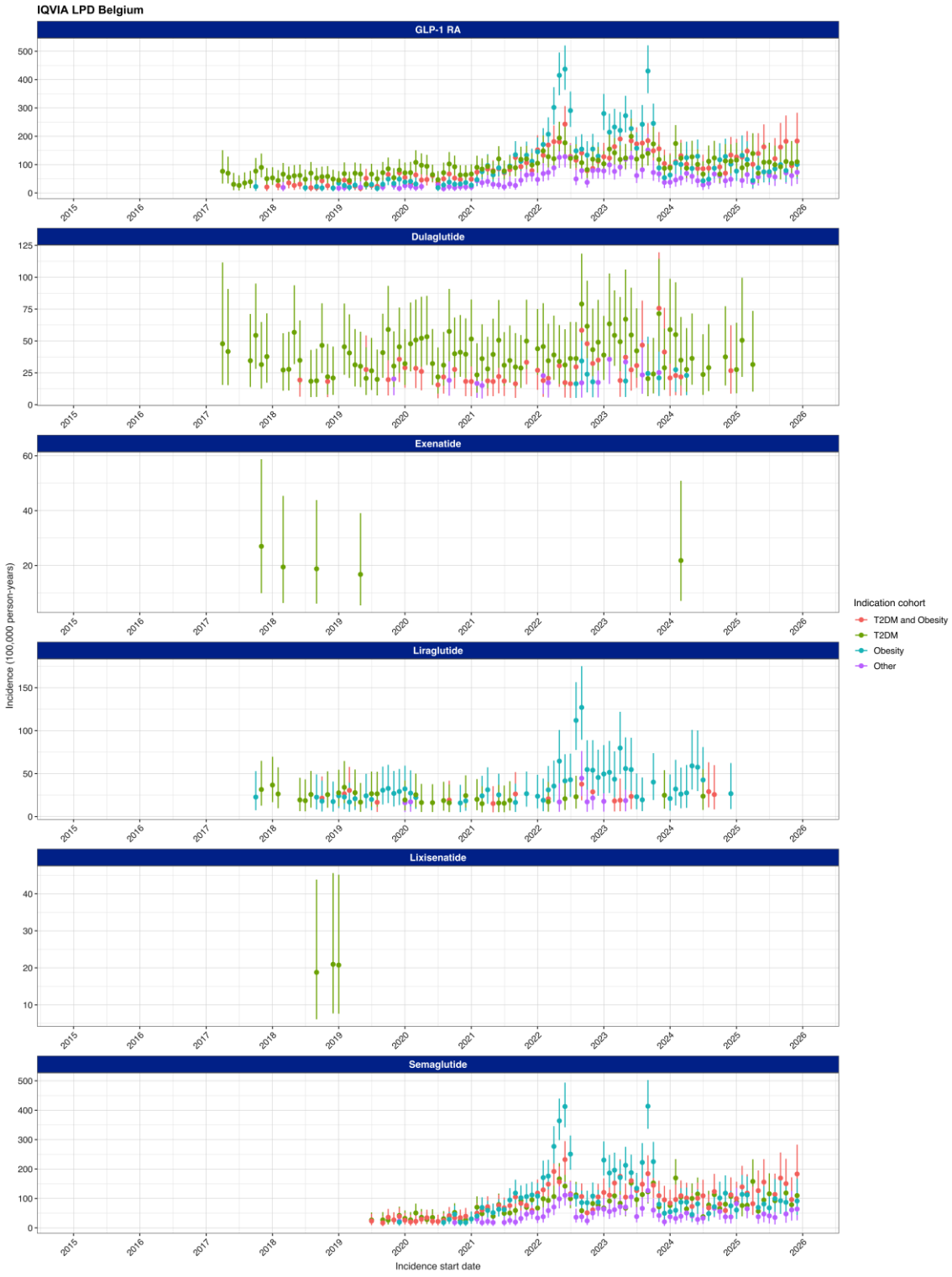


Figure 21. Incidence rates of GLP-1 RA ingredients by indication cohorts in IQVIA LPD Belgium.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in IQVIA LPD Belgium (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.



Figure 22. Incidence rates of GLP-1 RA ingredients by indication cohorts in NAJS.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in NAJS (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NAJS = Croatian National Public Health Information System; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

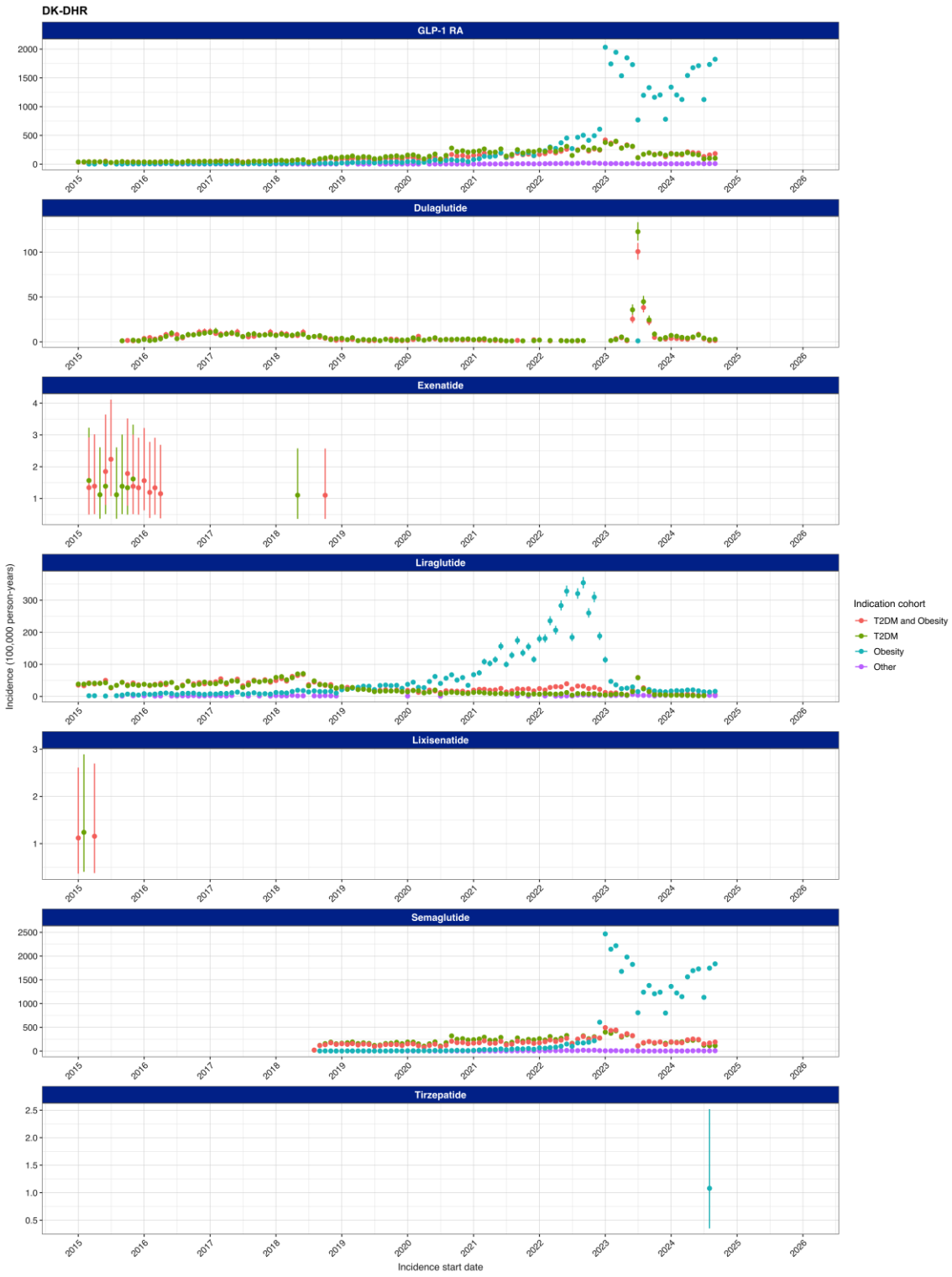


Figure 23. Incidence rates of GLP-1 RA ingredients by indication cohorts in DK-DHR.

Dots representing <5 cases were removed from the plot.
DK-DHR = Danish Data Health Registries; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

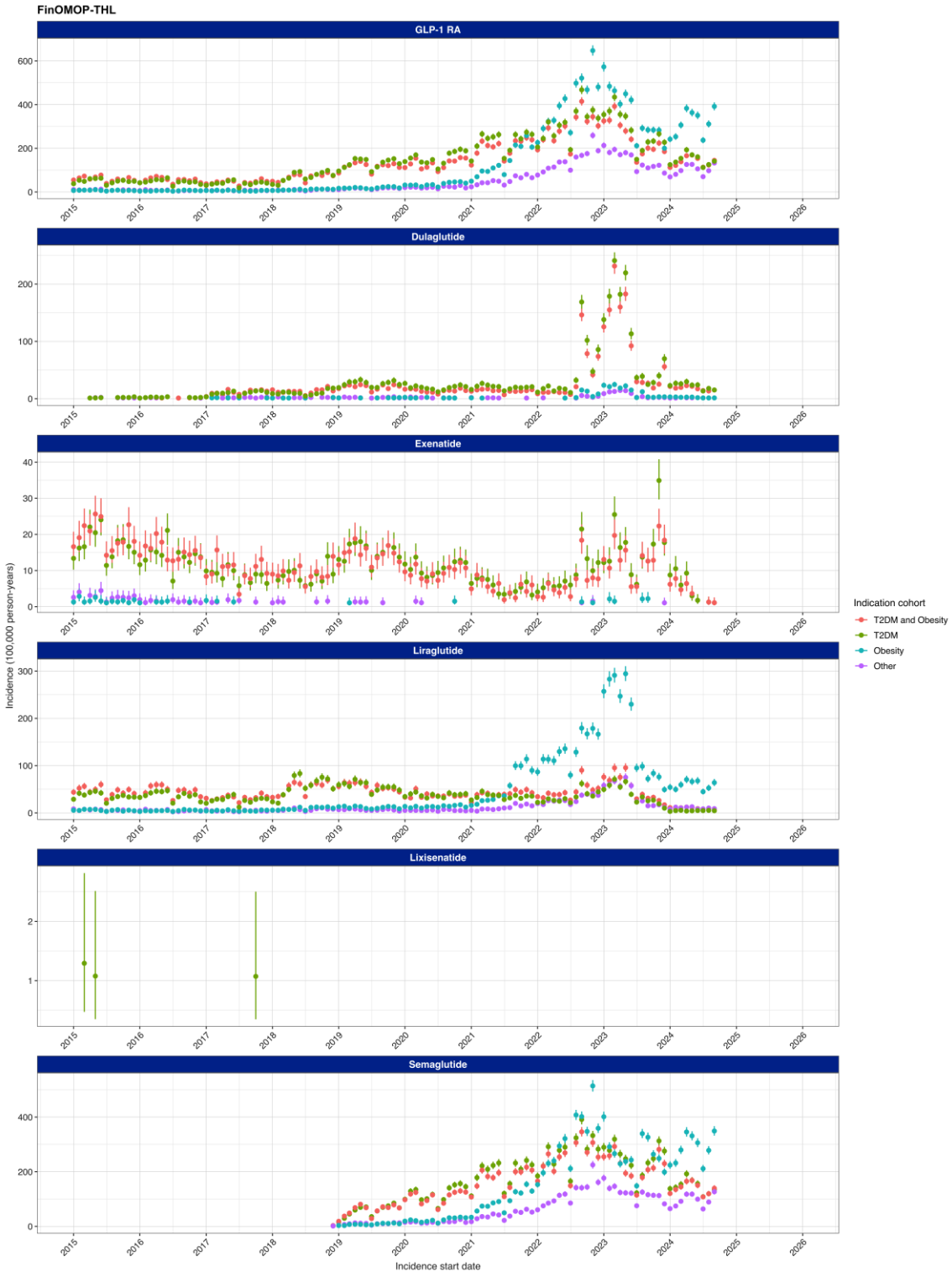


Figure 24. Incidence rates of GLP-1 RA ingredients in by indication cohorts FinOMOP-THL.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in FinOMOP-THL (i.e. no use was observed in the data source).
FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

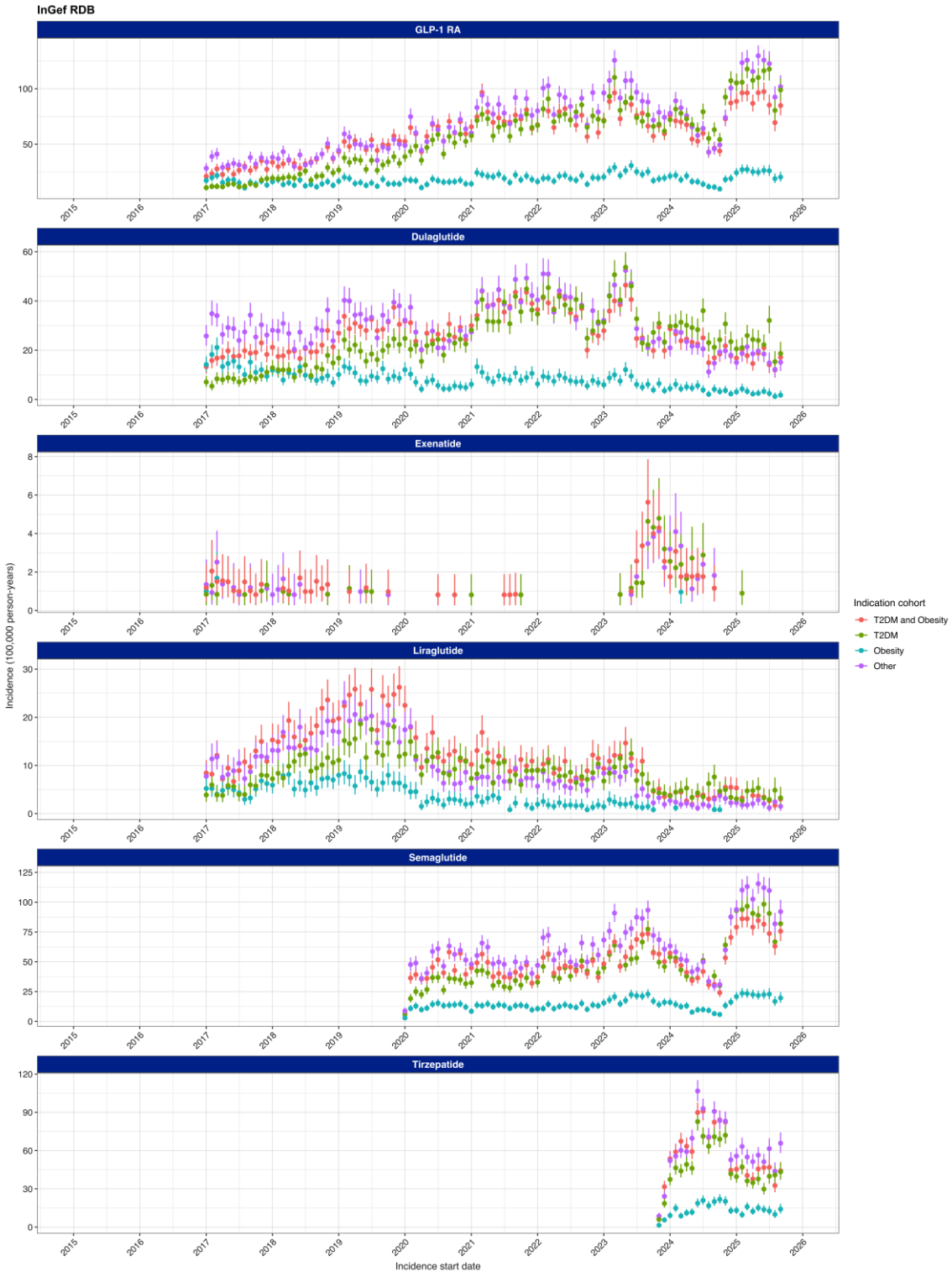


Figure 25. Incidence rates of GLP-1 RA ingredients by indication cohorts in InGef RDB.

Dots representing <5 cases were removed from the plot. Lixisenatide was not available in InGef RDB (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; InGef RDB = InGef Research Database; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

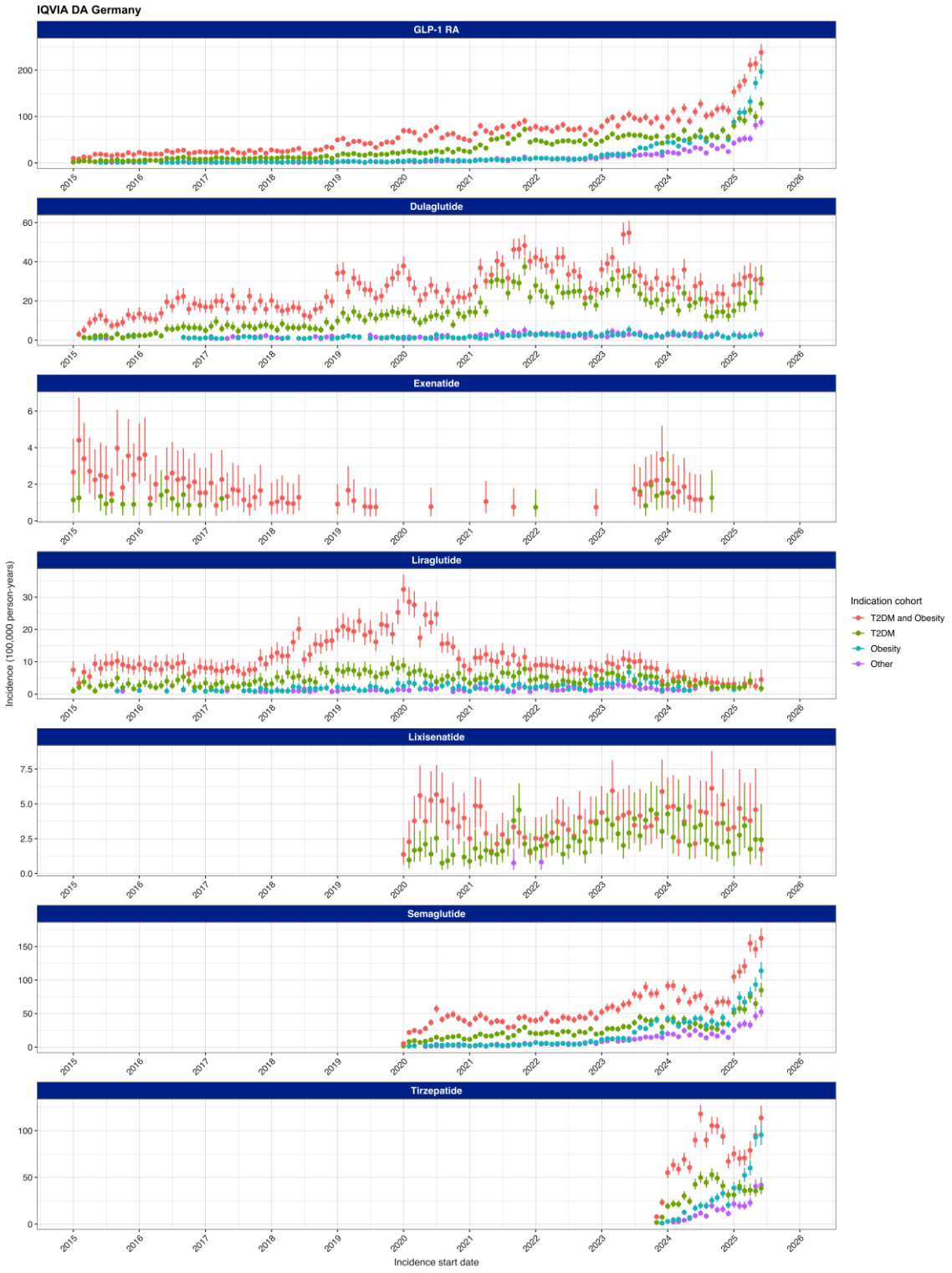


Figure 26. Incidence rates of GLP-1 RA ingredients by indication cohorts in IQVIA DA Germany.

Dots representing <5 cases were removed from the plot.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA DA Germany = IQVIA Disease Analyzer Germany; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

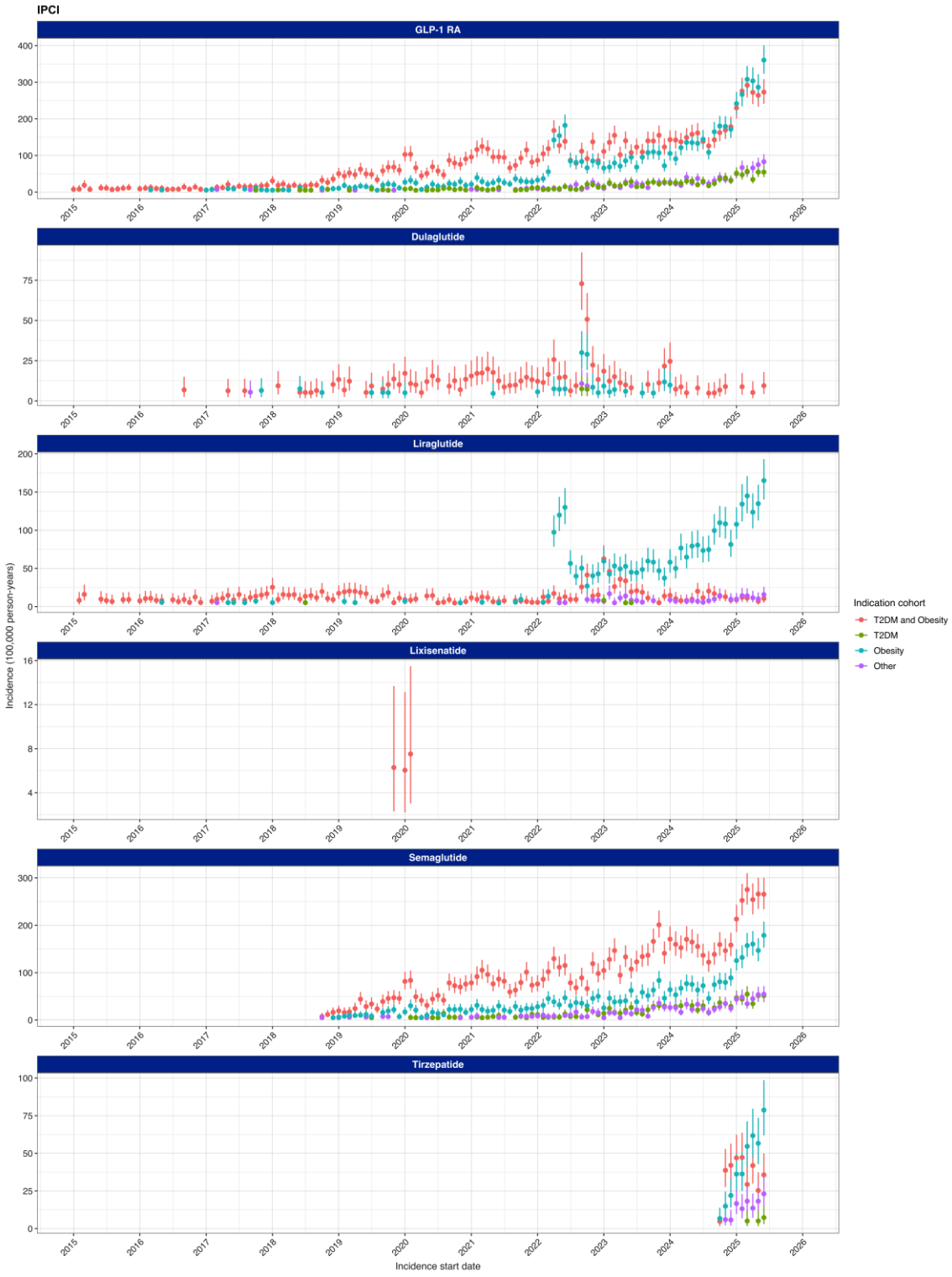


Figure 27. Incidence rates of GLP-1 RA ingredients by indication cohorts in IPCI.

Dots representing <5 cases were removed from the plot. Exenatide was not available in IPCI (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IPCI = Integrated Primary Care Information; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

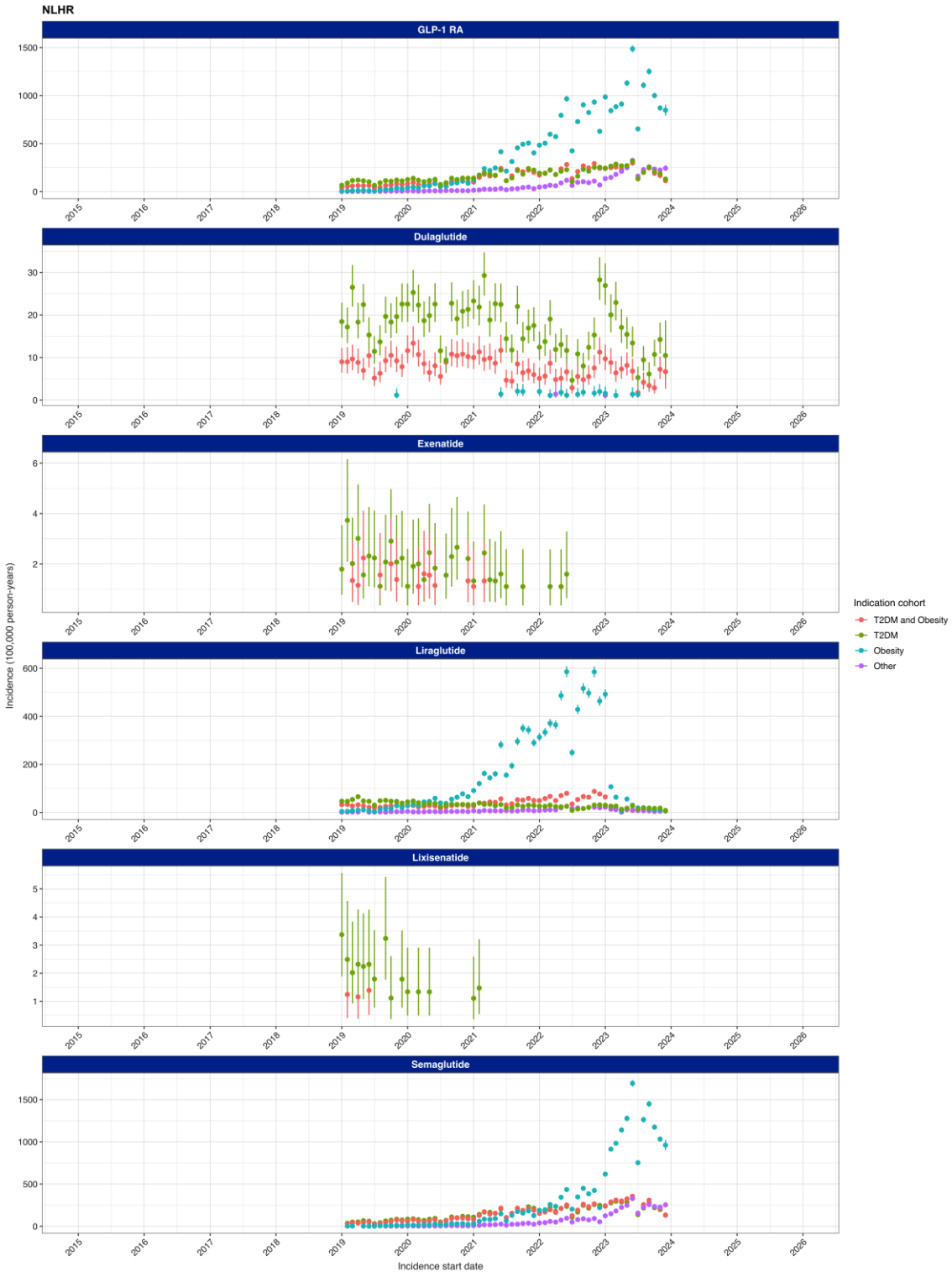


Figure 28. Incidence rates of GLP-1 RA ingredients by indication cohorts in NLHR.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in NLHR (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NLHR = Norwegian Linked Health Registry data; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

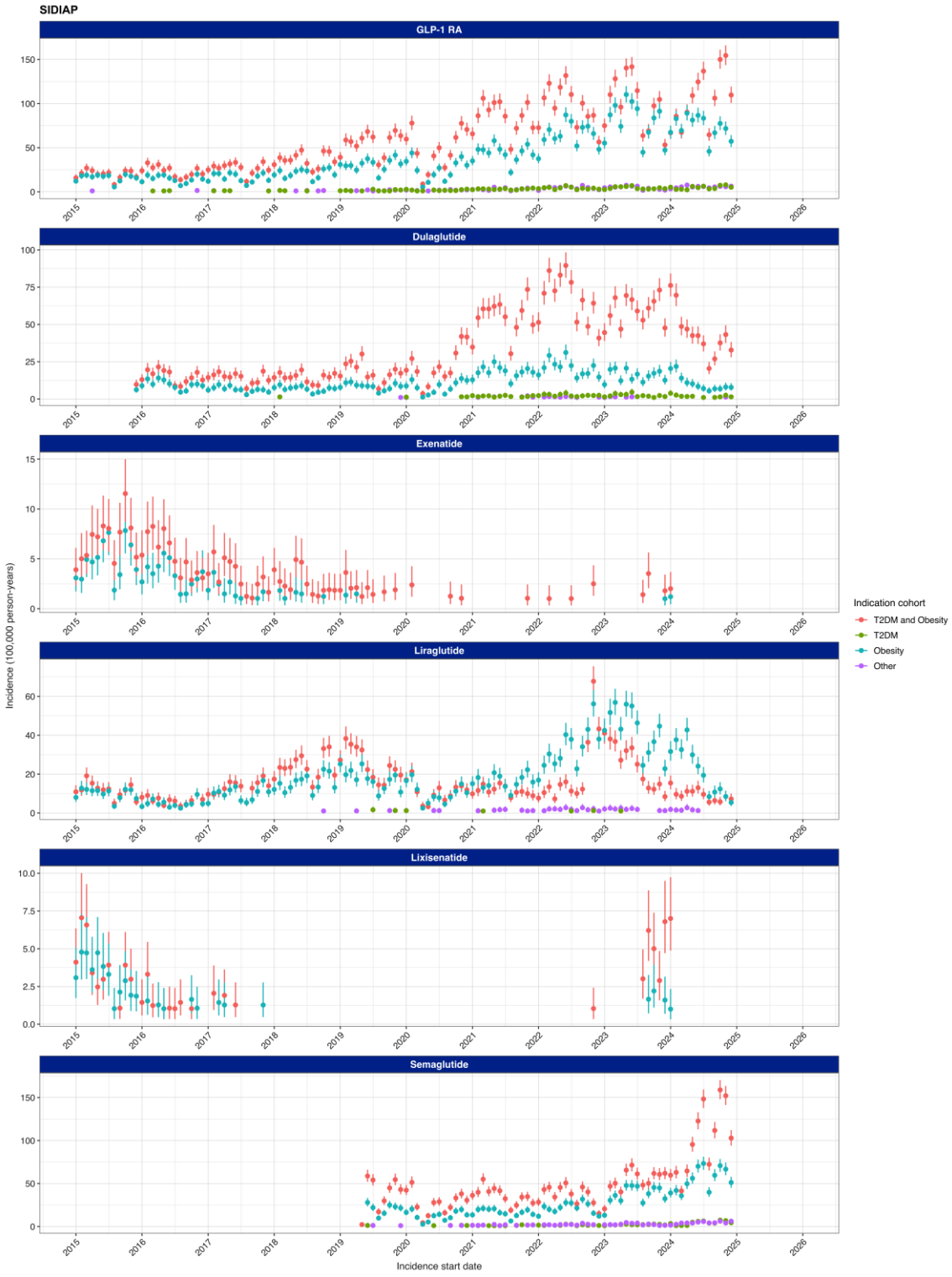


Figure 29. Incidence rates of GLP-1 RA ingredients by indication cohorts in SIDIAP.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in SIDIAP (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; Other = no indication for Obesity or T2DM recorded; SIDIAP = The Information System for Research in Primary Care; T2DM = Type 2 diabetes mellitus.

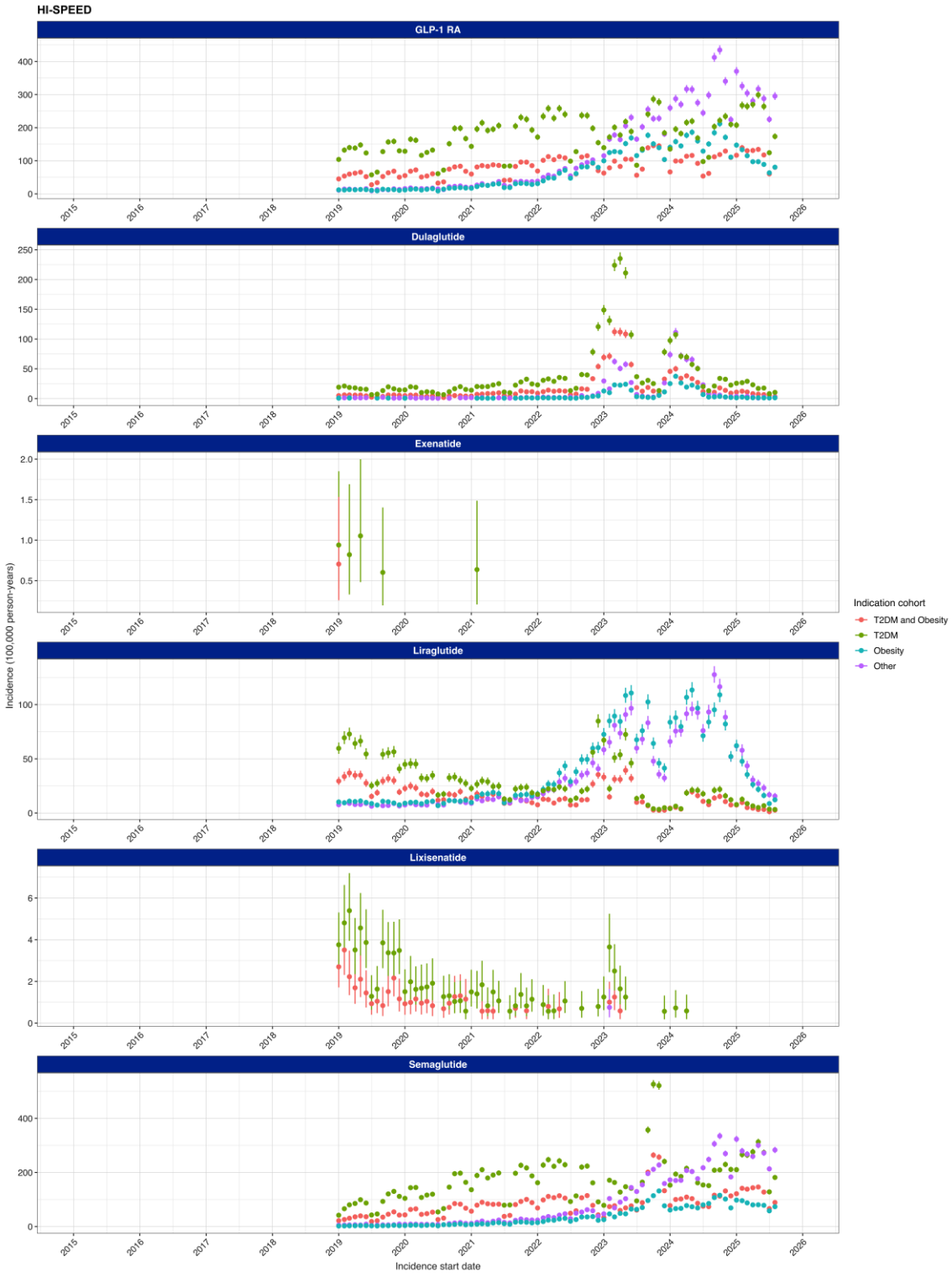


Figure 30. Incidence rates of GLP-1 RA ingredients by indication cohorts in HI-SPEED.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in HI-SPEED (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

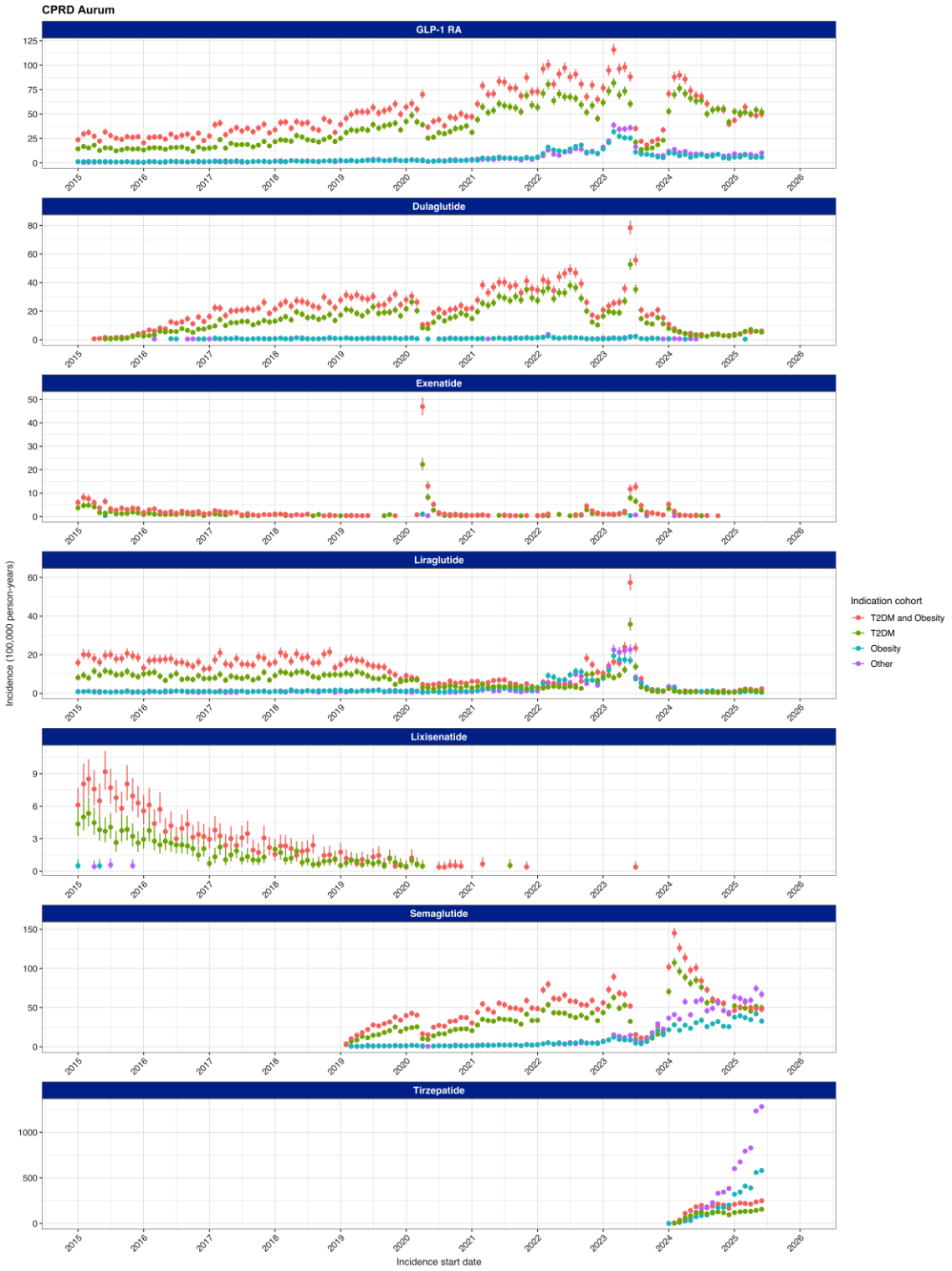


Figure 31. Incidence rates of GLP-1 RA ingredients by indication cohorts in CPRD Aurum.

Dots representing <5 cases were removed from the plot.
CPRD Aurum = Clinical Practice Research Datalink Aurum; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

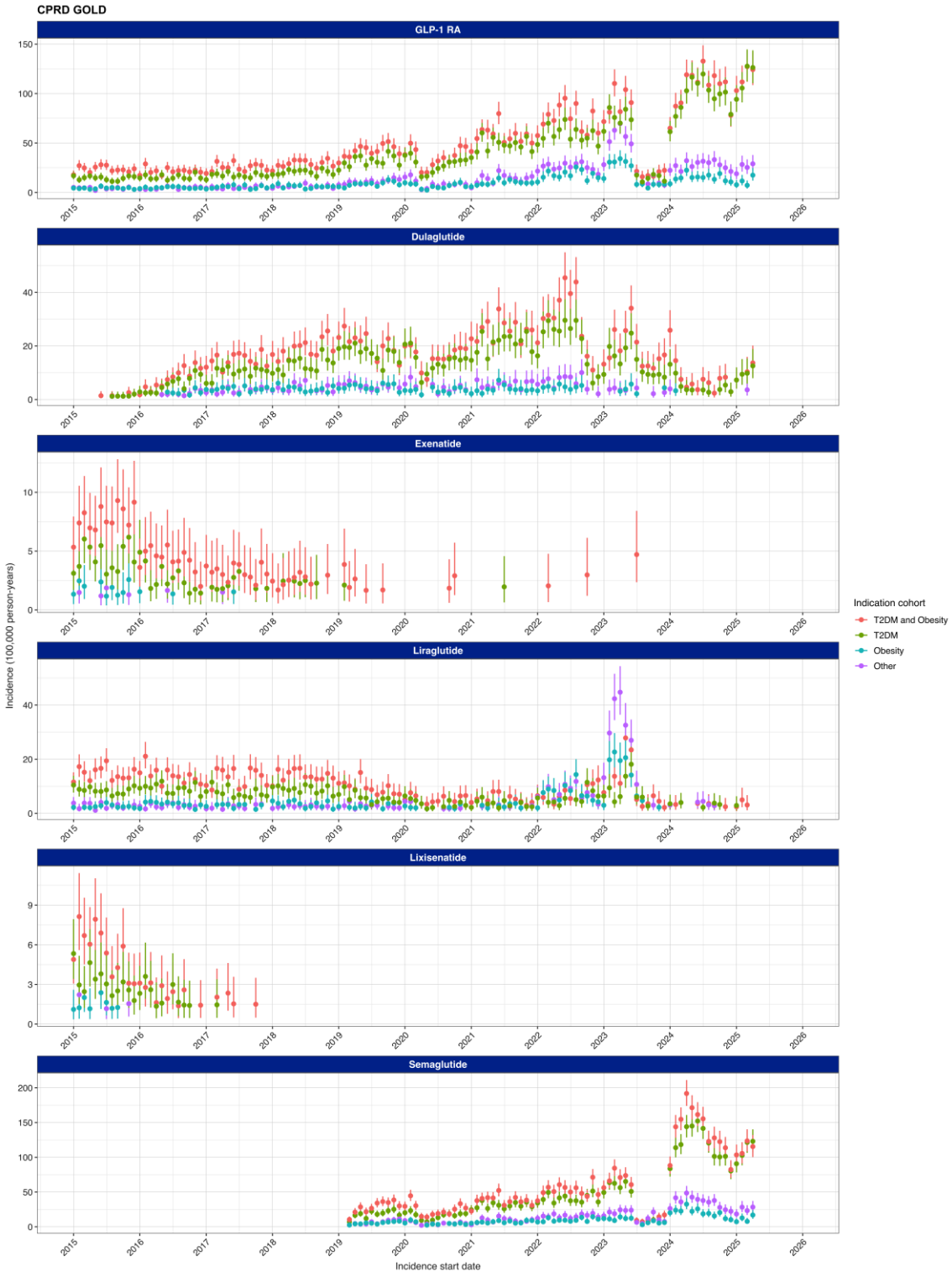


Figure 32. Incidence rates of GLP-1 RA ingredients by indication cohorts in CPRD GOLD.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in CPRD GOLD (i.e. no use was observed in the data source).
CPRD GOLD=Clinical Practice Research Datalink GOLD; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; Other = no indication for Obesity or T2DM recorded; T2DM = Type 2 diabetes mellitus.

10.2.2. Objective 1 – Prevalence of prescriptions of the GLP-1 RA medicines

Figure 33 displays the prevalence of GLP-1 RA use across all data sources, whilst **Figure 34** to **Figure 45** displays the prevalence estimates of the GLP-1 RA ingredients in each data source.

Note: HI-SPEED showed only 43 GLP-1 RA users (prevalence = 0.00%) in January 2018, whilst showing 15,756 GLP-1 RA users (0.16%) in February 2018. Therefore, January 2018 estimates were not taken into account in HI-SPEED.

Prevalence of prescriptions of GLP-1 RA

Prevalence of GLP-1 RA class use ranged from 0.03% in IQVIA DA Germany during January 2015 to 3.21% in DK-DHR during July 2024 (excluding months censored due to counts <5).

DK-DHR, NLHR, and HI-SPEED presented the highest prevalence estimates (>1.5%), whilst other data sources never exceeded 0.9% (**Figure 33**, **Figure S2**).

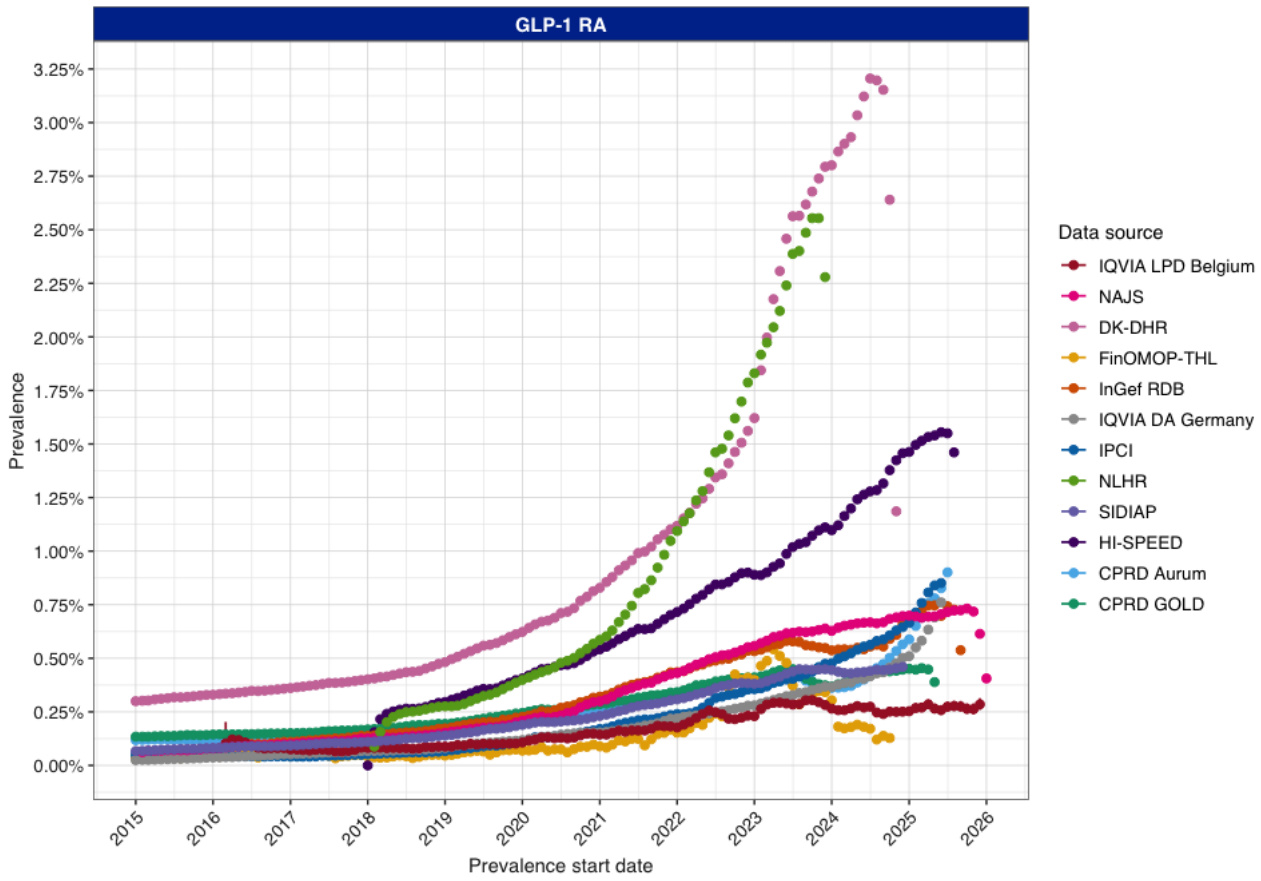


Figure 33. Prevalence of GLP-1 RA class per data source.

GLP-1 RA class includes use of any GLP-1 RA ingredient. Dots representing <5 cases were removed from the plot.
CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

Prevalence of GLP-1 RA ingredients

Figure 34 to **Figure 45** show the prevalence of the GLP-1 RA ingredients in each data source.

Prevalence of exenatide (≤0.04%) and lixisenatide (≤0.02%) use declined over time to 0.00%, with two exceptions among lixisenatide use (IQVIA DA Germany and NAJS):
In IQVIA DA Germany, prevalence of lixisenatide use increased from 0% in January 2020 to 0.01% in June 2025. Conversely, prevalence of lixisenatide use in NAJS increased from 0.00% in January 2015 to 0.02% in June–July 2021 but then decreased back to 0.01% in January 2026.

On the other hand, tirzepatide use started to be observed in some data sources from December 2023 (IQVIA DA Germany: ranged 0.02–0.19%), August 2024 (DK-DHR, n=5–10 and 0.00% prevalence), April 2024 (CPRD Aurum: ranged 0.01–0.61%), or October 2024 (IPCI: ranged 0.00–0.17%) onwards.

Details of dulaglutide, liraglutide, and semaglutide use per data source are described below.

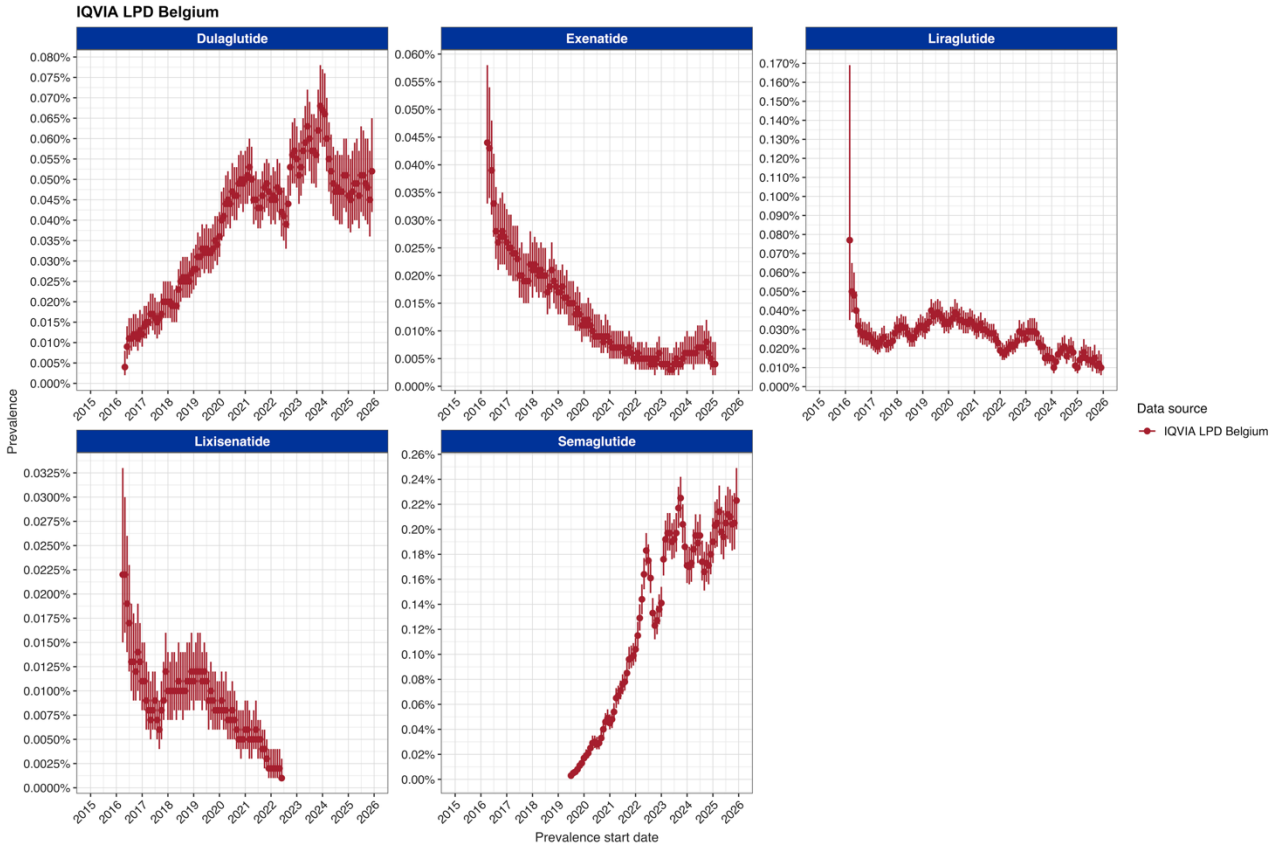


Figure 34. Prevalence of GLP-1 RA ingredients in IQVIA LPD Belgium.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in IQVIA LPD Belgium (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium.

In IQVIA LPD Belgium, the prevalence of dulaglutide use increased from 0.00% in May 2016 to 0.05% in December 2025, with a peak of use of 0.07% in December 2023.

Prevalence of liraglutide use decreased from 0.08% in March 2016 to 0.01% in December 2025.

Prevalence of semaglutide use increased from 0.00% in July 2019 to 0.22% in December 2025 (**Figure 34**).

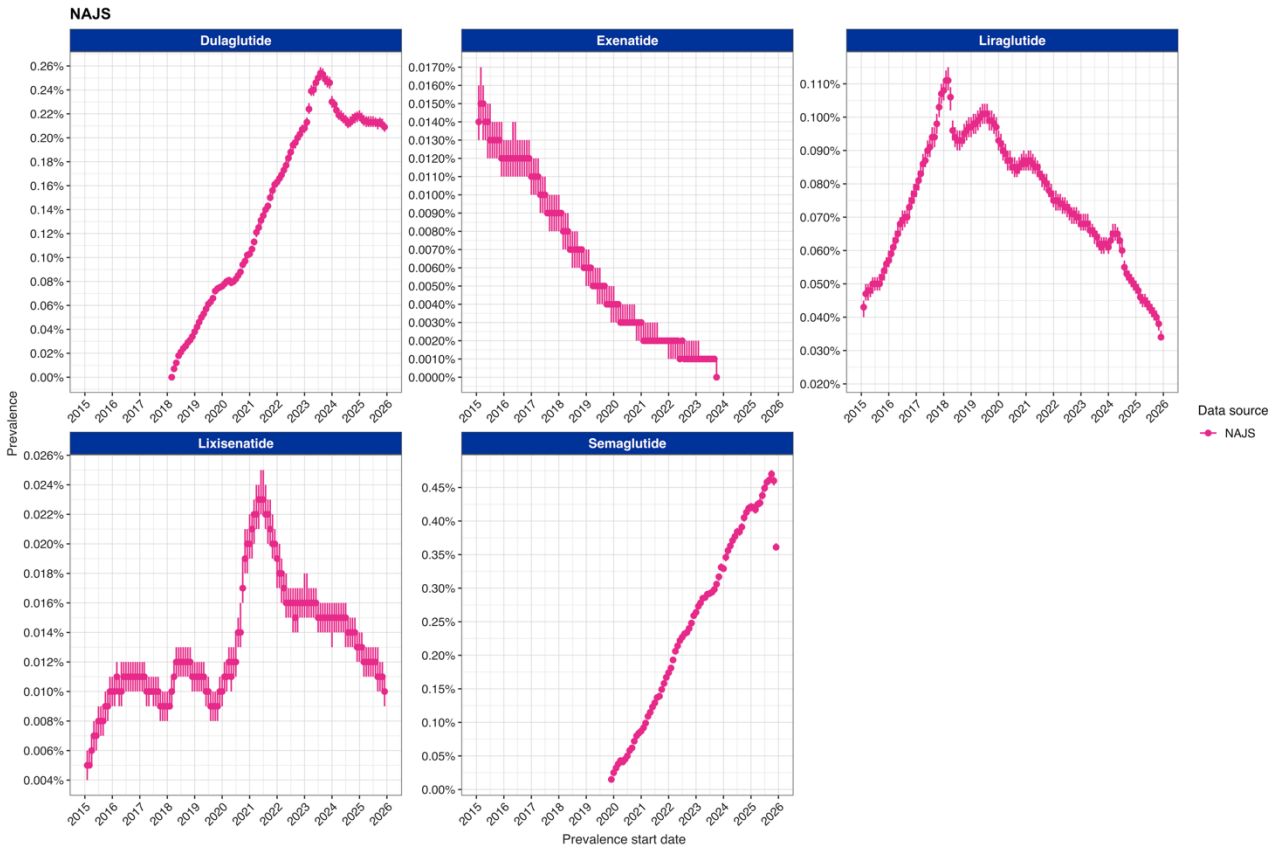


Figure 35. Prevalence of GLP-1 RA ingredients in NAJS.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in NAJS (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NAJS = Croatian National Public Health Information System.

Prevalence of dulaglutide use in NAJS increased from 0.01% in April 2018 to 0.25% in August 2023 and decreased to 0.18% in January 2026.

Prevalence of liraglutide use increased from 0.04% in February 2015 to 0.11% in February 2018 and decreased to 0.02% in January 2026.

Prevalence of semaglutide use increased from 0.01% in December 2019 to 0.36% in December 2025. The prevalence value observed in January 2026 was 0.19% (**Figure 35**).



Figure 36. Prevalence of GLP-1 RA ingredients in DK-DHR.

Dots representing <5 cases were removed from the plot.
DK-DHR = Danish Data Health Registries; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In DK-DHR, the prevalence of dulaglutide use increased from 0.00% in October 2015 to 0.3% in July–November 2018. It then decreased to 0.01% in June 2023, recovered to 0.03% in August 2023, and dropped to 0.01% in November 2024.

Prevalence of liraglutide use increased from 0.29% in January 2015 to 0.40% in July–September 2018, and decreased to 0.02% in November 2024, with a smaller secondary peak of use of 0.30% in December 2022.

Prevalence of semaglutide use increased from 0.00% in September 2018 to 3.12% in July–August 2024 but declined to 1.16% in November 2024.

Prevalence of tirzepatide use was first observed in August 2024, with negligible values (0.00%) until the end of the study period (**Figure 36**).

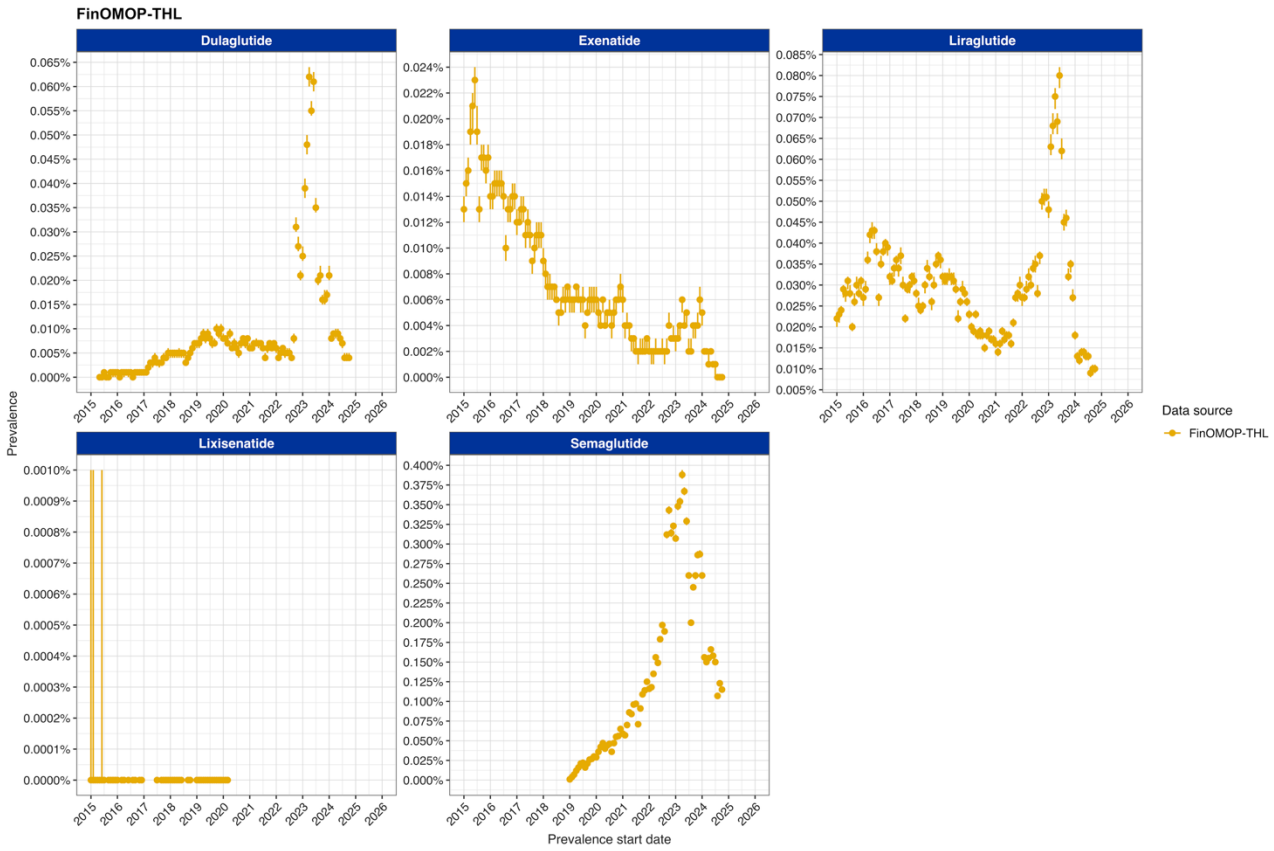


Figure 37. Prevalence of GLP-1 RA ingredients in FinOMOP-THL.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in FinOMOP-THL (i.e. no use was observed in the data source).
FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In FinOMOP-THL, the prevalence of dulaglutide use between May 2015–October 2024 was ≤0.01%, except for the months between October 2022 and January 2024, which showed a peak of dulaglutide use of 0.06% in April–June 2023.

Prevalence of liraglutide use between January 2015–October 2024 ranged between 0.02%–0.04%, except for the months between October 2022 and September 2023, which showed a peak of liraglutide use of 0.08% in June 2023.

Prevalence of semaglutide use increased from 0% in January 2019 to 0.39% in April 2023 and decreased to 0.11% in October 2024 (**Figure 37**).

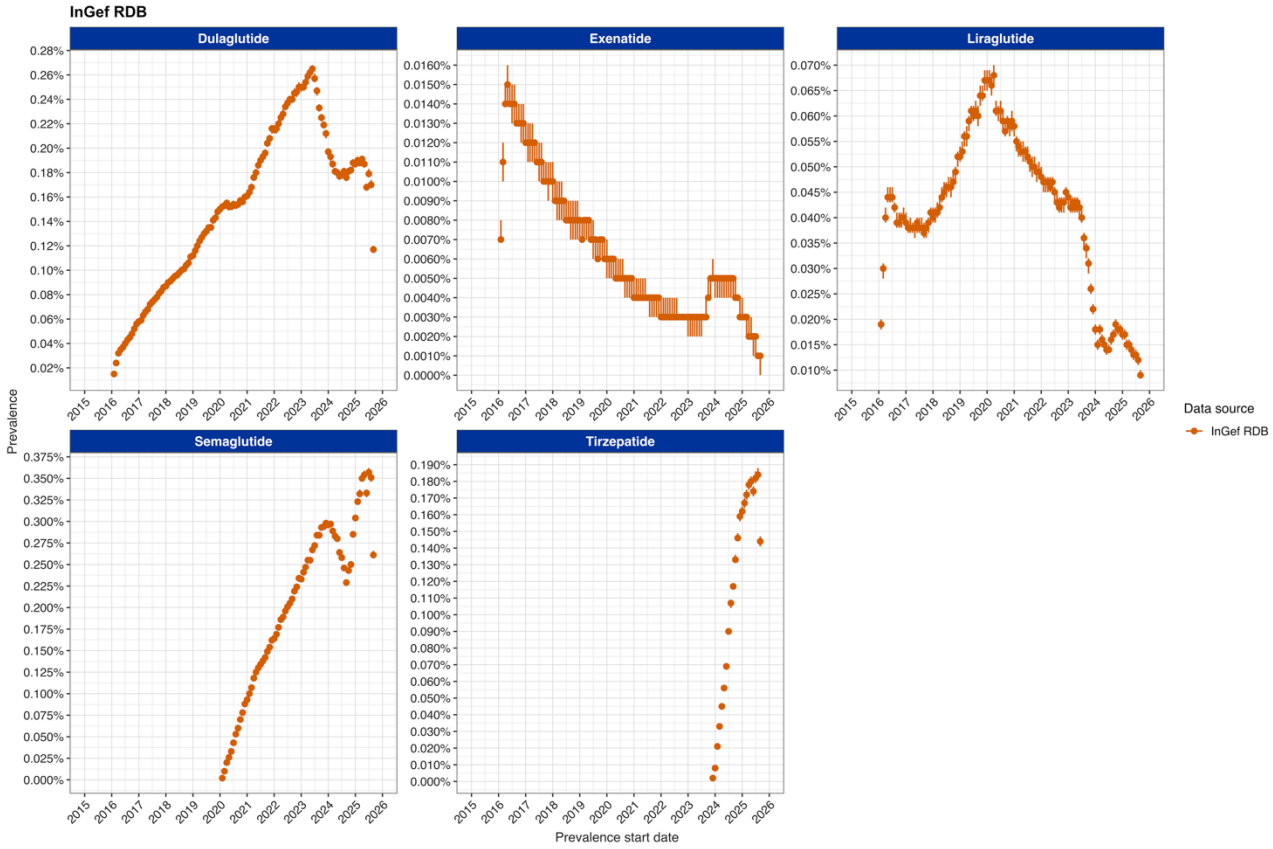


Figure 38. Prevalence of GLP-1 RA ingredients in InGef RDB.

Dots representing <5 cases were removed from the plot. Lixisenatide was not available in InGef RDB (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; InGef RDB = InGef Research Database.

In InGef RDB, the prevalence of dulaglutide use increased from 0.01% in February 2016 to 0.26% in June 2023 and decreased to 0.12% in September 2025.

Prevalence of liraglutide use increased from 0.02% in February 2016 to 0.07% in April 2020 and decreased to 0.01% in September 2025.

Prevalence of semaglutide use increased from 0% in February 2020 to 0.36% in July 2025 and decreased to 0.26% in September 2025.

Prevalence of tirzepatide use was first observed in December 2023, and its peak use was 0.18% in August 2025 (**Figure 38**).

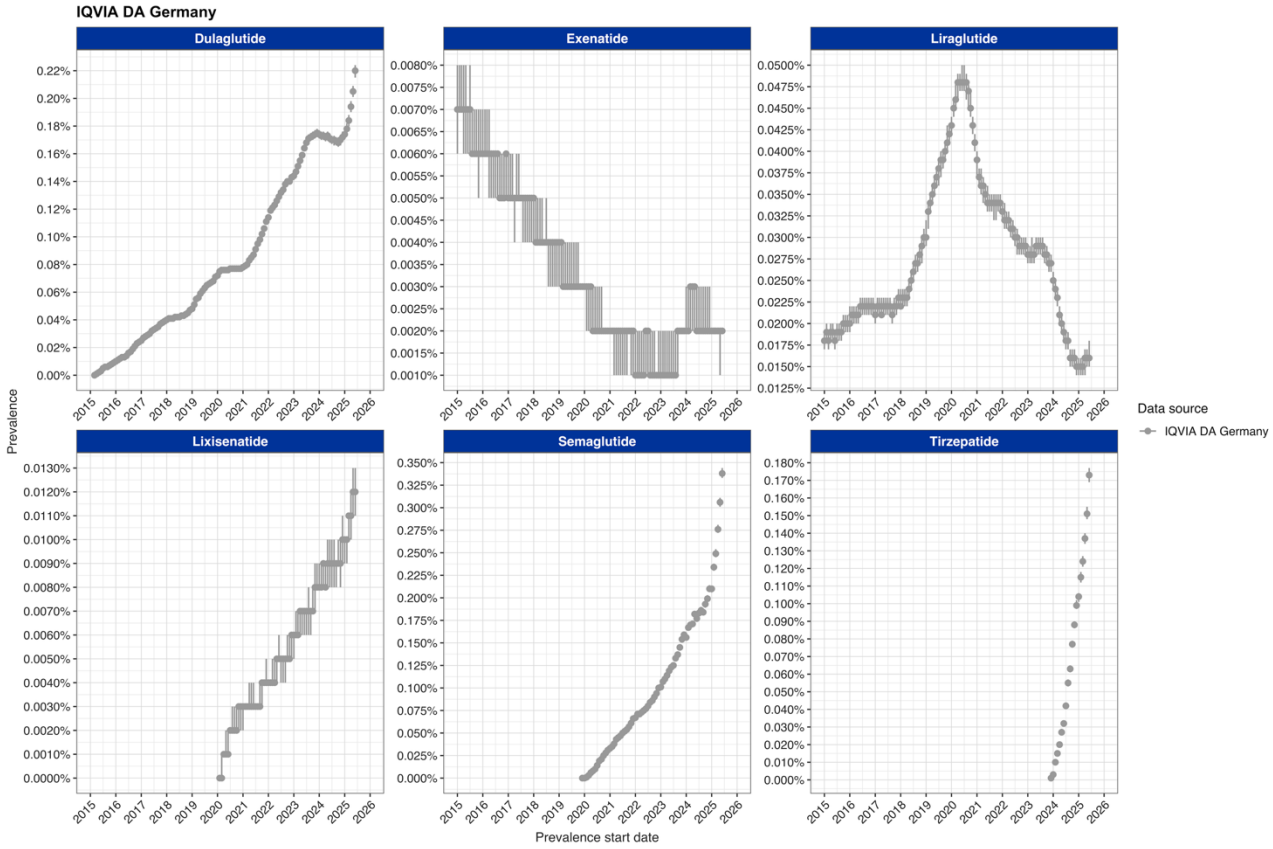


Figure 39. Prevalence of GLP-1 RA ingredients in IQVIA DA Germany.

Dots representing <5 cases were removed from the plot.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA DA Germany = IQVIA Disease Analyzer Germany.

In IQVIA DA Germany, prevalence of dulaglutide use increased from 0% in March 2015 to 0.22% in June 2025.

Prevalence of liraglutide use increased from 0.02% in January 2015 to 0.05% in April–August 2020 and decreased back to 0.02% in June 2025.

Prevalence of semaglutide use increased from 0.00% in December 2019 to 0.34% in June 2025.

Prevalence of tirzepatide use was first observed in December 2023, and its peak use was 0.17% in June 2025 (**Figure 39**).

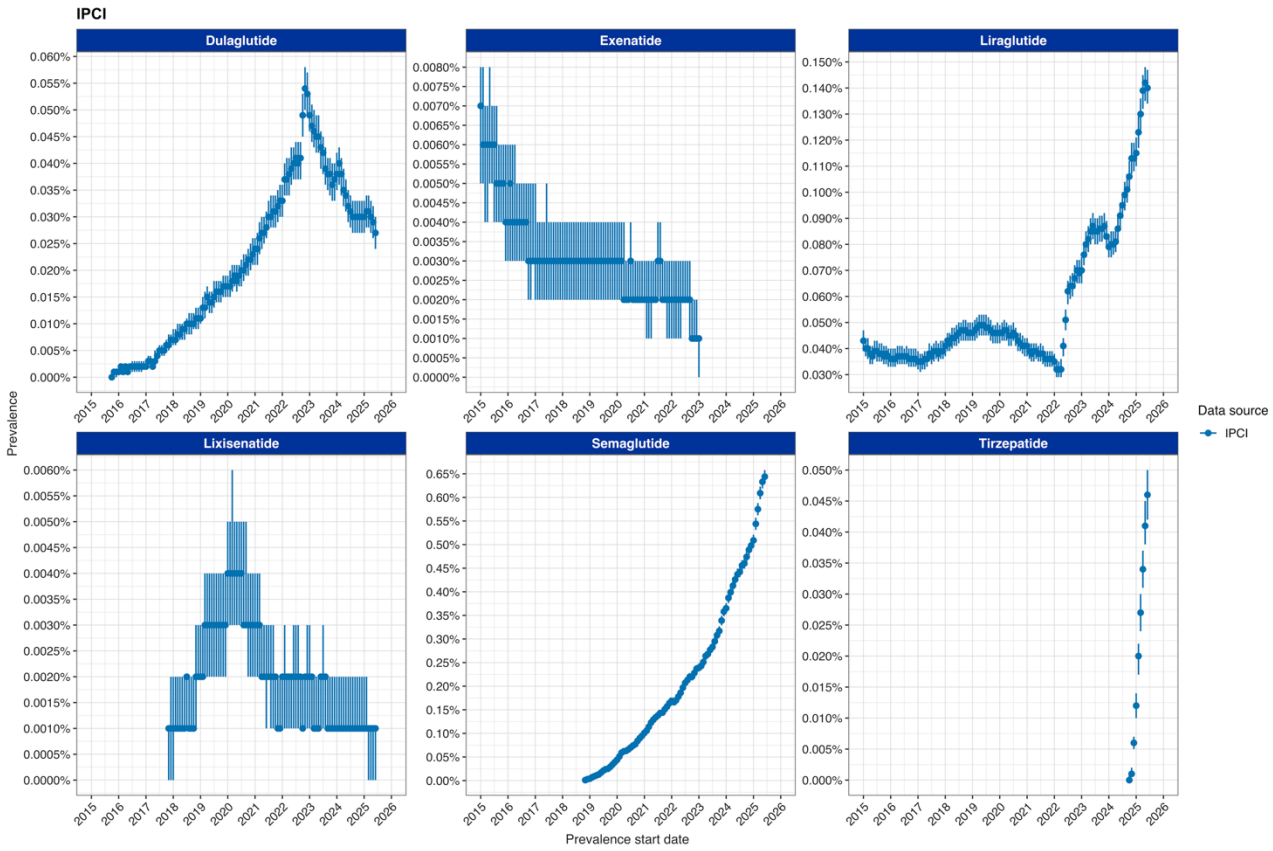


Figure 40. Prevalence of GLP-1 RA ingredients in IPCI.

Dots representing <5 cases were removed from the plot. Exenatide was not available in IPCI (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IPCI = Integrated Primary Care Information.

In IPCI, the prevalence of dulaglutide use increased from 0.00% in October 2015 to 0.05% in November 2022 and decreased to 0.03% in June 2025.

Prevalence of liraglutide use fluctuated between 0.03% and 0.05% during 2015–early 2022. After June 2022, it increased to 0.14% in May 2025.

Prevalence of semaglutide use increased from 0.00% in November 2018 to 0.64% in June 2025.

Prevalence of tirzepatide use was first observed in October 2024, and its peak use was 0.05% in June 2025 (**Figure 40**).

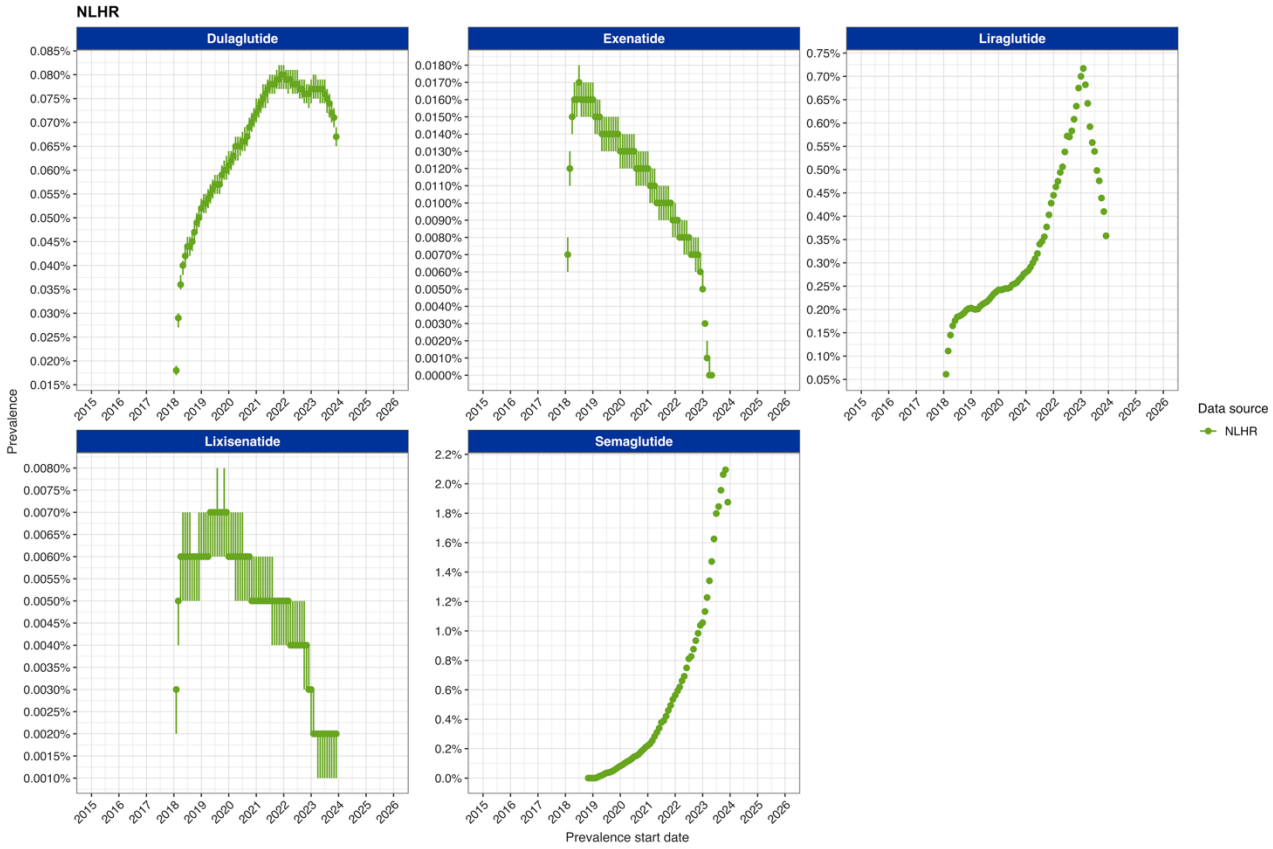


Figure 41. Prevalence of GLP-1 RA ingredients in NLHR.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in NLHR (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NLHR = Norwegian Linked Health Registry data.

In NLHR, the prevalence of dulaglutide use increased from 0.02% in February 2018 to 0.08% in December 2021 and decreased to 0.07% in December 2023.

Prevalence of liraglutide use increased from 0.06% in February 2018 to 0.72% in February 2023 and decreased to 0.36% in December 2023.

Prevalence of semaglutide use increased from 0.00% in November 2018 to 1.88% in December 2023 (**Figure 41**).

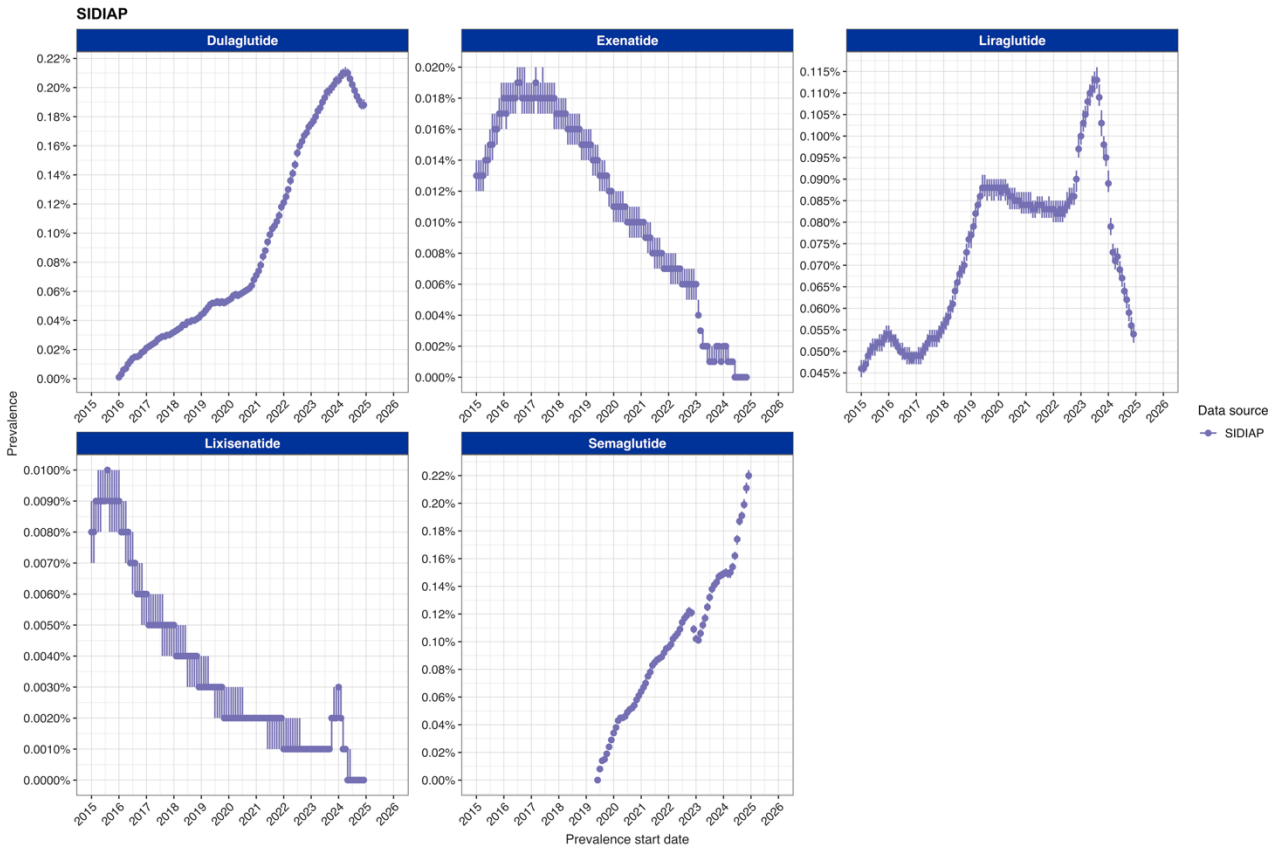


Figure 42. Prevalence of GLP-1 RA ingredients in SIDIAP.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in SIDIAP (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; SIDIAP = The Information System for Research in Primary Care.

In SIDIAP, the prevalence of dulaglutide use increased from 0.00% in January 2016 to 0.21% in March–May 2024 and decreased to 0.19% in December 2024.

Prevalence of liraglutide use increased from 0.05% in January 2015 to 0.11% in July–August 2023 and decreased back to 0.05% in December 2024.

Prevalence of semaglutide use increased from 0.00% in June 2019 to 0.22% in December 2024 (**Figure 42**).

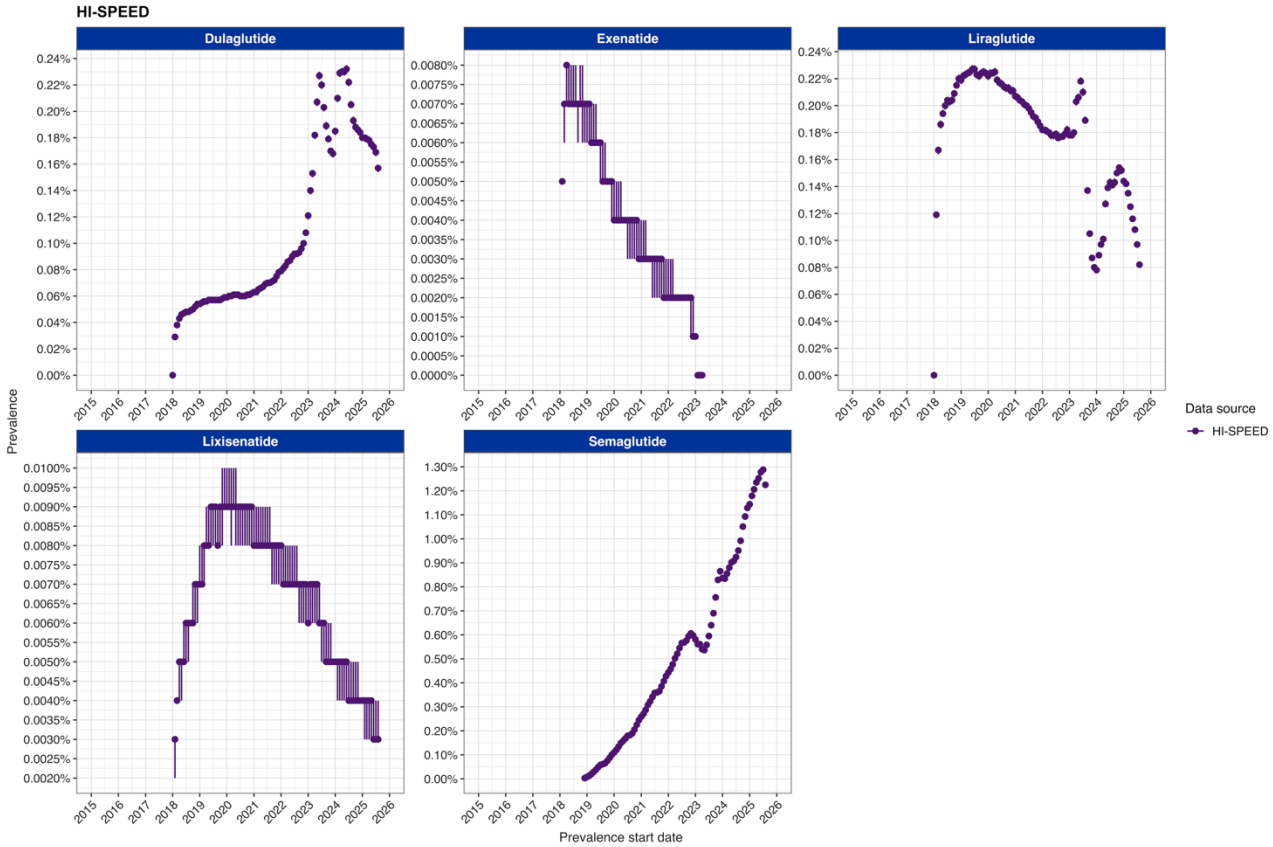


Figure 43. Prevalence of GLP-1 RA ingredients in HI-SPEED.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in HI-SPEED (i.e. no use was observed in the data source).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage.

In HI-SPEED, the prevalence of dulaglutide use increased from 0.03% in February 2018 to 0.23% in March–June 2024 and decreased to 0.16% in August 2025.

Prevalence of liraglutide use was 0.12% in February 2018 and increased to 0.23% in June 2019. It then fluctuated (with a second peak of use of 0.22% in June 2023) but finally decreased to 0.08% in August 2025.

Prevalence of semaglutide use increased from 0.00% in December 2018 to 1.23% in August 2025 (**Figure 43**).

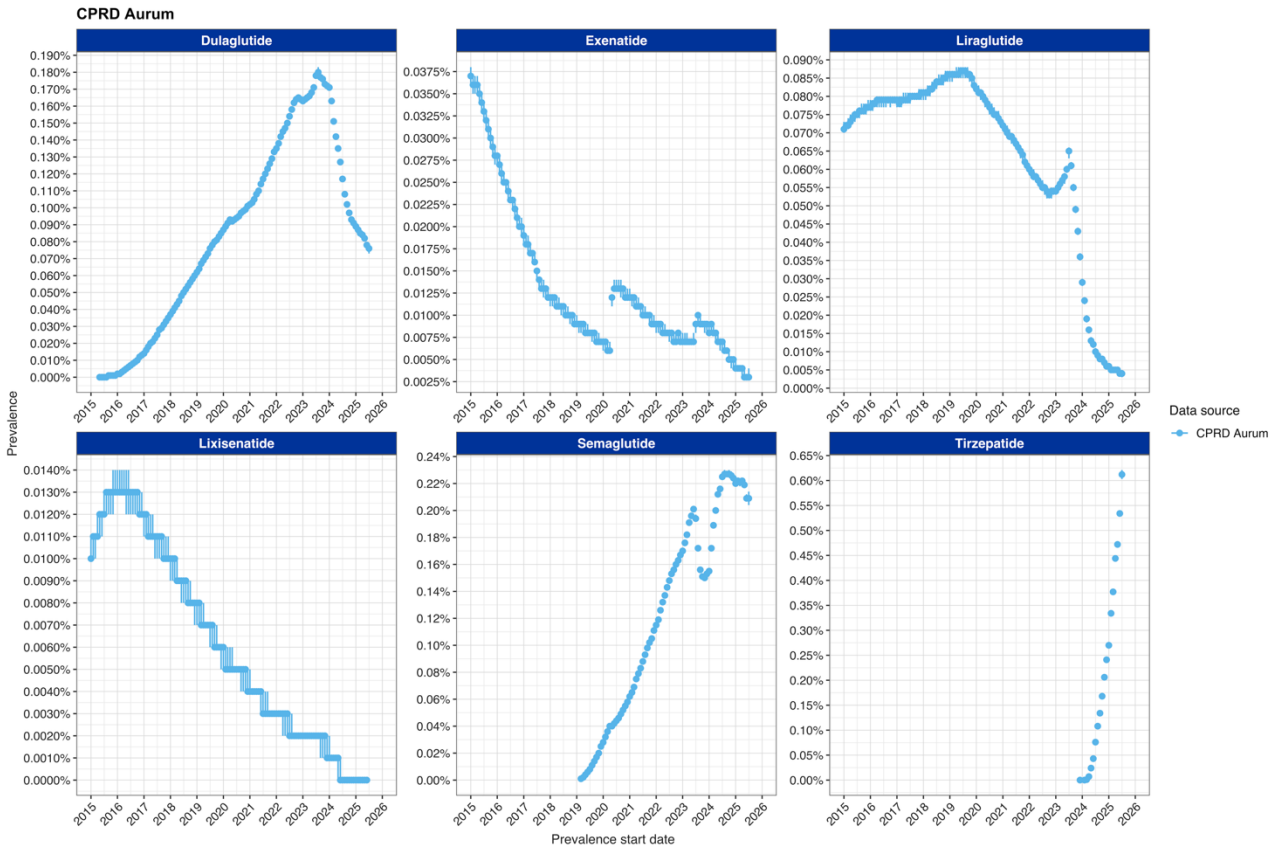


Figure 44. Prevalence of GLP-1 RA ingredients in CPRD Aurum.

Dots representing <5 cases were removed from the plot.
CPRD Aurum = Clinical Practice Research Datalink Aurum; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In CPRD Aurum, the prevalence of dulaglutide use increased from 0.00% in September 2015 to 0.18% in 2023 and decreased to 0.08% in July 2025.

Prevalence of liraglutide use increased from 0.07% in January 2015 to 0.09% between December 2018–October 2019 and decreased to 0.00% from February 2025 onwards.

Prevalence of semaglutide use increased from 0.00% in March 2019 to 0.21% in July 2025 but presented a drop in use between June 2023 and May 2024 (lowest prevalence in this period was 0.15% in November 2023).

Prevalence of tirzepatide use was first observed in December 2023, and its peak use was 0.61% in July 2025 (**Figure 44**).

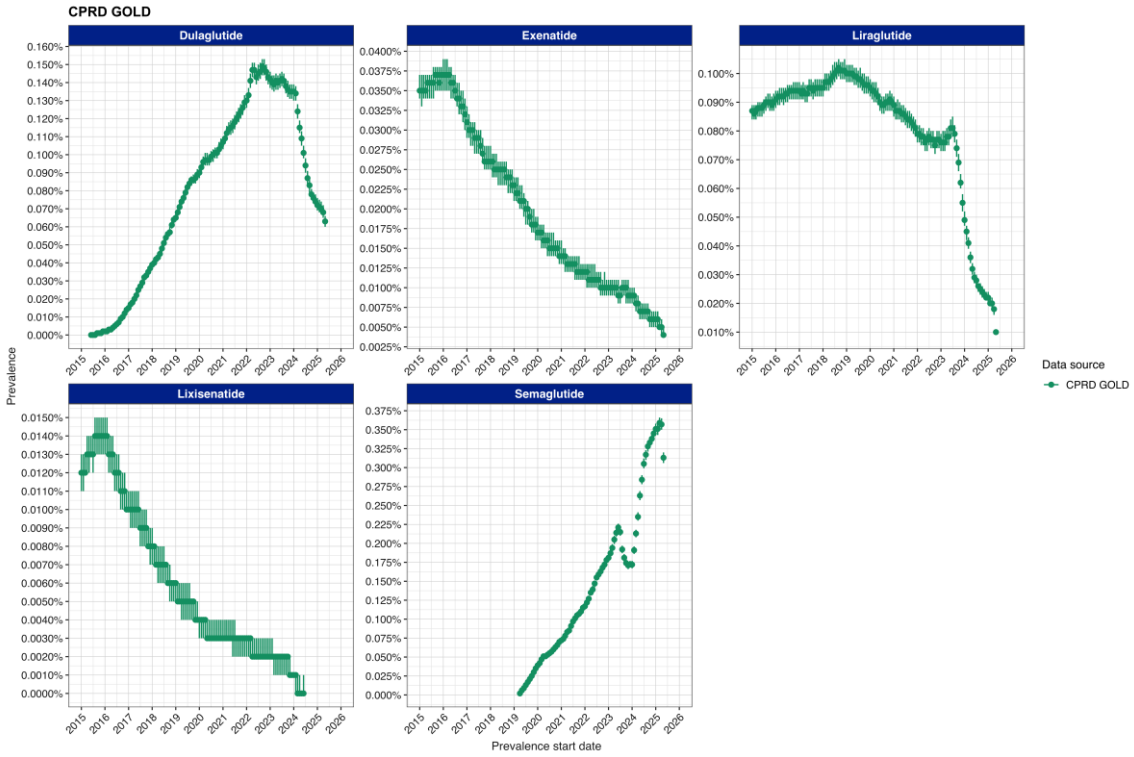


Figure 45. Prevalence of GLP-1 RA ingredients in CPRD GOLD.

Dots representing <5 cases were removed from the plot. Tirzepatide was not available in CPRD GOLD (i.e. no use was observed in the data source).
CPRD GOLD = Clinical Practice Research Datalink GOLD; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In CPRD GOLD, the prevalence of dulaglutide use increased from 0.00% in August 2015 to 0.15% in September 2022 and decreased to 0.06% in May 2025.

Prevalence of liraglutide use increased from 0.09% in January 2015 to 0.10% in September 2018 and decreased to 0.06% in November 2023. It promptly dropped to 0.01% in May 2025.

Prevalence of semaglutide use increased from 0.00% in April 2019 to 0.36% in March 2025. By May 2025, prevalence of semaglutide use was 0.31% (**Figure 45**).

10.2.3. Objective 2 – Characterisation of new drug users of GLP-1 RA

Characteristics of new GLP-1 RA users are presented in **Table 9.** During the study period, the percentage of users that were females ranged from 42.13% (InGef RDB) to 64.26% (CPRD Aurum). Use among children and adolescents aged <18 years old was negligible (≤0.51%). The median age of new GLP-1 RA users ranged between 52 years (NLHR) to 63 years (NAJS). The lower age and higher percentage of females observed in the GLP-1 RA class of NLHR (median age of 52 year, females 61.63%) and DK-DHR (median age of 54 year, females 60.15%) were driven by liraglutide and semaglutide users, whereas in CPRD Aurum (median age of 53 year, females 64.26%) was driven by tirzepatide.

Biguanides (i.e. metformin) was the most frequent comedication in all data sources (ranging from 24.65% of NLHR new users to 79.12% of CPRD GOLD new users), except NAJS and HI-SPEED, where it was drugs under the ATC group A10BD – combinations of oral blood glucose lowering drugs (50.83% and 54.39%, respectively). (**Table 9**)

The most common comorbidity was cardiovascular disease (CVD) (48.35% in CPRD Aurum–94.73% in NAJS). The second most common comorbidity was dyslipidaemia in DK-DHR (41.48%) and hypertension in the other data sources (32.71% in IPCI –91.76% in NAJS). Patients with no indications for the use of GLP-1 RA (T2DM or obesity) represented less than 14% of new users (0.71% in DK-DHR–13.63% in IQVIA LPD Belgium), except in InGef RDB (37.00%) and HI-SPEED (27.55 %). (**Table S1A**)

Figure S3 depicts the percentage of patients with missing BMI among IQVIA LPD Belgium, IQVIA DA Germany, IPCI, SIDIAP, and CPRD GOLD. The percentage of missing BMI ranged from 4.06% in CPRD GOLD to 89.58% in IQVIA DA Germany. Where available, median BMI (kg/m2) ranged from 33.12 (IQVIA LPD Belgium) to 35.63 (SIDIAP) (**Table 9**). BMI was not available in DK-DHR, NAJS, FinOMOP-THL, InGef RDB, NLHR, HI-SPEED, and CPRD Aurum.

Similar results were observed in the last reported year (**Table S2**).

Initial and cumulative dose in the overall study period are reported in **Table 10**, whilst **Table S3** describes the last reported year. Results for FinOMOP-THL are not reported because dose information is expected to be incorrect (see **Section 11.2**). Briefly, initial and cumulative dose varied across the data sources. For instance, in the overall period, median initial daily dose of dulaglutide ranged from 0.10 mg in NAJS to 3 mg in IQVIA LPD Belgium and SIDIAP; median initial daily dose of liraglutide ranged from 0 mg in DK-DHR and 0.4 mg in NAJS, to 18 mg in CPRD GOLD; and median initial daily dose of semaglutide ranged from 0 mg in DK-DHR, NLHR, and HI-SPEED, and 0.03 mg in NAJS, to 0.29 mg in CPRD GOLD.

Table 9. Characteristics of new users of GLP-1 by GLP-1 RA ingredient and per 12 data sources.

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
IQVIA LPD Belgium									
Age	–	Median [Q25 – Q75]	57.00 [47.00 - 67.00]	64.00 [55.00 - 71.00]	62.00 [55.00 - 70.75]	55.00 [46.00 - 65.00]	66.00 [59.25 - 73.00]	56.00 [46.00 - 65.00]	–
		Mean (SD)	56.30 (13.90)	62.95 (12.04)	62.55 (12.00)	55.01 (14.05)	64.31 (12.37)	55.13 (13.67)	–
Age group	0 to 17	N (%)	11 (0.14%)	0 (0.00%)	<5	<5	<5	8 (0.14%)	–
	18 to 44	N (%)	1,627 (20.44%)	134 (7.52%)	11 (5.34%)	347 (23.12%)	8 (6.45%)	1,270 (22.42%)	–
	45 to 54	N (%)	1,795 (22.55%)	287 (16.11%)	39 (18.93%)	363 (24.18%)	15 (12.10%)	1,334 (23.55%)	–
	55 to 64	N (%)	2,114 (26.55%)	491 (27.55%)	70 (33.98%)	393 (26.18%)	30 (24.19%)	1,536 (27.11%)	–
	65+	N (%)	2,414 (30.32%)	870 (48.82%)	85 (41.26%)	397 (26.45%)	70 (56.45%)	1,517 (26.78%)	–
BMI	–	Median [Q25 – Q75]	33.12 [30.06 - 36.85]	32.54 [29.39 - 35.94]	30.42 [28.80 - 34.44]	32.45 [29.36 - 36.51]	34.95 [30.84 - 38.34]	33.27 [30.08 - 37.04]	–
		Mean (SD)	33.68 (5.57)	33.11 (5.58)	32.01 (5.68)	33.14 (5.63)	35.10 (6.28)	33.82 (5.68)	–
BMI group	27–29	N (%)	408 (5.12%)	85 (4.77%)	14 (6.80%)	105 (7.00%)	<5	290 (5.12%)	–
	30–34	N (%)	1,096 (13.77%)	187 (10.49%)	18 (8.74%)	235 (15.66%)	9 (7.26%)	817 (14.42%)	–
	35–39	N (%)	607 (7.62%)	84 (4.71%)	<5	129 (8.59%)	8 (6.45%)	478 (8.44%)	–
	≤26	N (%)	247 (3.10%)	46 (2.58%)	7 (3.40%)	70 (4.66%)	<5	200 (3.53%)	–
	≥40	N (%)	356 (4.47%)	54 (3.03%)	7 (3.40%)	70 (4.66%)	5 (4.03%)	285 (5.03%)	–
Comedication	Alpha glucosidase	N (%)	8 (0.10%)	<5	0 (0.00%)	<5	0 (0.00%)	<5	–
	Biguanides	N (%)	2,973 (37.34%)	1,114 (62.51%)	119 (57.77%)	432 (28.78%)	81 (65.32%)	2,083 (36.77%)	–
	Combinations	N (%)	222 (2.79%)	86 (4.83%)	15 (7.28%)	30 (2.00%)	<5	126 (2.22%)	–
	DPP4 inhibitors	N (%)	509 (6.39%)	240 (13.47%)	22 (10.68%)	54 (3.60%)	7 (5.65%)	229 (4.04%)	–

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	Insulin	N (%)	810 (10.17%)	341 (19.14%)	23 (11.17%)	147 (9.79%)	60 (48.39%)	576 (10.17%)	–
	Other blood sugar-lowering medications	N (%)	229 (2.88%)	97 (5.44%)	10 (4.85%)	54 (3.60%)	10 (8.06%)	115 (2.03%)	–
	Other weight loss medications	N (%)	118 (1.48%)	18 (1.01%)	0 (0.00%)	77 (5.13%)	<5	95 (1.68%)	–
	SGLT2 inhibitors	N (%)	749 (9.41%)	292 (16.39%)	26 (12.62%)	60 (4.00%)	17 (13.71%)	488 (8.61%)	–
	Sulfonylureas	N (%)	1,285 (16.14%)	659 (36.98%)	90 (43.69%)	239 (15.92%)	61 (49.19%)	779 (13.75%)	–
	Thiazolidinediones	N (%)	23 (0.29%)	12 (0.67%)	<5	<5	0 (0.00%)	14 (0.25%)	–
Sex	Female	N (%)	4,599 (57.77%)	782 (43.88%)	91 (44.17%)	948 (63.16%)	61 (49.19%)	3,408 (60.16%)	–
	Male	N (%)	3,362 (42.23%)	1,000 (56.12%)	115 (55.83%)	553 (36.84%)	63 (50.81%)	2,257 (39.84%)	–
NAJS									
Age	–	Median [Q25 – Q75]	63 [56 - 70]	64 [57 - 71]	60 [53 - 66]	63 [56 - 70]	66 [59 - 72]	63 [55 - 70]	–
		Mean (SD)	62.32 (10.94)	63.42 (10.34)	58.99 (9.91)	62.11 (11.00)	65.16 (10.13)	61.99 (10.88)	–
Age group	0 to 17	N (%)	19 (0.03%)	0 (0.00%)	0 (0.00%)	12 (0.10%)	<5	7 (0.02%)	–
	18 to 44	N (%)	4,076 (6.57%)	1,108 (4.79%)	43 (8.87%)	777 (6.55%)	93 (3.33%)	2,801 (6.85%)	–
	45 to 54	N (%)	9,550 (15.39%)	3,173 (13.73%)	112 (23.09%)	1,876 (15.81%)	304 (10.88%)	6,474 (15.82%)	–
	55 to 64	N (%)	20,024 (32.26%)	7,379 (31.93%)	182 (37.53%)	3,948 (33.28%)	838 (29.99%)	13,339 (32.60%)	–
	65+	N (%)	28,399 (45.75%)	11,450 (49.55%)	148 (30.52%)	5,251 (44.26%)	1,558 (55.76%)	18,297 (44.72%)	–
BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
		Mean (SD)	–	–	–	–	–	–	–

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
Comedication	Alpha glucosidase	N (%)	343 (0.55%)	102 (0.44%)	5 (1.03%)	133 (1.12%)	28 (1.00%)	158 (0.39%)	–
	Biguanides	N (%)	29,585 (47.67%)	11,931 (51.63%)	284 (58.56%)	6,606 (55.68%)	1,399 (50.07%)	20,392 (49.84%)	–
	Combinations	N (%)	31,551 (50.83%)	11,781 (50.98%)	146 (30.10%)	4,257 (35.88%)	1,120 (40.09%)	21,624 (52.85%)	–
	DPP4 inhibitors	N (%)	10,711 (17.26%)	3,542 (15.33%)	67 (13.81%)	1,834 (15.46%)	394 (14.10%)	5,998 (14.66%)	–
	Insulin	N (%)	19,484 (31.39%)	9,256 (40.05%)	101 (20.82%)	5,988 (50.47%)	1,812 (64.85%)	11,257 (27.51%)	–
	Other blood sugar-lowering medications	N (%)	2,337 (3.77%)	908 (3.93%)	21 (4.33%)	634 (5.34%)	162 (5.80%)	1,338 (3.27%)	–
	Other weight loss medications	N (%)	48 (0.08%)	9 (0.04%)	<5	15 (0.13%)	<5	30 (0.07%)	–
	SGLT2 inhibitors	N (%)	8,574 (13.81%)	3,212 (13.90%)	53 (10.93%)	1,106 (9.32%)	267 (9.56%)	6,792 (16.60%)	–
	Sulfonylureas	N (%)	18,423 (29.68%)	7,311 (31.64%)	195 (40.21%)	3,827 (32.26%)	832 (29.78%)	10,399 (25.41%)	–
	Thiazolidinediones	N (%)	7,858 (12.66%)	3,125 (13.52%)	56 (11.55%)	1,272 (10.72%)	337 (12.06%)	5,721 (13.98%)	–
Sex	Female	N (%)	29,618 (47.72%)	11,320 (48.98%)	248 (51.13%)	6,198 (52.24%)	1,569 (56.16%)	19,298 (47.16%)	–
	Male	N (%)	32,450 (52.28%)	11,790 (51.02%)	237 (48.87%)	5,666 (47.76%)	1,225 (43.84%)	21,620 (52.84%)	–
DK-DHR									
Age	–	Median [Q25 – Q75]	54 [43 - 63]	62 [53 - 70]	57 [48 - 66]	54 [44 - 63]	58 [51 - 66]	55 [44 - 64]	46 [40 - 60]
		Mean (SD)	53.12 (14.53)	61.24 (12.59)	56.91 (12.28)	53.02 (13.81)	59.11 (10.79)	53.80 (14.60)	48.80 (12.69)
Age group	0 to 17	N (%)	582 (0.19%)	0 (0.00%)	0 (0.00%)	130 (0.23%)	0 (0.00%)	489 (0.17%)	0 (0.00%)

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	18 to 44	N (%)	82,084 (26.81%)	514 (9.13%)	45 (15.68%)	14,386 (25.74%)	6 (7.50%)	73,617 (25.48%)	10 (40.00%)
	45 to 54	N (%)	75,811 (24.77%)	1,075 (19.10%)	72 (25.09%)	15,242 (27.27%)	22 (27.50%)	69,012 (23.89%)	<5
	55 to 64	N (%)	79,011 (25.81%)	1,648 (29.28%)	83 (28.92%)	14,204 (25.42%)	27 (33.75%)	76,125 (26.35%)	8 (32.00%)
	65+	N (%)	68,630 (22.42%)	2,391 (42.48%)	87 (30.31%)	11,921 (21.33%)	25 (31.25%)	69,638 (24.11%)	<5
BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
		Mean (SD)	–	–	–	–	–	–	–
Comedication	Alpha glucosidase	N (%)	9 (0.00%)	0 (0.00%)	0 (0.00%)	9 (0.02%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
	Biguanides	N (%)	93,133 (30.42%)	4,274 (75.94%)	200 (69.69%)	18,463 (33.04%)	59 (73.75%)	93,449 (32.35%)	<5
	Combinations	N (%)	26,065 (8.51%)	1,193 (21.20%)	58 (20.21%)	4,202 (7.52%)	10 (12.50%)	24,669 (8.54%)	0 (0.00%)
	DPP4 inhibitors	N (%)	18,511 (6.05%)	870 (15.46%)	61 (21.25%)	4,685 (8.38%)	14 (17.50%)	14,361 (4.97%)	0 (0.00%)
	Insulin	N (%)	27,996 (9.15%)	2,216 (39.37%)	108 (37.63%)	8,779 (15.71%)	57 (71.25%)	41,445 (14.35%)	<5
	Other blood sugar-lowering medications	N (%)	228 (0.07%)	13 (0.23%)	0 (0.00%)	78 (0.14%)	0 (0.00%)	187 (0.06%)	0 (0.00%)
	Other weight loss medications	N (%)	3,735 (1.22%)	28 (0.50%)	<5	1,612 (2.88%)	<5	2,657 (0.92%)	0 (0.00%)
	SGLT2 inhibitors	N (%)	42,546 (13.90%)	2,395 (42.56%)	76 (26.48%)	5,291 (9.47%)	18 (22.50%)	46,509 (16.10%)	0 (0.00%)
	Sulfonylureas	N (%)	12,283 (4.01%)	771 (13.70%)	66 (23.00%)	3,984 (7.13%)	10 (12.50%)	9,868 (3.42%)	0 (0.00%)
	Thiazolidinediones	N (%)	55 (0.02%)	8 (0.14%)	0 (0.00%)	11 (0.02%)	0 (0.00%)	79 (0.03%)	0 (0.00%)
Sex	Female	N (%)	184,130 (60.15%)	2,484 (44.14%)	127 (44.25%)	35,003 (62.64%)	39 (48.75%)	171,485 (59.36%)	10 (40.00%)
	Male	N (%)	121,988 (39.85%)	3,144 (55.86%)	160 (55.75%)	20,880 (37.36%)	41 (51.25%)	117,396 (40.64%)	15 (60.00%)
FinOMOP-THL									

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
Age	–	Median [Q25 – Q75]	58 [48 - 67]	63 [55 - 71]	63 [55 - 70]	58 [49 - 67]	64 [58 - 72]	57 [48 - 66]	–
		Mean (SD)	57.08 (13.24)	62.32 (12.04)	62.25 (11.20)	57.14 (13.27)	63.94 (9.96)	56.51 (13.19)	–
Age group	0 to 17	N (%)	255 (0.11%)	<5	<5	181 (0.25%)	0 (0.00%)	94 (0.05%)	–
	18 to 44	N (%)	42,027 (17.45%)	2,344 (8.25%)	788 (6.37%)	12,506 (17.10%)	8 (4.04%)	32,357 (18.57%)	–
	45 to 54	N (%)	53,514 (22.22%)	4,495 (15.82%)	2,142 (17.32%)	16,240 (22.21%)	33 (16.67%)	39,805 (22.84%)	–
	55 to 64	N (%)	71,069 (29.50%)	8,352 (29.40%)	3,885 (31.41%)	21,062 (28.80%)	58 (29.29%)	52,090 (29.89%)	–
	65+	N (%)	74,020 (30.73%)	13,216 (46.52%)	5,550 (44.88%)	23,137 (31.64%)	99 (50.00%)	49,914 (28.64%)	–
BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
		Mean (SD)	–	–	–	–	–	–	–
Comedication	Alpha glucosidase	N (%)	18 (0.01%)	<5	0 (0.00%)	11 (0.02%)	0 (0.00%)	10 (0.01%)	–
	Biguanides	N (%)	77,691 (32.25%)	14,030 (49.38%)	6,602 (53.38%)	22,922 (31.35%)	123 (62.12%)	54,568 (31.31%)	–
	Combinations	N (%)	50,779 (21.08%)	9,653 (33.98%)	2,993 (24.20%)	10,587 (14.48%)	48 (24.24%)	40,278 (23.11%)	–
	DPP4 inhibitors	N (%)	29,582 (12.28%)	5,388 (18.96%)	2,238 (18.10%)	7,583 (10.37%)	42 (21.21%)	20,596 (11.82%)	–
	Insulin	N (%)	46,693 (19.38%)	9,802 (34.50%)	4,304 (34.80%)	17,424 (23.83%)	130 (65.66%)	37,580 (21.57%)	–
	Other blood sugar-lowering medications	N (%)	786 (0.33%)	148 (0.52%)	107 (0.87%)	373 (0.51%)	7 (3.54%)	386 (0.22%)	–
	Other weight loss medications	N (%)	941 (0.39%)	39 (0.14%)	26 (0.21%)	469 (0.64%)	0 (0.00%)	590 (0.34%)	–
	SGLT2 inhibitors	N (%)	49,046 (20.36%)	9,228 (32.48%)	3,540 (28.62%)	12,313 (16.84%)	58 (29.29%)	35,267 (20.24%)	–
	Sulfonylureas	N (%)	2,466 (1.02%)	390 (1.37%)	410 (3.32%)	1,088 (1.49%)	8 (4.04%)	1,018 (0.58%)	–

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	Thiazolidinediones	N (%)	2,606 (1.08%)	547 (1.93%)	323 (2.61%)	1,036 (1.42%)	5 (2.53%)	1,566 (0.90%)	–
Sex	Female	N (%)	139,823 (58.05%)	14,238 (50.11%)	5,800 (46.90%)	44,314 (60.60%)	94 (47.47%)	102,888 (59.04%)	–
	Male	N (%)	101,062 (41.95%)	14,173 (49.89%)	6,567 (53.10%)	28,812 (39.40%)	104 (52.53%)	71,372 (40.96%)	–
InGef RDB									
Age	–	Median [Q25 – Q75]	59 [52 - 67]	60 [53 - 68]	61 [54 - 69]	59 [52 - 67]	–	59 [52 - 67]	59 [52 - 66]
		Mean (SD)	59.15 (11.84)	59.94 (11.68)	60.78 (11.52)	58.61 (11.92)	–	58.99 (11.53)	58.72 (11.40)
Age group	0 to 17	N (%)	104 (0.09%)	27 (0.05%)	0 (0.00%)	50 (0.28%)	0 (0.00%)	31 (0.04%)	<5
	18 to 44	N (%)	13,304 (10.90%)	4,772 (9.21%)	117 (8.51%)	1,937 (10.99%)	0 (0.00%)	7,405 (10.75%)	2,651 (11.19%)
	45 to 54	N (%)	26,393 (21.62%)	10,919 (21.08%)	257 (18.69%)	4,030 (22.87%)	0 (0.00%)	14,718 (21.36%)	4,917 (20.75%)
	55 to 64	N (%)	42,230 (34.60%)	17,928 (34.61%)	468 (34.04%)	6,009 (34.10%)	0 (0.00%)	24,475 (35.53%)	8,723 (36.81%)
	65+	N (%)	40,027 (32.79%)	18,147 (35.04%)	533 (38.76%)	5,594 (31.75%)	0 (0.00%)	22,266 (32.32%)	7,403 (31.24%)
BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
		Mean (SD)	–	–	–	–	–	–	–
Comedication	Alpha glucosidase	N (%)	228 (0.19%)	126 (0.24%)	8 (0.58%)	53 (0.30%)	–	108 (0.16%)	33 (0.14%)
	Biguanides	N (%)	74,273 (60.85%)	31,860 (61.51%)	902 (65.60%)	11,333 (64.32%)	–	44,174 (64.12%)	14,672 (61.91%)
	Combinations	N (%)	31,848 (26.09%)	14,260 (27.53%)	304 (22.11%)	4,066 (23.08%)	–	16,170 (23.47%)	5,093 (21.49%)
	DPP4 inhibitors	N (%)	27,641 (22.65%)	12,062 (23.29%)	235 (17.09%)	3,768 (21.38%)	–	12,520 (18.17%)	3,300 (13.93%)
	Insulin	N (%)	46,086 (37.76%)	20,896 (40.35%)	550 (40.00%)	9,001 (51.08%)	–	27,434 (39.82%)	9,412 (39.72%)

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	Other blood sugar-lowering medications	N (%)	434 (0.36%)	406 (0.78%)	7 (0.51%)	132 (0.75%)	–	731 (1.06%)	43 (0.18%)
	Other weight loss medications	N (%)	<5	<5	0 (0.00%)	0 (0.00%)	–	<5	0 (0.00%)
	SGLT2 inhibitors	N (%)	47,765 (39.13%)	20,003 (38.62%)	540 (39.27%)	5,962 (33.84%)	–	28,817 (41.83%)	11,079 (46.75%)
	Sulfonylureas	N (%)	7,534 (6.17%)	3,966 (7.66%)	100 (7.27%)	1,338 (7.59%)	–	3,327 (4.83%)	746 (3.15%)
	Thiazolidinediones	N (%)	50 (0.04%)	24 (0.05%)	0 (0.00%)	10 (0.06%)	–	33 (0.05%)	9 (0.04%)
Sex	Female	N (%)	51,420 (42.13%)	21,569 (41.64%)	592 (43.05%)	7,680 (43.59%)	–	29,689 (43.09%)	10,215 (43.10%)
	Male	N (%)	70,638 (57.87%)	30,224 (58.36%)	783 (56.95%)	9,940 (56.41%)	–	39,206 (56.91%)	13,483 (56.90%)
IQVIA DA Germany									
Age	–	Median [Q25 – Q75]	61.00 [52.00 - 69.00]	63.00 [55.00 - 71.00]	63.00 [55.00 - 70.00]	61.00 [53.00 - 69.00]	67.00 [59.00 - 74.00]	60.00 [51.00 - 68.00]	60.00 [50.00 - 67.00]
		Mean (SD)	60.02 (13.02)	62.13 (12.17)	62.40 (11.11)	60.24 (12.63)	65.78 (11.70)	59.05 (13.01)	58.40 (12.93)
Age group	0 to 17	N (%)	50 (0.06%)	7 (0.02%)	0 (0.00%)	19 (0.14%)	0 (0.00%)	27 (0.07%)	<5
	18 to 44	N (%)	10,187 (12.47%)	2,550 (8.06%)	65 (5.57%)	1,500 (10.99%)	113 (4.58%)	5,750 (14.00%)	1,971 (15.00%)
	45 to 54	N (%)	14,866 (18.20%)	5,284 (16.69%)	208 (17.82%)	2,584 (18.93%)	279 (11.31%)	7,863 (19.14%)	2,521 (19.19%)
	55 to 64	N (%)	25,016 (30.62%)	9,914 (31.32%)	395 (33.85%)	4,204 (30.80%)	660 (26.75%)	12,734 (31.00%)	4,231 (32.21%)
	65+	N (%)	31,574 (38.65%)	13,899 (43.91%)	499 (42.76%)	5,342 (39.14%)	1,415 (57.36%)	14,707 (35.80%)	4,411 (33.58%)
BMI	–	Median [Q25 – Q75]	33.58 [29.74 - 38.20]	33.72 [30.08 - 38.30]	34.49 [30.41 - 39.45]	34.01 [30.12 - 38.99]	32.51 [29.49 - 36.49]	33.74 [29.65 - 38.27]	34.14 [29.73 - 39.02]

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Mean (SD)	34.32 (6.53)	34.52 (6.47)	35.40 (6.86)	34.86 (6.78)	33.44 (6.12)	34.32 (6.54)	34.74 (7.06)
BMI group	27–29	N (%)	1,229 (1.50%)	497 (1.57%)	25 (2.14%)	309 (2.26%)	40 (1.62%)	528 (1.29%)	124 (0.94%)
	30–34	N (%)	2,765 (3.38%)	1,201 (3.79%)	57 (4.88%)	697 (5.11%)	90 (3.65%)	1,186 (2.89%)	263 (2.00%)
	35–39	N (%)	1,940 (2.37%)	824 (2.60%)	39 (3.34%)	538 (3.94%)	46 (1.86%)	882 (2.15%)	207 (1.58%)
	≤26	N (%)	996 (1.22%)	388 (1.23%)	11 (0.94%)	238 (1.74%)	27 (1.09%)	465 (1.13%)	114 (0.87%)
	≥40	N (%)	1,582 (1.94%)	697 (2.20%)	41 (3.51%)	479 (3.51%)	33 (1.34%)	708 (1.72%)	183 (1.39%)
Comedication	Alpha glucosidase	N (%)	165 (0.20%)	97 (0.31%)	14 (1.20%)	46 (0.34%)	8 (0.32%)	77 (0.19%)	21 (0.16%)
	Biguanides	N (%)	28,541 (34.94%)	12,823 (40.51%)	542 (46.44%)	5,344 (39.15%)	988 (40.05%)	15,803 (38.47%)	4,994 (38.01%)
	Combinations	N (%)	12,816 (15.69%)	6,155 (19.44%)	235 (20.14%)	1,872 (13.72%)	496 (20.11%)	5,837 (14.21%)	1,712 (13.03%)
	DPP4 inhibitors	N (%)	9,461 (11.58%)	4,509 (14.24%)	180 (15.42%)	1,529 (11.20%)	325 (13.17%)	3,574 (8.70%)	1,041 (7.92%)
	Insulin	N (%)	23,435 (28.69%)	11,007 (34.77%)	370 (31.71%)	5,343 (39.15%)	1,548 (62.75%)	12,208 (29.72%)	3,734 (28.42%)
	Other blood sugar-lowering medications	N (%)	362 (0.44%)	306 (0.97%)	16 (1.37%)	126 (0.92%)	13 (0.53%)	514 (1.25%)	45 (0.34%)
	Other weight loss medications	N (%)	367 (0.45%)	125 (0.39%)	<5	89 (0.65%)	0 (0.00%)	196 (0.48%)	23 (0.18%)
	SGLT2 inhibitors	N (%)	19,799 (24.24%)	8,920 (28.18%)	283 (24.25%)	2,863 (20.98%)	823 (33.36%)	11,001 (26.78%)	4,206 (32.02%)
	Sulfonylureas	N (%)	2,712 (3.32%)	1,506 (4.76%)	90 (7.71%)	573 (4.20%)	118 (4.78%)	942 (2.29%)	243 (1.85%)
	Thiazolidinediones	N (%)	121 (0.15%)	57 (0.18%)	11 (0.94%)	27 (0.20%)	6 (0.24%)	74 (0.18%)	27 (0.21%)
Sex	Female	N (%)	39,946 (48.90%)	14,635 (46.23%)	532 (45.59%)	6,835 (50.08%)	1,128 (45.72%)	20,507 (49.92%)	6,434 (48.98%)
	Male	N (%)	41,747 (51.10%)	17,019 (53.77%)	635 (54.41%)	6,814 (49.92%)	1,339 (54.28%)	20,574 (50.08%)	6,703 (51.02%)

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
IPCI									
Age	–	Median [Q25 – Q75]	59 [51 - 68]	62 [54 - 69]	61 [55 - 67]	55 [45 - 63]	63 [56 - 70]	61 [53 - 69]	57 [47 - 65]
		Mean (SD)	58.50 (12.63)	61.25 (10.53)	60.79 (8.70)	53.76 (13.34)	62.64 (10.59)	60.56 (11.78)	54.98 (13.05)
Age group	0 to 17	N (%)	25 (0.14%)	<5	0 (0.00%)	18 (0.35%)	0 (0.00%)	7 (0.05%)	<5
	18 to 44	N (%)	2,422 (13.21%)	100 (6.45%)	<5	1,204 (23.32%)	9 (6.43%)	1,228 (9.01%)	173 (21.20%)
	45 to 54	N (%)	3,891 (21.23%)	297 (19.15%)	10 (18.87%)	1,337 (25.89%)	19 (13.57%)	2,618 (19.20%)	170 (20.83%)
	55 to 64	N (%)	5,795 (31.61%)	527 (33.98%)	24 (45.28%)	1,465 (28.37%)	49 (35.00%)	4,472 (32.80%)	265 (32.48%)
	65+	N (%)	6,199 (33.82%)	626 (40.36%)	18 (33.96%)	1,140 (22.08%)	63 (45.00%)	5,309 (38.94%)	207 (25.37%)
BMI	–	Median [Q25 – Q75]	34.79 [31.20 - 38.81]	34.20 [31.20 - 38.10]	36.40 [32.15 - 40.20]	36.80 [33.80 - 40.84]	34.10 [31.10 - 37.95]	33.80 [30.70 - 37.62]	34.82 [31.50 - 38.90]
		Mean (SD)	35.39 (5.80)	35.12 (5.53)	36.48 (5.96)	37.48 (5.73)	34.88 (5.23)	34.56 (5.66)	35.78 (6.13)
BMI group	27–29	N (%)	1,476 (8.05%)	135 (8.70%)	<5	224 (4.34%)	13 (9.29%)	1,351 (9.91%)	73 (8.95%)
	30–34	N (%)	6,051 (33.01%)	559 (36.04%)	16 (30.19%)	1,104 (21.38%)	56 (40.00%)	5,065 (37.15%)	251 (30.76%)
	35–39	N (%)	4,604 (25.11%)	363 (23.40%)	13 (24.53%)	1,589 (30.77%)	29 (20.71%)	3,093 (22.69%)	185 (22.67%)
	≤26	N (%)	762 (4.16%)	41 (2.64%)	<5	84 (1.63%)	<5	720 (5.28%)	21 (2.57%)
	≥40	N (%)	3,277 (17.88%)	234 (15.09%)	12 (22.64%)	1,380 (26.72%)	25 (17.86%)	1,921 (14.09%)	143 (17.52%)
Comedication	Alpha glucosidase	N (%)	22 (0.12%)	<5	<5	6 (0.12%)	<5	15 (0.11%)	0 (0.00%)
	Biguanides	N (%)	11,557 (63.04%)	1,301 (83.88%)	41 (77.36%)	1,592 (30.83%)	109 (77.86%)	10,298 (75.53%)	409 (50.12%)
	Combinations	N (%)	308 (1.68%)	27 (1.74%)	<5	30 (0.58%)	<5	272 (2.00%)	<5
	DPP4 inhibitors	N (%)	1,322 (7.21%)	192 (12.38%)	6 (11.32%)	159 (3.08%)	6 (4.29%)	1,051 (7.71%)	6 (0.74%)
	Insulin	N (%)	4,079 (22.25%)	613 (39.52%)	21 (39.62%)	755 (14.62%)	86 (61.43%)	3,553 (26.06%)	186 (22.79%)

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	Other blood sugar-lowering medications	N (%)	12 (0.07%)	0 (0.00%)	<5	10 (0.19%)	<5	23 (0.17%)	0 (0.00%)
	Other weight loss medications	N (%)	10 (0.05%)	0 (0.00%)	0 (0.00%)	5 (0.10%)	0 (0.00%)	7 (0.05%)	0 (0.00%)
	SGLT2 inhibitors	N (%)	2,829 (15.43%)	200 (12.89%)	<5	249 (4.82%)	8 (5.71%)	2,709 (19.87%)	122 (14.95%)
	Sulfonylureas	N (%)	8,669 (47.29%)	945 (60.93%)	31 (58.49%)	1,056 (20.45%)	59 (42.14%)	7,770 (56.99%)	274 (33.58%)
	Thiazolidinediones	N (%)	65 (0.35%)	8 (0.52%)	0 (0.00%)	22 (0.43%)	0 (0.00%)	46 (0.34%)	<5
Sex	Female	N (%)	10,290 (56.13%)	825 (53.19%)	27 (50.94%)	3,582 (69.36%)	70 (50.00%)	7,031 (51.57%)	479 (58.70%)
	Male	N (%)	8,042 (43.87%)	726 (46.81%)	26 (49.06%)	1,582 (30.64%)	70 (50.00%)	6,603 (48.43%)	337 (41.30%)
NLHR									
Age	–	Median [Q25 – Q75]	52 [42 - 62]	62 [53 - 71]	60 [53 - 68]	50 [38 - 59]	66 [56 - 73]	53 [43 - 62]	–
		Mean (SD)	51.56 (14.46)	61.71 (12.68)	60.13 (11.51)	49.08 (14.77)	63.45 (12.02)	52.54 (14.06)	–
Age group	0 to 17	N (%)	1,039 (0.50%)	<5	0 (0.00%)	665 (1.10%)	0 (0.00%)	463 (0.27%)	–
	18 to 44	N (%)	62,630 (30.09%)	612 (9.01%)	45 (9.13%)	21,736 (35.80%)	22 (8.15%)	47,572 (27.52%)	–
	45 to 54	N (%)	54,780 (26.32%)	1,276 (18.78%)	97 (19.68%)	16,465 (27.12%)	39 (14.44%)	45,460 (26.30%)	–
	55 to 64	N (%)	49,236 (23.66%)	1,969 (28.98%)	166 (33.67%)	12,498 (20.59%)	70 (25.93%)	43,582 (25.21%)	–
	65+	N (%)	40,429 (19.43%)	2,934 (43.18%)	185 (37.53%)	9,345 (15.39%)	139 (51.48%)	35,768 (20.69%)	–
BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
		Mean (SD)	–	–	–	–	–	–	–
Comedication	Alpha glucosidase	N (%)	123 (0.06%)	14 (0.21%)	<5	53 (0.09%)	<5	93 (0.05%)	–

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	Biguanides	N (%)	51,298 (24.65%)	4,233 (62.30%)	328 (66.53%)	10,088 (16.62%)	165 (61.11%)	49,329 (28.54%)	–
	Combinations	N (%)	16,435 (7.90%)	1,842 (27.11%)	166 (33.67%)	3,277 (5.40%)	80 (29.63%)	14,277 (8.26%)	–
	DPP4 inhibitors	N (%)	13,944 (6.70%)	1,515 (22.30%)	125 (25.35%)	3,181 (5.24%)	51 (18.89%)	11,159 (6.46%)	–
	Insulin	N (%)	16,132 (7.75%)	1,254 (18.45%)	93 (18.86%)	5,531 (9.11%)	165 (61.11%)	17,005 (9.84%)	–
	Other blood sugar-lowering medications	N (%)	45 (0.02%)	11 (0.16%)	<5	20 (0.03%)	0 (0.00%)	44 (0.03%)	–
	Other weight loss medications	N (%)	2,263 (1.09%)	28 (0.41%)	<5	1,000 (1.65%)	<5	1,555 (0.90%)	–
	SGLT2 inhibitors	N (%)	23,198 (11.15%)	2,554 (37.59%)	236 (47.87%)	4,605 (7.59%)	107 (39.63%)	22,836 (13.21%)	–
	Sulfonylureas	N (%)	9,588 (4.61%)	1,187 (17.47%)	126 (25.56%)	2,459 (4.05%)	51 (18.89%)	8,253 (4.77%)	–
	Thiazolidinediones	N (%)	540 (0.26%)	85 (1.25%)	10 (2.03%)	167 (0.28%)	<5	549 (0.32%)	–
Sex	Female	N (%)	128,271 (61.63%)	2,844 (41.85%)	203 (41.18%)	40,304 (66.39%)	108 (40.00%)	104,426 (60.42%)	–
	Male	N (%)	79,843 (38.37%)	3,951 (58.15%)	290 (58.82%)	20,405 (33.61%)	162 (60.00%)	68,419 (39.58%)	–
SIDIAP									
Age	–	Median [Q25 – Q75]	59 [50 - 67]	62 [54 - 70]	59 [52 - 67]	57 [48 - 65]	62 [54 - 69]	59 [51 - 67]	–
		Mean (SD)	58.17 (12.60)	61.37 (11.51)	58.64 (11.15)	55.63 (12.94)	61.24 (10.88)	58.44 (12.31)	–
Age group	0 to 17	N (%)	136 (0.23%)	<5	<5	111 (0.55%)	0 (0.00%)	33 (0.12%)	–
	18 to 44	N (%)	8,034 (13.53%)	1,983 (7.95%)	217 (10.45%)	3,614 (17.82%)	61 (7.05%)	3,383 (12.77%)	–
	45 to 54	N (%)	13,284 (22.38%)	4,580 (18.35%)	481 (23.17%)	5,139 (25.35%)	162 (18.73%)	5,824 (21.99%)	–
	55 to 64	N (%)	18,331 (30.88%)	7,884 (31.59%)	705 (33.96%)	6,206 (30.61%)	287 (33.18%)	8,373 (31.62%)	–
	65+	N (%)	19,579 (32.98%)	10,509 (42.11%)	672 (32.37%)	5,205 (25.67%)	355 (41.04%)	8,869 (33.49%)	–

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
BMI	–	Median [Q25 – Q75]	35.63 [32.05 - 40.16]	34.72 [31.53 - 38.81]	35.75 [32.25 - 40.12]	36.84 [32.89 - 41.50]	34.78 [31.55 - 39.21]	35.49 [31.98 - 39.97]	–
		Mean (SD)	36.55 (6.20)	35.66 (5.81)	36.68 (6.21)	37.60 (6.46)	35.73 (6.02)	36.37 (6.18)	–
BMI group	27–29	N (%)	4,557 (7.68%)	2,346 (9.40%)	164 (7.90%)	1,251 (6.17%)	78 (9.02%)	2,171 (8.20%)	–
	30–34	N (%)	18,832 (31.72%)	9,405 (37.68%)	659 (31.74%)	5,413 (26.70%)	317 (36.65%)	8,328 (31.45%)	–
	35–39	N (%)	15,751 (26.53%)	6,732 (26.97%)	595 (28.66%)	5,513 (27.19%)	228 (26.36%)	6,921 (26.13%)	–
	≤26	N (%)	1,599 (2.69%)	702 (2.81%)	45 (2.17%)	448 (2.21%)	38 (4.39%)	799 (3.02%)	–
	≥40	N (%)	14,203 (23.93%)	4,857 (19.46%)	507 (24.42%)	5,993 (29.56%)	175 (20.23%)	6,054 (22.86%)	–
Comedication	Alpha glucosidase	N (%)	85 (0.14%)	19 (0.08%)	7 (0.34%)	48 (0.24%)	<5	24 (0.09%)	–
	Biguanides	N (%)	21,463 (36.15%)	11,311 (45.32%)	1,105 (53.23%)	6,623 (32.67%)	477 (55.14%)	9,661 (36.48%)	–
	Combinations	N (%)	16,049 (27.03%)	9,340 (37.42%)	678 (32.66%)	3,808 (18.78%)	241 (27.86%)	6,718 (25.37%)	–
	DPP4 inhibitors	N (%)	7,533 (12.69%)	3,891 (15.59%)	276 (13.29%)	1,806 (8.91%)	115 (13.29%)	2,367 (8.94%)	–
	Insulin	N (%)	19,493 (32.84%)	11,062 (44.32%)	972 (46.82%)	6,137 (30.27%)	574 (66.36%)	8,511 (32.14%)	–
	Other blood sugar-lowering medications	N (%)	3,328 (5.61%)	1,805 (7.23%)	169 (8.14%)	1,042 (5.14%)	107 (12.37%)	1,275 (4.81%)	–
	Other weight loss medications	N (%)	13 (0.02%)	<5	0 (0.00%)	11 (0.05%)	0 (0.00%)	<5	–
	SGLT2 inhibitors	N (%)	11,508 (19.39%)	6,890 (27.61%)	343 (16.52%)	2,506 (12.36%)	154 (17.80%)	6,183 (23.35%)	–
	Sulfonylureas	N (%)	9,196 (15.49%)	5,015 (20.09%)	661 (31.84%)	2,690 (13.27%)	200 (23.12%)	2,905 (10.97%)	–
	Thiazolidinediones	N (%)	1,093 (1.84%)	639 (2.56%)	64 (3.08%)	324 (1.60%)	26 (3.01%)	629 (2.38%)	–
Sex	Female	N (%)	32,302 (54.41%)	12,198 (48.87%)	1,039 (50.05%)	12,399 (61.15%)	440 (50.87%)	14,346 (54.17%)	–
	Male	N (%)	27,062 (45.59%)	12,760 (51.13%)	1,037 (49.95%)	7,876 (38.85%)	425 (49.13%)	12,136 (45.83%)	–

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
HI-SPEED									
Age	–	Median [Q25 – Q75]	56 [45 - 67]	61 [51 - 70]	60 [52 - 69]	53 [40 - 63]	64 [55 - 72]	58 [48 - 68]	–
		Mean (SD)	55.51 (14.97)	59.74 (14.00)	59.61 (12.95)	51.85 (15.54)	62.86 (12.17)	57.33 (14.39)	–
Age group	0 to 17	N (%)	1,583 (0.51%)	84 (0.17%)	<5	1,122 (1.41%)	<5	518 (0.20%)	–
	18 to 44	N (%)	71,819 (23.29%)	7,251 (14.74%)	18 (11.11%)	24,679 (30.91%)	95 (7.51%)	50,684 (19.38%)	–
	45 to 54	N (%)	64,865 (21.03%)	8,924 (18.15%)	35 (21.60%)	17,822 (22.32%)	192 (15.18%)	52,532 (20.08%)	–
	55 to 64	N (%)	77,951 (25.28%)	13,127 (26.69%)	49 (30.25%)	18,208 (22.80%)	357 (28.22%)	69,381 (26.52%)	–
	65+	N (%)	92,160 (29.89%)	19,794 (40.25%)	59 (36.42%)	18,013 (22.56%)	620 (49.01%)	88,457 (33.82%)	–
BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
		Mean (SD)	–	–	–	–	–	–	–
Comedication	Alpha glucosidase	N (%)	365 (0.12%)	85 (0.17%)	<5	157 (0.20%)	<5	323 (0.12%)	–
	Biguanides	N (%)	147,866 (47.95%)	30,948 (62.93%)	114 (70.37%)	24,145 (30.24%)	929 (73.44%)	144,238 (55.14%)	–
	Combinations	N (%)	167,730 (54.39%)	35,772 (72.74%)	130 (80.25%)	27,611 (34.58%)	1,080 (85.38%)	163,988 (62.69%)	–
	DPP4 inhibitors	N (%)	44,582 (14.46%)	7,464 (15.18%)	41 (25.31%)	6,514 (8.16%)	297 (23.48%)	37,168 (14.21%)	–
	Insulin	N (%)	56,353 (18.27%)	14,785 (30.06%)	55 (33.95%)	13,873 (17.38%)	965 (76.28%)	58,997 (22.55%)	–
	Other blood sugar-lowering medications	N (%)	5,974 (1.94%)	1,400 (2.85%)	9 (5.56%)	989 (1.24%)	84 (6.64%)	5,761 (2.20%)	–
	Other weight loss medications	N (%)	8,661 (2.81%)	617 (1.25%)	<5	5,017 (6.28%)	12 (0.95%)	4,757 (1.82%)	–
	SGLT2 inhibitors	N (%)	71,091 (23.05%)	18,157 (36.92%)	56 (34.57%)	9,357 (11.72%)	441 (34.86%)	74,499 (28.48%)	–

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	Sulfonylureas	N (%)	13,477 (4.37%)	2,433 (4.95%)	25 (15.43%)	2,702 (3.38%)	155 (12.25%)	11,950 (4.57%)	–
	Thiazolidinediones	N (%)	3,043 (0.99%)	980 (1.99%)	<5	421 (0.53%)	35 (2.77%)	3,352 (1.28%)	–
Sex	Female	N (%)	168,403 (54.61%)	23,602 (47.99%)	69 (42.59%)	51,333 (64.29%)	519 (41.03%)	134,479 (51.41%)	–
	Male	N (%)	139,975 (45.39%)	25,578 (52.01%)	93 (57.41%)	28,511 (35.71%)	746 (58.97%)	127,093 (48.59%)	–
CPRD Aurum									
Age	–	Median [Q25 – Q75]	53 [42 - 62]	60 [52 - 67]	60 [53 - 68]	56 [47 - 64]	58 [50 - 66]	58 [49 - 66]	49 [38 - 59]
		Mean (SD)	51.87 (13.72)	59.24 (11.52)	59.83 (11.23)	55.13 (12.88)	57.72 (11.09)	56.66 (12.86)	48.75 (13.47)
Age group	0 to 17	N (%)	398 (0.12%)	32 (0.06%)	–	195 (0.56%)	–	156 (0.14%)	43 (0.02%)
	18 to 44	N (%)	102,649 (30.42%)	5,853 (10.12%)	–	6,754 (19.28%)	–	19,229 (17.52%)	78,081 (39.51%)
	45 to 54	N (%)	81,902 (24.27%)	12,835 (22.18%)	–	8,846 (25.25%)	–	25,073 (22.84%)	48,135 (24.35%)
	55 to 64	N (%)	89,325 (26.47%)	19,836 (34.28%)	–	10,556 (30.14%)	–	34,118 (31.09%)	46,327 (23.44%)
	65+	N (%)	63,150 (18.72%)	19,304 (33.36%)	–	8,676 (24.77%)	–	31,181 (28.41%)	25,057 (12.68%)
BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
		Mean (SD)	–	–	–	–	–	–	–
Comedication	Alpha glucosidase	N (%)	218 (0.06%)	74 (0.13%)	7 (0.14%)	69 (0.20%)	10 (0.24%)	85 (0.08%)	47 (0.02%)
	Biguanides	N (%)	149,118 (44.19%)	48,754 (84.26%)	4,383 (86.47%)	24,091 (68.78%)	3,759 (88.66%)	72,901 (66.42%)	51,144 (25.88%)
	Combinations	N (%)	4,960 (1.47%)	1,858 (3.21%)	79 (1.56%)	720 (2.06%)	98 (2.31%)	2,267 (2.07%)	1,157 (0.59%)

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	DPP4 inhibitors	N (%)	57,529 (17.05%)	18,716 (32.35%)	1,230 (24.27%)	10,010 (28.58%)	1,682 (39.67%)	23,915 (21.79%)	10,969 (5.55%)
	Insulin	N (%)	41,162 (12.20%)	16,402 (28.35%)	1,343 (26.49%)	9,401 (26.84%)	1,137 (26.82%)	19,984 (18.21%)	16,068 (8.13%)
	Other blood sugar-lowering medications	N (%)	407 (0.12%)	169 (0.29%)	15 (0.30%)	123 (0.35%)	15 (0.35%)	203 (0.18%)	93 (0.05%)
	Other weight loss medications	N (%)	11,484 (3.40%)	1,097 (1.90%)	149 (2.94%)	1,444 (4.12%)	125 (2.95%)	2,891 (2.63%)	7,220 (3.65%)
	SGLT2 inhibitors	N (%)	80,183 (23.76%)	24,886 (43.01%)	1,791 (35.33%)	8,628 (24.63%)	962 (22.69%)	44,142 (40.22%)	33,322 (16.86%)
	Sulfonylureas	N (%)	58,842 (17.44%)	21,310 (36.83%)	2,080 (41.03%)	12,036 (34.36%)	2,305 (54.36%)	26,571 (24.21%)	15,039 (7.61%)
	Thiazolidinediones	N (%)	6,929 (2.05%)	2,738 (4.73%)	301 (5.94%)	1,492 (4.26%)	334 (7.88%)	2,865 (2.61%)	1,620 (0.82%)
Sex	Female	N (%)	216,823 (64.26%)	28,258 (48.84%)	2,504 (49.40%)	20,223 (57.74%)	2,196 (51.79%)	60,752 (55.35%)	142,035 (71.86%)
	Male	N (%)	120,601 (35.74%)	29,602 (51.16%)	2,565 (50.60%)	14,804 (42.26%)	2,044 (48.21%)	49,005 (44.65%)	55,608 (28.14%)
CPRD GOLD									
Age	–	Median [Q25 – Q75]	59 [51 - 67]	60 [53 - 68]	58 [51 - 65]	57 [48 - 65]	58 [51 - 66]	61 [52 - 68]	–
		Mean (SD)	58.60 (12.23)	59.82 (11.58)	57.59 (10.99)	56.00 (12.54)	57.90 (11.11)	59.69 (12.01)	–
Age group	0 to 17	N (%)	35 (0.10%)	6 (0.05%)	<5	19 (0.22%)	0 (0.00%)	12 (0.05%)	–
	18 to 44	N (%)	4,664 (12.89%)	1,108 (9.55%)	211 (11.50%)	1,476 (17.44%)	102 (10.73%)	2,551 (11.47%)	–
	45 to 54	N (%)	7,845 (21.69%)	2,496 (21.52%)	480 (26.16%)	2,061 (24.35%)	265 (27.87%)	4,268 (19.18%)	–

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	55 to 64	N (%)	11,545 (31.91%)	3,795 (32.72%)	649 (35.37%)	2,682 (31.69%)	304 (31.97%)	7,310 (32.86%)	–
	65+	N (%)	12,088 (33.41%)	4,195 (36.16%)	494 (26.92%)	2,226 (26.30%)	280 (29.44%)	8,108 (36.44%)	–
BMI	–	Median [Q25 – Q75]	35.20 [31.30 - 40.30]	35.10 [31.20 - 40.00]	36.30 [32.30 - 41.40]	36.10 [32.10 - 41.10]	36.50 [32.70 - 41.20]	34.80 [30.80 - 40.00]	–
		Mean (SD)	36.36 (7.09)	36.18 (6.91)	37.34 (6.90)	37.11 (7.04)	37.67 (6.89)	36.01 (7.16)	–
BMI group	27–29	N (%)	3,988 (11.02%)	1,311 (11.30%)	148 (8.07%)	764 (9.03%)	71 (7.47%)	2,751 (12.36%)	–
	30–34	N (%)	10,839 (29.96%)	3,614 (31.16%)	530 (28.88%)	2,374 (28.05%)	283 (29.76%)	6,714 (30.18%)	–
	35–39	N (%)	8,771 (24.24%)	2,911 (25.09%)	524 (28.56%)	2,173 (25.67%)	279 (29.34%)	5,100 (22.92%)	–
	≤26	N (%)	1,889 (5.22%)	598 (5.16%)	62 (3.38%)	311 (3.67%)	21 (2.21%)	1,387 (6.23%)	–
	≥40	N (%)	9,220 (25.49%)	2,849 (24.56%)	537 (29.26%)	2,370 (28.00%)	287 (30.18%)	5,419 (24.36%)	–
Comedication	Alpha glucosidase	N (%)	34 (0.09%)	16 (0.14%)	<5	11 (0.13%)	<5	16 (0.07%)	–
	Biguanides	N (%)	28,625 (79.12%)	9,636 (83.07%)	1,569 (85.50%)	6,041 (71.37%)	815 (85.70%)	17,943 (80.65%)	–
	Combinations	N (%)	868 (2.40%)	268 (2.31%)	48 (2.62%)	182 (2.15%)	16 (1.68%)	463 (2.08%)	–
	DPP4 inhibitors	N (%)	12,090 (33.42%)	3,784 (32.62%)	674 (36.73%)	2,691 (31.79%)	380 (39.96%)	5,746 (25.83%)	–
	Insulin	N (%)	7,222 (19.96%)	3,012 (25.97%)	431 (23.49%)	2,144 (25.33%)	246 (25.87%)	4,404 (19.79%)	–
	Other blood sugar-lowering medications	N (%)	61 (0.17%)	27 (0.23%)	8 (0.44%)	25 (0.30%)	<5	11 (0.05%)	–
	Other weight loss medications	N (%)	635 (1.76%)	158 (1.36%)	56 (3.05%)	248 (2.93%)	26 (2.73%)	268 (1.20%)	–
	SGLT2 inhibitors	N (%)	17,423 (48.16%)	5,645 (48.66%)	621 (33.84%)	2,564 (30.29%)	195 (20.50%)	12,708 (57.12%)	–
	Sulfonylureas	N (%)	13,666 (37.78%)	4,730 (40.78%)	936 (51.01%)	3,643 (43.04%)	514 (54.05%)	7,361 (33.08%)	–
	Thiazolidinediones	N (%)	1,766 (4.88%)	668 (5.76%)	147 (8.01%)	476 (5.62%)	85 (8.94%)	836 (3.76%)	–

Variable name	Variable level	Estimate name	New users of GLP-1						
			GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
Sex	Female	N (%)	18,130 (50.11%)	5,601 (48.28%)	910 (49.59%)	4,780 (56.47%)	496 (52.16%)	10,886 (48.93%)	–
	Male	N (%)	18,047 (49.89%)	5,999 (51.72%)	925 (50.41%)	3,684 (43.53%)	455 (47.84%)	11,363 (51.07%)	–

GLP-1 RA class includes use of any GLP-1 RA ingredient.
The percentages of new GLP-1 RA users across BMI groups sum to less than 100%. The difference represents users who had no available on body mass index data, like is presented in Figure S1 for the GLP-1 RA class users.
– = not applicable; BMI = Body mass index; Combinations = ATC group A10BD – combinations of oral blood glucose lowering drugs; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; DPP-4 inhibitors = Dipeptidyl Peptidase 4 inhibitors; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS=Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SGLT2 inhibitors = Sodium-Glucose co-Transporter 2 inhibitors; SIDIAP=The Information System for Research in Primary Care.

Table 10. Initial and cumulative dose by GLP-1 RA ingredient and per data source in the overall study period.

Variable name	Estimate name	IQVIA LPD Belgium	NAJS	DK-DHR	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
Dulaglutide												
number records	N	1,782	23,110	5,628	51,793	31,654	1,551	6,795	24,958	49,180	57,860	11,600
number subjects	N	1,569	21,537	5,461	47,689	29,046	1,461	6,657	23,856	48,027	55,556	11,007
cumulative dose milligram	Median (Q25 – Q75)	18.00 (6.00 - 36.00)	90.00 (18.00 - 315.00)	–	–	45.00 (18.00 - 162.00)	60.90 (16.73 - 174.00)	–	1,329.75 (451.50 - 2,904.00)	–	120.00 (30.00 - 290.36)	84.00 (24.00 - 192.78)
initial daily dose milligram	Median (Q25 – Q75)	3.00 (0.86 - 6.00)	0.10 (0.10 - 0.10)	–	–	0.16 (0.16 - 0.16)	0.21 (0.13 - 0.26)	–	3.00 (1.50 - 3.00)	–	0.21 (0.11 - 0.21)	0.21 (0.11 - 0.21)
Exenatide												
number records	N	206	485	287	1,375	1,167	53	493	2,076	162	5,069	1,835
number subjects	N	190	471	280	1,330	1,107	52	482	2,037	160	4,874	1,787

Variable name	Estimate name	IQVIA LPD Belgium	NAJS	DK-DHR	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
cumulative dose milligram	Median (Q25 – Q75)	16.00 (8.00 - 32.00)	24.00 (7.25 - 120.00)	32.00 (8.00 - 144.00)	–	8.00 (1.80 - 48.00)	48.00 (9.60 - 168.00)	279.72 (55.94 - 1,006.99)	689.00 (180.00 - 2,023.00)	24.00 (8.00 - 80.00)	32.00 (8.00 - 136.00)	61.43 (16.00 - 176.00)
initial daily dose milligram	Median (Q25 – Q75)	2.00 (1.14 - 8.00)	0.27 (0.01 - 0.27)	0.30 (0.30 - 0.30)	–	0.29 (0.02 - 0.29)	0.29 (0.29 - 0.29)	2.00 (2.00 - 2.00)	2.00 (2.00 - 2.00)	0.29 (0.29 - 0.57)	0.29 (0.29 - 0.29)	0.29 (0.29 - 0.29)
Liraglutide												
number records	N	1,501	11,864	55,883	17,620	13,649	5,164	60,709	20,275	79,844	35,027	8,464
number subjects	N	1,320	10,847	52,203	16,001	12,475	4,896	59,663	19,226	75,379	33,525	8,114
cumulative dose milligram	Median (Q25 – Q75)	108.00 (90.00 - 216.00)	144.00 (36.00 - 378.00)	0.00 (0.00 - 90.00)	–	180.00 (90.00 - 468.00)	193.35 (72.00 - 612.00)	2,495.34 (720.00 - 4,320.00)	1,944.00 (366.00 - 6,097.20)	270.00 (90.00 - 540.00)	270.00 (54.00 - 954.00)	324.00 (90.00 - 981.90)
initial daily dose milligram	Median (Q25 – Q75)	12.86 (6.00 - 54.00)	0.40 (0.36 - 0.40)	0.00 (0.00 - 1.50)	–	1.50 (1.50 - 1.80)	1.00 (0.60 - 2.57)	5.90 (5.90 - 5.90)	6.00 (6.00 - 7.20)	7.71 (3.38 - 8.18)	1.29 (1.29 - 1.93)	18.00 (1.50 - 27.00)
Lixisenatide												
number records	N	124	2,794	80	–	2,467	140	270	865	1,265	4,240	951
number subjects	N	114	2,623	79	–	2,351	124	269	857	1,251	4,168	938
cumulative dose milligram	Median (Q25 – Q75)	1.50 (0.56 - 3.36)	0.75 (0.20 - 2.25)	–	–	0.00 (0.00 - 0.00)	1.37 (0.45 - 7.07)	14.89 (3.75 - 66.15)	–	–	4.80 (1.50 - 12.19)	4.20 (1.65 - 10.95)
initial daily dose milligram	Median (Q25 – Q75)	0.02 (0.02 - 0.05)	0.00 (0.00 - 0.00)	–	–	0.00 (0.00 - 0.00)	0.01 (0.00 - 0.03)	0.03 (0.02 - 0.05)	–	–	0.02 (0.01 - 0.03)	0.02 (0.01 - 0.02)
Semaglutide												
number records	N	5,665	40,918	288,881	68,895	41,081	13,634	172,845	26,482	261,572	109,757	22,249
number subjects	N	5,112	38,457	279,823	65,070	38,802	12,967	169,433	25,461	246,365	105,871	21,335
cumulative dose milligram	Median (Q25 – Q75)	–	33.75 (2.93 - 1,331.90)	0.00 (0.00 - 0.00)	–	2.50 (1.00 - 6.49)	90.00 (6.39 - 1,260.00)	0.00 (0.00 - 16.03)	168.25 (49.00 - 460.94)	0.00 (0.00 - 720.00)	90.00 (6.03 - 690.00)	39.55 (10.52 - 98.49)
initial daily dose milligram	Median (Q25 – Q75)	–	0.03 (0.01 - 7.00)	0.00 (0.00 - 0.00)	–	0.03 (0.02 - 0.05)	0.14 (0.04 - 3.00)	0.00 (0.00 - 0.23)	0.50 (0.25 - 1.00)	0.00 (0.00 - 2.90)	0.14 (0.07 - 3.21)	0.29 (0.10 - 3.00)

Variable name	Estimate name	IQVIA LPD Belgium	NAJS	DK-DHR	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
Tirzepatide												
number records	N	–	–	25	23,698	13,137	816	–	–	–	197,643	–
number subjects	N	–	–	25	23,673	13,120	816	–	–	–	197,601	–
cumulative dose milligram	Median (Q25 – Q75)	–	–	–	–	0.00 (0.00 - 20.00)	0.00 (0.00 - 2.50)	–	–	–	2.00 (0.00 - 45.00)	–
initial daily dose milligram	Median (Q25 – Q75)	–	–	–	–	0.00 (0.00 - 1.25)	0.00 (0.00 - 0.06)	–	–	–	0.04 (0.00 - 0.36)	–

Results for FinOMOP-THL are not reported because dose information is expected to be incorrect given that the duration of treatment episodes is not correctly captured in the data source. Similarly, a substantial proportion of records were mapped at ingredient level in NAJS (i.e. high proportion of records do not contain information on dose/duration), which limits its interpretation in the drug utilisation analyses. In CPRD Aurum, exenatide and lixisenatide results were masked in accordance with minimum cell count disclosure rules of the data source.
Cells reporting an initial or cumulative dose of 0 reflect a large proportion of records with missing dose information, which are included as 0 in the sum used to calculate the initial or cumulative dose.
– = not applicable; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; DPP-4 inhibitors = Dipeptidyl Peptidase 4 inhibitors; FinOMOP-THL = Finnish Care Register for Health Care; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

10.2.4. Objective 3 – Time-to-switch (discontinuation) within GLP-1 RA switching of ingredients

Table 11 summarises the time (days) from the first ever GLP-1 RA (class or ingredient) prescription to discontinuation (or to switch to a different drug other than a GLP-1 RA). Follow-up is limited to one year (i.e. the first year since the first prescription). For FinOMOP-THL, treatment duration for each prescription was unavailable and imputed to 30 days. Thus, discontinuation could not be evaluated in FinOMOP-THL.

Overall, the average time-on-treatment (i.e. restricted mean survival [RMS] (days)) of the first GLP-1 RA treatment episode was estimated separately for the time period of 2015–2020 and 2021 onwards. Treatment durations in 2015–2020 were larger than or similar to those from 2021, which was the time reports of drug shortages emerged. For instance, time-on-treatment in 2015–2020 vs. 2021 were 110 vs. 99 days in IQVIA LPD Belgium, 290 vs. 286 days in NAJS, and 265 vs. 269 days in HI-SPEED. However, for InGef RDB and IPCI treatment durations in 2021 were longer than in the previous period, with 227 vs. 247 days in InGef RDB, and 257 vs. 273 days in IPCI for 2015–2020 and 2021, respectively (**Table 11**). Conversely, fluctuations can be seen in the treatment length from 2021 onwards:

IQVIA LPD Belgium showed shorter treatment episodes compared to other data sources, which decreased over time (GLP-1 RA RMS: 99 days in 2021 to 55 days in 2025). Dulaglutide is the only ingredient that showed an increase in the number of days in 2023 (RMS: 95 days), but decreased again in the following years (RMS: 42 and 32 days for 2024 and 2025, respectively). (**Table 11**)

NAJS, InGef RDB, IQVIA DA Germany, IPCI, NLHR, SIDIAP, HI-SPEED and CPRD Aurum also showed a decrease in the treatment duration over time. GLP-1 RA RMS ranged from 286 to 161 days between 2021–2024 in NAJS, from 286 to 232 days between 2021–2023 in NLHR, from 300 to 240 days between 2021–2024 in SIDIAP; and, between 2021–2025, from 247 to 143 days for InGef RDB, from 225 to 150 days in IQVIA DA Germany, from 273 to 229 days in IPCI, from 269 to 193 days in 2025 for HI-SPEED, and from 279 to 76 days in CPRD Aurum. (**Table 11**)

DK-DHR's length of treatment episodes increased between 2021–2023 (GLP-1 RA RMS: from 266 to 281 days) but decreased in 2024 (GLP-1 RA RMS: 132 days), which was led by new semaglutide users. Conversely, liraglutide episodes shortened (RMS: 200 days in 2021 to 122 days in 2024). (**Table 11**)

CPRD GOLD showed a decrease in the treatment duration between 2021 to 2025 (GLP-1 RA RMS: from 271 to 123 days).
Within this period, there was a marked reduction of the treatment duration in 2023 (GLP-1 RA RMS: decreased from 242 to 179 days between 2022 and 2023, then recovered to 236 days in 2024). This was led by a decrease in the number of new GLP-1 RA users in 2023 (4,300 in 2022 vs. 3,561 in 2023) along with an increase in the number of patients who discontinued their treatment within 365 days (2,137 in 2022 vs. 2,378 in 2023). New users of liraglutide substantially increased from 2022 to 2023 (from 591 to 913, respectively), but time-on-treatment was reduced (RMS: 132 to 77 days, respectively). (**Table 11**)

Table 11. Time-to-switch from new GLP-1 RA use (class or ingredient) with no prior use of any other GLP-1 RA ingredient in the prior 365 days, limited to one year follow-up.

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
IQVIA LPD Belgium				
GLP-1 RA class	overall	6,651	6,184	81.00 (78.00, 83.00)
	2015–2020	1,404	1,242	110.00 (104.00, 117.00)
	2021	1,004	926	99.00 (92.00, 107.00)
	2022	1,769	1,667	70.00 (66.00, 74.00)
	2023	1,512	1,425	68.00 (64.00, 73.00)
	2024	556	535	52.00 (45.00, 60.00)
	2025	406	389	55.00 (48.00, 62.00)
dulaglutide	overall	1,172	1,064	94.00 (88.00, 101.00)
	2015–2020	550	487	118.00 (108.00, 129.00)
	2021	180	168	81.00 (65.00, 98.00)
	2022	185	173	58.00 (44.00, 72.00)
	2023	177	160	95.00 (77.00, 112.00)
	2024	61	58	42.00 (21.00, 64.00)
	2025	19	18	32.00 (12.00, 51.00)
exenatide	overall	118	110	84.00 (65.00, 103.00)
	2015–2020	84	76	97.00 (73.00, 121.00)
	2021	14	14	55.00 (16.00, 94.00)
	2022	6	6	53.00 (5.00, 100.00)
	2023	7	7	26.00 (-3.00, 56.00)
	2024	6	6	71.00 (-5.00, 148.00)
	2025	-	-	7.00 (7.00, 7.00)
liraglutide	overall	979	947	62.00 (56.00, 67.00)
	2015–2020	422	401	84.00 (74.00, 94.00)
	2021	106	102	59.00 (43.00, 74.00)
	2022	199	197	48.00 (38.00, 58.00)
	2023	145	143	37.00 (28.00, 46.00)
	2024	70	68	34.00 (20.00, 48.00)
	2025	37	36	34.00 (21.00, 47.00)
lixisenatide	overall	67	59	131.00 (100.00, 162.00)
	2015–2020	62	54	137.00 (105.00, 170.00)
	2021	-	-	54.00 (-16.00, 124.00)
	2023	-	-	41.00 (41.00, 41.00)
semaglutide	overall	4,328	4,055	76.00 (73.00, 79.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2015–2020	287	246	114.00 (98.00, 129.00)
	2021	701	645	106.00 (97.00, 115.00)
	2022	1,381	1,300	70.00 (65.00, 75.00)
	2023	1,188	1,124	67.00 (61.00, 72.00)
	2024	420	404	56.00 (47.00, 65.00)
	2025	351	336	59.00 (51.00, 67.00)
NAJS				
GLP-1 RA class	overall	46,759	19,903	265.00 (264.00, 266.00)
	2015–2020	15,401	4,653	290.00 (288.00, 292.00)
	2021	8,122	2,594	286.00 (283.00, 289.00)
	2022	8,630	3,064	278.00 (276.00, 281.00)
	2023	7,530	2,995	270.00 (267.00, 273.00)
	2024	7,051	6,597	161.00 (158.00, 164.00)
	2025	25	0	365.00 (365.00, 365.00)
dulaglutide	overall	14,203	5,540	271.00 (269.00, 274.00)
	2015–2020	4,515	1,450	284.00 (280.00, 287.00)
	2021	3,131	965	287.00 (283.00, 292.00)
	2022	2,802	855	288.00 (284.00, 293.00)
	2023	2,615	1,139	264.00 (258.00, 269.00)
	2024	1,140	1,131	156.00 (150.00, 162.00)
liraglutide	overall	8,730	3,511	270.00 (268.00, 273.00)
	2015–2020	6,897	2,550	278.00 (275.00, 281.00)
	2021	643	246	272.00 (262.00, 283.00)
	2022	527	223	263.00 (251.00, 275.00)
	2023	336	185	233.00 (218.00, 249.00)
	2024	324	307	158.00 (145.00, 171.00)
	2025	-	0	365.00 (365.00, 365.00)
lixisenatide	overall	1,699	751	261.00 (254.00, 267.00)
	2015–2020	1,123	442	275.00 (267.00, 282.00)
	2021	240	103	271.00 (255.00, 288.00)
	2022	111	47	261.00 (235.00, 287.00)
	2023	131	72	209.00 (183.00, 235.00)
	2024	94	87	139.00 (116.00, 162.00)
semaglutide	overall	21,795	11,447	243.00 (242.00, 245.00)
	2015–2020	2,520	732	294.00 (289.00, 298.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2021	4,110	1,538	274.00 (270.00, 278.00)
	2022	5,193	2,194	265.00 (261.00, 268.00)
	2023	4,453	1,905	262.00 (259.00, 266.00)
	2024	5,497	5,078	159.00 (156.00, 162.00)
	2025	22	0	365.00 (365.00, 365.00)
exenatide	overall	347	193	232.00 (218.00, 247.00)
DK-DHR				
GLP-1 RA class	overall	277,946	150,368	244.00 (243.00, 244.00)
	2015–2020	46,553	17,522	277.00 (276.00, 278.00)
	2021	25,389	10,929	266.00 (264.00, 268.00)
	2022	42,534	17,803	271.00 (270.00, 273.00)
	2023	97,198	45,202	281.00 (280.00, 282.00)
	2024	66,272	58,912	132.00 (131.00, 133.00)
dulaglutide	overall	1,778	745	266.00 (260.00, 272.00)
	2015–2020	1,451	552	275.00 (268.00, 281.00)
	2021	90	46	240.00 (212.00, 268.00)
	2022	40	21	254.00 (214.00, 294.00)
	2023	129	64	248.00 (224.00, 272.00)
	2024	68	62	161.00 (137.00, 186.00)
exenatide	overall	156	89	230.00 (207.00, 252.00)
	2015–2020	146	85	227.00 (204.00, 250.00)
	2021	7	-	337.00 (287.00, 387.00)
	2022	-	-	95.00 (26.00, 164.00)
liraglutide	overall	46,312	31,106	217.00 (216.00, 218.00)
	2015–2020	22,987	11,622	254.00 (252.00, 256.00)
	2021	6,995	5,376	200.00 (197.00, 203.00)
	2022	14,253	12,417	172.00 (170.00, 174.00)
	2023	1,704	1,361	177.00 (171.00, 183.00)
	2024	373	330	122.00 (113.00, 131.00)
semaglutide	overall	229,685	125,249	242.00 (242.00, 243.00)
	2015–2020	21,951	6,615	290.00 (289.00, 292.00)
	2021	18,298	5,950	286.00 (284.00, 288.00)
	2022	28,239	9,816	288.00 (286.00, 289.00)
	2023	95,367	44,339	281.00 (280.00, 282.00)
	2024	65,830	58,529	132.00 (131.00, 132.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
lixisenatide	overall	20	12	216.00 (153.00, 279.00)
tirzepatide	overall	-	-	14.00 (14.00, 14.00)
FinOMOP-THL				
GLP-1 RA class	overall	157,883	153,418	67.00 (67.00, 67.00)
	2015–2020	34,248	34,038	59.00 (58.00, 59.00)
	2021	21,534	21,314	66.00 (65.00, 67.00)
	2022	44,395	43,760	81.00 (80.00, 81.00)
	2023	38,682	38,534	66.00 (66.00, 67.00)
	2024	19,024	15,772	51.00 (51.00, 52.00)
dulaglutide	overall	7,743	7,663	47.00 (46.00, 48.00)
	2015–2020	4,011	3,982	49.00 (48.00, 51.00)
	2021	515	513	46.00 (42.00, 49.00)
	2022	613	611	49.00 (45.00, 53.00)
	2023	2,257	2,252	46.00 (44.00, 47.00)
	2024	347	305	37.00 (34.00, 40.00)
exenatide	overall	3,723	3,703	52.00 (50.00, 53.00)
	2015–2020	3,314	3,294	53.00 (52.00, 55.00)
	2021	85	85	39.00 (34.00, 45.00)
	2022	61	61	46.00 (37.00, 54.00)
	2023	205	205	37.00 (34.00, 41.00)
	2024	58	58	34.00 (29.00, 39.00)
liraglutide	overall	40,416	40,041	52.00 (52.00, 53.00)
	2015–2020	16,008	15,941	55.00 (54.00, 56.00)
	2021	3,870	3,849	54.00 (52.00, 56.00)
	2022	8,850	8,811	54.00 (53.00, 56.00)
	2023	9,689	9,683	48.00 (47.00, 48.00)
	2024	1,999	1,757	37.00 (36.00, 39.00)
lixisenatide	overall	75	75	54.00 (45.00, 63.00)
	2015–2020	74	74	54.00 (45.00, 63.00)
	2021	-	-	30.00 (30.00, 30.00)
semaglutide	overall	106,613	102,887	70.00 (69.00, 70.00)
	2015–2020	10,883	10,809	63.00 (62.00, 64.00)
	2021	17,079	16,911	66.00 (65.00, 67.00)
	2022	35,002	34,565	81.00 (81.00, 82.00)
	2023	26,914	26,806	69.00 (68.00, 69.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2024	16,735	13,796	52.00 (52.00, 53.00)
InGef RDB				
GLP-1 RA class	overall	104,217	59,438	223.00 (222.00, 224.00)
	2015–2020	31,071	17,481	227.00 (226.00, 229.00)
	2021	14,483	7,176	247.00 (245.00, 249.00)
	2022	14,850	7,833	244.00 (241.00, 246.00)
	2023	15,649	10,151	216.00 (213.00, 218.00)
	2024	14,183	9,251	219.00 (217.00, 221.00)
	2025	13,981	7,546	143.00 (141.00, 146.00)
dulaglutide	overall	39,309	21,255	236.00 (234.00, 237.00)
	2015–2020	17,612	8,931	244.00 (242.00, 246.00)
	2021	6,719	3,281	249.00 (246.00, 252.00)
	2022	6,158	3,132	247.00 (244.00, 251.00)
	2023	4,724	3,259	205.00 (201.00, 209.00)
	2024	2,666	1,832	206.00 (200.00, 211.00)
	2025	1,430	820	138.00 (131.00, 145.00)
exenatide	overall	445	348	162.00 (149.00, 174.00)
	2015–2020	260	203	156.00 (140.00, 172.00)
	2021	30	19	189.00 (136.00, 243.00)
	2022	15	10	194.00 (114.00, 273.00)
	2023	58	47	179.00 (143.00, 216.00)
	2024	77	65	159.00 (132.00, 187.00)
	2025	5	-	51.00 (15.00, 87.00)
liraglutide	overall	12,255	10,087	150.00 (148.00, 152.00)
	2015–2020	8,730	7,069	155.00 (153.00, 158.00)
	2021	1,244	989	157.00 (150.00, 165.00)
	2022	1,022	880	142.00 (134.00, 149.00)
	2023	839	797	112.00 (105.00, 118.00)
	2024	251	225	130.00 (116.00, 145.00)
	2025	169	127	87.00 (71.00, 103.00)
semaglutide	overall	43,518	26,171	212.00 (210.00, 213.00)
	2015–2020	4,470	2,216	251.00 (247.00, 255.00)
	2021	6,491	3,301	244.00 (241.00, 248.00)
	2022	7,655	4,229	240.00 (237.00, 243.00)
	2023	9,908	6,700	211.00 (208.00, 214.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2024	5,934	4,593	173.00 (170.00, 177.00)
	2025	9,060	5,132	135.00 (133.00, 138.00)
tirzepatide	overall	8,707	4,813	223.00 (220.00, 226.00)
	2023	127	34	317.00 (300.00, 334.00)
	2024	5,263	3,148	245.00 (242.00, 249.00)
	2025	3,317	1,631	156.00 (150.00, 161.00)
IQVIA DA Germany				
GLP-1 RA class	overall	68,667	42,578	199.00 (198.00, 200.00)
	2015–2020	19,085	10,829	224.00 (222.00, 226.00)
	2021	9,189	5,001	225.00 (222.00, 228.00)
	2022	8,891	5,425	203.00 (200.00, 207.00)
	2023	11,479	7,839	182.00 (179.00, 185.00)
	2024	11,826	8,432	174.00 (171.00, 176.00)
	2025	8,197	5,052	150.00 (147.00, 153.00)
dulaglutide	overall	23,673	12,059	238.00 (237.00, 240.00)
	2015–2020	9,878	4,944	243.00 (240.00, 246.00)
	2021	4,236	1,864	256.00 (252.00, 260.00)
	2022	3,734	1,898	236.00 (231.00, 241.00)
	2023	3,356	1,945	225.00 (220.00, 230.00)
	2024	1,778	1,073	210.00 (203.00, 216.00)
	2025	691	335	201.00 (189.00, 213.00)
exenatide	overall	653	475	170.00 (159.00, 181.00)
	2015–2020	525	388	166.00 (153.00, 178.00)
	2021	27	16	190.00 (130.00, 251.00)
	2022	23	15	187.00 (129.00, 245.00)
	2023	40	24	243.00 (201.00, 285.00)
	2024	35	29	138.00 (96.00, 180.00)
	2025	-	-	90.00 (-9.00, 188.00)
liraglutide	overall	9,966	7,317	172.00 (169.00, 175.00)
	2015–2020	6,722	4,676	191.00 (188.00, 194.00)
	2021	1,203	923	155.00 (147.00, 163.00)
	2022	810	671	128.00 (119.00, 137.00)
	2023	904	784	110.00 (103.00, 118.00)
	2024	276	229	114.00 (101.00, 128.00)
	2025	51	34	126.00 (91.00, 161.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
lixisenatide	overall	1,526	1,215	142.00 (135.00, 148.00)
	2015–2020	271	210	150.00 (133.00, 167.00)
	2021	322	252	151.00 (136.00, 166.00)
	2022	305	232	160.00 (144.00, 176.00)
	2023	322	264	137.00 (122.00, 152.00)
	2024	240	203	113.00 (98.00, 129.00)
	2025	66	54	91.00 (63.00, 118.00)
semaglutide	overall	27,193	19,467	165.00 (164.00, 167.00)
	2015–2020	1,698	1,105	196.00 (189.00, 203.00)
	2021	3,406	2,105	206.00 (201.00, 211.00)
	2022	4,025	2,763	182.00 (178.00, 187.00)
	2023	6,853	5,185	158.00 (155.00, 162.00)
	2024	6,517	5,186	143.00 (140.00, 146.00)
	2025	4,694	3,123	137.00 (133.00, 141.00)
tirzepatide	overall	5,774	3,772	175.00 (171.00, 179.00)
	2023	33	19	201.00 (148.00, 254.00)
	2024	3,030	2,114	189.00 (183.00, 194.00)
	2025	2,711	1,639	146.00 (141.00, 152.00)
IPCI				
GLP-1 RA class	overall	16,573	6,415	260.00 (258.00, 262.00)
	2015–2020	2,608	1,173	257.00 (252.00, 262.00)
	2021	1,538	610	273.00 (266.00, 279.00)
	2022	2,379	1,002	272.00 (267.00, 277.00)
	2023	2,743	1,251	259.00 (254.00, 264.00)
	2024	3,777	1,566	262.00 (258.00, 266.00)
	2025	3,528	813	229.00 (215.00, 243.00)
dulaglutide	overall	995	459	258.00 (249.00, 266.00)
	2015–2020	441	204	253.00 (240.00, 266.00)
	2021	178	64	288.00 (270.00, 305.00)
	2022	214	100	267.00 (250.00, 284.00)
	2023	94	51	245.00 (218.00, 272.00)
	2024	50	35	182.00 (144.00, 221.00)
	2025	18	5	251.00 (169.00, 333.00)
exenatide	overall	31	19	218.00 (170.00, 266.00)
	2015–2020	23	13	224.00 (165.00, 284.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2021	-	-	306.00 (212.00, 400.00)
	2022	5	5	140.00 (84.00, 195.00)
liraglutide	overall	4,096	2,053	231.00 (227.00, 235.00)
	2015–2020	726	396	228.00 (217.00, 238.00)
	2021	112	87	161.00 (138.00, 185.00)
	2022	694	369	249.00 (239.00, 259.00)
	2023	688	423	227.00 (217.00, 237.00)
	2024	1,055	550	239.00 (231.00, 247.00)
	2025	821	228	185.00 (138.00, 232.00)
lixisenatide	overall	105	63	203.00 (174.00, 231.00)
	2015–2020	99	60	204.00 (174.00, 233.00)
	2021	-	0	365.00 (365.00, 365.00)
	2022	-	-	60.00 (41.00, 78.00)
	2024	-	-	34.00 (34.00, 34.00)
	2025	-	0	365.00 (365.00, 365.00)
semaglutide	overall	11,072	4,133	263.00 (260.00, 265.00)
	2015–2020	1,320	545	272.00 (265.00, 279.00)
	2021	1,243	475	277.00 (270.00, 284.00)
	2022	1,466	613	269.00 (263.00, 276.00)
	2023	1,969	863	259.00 (253.00, 265.00)
	2024	2,657	1,087	262.00 (257.00, 267.00)
	2025	2,417	550	241.00 (232.00, 251.00)
tirzepatide	overall	319	83	177.00 (162.00, 191.00)
	2024	37	14	186.00 (155.00, 218.00)
	2025	282	69	158.00 (134.00, 182.00)
NLHR				
GLP-1 RA class	overall	199,859	75,338	269.00 (269.00, 270.00)
	2015–2020	23,608	8,115	284.00 (282.00, 286.00)
	2021	36,072	13,395	286.00 (284.00, 287.00)
	2022	61,434	24,938	282.00 (281.00, 283.00)
	2023	78,745	28,890	232.00 (230.00, 233.00)
dulaglutide	overall	5,097	1,884	278.00 (275.00, 282.00)
	2015–2020	2,565	933	280.00 (275.00, 285.00)
	2021	1,213	429	288.00 (281.00, 294.00)
	2022	749	319	270.00 (261.00, 279.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2023	570	203	253.00 (241.00, 265.00)
exenatide	overall	355	214	223.00 (209.00, 238.00)
	2015–2020	261	144	230.00 (213.00, 247.00)
	2021	71	48	219.00 (189.00, 250.00)
	2022	23	22	157.00 (115.00, 199.00)
liraglutide	overall	54,459	26,711	268.00 (267.00, 269.00)
	2015–2020	9,489	4,318	265.00 (263.00, 268.00)
	2021	14,443	6,793	274.00 (272.00, 276.00)
	2022	25,899	13,253	270.00 (269.00, 272.00)
	2023	4,628	2,347	237.00 (233.00, 241.00)
lixisenatide	overall	150	69	249.00 (227.00, 271.00)
	2015–2020	118	53	254.00 (230.00, 279.00)
	2021	20	11	224.00 (163.00, 285.00)
	2022	9	5	206.00 (107.00, 304.00)
	2023	-	0	365.00 (365.00, 365.00)
semaglutide	overall	139,818	52,007	261.00 (261.00, 262.00)
	2015–2020	11,181	3,756	281.00 (279.00, 284.00)
	2021	20,328	7,276	282.00 (280.00, 284.00)
	2022	34,765	14,062	276.00 (275.00, 277.00)
	2023	73,544	26,913	227.00 (226.00, 229.00)
SIDIAP				
GLP-1 RA class	overall	52,622	18,389	280.00 (278.00, 281.00)
	2015–2020	17,272	5,209	297.00 (295.00, 299.00)
	2021	6,998	1,995	300.00 (297.00, 303.00)
	2022	8,880	3,303	279.00 (276.00, 282.00)
	2023	9,855	4,646	264.00 (261.00, 266.00)
	2024	9,617	3,236	240.00 (236.00, 243.00)
dulaglutide	overall	17,682	4,988	299.00 (298.00, 301.00)
	2015–2020	5,458	1,621	299.00 (296.00, 302.00)
	2021	3,438	849	310.00 (306.00, 314.00)
	2022	3,914	1,013	305.00 (302.00, 309.00)
	2023	2,896	978	294.00 (289.00, 298.00)
	2024	1,976	527	272.00 (266.00, 279.00)
exenatide	overall	1,499	675	263.00 (257.00, 270.00)
	2015–2020	1,424	631	265.00 (258.00, 271.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2021	35	13	269.00 (223.00, 315.00)
	2022	33	26	206.00 (166.00, 247.00)
	2023	7	5	180.00 (80.00, 280.00)
liraglutide	overall	16,371	8,245	252.00 (250.00, 254.00)
	2015–2020	7,610	2,907	280.00 (277.00, 283.00)
	2021	1,452	712	257.00 (251.00, 264.00)
	2022	2,488	1,376	243.00 (238.00, 248.00)
	2023	3,355	2,332	218.00 (213.00, 222.00)
	2024	1,466	918	179.00 (172.00, 186.00)
lixisenatide	overall	485	293	231.00 (220.00, 243.00)
	2015–2020	468	277	235.00 (223.00, 247.00)
	2021	-	-	196.00 (78.00, 314.00)
	2022	-	-	97.00 (97.00, 97.00)
	2023	11	11	111.00 (59.00, 163.00)
	2024	-	-	90.00 (90.00, 90.00)
semaglutide	overall	16,610	6,555	255.00 (253.00, 257.00)
	2015–2020	2,312	594	306.00 (301.00, 310.00)
	2021	2,069	689	288.00 (282.00, 293.00)
	2022	2,453	1,288	238.00 (233.00, 244.00)
	2023	3,591	1,898	245.00 (241.00, 249.00)
	2024	6,185	2,086	230.00 (226.00, 235.00)
HI-SPEED				
GLP-1 RA class	overall	281,573	141,899	240.00 (240.00, 241.00)
	2015–2020	41,610	17,374	265.00 (264.00, 266.00)
	2021	29,264	11,891	269.00 (268.00, 271.00)
	2022	40,195	20,533	247.00 (246.00, 248.00)
	2023	58,391	33,010	232.00 (231.00, 233.00)
	2024	69,007	41,716	232.00 (231.00, 233.00)
	2025	43,106	17,375	193.00 (190.00, 195.00)
dulaglutide	overall	21,244	10,357	246.00 (244.00, 248.00)
	2015–2020	3,335	1,169	283.00 (279.00, 288.00)
	2021	2,098	670	288.00 (283.00, 294.00)
	2022	3,323	1,165	285.00 (281.00, 290.00)
	2023	5,568	2,984	237.00 (234.00, 241.00)
	2024	5,942	4,025	198.00 (195.00, 201.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2025	978	344	226.00 (209.00, 243.00)
exenatide	overall	96	65	180.00 (150.00, 210.00)
	2015–2020	79	50	191.00 (158.00, 224.00)
	2021	7	5	169.00 (61.00, 276.00)
	2022	7	7	147.00 (52.00, 241.00)
	2024	-	-	15.00 (11.00, 18.00)
liraglutide	overall	65,842	52,903	163.00 (162.00, 164.00)
	2015–2020	15,261	9,745	208.00 (206.00, 211.00)
	2021	5,109	3,729	182.00 (179.00, 186.00)
	2022	8,742	7,449	158.00 (156.00, 161.00)
	2023	15,763	14,087	134.00 (133.00, 136.00)
	2024	17,173	15,055	153.00 (152.00, 155.00)
	2025	3,794	2,838	117.00 (113.00, 121.00)
lixisenatide	overall	725	288	279.00 (270.00, 288.00)
	2015–2020	522	193	287.00 (276.00, 297.00)
	2021	91	36	277.00 (253.00, 302.00)
	2022	46	19	270.00 (234.00, 306.00)
	2023	49	32	202.00 (163.00, 241.00)
	2024	14	7	289.00 (230.00, 347.00)
	2025	-	-	204.00 (204.00, 204.00)
semaglutide	overall	193,738	88,383	253.00 (252.00, 253.00)
	2015–2020	22,426	7,373	289.00 (287.00, 290.00)
	2021	21,962	8,076	281.00 (280.00, 283.00)
	2022	28,081	14,746	250.00 (248.00, 251.00)
	2023	37,037	19,359	245.00 (244.00, 247.00)
	2024	45,900	24,538	251.00 (249.00, 252.00)
	2025	38,332	14,291	200.00 (198.00, 203.00)
CPRD Aurum				
GLP-1 RA class	overall	305,872	176,219	174.00 (173.00, 174.00)
	2015–2020	47,226	16,869	279.00 (278.00, 280.00)
	2021	17,925	6,098	280.00 (278.00, 282.00)
	2022	22,519	9,744	255.00 (254.00, 257.00)
	2023	19,698	12,539	187.00 (184.00, 189.00)
	2024	73,404	54,122	148.00 (147.00, 149.00)
	2025	125,100	76,847	76.00 (74.00, 78.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
dulaglutide	overall	37,904	12,291	287.00 (286.00, 289.00)
	2015–2020	18,969	6,046	288.00 (286.00, 290.00)
	2021	7,301	2,108	295.00 (292.00, 298.00)
	2022	7,243	2,146	293.00 (290.00, 296.00)
	2023	3,501	1,576	271.00 (267.00, 276.00)
	2024	552	322	217.00 (206.00, 229.00)
	2025	338	93	199.00 (155.00, 243.00)
exenatide	overall	2,451	1,276	234.00 (229.00, 240.00)
	2015–2020	2,006	1,068	232.00 (226.00, 238.00)
	2021	88	45	225.00 (194.00, 256.00)
	2022	121	55	246.00 (221.00, 272.00)
	2023	199	87	257.00 (238.00, 277.00)
	2024	31	18	222.00 (173.00, 270.00)
	2025	6	-	108.00 (68.00, 147.00)
liraglutide	overall	25,029	14,750	206.00 (204.00, 208.00)
	2015–2020	15,798	6,757	263.00 (261.00, 265.00)
	2021	1,358	904	179.00 (171.00, 187.00)
	2022	2,842	2,357	117.00 (112.00, 122.00)
	2023	4,473	4,253	87.00 (84.00, 90.00)
	2024	377	367	39.00 (33.00, 44.00)
	2025	181	112	107.00 (84.00, 131.00)
lixisenatide	overall	3,127	1,779	236.00 (231.00, 241.00)
	2015–2020	3,073	1,746	237.00 (232.00, 242.00)
	2021	34	19	216.00 (167.00, 264.00)
	2022	17	12	166.00 (99.00, 233.00)
	2023	-	-	73.00 (73.00, 73.00)
	2024	-	-	28.00 (28.00, 28.00)
	2025	-	0	365.00 (365.00, 365.00)
semaglutide	overall	77,739	45,507	195.00 (194.00, 196.00)
	2015–2020	7,430	2,863	268.00 (265.00, 272.00)
	2021	9,154	3,472	271.00 (269.00, 274.00)
	2022	12,321	5,909	252.00 (249.00, 254.00)
	2023	11,539	7,816	177.00 (174.00, 179.00)
	2024	24,744	17,825	158.00 (156.00, 160.00)
	2025	12,551	7,622	95.00 (90.00, 99.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
tirzepatide	overall	159,810	107,022	101.00 (101.00, 102.00)
	2023	–	–	112.00 (–31.00, 255.00)
	2024	47,731	37,538	132.00 (130.00, 133.00)
	2025	112,075	69,481	72.00 (70.00, 75.00)
CPRD GOLD				
GLP-1 RA class	overall	30,189	13,577	249.00 (247.00, 251.00)
	2015–2020	11,911	4,329	279.00 (277.00, 281.00)
	2021	3,314	1,296	271.00 (267.00, 276.00)
	2022	4,300	2,137	242.00 (237.00, 246.00)
	2023	3,561	2,378	179.00 (174.00, 184.00)
	2024	5,112	2,687	236.00 (232.00, 240.00)
	2025	1,991	750	123.00 (69.00, 177.00)
dulaglutide	overall	7,369	2,453	289.00 (286.00, 292.00)
	2015–2020	4,210	1,228	298.00 (294.00, 301.00)
	2021	1,209	428	287.00 (280.00, 294.00)
	2022	1,209	461	279.00 (272.00, 286.00)
	2023	562	253	272.00 (261.00, 282.00)
	2024	105	61	206.00 (179.00, 232.00)
	2025	74	22	237.00 (193.00, 281.00)
exenatide	overall	1,175	513	259.00 (251.00, 267.00)
	2015–2020	1,089	479	259.00 (251.00, 267.00)
	2021	40	17	258.00 (215.00, 300.00)
	2022	16	7	262.00 (196.00, 327.00)
	2023	27	9	278.00 (226.00, 329.00)
	2024	-	-	278.00 (140.00, 417.00)
liraglutide	overall	5,916	3,388	212.00 (208.00, 216.00)
	2015–2020	4,097	1,857	256.00 (252.00, 260.00)
	2021	229	131	213.00 (192.00, 233.00)
	2022	591	467	132.00 (119.00, 144.00)
	2023	913	856	77.00 (69.00, 84.00)
	2024	75	69	104.00 (74.00, 133.00)
	2025	11	8	82.00 (3.00, 162.00)
lixisenatide	overall	709	395	236.00 (226.00, 246.00)
	2015–2020	691	384	236.00 (226.00, 247.00)
	2021	11	8	210.00 (136.00, 284.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2022	6	-	266.00 (152.00, 380.00)
	2023	-	-	114.00 (114.00, 114.00)
semaglutide	overall	15,026	7,503	231.00 (229.00, 234.00)
	2015–2020	1,826	753	268.00 (262.00, 274.00)
	2021	1,825	784	259.00 (252.00, 265.00)
	2022	2,480	1,285	240.00 (235.00, 246.00)
	2023	2,060	1,376	185.00 (178.00, 191.00)
	2024	4,929	2,579	237.00 (233.00, 241.00)
	2025	1,906	726	121.00 (69.00, 173.00)

GLP-1 RA class includes use of any GLP-1 RA ingredient.
The follow-up was limited to one-year since the first drug prescription to enable the comparison across different time periods. Last reported year can be an incomplete calendar year (see end of study period in **Table 1**).
Number of records refer to number of new users, defined as no previous use of the GLP-1 class or ingredient in the previous 365 days (i.e. an individual may contribute to different years for different treatment episodes). Number of events refer to number of individuals who discontinued their treatment within the year/period of interest. Restricted mean survival represents the average time-on-treatment (i.e. average time patients were alive and still had not changed the treatment).
In FinOMOP-THL, treatment duration for each prescription was unavailable and imputed to 30 days. Thus, median survival and restricted median survival values shown for FinOMOP-THL are inaccurate and unreliable.
In CPRD Aurum, exenatide, lixisenatide, and tirzepatide results were masked in accordance with minimum cell count disclosure rules of the data source.
– = not applicable; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; DPP-4 inhibitors = Dipeptidyl Peptidase 4 inhibitors; FinOMOP-THL = Finnish Care Register for Health Care; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

10.2.5. Objective 3 – Within GLP-1 RA switching of ingredients

This section describes GLP-1 RA switching of ingredients (exenatide, liraglutide, lixisenatide, dulaglutide, semaglutide, or tirzepatide cohorts) among new (first-time ever) GLP-1 RA users, with no prior use of any GLP-1 RA ingredient, for each data source between 2015–2020.

Across all the data sources, the treatment trajectories of 1,006,368 first GLP-1 RA users were obtained. To ensure the readability of the Sankey diagrams, the displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Thus, **Figure 46** to **Figure 57** contain the trajectories of 666,581 new users.

For context, in the Sankey diagrams, the incident records ("_incident") in the first (left-hand) column indicate which was the first (i.e. incident) GLP-1 RA ingredient that patients used. The other columns refer to any record of GLP-1 RA ingredients recorded after the incident prescription. When the same ingredient is written consecutively (e.g. "1.semaglutide_incident" followed by "2.semaglutide"), it indicates that the patient had at least >30 days of treatment (i.e. they were treated with semaglutide for >30 days). Cases where the record in the second column is not the same as the incident GLP-1 RA ingredient indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. Additionally, records may be displayed in combination with the use of an ATC3/ATC4 class drug (e.g. "2.insulin_drugs+liraglutide" or "2.beiguanides+dulaglutide"). When this is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Finally, STOP indicates cessation of the last treatment received.

To summarise, switching across ingredients was observed in IQVIA LPD Belgium, DK-DHR, FinOMOP-THL, InGef RDB, NLHR, and HI-SPEED:

- IQVIA LPD Belgium: 1.35% of first-time GLP-1 RA users who started with liraglutide switched to semaglutide, of which about half switched within the first 30 days. Among all first-time GLP-1 RA users, 11.37% started with liraglutide (**Figure 46**).
- DK-DHR: 6.76% of first-time GLP-1 RA users started with liraglutide (alone or combined with insulin) and later switched to semaglutide. Among all first-time GLP-1 RA users, 14.38% started with liraglutide, whilst 85.49% started with semaglutide (**Figure 48**).
- FinOMOP-THL: 7.30% of first-time GLP-1 RA users started with liraglutide and later switched to semaglutide (2.23% of first-time GLP-1 RA users who started with liraglutide switched to semaglutide within the first 30 days). Additionally, 1.17% of first-time GLP-1 RA users started with dulaglutide and switched to semaglutide (0.30% of first-time GLP-1 RA users who started with dulaglutide switched to semaglutide within the first 30 days). Only 0.65% of first-time GLP-1 RA users started with exenatide and switched to semaglutide (0.44% of first-time GLP-1 RA users who started with exenatide switched to semaglutide within the first 30 days). Among all first-time GLP-1 RA users, 23.04% started with liraglutide, 70.37% started with semaglutide, 4.11% started with dulaglutide, and 2.47% started with exenatide (**Figure 49**).
- InGef RDB: 2.55% of first-time GLP-1 RA users who started with dulaglutide, 1.33% who started with liraglutide, and 0.04% who started with exenatide, switched to semaglutide; whilst 0.03% who started with exenatide later switched to dulaglutide (<0.02% of first-time GLP-1 RA users started with exenatide switched to dulaglutide or semaglutide within the first 30 days). Among all first-time GLP-1 RA users, 38.38% started with dulaglutide, 9.87% with liraglutide, 0.22% with exenatide, and 43.18% with semaglutide (**Figure 50**).
- NLHR: 5.10% of first-time GLP-1 RA users who started with liraglutide and later switched to semaglutide, whilst 0.10% started with dulaglutide and switched to semaglutide, and only 0.006% started with exenatide and switched to semaglutide. Among all first-time GLP-1 RA users, 28.62% started with liraglutide, 1.45% started with dulaglutide, and 0.009% started with exenatide (**Figure 53**).
- HI-SPEED: 1.78% of first-time GLP-1 RA users who started with liraglutide and 0.97% who started with dulaglutide later switched to semaglutide (**Figure 55**).

Conversely, very few or no patients were observed switching in NAJS, IQVIA DA Germany, IPCI, SIDIAP, CPRD Aurum, and CPRD GOLD (<1% of first-time GLP-1 RA users). For instance, CPRD Aurum had 0.36% of first-time GLP-1 RA users who started with liraglutide switched to tirzepatide within the first 30 days, and 0.02% who started with lixisenatide switched to dulaglutide.

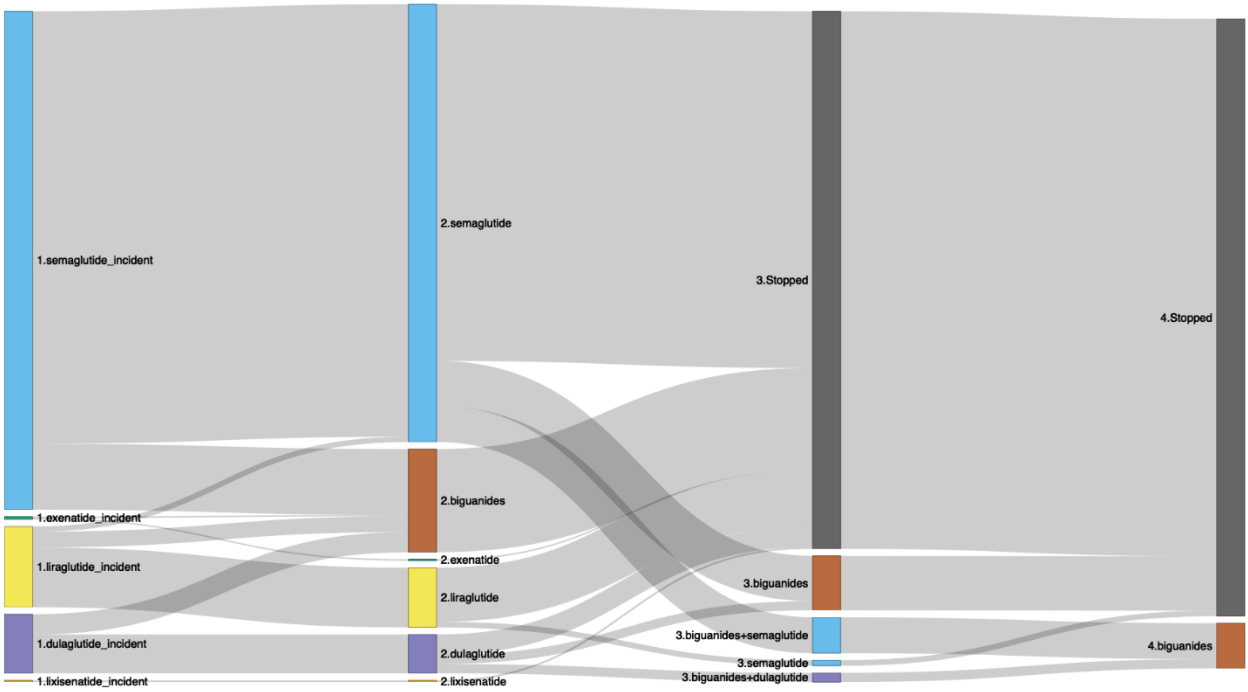


Figure 46. Within GLP-1 RA switching of ingredients in IQVIA LPD Belgium.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium.

In IQVIA LPD Belgium, the treatment trajectories for a total of 3,192 GLP-1 RA users were obtained. **Figure 46** contains the trajectories of 2,506 new users.

A total of 1,370 patients (42.92% of all incident GLP-1 RA users) only used semaglutide. Another 140 (4.39%) patients who started with only semaglutide switched to semaglutide with biguanides and ended with only biguanides (i.e. semaglutide_incident → semaglutide → biguanides + semaglutide → biguanides). Another 257 (8.05%) patients had an incident prescription of semaglutide, but they were observed to discontinue to biguanides alone.

There were 211 (6.61%) patients who only used liraglutide, and 80 (2.51%) who only used dulaglutide.

22 (0.69%) patients were observed who started liraglutide and later (i.e. ≥30 days) switched to semaglutide, another 21 (0.66%) patients who showed an incident use of liraglutide, followed by a prevalent use of semaglutide (i.e. switched from liraglutide to semaglutide in ≤30 days).

Treatment patterns among new users of lixisenatide and exenatide were very rare. Most common paths were use (n, % of total GLP-1 RA new users in IQVIA LPD Belgium) of lixisenatide (7, 0.22%) and exenatide (5, 0.16%) alone.

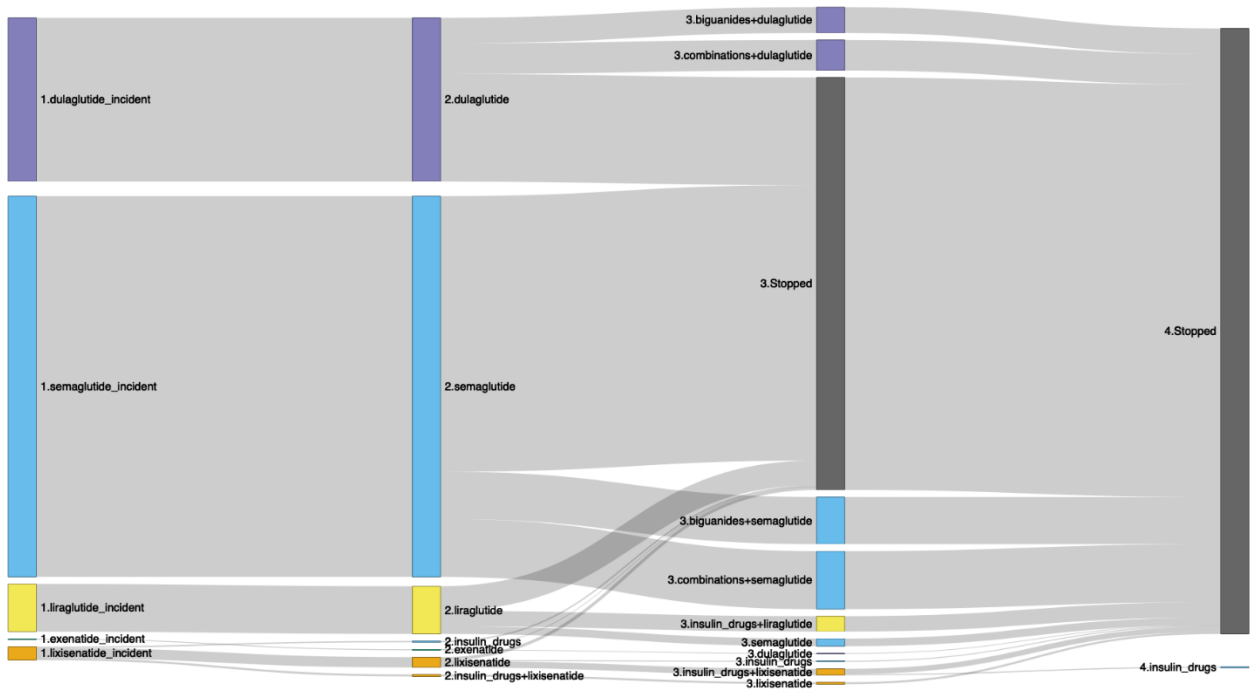


Figure 47. Within GLP-1 RA switching of ingredients in NAJS.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [Other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NAJS = Croatian National Public Health Information System.

In NAJS, the treatment trajectories for a total of 25,971 GLP-1 RA users were obtained. **Figure 47** contains the trajectories of 11,767 new users.

It was observed that 5,345 (20.58%) of new GLP-1 RA users from NAJS were only treated with semaglutide, whilst 2,088 (8.04%) were only treated with dulaglutide. Moreover, another 1,125 (4.33%) of new semaglutide users switched to combination drugs with semaglutide (i.e. A10BC – combinations of oral blood glucose lowering drugs), whilst 915 (3.52%) new semaglutide users switched to biguanides with semaglutide. Similarly, another 593 (2.28%) new dulaglutide users switched to combination drugs with dulaglutide, whilst 498 (1.92%) new dulaglutide users switched to biguanides with dulaglutide.

481 (1.85%) new GLP-1 RA users who were only treated with liraglutide, and 296 (1.14%) patients who started using liraglutide and later switched to liraglutide with insulin drugs, were also observed. Moreover, 148 (0.57%) of liraglutide users who later switched to semaglutide were observed.

There were 58 (0.22%) new users who were only treated with lixisenatide and 101 (0.39%) new lixisenatide users who later switched to lixisenatide with insulin drugs.

Moreover, 6 (0.02%) patients were observed who were only treated with exenatide and another 10 (0.04%) patients who started using exenatide and later switched to dulaglutide.

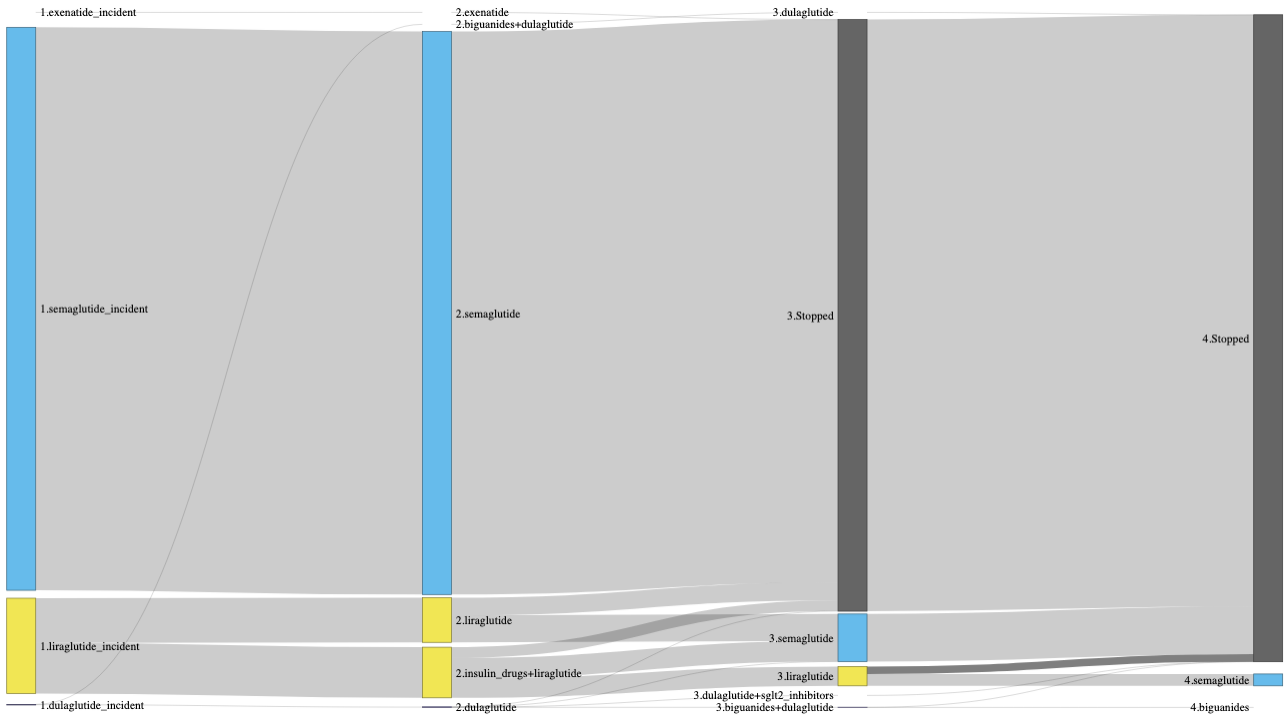


Figure 48. Within GLP-1 RA switching of ingredients in DK-DHR.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
DK-DHR = Danish Data Health Registries; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In DK-DHR, the treatment trajectories for a total of 225,009 GLP-1 RA users were obtained. **Figure 48** contains the trajectories of 169,469 new users.

A total of 144,798 (64.35%) new GLP-1 RA patients were observed who were only treated with semaglutide. The following most common treatment pattern shown was 6,889 (3.06%) patients who started using liraglutide and later switched to semaglutide; 5,271 (2.34%) incident users of liraglutide who showed insulin drugs combined with liraglutide in the second column and who later switched to semaglutide, 4,566 (2.03%) liraglutide only users, and 3,057 (1.36%) patients who showed insulin drugs combined with liraglutide in the second column, switched to liraglutide alone, and finally to semaglutide alone.

Moreover, 2,745 (1.22%) new GLP-1 RA patients were observed who had an incident use of liraglutide followed by insulin drugs combined with liraglutide, and 1,956 (0.87%) who had the same path plus final liraglutide use alone.

For other ingredients, any other treatment pattern had less than 60 users (e.g. 56 (0.02%) patients who were only dulaglutide users).

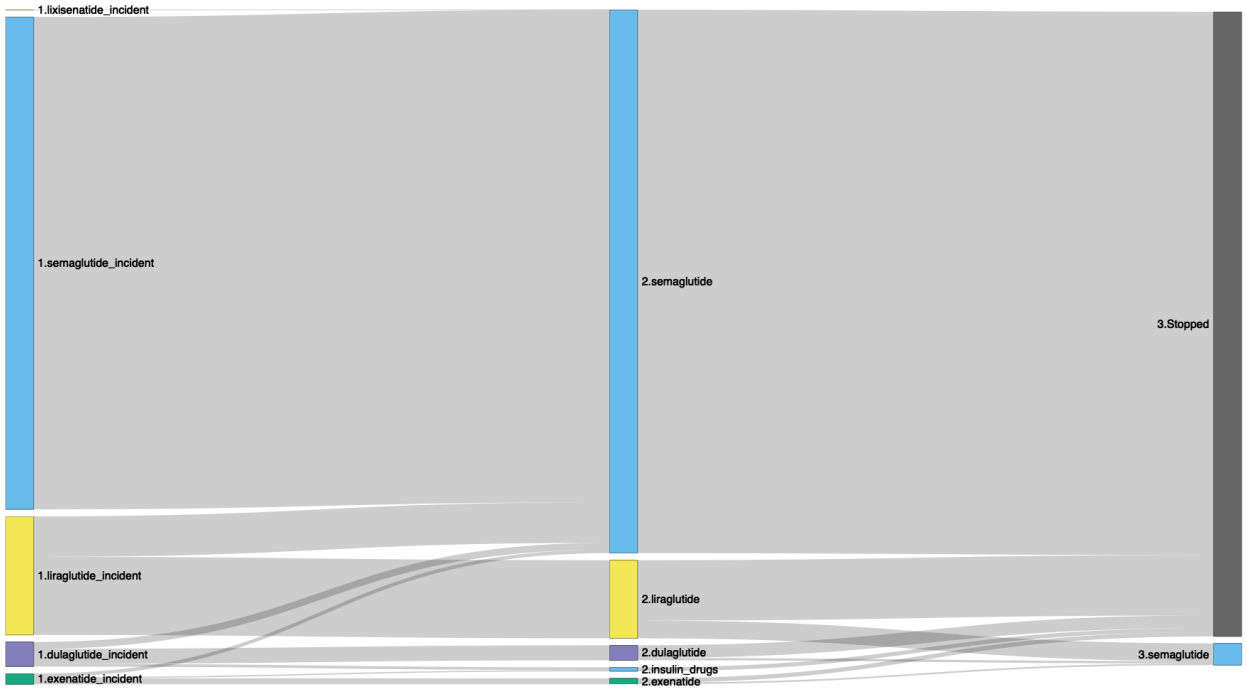


Figure 49. Within GLP-1 RA switching of ingredients in FinOMOP-THL.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In FinOMOP-THL, the treatment trajectories for a total of 77,286 GLP-1 RA users were obtained. **Figure 49**Figure 46 contains the trajectories of 62,717 new users.

47,774 (61.81%) new GLP-1 RA users were observed who were only treated with semaglutide, 5,852 (7.57%) only with liraglutide, 1,234 (1.60%) only with dulaglutide, and 414 (0.54%) only with exenatide.

A total of 3,920 (5.07%) incident liraglutide users switched to semaglutide in ≤30 days, whilst 1,724 (2.23%) liraglutide users switched to semaglutide after using liraglutide for >30 days. Additionally, incident dulaglutide users were observed who switched to semaglutide (670, 0.87%) or to insulin drugs alone (258, 0.33%) in ≤30 days, and 230 (0.30%) dulaglutide users who later switched to semaglutide.

Incident exenatide users who switched to semaglutide (343, 0.44%) or insulin drugs alone (125, 0.16%) in ≤30 days, and 165 (0.21%) exenatide users who later switched to semaglutide, were also observed.

Treatment patterns starting with lixisenatide use were very rare. The most common was 8 (0.01%) incident lixisenatide users who switched to semaglutide in >30 days.

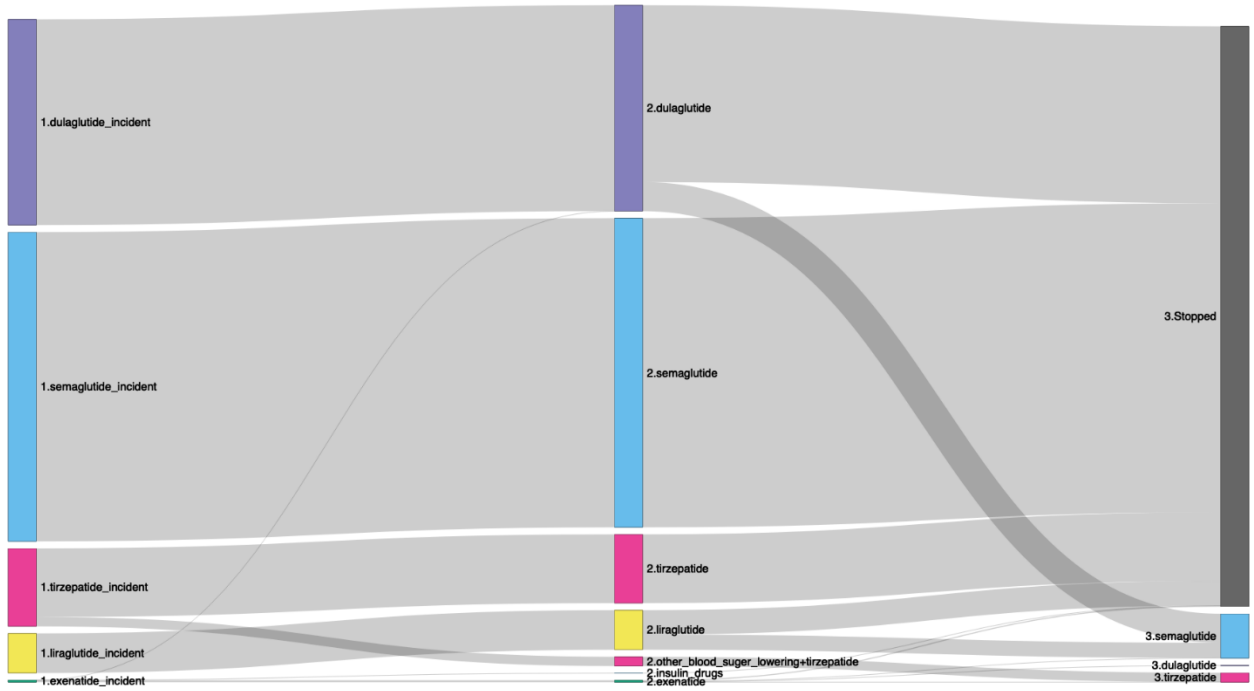


Figure 50. Within GLP-1 RA switching of ingredients in InGef RDB.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; InGef RDB = InGef Research Database.

In InGef RDB, the treatment trajectories for a total of 81,407GLP-1 RA users were obtained. **Figure 50**Figure 46 contains the trajectories of 45,349 new users.

22,086 (27.13%) new GLP-1 RA patients were observed who were only treated with semaglutide, 12,629 (15.51%) only with dulaglutide, 4,908 (6.03%) only with tirzepatide, 1,751 (2.15%) only with liraglutide, and 69 (0.08%) only with exenatide.

2,076 (2.55%) dulaglutide users, 1,080 (1.33%) liraglutide users, and 30 (0.04%) exenatide users were observed who later switched to semaglutide; 23 (0.03%) exenatide users who later switched to dulaglutide; and incident exenatide users who switched to dulaglutide (13, 0.02%) or semaglutide (10, 0.01%) in ≤30 days.

Moreover, there were 664 (0.82%) incident tirzepatide patients who showed Other drugs (i.e. other A10B drugs) combined with tirzepatide in the second column, but all of them later switched to only tirzepatide in the third column.

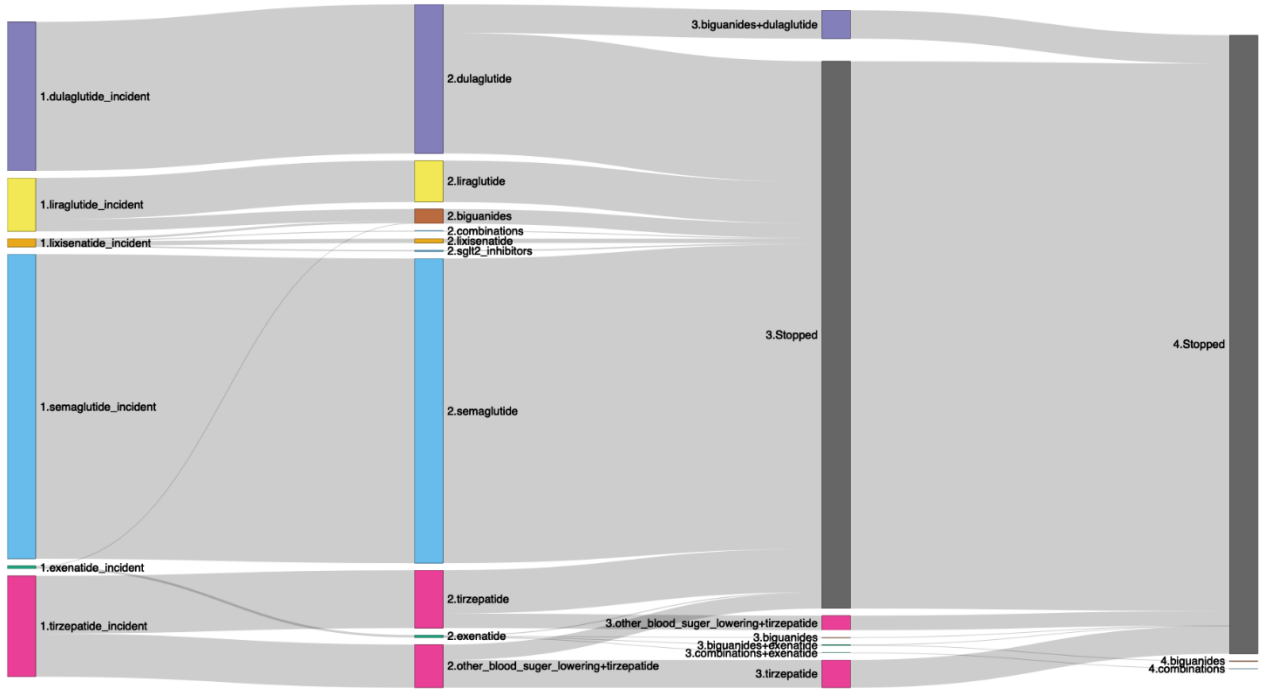


Figure 51. Within GLP-1 RA switching of ingredients in IQVIA DA Germany.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA DA Germany = IQVIA Disease Analyzer Germany.

In IQVIA DA Germany, the treatment trajectories for a total of 36,609 GLP-1 RA users were obtained. **Figure 51**Figure 46 contains the trajectories of 15,501 new users.

7,622 (20.82%) new GLP-1 RA patients were observed who were only treated with semaglutide, 3,019 (8.25%) only with dulaglutide, 1,082 (2.96%) only with tirzepatide, 1,036 (2.83%) only with liraglutide, 108 (0.30%) only with lixisenatide, and 24 (0.07%) only with exenatide.

A total of 711 (1.94%) new GLP-1 RA patients were observed who started with dulaglutide use and later switched to biguanides in combination with dulaglutide, whilst 361 (0.99%) incident tirzepatide users later switched other drugs (i.e. other A10B drugs) in combination with tirzepatide. Moreover, there were 1,078 (2.94%) incident tirzepatide patients who showed other drugs combined with tirzepatide, of which 693 (1.89%) later switched to only tirzepatide.

Additionally, 299 (0.82%) incident liraglutide users were observed who discontinued to biguanides in ≤30 days.

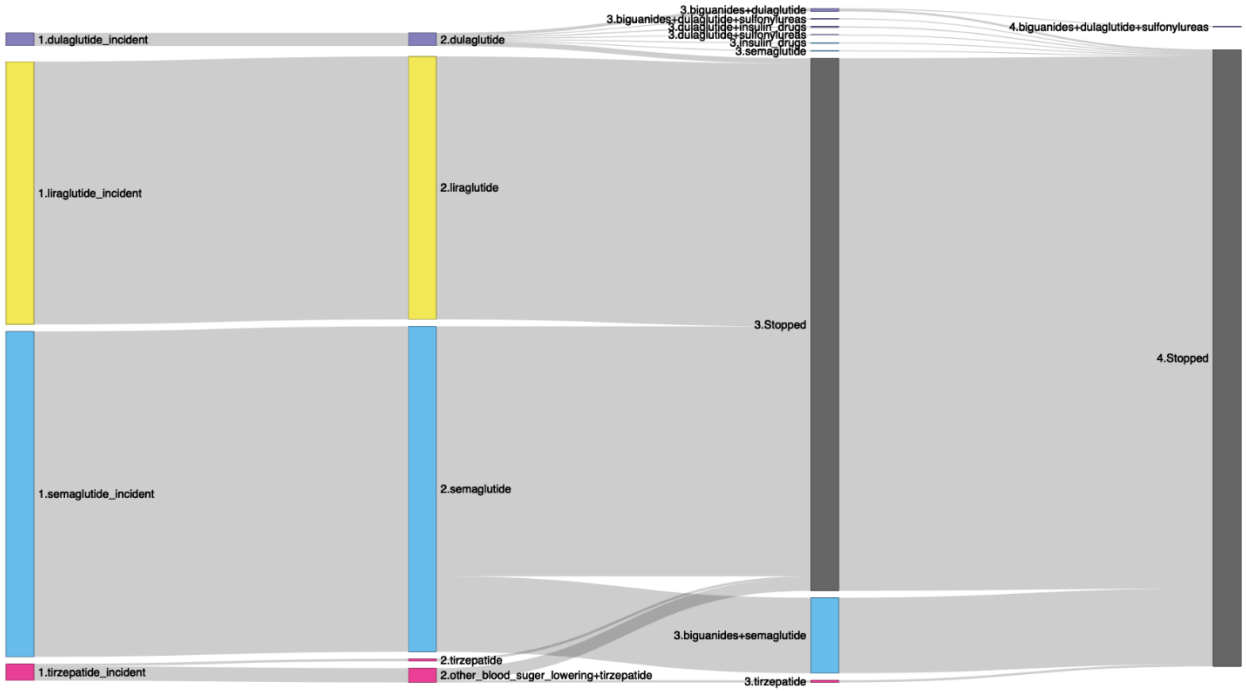


Figure 52. Within GLP-1 RA switching of ingredients in IPCI.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IPCI = Integrated Primary Care Information.

In IPCI, the treatment trajectories for a total of 10,270 GLP-1 RA users were obtained. **Figure 52**Figure 46 contains the trajectories of 5,944 new users.

2,528 (24.62%) new GLP-1 RA patients were observed who were only treated with liraglutide and 2,403 (23.40%) only with semaglutide. Another 726 (7.07%) semaglutide users were also observed who later switched to biguanides combined with semaglutide. Moreover, 116 (1.13%) incident tirzepatide users showed other drugs combined with tirzepatide, followed by tirzepatide alone.

For other ingredients, any other treatment pattern had ≤50 users (e.g. 50 (0.49%) patients who were only dulaglutide users or 24 (0.23%) who were only tirzepatide users).

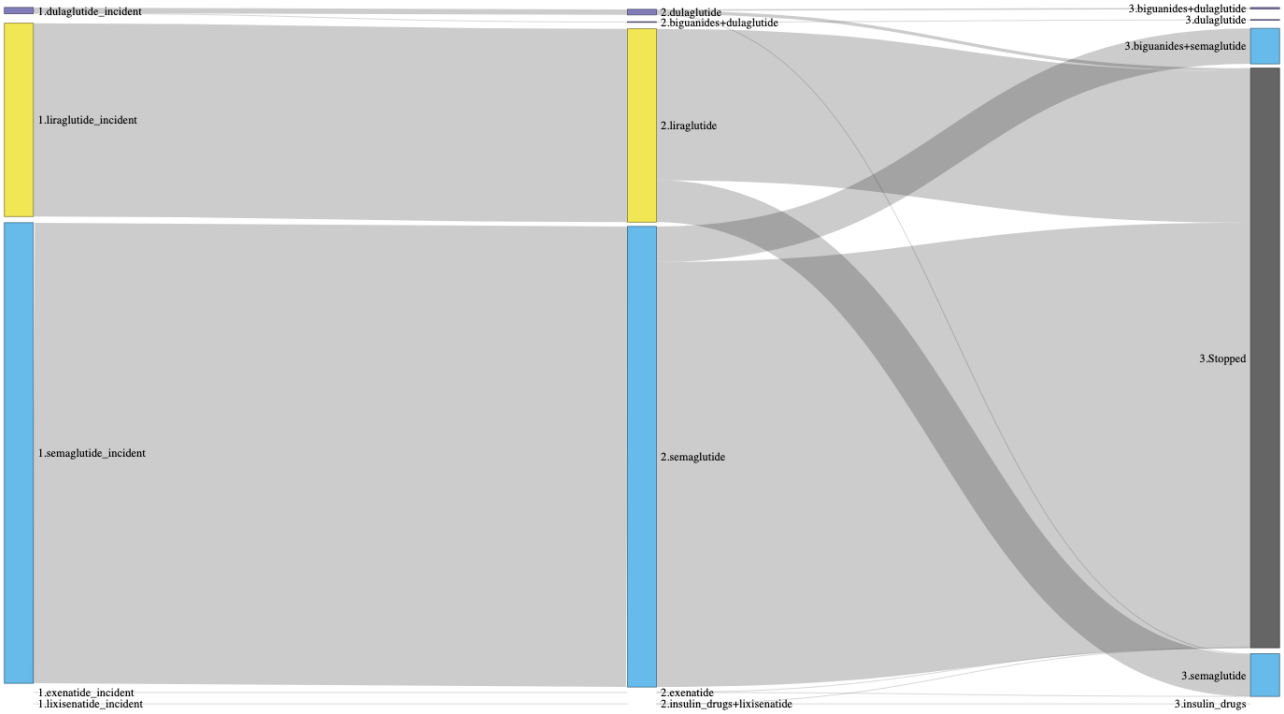


Figure 53. Within GLP-1 RA switching of ingredients in NLHR.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NLHR = Norwegian Linked Health Registry data.

In NLHR, the treatment trajectories for a total of 171,304 GLP-1 RA users were obtained. **Figure 53**Figure 46 contains the trajectories of 137,354 new users.

88,423 (51.62%) new GLP-1 RA patients were observed who were only treated with semaglutide, 31,488 (18.38%) only with liraglutide, and 646 (0.38%) only with dulaglutide.

A total of 8,733 (5.10%) liraglutide users switched to semaglutide, and 167 (0.10%) dulaglutide users switched to semaglutide.

There were 7,398 (4.32%) semaglutide users and 329 (0.19%) dulaglutide users who switched to biguanides combined with semaglutide or dulaglutide, respectively. Moreover, another 145 (0.08%) incident dulaglutide users used biguanides combined with dulaglutide and later switched to dulaglutide alone.

Treatment patterns where new users started using exenatide were very rare (below 10 users per path). The most common was 10 (0.006%) exenatide users switching to semaglutide.

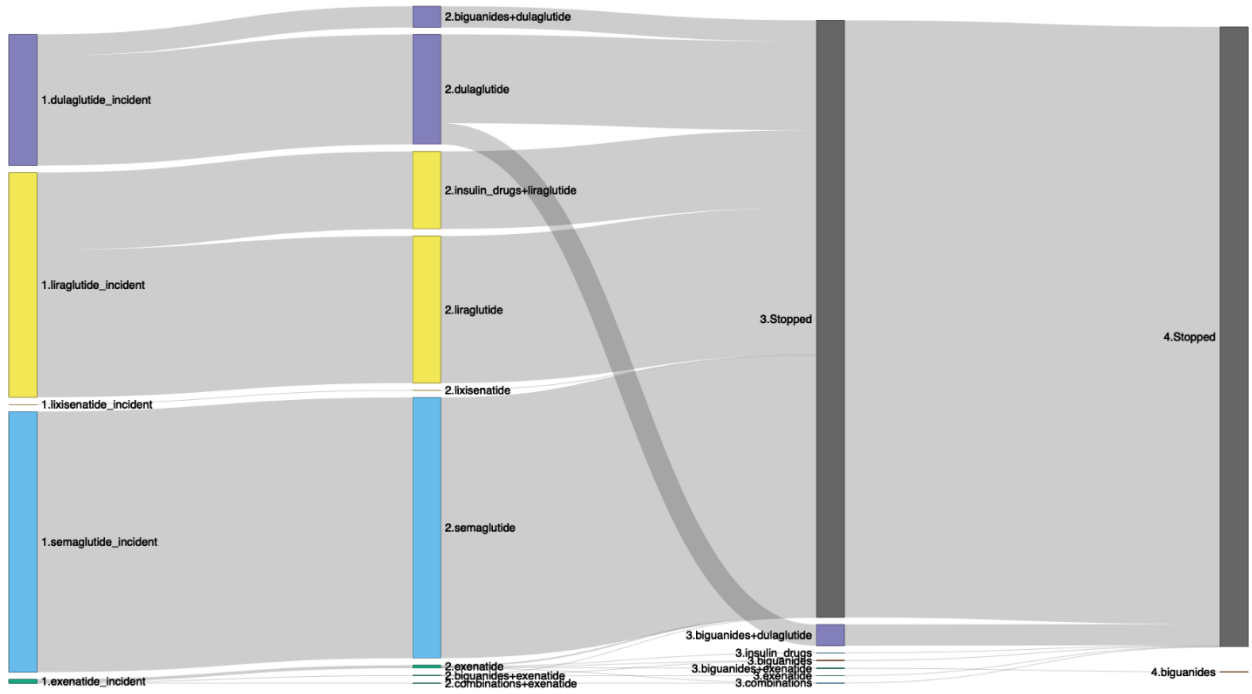


Figure 54. Within GLP-1 RA switching of ingredients in SIDIAP.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; SIDIAP = The Information System for Research in Primary Care.

In SIDIAP, the treatment trajectories for a total of 32,147 GLP-1 RA users were obtained. **Figure 54**Figure 46 contains the trajectories of 15,467 new users.

6,494 (20.20%) new GLP-1 RA patients were observed who were only treated with semaglutide, 3,666 (11.40%) only with liraglutide, 2,209 (6.87%) only with dulaglutide, and 36 (0.11%) only with exenatide.

Moreover, 1931 (6.01%) incident liraglutide users showed insulin drugs combined with liraglutide, 531 (1.65%) incident dulaglutide users showed biguanides combined with dulaglutide, and 528 (1.64%) dulaglutide users later switched to biguanides combined with dulaglutide.

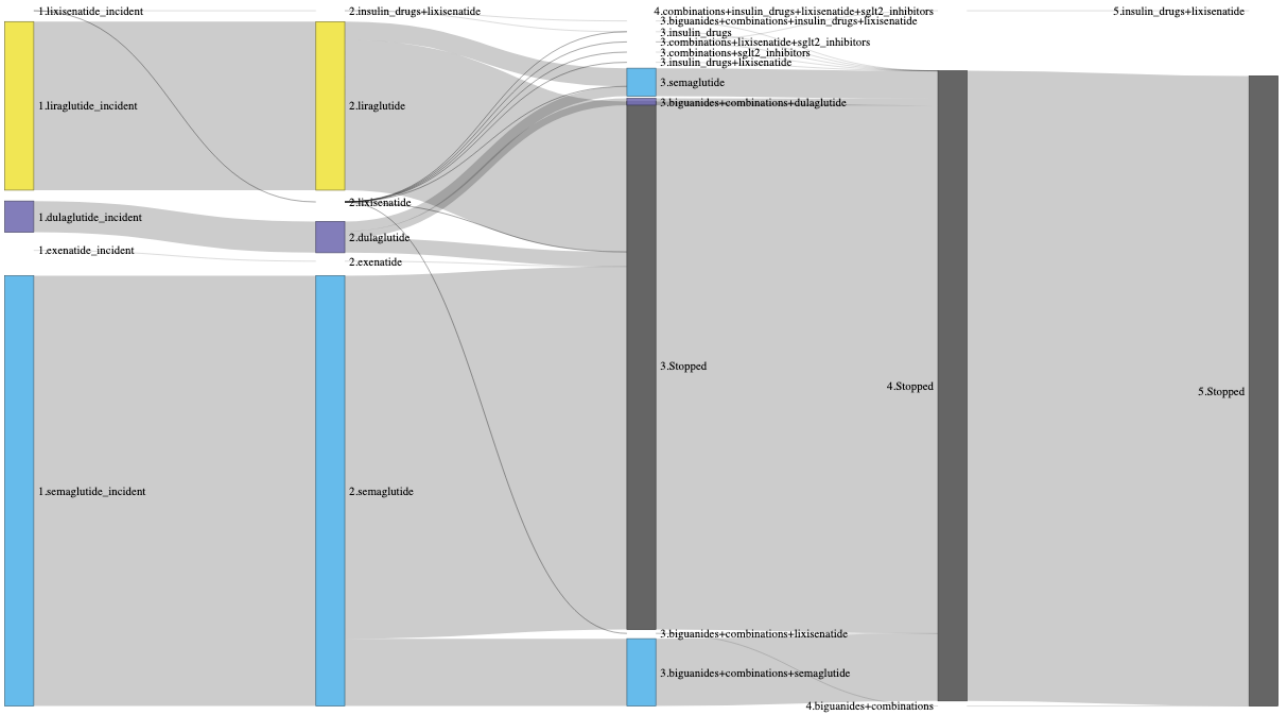


Figure 55. Within GLP-1 RA switching of ingredients in HI-SPEED.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage.

In HI-SPEED, the treatment trajectories for a total of 199,227 GLP-1 RA users were obtained. **Figure 55** contains the trajectories of 123,371 new users.

71,029 (35.65%) new GLP-1 RA patients were observed who were only treated with semaglutide, 29,436 (14.78%) only with liraglutide, and 2,850 (1.43%) only with dulaglutide. Moreover, another 13,168 (6.61%) semaglutide and 1,314 (0.66%) dulaglutide users later switched to biguanides combined with semaglutide and dulaglutide, respectively.

A total of 3,546 (1.78%) liraglutide users and 1,927 (0.97%) dulaglutide users later switched to semaglutide.

For other ingredients, any other treatment pattern had less than 25 users (e.g. 21 (0.01%) patients who started using lixisenatide and switched to insulin drugs combined with lixisenatide).

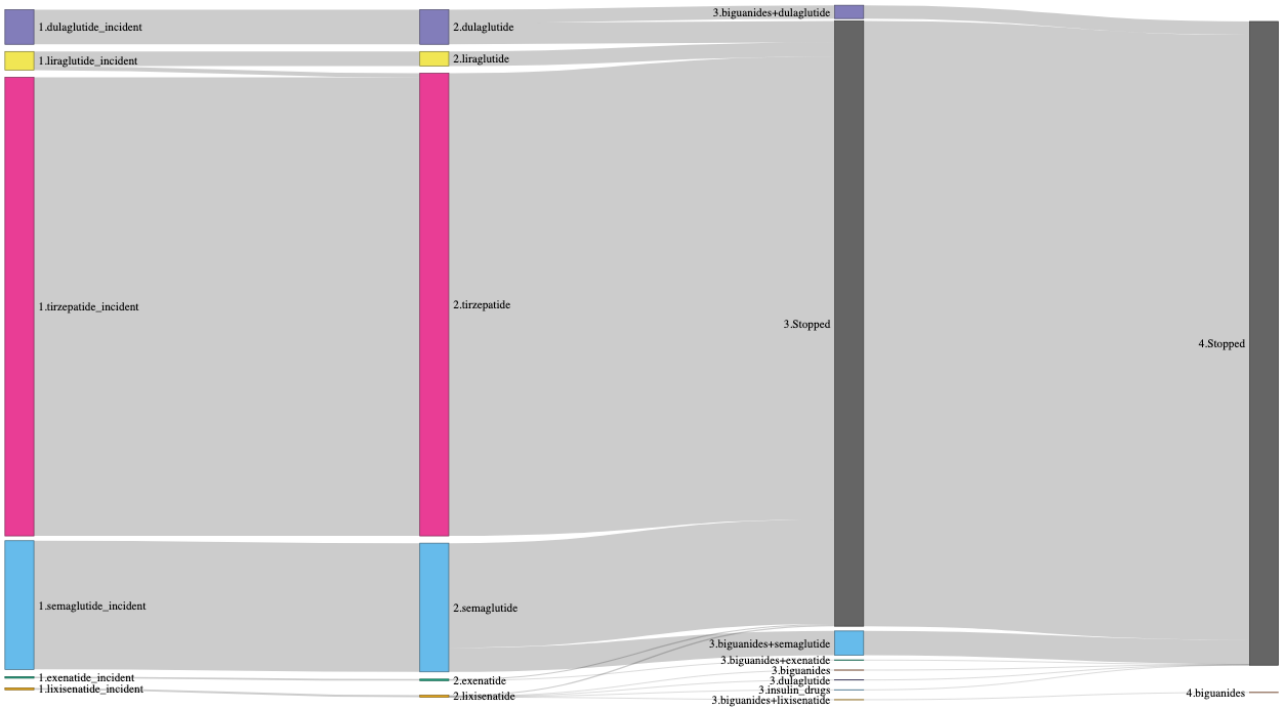


Figure 56. Within GLP-1 RA switching of ingredients in CPRD Aurum.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
CPRD Aurum = Clinical Practice Research Datalink Aurum; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In CPRD Aurum, the treatment trajectories for a total of 129,272GLP-1 RA users were obtained. **Figure 56**Figure 46 contains the trajectories of 71,134 new users.

50,471 (39.04%) new GLP-1 RA patients were observed who were only treated with tirzepatide, 11,553 (8.94%) only treated with semaglutide, 2,390 (1.85%) only treated with dulaglutide, 1,638 (1.27%) only treated with liraglutide, 137 (0.11%) only treated with exenatide, and 124 (0.10%) only treated with lixisenatide.

464 (0.36%) liraglutide users who switched to tirzepatide in ≤30 days, and 20 (0.02%) incident lixisenatide users who switched to dulaglutide, were also observed.

Moreover, 2,724 (2.11%) incident semaglutide users, 1,482 (1.15%) incident semaglutide dulaglutide users, 43 (0.03%) incident exenatide users, and 39 (0.03%) incident lixisenatide users later switched to biguanides combined with semaglutide, dulaglutide, exenatide, and lixisenatide, respectively. Among the 39 lixisenatide users who later started biguanides, 20 later discontinued to biguanides alone.

Furthermore, another 29 (0.02%) GLP-1 RA users who started with lixisenatide later discontinued to insulin drugs, whilst another 20 (0.02%) incident lixisenatide users switched to biguanides alone.

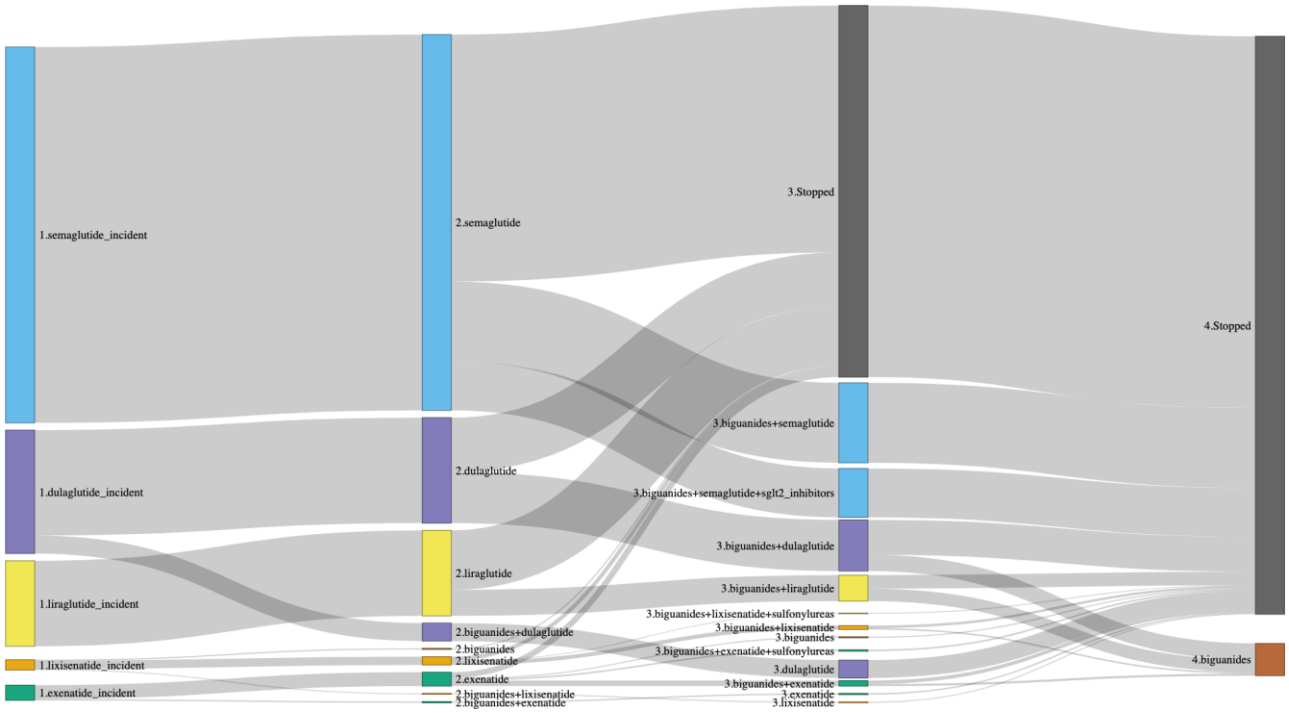


Figure 57. Within GLP-1 RA switching of ingredients in CPRD GOLD.

The displayed treatment paths were restricted to those with more than 5% of patients per incident ingredient. Incident records in the first (left-hand) column refers to first use ever of a GLP-1 RA (i.e. the incident GLP-1 RA ingredient cohorts with no prior use of any GLP-1 RA class drug). The other columns refer to any subsequent record of GLP-1 RA ingredients or ATC3/ATC4 class drugs, which may be displayed in combination. When a combination of a GLP-1 RA ingredient and an ATC3/ATC4 class drug is shown in the second column (from the left), it is possible that the patient was already under the ATC3/ATC4 class treatment (e.g. biguanides). Cases where the ingredient recorded in the second column is not the same as the incident GLP-1 RA ingredient (first column) indicates that the incident use of the GLP-1 RA ingredient was shorter than 30 days. STOP refers to cessation of the last treatment received.
ATC3/ATC4 class drugs: A10BA – biguanides, A10BB – sulfonylureas, A10BC – combinations of oral blood glucose lowering drugs [combinations], A10BF – alpha glucosidase inhibitors, A10BG – thiazolidinediones, A10BH – dipeptidyl peptidase 4 inhibitors [DPP-4 inhibitors], A10BK – [SGLT2 inhibitors], other A10B – The remaining drugs in A10B class [other], A10A – Insulin drugs, and A08A – antiobesity preparations, excluding diet products [antiobesity]).
CPRD GOLD = Clinical Practice Research Datalink GOLD; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In CPRD GOLD, the treatment trajectories for a total of 14,674 GLP-1 RA users were obtained. **Figure 57**Figure 46 contains the trajectories of 6,002 new users.

2,429 (16.55%) new GLP-1 RA patients were observed who were only treated with semaglutide, 586 (3.99%) only with liraglutide, 535 (3.65%) only with dulaglutide, 57 (0.39%) only with exenatide, and 38 (0.26%) only with lixisenatide.

Semaglutide users who switched to biguanides combined with semaglutide (787, 5.36%) or who switched to SGLT2 inhibitors combined with semaglutide (481, 3.28%) were also observed.

There were 502 (3.42%) dulaglutide users who later switched to biguanides combined with dulaglutide, of which 160 (1.09%) then switched to biguanides alone. Moreover, there were 177 (1.21%) incident dulaglutide users who showed biguanides combined with dulaglutide and then switched to dulaglutide alone.

Additionally, 134 (0.91%) incident liraglutide users were observed who showed biguanides combined with liraglutide, and 122 (0.83%) liraglutide users who later switched to biguanides combined with liraglutide.

10.2.6. Objective 4 – Time-to-switch (discontinuation) within-ingredient switching

A summary of the discontinuation (or time-to-switch to a different drug other than a GLP-1 RA) from the first prescribed strength in new users of liraglutide, dulaglutide, semaglutide, and tirzepatide are reported in **Table 12** to **Table 15**, respectively. In line with the time-to-switch across GLP-1 RA class or ingredients, the follow-up was limited to one year since the new prescription, and duration of episodes in FinOMOP-THL could not be evaluated, as duration was either mapped to 30 days or had no end date recorded.

During the overall study period, new users of liraglutide with strength 3.6 mg had a longer treatment duration than those with strength 6 mg in NLHR and HI-SPEED (e.g. RMS for 3.6 mg vs. 6 mg was: 296 vs. 268 days in NLHR, and 314 vs. 174 days in HI-SPEED). Conversely, duration was longer for strength 6 mg in NAJS and DK-DHR (e.g. RMS for 3.6 mg vs. 6 mg was: 267 vs. 276 days in NAJS, and 208 vs. 254 days in DK-DHR). Among new liraglutide users with strength 18 mg, the treatment length of Saxenda was shorter than Victoza and other records (target cohorts displayed as "other" in **Table 12** contains records where brand was unknown or other than Victoza and Saxenda) in IQVIA LPD Belgium, InGef RDB, IQVIA DA Germany, CPRD Aurum, and CPRD GOLD (e.g. RMS was 40 days for Saxenda vs. 226 days for Victoza in CPRD GOLD). Conversely, in IPCI, higher strengths display longer treatment durations (RMS for 6 mg, 10.8 mg, and 18 mg: 104 days, 217 days, and 226–233 days, respectively), including Saxenda 18 mg (233 days). (**Table 12**)

New users of dulaglutide in the overall study period showed longer treatment durations for higher strengths in IQVIA LPD Belgium and IQVIA DA Germany (e.g. RMS in IQVIA LPD Belgium increased from 59 days in 0.75 mg strength to 79 days for 1.5 mg strength). Conversely, InGef RDB presented longer treatment durations for lower strengths (e.g. RMS decreased from 209 days in 1.5 mg strength to 106 days for 3 mg strength). NAJS, IPCI, CPRD Aurum, and CPRD GOLD showed fluctuations in the length of the treatment, where the 0.75 mg strength for CPRD Aurum (RMS of 128–131 days), the 6 mg strength for NAJS (RMS of 137 days), and the 3 mg strength for IPCI (RMS of 87–97 days) and CPRD GOLD (RMS of 174 days) had the shorter treatment durations. (
Table 13)

Strength of new users of semaglutide can be distinguished between those in an oral form (old formulations: 3 mg, 7 mg, 14 mg; and new formulations = 1.5 mg, 4 mg, 9 mg) and those in an injection form (0.25 mg, 0.33 mg, 0.5 mg, 1 mg, 1.34 mg, 2 mg, 4 mg). New users of semaglutide in the overall study period generally showed longer treatment durations for higher strengths in IQVIA LPD Belgium, NAJS, DK-DHR, InGef RDB, IPCI, NLHR, SIDIAP, HI-SPEED, CPRD Aurum, and CPRD GOLD (e.g. RMS in SIDIAP increased from 71 days for 0.25 mg to 263 days in 1 mg). The exception was IQVIA DA Germany, where longer treatment was observed for strength 0.333 mg (RMS in 0.333 mg Ozempic was 139 days whilst 1 mg Ozempic was 96 days). (**Table 14**)

Results on tirzepatide were limited to InGef RDB, IQVIA DA Germany, IPCI, and CPRD Aurum, and calendar stratification started in 2023 or later. Overall, time-to-switch was similar or decreased over time. For instance, in InGef RDB, RMS for 2.5 ml of Mounjaro decreased from 57 to 35 days between 2023 and 2025, whilst RMS for 12.5 ml of Mounjaro were 84 and 81 days for 2024 and 2025, respectively. (**Table 15**)

Table 12. Time-to-switch between strengths in new liraglutide users, limited to one year follow-up.

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
IQVIA LPD Belgium				
Liraglutide 10.8 mg (other)	overall	245	237	71.00 (58.00, 84.00)
	2015–2020	149	143	91.00 (73.00, 109.00)
	2021	38	36	65.00 (33.00, 97.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2022	23	23	28.00 (7.00, 49.00)
	2023	17	17	20.00 (-1.00, 41.00)
	2024	9	9	21.00 (2.00, 40.00)
	2025	6	6	24.00 (0.00, 49.00)
	2026	-	-	3.00 (0.00, 6.00)
liraglutide 18 mg (other)	overall	1,357	1,304	60.00 (55.00, 65.00)
	2015–2020	604	568	83.00 (74.00, 91.00)
	2021	126	122	62.00 (48.00, 76.00)
	2022	288	282	44.00 (36.00, 52.00)
	2023	181	179	32.00 (25.00, 39.00)
	2024	109	106	31.00 (20.00, 42.00)
	2025	47	45	30.00 (19.00, 42.00)
	2026	-	-	4.00 (0.00, 8.00)
liraglutide 18 mg (Saxenda)	overall	832	809	53.00 (48.00, 58.00)
	2015–2020	233	225	84.00 (72.00, 95.00)
	2021	84	81	59.00 (45.00, 74.00)
	2022	252	246	45.00 (36.00, 54.00)
	2023	143	141	30.00 (22.00, 37.00)
	2024	85	83	34.00 (21.00, 47.00)
	2025	34	32	32.00 (19.00, 45.00)
	2026	-	-	7.00 (7.00, 7.00)
liraglutide 18 mg (Victoza)	overall	529	499	68.00 (59.00, 77.00)
	2015–2020	371	343	81.00 (70.00, 93.00)
	2021	43	42	65.00 (36.00, 93.00)
	2022	37	37	31.00 (13.00, 48.00)
	2023	39	39	28.00 (13.00, 42.00)
	2024	25	24	20.00 (7.00, 34.00)
	2025	13	13	26.00 (3.00, 48.00)
	2026	-	-	1.00 (1.00, 1.00)
NAJS				
liraglutide 3.6 mg (other)	overall	3,412	1,462	267.00 (262.00, 271.00)
	2015–2020	1,290	460	280.00 (273.00, 287.00)
	2021	769	284	278.00 (268.00, 287.00)
	2022	667	250	277.00 (267.00, 287.00)
	2023	357	163	262.00 (248.00, 276.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2024	325	305	170.00 (158.00, 183.00)
	2025	-	0	365.00 (365.00, 365.00)
liraglutide 6 mg (other)	overall	8,815	3,350	276.00 (273.00, 279.00)
	2015–2020	8,255	2,897	284.00 (281.00, 287.00)
	2021	58	32	206.00 (166.00, 245.00)
	2022	86	60	181.00 (151.00, 211.00)
	2023	199	155	166.00 (147.00, 185.00)
	2024	217	206	140.00 (125.00, 155.00)
DK-DHR				
liraglutide 3.6 mg (other)	overall	515	373	208.00 (197.00, 220.00)
	2015–2020	469	339	211.00 (199.00, 223.00)
	2022	20	15	177.00 (115.00, 239.00)
	2023	20	13	221.00 (161.00, 281.00)
	2024	6	6	60.00 (27.00, 93.00)
liraglutide 6 mg (other)	overall	57,474	28,476	254.00 (253.00, 256.00)
	2015–2020	49,018	21,439	268.00 (266.00, 269.00)
	2021	4,610	3,641	195.00 (191.00, 198.00)
	2022	2,758	2,418	169.00 (165.00, 173.00)
	2023	790	711	141.00 (133.00, 149.00)
	2024	298	267	107.00 (98.00, 115.00)
FinOMOP-THL				
liraglutide 18 mg (other)	overall	19,899	19,843	47.00 (46.00, 47.00)
	2015–2020	17,423	17,374	47.00 (47.00, 48.00)
	2021	505	503	43.00 (39.00, 46.00)
	2022	721	719	46.00 (43.00, 50.00)
	2023	1,215	1,214	39.00 (37.00, 41.00)
	2024	35	33	34.00 (27.00, 40.00)
liraglutide 6 mg (other)	overall	13,715	13,658	52.00 (51.00, 53.00)
	2015–2020	12,331	12,281	53.00 (52.00, 54.00)
	2021	303	303	41.00 (37.00, 45.00)
	2022	421	420	48.00 (44.00, 53.00)
	2023	636	635	43.00 (40.00, 46.00)
	2024	24	19	34.00 (27.00, 41.00)
InGef RDB				
liraglutide 18 mg (other)	overall	21,443	17,311	153.00 (152.00, 155.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2015–2020	16,418	12,934	161.00 (159.00, 163.00)
	2021	1,610	1,301	152.00 (145.00, 158.00)
	2022	1,439	1,256	136.00 (130.00, 143.00)
	2023	1,305	1,243	102.00 (96.00, 107.00)
	2024	408	371	118.00 (107.00, 129.00)
	2025	263	206	77.00 (67.00, 87.00)
liraglutide 18 mg (Saxenda)	overall	47	43	77.00 (50.00, 104.00)
	2015–2020	13	11	77.00 (18.00, 136.00)
	2021	8	8	57.00 (30.00, 83.00)
	2022	11	10	101.00 (40.00, 162.00)
	2023	8	7	72.00 (-5.00, 149.00)
	2024	6	6	74.00 (16.00, 132.00)
	2025	-	-	30.00 (30.00, 30.00)
liraglutide 18 mg (Victoza)	overall	21,399	17,273	154.00 (152.00, 155.00)
	2015–2020	16,405	12,925	161.00 (159.00, 163.00)
	2021	1,602	1,293	152.00 (146.00, 159.00)
	2022	1,428	1,246	136.00 (130.00, 143.00)
	2023	1,300	1,239	102.00 (96.00, 107.00)
	2024	402	365	119.00 (107.00, 130.00)
	2025	262	205	77.00 (67.00, 87.00)
IQVIA DA Germany				
liraglutide 18 mg (other)	overall	18,522	13,074	182.00 (180.00, 184.00)
	2015–2020	13,561	9,087	199.00 (197.00, 201.00)
	2021	1,717	1,297	158.00 (151.00, 164.00)
	2022	1,280	1,034	134.00 (127.00, 141.00)
	2023	1,445	1,233	117.00 (111.00, 123.00)
	2024	437	370	117.00 (106.00, 128.00)
	2025	82	53	113.00 (85.00, 141.00)
liraglutide 18 mg (Saxenda)	overall	1,593	1,467	68.00 (64.00, 72.00)
	2015–2020	498	462	73.00 (65.00, 80.00)
	2021	258	237	70.00 (59.00, 80.00)
	2022	285	265	73.00 (63.00, 83.00)
	2023	464	428	61.00 (55.00, 67.00)
	2024	67	62	65.00 (48.00, 82.00)
	2025	21	13	53.00 (28.00, 79.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
liraglutide 18 mg (Victoza)	overall	16,959	11,646	192.00 (190.00, 194.00)
	2015–2020	13,076	8,643	203.00 (201.00, 206.00)
	2021	1,462	1,063	172.00 (165.00, 179.00)
	2022	995	769	150.00 (142.00, 159.00)
	2023	992	820	139.00 (131.00, 147.00)
	2024	373	311	125.00 (113.00, 137.00)
	2025	61	40	125.00 (93.00, 158.00)
Liraglutide 10.8 mg (other)10.8 mg (other)	overall	309	284	160.00 (146.00, 173.00)
IPCI				
liraglutide 10.8 mg (other)	overall	245	143	217.00 (198.00, 235.00)
	2015–2020	184	109	214.00 (193.00, 235.00)
	2021	21	13	197.00 (133.00, 260.00)
	2022	20	9	254.00 (191.00, 316.00)
	2023	10	6	247.00 (161.00, 334.00)
	2024	10	6	200.00 (112.00, 287.00)
liraglutide 18 mg (other)	overall	6,455	3,423	226.00 (223.00, 230.00)
	2015–2020	2,147	1,115	238.00 (232.00, 244.00)
	2021	164	112	181.00 (160.00, 202.00)
	2022	832	465	237.00 (228.00, 247.00)
	2023	1,078	743	201.00 (193.00, 210.00)
	2024	1,295	717	232.00 (225.00, 239.00)
	2025	939	271	192.00 (161.00, 222.00)
liraglutide 18 mg (Saxenda)	overall	2,297	1,095	233.00 (228.00, 239.00)
	2015–2020	20	19	130.00 (80.00, 181.00)
	2021	27	22	134.00 (87.00, 182.00)
	2022	412	204	260.00 (248.00, 272.00)
	2023	437	244	238.00 (226.00, 251.00)
	2024	768	425	233.00 (224.00, 243.00)
	2025	633	181	214.00 (194.00, 234.00)
liraglutide 18 mg (Victoza)	overall	1,830	979	231.00 (225.00, 238.00)
	2015–2020	1,350	591	262.00 (254.00, 269.00)
	2021	75	48	177.00 (144.00, 210.00)
	2022	110	79	167.00 (140.00, 195.00)
	2023	226	213	118.00 (103.00, 132.00)
	2024	48	37	176.00 (139.00, 212.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2025	21	11	164.00 (90.00, 239.00)
liraglutide 6 mg (other)	overall	269	219	104.00 (89.00, 118.00)
	2015–2020	6	5	201.00 (102.00, 301.00)
	2021	11	11	108.00 (54.00, 161.00)
	2022	68	57	113.00 (84.00, 143.00)
	2023	41	37	88.00 (54.00, 122.00)
	2024	89	74	102.00 (76.00, 129.00)
	2025	54	35	62.00 (47.00, 76.00)
NLHR				
liraglutide 3.6 mg (other)	overall	8,596	2,929	296.00 (294.00, 298.00)
	2015–2020	5,771	1,763	307.00 (304.00, 310.00)
	2021	1,221	480	289.00 (283.00, 295.00)
	2022	923	499	250.00 (242.00, 258.00)
	2023	681	187	264.00 (252.00, 275.00)
liraglutide 6 mg (other)	overall	61,515	29,797	268.00 (267.00, 269.00)
	2015–2020	17,509	7,305	277.00 (275.00, 278.00)
	2021	13,091	6,364	270.00 (268.00, 272.00)
	2022	26,030	13,538	268.00 (267.00, 269.00)
	2023	4,885	2,590	230.00 (226.00, 234.00)
SIDIAP				
liraglutide 6 mg (other)	overall	20,762	9,563	261.00 (260.00, 263.00)
	2015–2020	12,549	4,384	290.00 (288.00, 292.00)
	2021	1,359	684	251.00 (244.00, 258.00)
	2022	2,473	1,444	233.00 (228.00, 239.00)
	2023	3,088	2,261	205.00 (201.00, 210.00)
	2024	1,293	790	172.00 (164.00, 179.00)
HI-SPEED				
liraglutide 3.6 mg (other)	overall	6,144	1,493	314.00 (311.00, 316.00)
	2015–2020	4,568	921	324.00 (322.00, 327.00)
	2021	401	143	292.00 (281.00, 303.00)
	2022	319	99	291.00 (278.00, 305.00)
	2023	375	147	278.00 (266.00, 291.00)
	2024	337	139	276.00 (263.00, 289.00)
	2025	144	44	236.00 (206.00, 267.00)
liraglutide 6 mg (other)	overall	100,488	76,647	174.00 (173.00, 175.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2015–2020	45,039	28,348	214.00 (213.00, 216.00)
	2021	5,197	3,922	175.00 (171.00, 179.00)
	2022	9,881	8,649	149.00 (146.00, 151.00)
	2023	18,057	16,477	124.00 (122.00, 126.00)
	2024	18,315	16,209	149.00 (147.00, 150.00)
	2025	3,999	3,042	113.00 (110.00, 117.00)
CPRD Aurum				
liraglutide 10.8 mg (other)	overall	1,574	696	260.00 (253.00, 267.00)
	2015–2020	1,125	460	268.00 (260.00, 275.00)
	2021	136	67	252.00 (229.00, 275.00)
	2022	94	45	274.00 (249.00, 298.00)
	2023	132	75	223.00 (198.00, 248.00)
	2024	62	37	223.00 (187.00, 259.00)
	2025	25	12	131.00 (53.00, 208.00)
liraglutide 18 mg (other)	overall	61,028	32,075	232.00 (231.00, 233.00)
	2015–2020	47,482	20,599	264.00 (262.00, 265.00)
	2021	2,033	1,248	198.00 (191.00, 204.00)
	2022	3,940	3,100	138.00 (134.00, 142.00)
	2023	6,757	6,427	94.00 (91.00, 96.00)
	2024	573	558	44.00 (40.00, 48.00)
	2025	243	143	116.00 (95.00, 137.00)
liraglutide 18 mg (Saxenda)	overall	5,799	5,659	46.00 (44.00, 47.00)
	2015–2020	383	356	79.00 (68.00, 89.00)
	2021	355	336	65.00 (56.00, 74.00)
	2022	1,760	1,699	54.00 (51.00, 58.00)
	2023	2,885	2,862	36.00 (35.00, 37.00)
	2024	332	329	30.00 (27.00, 32.00)
	2025	84	77	37.00 (27.00, 46.00)
liraglutide 18 mg (Victoza)	overall	16,026	8,921	230.00 (228.00, 233.00)
	2015–2020	11,629	5,567	250.00 (247.00, 252.00)
	2021	744	357	246.00 (236.00, 256.00)
	2022	1,173	716	224.00 (215.00, 232.00)
	2023	2,328	2,138	142.00 (137.00, 146.00)
	2024	135	128	64.00 (52.00, 76.00)
	2025	17	15	37.00 (30.00, 45.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
CPRD GOLD				
liraglutide 10.8 mg (other)	overall	1,226	644	234.00 (226.00, 242.00)
	2015–2020	753	355	247.00 (237.00, 258.00)
	2021	100	54	230.00 (202.00, 259.00)
	2022	115	53	244.00 (217.00, 270.00)
	2023	113	58	239.00 (212.00, 265.00)
	2024	116	97	182.00 (160.00, 203.00)
	2025	29	27	37.00 (22.00, 52.00)
liraglutide 18 mg (other)	overall	12,789	5,436	267.00 (264.00, 269.00)
	2015–2020	12,510	5,209	269.00 (267.00, 272.00)
	2021	51	34	173.00 (131.00, 215.00)
	2022	91	73	160.00 (133.00, 188.00)
	2023	130	114	131.00 (109.00, 153.00)
	2024	-	-	39.00 (22.00, 56.00)
	2025	-	-	120.00 (-20.00, 261.00)
liraglutide 18 mg (Saxenda)	overall	1,153	1,118	40.00 (35.00, 45.00)
	2015–2020	70	58	117.00 (84.00, 151.00)
	2021	46	43	55.00 (26.00, 84.00)
	2022	348	329	60.00 (49.00, 72.00)
	2023	651	651	22.00 (18.00, 25.00)
	2024	35	35	16.00 (0.00, 32.00)
	2025	-	-	122.00 (-72.00, 317.00)
liraglutide 18 mg (Victoza)	overall	6,877	3,859	226.00 (223.00, 230.00)
	2015–2020	6,023	3,229	232.00 (229.00, 236.00)
	2021	220	112	247.00 (228.00, 266.00)
	2022	258	171	195.00 (177.00, 214.00)
	2023	357	330	145.00 (132.00, 157.00)
	2024	17	15	44.00 (17.00, 71.00)
	2025	-	-	13.00 (-2.00, 28.00)

The follow-up was limited to one-year since the first drug prescription to enable the comparison across different time periods. Last reported year can be an incomplete calendar year (see end of study period in **Table 1**).
Number of records refer to number of new users, defined as no previous use of the GLP-1 class or ingredient in the previous 365 days (i.e. an individual may contribute to different years for different treatment episodes). Number of events refer to number of individuals who discontinued their treatment within the year/period of interest. Restricted mean survival represents the average time-on-treatment (i.e. average time patients were alive and still had not changed the treatment).
In FinOMOP-THL, treatment duration for each prescription was unavailable and imputed to 30 days. Thus, median survival and restricted median survival values shown for FinOMOP-THL are inaccurate and unreliable.
– = not applicable; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef

Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

Table 13. Time-to-switch between strengths in new dulaglutide users, limited to one year follow-up.

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
IQVIA LPD Belgium				
dulaglutide 0.75 mg (other)	overall	515	492	59.00 (51.00, 67.00)
	2015–2020	223	214	72.00 (59.00, 85.00)
	2021	76	76	40.00 (24.00, 57.00)
	2022	92	88	42.00 (26.00, 57.00)
	2023	84	78	65.00 (43.00, 88.00)
	2024	27	24	61.00 (18.00, 104.00)
	2025	10	9	58.00 (-8.00, 124.00)
	2026	-	-	10.00 (-4.00, 24.00)
dulaglutide 0.75 mg (Trulicity)	overall	515	492	59.00 (51.00, 67.00)
	2015–2020	223	214	72.00 (59.00, 85.00)
	2021	76	76	40.00 (24.00, 57.00)
	2022	92	88	42.00 (26.00, 57.00)
	2023	84	78	65.00 (43.00, 88.00)
	2024	27	24	61.00 (18.00, 104.00)
	2025	10	9	58.00 (-8.00, 124.00)
	2026	-	-	10.00 (-4.00, 24.00)
dulaglutide 1.5 mg (other)	overall	1,404	1,309	79.00 (73.00, 85.00)
	2015–2020	634	568	109.00 (99.00, 118.00)
	2021	182	166	78.00 (61.00, 94.00)
	2022	237	231	50.00 (40.00, 61.00)
	2023	207	202	57.00 (46.00, 69.00)
	2024	95	94	27.00 (15.00, 38.00)
	2025	43	42	33.00 (14.00, 52.00)
	2026	6	6	2.00 (0.00, 4.00)
dulaglutide 1.5 mg (Trulicity)	overall	1,404	1,309	79.00 (73.00, 85.00)
	2015–2020	634	568	109.00 (99.00, 118.00)
	2021	182	166	78.00 (61.00, 94.00)
	2022	237	231	50.00 (40.00, 61.00)
	2023	207	202	57.00 (46.00, 69.00)
	2024	95	94	27.00 (15.00, 38.00)
	2025	43	42	33.00 (14.00, 52.00)
	2026	6	6	2.00 (0.00, 4.00)
NAJS				

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
dulaglutide 1.5 mg (other)	overall	18,699	11,237	216.00 (214.00, 218.00)
	2015–2020	6,572	2,319	284.00 (281.00, 287.00)
	2021	3,734	2,244	221.00 (217.00, 225.00)
	2022	3,338	2,291	194.00 (189.00, 198.00)
	2023	3,568	2,899	149.00 (145.00, 153.00)
	2024	1,487	1,484	112.00 (108.00, 117.00)
dulaglutide 6 mg (other)	overall	861	730	137.00 (129.00, 146.00)
	2021	88	70	175.00 (147.00, 203.00)
	2022	142	110	151.00 (128.00, 174.00)
	2023	450	370	138.00 (126.00, 150.00)
	2024	181	180	106.00 (93.00, 120.00)
dulaglutide 9 mg (other)	overall	412	290	189.00 (175.00, 202.00)
	2021	9	6	254.00 (176.00, 332.00)
	2022	32	10	289.00 (248.00, 331.00)
	2023	303	206	192.00 (175.00, 208.00)
	2024	68	68	120.00 (95.00, 145.00)
DK-DHR				
dulaglutide 1.5 mg (other)	overall	3,070	1,933	204.00 (199.00, 209.00)
	2015–2020	1,727	779	262.00 (256.00, 268.00)
	2021	92	49	246.00 (219.00, 272.00)
	2022	47	31	189.00 (149.00, 230.00)
	2023	1,082	959	118.00 (111.00, 124.00)
	2024	122	115	117.00 (103.00, 131.00)
dulaglutide 1.5 mg (Trulicity)	overall	3,070	1,933	204.00 (199.00, 209.00)
	2015–2020	1,727	779	262.00 (256.00, 268.00)
	2021	92	49	246.00 (219.00, 272.00)
	2022	47	31	189.00 (149.00, 230.00)
	2023	1,082	959	118.00 (111.00, 124.00)
	2024	122	115	117.00 (103.00, 131.00)
InGef RDB				
dulaglutide 1.5 mg (other)	overall	29,625	18,551	209.00 (207.00, 210.00)
	2015–2020	17,458	9,384	238.00 (236.00, 240.00)
	2021	3,565	2,448	192.00 (188.00, 197.00)
	2022	3,266	2,355	178.00 (173.00, 182.00)
	2023	2,791	2,336	144.00 (139.00, 149.00)
	2024	1,716	1,433	149.00 (142.00, 155.00)
	2025	829	595	96.00 (89.00, 103.00)
dulaglutide 3 mg (other)	overall	1,473	1,309	106.00 (100.00, 111.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2021	323	291	116.00 (103.00, 128.00)
	2022	281	243	127.00 (112.00, 142.00)
	2023	419	393	87.00 (78.00, 96.00)
	2024	247	227	112.00 (98.00, 126.00)
	2025	203	155	83.00 (71.00, 94.00)
IQVIA DA Germany				
dulaglutide 0.75 mg (other)	overall	14,302	12,518	97.00 (95.00, 99.00)
	2015–2020	4,612	4,102	91.00 (87.00, 94.00)
	2021	2,673	2,322	104.00 (99.00, 109.00)
	2022	2,564	2,202	105.00 (100.00, 110.00)
	2023	2,372	2,132	99.00 (94.00, 103.00)
	2024	1,248	1,133	92.00 (86.00, 97.00)
	2025	833	627	79.00 (71.00, 87.00)
dulaglutide 0.75 mg (Trulicity)	overall	14,302	12,518	97.00 (95.00, 99.00)
	2015–2020	4,612	4,102	91.00 (87.00, 94.00)
	2021	2,673	2,322	104.00 (99.00, 109.00)
	2022	2,564	2,202	105.00 (100.00, 110.00)
	2023	2,372	2,132	99.00 (94.00, 103.00)
	2024	1,248	1,133	92.00 (86.00, 97.00)
	2025	833	627	79.00 (71.00, 87.00)
dulaglutide 1.5 mg (other)	overall	21,495	12,006	229.00 (228.00, 231.00)
	2015–2020	11,053	5,395	252.00 (249.00, 254.00)
	2021	3,239	1,873	228.00 (224.00, 233.00)
	2022	2,734	1,803	199.00 (194.00, 204.00)
	2023	2,405	1,662	192.00 (187.00, 197.00)
	2024	1,436	1,007	187.00 (180.00, 193.00)
	2025	628	266	190.00 (175.00, 204.00)
dulaglutide 1.5 mg (Trulicity)	overall	21,495	12,006	229.00 (228.00, 231.00)
	2015–2020	11,053	5,395	252.00 (249.00, 254.00)
	2021	3,239	1,873	228.00 (224.00, 233.00)
	2022	2,734	1,803	199.00 (194.00, 204.00)
	2023	2,405	1,662	192.00 (187.00, 197.00)
	2024	1,436	1,007	187.00 (180.00, 193.00)
	2025	628	266	190.00 (175.00, 204.00)
dulaglutide 3 mg (other)	overall	2,249	1,318	231.00 (226.00, 236.00)
	2015–2020	-	0	365.00 (365.00, 365.00)
	2021	400	253	218.00 (205.00, 231.00)
	2022	520	328	234.00 (223.00, 245.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2023	690	440	228.00 (219.00, 238.00)
	2024	413	245	236.00 (224.00, 247.00)
	2025	225	52	230.00 (198.00, 262.00)
dulaglutide 4.5 mg (other)	overall	758	362	275.00 (267.00, 284.00)
	2021	66	32	264.00 (234.00, 293.00)
	2022	141	70	274.00 (254.00, 295.00)
	2023	298	161	275.00 (262.00, 289.00)
	2024	179	87	277.00 (260.00, 295.00)
	2025	74	12	298.00 (264.00, 332.00)
dulaglutide 3 mg (Trulicity)	overall	2,249	1,318	231.00 (226.00, 236.00)
	2015–2020	-	0	365.00 (365.00, 365.00)
	2021	400	253	218.00 (205.00, 231.00)
	2022	520	328	234.00 (223.00, 245.00)
	2023	690	440	228.00 (219.00, 238.00)
	2024	413	245	236.00 (224.00, 247.00)
	2025	225	52	230.00 (198.00, 262.00)
dulaglutide 4.5 mg (Trulicity)	overall	758	362	275.00 (267.00, 284.00)
	2021	66	32	264.00 (234.00, 293.00)
	2022	141	70	274.00 (254.00, 295.00)
	2023	298	161	275.00 (262.00, 289.00)
	2024	179	87	277.00 (260.00, 295.00)
	2025	74	12	298.00 (264.00, 332.00)
IPCI				
dulaglutide 0.75 mg (other)	overall	274	240	110.00 (97.00, 123.00)
	2015–2020	63	55	120.00 (91.00, 150.00)
	2021	40	32	130.00 (89.00, 171.00)
	2022	73	67	97.00 (76.00, 118.00)
	2023	58	53	103.00 (76.00, 129.00)
	2024	33	31	85.00 (54.00, 115.00)
	2025	7	-	263.00 (146.00, 379.00)
dulaglutide 0.75 mg (Trulicity)	overall	207	179	110.00 (94.00, 125.00)
	2015–2020	48	41	128.00 (93.00, 163.00)
	2021	34	27	120.00 (76.00, 164.00)
	2022	47	43	86.00 (65.00, 106.00)
	2023	48	43	109.00 (77.00, 140.00)
	2024	26	24	91.00 (53.00, 129.00)
	2025	-	-	281.00 (138.00, 424.00)
dulaglutide 1.5 mg (other)	overall	1,463	796	231.00 (224.00, 238.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2015–2020	561	257	256.00 (244.00, 267.00)
	2021	232	91	278.00 (261.00, 294.00)
	2022	343	215	213.00 (199.00, 228.00)
	2023	185	138	178.00 (158.00, 199.00)
	2024	112	82	164.00 (139.00, 190.00)
	2025	30	13	169.00 (96.00, 242.00)
dulaglutide 1.5 mg (Trulicity)	overall	1,080	556	239.00 (230.00, 247.00)
	2015–2020	394	171	265.00 (252.00, 279.00)
	2021	181	63	284.00 (266.00, 302.00)
	2022	257	154	219.00 (202.00, 236.00)
	2023	144	101	189.00 (165.00, 212.00)
	2024	82	58	174.00 (143.00, 204.00)
	2025	22	9	193.00 (111.00, 275.00)
dulaglutide 3 mg (other)	overall	62	53	87.00 (66.00, 108.00)
	2021	-	-	92.00 (18.00, 166.00)
	2022	27	20	105.00 (66.00, 144.00)
	2023	23	23	64.00 (43.00, 84.00)
	2024	8	6	102.00 (21.00, 183.00)
	2025	-	-	46.00 (46.00, 46.00)
dulaglutide 4.5 mg (other)	overall	21	17	111.00 (64.00, 158.00)
	2022	14	13	82.00 (39.00, 124.00)
	2023	-	-	144.00 (19.00, 270.00)
	2024	-	-	211.00 (211.00, 211.00)
	2025	-	0	365.00 (365.00, 365.00)
dulaglutide 3 mg (Trulicity)	overall	28	19	97.00 (69.00, 124.00)
	2021	-	-	46.00 (46.00, 46.00)
	2022	14	7	128.00 (89.00, 167.00)
	2023	8	8	58.00 (41.00, 76.00)
	2024	5	-	85.00 (5.00, 166.00)
dulaglutide 4.5 mg (Trulicity)	overall	8	5	168.00 (75.00, 262.00)
	2022	5	-	127.00 (22.00, 233.00)
	2023	-	0	365.00 (365.00, 365.00)
	2024	-	-	211.00 (211.00, 211.00)
	2025	-	0	365.00 (365.00, 365.00)
SIDIAP				
dulaglutide 1.5 mg (other)	overall	9,433	6,525	169.00 (166.00, 172.00)
	2015–2020	1,836	1,142	200.00 (193.00, 207.00)
	2021	1,544	1,040	179.00 (172.00, 186.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2022	2,289	1,657	167.00 (161.00, 172.00)
	2023	2,132	1,618	158.00 (152.00, 164.00)
	2024	1,632	1,068	140.00 (133.00, 147.00)
dulaglutide 3 mg (other)	overall	15,649	4,710	296.00 (295.00, 298.00)
	2015–2020	5,627	1,754	296.00 (293.00, 299.00)
	2021	2,925	764	307.00 (303.00, 311.00)
	2022	3,094	879	300.00 (296.00, 305.00)
	2023	2,403	842	292.00 (287.00, 297.00)
	2024	1,600	471	272.00 (265.00, 279.00)
CPRD Aurum				
dulaglutide 0.75 mg (other)	overall	24,266	19,470	131.00 (130.00, 133.00)
	2015–2020	11,019	8,511	143.00 (140.00, 145.00)
	2021	4,392	3,599	125.00 (121.00, 129.00)
	2022	4,352	3,642	121.00 (117.00, 125.00)
	2023	3,372	2,846	120.00 (116.00, 124.00)
	2024	737	649	118.00 (110.00, 126.00)
	2025	394	223	75.00 (67.00, 82.00)
dulaglutide 0.75 mg (Trulicity)	overall	14,433	11,668	128.00 (125.00, 130.00)
	2015–2020	5,282	4,111	139.00 (135.00, 143.00)
	2021	2,922	2,403	123.00 (118.00, 127.00)
	2022	2,987	2,487	122.00 (117.00, 126.00)
	2023	2,383	2,017	120.00 (115.00, 125.00)
	2024	532	471	116.00 (106.00, 125.00)
	2025	327	179	98.00 (62.00, 133.00)
dulaglutide 1.5 mg (other)	overall	38,873	17,439	258.00 (257.00, 259.00)
	2015–2020	19,527	6,544	286.00 (284.00, 288.00)
	2021	6,374	3,040	257.00 (254.00, 261.00)
	2022	6,711	3,675	231.00 (228.00, 234.00)
	2023	4,839	3,347	201.00 (198.00, 205.00)
	2024	987	671	184.00 (175.00, 193.00)
	2025	435	162	169.00 (148.00, 190.00)
dulaglutide 1.5 mg (Trulicity)	overall	22,971	11,034	249.00 (247.00, 251.00)
	2015–2020	9,308	3,221	283.00 (280.00, 285.00)
	2021	4,147	1,999	256.00 (252.00, 260.00)
	2022	4,793	2,625	230.00 (226.00, 234.00)
	2023	3,618	2,540	199.00 (195.00, 204.00)
	2024	739	510	180.00 (170.00, 190.00)
	2025	366	139	165.00 (141.00, 189.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
dulaglutide 3 mg (other)	overall	1,699	1,195	181.00 (174.00, 187.00)
	2021	129	92	204.00 (181.00, 227.00)
	2022	359	242	179.00 (164.00, 194.00)
	2023	817	621	176.00 (167.00, 186.00)
	2024	298	204	184.00 (168.00, 199.00)
dulaglutide 4.5 mg (other)	overall	585	385	200.00 (189.00, 211.00)
	2022	92	44	237.00 (207.00, 267.00)
	2023	338	255	194.00 (181.00, 208.00)
	2024	108	71	179.00 (152.00, 206.00)
CPRD GOLD				
dulaglutide 0.75 mg (other)	overall	1,620	1,163	165.00 (159.00, 172.00)
	2015–2020	994	675	178.00 (169.00, 187.00)
	2021	212	164	155.00 (137.00, 173.00)
	2022	250	203	137.00 (120.00, 153.00)
	2023	113	86	157.00 (131.00, 182.00)
	2024	28	23	129.00 (81.00, 177.00)
	2025	23	12	171.00 (100.00, 243.00)
dulaglutide 0.75 mg (Trulicity)	overall	3,458	2,514	158.00 (153.00, 163.00)
	2015–2020	1,917	1,341	170.00 (163.00, 176.00)
	2021	531	410	137.00 (125.00, 149.00)
	2022	535	408	145.00 (133.00, 157.00)
	2023	340	252	157.00 (142.00, 172.00)
	2024	92	82	104.00 (84.00, 123.00)
	2025	43	21	74.00 (60.00, 88.00)
dulaglutide 1.5 mg (other)	overall	2,667	1,068	269.00 (263.00, 274.00)
	2015–2020	1,661	518	291.00 (285.00, 297.00)
	2021	365	173	256.00 (242.00, 270.00)
	2022	345	187	233.00 (218.00, 248.00)
	2023	165	104	219.00 (197.00, 240.00)
	2024	87	68	157.00 (132.00, 182.00)
	2025	44	18	196.00 (140.00, 252.00)
dulaglutide 1.5 mg (Trulicity)	overall	4,784	1,971	267.00 (263.00, 270.00)
	2015–2020	2,653	859	289.00 (284.00, 294.00)
	2021	709	328	261.00 (252.00, 271.00)
	2022	724	364	244.00 (234.00, 254.00)
	2023	469	293	224.00 (212.00, 237.00)
	2024	150	101	165.00 (142.00, 189.00)
	2025	79	26	194.00 (145.00, 243.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
dulaglutide 3 mg (other)	overall	83	57	174.00 (142.00, 207.00)
	2021	16	13	116.00 (51.00, 182.00)
	2022	23	12	224.00 (160.00, 287.00)
	2023	21	17	198.00 (138.00, 259.00)
	2024	16	11	150.00 (79.00, 221.00)
	2025	7	-	48.00 (24.00, 72.00)
dulaglutide 4.5 mg (other)	overall	37	21	212.00 (164.00, 261.00)
	2021	-	-	150.00 (19.00, 281.00)
	2022	5	-	272.00 (156.00, 388.00)
	2023	15	8	247.00 (174.00, 320.00)
	2024	9	6	178.00 (89.00, 267.00)
	2025	-	-	190.00 (19.00, 362.00)

The follow-up was limited to one-year since the first drug prescription to enable the comparison across different time periods. Last reported year can be an incomplete calendar year (see end of study period in **Table 1**).
Number of records refer to number of new users, defined as no previous use of the GLP-1 class or ingredient in the previous 365 days (i.e. an individual may contribute to different years for different treatment episodes). Number of events refer to number of individuals who discontinued their treatment within the year/period of interest. Restricted mean survival represents the average time-on-treatment (i.e. average time patients were alive and still had not changed the treatment).
In FinOMOP-THL, treatment duration for each prescription was unavailable and imputed to 30 days. Thus, median survival and restricted median survival values shown for FinOMOP-THL are inaccurate and unreliable.
In CPRD Aurum, missing year stratification for specific strength records were removed in accordance with minimum cell count disclosure rules of the data source.
– = not applicable; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; DPP-4 inhibitors = Dipeptidyl Peptidase 4 inhibitors; FinOMOP-THL = Finnish Care Register for Health Care; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

Table 14. Time-to-switch between strengths in new semaglutide users, limited to one year follow-up.

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
IQVIA LPD Belgium				
semaglutide 1 mg (other)	overall	2,316	2,279	19.00 (18.00, 21.00)
	2015–2020	180	177	32.00 (24.00, 40.00)
	2021	450	448	22.00 (18.00, 25.00)
	2022	763	750	17.00 (14.00, 19.00)
	2023	566	559	19.00 (16.00, 22.00)
	2024	150	150	19.00 (13.00, 24.00)
	2025	157	152	13.00 (9.00, 18.00)
	2026	50	43	10.00 (6.00, 13.00)
semaglutide 2 mg (other)	overall	2,250	2,184	36.00 (33.00, 38.00)
	2015–2020	232	222	66.00 (53.00, 79.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2021	353	348	43.00 (36.00, 50.00)
	2022	640	623	30.00 (26.00, 35.00)
	2023	608	586	33.00 (29.00, 37.00)
	2024	206	203	29.00 (22.00, 37.00)
	2025	169	164	20.00 (15.00, 25.00)
	2026	42	38	6.00 (4.00, 8.00)
semaglutide 2 mg (Ozempic)	overall	2,250	2,184	36.00 (33.00, 38.00)
	2015–2020	232	222	66.00 (53.00, 79.00)
	2021	353	348	43.00 (36.00, 50.00)
	2022	640	623	30.00 (26.00, 35.00)
	2023	608	586	33.00 (29.00, 37.00)
	2024	206	203	29.00 (22.00, 37.00)
	2025	169	164	20.00 (15.00, 25.00)
	2026	42	38	6.00 (4.00, 8.00)
semaglutide 4 mg (other)	overall	2,460	2,364	51.00 (48.00, 54.00)
	2015–2020	171	153	106.00 (88.00, 125.00)
	2021	313	297	77.00 (66.00, 88.00)
	2022	601	584	47.00 (41.00, 53.00)
	2023	632	616	37.00 (32.00, 43.00)
	2024	377	367	45.00 (37.00, 53.00)
	2025	301	292	42.00 (34.00, 49.00)
	2026	65	55	28.00 (5.00, 52.00)
semaglutide 4 mg (Ozempic)	overall	2,460	2,364	51.00 (48.00, 54.00)
	2015–2020	171	153	106.00 (88.00, 125.00)
	2021	313	297	77.00 (66.00, 88.00)
	2022	601	584	47.00 (41.00, 53.00)
	2023	632	616	37.00 (32.00, 43.00)
	2024	377	367	45.00 (37.00, 53.00)
	2025	301	292	42.00 (34.00, 49.00)
	2026	65	55	28.00 (5.00, 52.00)
semaglutide 1 mg (Ozempic)	overall	2,316	2,279	19.00 (18.00, 21.00)
	2015–2020	180	177	32.00 (24.00, 40.00)
	2021	450	448	22.00 (18.00, 25.00)
	2022	763	750	17.00 (14.00, 19.00)
	2023	566	559	19.00 (16.00, 22.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2024	150	150	19.00 (13.00, 24.00)
	2025	157	152	13.00 (9.00, 18.00)
	2026	50	43	10.00 (6.00, 13.00)
NAJS				
semaglutide 1 mg (other)	overall	2,143	1,431	194.00 (188.00, 200.00)
	2015–2020	245	84	282.00 (266.00, 298.00)
	2021	212	71	275.00 (257.00, 293.00)
	2022	414	190	246.00 (232.00, 260.00)
	2023	450	273	203.00 (189.00, 217.00)
	2024	822	813	115.00 (108.00, 122.00)
semaglutide 14 mg (other)	overall	1,030	857	149.00 (141.00, 157.00)
	2021	16	9	223.00 (159.00, 287.00)
	2022	47	25	234.00 (192.00, 276.00)
	2023	367	261	161.00 (146.00, 176.00)
	2024	598	562	133.00 (124.00, 142.00)
	2025	-	0	365.00 (365.00, 365.00)
semaglutide 7 mg (other)	overall	1,946	1,808	91.00 (87.00, 96.00)
	2021	85	67	142.00 (114.00, 170.00)
	2022	236	203	112.00 (98.00, 127.00)
	2023	639	586	98.00 (90.00, 106.00)
	2024	984	952	77.00 (72.00, 82.00)
	2025	-	0	365.00 (365.00, 365.00)
semaglutide 0.25 mg (other)	overall	11,862	11,575	59.00 (57.00, 60.00)
	2015–2020	2,929	2,849	59.00 (56.00, 61.00)
	2021	3,125	3,036	59.00 (57.00, 62.00)
	2022	2,808	2,724	63.00 (60.00, 66.00)
	2023	1,688	1,658	60.00 (57.00, 64.00)
	2024	1,312	1,308	44.00 (42.00, 46.00)
semaglutide 1.34 mg (other)	overall	4,139	3,548	118.00 (114.00, 121.00)
	2015–2020	1,410	1,098	144.00 (137.00, 151.00)
	2021	915	763	124.00 (116.00, 132.00)
	2022	739	648	108.00 (100.00, 117.00)
	2023	596	561	97.00 (89.00, 105.00)
	2024	479	478	67.00 (62.00, 72.00)
DK-DHR				

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
semaglutide 1 mg (other)	overall	9,852	6,226	211.00 (208.00, 214.00)
	2015–2020	2,972	802	306.00 (302.00, 310.00)
	2021	797	342	265.00 (256.00, 274.00)
	2022	1,541	1,075	211.00 (205.00, 218.00)
	2023	2,424	2,017	163.00 (158.00, 168.00)
	2024	2,118	1,990	106.00 (103.00, 110.00)
semaglutide 14 mg (other)	overall	169	128	154.00 (133.00, 174.00)
	2015–2020	23	12	205.00 (143.00, 267.00)
	2021	30	17	217.00 (164.00, 269.00)
	2022	53	41	170.00 (134.00, 205.00)
	2023	29	28	105.00 (72.00, 137.00)
	2024	34	30	80.00 (51.00, 110.00)
semaglutide 14 mg (Rybelsus)	overall	44	42	99.00 (72.00, 125.00)
	2022	7	5	183.00 (76.00, 289.00)
	2023	23	23	100.00 (69.00, 131.00)
	2024	14	14	55.00 (40.00, 70.00)
semaglutide 3 mg (other)	overall	11,720	11,539	34.00 (33.00, 35.00)
	2015–2020	2,464	2,409	29.00 (27.00, 32.00)
	2021	4,374	4,255	41.00 (38.00, 43.00)
	2022	3,800	3,793	32.00 (30.00, 34.00)
	2023	186	186	12.00 (10.00, 14.00)
	2024	896	896	25.00 (23.00, 27.00)
semaglutide 3 mg (Rybelsus)	overall	11,720	11,539	34.00 (33.00, 35.00)
	2015–2020	2,464	2,409	29.00 (27.00, 32.00)
	2021	4,374	4,255	41.00 (38.00, 43.00)
	2022	3,800	3,793	32.00 (30.00, 34.00)
	2023	186	186	12.00 (10.00, 14.00)
	2024	896	896	25.00 (23.00, 27.00)
semaglutide 7 mg (other)	overall	1,060	951	103.00 (96.00, 110.00)
	2015–2020	224	176	140.00 (122.00, 158.00)
	2021	366	313	129.00 (115.00, 142.00)
	2022	326	323	71.00 (63.00, 79.00)
	2023	65	64	46.00 (30.00, 61.00)
	2024	79	75	50.00 (39.00, 61.00)
semaglutide 0.25 mg (other)	overall	228,199	225,924	24.00 (24.00, 25.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2015–2020	24,844	24,432	29.00 (28.00, 30.00)
	2021	13,597	13,319	31.00 (30.00, 32.00)
	2022	23,737	23,392	27.00 (26.00, 28.00)
	2023	100,293	99,243	24.00 (24.00, 25.00)
	2024	65,728	65,538	21.00 (20.00, 21.00)
semaglutide 0.25 mg (Ozempic)	overall	85,934	84,409	33.00 (32.00, 33.00)
	2015–2020	24,844	24,432	29.00 (28.00, 30.00)
	2021	13,597	13,319	31.00 (30.00, 32.00)
	2022	21,757	21,442	27.00 (27.00, 28.00)
	2023	18,546	18,067	44.00 (43.00, 45.00)
	2024	7,190	7,149	34.00 (32.00, 35.00)
semaglutide 0.5 mg (other)	overall	21,317	19,010	96.00 (94.00, 97.00)
	2015–2020	8,743	7,201	127.00 (124.00, 129.00)
	2021	2,304	1,923	121.00 (115.00, 126.00)
	2022	2,756	2,517	91.00 (87.00, 95.00)
	2023	4,724	4,587	58.00 (55.00, 60.00)
	2024	2,790	2,782	48.00 (46.00, 49.00)
semaglutide 0.5 mg (Ozempic)	overall	15,248	13,975	83.00 (81.00, 85.00)
	2015–2020	4,338	3,570	126.00 (122.00, 130.00)
	2021	2,287	1,914	121.00 (115.00, 126.00)
	2022	2,647	2,542	81.00 (78.00, 85.00)
	2023	4,015	3,992	40.00 (39.00, 42.00)
	2024	1,961	1,957	33.00 (31.00, 34.00)
semaglutide 1 mg (Ozempic)	overall	6,548	3,272	249.00 (246.00, 252.00)
	2015–2020	2,972	802	306.00 (302.00, 310.00)
	2021	797	342	265.00 (256.00, 274.00)
	2022	1,437	1,071	199.00 (193.00, 206.00)
	2023	535	354	213.00 (201.00, 225.00)
	2024	807	703	126.00 (120.00, 132.00)
InGef RDB				
semaglutide 1 mg (other)	overall	41	38	40.00 (31.00, 50.00)
	2023	-	-	30.00 (30.00, 30.00)
	2024	23	23	47.00 (33.00, 62.00)
	2025	15	12	30.00 (30.00, 30.00)
semaglutide 2 mg (other)	overall	49,890	43,599	109.00 (108.00, 110.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2015–2020	6,943	5,960	124.00 (121.00, 127.00)
	2021	8,154	6,847	130.00 (127.00, 132.00)
	2022	8,947	7,672	130.00 (127.00, 132.00)
	2023	11,386	10,817	107.00 (105.00, 108.00)
	2024	4,636	4,445	79.00 (77.00, 81.00)
	2025	9,824	7,858	67.00 (66.00, 69.00)
semaglutide 2 mg (Ozempic)	overall	49,869	43,580	109.00 (108.00, 110.00)
	2015–2020	6,943	5,960	124.00 (121.00, 127.00)
	2021	8,154	6,847	130.00 (127.00, 132.00)
	2022	8,947	7,672	130.00 (127.00, 132.00)
	2023	11,386	10,817	107.00 (105.00, 108.00)
	2024	4,623	4,433	79.00 (77.00, 82.00)
	2025	9,816	7,851	68.00 (66.00, 69.00)
semaglutide 4 mg (other)	overall	19,720	14,271	163.00 (161.00, 165.00)
	2015–2020	2,760	1,691	207.00 (201.00, 212.00)
	2021	2,104	1,366	196.00 (189.00, 202.00)
	2022	2,422	1,745	178.00 (172.00, 183.00)
	2023	3,437	2,662	155.00 (151.00, 160.00)
	2024	5,521	4,454	150.00 (146.00, 153.00)
	2025	3,476	2,353	104.00 (100.00, 108.00)
semaglutide 4 mg (Ozempic)	overall	19,690	14,245	163.00 (161.00, 165.00)
	2015–2020	2,760	1,691	207.00 (201.00, 212.00)
	2021	2,104	1,366	196.00 (189.00, 202.00)
	2022	2,422	1,745	178.00 (172.00, 183.00)
	2023	3,436	2,661	155.00 (151.00, 160.00)
	2024	5,506	4,439	150.00 (147.00, 154.00)
	2025	3,462	2,343	104.00 (101.00, 108.00)
semaglutide 6.81 mg (other)	overall	16	16	36.00 (28.00, 43.00)
	2024	10	10	39.00 (28.00, 50.00)
	2025	6	6	30.00 (30.00, 30.00)
semaglutide 9.6 mg (other)	overall	16	13	55.00 (30.00, 80.00)
	2024	9	8	56.00 (26.00, 86.00)
	2025	7	5	54.00 (11.00, 96.00)
IQVIA DA Germany				
semaglutide 1 mg (other)	overall	4,368	4,041	35.00 (33.00, 36.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2015–2020	180	164	91.00 (75.00, 106.00)
	2021	13	12	151.00 (89.00, 213.00)
	2022	5	-	177.00 (62.00, 292.00)
	2023	639	626	33.00 (30.00, 35.00)
	2024	1,989	1,940	31.00 (30.00, 32.00)
	2025	1,542	1,295	32.00 (29.00, 34.00)
semaglutide 2 mg (other)	overall	1,418	1,281	38.00 (35.00, 40.00)
	2023	224	217	38.00 (32.00, 44.00)
	2024	640	614	37.00 (34.00, 40.00)
	2025	554	450	40.00 (34.00, 45.00)
semaglutide 4 mg (other)	overall	1,410	1,083	101.00 (95.00, 107.00)
	2023	268	226	122.00 (107.00, 136.00)
	2024	637	550	95.00 (87.00, 104.00)
	2025	505	307	94.00 (80.00, 108.00)
semaglutide 0.25 mg (other)	overall	2,013	1,982	35.00 (33.00, 37.00)
	2015–2020	1,042	1,035	36.00 (34.00, 38.00)
	2021	194	190	29.00 (23.00, 35.00)
	2022	295	291	38.00 (32.00, 45.00)
	2023	386	381	33.00 (30.00, 37.00)
	2024	42	39	27.00 (24.00, 31.00)
	2025	54	46	31.00 (24.00, 39.00)
semaglutide 0.25 mg (Ozempic)	overall	2,013	1,982	35.00 (33.00, 37.00)
	2015–2020	1,042	1,035	36.00 (34.00, 38.00)
	2021	194	190	29.00 (23.00, 35.00)
	2022	295	291	38.00 (32.00, 45.00)
	2023	386	381	33.00 (30.00, 37.00)
	2024	42	39	27.00 (24.00, 31.00)
	2025	54	46	31.00 (24.00, 39.00)
semaglutide 0.5 mg (other)	overall	22,962	20,260	93.00 (92.00, 94.00)
	2015–2020	2,641	2,394	92.00 (88.00, 96.00)
	2021	4,055	3,486	111.00 (107.00, 114.00)
	2022	4,074	3,512	108.00 (105.00, 112.00)
	2023	6,103	5,667	93.00 (91.00, 96.00)
	2024	3,094	2,935	69.00 (67.00, 72.00)
	2025	2,995	2,266	64.00 (61.00, 67.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
semaglutide 0.5 mg (Ozempic)	overall	22,962	20,260	93.00 (92.00, 94.00)
	2015–2020	2,641	2,394	92.00 (88.00, 96.00)
	2021	4,055	3,486	111.00 (107.00, 114.00)
	2022	4,074	3,512	108.00 (105.00, 112.00)
	2023	6,103	5,667	93.00 (91.00, 96.00)
	2024	3,094	2,935	69.00 (67.00, 72.00)
	2025	2,995	2,266	64.00 (61.00, 67.00)
semaglutide 1 mg (Ozempic)	overall	208	188	96.00 (81.00, 111.00)
	2015–2020	180	164	91.00 (75.00, 106.00)
	2021	13	12	151.00 (89.00, 213.00)
	2022	5	-	177.00 (62.00, 292.00)
	2023	9	7	75.00 (27.00, 123.00)
	2024	-	-	30.00 (30.00, 30.00)
semaglutide 0.333 mg (other)	overall	13,340	10,436	139.00 (136.00, 141.00)
	2015–2020	819	545	186.00 (176.00, 196.00)
	2021	1,447	960	189.00 (182.00, 197.00)
	2022	1,950	1,553	142.00 (136.00, 148.00)
	2023	3,190	2,601	133.00 (128.00, 137.00)
	2024	4,165	3,405	134.00 (130.00, 138.00)
	2025	1,769	1,372	76.00 (72.00, 80.00)
semaglutide 0.333 mg (Ozempic)	overall	13,340	10,436	139.00 (136.00, 141.00)
	2015–2020	819	545	186.00 (176.00, 196.00)
	2021	1,447	960	189.00 (182.00, 197.00)
	2022	1,950	1,553	142.00 (136.00, 148.00)
	2023	3,190	2,601	133.00 (128.00, 137.00)
	2024	4,165	3,405	134.00 (130.00, 138.00)
	2025	1,769	1,372	76.00 (72.00, 80.00)
semaglutide 2.27 mg (other)	overall	47	32	84.00 (50.00, 118.00)
	2024	19	15	93.00 (40.00, 145.00)
	2025	28	17	67.00 (35.00, 99.00)
semaglutide 2.27 mg (Wegovy)	overall	47	32	84.00 (50.00, 118.00)
	2024	19	15	93.00 (40.00, 145.00)
	2025	28	17	67.00 (35.00, 99.00)
semaglutide 3.2 mg (other)	overall	259	181	107.00 (91.00, 123.00)
	2023	37	29	116.00 (73.00, 159.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2024	92	78	102.00 (78.00, 125.00)
	2025	130	74	105.00 (81.00, 130.00)
semaglutide 3.2 mg (Wegovy)	overall	259	181	107.00 (91.00, 123.00)
	2023	37	29	116.00 (73.00, 159.00)
	2024	92	78	102.00 (78.00, 125.00)
	2025	130	74	105.00 (81.00, 130.00)
IPCI				
semaglutide 1 mg (other)	overall	6,926	6,074	65.00 (63.00, 66.00)
	2015–2020	1,100	1,074	60.00 (56.00, 64.00)
	2021	930	881	64.00 (59.00, 68.00)
	2022	1,136	1,078	72.00 (68.00, 77.00)
	2023	887	869	74.00 (69.00, 78.00)
	2024	762	730	63.00 (58.00, 67.00)
	2025	2,111	1,442	60.00 (55.00, 64.00)
semaglutide 14 mg (other)	overall	506	278	216.00 (203.00, 228.00)
	2021	14	7	252.00 (182.00, 321.00)
	2022	21	10	250.00 (188.00, 312.00)
	2023	121	67	213.00 (186.00, 239.00)
	2024	281	173	210.00 (194.00, 227.00)
	2025	69	21	230.00 (182.00, 278.00)
semaglutide 14 mg (Rybelsus)	overall	343	177	223.00 (207.00, 239.00)
	2021	8	-	264.00 (172.00, 357.00)
	2022	11	5	263.00 (186.00, 341.00)
	2023	82	42	222.00 (190.00, 254.00)
	2024	195	111	217.00 (197.00, 237.00)
	2025	47	15	244.00 (194.00, 295.00)
semaglutide 2 mg (other)	overall	1,635	1,278	147.00 (141.00, 153.00)
	2015–2020	575	475	157.00 (147.00, 167.00)
	2021	187	140	157.00 (138.00, 176.00)
	2022	164	143	143.00 (127.00, 160.00)
	2023	267	222	147.00 (132.00, 162.00)
	2024	230	190	131.00 (116.00, 145.00)
	2025	212	108	137.00 (112.00, 162.00)
semaglutide 2 mg (Ozempic)	overall	756	590	141.00 (132.00, 150.00)
	2015–2020	137	123	132.00 (112.00, 152.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2021	100	77	153.00 (127.00, 178.00)
	2022	89	79	148.00 (125.00, 171.00)
	2023	164	132	154.00 (134.00, 174.00)
	2024	139	113	135.00 (116.00, 154.00)
	2025	127	66	146.00 (113.00, 179.00)
semaglutide 3 mg (other)	overall	5,239	4,832	68.00 (66.00, 71.00)
	2015–2020	145	144	56.00 (46.00, 66.00)
	2021	465	451	59.00 (52.00, 65.00)
	2022	567	531	71.00 (64.00, 78.00)
	2023	1,340	1,267	72.00 (68.00, 77.00)
	2024	2,142	2,010	69.00 (66.00, 73.00)
	2025	580	429	61.00 (53.00, 70.00)
semaglutide 3 mg (Rybelsus)	overall	3,325	3,053	68.00 (65.00, 71.00)
	2015–2020	88	87	53.00 (40.00, 66.00)
	2021	284	276	57.00 (49.00, 65.00)
	2022	352	323	76.00 (66.00, 85.00)
	2023	822	773	73.00 (67.00, 79.00)
	2024	1,385	1,303	67.00 (63.00, 71.00)
	2025	394	291	58.00 (47.00, 68.00)
semaglutide 4 mg (other)	overall	1,866	903	236.00 (230.00, 243.00)
	2015–2020	210	92	259.00 (241.00, 277.00)
	2021	214	98	260.00 (243.00, 278.00)
	2022	239	125	240.00 (222.00, 258.00)
	2023	410	226	226.00 (212.00, 240.00)
	2024	519	278	228.00 (216.00, 240.00)
	2025	274	84	219.00 (192.00, 245.00)
semaglutide 4 mg (Ozempic)	overall	1,249	569	242.00 (234.00, 250.00)
	2015–2020	133	56	263.00 (240.00, 286.00)
	2021	136	50	271.00 (248.00, 294.00)
	2022	143	74	244.00 (221.00, 266.00)
	2023	281	151	232.00 (215.00, 248.00)
	2024	346	170	239.00 (224.00, 253.00)
	2025	210	68	216.00 (187.00, 246.00)
semaglutide 7 mg (other)	overall	702	516	151.00 (141.00, 162.00)
	2015–2020	10	7	168.00 (80.00, 256.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2021	50	30	192.00 (150.00, 233.00)
	2022	55	32	209.00 (170.00, 249.00)
	2023	207	164	150.00 (132.00, 168.00)
	2024	299	237	139.00 (125.00, 153.00)
	2025	81	46	136.00 (97.00, 174.00)
semaglutide 7 mg (Rybelsus)	overall	504	369	147.00 (135.00, 159.00)
	2015–2020	5	-	149.00 (30.00, 267.00)
	2021	31	19	188.00 (137.00, 240.00)
	2022	45	28	201.00 (158.00, 244.00)
	2023	146	115	144.00 (123.00, 165.00)
	2024	213	166	136.00 (118.00, 154.00)
	2025	64	37	133.00 (90.00, 175.00)
semaglutide 1 mg (Ozempic)	overall	4,694	4,174	63.00 (60.00, 65.00)
	2015–2020	965	941	60.00 (56.00, 64.00)
	2021	688	652	60.00 (54.00, 65.00)
	2022	707	666	71.00 (65.00, 77.00)
	2023	579	567	75.00 (69.00, 81.00)
	2024	425	404	58.00 (53.00, 63.00)
	2025	1,330	944	56.00 (50.00, 62.00)
NLHR				
semaglutide 14 mg (other)	overall	23	15	159.00 (103.00, 215.00)
	2021	5	-	251.00 (127.00, 375.00)
	2022	-	-	55.00 (36.00, 74.00)
	2023	16	11	128.00 (82.00, 173.00)
semaglutide 3 mg (other)	overall	399	388	22.00 (18.00, 26.00)
	2015–2020	5	5	13.00 (6.00, 21.00)
	2021	145	144	26.00 (19.00, 34.00)
	2022	106	106	21.00 (14.00, 29.00)
	2023	143	133	19.00 (12.00, 26.00)
semaglutide 7 mg (other)	overall	48	43	81.00 (53.00, 109.00)
	2021	11	11	58.00 (25.00, 91.00)
	2022	21	19	95.00 (48.00, 142.00)
	2023	16	13	83.00 (26.00, 140.00)
semaglutide 0.25 mg (other)	overall	47,062	45,056	16.00 (16.00, 16.00)
semaglutide 0.5 mg (other)	overall	4,611	4,207	35.00 (33.00, 36.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
semaglutide 1 mg (other)	overall	4,299	2,780	119.00 (115.00, 122.00)
SIDIAP				
semaglutide 1 mg (other)	overall	9,022	2,989	263.00 (260.00, 266.00)
	2015–2020	819	184	319.00 (312.00, 326.00)
	2021	665	204	299.00 (290.00, 308.00)
	2022	970	560	229.00 (221.00, 238.00)
	2023	1,572	848	240.00 (233.00, 247.00)
	2024	4,996	1,193	259.00 (254.00, 264.00)
semaglutide 0.25 mg (other)	overall	12,762	11,738	71.00 (69.00, 72.00)
	2015–2020	2,535	2,363	77.00 (74.00, 81.00)
	2021	2,051	1,882	83.00 (79.00, 88.00)
	2022	2,062	1,906	80.00 (75.00, 84.00)
	2023	2,829	2,689	72.00 (69.00, 76.00)
	2024	3,285	2,898	48.00 (46.00, 51.00)
semaglutide 0.5 mg (other)	overall	9,044	6,698	163.00 (160.00, 166.00)
	2015–2020	2,676	1,742	203.00 (198.00, 209.00)
	2021	1,266	865	190.00 (183.00, 198.00)
	2022	1,221	896	174.00 (167.00, 182.00)
	2023	1,875	1,553	157.00 (152.00, 163.00)
	2024	2,006	1,642	77.00 (73.00, 81.00)
HI-SPEED				
semaglutide 14 mg (other)	overall	2,987	2,120	179.00 (174.00, 184.00)
	2015–2020	31	17	238.00 (194.00, 283.00)
	2021	70	45	208.00 (176.00, 240.00)
	2022	132	93	191.00 (167.00, 214.00)
	2023	677	450	200.00 (190.00, 210.00)
	2024	1,692	1,307	172.00 (165.00, 178.00)
	2025	385	208	144.00 (124.00, 165.00)
semaglutide 3 mg (other)	overall	68,936	66,776	45.00 (44.00, 45.00)
	2015–2020	1,364	1,329	45.00 (41.00, 48.00)
	2021	4,617	4,489	49.00 (47.00, 51.00)
	2022	5,628	5,488	48.00 (46.00, 50.00)
	2023	16,832	16,503	47.00 (46.00, 48.00)
	2024	29,649	29,240	44.00 (43.00, 44.00)
	2025	10,846	9,727	39.00 (39.00, 40.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
semaglutide 7 mg (other)	overall	12,604	10,078	142.00 (140.00, 145.00)
	2015–2020	238	177	165.00 (147.00, 182.00)
	2021	690	527	161.00 (151.00, 171.00)
	2022	818	636	155.00 (146.00, 164.00)
	2023	3,540	2,830	157.00 (153.00, 161.00)
	2024	5,718	4,861	132.00 (129.00, 136.00)
	2025	1,600	1,047	126.00 (119.00, 134.00)
CPRD Aurum				
semaglutide 1 mg (other)	overall	12,327	11,524	26.00 (25.00, 26.00)
	2023	714	708	33.00 (31.00, 36.00)
	2024	5,703	5,662	26.00 (25.00, 27.00)
	2025	5,910	5,154	24.00 (23.00, 25.00)
semaglutide 14 mg (other)	overall	1,196	674	205.00 (197.00, 214.00)
	2022	118	72	209.00 (182.00, 236.00)
	2023	215	140	187.00 (167.00, 207.00)
	2024	619	374	212.00 (200.00, 223.00)
	2025	209	71	164.00 (126.00, 202.00)
semaglutide 14 mg (Rybelsus)	overall	681	389	206.00 (195.00, 217.00)
	2021	8	5	182.00 (78.00, 286.00)
	2022	54	37	177.00 (137.00, 217.00)
	2023	119	79	183.00 (156.00, 209.00)
	2024	383	231	219.00 (205.00, 233.00)
	2025	117	37	166.00 (121.00, 210.00)
semaglutide 2 mg (other)	overall	51,310	38,997	153.00 (152.00, 154.00)
	2015–2020	13,534	9,854	172.00 (170.00, 174.00)
	2021	11,082	7,964	175.00 (172.00, 177.00)
	2022	11,532	8,749	167.00 (165.00, 169.00)
	2023	7,590	6,535	130.00 (128.00, 133.00)
	2024	4,582	4,244	74.00 (71.00, 76.00)
	2025	2,990	1,651	96.00 (87.00, 104.00)
semaglutide 2 mg (Ozempic)	overall	24,121	18,323	152.00 (151.00, 154.00)
	2015–2020	5,333	4,016	159.00 (155.00, 163.00)
	2021	5,491	4,017	169.00 (165.00, 172.00)
	2022	6,372	4,935	159.00 (156.00, 163.00)
	2023	4,105	3,558	130.00 (126.00, 133.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2024	1,375	1,221	106.00 (100.00, 111.00)
	2025	1,445	576	133.00 (118.00, 148.00)
semaglutide 3 mg (other)	overall	39,700	36,518	68.00 (67.00, 69.00)
	2015–2020	143	134	63.00 (48.00, 77.00)
	2021	2,072	1,913	81.00 (76.00, 85.00)
	2022	4,956	4,665	74.00 (71.00, 76.00)
	2023	5,926	5,576	74.00 (72.00, 76.00)
	2024	21,645	20,601	65.00 (64.00, 66.00)
	2025	4,958	3,629	61.00 (56.00, 66.00)
semaglutide 3 mg (Rybelsus)	overall	24,429	22,604	63.00 (62.00, 64.00)
	2015–2020	45	43	46.00 (25.00, 67.00)
	2021	698	654	72.00 (65.00, 78.00)
	2022	2,167	2,068	65.00 (61.00, 68.00)
	2023	3,341	3,157	69.00 (66.00, 72.00)
	2024	14,966	14,301	62.00 (60.00, 63.00)
	2025	3,212	2,381	61.00 (55.00, 66.00)
semaglutide 4 mg (other)	overall	9,188	6,103	164.00 (160.00, 167.00)
	2015–2020	1,010	429	255.00 (246.00, 263.00)
	2021	1,018	437	254.00 (245.00, 262.00)
	2022	1,540	814	234.00 (227.00, 241.00)
	2023	1,622	1,173	152.00 (145.00, 159.00)
	2024	3,024	2,551	96.00 (92.00, 101.00)
	2025	974	699	66.00 (49.00, 83.00)
semaglutide 4 mg (Ozempic)	overall	3,404	1,838	220.00 (215.00, 225.00)
	2015–2020	314	133	253.00 (237.00, 269.00)
	2021	513	229	248.00 (236.00, 261.00)
	2022	839	455	237.00 (228.00, 247.00)
	2023	800	525	180.00 (170.00, 191.00)
	2024	715	418	215.00 (204.00, 225.00)
	2025	223	78	197.00 (168.00, 225.00)
semaglutide 6.81 mg (other)	overall	1,473	1,423	27.00 (26.00, 29.00)
	2023	83	83	37.00 (26.00, 47.00)
	2024	1,008	1,003	27.00 (25.00, 29.00)
	2025	382	337	27.00 (22.00, 31.00)
semaglutide 7 mg (other)	overall	4,616	3,583	137.00 (133.00, 141.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2015–2020	14	11	118.00 (49.00, 186.00)
	2021	164	122	156.00 (134.00, 178.00)
	2022	561	443	149.00 (137.00, 160.00)
	2023	725	601	135.00 (125.00, 144.00)
	2024	2,630	2,135	135.00 (130.00, 140.00)
	2025	522	271	126.00 (105.00, 147.00)
Semaglutide 7 mg (Rybelsus)	overall	2,565	1,994	138.00 (133.00, 143.00)
	2022	239	186	158.00 (142.00, 175.00)
	2023	371	306	140.00 (127.00, 153.00)
	2024	1,641	1,335	133.00 (127.00, 140.00)
	2025	271	132	135.00 (99.00, 171.00)
semaglutide 9.6 mg (other)	overall	1,530	1,452	32.00 (30.00, 35.00)
	2023	25	24	45.00 (18.00, 72.00)
	2024	1,019	1,006	33.00 (30.00, 36.00)
	2025	486	422	29.00 (25.00, 33.00)
CPRD GOLD				
semaglutide 14 mg (other)	overall	282	160	205.00 (187.00, 223.00)
	2021	19	11	228.00 (162.00, 295.00)
	2022	45	29	218.00 (174.00, 263.00)
	2023	57	34	199.00 (158.00, 239.00)
	2024	128	74	206.00 (181.00, 231.00)
	2025	33	12	150.00 (74.00, 226.00)
semaglutide 14 mg (Rybelsus)	overall	116	69	190.00 (162.00, 217.00)
	2015–2020	-	-	31.00 (31.00, 31.00)
	2021	5	-	172.00 (31.00, 314.00)
	2022	19	12	215.00 (147.00, 284.00)
	2023	19	13	171.00 (107.00, 235.00)
	2024	54	33	199.00 (161.00, 236.00)
	2025	18	7	206.00 (116.00, 295.00)
semaglutide 2 mg (other)	overall	4,681	3,590	152.00 (148.00, 156.00)
	2015–2020	1,829	1,365	163.00 (157.00, 170.00)
	2021	1,011	759	159.00 (150.00, 168.00)
	2022	1,055	805	155.00 (147.00, 164.00)
	2023	529	445	133.00 (122.00, 144.00)
	2024	145	136	72.00 (57.00, 88.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2025	112	80	58.00 (37.00, 80.00)
semaglutide 2 mg (Ozempic)	overall	3,576	2,656	153.00 (148.00, 158.00)
	2015–2020	1,421	1,051	161.00 (154.00, 168.00)
	2021	795	566	166.00 (156.00, 176.00)
	2022	675	504	164.00 (153.00, 174.00)
	2023	321	275	124.00 (110.00, 138.00)
	2024	144	132	98.00 (80.00, 115.00)
	2025	220	128	65.00 (47.00, 84.00)
semaglutide 3 mg (other)	overall	8,524	7,920	49.00 (47.00, 50.00)
	2015–2020	40	40	13.00 (3.00, 22.00)
	2021	436	423	31.00 (24.00, 38.00)
	2022	980	951	38.00 (33.00, 43.00)
	2023	1,180	1,146	52.00 (48.00, 57.00)
	2024	4,744	4,542	52.00 (49.00, 54.00)
	2025	1,144	818	41.00 (34.00, 48.00)
semaglutide 3 mg (Rybelsus)	overall	4,445	4,113	41.00 (39.00, 43.00)
	2015–2020	17	16	37.00 (-5.00, 79.00)
	2021	203	201	16.00 (9.00, 22.00)
	2022	444	435	29.00 (23.00, 35.00)
	2023	475	463	39.00 (32.00, 45.00)
	2024	2,572	2,458	44.00 (41.00, 47.00)
	2025	734	540	48.00 (39.00, 58.00)
semaglutide 4 mg (other)	overall	852	435	236.00 (226.00, 246.00)
	2015–2020	264	102	272.00 (256.00, 288.00)
	2021	146	59	263.00 (241.00, 286.00)
	2022	179	71	280.00 (262.00, 299.00)
	2023	156	114	163.00 (139.00, 186.00)
	2024	94	76	155.00 (127.00, 184.00)
	2025	13	13	37.00 (17.00, 57.00)
semaglutide 4 mg (Ozempic)	overall	302	179	206.00 (189.00, 222.00)
	2015–2020	68	28	257.00 (223.00, 291.00)
	2021	50	23	248.00 (210.00, 286.00)
	2022	66	41	214.00 (180.00, 247.00)
	2023	58	41	154.00 (115.00, 193.00)
	2024	46	36	170.00 (133.00, 207.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2025	14	10	72.00 (-3.00, 147.00)
semaglutide 7 mg (other)	overall	1,081	869	121.00 (113.00, 129.00)
	2015–2020	-	-	244.00 (49.00, 438.00)
	2021	67	50	136.00 (99.00, 173.00)
	2022	156	130	128.00 (105.00, 150.00)
	2023	137	111	110.00 (87.00, 133.00)
	2024	632	533	120.00 (110.00, 130.00)
	2025	86	44	96.00 (53.00, 140.00)
semaglutide 7 mg (Rybelsus)	overall	756	617	96.00 (87.00, 105.00)
	2015–2020	-	-	139.00 (139.00, 139.00)
	2021	24	22	69.00 (26.00, 113.00)
	2022	64	56	92.00 (59.00, 124.00)
	2023	111	99	99.00 (76.00, 122.00)
	2024	463	390	97.00 (85.00, 108.00)
	2025	93	49	125.00 (85.00, 166.00)

The follow-up was limited to one-year since the first drug prescription to enable the comparison across different time periods. Last reported year can be an incomplete calendar year (see end of study period in **Table 1**).
Number of records refer to number of new users, defined as no previous use of the GLP-1 class or ingredient in the previous 365 days (i.e. an individual may contribute to different years for different treatment episodes). Number of events refer to number of individuals who discontinued their treatment within the year/period of interest. Restricted mean survival represents the average time-on-treatment (i.e. average time patients were alive and still had not changed the treatment).
In FinOMOP-THL, treatment duration for each prescription was unavailable and imputed to 30 days. Thus, median survival and restricted median survival values shown for FinOMOP-THL are inaccurate and unreliable.
In CPRD Aurum, missing year stratification for specific strength records were removed in accordance with minimum cell count disclosure rules of the data source.
– = not applicable; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; DPP-4 inhibitors = Dipeptidyl Peptidase 4 inhibitors; FinOMOP-THL = Finnish Care Register for Health Care; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

Table 15. Time-to-switch between strengths in new tirzepatide users, limited to one year follow-up.

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
InGef RDB				
tirzepatide 10 mg (other)	overall	12,596	11,614	48.00 (47.00, 49.00)
	2024	7,807	7,670	49.00 (48.00, 51.00)
	2025	4,789	3,944	45.00 (43.00, 46.00)
tirzepatide 2.5 mg (other)	overall	5,880	5,832	45.00 (44.00, 46.00)
	2023	626	622	57.00 (53.00, 61.00)
	2024	5,055	5,021	44.00 (43.00, 45.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2025	199	189	35.00 (31.00, 40.00)
tirzepatide 20 mg (other)	overall	4,167	3,471	99.00 (96.00, 102.00)
	2024	2,394	2,174	111.00 (106.00, 115.00)
	2025	1,773	1,297	74.00 (70.00, 78.00)
tirzepatide 30 mg (other)	overall	579	490	65.00 (58.00, 72.00)
	2024	283	268	71.00 (61.00, 81.00)
	2025	296	222	55.00 (47.00, 64.00)
tirzepatide 40.1 mg (other)	overall	638	503	116.00 (107.00, 126.00)
	2024	303	264	136.00 (122.00, 150.00)
	2025	335	239	85.00 (77.00, 94.00)
tirzepatide 5 mg (other)	overall	1,061	1,022	67.00 (63.00, 71.00)
	2023	25	24	89.00 (60.00, 117.00)
	2024	973	946	67.00 (63.00, 72.00)
	2025	63	52	56.00 (38.00, 73.00)
tirzepatide 60 mg (other)	overall	251	190	119.00 (103.00, 134.00)
	2024	91	76	155.00 (129.00, 182.00)
	2025	160	114	87.00 (72.00, 102.00)
tirzepatide 10 mg (Mounjaro)	overall	74	72	56.00 (42.00, 70.00)
	2024	69	68	58.00 (43.00, 72.00)
	2025	5	–	30.00 (30.00, 30.00)
tirzepatide 12.5 mg (Mounjaro)	overall	63	53	84.00 (57.00, 111.00)
	2024	36	31	84.00 (48.00, 120.00)
	2025	27	22	81.00 (41.00, 121.00)
tirzepatide 12.5 mg (other)	overall	63	53	84.00 (57.00, 111.00)
	2024	36	31	84.00 (48.00, 120.00)
	2025	27	22	81.00 (41.00, 121.00)
tirzepatide 15 mg (Mounjaro)	overall	15	14	56.00 (36.00, 77.00)
tirzepatide 15 mg (other)	overall	15	14	56.00 (36.00, 77.00)
tirzepatide 2.5 mg (Mounjaro)	overall	5,880	5,832	45.00 (44.00, 46.00)
	2023	626	622	57.00 (53.00, 61.00)
	2024	5,055	5,021	44.00 (43.00, 45.00)
	2025	199	189	35.00 (31.00, 40.00)
tirzepatide 5 mg (Mounjaro)	overall	1,061	1,022	67.00 (63.00, 71.00)
	2023	25	24	89.00 (60.00, 117.00)
	2024	973	946	67.00 (63.00, 72.00)
	2025	63	52	56.00 (38.00, 73.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
tirzepatide 7.5 mg (Mounjaro)	overall	133	131	44.00 (39.00, 50.00)
	2023	-	-	30.00 (30.00, 30.00)
	2024	132	131	44.00 (39.00, 50.00)
tirzepatide 7.5 mg (other)	overall	133	131	44.00 (39.00, 50.00)
	2023	-	-	30.00 (30.00, 30.00)
	2024	132	130	44.00 (39.00, 50.00)
IQVIA DA Germany				
tirzepatide 10 mg (other)	overall	179	159	56.00 (46.00, 67.00)
	2024	127	120	61.00 (48.00, 73.00)
	2025	52	39	49.00 (27.00, 71.00)
tirzepatide 2.5 mg (other)	overall	4,136	4,005	25.00 (24.00, 26.00)
	2023	250	250	26.00 (22.00, 30.00)
	2024	3,086	3,054	26.00 (24.00, 27.00)
	2025	800	701	20.00 (18.00, 22.00)
tirzepatide 5 mg (other)	overall	1,209	1,119	53.00 (49.00, 57.00)
	2023	35	35	74.00 (54.00, 93.00)
	2024	943	905	56.00 (51.00, 60.00)
	2025	231	179	40.00 (31.00, 49.00)
tirzepatide 10 mg (Mounjaro)	overall	179	159	56.00 (46.00, 67.00)
	2024	127	120	61.00 (48.00, 73.00)
	2025	52	39	49.00 (27.00, 71.00)
tirzepatide 12.5 mg (Mounjaro)	overall	21	20	58.00 (29.00, 87.00)
	2024	16	15	66.00 (29.00, 103.00)
	2025	5	5	33.00 (29.00, 36.00)
tirzepatide 12.5 mg (other)	overall	21	20	58.00 (29.00, 87.00)
	2024	16	15	66.00 (29.00, 103.00)
	2025	5	5	33.00 (29.00, 36.00)
tirzepatide 2.5 mg (Mounjaro)	overall	4,136	4,005	25.00 (24.00, 26.00)
	2023	250	250	26.00 (22.00, 30.00)
	2024	3,086	3,054	26.00 (24.00, 27.00)
	2025	800	701	20.00 (18.00, 22.00)
tirzepatide 5 mg (Mounjaro)	overall	1,209	1,119	53.00 (49.00, 57.00)
	2023	35	35	74.00 (54.00, 93.00)
	2024	943	905	56.00 (51.00, 60.00)
	2025	231	179	40.00 (31.00, 49.00)
tirzepatide 7.5 mg (Mounjaro)	overall	204	189	46.00 (39.00, 52.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2024	177	170	46.00 (40.00, 53.00)
	2025	27	19	41.00 (23.00, 58.00)
tirzepatide 7.5 mg (other)	overall	204	189	46.00 (39.00, 52.00)
	2024	177	170	46.00 (40.00, 53.00)
	2025	27	19	41.00 (23.00, 58.00)
tirzepatide 15 mg (Mounjaro)	overall	55	43	120.00 (90.00, 150.00)
	2024	41	35	126.00 (91.00, 161.00)
	2025	14	8	90.00 (48.00, 132.00)
tirzepatide 15 mg (other)	overall	55	43	120.00 (90.00, 150.00)
	2024	41	35	126.00 (91.00, 161.00)
	2025	14	8	90.00 (48.00, 132.00)
IPCI				
tirzepatide 2.5 mg (other)	overall	180	140	59.00 (52.00, 66.00)
	2023	-	-	131.00 (131.00, 131.00)
	2024	61	58	53.00 (44.00, 62.00)
	2025	118	81	64.00 (53.00, 74.00)
tirzepatide 5 mg (other)	overall	26	23	61.00 (44.00, 78.00)
	2024	8	8	68.00 (30.00, 105.00)
	2025	18	15	57.00 (41.00, 74.00)
tirzepatide_2_5 (Mmounjaro)	overall	47	36	37.00 (27.00, 48.00)
	2024	19	19	31.00 (18.00, 44.00)
	2025	28	17	42.00 (28.00, 57.00)
tirzepatide 5 mg (Mounjaro)	overall	8	8	46.00 (22.00, 70.00)
	2024	-	-	42.00 (9.00, 75.00)
	2025	-	-	50.00 (16.00, 84.00)
tirzepatide 10 mg (Mounjaro)	overall	-	-	63.00 (26.00, 100.00)
tirzepatide 10 mg (other)	overall	-	-	63.00 (26.00, 100.00)
tirzepatide 7.5 mg (Mounjaro)	overall	-	-	95.00 (95.00, 95.00)
tirzepatide 7.5 mg (other)	overall	5	5	52.00 (26.00, 79.00)
CPRD Aurum				
tirzepatide 10 mg (other)	overall	163,784	137,536	40.00 (40.00, 40.00)
tirzepatide 2.5 mg (other)	overall	1,484	1,475	26.00 (25.00, 27.00)
	2023	14	12	53.00 (30.00, 76.00)
	2024	1,470	1,463	26.00 (25.00, 27.00)
tirzepatide 20 mg (other)	overall	30,775	24,882	61.00 (60.00, 62.00)
	2024	12,294	11,242	73.00 (71.00, 75.00)

Target cohort	Calendar year	Number records	Number events	Restricted mean survival (95% CI)
	2025	18,481	13,640	45.00 (42.00, 48.00)
tirzepatide 30 mg (other)	overall	9,570	7,964	40.00 (39.00, 41.00)
	2024	3,577	3,488	40.00 (38.00, 42.00)
	2025	5,993	4,476	39.00 (37.00, 41.00)
tirzepatide 40.1 mg (other)	overall	4,700	3,700	46.00 (43.00, 48.00)
tirzepatide 48 mg (other)	overall	1,787	1,467	34.00 (32.00, 35.00)
	2024	510	504	34.00 (32.00, 37.00)
	2025	1,277	963	34.00 (31.00, 36.00)
tirzepatide 5 mg (other)	overall	150	150	28.00 (25.00, 30.00)
tirzepatide 60 mg (other)	overall	1,887	1,446	46.00 (42.00, 50.00)
	2024	477	455	50.00 (43.00, 57.00)
	2025	1,410	991	43.00 (38.00, 48.00)

The follow-up was limited to one-year since the first drug prescription to enable the comparison across different time periods. Last reported year can be an incomplete calendar year (see end of study period in **Table 1**).
Number of records refer to number of new users, defined as no previous use of the GLP-1 class or ingredient in the previous 365 days (i.e. an individual may contribute to different years for different treatment episodes). Number of events refer to number of individuals who discontinued their treatment within the year/period of interest. Restricted mean survival represents the average time-on-treatment (i.e. average time patients were alive and still had not changed the treatment).
In FinOMOP-THL, treatment duration for each prescription was unavailable and imputed to 30 days. Thus, median survival and restricted median survival values shown for FinOMOP-THL are inaccurate and unreliable.
In CPRD Aurum, missing year stratification for specific strength records were removed in accordance with minimum cell count disclosure rules of the data source.
– = not applicable; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; DPP-4 inhibitors = Dipeptidyl Peptidase 4 inhibitors; FinOMOP-THL = Finnish Care Register for Health Care; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

10.2.7. Objective 4 – Within-ingredient switching of strength

This section describes GLP-1 RA within-ingredient switching of strength for liraglutide, dulaglutide, semaglutide, and tirzepatide (limited to pre-defined cohorts of strength-levels, with brands, when available) among new users of the respective ingredient (i.e. no prior use of the respective ingredient of interest in the last 365 days) for each data source between 2015–2020.

Across all the data sources, the strength trajectories of 797,602 GLP-1 RA users were obtained, with the aim to observe dose escalation within the ingredient.

To ensure the readability of the Sankey diagrams, the displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. Thus, **Figure 58** to **Figure 69** contain the switching of strength trajectories of 730,724 incident users.

For context, in the Sankey diagrams, the incident records ("_incident") in the first (left-hand) column indicate which was the new GLP-1 RA ingredient that patients used. The other columns refer to the pre-defined strength cohorts (e.g. semaglutide users staring with 1 mg are indicated as follows: "*1.semaglutide_incident*" followed by "*2. semaglutide_1_other*"). The strength is indicated by the number, and decimal numbers are indicated with a "_" rather than a dot (e.g. 10.8 mg liraglutide cohort is indicated as "*liraglutide_10_8_other*"). When the brand information was available, it is indicated with a "+" after the

"other" (i.e. other/unknown brand record) prevalent record, such as "*semaglutide_2_other +semaglutide_2_ozempic*".
Some records of strength escalation showed concomitant use of different strength cohorts (e.g. from 3 mg, to 3 mg + 7 mg, and then 7 mg). This likely reflects an overlap period (≥30 days) where the prescriptions coexisted whilst there was the transition from one strength to another, and therefore, has been considered as switching directly from one strength to another in the counts for the most frequent switching.
Finally, STOP indicates cessation of the last recorded strength received within the specific ingredient.

The following results focus on patients who switched strengths and represented at least 0.5% of the total number of patients for the specific ingredient. To reproduce this selection, the minimum number of frequency counts used in each ingredient and data source are reported below.

As a summary, information on brands was not available in NAJS, FinOMOP-THL, NLHR, SIDIAP, and HI-SPEED. Moreover, no strength cohorts for new dulaglutide use were observed in FinOMOP, NLHR, and HI-SPEED.

When strength cohorts were available, dose escalation among new dulaglutide users was observed in most of the data sources (except DK-DHR, which showed no switch). The most frequent switching of strength varied across data sources and, when recorded, the brand observed was Trulicity:

- In IQVIA LPD Belgium, 4.88% of the new dulaglutide users who started with 0.75 mg switched to 1.5 mg.
- In NAJS, 31.05% switched from 1.5 mg to 6 mg, and about a third (of the users who escalated to 6 mg) progressed to 9 mg.
- In InGef RDB, 14.49% switched from 1.5 mg to 3 mg.
- Similarly, in IQVIA DA Germany, 10.73% switched from 1.5 mg to 3 mg, and about a fifth progressed to 4.5 mg. The second most common switch was from 0.75 mg to 1.5 mg (7.96% of the new dulaglutide users), and about a sixth progressed to 3 mg.
- In IPCI, 6.16% switched from 0.75 mg to 1.5 mg, whilst 4.15% started with 1.5 mg and switched to 3 mg. However, 2.13% new users started with 1.5 mg and then switched to 0.75 mg, of which about three quarters later returned to 1.5 mg.
- In SIDIAP, 15.90% switched from 1.5 mg to 3 mg, but 1.26% started with 3 mg and switched to 1.5 mg.
- In CPRD Aurum, 15.02% switched from 1.5 mg to 3 mg, and about a fifth progressed to 4.5 mg. Moreover, 10.11% switched from 0.75 to 1.5 mg, and about a sixth progressed to 3 mg. However, 1.46% new users started with 1.5 mg and then switched to 0.75 mg, of which about three quarters later returned to 1.5 mg.
- In CPRD GOLD, 15.10% switched from 0.75 mg to 1.5 mg, and very few (about a twenty-sixth) progressed to 3 mg; and 4.08% who switched from 1.5 mg to 3 mg, and about a fifth progressed to 4.5 mg.

Information on dose escalation among new liraglutide users was limited. Switching across liraglutide strength cohorts was only observed in four data sources (NAJS, DK-DHR, IPCI, and CPRD GOLD), and all of them show a reduction of the strength: 3.19% of NAJS and 0.51% of DK-DHR new liraglutide users switched from 6 mg to 3.6 mg, 0.67% of IPCI new liraglutide users switch form Saxenda 18 mg to "Other" 6 mg, and 2.72% of CPRD GOLD new liraglutide users switched from 18 mg to 10.8 mg.
When brand information was available, Saxenda was more frequently used in IQVIA LPD Belgium and IPCI, whilst Trulicity was more frequently used in CPRD Aurum, and Victoza was more frequently used in InGef RDB, IQVIA DA Germany, CPRD Aurum, and CPRD GOLD.

Dose escalation among new semaglutide users was observed in most of the data sources (except FinOMOP-THL, which showed no switch, and IQVIA DA Germany, which showed a decrease in strength), along with differences in the most frequent switches of strength. Ozempic was more commonly observed in IQVIA LPD Belgium, DK-DHR, InGef RDB, and IQVIA DA Germany, whilst Rybelsus was more common in CPRD GOLD, and similar use was observed among Ozempic and Rybelsus brands in IPCI:

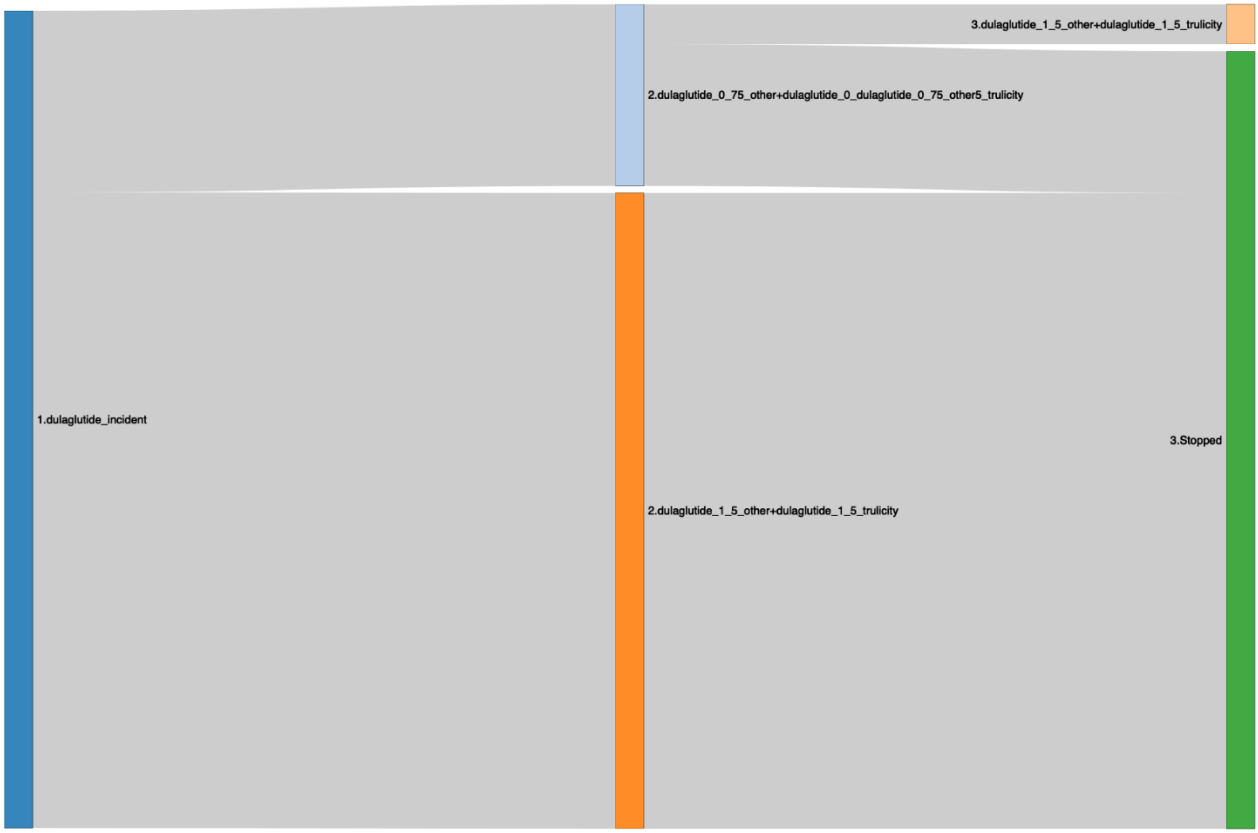
- In IQVIA LPD Belgium, 9.04% of the new semaglutide users switched from 2 mg to 4 mg, 3.56% switched from 1 mg to 2 mg, and 1.30% switched from 1 mg to 4 mg.
- In NAJS, 9.5% switched from 7 mg to 14 mg, 5.91% switched from 0.25 mg to 1 mg/1.34 mg, and 1.11% switched from 1 mg to 14 mg.
- In DK-DHR, 15.18% switched from 0.5 mg to 1 mg, and about one sixteenth de-escalated to 0.25 mg; whilst 4.81% switched from 0.25 mg to 0.5 mg, of which more than half progressed to 1 mg.
- In InGef RDB, 24.29% switched from 2 mg to 4 mg, and a small proportion (0.02%) then returned to 2 mg. Moreover, 1.75% also started with 4 mg and then switched to 2 mg.
- In IPCI, 9.45% switched from 2 mg to 4 mg; 6.73% switched from 7 mg to 14 mg, of which about a fifth returned to 7 mg; and 4.54% switched from 3 mg to 7 mg, and about a third progressed to 14 mg.
- In NLHR, 8.40% switched from 0.5 mg to 1 mg; 3.14% from 0.25 mg to 0.5 mg, of which about a third later switched to 1 mg; and 2.33% who started with 0.25 mg and directly switched to 1 mg.
- In SIDIAP, 17,23% switched from 0.25 mg to 0.5 mg, and more than half progressed to 1 mg. Moreover, 15.12% started with 0.5 mg and switched to 1 mg.
- In HI-SPEED, 23.83% switched from 3 mg to 7 mg, and about a third progressed to 14 mg. Moreover, 15.48% started with 7 mg and then switched to 14 mg.
- In CPRD Aurum, 20.30% switched from 2 mg to 4 mg, 5.17% from 7 mg to 14 mg, 4.78% from 3 mg to 14 mg (of which about a third progressed to 14 mg), and 0.56% who switched from 3 mg to 14 mg.
- In CPRD GOLD, 11.60% switched from 2 mg to 4 mg and 8.24% switched from 7 mg to 14 mg. Moreover, 8.38% switched from 3 mg to 7 mg, and about a fourth progressed to 14 mg.

Conversely, in IQVIA DA Germany, most common switching among new semaglutide users showed a decrease in strength: 14.97% switched from 0.5 mg to 0.333 mg, 1.66% switched from 4 mg to 3.2 mg. Only 0.74% increased the strength from 2 mg to 4 mg, and 0.92% from 7.5 mg to 10 mg.

Strength cohorts for new tirzepatide use was limited to InGef RDB, IQVIA DA Germany, IPCI, and CPRD Aurum. The brand recorded was Mounjaro. No switching was observed in IPCI, but dose escalation among new tirzepatide users was observed in the other three data sources:

- In InGef RDB, 5.97% switched from 2.5 mg to 5 mg, and about a fourth later switched to 20 mg. Moreover, 4.79% switched from 5 mg to 20 mg, 2.91% switched from 2.5 mg to 20 mg, 1.78% switched from 5 mg to 30 mg, and another 1.70% switched from 12.5 mg to 60 mg.
- In IQVIA DA Germany, 4.78% switched from 2.5 mg to 5 mg, 3.54% switched from 5 mg to 7.5 mg, and only 0.92% switched from 7.5 mg to 10 mg.
- In CPRD Aurum, 8.50% switched from 10 mg to 20 mg; 6.69% from 20 mg to 30 mg, of which about a sixth progressed to 40 mg; 1.25% from 30 mg to 40 mg, 1.11% from 20 mg to 40 mg; and 0.53% from 10 mg to 30 mg.

A) Dulaglutide



B) Liraglutide



C) Semaglutide

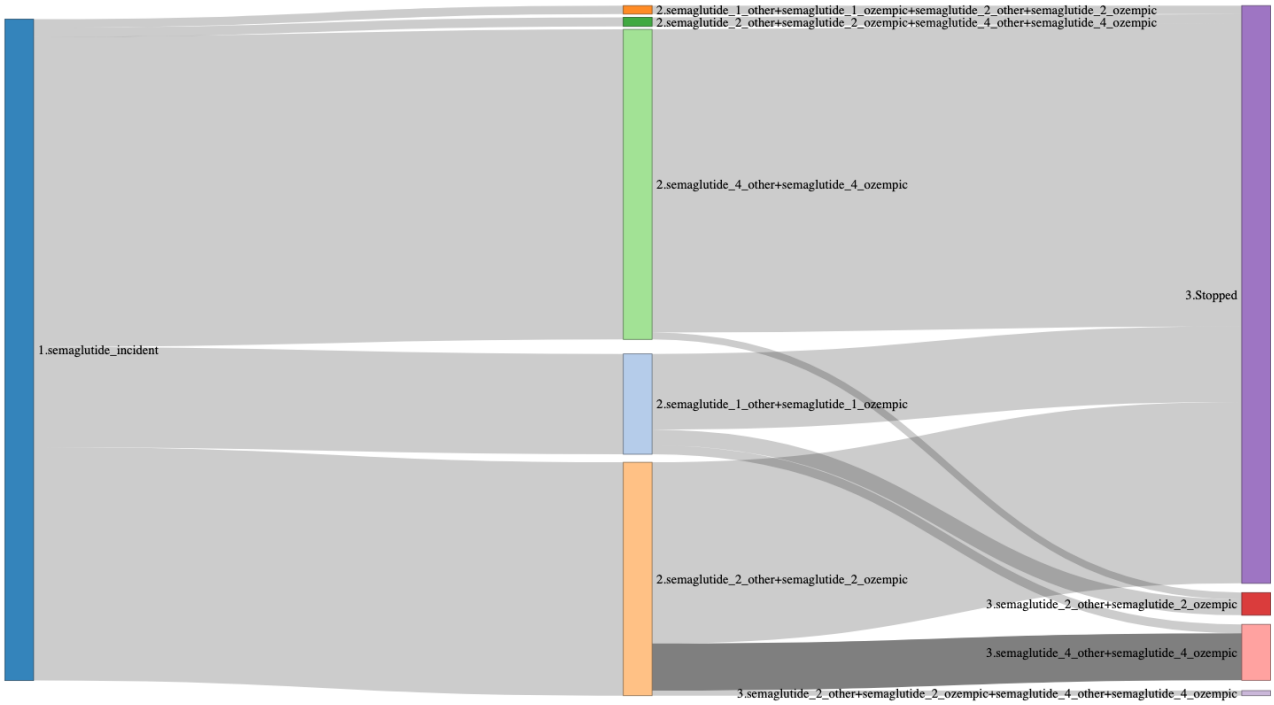


Figure 58. Within-ingredient switching of strength in IQVIA LPD Belgium in A) dulaglutide, B) liraglutide, and C) semaglutide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.dulaglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP indicates cessation of the last recorded strength received within the specific ingredient.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium.

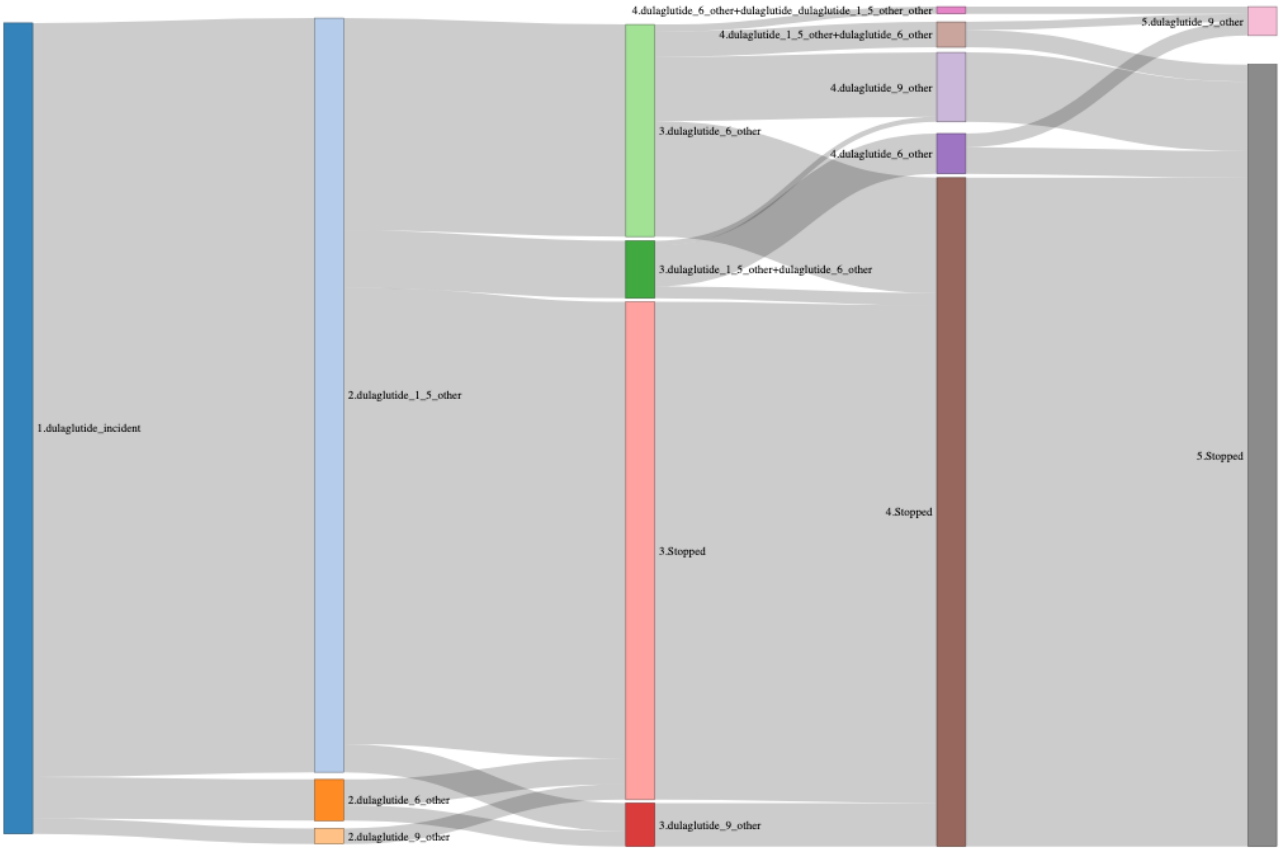
In IQVIA LPD Belgium, the strength trajectories of 2,747 new users of dulaglutide (n=594), liraglutide (n=384), and semaglutide (n=1,769) were obtained. **Figure 58** contains the trajectories of 2,707 new users.

Only 29 patients (4.88% of the new dulaglutide users) were observed who started with Trulicity 0.75 mg and later switched to Trulicity 1.5 mg. No other dose escalation was observed for the remaining new users of dulaglutide, nor in any new users of liraglutide (the most frequent brand used was Saxenda, followed by Victoza).

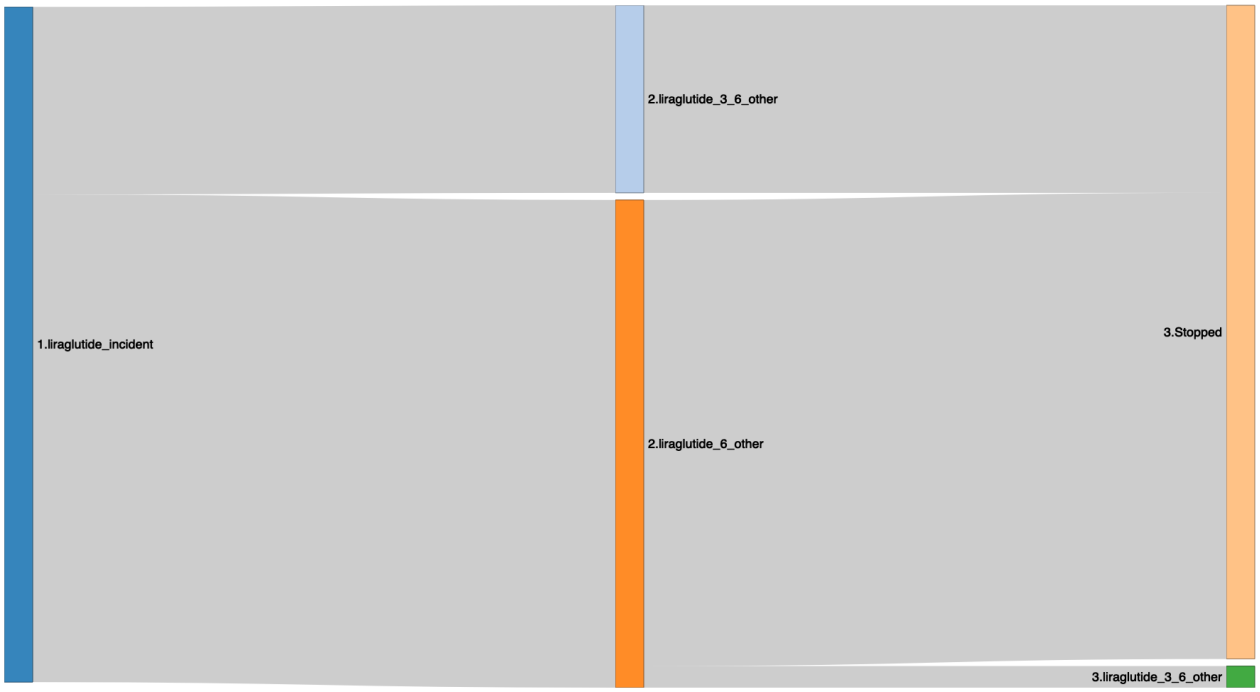
Conversely, among incident semaglutide users, 63 (3.56%)[1] users were observed who started with Ozempic 1 mg who later switched to Ozempic 2 mg, 23 (1.30%) who also started with Ozempic 1 mg but switched to Ozempic 4 mg, 160 (9.04%)[2] who started Ozempic 2 mg and escalated their dose to Ozempic 4 mg, and 18 (1.02%) who started with Ozempic 4 mg and de-escalated to Ozempic 2 mg.

[1] n=63: **22** users came from "*semaglutide_1_other+semaglutide_1_ozempic+ semaglutide_2_other+semaglutide_2_ozempic*", and **41** from "*semaglutide_1_other+ semaglutide_1_ozempic-semaglutide_2_other+semaglutide_2_ozempic*" records.
[2] n=160: **123** users came from "*semaglutide_2_other+semaglutide_2_ozempic-semaglutide_4_other+semaglutide_4_ozempic*", **24** from "*semaglutide_2_other+ semaglutide_2_ozempic+semaglutide_4_other+semaglutide_4_ozempic*", and **13** from "*semaglutide_2_other+semaglutide_2_ozempic-semaglutide_2_other+ semaglutide_2_ozempic+semaglutide_4_other+semaglutide_4_ozempic*".

A) Dulaglutide



B) Liraglutide



C) Semaglutide

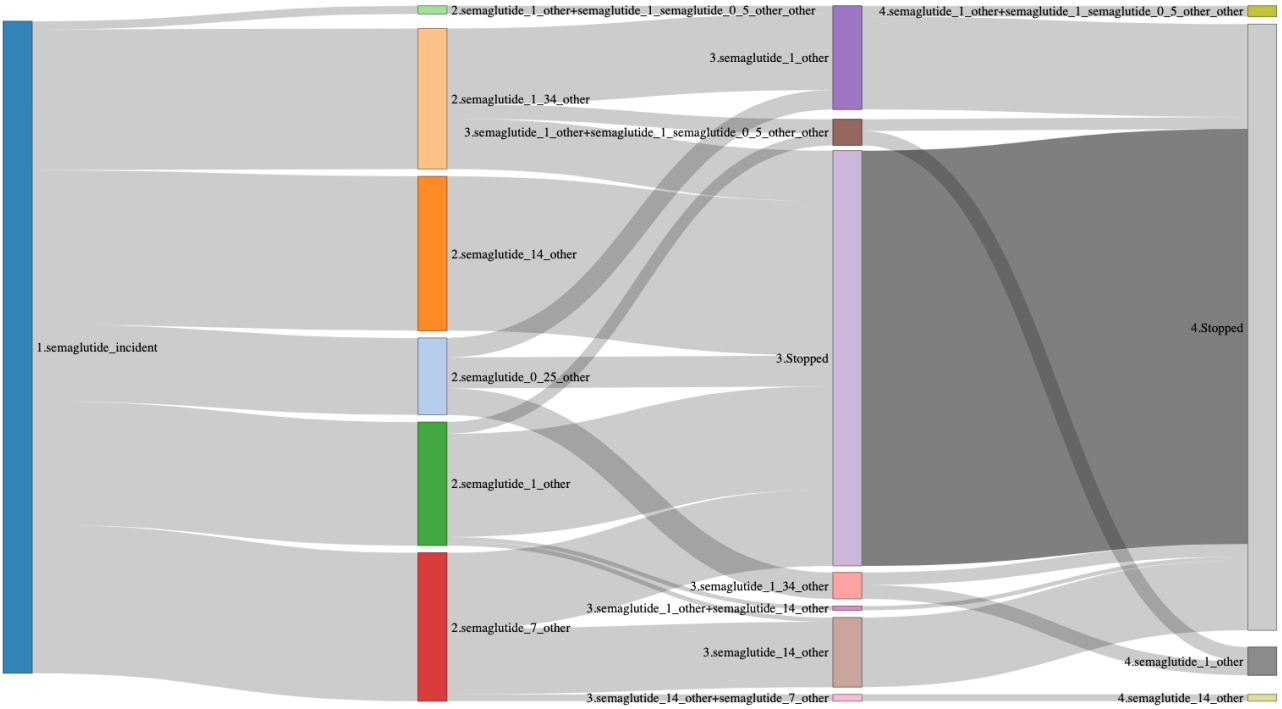


Figure 59. Within-ingredient switching of strength in NAJS in A) dulaglutide, B) liraglutide, and C) semaglutide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.dulaglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP indicates cessation of the last recorded strength received within the specific ingredient.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NAJS = Croatian National Public Health Information System.

In NAJS, the strength trajectories of 35,199 new users of dulaglutide (n=12,243), liraglutide, (n=7,464) and semaglutide (n=15,492) were obtained. **Figure 59** contains the trajectories of 32,188 new users. Information on brands was not available.

Only 238 (3.19%) of new liraglutide users showed a switch from 6 mg to 3.6 mg.

Conversely, dose escalation is widely observed within new users of dulaglutide and semaglutide:

Among new users of dulaglutide, the most frequent switch was from 1.5 mg to 6 mg (n=3,802, 31.05%)[1]. Of them, 1,385[2] new users progress to 9 mg.

Among new users of semaglutide, dose escalation was observed from 0.25 mg to 1 mg or 1.34 mg (n=916, 5.19%)[3], from 1 mg to 14 mg (n=172, 1.11%)[4], and 7 mg to 14 mg (n=1,472, 9.5%)[5].

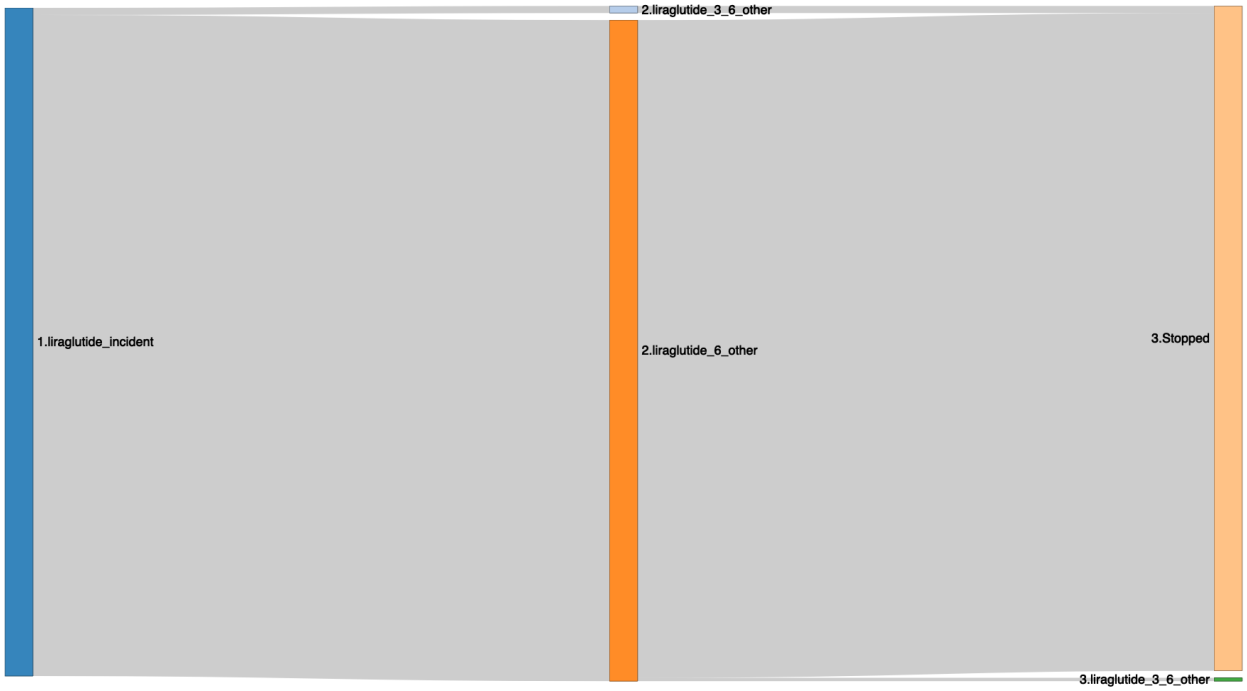
[1] n=3,802: **1,629** users *came from "dulaglutide_1_5_other-dulaglutide_6_other",* ***904*** *from "dulaglutide_1_5_other-dulaglutide_6_other-dulaglutide_9_other",* ***377*** *from "dulaglutide_1_5_other-dulaglutide_1_5_other+dulaglutide_6_other-dulaglutide_6_other", **241** from "dulaglutide_1_5_other-dulaglutide_6_other-dulaglutide_1_5_other+dulaglutide_6_other", **191** from "dulaglutide_1_5_other-dulaglutide_1_5_other+dulaglutide_6_other-dulaglutide_6_other-dulaglutide_9_other", **170** from "dulaglutide_1_5_other-dulaglutide_1_5_other+dulaglutide_6_other" , **116** from "dulaglutide_1_5_other-dulaglutide_6_other-dulaglutide_1_5_other+ dulaglutide_6_other-dulaglutide_9_other", **100** from "dulaglutide_1_5_other-dulaglutide_6_other-dulaglutide_6_other+dulaglutide_dulaglutide_1_5_other_other-dulaglutide_9_other", and **74** from "dulaglutide_1_5_other-dulaglutide_1_5_other +dulaglutide_6_other-dulaglutide_9_other".*
[2] n=1,385: is the sum of **904+191+116+100+74** users highlighted in bold in [1].
[3] n=916: **379** users came from "*semaglutide_0_25_other-semaglutide_1_other*", **282** from "*semaglutide_0_25_other-*

semaglutide_1_34_other-semaglutide_1_other", and **255** from "*semaglutide_0_25_other-semaglutide_1_34_other*".
[4] n=172, **88** users came from "*semaglutide_1_other-semaglutide_14_other*", and **84** from "*semaglutide_1_other-semaglutide_1_other+semaglutide_14_other*".
[5] n=1,472, **1,332** users came from "*semaglutide_7_other-semaglutide_14_other*", and **140** from "*semaglutide_7_other-semaglutide_14_other+semaglutide_7_other-semaglutide_14_other*".

A) Dulaglutide



B) Liraglutide



C) Semaglutide

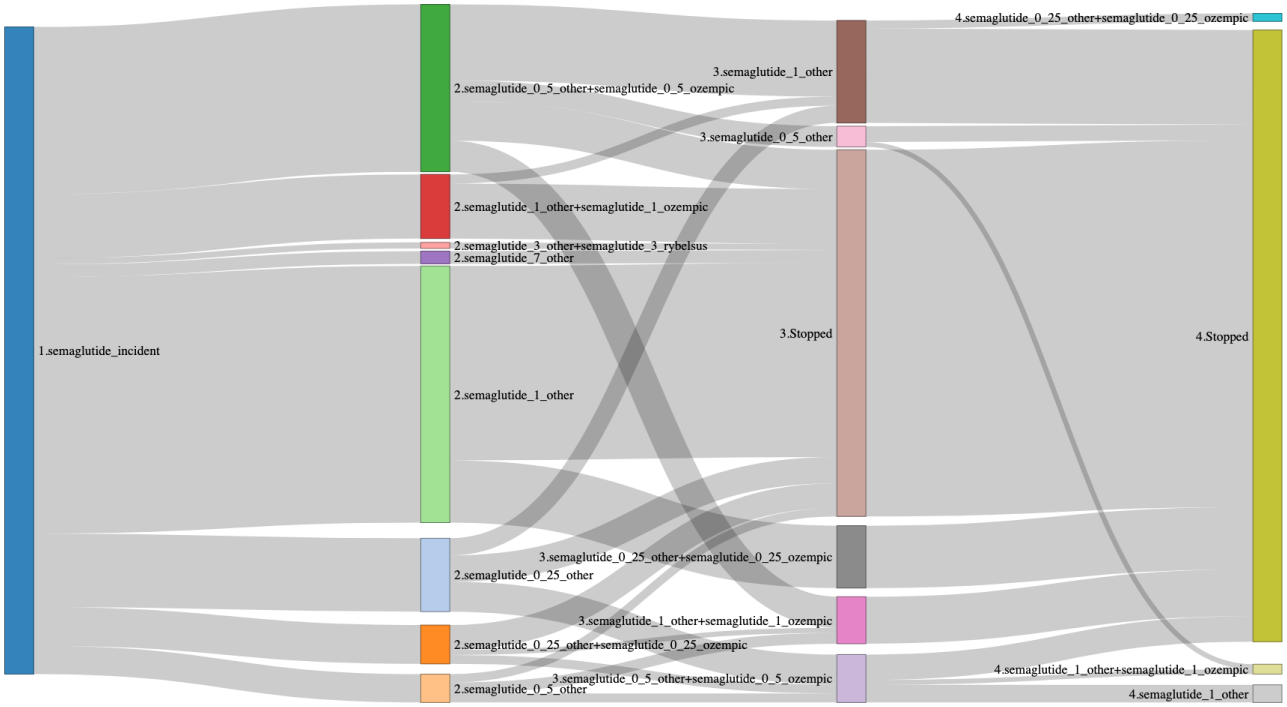


Figure 60. Within-ingredient switching of strength in DK-DHR in A) dulaglutide, B) liraglutide, and C) semaglutide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.dulaglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP

indicates cessation of the last recorded strength received within the specific ingredient.
DK-DHR = Danish Data Health Registries; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In DK-DHR, the strength trajectories of 223,284 new users of dulaglutide (n=1,565), liraglutide (n=32,880), and semaglutide (n=188,839) were obtained. **Figure 60** contains the trajectories of 185,486 new users.

No switching was observed among new dulaglutide users (the observed brand was Trulicity), and only 167 (0.51%) new liraglutide users showed a switch from 6 mg to 3.6 mg.

Among new semaglutide users, a dose escalation from 0.25 mg to 0.5 mg (n=9,087, 4.81%)[1] was observed, of which 5,243[2] users later switched to 1 mg; or from 0.5 mg to 1 mg (n=28,661, 15.18%)[3], of which 1,845[4] users later de-escalated to 0.25 mg. Moreover, when indicated, the brand was always Ozempic, except for 1,422 (0.75%) individuals who used Rybelsus 3 mg, but never switched to any other strength.

[1] n=9,087: **4,116** users came from *"semaglutide_0_25_other-semaglutide_0_5_other+ semaglutide_0_5_ozempic-semaglutide_1_other",* **2,877** from "*semaglutide_0_25_other-semaglutide_0_5_other+semaglutide_0_5_ozempic*", **1,127** from **"***semaglutide_0_25_other+ semaglutide_0_25_ozempic-semaglutide_0_5_other+ semaglutide_0_5_ozempic-semaglutide_1_other+semaglutide_1_ozempic*", and **967** from "*semaglutide_0_25_other+ semaglutide_0_25_ozempic-semaglutide_0_5_other+ semaglutide_0_5_ozempic*".
[2] n=5,243: is the sum of **4,116+1,127** users highlighted in bold in [1].
[3] n=28,661: **15,888** users came from "*semaglutide_0_5_other+semaglutide_0_5_ozempic-semaglutide_1_other*", **7,233** from "*semaglutide_0_5_other+semaglutide_0_5_ozempic-semaglutide_1_other+semaglutide_1_ozempic*", **2,539** from "semaglutide_0_5_other-semaglutide_1_other+semaglutide_1_ozempic", **1,845** from "*semaglutide_0_5_other+ semaglutide_0_5_ozempic-semaglutide_1_other-semaglutide_0_25_other+ semaglutide_0_25_ozempic*", and **1,156** from "*semaglutide_0_5_other+semaglutide_0_5_ozempic-semaglutide_0_5_other-semaglutide_1_other+semaglutide_1_ozempic*".
[4] n=1,845**: 1,845** users highlighted in bold in [3].



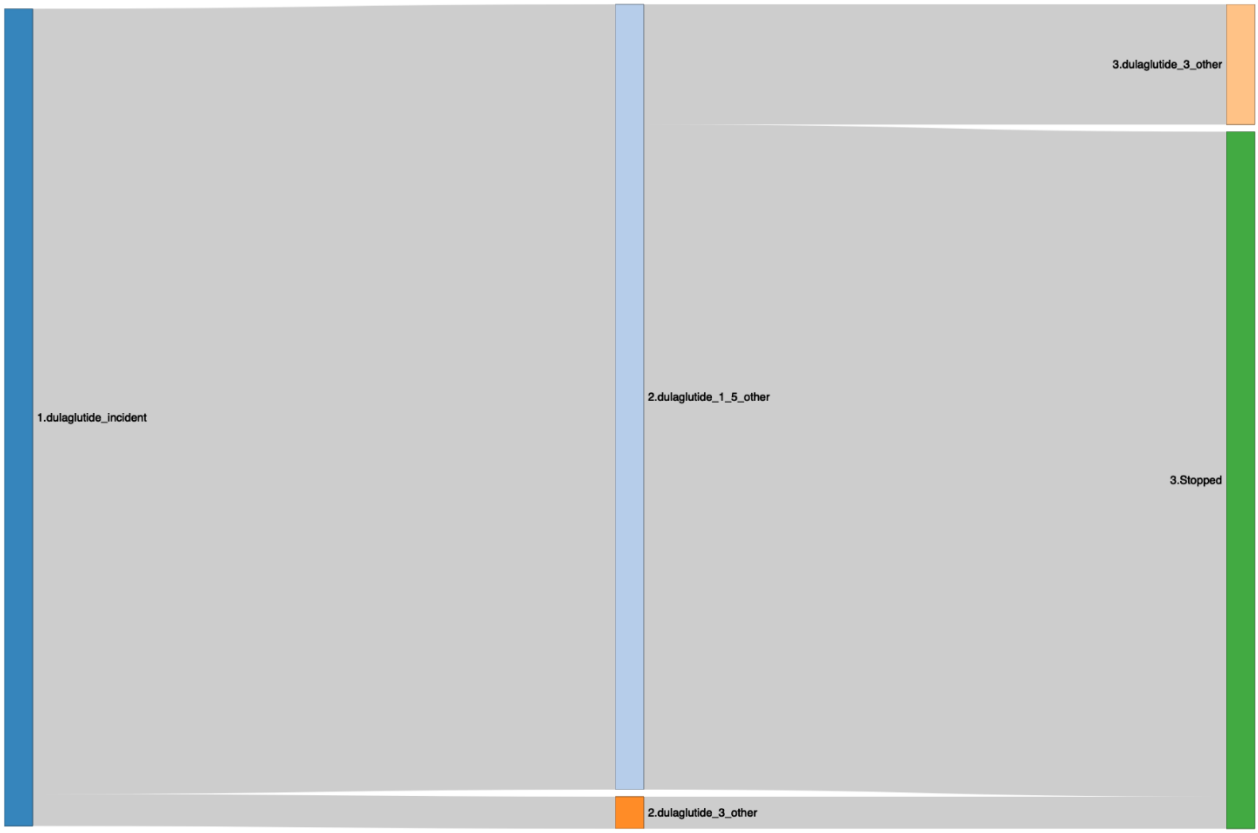
Figure 61. Within-ingredient switching of strength in FinOMOP-THL in liraglutide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.liraglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP indicates cessation of the last recorded strength received within the specific ingredient. No strength cohorts were captured for dulaglutide and semaglutide in FinOMOP.
FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In FinOMOP-THL, the strength trajectories of 4,102 new users of liraglutide were obtained. No strength cohorts were captured for dulaglutide and semaglutide in FinOMOP-THL, and information on brands was not available.

Figure 61 contains the trajectories of 4,081 new liraglutide users, but no switching was observed.

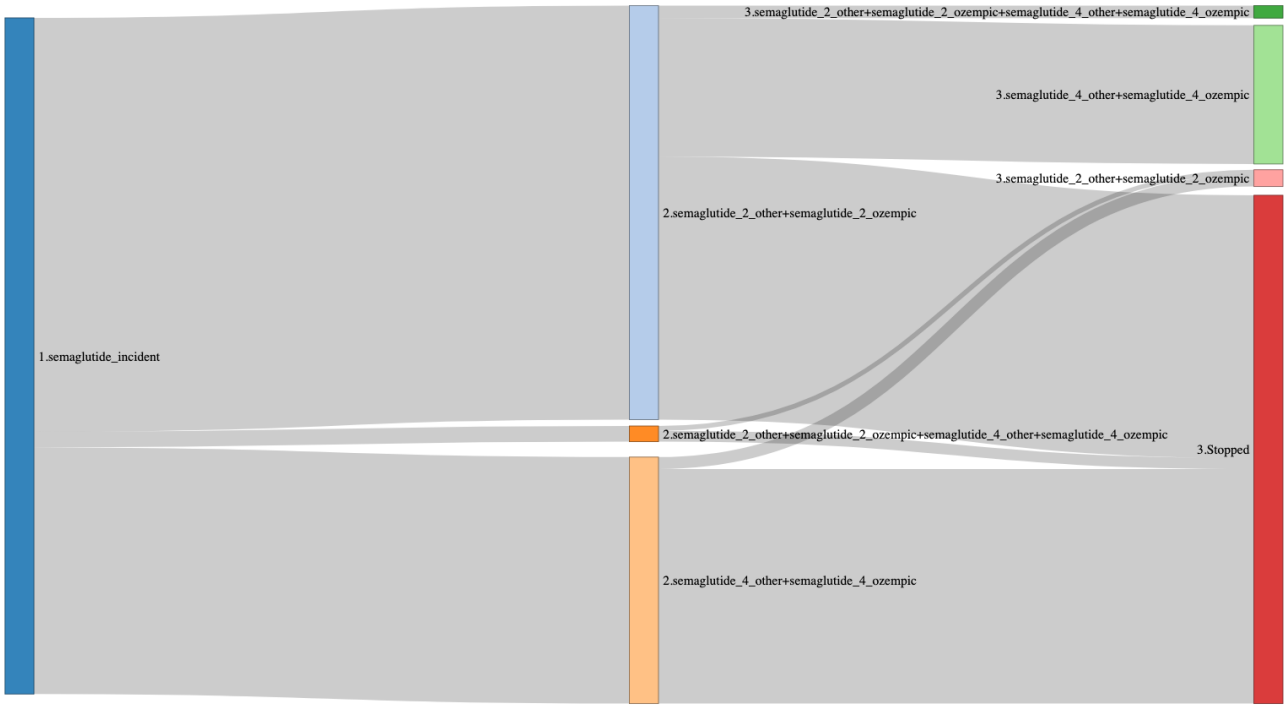
A) Dulaglutide



B) Liraglutide



C) Semaglutide



D) Tirzepatide

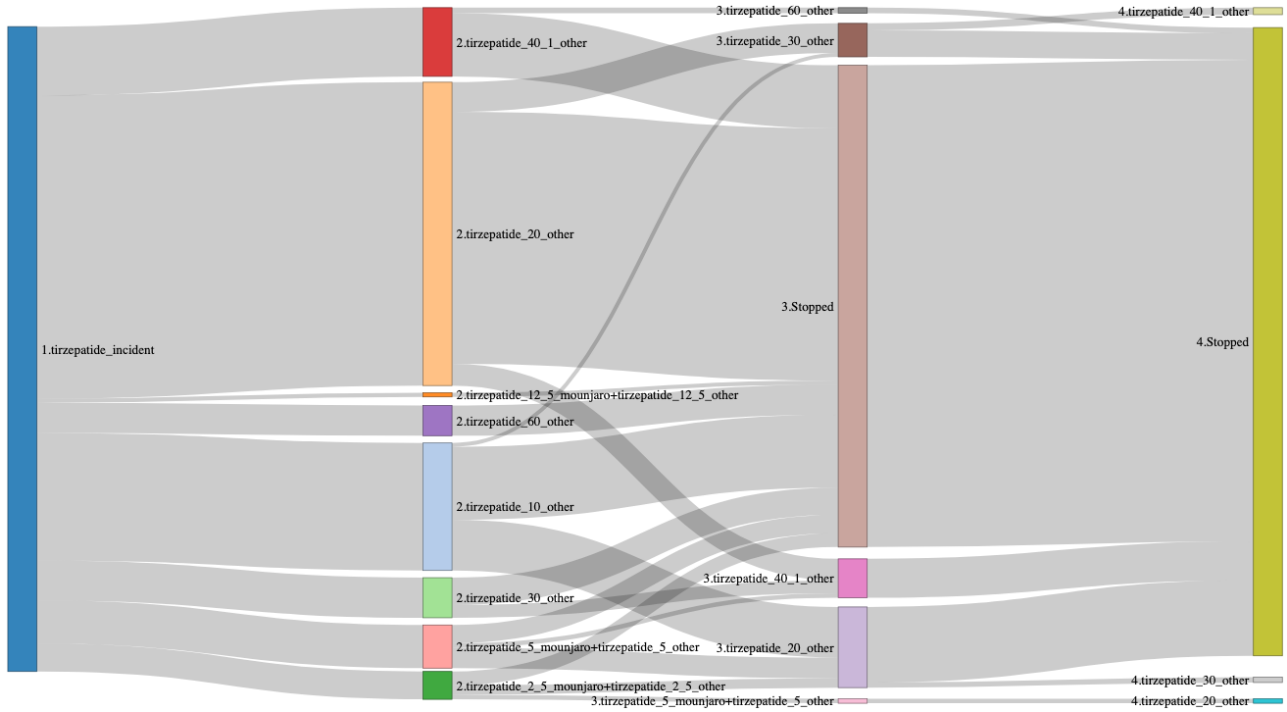


Figure 62. Within-ingredient switching of strength in InGef RDB in A) dulaglutide, B) liraglutide, C) semaglutide, and D) tirzepatide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.dulaglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP

indicates cessation of the last recorded strength received within the specific ingredient.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; InGef RDB = InGef Research Database.

In InGef RDB, the strength trajectories of 72,112 new users of dulaglutide (n=25,871), liraglutide (n=8,198), semaglutide (n=32,525), and tirzepatide (n=5,518) were obtained. **Figure 62** contains the trajectories of 70,809 new users.

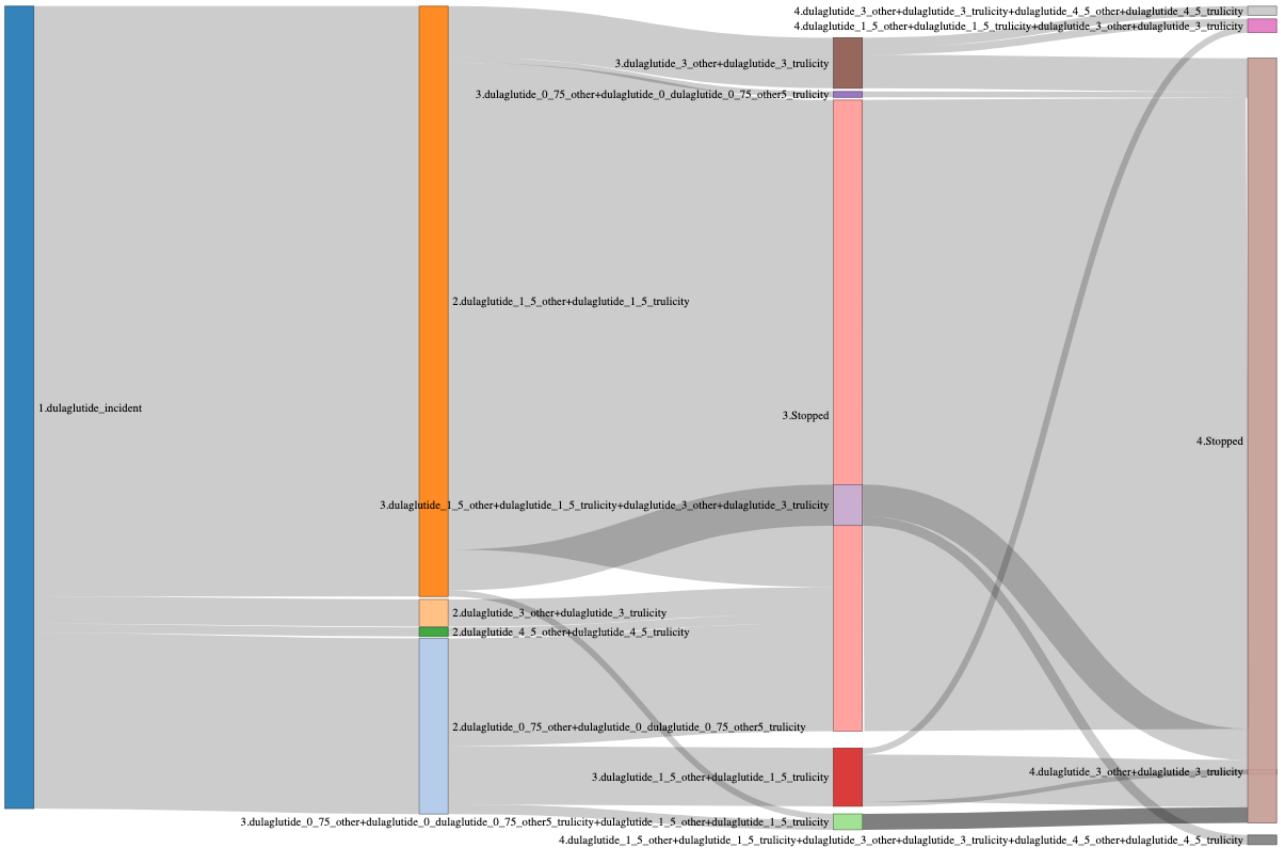
Among new dulaglutide users, 3,750 (14.49%) switched from 1.5 mg to 3 mg. Conversely, no new liraglutide users showed a strength switch (Victoza was the brand used).

Among new semaglutide users, 7,934 (24.39%)[1] switched from 2 mg to 4 mg, of which 227[2] later de-escalated to 2 mg. Moreover, 571 (1.76%) new users who started with 4 mg later also switched to 2 mg. When recorded, the brand was Ozempic.

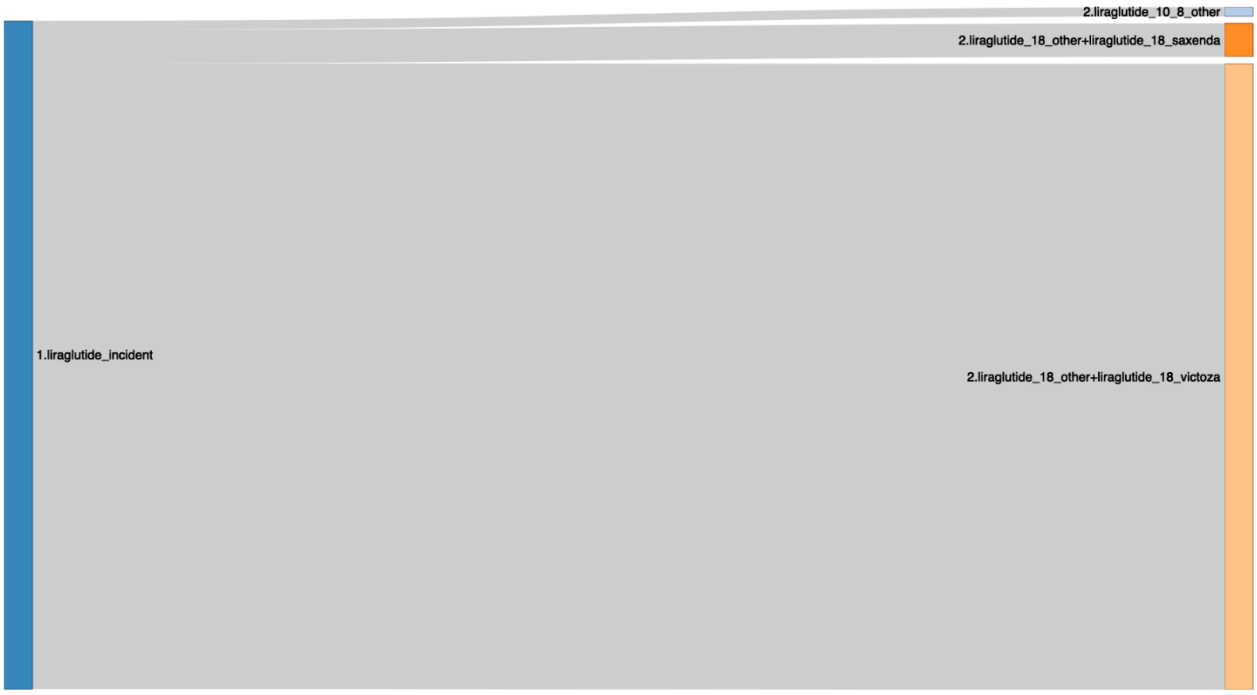
Among new tirzepatide users, the larger number of patients showing dose escalation was 391 (7.09%)[3] users who switched from 10 mg to 20 mg, of which 40[4] users escalated to 30 mg. This was followed by 229 (4.15%)[5] users who switched from 20 mg to 30 mg, of which 54[6] users escalated to 40.1 mg.
Other strength switches observed were from users who switched from 20 mg to 40.1 mg (n=168, 3.04%), from 5 mg to 20 mg (n=159, 2.88%), from 30 mg to 40.1 mg (n=99, 1.79%), from 2.5 mg to 20 mg (n=73, 1.32%), from 2.5 mg to 5 mg and later they escalated to 20 mg (n=35, 0.63%), from 5 mg to 40.1 mg (n=35, 0.63%), from 10 mg to 30 mg (n=30, 0.54%), and from 40 mg to 60 mg (n=43, 0.78%). When recorded, the brand was Mounjaro.

[1] n=7,934: **6,593** users came from "*semaglutide_2_other+semaglutide_2_ozempic-semaglutide_4_other+semaglutide_4_ozempic*", **593** from "*semaglutide_2_other+semaglutide_2_ozempic_prevalent-semaglutide_4_other+semaglutide_4_ozempic*", **521** from "*semaglutide_2_other+semaglutide_2_ozempic+semaglutide_4_other+semaglutide_4_ozempic*", and **227** from "*semaglutide_2_other+semaglutide_2_ozempic+semaglutide_4_other+semaglutide_4_ozempic-semaglutide_2_other+ semaglutide_2_ozempic*".
[2] n=228: **227** users highlighted in bold in [1].
[3] n=391: ***351*** *users came from "tirzepatide_10_other-tirzepatide_20_other", and* ***40*** *from "tirzepatide_10_other-tirzepatide _20_other-tirzepatide_30_other".*
[4] n=40: **40** users highlighted in bold in [3].
[5] n=229: **175** users came from *"tirzepatide_20_other-tirzepatide_30_other", and* ***54*** *from "tirzepatide_20_other-tirzepatide_30_ other-tirzepatide_40_1_other".*
[6] n=54: **54** users highlighted in bold in [5].

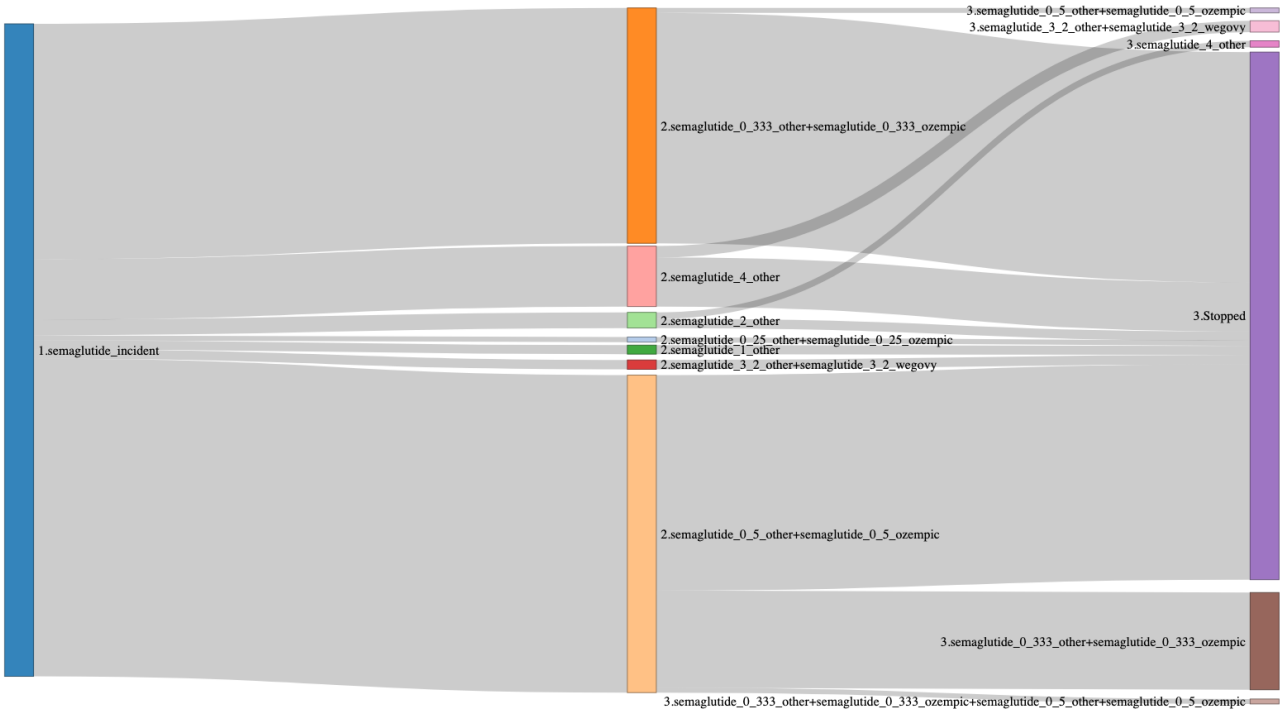
A) Dulaglutide



B) Liraglutide



C) Semaglutide



D) Tirzepatide

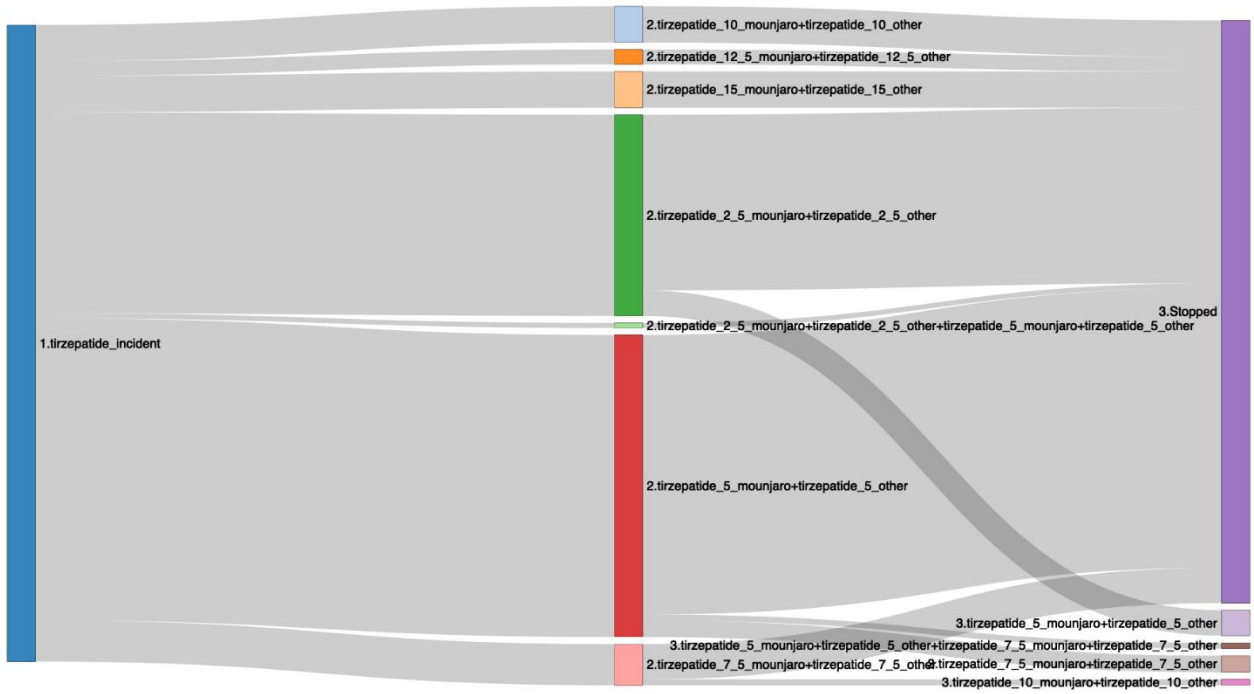


Figure 63. Within-ingredient switching of strength in IQVIA DA Germany in A) dulaglutide, B) liraglutide, C) semaglutide, and D) tirzepatide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.dulaglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP

indicates cessation of the last recorded strength received within the specific ingredient.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IQVIA DA Germany = IQVIA Disease Analyzer Germany.

In IQVIA DA Germany, the strength trajectories of 44,055 new users of dulaglutide (n=20,688), liraglutide (n=7,393), semaglutide (n=15,325), and tirzepatide (n=649) were obtained. **Figure 63** contains the trajectories of 42,144 new users.

Among new users of dulaglutide, the most common switch was from 1.5 mg to 3 mg (n=2,220, 10.73%)[1], of which 461[2] users later escalated to 4.5 mg. The second most common was from 0.75 to 1.5 (n=1,647, 7.96%)[3], of which 265[4] later switched to 3 mg. When recorded, the brand observed was Trulicity.

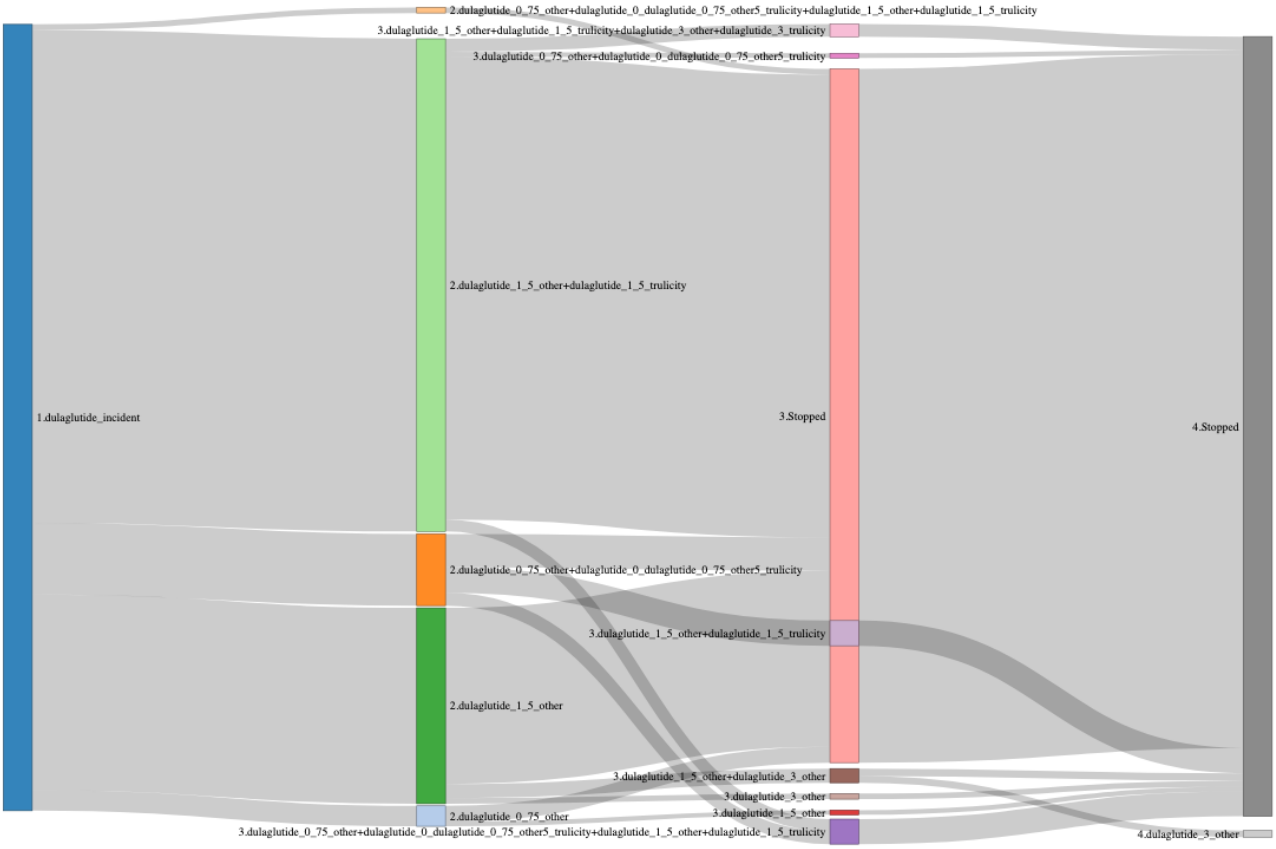
Conversely, no new liraglutide users showed a strength switch (the most frequent brand used was Victoza, followed by Saxenda).

Among new users of semaglutide, the most common switch was from Ozempic 0.5 mg to Ozempic 0.333 mg (n=2,294, 14.97%)[5]. The second most common was from 4 mg to Wegovy 3.2 mg (n=255, 1,66%). Dose escalation from 2 mg to 4 mg was observed among 144 (0.74%) new semaglutide users (no brand specified), and from Ozempic 0.333 mg to Ozempic 0.5 mg (n=111, 0.72%). When recorded, Ozempic was the most frequently observed brand.

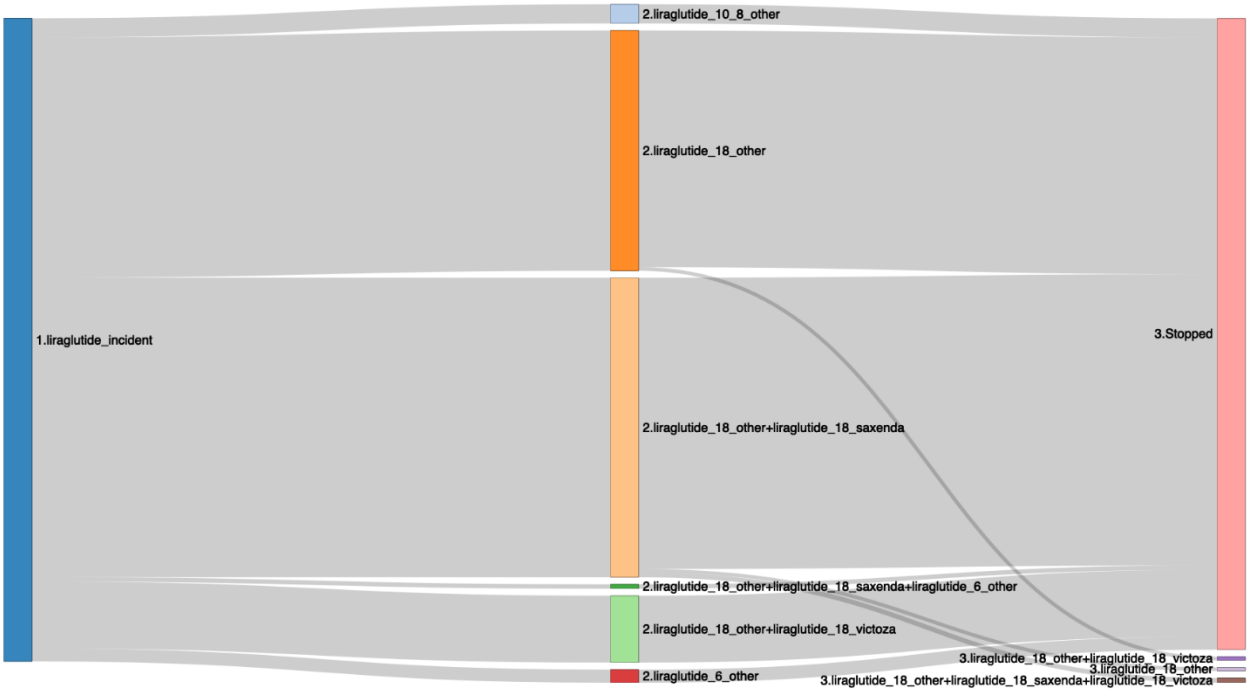
Among new users of tirzepatide, the most common switch was from 2.5 mg to 5 mg (n=31, 4.78%)[6], followed by 5 mg to 7.5 mg (n=23, 3.54%)[7]. Other dose escalation observed was from 7.5 mg to 10 mg (n=6, 0.92%). The brand recorded was Mounjaro.

[1] n=2,220: **818** users came from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_3_ other+dulaglutide_3_trulicity*", **761** from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity_ prevalent-dulaglutide_1_5_other+dulaglutide_1_5_trulicity+dulaglutide_3_other+ dulaglutide_3_trulicity*", **233** from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_1_5_other+dulaglutide_1_5_trulicity+dulaglutide_3_other+dulaglutide_3_trulicity-dulaglutide_1_5_other+dulaglutide_1_5_trulicity+dulaglutide_3_other+ dulaglutide_3_trulicity+dulaglutide_4_5_other+dulaglutide_4_5_trulicity*", **228** from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_3_other+dulaglutide_3_trulicity_ prevalent-dulaglutide_3_other+dulaglutide_3_trulicity+dulaglutide_4_5_other+ dulaglutide_4_5_trulicity*", and **180** from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_3_other+dulaglutide_3_trulicity-dulaglutide_1_5_other+ dulaglutide_1_5_trulicity_ prevalent+dulaglutide_3_other+dulaglutide_3_trulicity*".
[2] n=461: is the sum of **233+228** users highlighted in bold in [1].
[3] n=1,647: **1,143** users came from "*dulaglutide_0_75_other+dulaglutide_0_dulaglutide_0_75_other5_ trulicity-dulaglutide_1_5_other+dulaglutide_1_5_trulicity*", **239** from "*dulaglutide_0_75_other_ prevalent+dulaglutide_0_dulaglutide_0_75_other5_trulicity-dulaglutide_0_75_other+ dulaglutide_0_dulaglutide_0_75_other5_trulicity+dulaglutide_1_5_other+dulaglutide_1_5_trulicity*", **151** form "*dulaglutide_0_75_other+dulaglutide_0_dulaglutide_0_75_other5_trulicity_ prevalent-dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_1_5_other+ dulaglutide_1_5_trulicity+dulaglutide_3_other+dulaglutide_3_trulicity*", and **114** from "*dulaglutide_0_75_other+dulaglutide_0_dulaglutide_0_75_other5_trulicity-dulaglutide_1_5_ other+dulaglutide_1_5_trulicity-dulaglutide_1_5_other+ dulaglutide_1_5_trulicity+ dulaglutide_3_other+dulaglutide_3_trulicity*".
[4] n=265: is the sum of **151+114** users highlighted in bold in [3].
[5] n=2,294: **2,183** users came from "*semaglutide_0_5_other+semaglutide_0_5_ozempic-semaglutide_0_333_ other_ prevalent+semaglutide_0_333_ozempic*", and **111** from "*semaglutide_0_5_other+ semaglutide_0_5_ozempic-semaglutide_0_333_other+ semaglutide_0_333_ozempic+ semaglutide_0_5_other+semaglutide_0_5_ozempic*".
[6] n=31: **26** users came from "*tirzepatide_2_5_mounjaro+tirzepatide_2_5_other-tirzepatide_5_mounjaro_ prevalent+tirzepatide_5_other*", and **5** from "*tirzepatide_2_5_mounjaro+tirzepatide_2_5_other+ tirzepatide_5_mounjaro+tirzepatide_5_other*".
[7] n=23: **17** users came from "*tirzepatide_5_mounjaro+tirzepatide_5_other-tirzepatide_7_5_mounjaro_ prevalent+tirzepatide_7_5_other*", and **6** from "*tirzepatide_5_mounjaro+tirzepatide_5_other-tirzepatide_5_mounjaro+tirzepatide_5_other+tirzepatide_7_5_mounjaro+tirzepatide_7_5_other*".

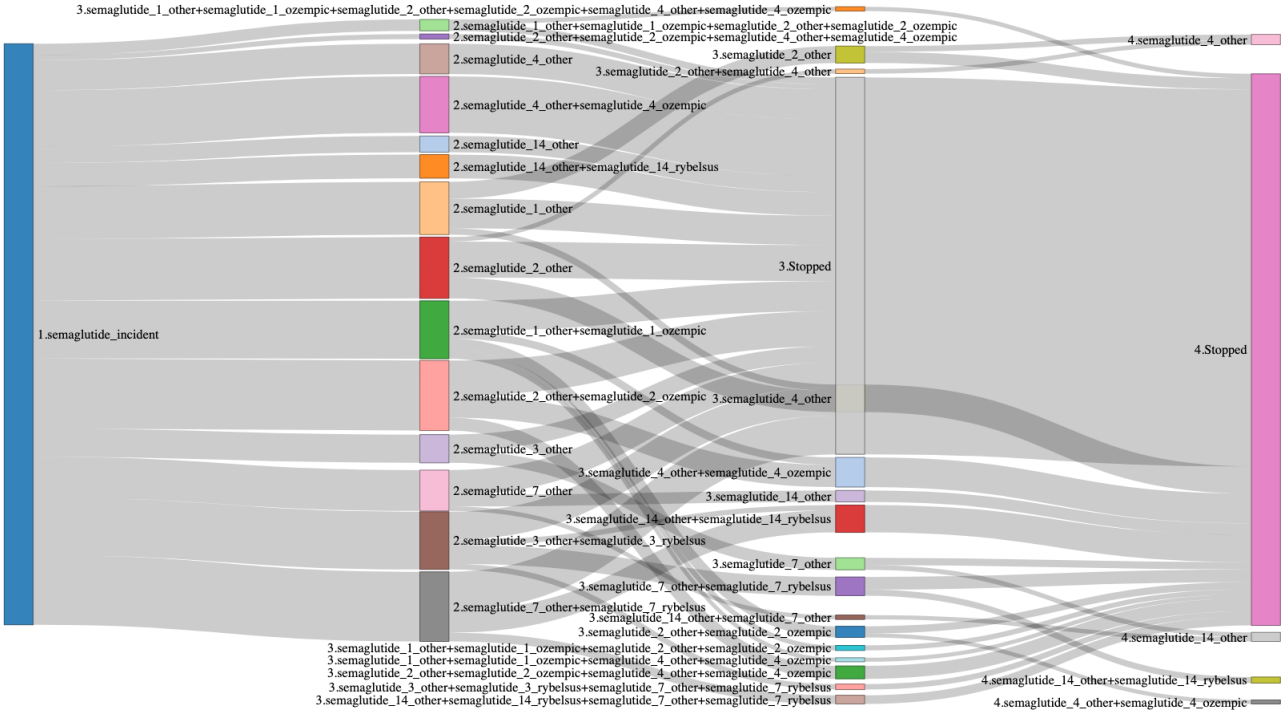
A) Dulaglutide



B) Liraglutide



C) Semaglutide



D) Tirzepatide



Figure 64. Within-ingredient switching of strength in IPCI in A) dulaglutide, B) liraglutide, C) semaglutide, and D) tirzepatide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.dulaglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP

indicates cessation of the last recorded strength received within the specific ingredient.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IPCI = Integrated Primary Care Information.

In IPCI, the strength trajectories of 12,223 new users of dulaglutide (n=844), liraglutide (n=3,595), semaglutide (n=7,746), and tirzepatide (n=38) were obtained. **Figure 64** contains the trajectories of 10,878 new users.

Among new users of dulaglutide, 52 (6.16%)[1] users were observed who switched from 0.75 mg to 1.5 mg and 35 (4.15%)[2] users who switched from 1.5 mg to 3 mg. Moreover, another 18 (2.13%)[3] new users started with 1.5 mg and then switched to 0.75 mg, of which 13[4] later returned to 1.5 mg. When recorded, the brand was Trulicity.

Among new users of liraglutide, switch of strength was only observed from Saxenda 18 mg to "Other" 6 mg (i.e. unknown brand or other than Saxenda or Victoza) (n=24, 0.67%). Any other visual switch displayed happened among pre-defined cohorts with the same strength with or without the brand information (e.g. "2. liraglutide_18_other+liraglutide_18_saxenda" to "3.liraglutide_18_other"). Most frequent brand used was Saxenda, followed by Victoza.

Among new users of semaglutide, the most common switch was from 2 mg to 4 mg (n=732, 9.45%, with brand Ozempic, when recorded)[5]. The second most common was from 7 mg to 14 mg (n= 521, 6.73%, with brand Rybelsus, when recorded)[6], of which 98[7] later de-escalated to 7 mg. The third most common was from 3 mg to 7 mg (n=352, 4.54%, with brand Rybelsus, when recorded)[8], of which 120[9] later switched to Rybelsus 14 mg. When recorded, similar use was observed among brands Ozempic and Rybelsus.

Conversely, no switching was observed among new tirzepatide users.

[1] n=52: **27** users came from "*dulaglutide_0_75_other+dulaglutide_0_dulaglutide_0_75_other5_trulicity_ prevalent-dulaglutide_1_5_other+dulaglutide_1_5_trulicity*", **14** from "*dulaglutide_0_75_other+ dulaglutide_0_dulaglutide_0_75_other5_trulicity-dulaglutide_0_75_other+dulaglutide_0_ dulaglutide_0_75_other5_trulicity+dulaglutide_1_5_other+dulaglutide_1_5_trulicity*", **6** from "*dulaglutide_0_75_other+dulaglutide_0_dulaglutide_0_75_other5_trulicity+ dulaglutide_1_5_other+dulaglutide_1_5_trulicity*", and **5** from "*dulaglutide_0_75_other-dulaglutide_1_5_other*".
[2] n=35: **14** users came from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_1_5_other_ prevalent+dulaglutide_1_5_trulicity+dulaglutide_3_other+dulaglutide_3_trulicity*", **8** from "*dulaglutide_1_5_other-dulaglutide_1_5_other+dulaglutide_3_other*", **7** from "*dulaglutide_1_5_ other-dulaglutide_1_5_other+dulaglutide_3_other-dulaglutide_3_other", and **6** from "dulaglutide_1_5_other-dulaglutide_3_other*".
[3] n=18: **13** users came from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_0_75_other_ prevalent+dulaglutide_0_dulaglutide_0_75_other5_trulicity+dulaglutide_1_5_other+dulaglutide_1_5_trulicity*", and **5** from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_0_75_ other+dulaglutide_0_dulaglutide_0_75_other5_trulicity*".
[4] n=13: **13** users highlighted in bold in [3].
[5] n=732: **247** users came from "*semaglutide_2_other+semaglutide_2_ozempic-semaglutide_4_other_ prevalent+semaglutide_4_ozempic*", **234** from "*semaglutide_2_other-semaglutide_4_other*", **143** from "*semaglutide_2_other+semaglutide_2_ozempic-semaglutide_2_other+ semaglutide_2_ozempic+semaglutide_4_other+semaglutide_4_ozempic*", **57** from "*semaglutide_2_other+semaglutide_2_ozempic+semaglutide_4_other+semaglutide_4_ozempic*", and **51** from "*semaglutide_2_other-semaglutide_2_other+semaglutide_4_other-semaglutide_4_other*".
[6] n=521: **246** users came from "*semaglutide_7_other+semaglutide_7_rybelsus-semaglutide_14_other_ prevalent+semaglutide_14_rybelsus*", **129** from "*semaglutide_7_other-semaglutide_14_other*", **98** from "*semaglutide_7_other+semaglutide_7_rybelsus-semaglutide_14_other+semaglutide_ 14_rybelsus+semaglutide_7_other+semaglutide_7_rybelsus*", and **48** from "*semaglutide_7_other - semaglutide_14_other+semaglutide_7_other-semaglutide_14_other*".
[7] n=98: **98** users highlighted in bold in [6].
[8] n=352: **139** users came from "*semaglutide_3_other+semaglutide_3_rybelsus-semaglutide_7_other_ prevalent+semaglutide_7_rybelsus*", **82** from "*semaglutide_3_other-semaglutide_7_other*", **68** from "*semaglutide_3_other+semaglutide_3_rybelsus-semaglutide_7_other+ semaglutide_7_rybelsus-semaglutide_14_other+semaglutide_14_rybelsus*", **63** from "*semaglutide _3_other+semaglutide_3_rybelsus-semaglutide_3_other+semaglutide_3_rybelsus+ semaglutide_7_other+semaglutide_7_rybelsus*", **52** from "*semaglutide_3_other-semaglutide_7_other-semaglutide_14_other*".
[9] n=120: is the sum of **68+52** users highlighted in bold in [8].

A) Liraglutide



B) Semaglutide

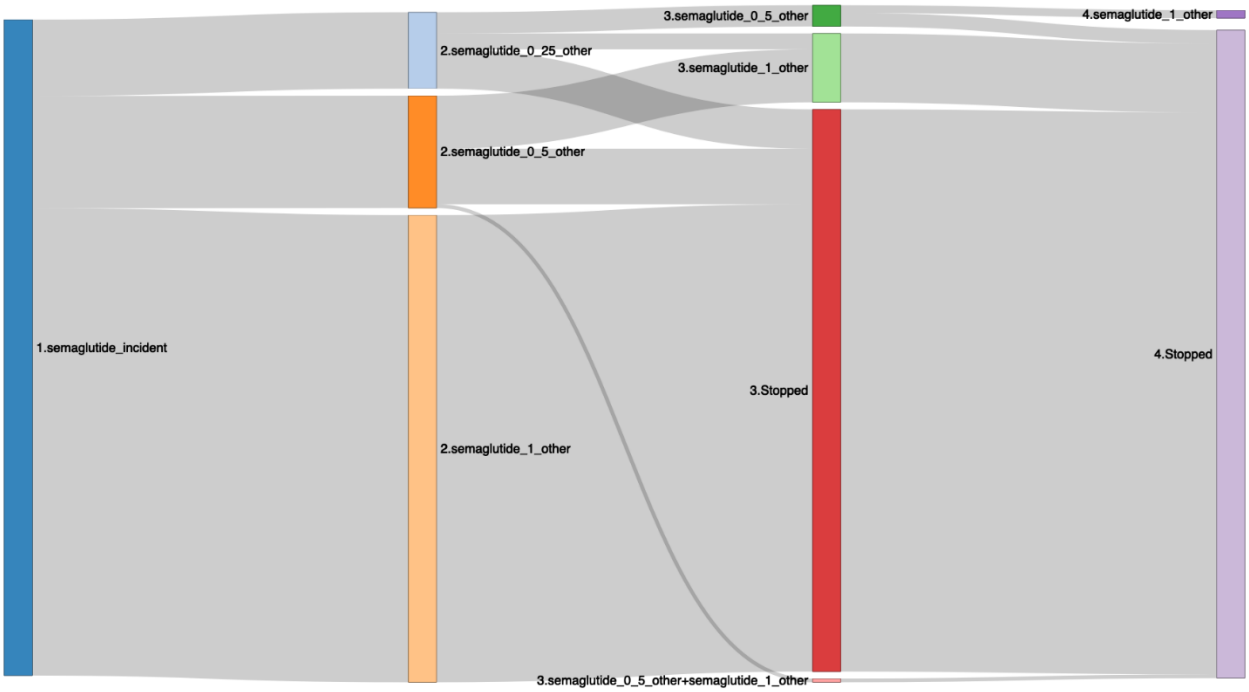


Figure 65. Within-ingredient switching of strength in NLHR in A) liraglutide and B) semaglutide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.liraglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP

indicates cessation of the last recorded strength received within the specific ingredient. No strength cohorts were captured for dulaglutide in NLHR.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; NLHR = Norwegian Linked Health Registry data.

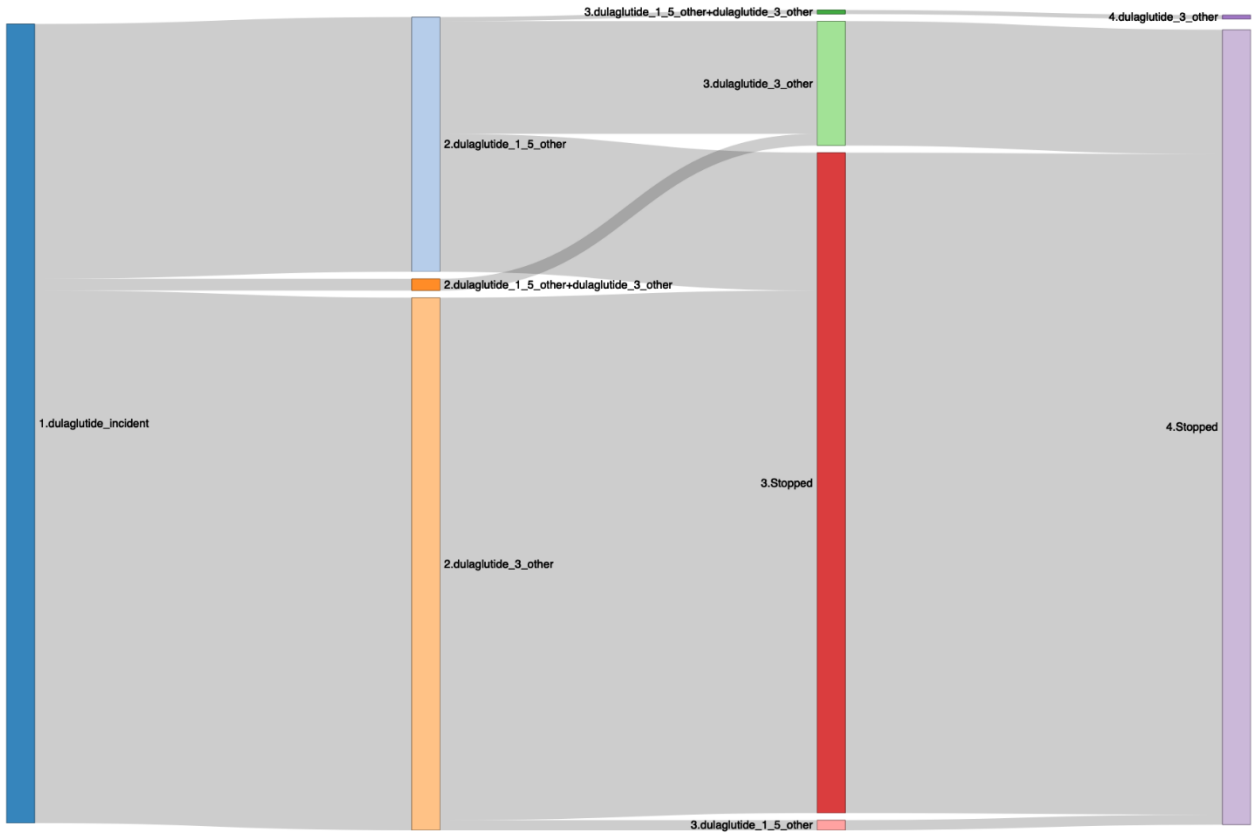
In NLHR, the strength trajectories of 88,103 new users of liraglutide (n=54,048) and semaglutide (n=34,055) were obtained. No strength cohorts were captured for semaglutide in NLHR. **Figure 65** contains the trajectories of 86,706 new users. Information on brands was not available.

No switching was observed among new liraglutide users.

On the other hand, among new users of semaglutide, 1,071 (3.14%)[1] started with 0.25 mg and switched to 0.5 mg, of which 399[2] users later switched to 1 mg. About 794 (2.33%) new users started with 0.25 mg and directly switched to 1 mg, whilst 2,860 (8.40%)[3] new users started with 0.5 mg and switched to 1 mg.

[1] n=1,071: **672** users came from "*semaglutide_0_25_other-semaglutide_0_5_other*", and **399** from "*semaglutide_0_25_other-semaglutide_0_5_other-semaglutide_1_other*".
[2] n=399: **399** users highlighted in bold in [1].
[3] n=2,860: **2,675** users came from "*semaglutide_0_5_other-semaglutide_1_other*", and **185** from "*semaglutide_0_5_other-semaglutide_0_5_other+semaglutide_1_other*".

A) Dulaglutide



B) Liraglutide



C) Semaglutide

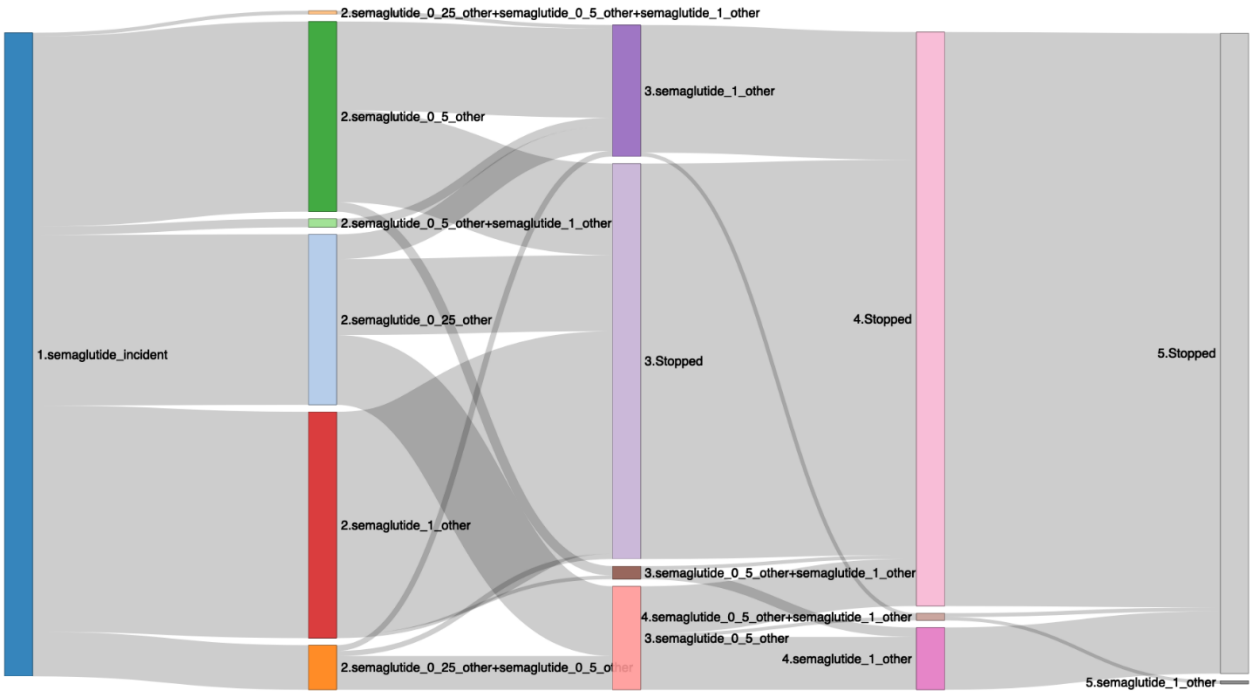


Figure 66. Within-ingredient switching of strength in SIDIAP in A) dulaglutide, B) liraglutide, and C) semaglutide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.dulaglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP indicates cessation of the last recorded strength received within the specific ingredient.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; SIDIAP = The Information System for Research in Primary Care.

In SIDIAP, the strength trajectories of 44,549 new users of dulaglutide (n=16,613), liraglutide (n=13,877), and semaglutide (n=14,059) were obtained. **Figure 66** contains the trajectories of 43,520 new users. Information on brands was not available.

Among new users of dulaglutide, 2,641 (15.90%)[1] new users were observed switching from 1.5 mg to 3 mg, whilst 209 (1.26%) started with 3 mg and then switched to 1.5 mg.

No switching was observed among new liraglutide users.

Among new users of semaglutide, the most frequent switching was 0.25 mg to 0.5 mg (n=2,423, 17,23%)[2], of which 1,348[3] users later switched to 1 mg. The second most frequent switching was from 0.5 mg to 1 mg (n=2,126, 15.12%)[4]. Another 81 (0.58%) new users were also observed who started with 0.5 mg, switched to 1 mg, and then displayed a combination of 0.5 mg + 1 mg.

[1] n=2,641: **2,313** users came from "*dulaglutide_1_5_other-dulaglutide_3_other*", **243** from "*dulaglutide_1_5_other+dulaglutide_3_other-dulaglutide_3_other*", and **85** from "*dulaglutide_1_5_other-dulaglutide_1_5_other+dulaglutide_3_other-dulaglutide_3_other*".
[2] n=2,423: **752** users came from "*semaglutide_0_25_other-semaglutide_0_5_other-semaglutide_1_other_ prevalent*", **613** from "*semaglutide_0_25_other-semaglutide_0_5_other*", **358** from "*semaglutide_0_25_other +semaglutide_0_5_other-semaglutide_0_5_other*", **333** from "*semaglutide_0_25_other+ semaglutide_0_5_other-semaglutide_0_5_other-semaglutide_1_other*", **118** from "*semaglutide_ 0_25_other+semaglutide_0_5_other-semaglutide_1_other*", **104** from "*semaglutide_0_25_other_ prevalent+semaglutide_0_5_other*", **74** from "*semaglutide_0_25_other+semaglutide_0_5_other+ semaglutide_1_other-semaglutide_1_other*", and **71** from "*semaglutide_0_25_other-semaglutide_ 0_5_other-*

semaglutide_0_5_other+semaglutide_1_other-semaglutide_1_other".
[3] n=1,348: is the sum of **752+333+118+74+71** users highlighted in bold in [2].
[4] n=2,126: **1,755** users came from "*semaglutide_0_5_other-semaglutide_1_other*", **195** from "*semaglutide_ 0_5_other-semaglutide_0_5_other+semaglutide_1_other-semaglutide_1_other*", and **176** from "*semaglutide_0_5_other+semaglutide_1_other-semaglutide_1_other*".

A) Liraglutide



B) Semaglutide

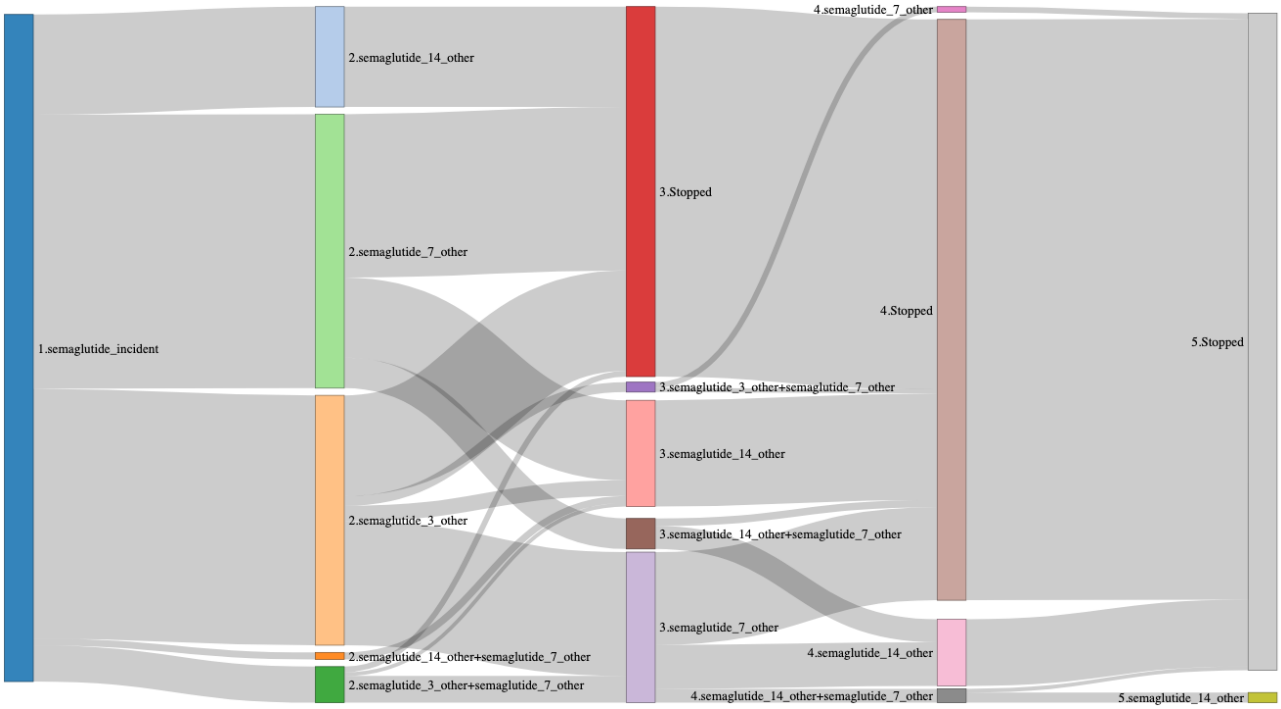


Figure 67. Within-ingredient switching of strength in HI-SPEED in A) liraglutide and B) semaglutide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.liraglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP indicates cessation of the last recorded strength received within the specific ingredient.
No strength cohorts were captured for dulaglutide in HI-SPEED.
GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage.

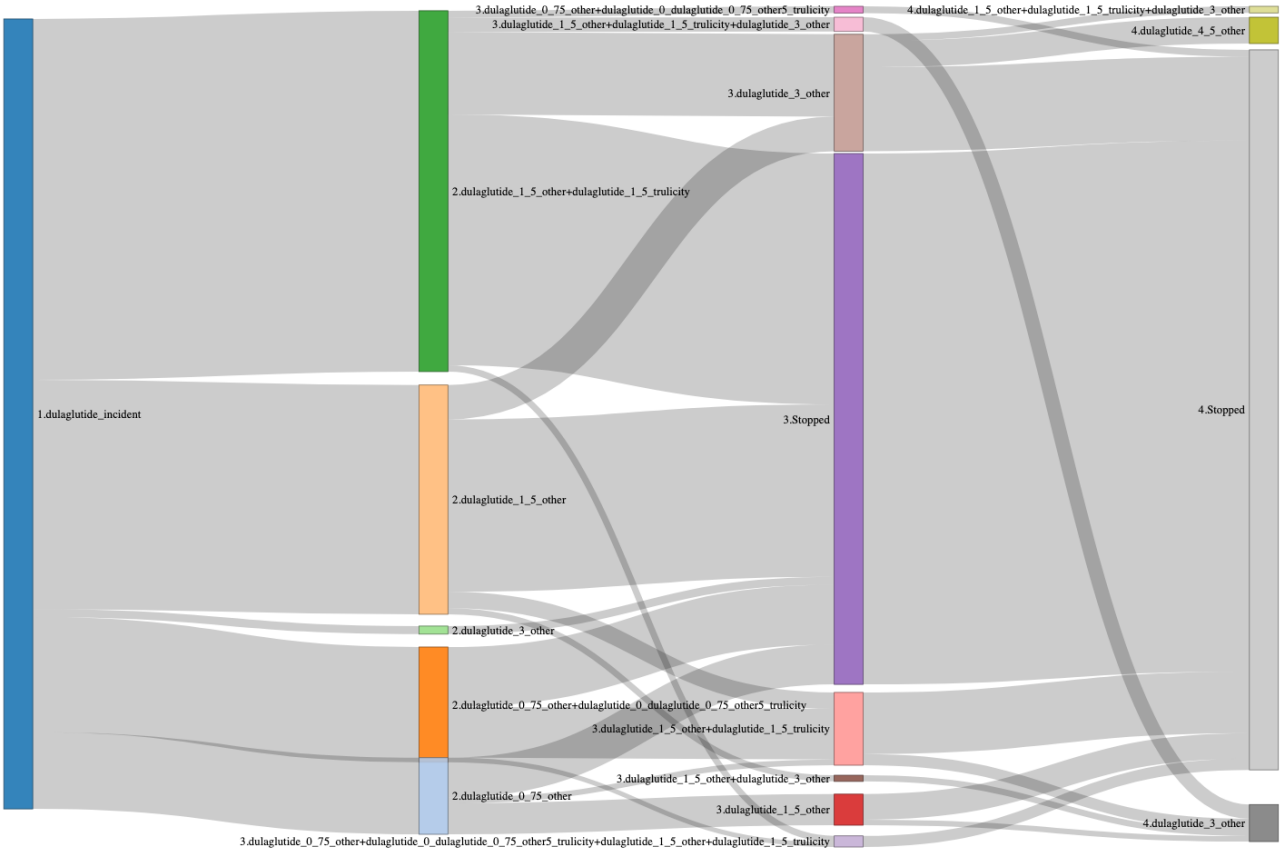
In HI-SPEED, the strength trajectories of 125,027 new users of liraglutide (n=52,032), and semaglutide (n=72,995) were obtained. No strength cohorts were captured for dulaglutide in HI-SPEED. **Figure 67** contains the trajectories of 120,210 new users. Information on brands was not available.

No switching was observed among new liraglutide users.

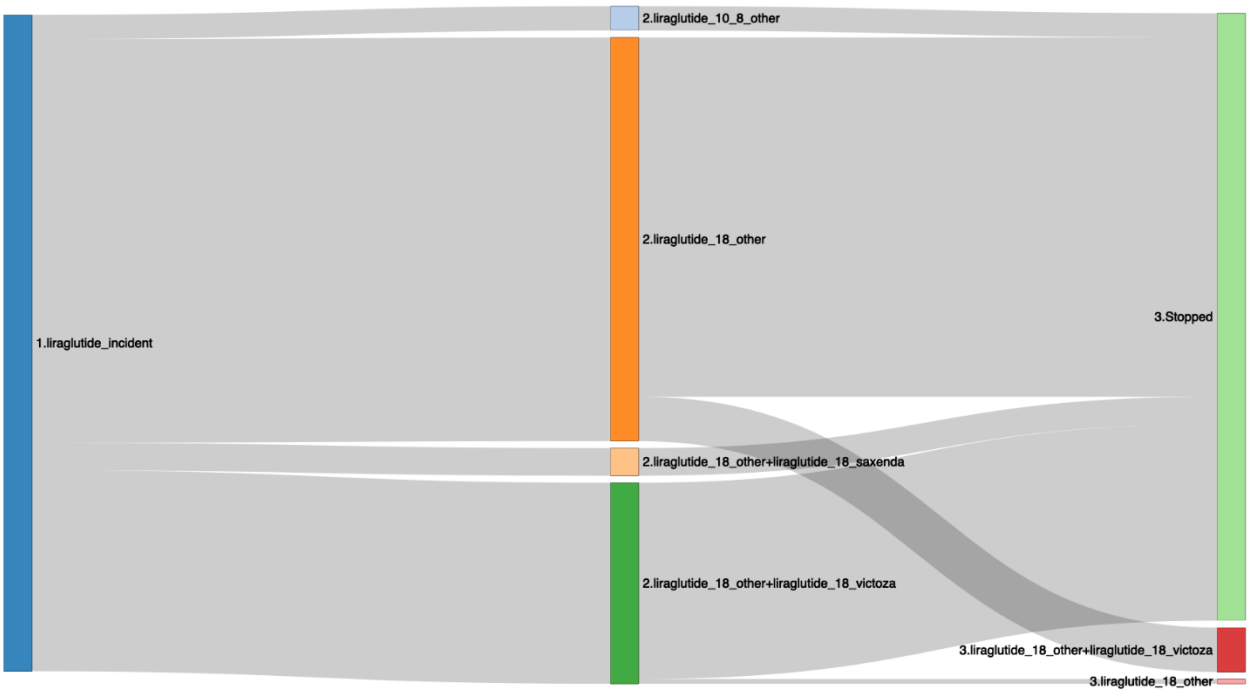
Among new users of semaglutide, the most frequent switching was from 3 mg to 7 mg (n=17,398, 23.83%)[1], of which 6,306[2] users then switched to 14 mg. Among these 6,306 users, 391[3] later switched to 7 mg again. 11,299 (15.4 8%)[4] new users starting with 7 mg and switching to 14 mg were also observed.

[1] n=17,398: **7,413** users came from "*semaglutide_3_other-semaglutide_7_other*", **3,861** from "*semaglutide_ 3_other-semaglutide_7_other-semaglutide_14_other*", **2,103** from "*semaglutide_3_other_ prevalent+semaglutide_7_other-semaglutide_7_other*", **1,042** from "*semaglutide_3_other-semaglutide_7_other-semaglutide_14_other+semaglutide_7_other-semaglutide_14_other_ prevalent*", **620** from "*semaglutide_3_other+semaglutide_7_other-semaglutide_7_other-semaglutide_14_other*", **582** from "*semaglutide_3_other+semaglutide_7_other*", **569** from "*semaglutide_3_other-semaglutide_3_other+semaglutide_7_other-semaglutide_7_other_ prevalent*", **425** from "*semaglutide_3_other-semaglutide_3_other+semaglutide_7_other*",
392 from "*semaglutide_3_other+semaglutide_7_other-semaglutide_14_other*", and **391** from "*semaglutide_3_other-semaglutide_7_other-semaglutide_14_other+semaglutide_7_other_ prevalent*".
[2] n=6,306: is the sum of **3,861+1,042+620+392+391** users highlighted in bold in [1].
[3] n=391: **391** users highlighted in bold in [1].
[4] n=11,299: **8,182** users came from "*semaglutide_7_other-semaglutide_14_other*", **2,341** from "*semaglutide_ 7_other-semaglutide_14_other+semaglutide_7_other-semaglutide_14_other*",
and **776** from "*semaglutide_7_other-semaglutide_14_other+semaglutide_7_other*".

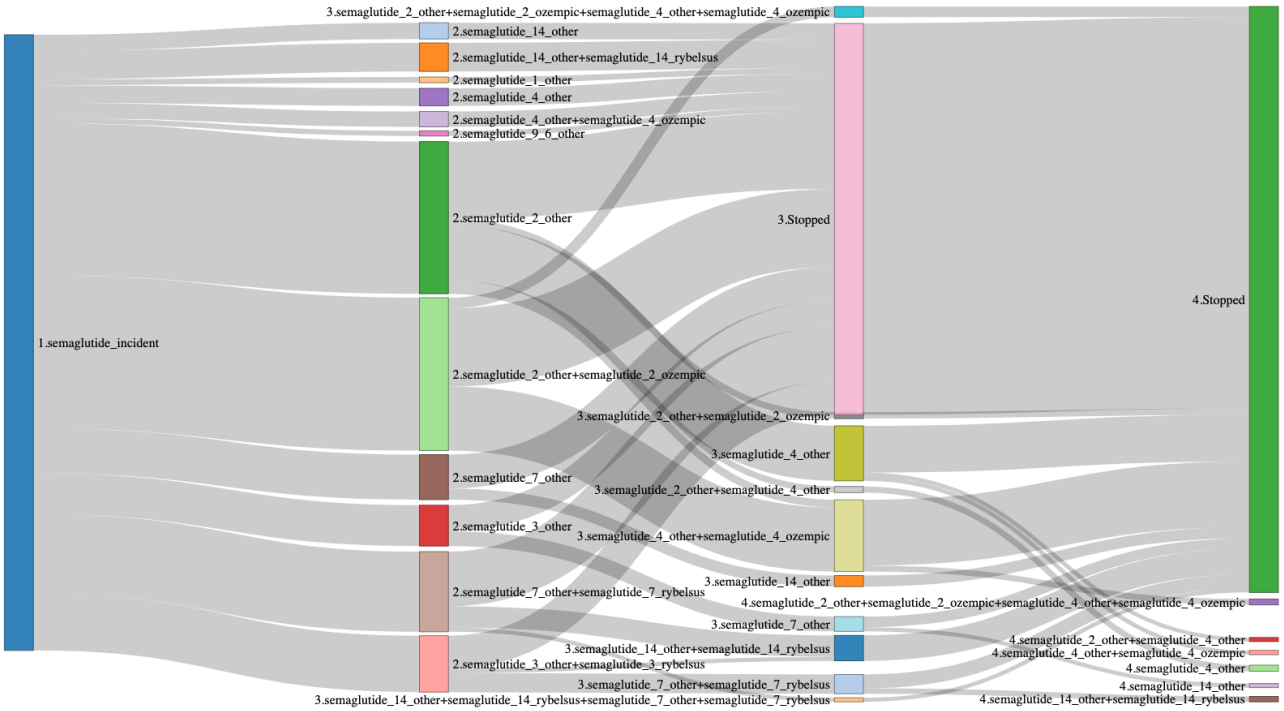
A) Dulaglutide



B) Liraglutide



C) Semaglutide



D) Tirzepatide

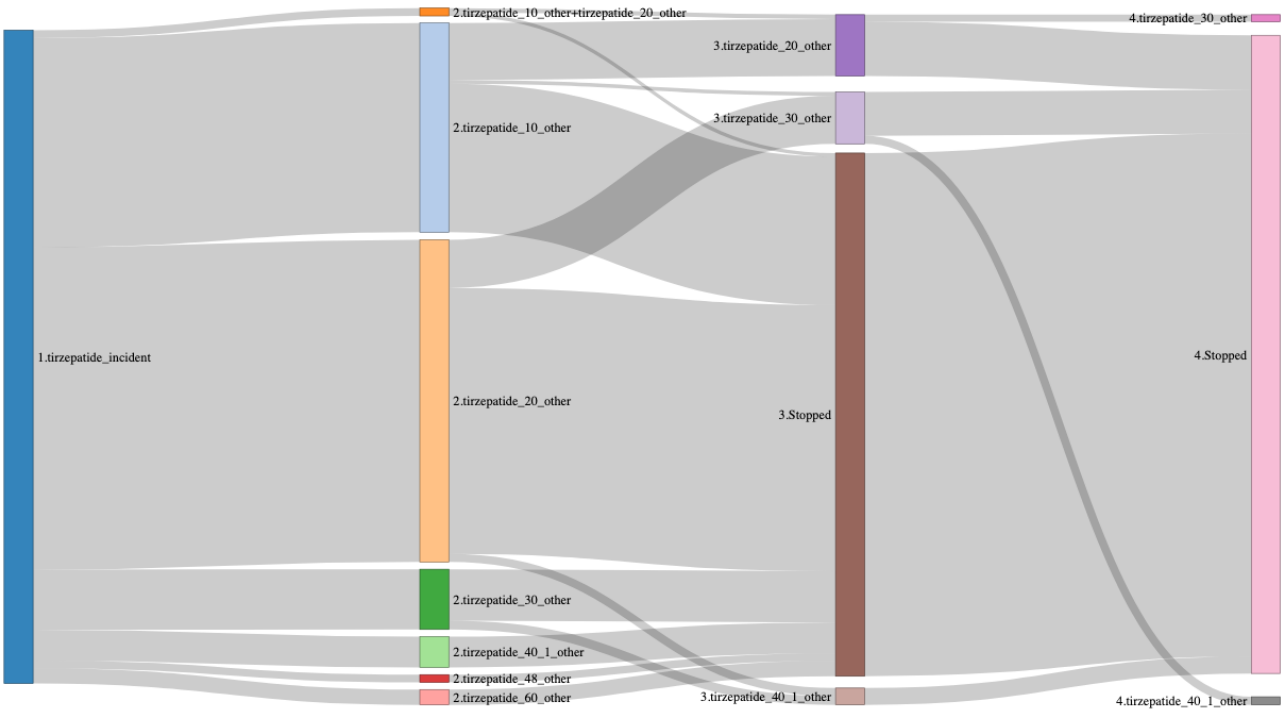


Figure 68. Within-ingredient switching of strength in CPRD Aurum in A) dulaglutide, B) liraglutide, C) semaglutide, and D) tirzepatide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.dulaglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the

strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP indicates cessation of the last recorded strength received within the specific ingredient.
CPRD Aurum = Clinical Practice Research Datalink Aurum; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In CPRD Aurum, the strength trajectories of 126,009 new users of dulaglutide (n=32,638), liraglutide (n=16,999), semaglutide (n=45,704), and tirzepatide (n=30,668) were obtained. **Figure 68** contains the trajectories of 113,432 new users.

Among new dulaglutide users, the most frequent switching was 1.5 mg to 3 mg (n=4,906, 15.03%)[1], of which 938[2] later switched to 4.5 mg. The second most frequent switching was from 0.75 mg to 1.5 mg (n=3,302, 10.12%)[3], of which 595[4] later switched to 3 mg. Additionally 476[5] (1.46%) new dulaglutide users were observed who started with 1.5 mg and de-escalated to 0.75 mg, of which 229 returned to 1.5 mg. When recorded, the brand observed was Trulicity.

No switching was observed among new liraglutide users. When recorded, the most frequent brand used was Victoza, followed by Saxenda.

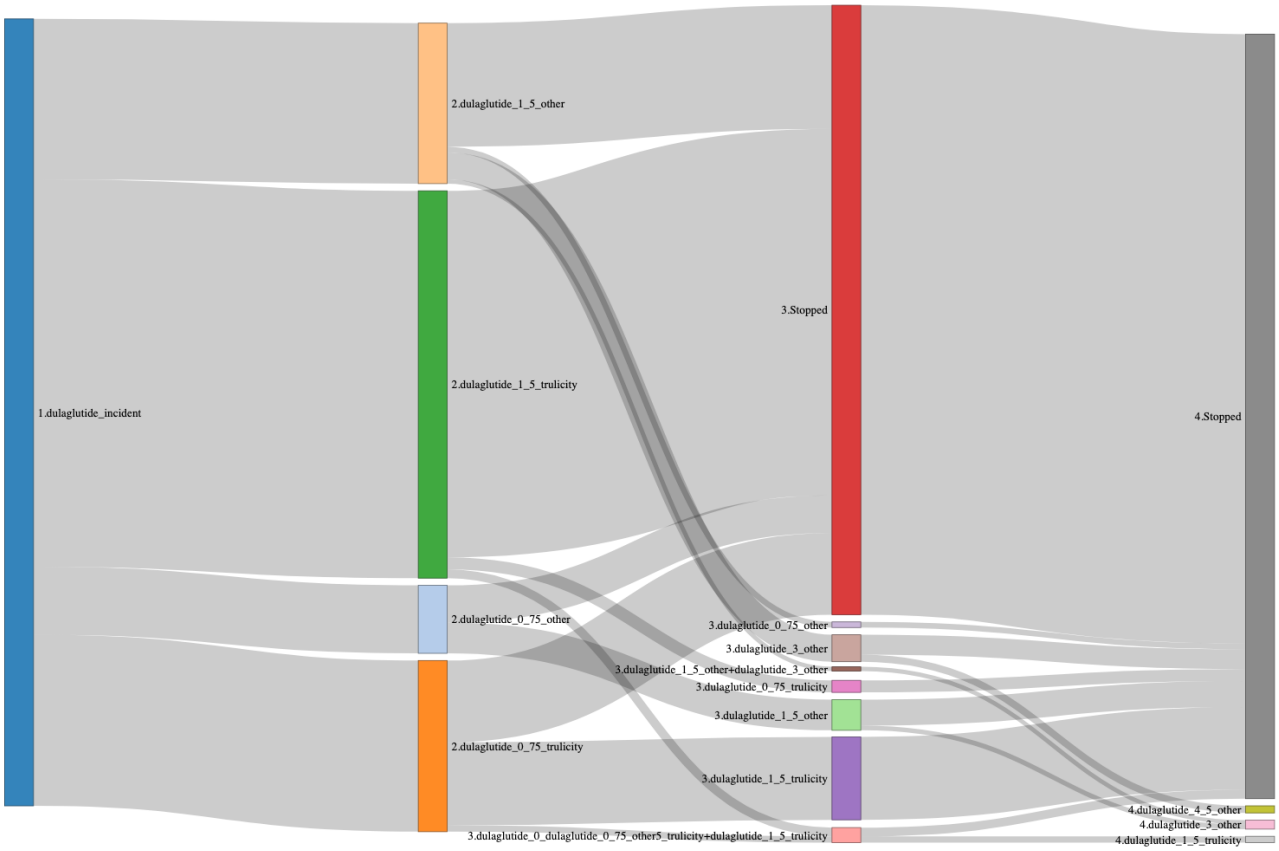
Among new users of semaglutide, the most frequent switching was from 2 mg to 4 mg (n=9,348, 20.45%)[6], followed by 7 mg to 14 mg (n=2,372, 5.19%)[7]. The third most frequent switching was from 3 mg to 7 mg (n=2,189, 4.79%)[8], of which 608 users later switched to 14 mg. Moreover, 258 (0.56%) of new semaglutide users started with 3 mg and switched to 14 mg. Furthermore, of all new semaglutide users, 10,660 used Rybelsus, whilst 12,114 used Ozempic.

Among new users of tirzepatide, the most frequent switching was from 10 mg to 20 mg (n=2,847, 9.28%)[10], of which 363[11] then switched to 30 mg. The second most frequent switching was from 20 mg to 30 mg (n=2,110, 6.88%)[12], of which 352[13] then switched to 40 mg. Moreover, 390 (1.27%) new tirzepatide users started with 30 mg and switched to 40 mg, 351 (1.14%) started with 20 mg and switched to 40 mg, and 163 (0.53%) started with 10 mg and switched to 30 mg.

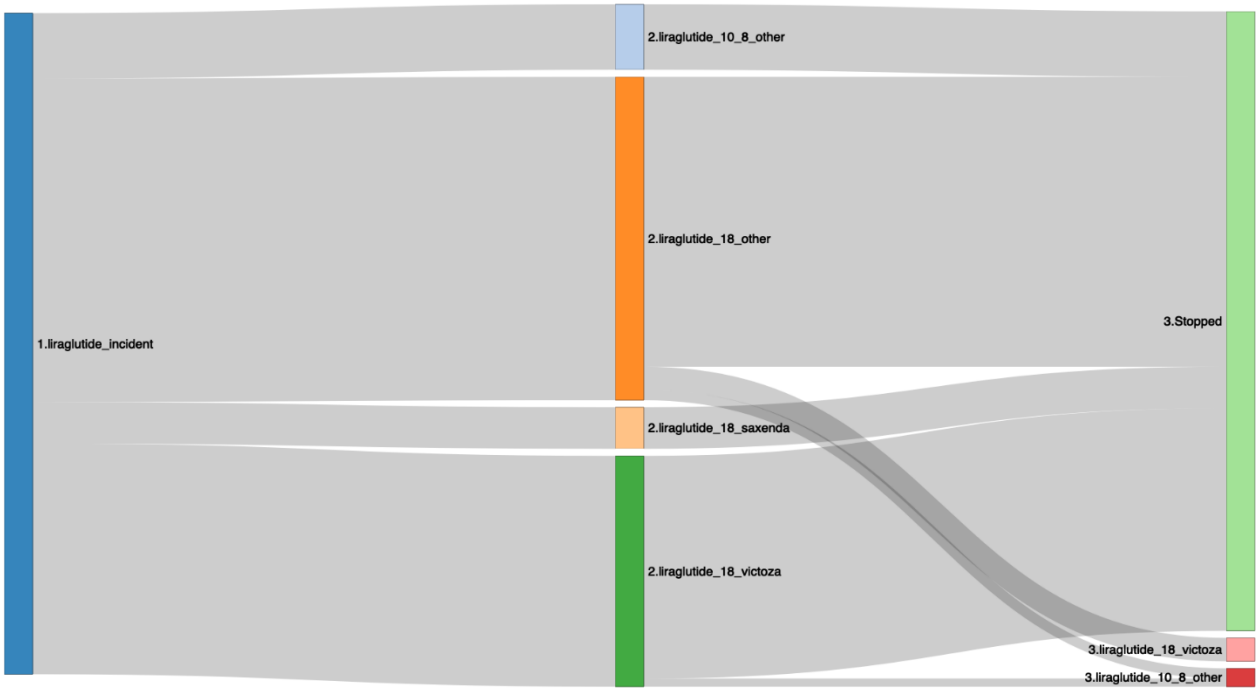
[1] n=4,906: **2,089** users came from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_3_other_prevalent*", **909** from "*dulaglutide_1_5_other-dulaglutide_3_other*", **619** from "*dulaglutide_1_5_other_prevalent+dulaglutide_1_5_trulicity-dulaglutide_3_other-dulaglutide_4_5_other*", **508** from "*dulaglutide_1_5_other+dulaglutide_1_5_ trulicity-dulaglutide_1_5_other +dulaglutide_1_5_trulicity+dulaglutide_3_other-dulaglutide_3_other*", **319** from "dulaglutide_1_5_other-dulaglutide_3_other-dulaglutide_4_5_other", **241** from "*dulaglutide_1_5_other+dulaglutide_1_5_ trulicity-dulaglutide_3_other-dulaglutide_1_5_other+ dulaglutide_1_5_trulicity+ dulaglutide_3_other*", and **221** from "dulaglutide_1_5_other-dulaglutide_1_5_other+ dulaglutide_3_ other-dulaglutide_3_other".
[2] n=938: is the sum of **619+319** users highlighted in bold in [1].
[3] n=3,302: **1,414** users came from "*dulaglutide_0_75_other+dulaglutide_0_dulaglutide_0_75_other 5_trulicity-dulaglutide_1_5_ other+dulaglutide_1_5_trulicity*", **914** from "*dulaglutide_incident-dulaglutide_0_75_other-dulaglutide_1_5_other*", **398** from "*dulaglutide_0_75_other+ dulaglutide_0_dulaglutide_0_75_other5_trulicity-dulaglutide_1_5_other +dulaglutide_1_5_ trulicity-dulaglutide_3_other*", **206** from "*dulaglutide_0_75_other-dulaglutide_1_5_other_prevalent+dulaglutide_1_5_trulicity*", **197** from "*dulaglutide_0_75_other-dulaglutide_1_5_other-dulaglutide_3_other*", and **173** from "*dulaglutide_0_75_other+dulaglutide_0_ dulaglutide_0_75_other_ prevalent5_trulicity-dulaglutide_0_75_other+dulaglutide_0_dulaglutide_0_75_other5_trulicity_ prevalent+dulaglutide_1_5_other+dulaglutide_1_5_trulicity*".
[4] n=595: is the sum of **398+197** users highlighted in bold in [2].
[5] n=476: **247** users came from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_0_75_other_prevalent+dulaglutide_0_dulaglutide_0_75_other5_trulicity*", **229** from "*dulaglutide_1_5_other+dulaglutide_1_5_trulicity-dulaglutide_0_75_other+ dulaglutide_0_dulaglutide_0_75_other5_trulicity+dulaglutide_1_5_other+dulaglutide_1_5_trulicity*".
[6] n=9,348: **3,791** users came from "*semaglutide_2_other+semaglutide_2_ozempic-semaglutide_4_other_prevalent+semaglutide _4_ozempic*", **3,041** from "*semaglutide_2_other-semaglutide_4_other*", **697** from "*semaglutide_2_other+ semaglutide_2_ozempic-semaglutide_2_other+semaglutide_2_ ozempic+semaglutide_4_other+ semaglutide_4_ozempic*", **497** from "*semaglutide_2_other_ prevalent-semaglutide_4_other+semaglutide_4_ozempic*", **401** from "*semaglutide_2_other-semaglutide_2_other+semaglutide_4_ other-semaglutide_4_other*", **387** from "*semaglutide_2_other_prevalent+semaglutide_ 2_ozempic-semaglutide_4_other+ semaglutide_4_ozempic-semaglutide_2_other+semaglutide_2_ozempic+semaglutide_4_other+semaglutide_4_ozempic*", **272** from "*semaglutide_2_other-semaglutide_4_other-semaglutide_4_other+semaglutide_4_ozempic*", and **262** from "*semaglutide_2_other-semaglutide_4_other-semaglutide_2_other_prevalent+semaglutide_4_other*".
[7] n=2,372: **1,390** users came from "*semaglutide_7_other+semaglutide_7_rybelsus-semaglutide_14_other_prevalent+ semaglutide_14_rybelsus*", **713** from "*semaglutide_7_other-semaglutide_14_other",* and **269** from "*semaglutide_7_other+ semaglutide_7_rybelsus-semaglutide_14_other+semaglutide_14_ rybelsus+semaglutide_7_other+semaglutide_7_rybelsus".*

[8] n=2,189: **888** users came from "*semaglutide_3_other+semaglutide_3_rybelsus-semaglutide_7_other_prevalent+semaglutide_7_rybelsus*", **693** from "*semaglutide_3_other-semaglutide_7_other*", **349** from "*semaglutide_3_other+semaglutide_3_rybelsus-semaglutide_7_other+semaglutide_7_rybelsus-semaglutide_14_other+semaglutide_14_rybelsus*", **259** from "semaglutide_3_other -semaglutide_7_other-semaglutide_14_other" .
[9] n=608: is the sum of **349+259** users highlighted in bold in [8].
[10] n=2,847: **2,195** from "*tirzepatide_10_other-tirzepatide_20_other*", **308** from "*tirzepatide_10_other_prevalent-tirzepatide_20_other-tirzepatide_30_other*", **155** from "*tirzepatide_10_other+tirzepatide_20_other*", and **192** from "*tirzepatide_10_other+ tirzepatide_20_ other-tirzepatide_20_other*".
[11] n=310: **310** users highlighted in bold in [10].
[12] n=2,110: **1,758** from "*tirzepatide_20_other-tirzepatide_30_other*", and **352** from "*tirzepatide_20_other_ prevalent-tirzepatide_30_other-tirzepatide_40_1_other*".
[13] n=352: **352** users highlighted in bold in [12].

A) Dulaglutide



B) Liraglutide



C) Semaglutide

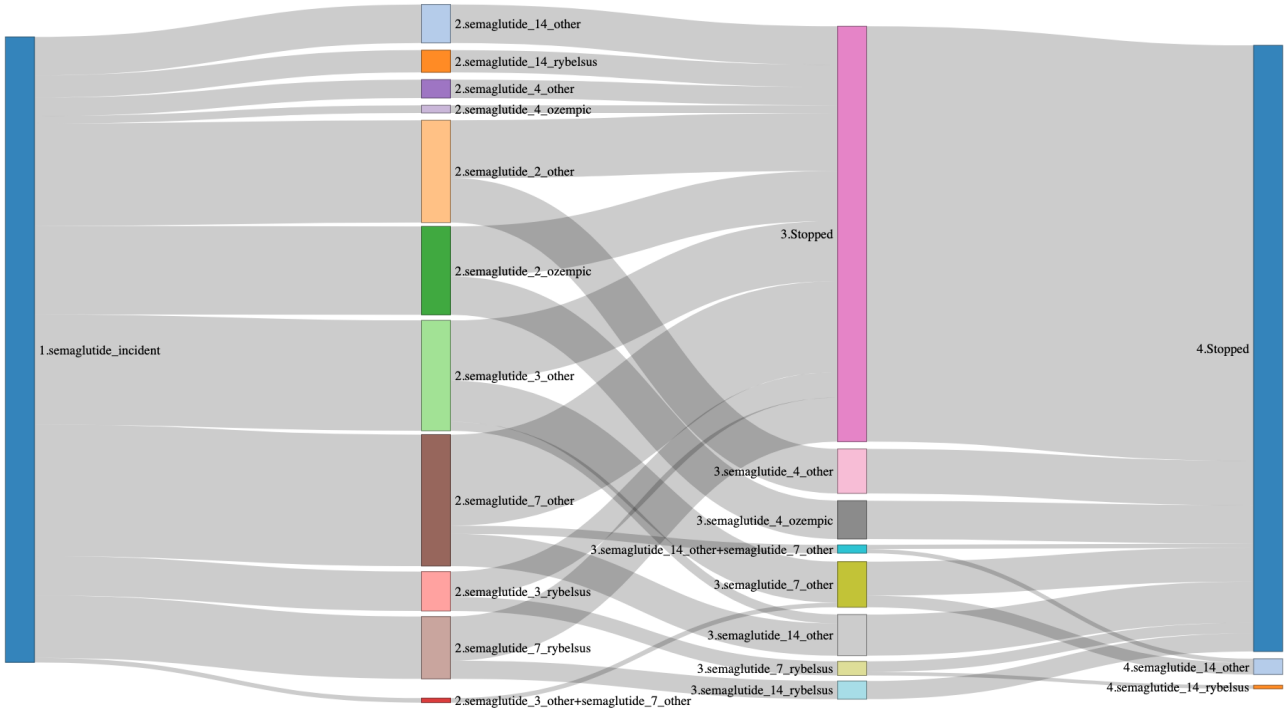


Figure 69. Within-ingredient switching of strength in CPRD GOLD in A) dulaglutide, B) liraglutide, and C) semaglutide.

The displayed treatment paths were restricted to those with more than 0.5% of patients per incident ingredient. The first (left-hand) column indicates the GLP-1 RA ingredient for which incident users are being described (e.g. 1.dulaglutide_incident). New users were defined as those who had no prior use of that GLP-1 RA ingredient in the prior 365 days. The other columns report the strength (with brand, where available) recorded in the new users, and "_other" refers to other/unknown brand record. STOP

indicates cessation of the last recorded strength received within the specific ingredient.
CPRD GOLD = Clinical Practice Research Datalink GOLD; GLP-1 RA = Glucagon-like peptide-1 receptor agonists.

In CPRD GOLD, the strength trajectories of 22,383 new users of dulaglutide (n=6,475), liraglutide (n=4,405), and semaglutide (n=11,503) were obtained. **Figure 69** contains the trajectories of 20,543 new users.

Among new users of dulaglutide, 978 (15.10%)[1] users were observed switching from 0.75 mg to 1.5 mg, of which 37 users later switched to 3 mg; and 264 (4.08%)[2] users who switched from 1.5 mg to 3 mg, of which 55 users later switched to 4.5 mg. When recorded, the brand observed was Trulicity.

Among new users of liraglutide, 120 (2.72%) users were observed who switched from 18 mg to 10.8 mg. When recorded, the most frequent brand used was Victoza, followed by Saxenda.

Among new users of semaglutide, the most frequent switching was from 2 mg to 4 mg (n=1,334, 11.60%, with brand Ozempic, when recorded) [3], followed by 7 mg to 14 mg: 948 (8.24%, with brand Rybelsus, when recorded)[4]. The third most frequent switching was from 3 mg to 7 mg (n=964, 8.38%, with brand Rybelsus, when recorded)[5], of which 248[6] later switched to 14 mg. When recorded, Rybelsus was the most frequently observed brand.

[1] n=978: **641** users came from "*dulaglutide_0_75_trulicity-dulaglutide_1_5_trulicity*", **201** from "*dulaglutide_ 0_75_other-dulaglutide_1_5_other*", **50** from "*dulaglutide_0_75_trulicity-dulaglutide_0_ dulaglutide_0_75_other5_trulicity+dulaglutide_1_5_trulicity-dulaglutide_1_5_trulicity*", **37** from "*dulaglutide_0_75_other-dulaglutide_1_5_other-dulaglutide_3_other*", **26** from "*dulaglutide_0_75_other-dulaglutide_0_75_other+dulaglutide_1_5_other-dulaglutide_1_5_other_ prevalent*", and **23** from "*dulaglutide_0_75_trulicity-dulaglutide_0_dulaglutide_0_75_other5_trulicity_ prevalent+dulaglutide_1_5_trulicity*".
[2] n=264: **153** users came from "*dulaglutide_1_5_other-dulaglutide_3_other*", **55** from "*dulaglutide_1_5_other - dulaglutide_3_other-dulaglutide_4_5_other*", **33** from "*dulaglutide_1_5_other-dulaglutide_1_5_other+dulaglutide_3_other-dulaglutide_3_other*", and **23** from "*dulaglutide_1_5_ other-dulaglutide_3_other-dulaglutide_1_5_other+dulaglutide_3_other*".
[3] n=1,334: **716** users came from "*semaglutide_2_other-semaglutide_4_other*", and **618** from "*semaglutide_2_ozempic-semaglutide_4_ozempic*".
[4] n=948: **518** users came from "*semaglutide_7_other-semaglutide_14_other*", **295** from "semaglutide_7_rybelsus-semaglutide_14_rybelsus", **68** from "semaglutide_7_other-semaglutide_14_other+semaglutide_7_other-semaglutide_14_other", and **67** from "*semaglutide_7_other-semaglutide_14_other+semaglutide_7_other*".
[5] n=964: **474** users came from "*semaglutide_3_other-semaglutide_7_other*", **189** from "*semaglutide_3_other - semaglutide_7_other-semaglutide_14_other*", **170** from "*semaglutide_3_rybelsus-semaglutide_7_rybelsus*", **72** from "*semaglutide_3_other+semaglutide_7_other-semaglutide_7_other*", and **59** from "*semaglutide_3_rybelsus-semaglutide_7_rybelsus-semaglutide_14_rybelsus*".
[6] n=248: is the sum of **189+59** users highlighted in bold in [5].

11. DISCUSSION

11.1. Key results

A total of 1,616,163 new GLP-1 RA users were observed in the twelve data sources participating in the study. The number of new GLP-1 RA users ranged between 6,922 in IQVIA LPD Belgium and 319,364 in CPRD Aurum.

Incidence and prevalence of prescriptions of GLP-1 RA

During 2015–2025, prevalence and incidence of GLP-1 RA class generally increased among all data sources. Prevalence of GLP-1 RA class ranged between 0.03% in IQVIA DA Germany and 3.21% in DK-DHR. DK-DHR, NLHR, and HI-SPEED had the highest prevalence (>1.5%). Monthly incidence rates (IR, cases/100,000 person-years) of GLP-1 RA use ranged from 7.6 in IPCI to 2,872.7 in DK-DHR. Compared with the prevalence estimates, IR were highest in DK-DHR, NLHR, CPRD AURUM and FinOMOP-THL.

Incidence of individual GLP-1 RA ingredients varied across time and data sources. While incidence of dulaglutide increased until 2022 or 2023 in most data sources, a decrease of new prescriptions was observed in the most recent years. Similarly, incidences of liraglutide increased in all data sources before it

decreased towards the end of the study period (except for NAJS and IPCI). Incidence of exenatide and lixisenatide declined over time, reaching a point where no new users were observed in the most recent years. Incidence of semaglutide increased over time but exhibited fluctuations throughout the study period that varied across data sources, such as an abrupt peak use before the end of the observation period (e.g. IQVIA LPD Belgium, NAJS, DK-DHR, and HI-SPEED). For instance, in FinOMOP-THL, NLHR, and CPRD Aurum, IR of semaglutide increased to its peak use in November 2022, June 2023, and February 2024, respectively, followed by a decrease. Meanwhile, incidence rates fluctuated in InGef RDB and CPRD GOLD, with a peak use in March 2025 and in May 2024, respectively. Conversely, tirzepatide use began to be observed in some data sources from the end of 2023 onwards (including DK-DHR, InGef RDB, IQVIA DA Germany, IPCI, and CPRD Aurum).

When stratified by indication, incidence was consistently higher for patients with T2DM (with or without Obesity) in most data sources. However, in the most recent years, incidence of new GLP-1 RA users became the highest for patients with Obesity in many data sources, which were led by new users of semaglutide and tirzepatide.

Characterisation of new drug users of GLP-1 RA medicines

During the overall study period, median age (years) of all new GLP-1 RA users ranged between 52 (NLHR) and 63 (NAJS), and the percentage of females ranged from 42.13% (InGef RDB) to 64.26% (CPRD Aurum). BMI was only available for 5 data sources, in which the median BMI (kg/m2) for new GLP-1 RA users ranged from 33.12 (IQVIA LPD Belgium) to 35.63 (SIDIAP). Biguanides were the most frequent comedication in most data sources, while CVD was the most common comorbidity. The second most common was dyslipidaemia in DK-DHR and hypertension in the other data sources. Patients with no indications for GLP-1 RA represented less than 14% of new users, except in InGef RDB (37.00%) and HI-SPEED (27.55%). Initial and cumulative dose varied across the data sources. Results observed in the last reported year were similar to findings from the overall study period.

Time-to-switch within GLP-1 RA switching of ingredients

Within each data source, average time-on-treatment of GLP-1 RA drugs was generally similar for the time period of 2015–2020 and the year of 2021, except for InGef RDB and IPCI, where treatment was about 16–20 days longer in 2021. IQVIA LPD Belgium showed shorter treatment episodes compared to other data sources. After 2021, average time-on-treatment of GLP-1 RA drugs decreased in most data sources. In CPRD GOLD, the number of users starting liraglutide increased in 2023, but their time-on-treatment was reduced compared to 2022 (from 132 to 77 days). Conversely, average time-on-treatment of GLP-1 RA drugs increased in DK-DHR between 2021–2023, led by new semaglutide users, despite liraglutide episodes shortening between 2021–2024.

Within GLP-1 RA switching of ingredients

Switching across ingredients was observed in IQVIA LPD Belgium, DK-DHR, FinOMOP-THL, InGef RDB, NLHR, and HI-SPEED. Conversely, very few or no patients were observed to have switched between GLP-1 RA ingredients (<1% of first GLP-1 RA users) in NAJS, IQVIA DA Germany, IPCI, SIDIAP, CPRD Aurum, and CPRD GOLD.

Time-to-switch within-ingredient switching (i.e. switching between different strengths)

Patients initiating liraglutide 3.6 mg had a longer treatment duration than those initiating 6 mg in NLHR and HI-SPEED, whilst the opposite was observed in NAJS and DK-DHR. Among patients initiating liraglutide 18 mg, treatment duration of Saxenda in IQVIA LPD Belgium, InGef RDB, IQVIA DA Germany, CPRD Aurum, and CPRD GOLD was shorter than the Victoza and “Other/Unknown brand” records. Conversely, in IPCI, longer durations were observed for liraglutide 18 mg, followed by liraglutide 6 mg. (i.e. the higher the strength, the longer the observed treatment duration). Patients initiating dulaglutide showed longer treatment durations for higher strengths in IQVIA LPD Belgium and IQVIA DA Germany, whilst InGef RDB presented

longer treatment durations for lower strengths. NAJS, IPCI, CPRD Aurum, and CPRD GOLD showed fluctuations in the length of dulaglutide treatment, where the 0.75 mg strength for CPRD Aurum, the 3 mg strength for IPCI and CPRD GOLD, and the 6 mg strength for NAJS had shorter treatment durations. Patients initiating semaglutide generally showed longer treatment durations for higher strengths in IQVIA LPD Belgium, NAJS, DK-DHR, InGef RDB, IPCI, NLHR, SIDIAP, HI-SPEED, CPRD Aurum, and CPRD GOLD. The exception is IQVIA DA Germany, where longer treatment was observed for strength 0.333 mg. Results on tirzepatide were limited to InGef RDB, IQVIA DA Germany, IPCI, and CPRD Aurum, and calendar stratification started in 2023 or later. Overall, time-to-switch was similar or decreased over time.

Within-ingredient switching of strength (i.e. switching between different strengths)

Where strength cohorts were available, dose escalation among new dulaglutide users was observed in most of the data sources (except DK-DHR, which showed no switching). The most frequent switching of strength varied across data sources and, when recorded, the brand observed was Trulicity.

Information on dose escalation among new liraglutide users was limited. Switching across liraglutide strength cohorts was only observed in four data sources (NAJS, DK-DHR, IPCI, and CPRD GOLD), and all of them showed a reduction of the strength. When brand information was available, Saxenda was frequently used in IQVIA LPD Belgium and IPCI, whilst Trulicity was frequently used in CPRD Aurum, and Victoza was frequently used in InGef RDB, IQVIA DA Germany, CPRD Aurum, and CPRD GOLD.

Dose escalation among new semaglutide users was observed in most of the data sources (except FinOMOP-THL, which showed no switch, and IQVIA DA Germany, which showed a decrease in strength), along with differences in the most frequent switches of strength. Ozempic was more commonly observed in IQVIA LPD Belgium, DK-DHR, InGef RDB, and IQVIA DA Germany, whilst Rybelsus was more common in CPRD GOLD, and similar use was observed among brands Ozempic and Rybelsus in IPCI.

Strength cohorts for new tirzepatide use was limited to InGef RDB, IQVIA DA Germany, IPCI, and CPRD Aurum. The brand recorded was Mounjaro. No switching was observed in IPCI, but dose escalation among new tirzepatide users was observed in the other three data sources.

11.2. Strengths and limitations of the research methods

This study has several strengths. It was based on Real-World Data with large multinational coverage from 10 European countries over the past 10 years. Additionally, the analysis included granular drug utilisation analyses, including brand-level assessments and multiple time windows. The use of the OMOP CDM and development of all analytic code using open-source tools within a federated approach ensures that this approach is fully reproducible and scalable for future efforts. All data sources have previously undergone multiple quality control checks to ensure data quality and to support a clear understanding of the data's characteristics and limitations.

Study specific limitations:

This study is informed by routinely collected health care data, and therefore, data quality issues must be considered: In particular, a recording of a prescription or dispensation does not mean that the patient actually took the drug. The actual reason for prescription of the drug was not recorded in any of the data sources, except for DK-DHR. Indication was therefore assessed via a proxy based on pre-defined conditions recorded on or before the date of treatment initiation. Therefore, recording of potential indications might have been incomplete. To better capture the indication for obesity, any obesity diagnosis recorded any time in the patient's history was used in line with the definition for the previous DARWIN EU® study. Similarly, the documentation of comorbidities, necessary for patient-level characterisation, may vary across data sources. Moreover, prescriber speciality was limited to FinOMOP-THL, InGef RDB, IQVIA DA Germany, and NLHR, and prescriptions with two specialties recorded on the same day were classified as having an unknown specialty.

In addition, assumptions around the duration of drug use were unavoidable. Calculations of daily and cumulative dose were based on the formulas developed in the OMOP CDM to match the World Health Organisation Defined Daily Dose, which were applicable to >85% of drug records from IPCI and CPRD GOLD.[12] However, the quality of recording of drug dose may vary between the data sources. Therefore, data quality checks were conducted to evaluate the quality of the recording of units and dosage (OMOP drug_exposure tables) for GLP-1 RA in the data sources. However, when median initial and cumulative dose are calculated, records with no recorded dose are treated as 0 in the summatory (e.g. drugs records mapped at ingredient level). When median initial and cumulative dose show a value of 0, it indicates a large proportion of records with no available dose. When all records are missing, the results are indicated with a dash (i.e. – : not applicable). Consequently, initial and cumulative dose reported in the study might be underestimated. Moreover, information on brands was not available for all records. The stratification for brand (e.g. Ozempic/Wegovy) was therefore limited and likely underestimated the true proportion of prescription of the branded products.

The study's data only reflected publicly reimbursed prescriptions or dispensations within national health systems. Moreover, marketing status, prescription restrictions, and reimbursement policies might have led to an underestimation of the true incidence/prevalence of GLP-1 RA use: First, data sources based on primary care records (e.g. CPRD GOLD, IPCI, and SIDIAP) that do not contain information on GLP-1 RA prescriptions issued by specialists. In addition, several countries allowing private prescriptions of GLP-1 RA, which are then paid out-of-pocket and are not reimbursed. This mean that data only capturing prescriptions that were reimbursed by national health systems, did not include those GLP-1 RA records. Although absolute GLP-1 RA use may have been underestimated, the provided trends over time still provide meaningful and actionable information for healthcare professionals and regulators.

The results estimated from this study only reflect the populations from the included data sources. Electronic health records have certain inherent limitations because they were collected for clinical purpose rather than primarily for research use. Consequently, using 12 primary care, outpatient, national registries, and claims data sources from Belgium, Croatia, Denmark, Finland, Germany, the Netherlands, Norway, Spain, Sweden, and the United Kingdom limits generalisability to those countries.

Data source-specific limitations:

In IQVIA LPD Belgium and IQVIA DA Germany, the observation period of the patients was calculated based on the last visit, observation, or interaction of the patient with the health care system. This methodology impacts the individuals considered "at risk" for the different medicines of interest of the study (i.e. the individuals included in the denominator populations) during the latest months of available data from the latest data lock, where healthy and/or non-frequent users of the health care system were not considered active. Consequently, the denominators that was used to calculate the incident use of drugs in the population may present an artefactual decrease whilst the incident users remained, incrementing the incidence and prevalence ratios. To reduce the effect of the artifacts in the denominator, we removed the last 3 months of data in IQVIA LPD Belgium and IQVIA DA Germany for all study objectives.

DK-DHR did not have data available on specialty, drug brands, or strength. BMI was largely incomplete, as weight measurements were only recorded in pregnant females. Records of conditions were limited to individuals who had hospital contact. For instance, asthma, depression, anxiety, and other chronic conditions that were mainly treated by the general practitioner were likely captured in individuals who presented severe cases and were hospitalised. However, drug indications were recorded. Therefore, obesity and T2DM indications could be obtained.

NLHR did not have data available on drug brands or strength. BMI was largely incomplete, as weight measurements were only recorded in pregnant females at the start of pregnancy. Primary care data in NLHR start from 2008, while drug data and secondary care data start from 2018, and all datasets were available until the end of 2023. Thus, the study period in NLHR started in 2018. Likewise, the study period in

HI-SPEED started in 2018. Due to this data availability, incidence rates for NLHR and HI-SPEED were restricted to 2019 onwards.

In InGef RDB, all outpatient diagnoses were only recorded per quarter of the year, and information on route/dose form and duration is incomplete. Thus, no dose calculation for any dose forms besides tablets could reliably be calculated in InGef RDB. Moreover, exposure days (i.e. days' supply) are not available in InGef RDB and were mapped to 30 days by default, which limits the interpretation of the treatment duration. BMI measurements could not be captured in InGef RDB.

Additionally, no records for oral semaglutide were observed in IQVIA DA Germany or InGef RDB. The only marketed oral semaglutide product in Germany, Rybelsus, was launched in July 2025. Thus, no prescriptions were observed within the study period. While IQVIA DA Germany has geographical/population overlap with InGef RDB, there were also differences in data type/setting. Differences in incidence/prevalence and GLP-1 RA utilisation between these data sources are therefore expected (to some degree) and were taken into consideration when comparing results from the data sources covering the same country.

NAJS does not contain detailed recordings of dose/duration, as a substantial proportion of records were mapped at ingredient level, which limited its inclusion in the drug utilisation analyses. Moreover, the 2015 incidence rates were removed from the report because NAJS presented an unstable denominator during that year, resulting in artefactual incidence estimates.

Treatment episodes in FinOMOP-THL were mapped to either 30 days or had no end date recorded. Thus, discontinuation could not be evaluated in FinOMOP-THL.

11.3. Interpretation

The prevalence of T2DM and obesity has increased worldwide, which is also reflected in the European population.[16, 17] GLP-1 RA were initially developed for the treatment of T2DM. However, they were found to be effective in weight management for obesity, which was later incorporated as an indication.[18-20] This study showed a change in the trend of the indications for GLP-1 RA use, with obesity becoming a frequent indication from 2022 onwards, which aligns with the approval of Wegovy (semaglutide injection) for the management of obesity by the European Union (EU) in 2022.[21]

The efficacy of GLP-1 RA medicines for both indications, T2DM and obesity, has increased demand worldwide, along with increasing concerns about excessive off-label use of some of these medicines for cosmetic weight loss.[22] These factors have contributed to the shortage of medicines containing GLP-1 RA ingredients in several EU countries since 2022.[3, 4] This study adds to the evidence supporting the increased use of GLP-1 RA in Europe up to 2025 and provides insightful information on the characteristics and the treatment patterns among new GLP-1 RA users.

In the previous DARWIN EU® study P3-C1-008, which reported the use of five GLP-1 RA ingredients between 2013 and early 2024 across Belgium (IQVIA LPD Belgium), Germany (IQVIA DA Germany), Spain (SIDIAP), the Netherlands (IPCI), and the UK (CPRD GOLD), trends of dulaglutide and semaglutide use increased over time, whilst liraglutide use showed a mixed pattern.[2] Conversely, in recent years covered by the current study, a mixed pattern was observed within dulaglutide and semaglutide use and a decline of liraglutide use, consistent with the reported shortages in Europe.

For instance, a shortage of several strengths of Trulicity (dulaglutide) that affected numerous EU countries was declared in August 2023 and was not resolved until February 2026.[23] The data from this study shows a decrease in the incident use of dulaglutide in 6 of the 12 included data sources, either after 2022 (in NLHR [NO], SIDIAP [ES], and CPRD GOLD [UK]), or after 2023 (in IQVIA LPD Belgium [BE], InGef RDB [DE], IQVIA DA Germany [DE]), which may have been driven by the shortage. Similarly, two different semaglutide brands were affected by shortages in different strengths, namely Ozempic during October 2022–January 2026 and

Rybelsus during July 2023–January 2024. These shortages could explain the decrease in incident use of semaglutide observed in FinOMOP-THL [FI], NLHR [NO], and CPRD Aurum [UK].
Moreover, the 6 data sources that did not show a decrease in the incident use of dulaglutide (NAJS [HR], DK-DHR [DK], FinOMOP-THL [FI], IPCI [NL], HI-SPEED [SE], CPRD Aurum [UK]) showed several abrupt spikes of dulaglutide use in specific months, where the incidence rates doubled compared with the rest of study period, or even quadrupled, such as in IPCI [NL] (from <50 to 121.1 cases/100,000 person-years in September 2022) and HI-SPEED [SE] (from <100 to 421.7 cases/100,000 person-years in March 2023). These spikes align with the semaglutide shortage (late 2020 to 2023), potentially suggesting a partial supply substitution.

In addition, there is an ongoing shortage of two liraglutide products (Saxenda and Victoza, declared in August 2023),[24, 25] which could explain the observed decrease in liraglutide use in 10 of the data sources (all except NAJS [HR] and IPCI [NL]), as well as the changes in the duration of liraglutide treatment. When observing the average time-on-treatment, a reduction was observed from 2022 onwards, in line with the shortage warnings announced by the EU.[4] Interestingly, one of the UK data sources (CPRD GOLD) showed an increase of new liraglutide users in 2023 accompanied by a substantial reduction in the average time-on-treatment, which could be interpreted as a temporary mitigation measure that would lead to switching to other GLP-1 ingredients. However, no switching was observed in CPRD GOLD.

A prior study on patients with T2DM showed varying treatment patterns among exenatide, liraglutide, and lixisenatide users across 5 European countries (BE, FR, DE, NL, SE) during 2013–2015.[26] That same study reported biguanides as the most frequent antihyperglycemic therapy class used before the index date.[26] This current study also showed a variation in treatment patterns across the data sources, representing the different prescription practices, marketing statuses, and mitigation strategies across European countries. This study also observed biguanides as the most frequent comedication during the previous year before starting GLP-1 RA in 10 out the 12 data sources (except NAJS [HR] and HI-SPEED [SE]). Despite observing combinations of oral blood glucose lowering drugs as the most frequent comedication in HI-SPEED [SE], biguanides were the second most frequent in this data source (54.39% vs. 47.95% of new GLP-1 RA users, respectively). When comparing the demographics, sex distribution was in the same range (female proportion in *Divino et al*. ranged 45.1%–61.4%), whilst observing a slightly younger population in this study (median age in *Divino et al*. ranged 58–63 years, whilst this study ranged from 52–63 years). Conversely, the patient demographics of this study were comparable with the results presented in the previous DARWIN EU® study P3-C1-008,[2] with the only difference being that new liraglutide users in SIDIAP showed a slightly lower proportion of males in the updated data.

11.4. Generalisability

The study comprised all individuals prescribed GLP-1 RA of interest present in 12 data sources from 10 different European countries via their national health system. While the results are considered representative for the study population in the respective regions, the results may differ from individuals with privately prescribed medicines. Moreover, the results should not be generalised to other countries or data sources but only reflect the situation in the specific region, setting covered by the respective data source, and local reimbursement policy.

12. CONCLUSION

This study adds to the evidence supporting the increased use of the overall GLP-1 RA in Europe and provides insightful information on the characteristics and the treatment patterns among new GLP-1 RA users. An overall increase was observed in the use of GLP-1 RA, led by dulaglutide, semaglutide, and tirzepatide use. Despite the overall increase, fluctuations in the prescribing trends of GLP-1 RA ingredients (i.e. dulaglutide, liraglutide, and semaglutide) and a reduction of the average treatment time was detected, which appeared to align with the shortage warnings reported in the European Medicines Agency (EMA)

shortages catalogue. Stratification by indication suggests an increasing use of GLP-1 RA for obesity in recent years. Half of the data sources of the study presented switching of GLP-1 RA ingredients. Moreover, increases and decreases in dose could be observed, which varied among the study data sources, representing the different prescription practices, marketing statuses, and mitigation strategies across European countries.

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14. ANNEXES

ANNEX I. Description of data sources

Belgium: IQVIA Longitudinal Patient Database Belgium (IQVIA LPD Belgium)

#	Section	Description
1	Database Identification and country	IQVIA LPD Belgium (IQVIA Longitudinal Patient Database Belgium) Belgium
2	Data partner information section	IQVIA IQVIA Europe
3	Coverage and timespan	Data collection since: 2005 Extent: Nation-wide. Panel of 300 GPs in Belgium. The panel is maintained as a representative sample of the primary care physician population in Belgium, according to three criteria known to influence prescribing: age, sex, and geographical distribution.
4	Healthcare setting / type of data	Primary care – gps. Ambulatory visits, with diagnosis, prescriptions, procedures, and laboratory tests.
5	Data collection process	Outpatient electronic health records. Records are entered by GPs at the healthcare encounter.
6	General representativeness	The panel of contributing physicians (a stable 300 GPs) is maintained as a representative sample of the primary care physician population in Belgium, according to three criteria known to influence prescribing: age, sex, and geographical distribution. The panel consists of a stable 300 GPs that are geographically well spread. The total number of active GPs in Belgium is 15,602. The regional geographical spread of physicians in the LPD data is also representative of the distribution across the country: 57% GPs in the North (compared to 54% nationally), 31% in the South (33% nationally), and 12% in Brussels (13%).The provider of the data has more than 2,250 GPs under contract so in case of a drop out a replacement is easily found.
7	Data content /source coding	No information on source coding.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network. The patient ID is per practice. So, a patient can have different IDs in the DB, one per practice. In Belgium, patients are typically registered at only one GP practice, so duplication should be minimal.
9	Quality control (database specific)	No QC. Integrity constraints only.
10	Linkage	No linkage.
11	Vital status	Death information is derived from healthcare events.
12	Limitations	The observation period of the patients in these databases is calculated based on the last visit, observation or interaction of the patient with the health care system. Consequently, healthy and/or non-frequent users of the health care system will not be considered active/included in the denominator populations during the latest months of available data from the latest data lock. The denominators that will be used to calculate the incident use of drugs in the population may present an artefactual decrease whilst the incident users will remain, incrementing the incidence and prevalence ratios.
13	Main references	No main reference provided.
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/1111116 Website: https://iqvia.com

Croatia: Croatian National Public Health Information System (NAJS)

#	Section	Description
1	Database Identification and country	NAJS (Croatian National Public Health Information System) Croatia
2	Data partner information section	Croatian Institute of Public Health Department of Data Science and Analytics
3	Coverage and timespan	Data collection since: 1998 Extent: Nation-wide. Geographic coverage covers whole Croatia, with various levels of resolution for different registries. Current estimates for the population in Croatia will be available at: https://podaci.dzs.hr/hr/podaci/stanovnistvo/procjena-stanovnistva/ for each year.
4	Healthcare setting / type of data	Primary care – gps, and secondary care – specialists (ambulatory or hospital outpatient care), and hospital inpatient care. For both inpatient and outpatient setting diagnoses, medication, procedures, and measurements are captured. Since 2025, also family relationships from the birth registry, histopathological data from the cancer registry, and vital signs from health risk assessment have been added. The year of availability of information depends on the setting: • 2014 for lab tests • 2015 for general practitioners • 2016 for secondary conciliatory care • 2017 for hospital records • 2020 for vaccination records
5	Data collection process	Inpatient hospital billing systems, and Other. Data is entered by clinicians at healthcare contact, then combined by CIPH into the NAJS database.
6	General representativeness	The data is collected from public health records, as the majority of health care in Croatia is public. Personal details are collected to a better extent for insured individuals compared to uninsured patients.
7	Data content /source coding	Medication prescriptions are recorded with ATC codes, and diagnoses with ICD10 codes.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network. Records from 2017 include insured patients with reliable IDs. Uninsured patients do not have reliable IDs. For example, if a patient changed her status from insured to uninsured, or vice versa, she could be counted several times, as could tracking records from before 2017 and after. By using the unique personal identifier for Croatian citizens, it can be checked and verified.
9	Quality control (database specific)	There is a Network of registry personnel (leaders, administrators, coders, sources) working on data coverage and other quality dimensions. An analytical team routinely checks for erroneous entries in hospital records, removing double entries, false dates, and overlapping stays. Entries without enough data or with obviously erroneous dates from primary care analysis are being excluded.
10	Linkage	NAJS is linked to the national death registry, which is updated monthly, and to primary care, which is updated weekly. Additionally, other specific registries are included in NAJS (e.g. diabetes registry), where inclusion criteria vary across these registries.
11	Vital status	NAJS is linked to the national death registry.
12	Limitations	Hospital data is available from 2017 onwards. This is often used as start of data collection, while laboratory and GP data is captured before that (since 2014 and 2015 respectively). The total and active person count in the NAJS data is larger than the current population of Croatia. This explained by a) the person table included deceased and all previously insured people and b) there is no information about insurance ending. It is known that a lot of people migrated (300k-400k) and weren't included in the last population census but still are in the NAJS

#	Section	Description
		database. In-hospital administrations are managed via paper drug charts and hospital discharge summaries are currently not captured into NAJS. NAJS do not contain detailed recordings of dose/duration as a substantial proportion of records are mapped at ingredient level, which limits its inclusion in the drug utilisation analyses.
13	Main references	No main reference provided.
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/1111155 Website: https://www.hzjz.hr/nacionalni-javnozdravstveni-informacijski-sustav-najs/

Denmark: Danish Data Health Registries (DK-DHR)

#	Section	Description
1	Database Identification and country	DK-DHR (Danish Data Health Registries) Denmark
2	Data partner information section	Danish Medicines Agency (DKMA) Data Analytics Centre (DAC)
3	Coverage and timespan	Data collection since: 1995 Extent: Nation-wide. The data is representative of the entire Danish population.
4	Healthcare setting / type of data	Community pharmacists, and secondary care – specialists (ambulatory or hospital outpatient care), and hospital inpatient care. The following data elements are collected: diagnosis (including rare diseases and pregnancy data), hospital admissions, discharge and ICU data, Cause of death, Drug prescriptions, dispensing, vaccination and contraception, Procedures, Devices, and Sociodemographic information.
5	Data collection process	Outpatient electronic health records, and Inpatient hospital electronic health records, and Registries, and Other. All causes of deaths, all retrieved drug prescriptions, all records of vaccinations, all hospital inpatient and outpatients contacts including disease diagnoses and hospital surgical and non-surgical procedures, cancers, laboratory test results for the entire Danish population from 1/1/1995 onwards.
6	General representativeness	The data is representative of the entire Danish population. Healthcare is free in Denmark, so we do not expect any bias in data collection based on socio-economic status.
7	Data content /source coding	Diagnoses and causes of death are collected using the ICD-10 vocabulary. ATC and RxNorm are used for Drugs. SNOMED codes are used for Procedures.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network.
9	Quality control (database specific)	The data we have received relating to nationwide Danish Health Data registries offer an opportunity for large-scale, population-based studies with several advantages 1) Their large size improves the precision of estimates and enables the study of rare exposures and outcomes with long-term latency, 2) Inclusion of nearly all individuals in the target population ensures that the data reflect routine clinical care and all clinical segments of the source population, 3) Data are collected independently of each research study, thus minimising certain types of bias, e.g. non-response, and the influence from attention to the research question on the diagnostic process. Before the source data is sent to us, the Danish Health Data Authority runs and does comprehensive checks of the registry table data validity of the variables, breaks in data, changes in variable coding, missingness, etc. We perform checks of missingness/completeness in relation to requested variables. In essence, we are receiving a dump of a mirror of the data that is controlled by the SDS. The documentation performed by SDS is available online, in Danish primarily https://www.esundhed.dk/Dokumentation

#	Section	Description
		(all variables), but also in English https://sundhedsdatastyrelsen.dk/da/english/health_data_and_registers/national_health_registers
	Linkage	There is no linkage in this data source.
	Vital status	The Cause of Death registry (DAR) is used, the cause of death is collected using ICD-10 codes.
	Limitations	DK-DHR data source do not have data on specialty, drug brands or strength available. BMI is largely incomplete as weight measurements are only recorded in pregnant women. Record of conditions are limited by individuals who had a hospital contact (i.e. asthma, depression, anxiety and other chronic conditions that are mainly treated at the GP will likely be captured in individuals who presented severe cases and were hospitalized). However, drug indications are recorded.
13	Main references	Schmidt M, Schmidt SAJ,Adelborg K,Sundbøll J,Laugesen K,Ehrenstein V,Sørensen HT "The Danish health care system and epidemiological research: from health care contacts to database records." Clinical epidemiology (2019): 31372058
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/1111217 Website: https://sundhedsdatastyrelsen.dk/da/english/health_data_and_registers/healthdatadenmark

Finland: Finnish Care Register for Health Care (FinOMOP - THL)

#	Section	Description
1	Database Identification and country	FinOMOP-THL (Finnish Care Register for Health Care) Finland
2	Data partner information section	Finnish Institute for Health and Welfare (THL) Department of Knowledge Brokers
3	Coverage and timespan	Data collection since: 1998 Extent: Nation-wide. The current CDM population comprises all persons having been alive and residing in Finland since the beginning of 2011.
4	Healthcare setting / type of data	Primary care – gps, and primary care specialists (e.g. paediatricians), and secondary care – specialists (ambulatory or hospital outpatient care), and hospital inpatient care. The THL database covers both public and private, primary, and specialised inpatient and outpatient health care encounters in Finland, starting from 2011. The entire public sector and private inpatient encounters have been included since 2011, while private outpatient encounters, including occupational care, are included since 2020. Since 1998, the register has covered both public outpatient and inpatient specialized care and private inpatient care (TerveysHilmo). Since 2009, the Finnish National Vaccination Register is covered (complete since 2020). The vaccination register covers all vaccinations from the public sector and from a large part of private vaccination providers, with the data coverage from both sections being very good from 2020 onwards. Since 2011, the register has covered public primary care (AvoHilmo). Since 2020, the register has covered private outpatient care and occupational care. In addition, the CDM also contains positive COVID-19 test results from the Finnish National Infectious Diseases Register, which is maintained by THL.
5	Data collection process	Outpatient electronic health records, inpatient hospital electronic health records, and registries. Data is entered by clinicians upon healthcare contact and processed by THL.
6	General representativeness	The THL data has national coverage and is therefore representative of the Finnish population. Using the complete population as a basis for the person table also serves to facilitate calculations on a population level, e.g. incidence rates.
7	Data content /source coding	The following coding systems have been OMOP-mapped, typically to a good level of completeness: ICD10fi Finnish Extension, ATC, Toimenpideluokitus (procedure classification adapted from the Nordic Classification of Surgical Procedures (NCSP)), Terveydenhuollon erikoisalat (Hilmo specific provider speciality), Rokotustapa (AR/YDIN National classification for

#	Section	Description
		vaccine administration), Tupakointistatus (AR/YDIN National classification for smoking status). Vaccinations are identified on product level based on batch number, trade name, vaccine title, and ATC-code. This is mapped on brand and type in the OMOP CDM.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network. Each patient in THL has a unique identifier.
9	Quality control (database specific)	The source data collection undergoes a structural and semantic validation before entry into the source database. Additionally, some coded variables undergo quality assessment against the respective code systems post entry into the database. The source registers are also assessed for completeness and coverage, with the aim of improving future collection in the areas where data is lacking.
10	Linkage	THL is already a linkage of multiple Finnish registries (see above).
11	Vital status	The National Population registry data forms the basis for forming the patient population. This ensures an up-to-date location (municipality of residence) of patients, as well as complete death occurrences (although not the cause of death).
12	Limitations	No database-specific limitations documented. General limitations for the data type applicable.
13	Main references	Häkkinen, Pirjo; Mölläri, Kaisa; Saukkonen, Sanna-Mari; Väyrynen, Riikka; Mielikäinen, Lasse; Järvelin, Jutta "Hilmo - Sosiaali- ja terveydenhuollon hoitoilmoitus 2020 : Määrittelyt ja ohjeistus : Voimassa 1.1.2020 alkaen" Terveyden ja hyvinvoinnin laitos (2019):
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/1111187 Website: https://thl.fi/fi/tilastot-ja-data/ohjeet-tietojen-toimittamiseen/hoitoilmoitusjarjestelma-hilmo

Germany: InGef Research Database (InGef RDB)

#	Section	Description
1	Database Identification and country	InGef RDB (InGef Research Database) Germany
2	Data partner information section	InGef - Institute for Applied Health Research Berlin GmbH
3	Coverage and timespan	Data collection since: 2016 Extent: Nation-wide. The data source contains information from the statutory health insurances (SHI), which insure a total of about 89% (~73 million individuals) of the German population. Since the InGef RDB currently includes about ten million individuals, it covers about 13% of the total population insured in one of the German SHIs. The data in the database depicts all health care use which has been reimbursed by the SHI.
4	Healthcare setting / type of data	Primary care – General Practitioner, and community pharmacists, and primary care specialists (e.g. paediatricians), and secondary care – specialists (ambulatory or hospital outpatient care), and hospital inpatient care, and claims data. The following data elements are presented in the OMOP CDM: demographic information, diagnoses, procedures, dispensing drugs and advanced therapy medicinal products, vaccinations, pregnancy data (via diagnoses and procedures) and contraception.
5	Data collection process	Insurance/administrative claims. The data in the database depicts all health care use which has been reimbursed by the SHI (statutory health insurances).
6	General representativeness	InGef RDB covers about 11% of the German population and is comparable to the German population in terms of the distribution of age and sex. Most health insurances that contribute to the InGef RDB have nationwide coverage, meaning that the database covers all regions of Germany. Since almost all services covered by statutory health insurances are specified in

#	Section	Description
		national legislation, healthcare provision all over Germany is well represented in the InGef RDB. Additionally, in Germany it is very common to stay with the same health insurance throughout life, which results in a good longitudinal coverage over the entire period of 10 years.
7	Data content /source coding	The coding in the research database complies with national classification and coding rules in Germany. Diagnoses are coded according to ICD-10-GM. Inpatient and outpatient surgeries or procedures are recorded as OPS codes (German classification of Operations and Procedures). The dispensing of drugs in pharmacies is recorded using the PZN (pharmaceutical registration number). For drugs that miss a PZN-to-RxNorm mapping, the ATC code is used instead. In some cases, dispensed drugs can be coded using OPS codes (e.g. in hospitals) or EBM codes (fee schedule for outpatient treatments).
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network. In the German statutory health system, a person can only be enrolled in one health insurance at a time. However, if a person changes from one contributing insurer to another, a new ID number will be generated.
9	Quality control (database specific)	The data transmitted by healthcare providers complies with the standardized requirements and formats of the Association of Statutory Health Insurances (GKV-SV). Before being imported into the research database, the data elements are checked for data format, completeness and plausibility. After each update of the research database, various counts are compared with the previous update to verify completeness. Due to the anonymity of the database, direct validation of the data (e.g. using medical records as the gold standard) is not possible.
10	Linkage	Due to the anonymization of the source data, linkage is not possible.
11	Vital status	The date of death is recorded as the last day of the quarter in which the death occurred (i.e. 30/31st of Mar/Jun/Sept/Dec) as reported to the health insurance (no linkage to death registry). The cause of death is not available.
12	Limitations	Ambulatory diagnoses and procedures are summarised in the source on a quarterly basis. Both are mapped to the observation table with the date set to the last day of the respective quarter (i.e. 30/31st of Mar/Jun/Sept/Dec) and the concept “History of event within 3 months” (observation_concept_id 1340222), with the actual diagnosis or procedure concept_id recorded in the field “value_as_concept_id”. There is no vocabulary for the German pharmaceutical product codes (PZN). A direct source-to-standard-mapping has been done manually by InGef RDB but is incomplete. The drug exposure duration is unknown. Following OMOP conventions, the end date is always set to dispensing date + 29. Outpatient and inpatient procedures are recorded as OPS codes (German Procedure Classification), for which the vocabulary is incomplete. Approx. 10.5 Million insurees are included in the database, 7.8 Million of these actively insured in 2024. This corresponds to 7% of the total German population. Data are longitudinally linked over a period of currently ten years.
13	Main references	Andersohn F, Walker J "Characteristics and external validity of the German Health Risk Institute (HRI) Database." Pharmacoepidemiology and drug safety (2016): 26530279
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/1111207 Website: https://www.ingef.de/en/

Germany: IQVIA Disease Analyzer Germany (IQVIA DA Germany)

#	Section	Description
1	Database Identification and country	IQVIA DA Germany (IQVIA Disease Analyzer Germany) Germany
2	Data partner information section	IQVIA

#	Section	Description
3	Coverage and timespan	Data collection since: 1989 Extent: Nation-wide. GP and specialists in Germany using specific patient management software.
4	Healthcare setting / type of data	Primary care – gps, and primary care specialists (e.g. paediatricians). Diagnoses, medication, and procedures from an ambulatory setting. Medications are recorded as prescriptions of marketed products.
5	Data collection process	Outpatient electronic health records. By clinicians at healthcare contact.
6	General representativeness	No specific details on general representativeness given.
7	Data content /source coding	Prescription is on product code level (German PZN), ICD10, NFC, Local lab coding.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network. There can be patients registered under different ID numbers, because there is no linkage between different GPs.
9	Quality control (database specific)	Data is quality checked on plausibility.
10	Linkage	No.
11	Vital status	Death information is derived from medical events.
12	Limitations	The observation period of the patients in these data sources is calculated based on the last visit, observation or interaction of the patient with the health care system. Consequently, healthy and/or non-frequent users of the health care system will not be considered active/included in the denominator populations during the latest months of available data from the latest data lock. The denominators that will be used to calculate the incident use of drugs in the population may present an artefactual decrease whilst the incident users will remain, incrementing the incidence and prevalence ratios.
13	Main references	No main reference provided.
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/104282 Website: https://www.iqvia.com/

The Netherlands: Integrated Primary Care Information (IPCI)

#	Section	Description
1	Database Identification and country	IPCI (Integrated Primary Care Information) The Netherlands
2	Data partner information section	Erasmus University Medical Center Department of Medical Informatics
3	Coverage and timespan	Data collection since: 2006 Extent: Nation-wide. IPCI is a Dutch database that contains patient records from 2006 onwards. However, it mainly covers the central part of the country, including the most densely populated area (the 'Randstad') and non-urban areas. IPCI contains information on all patients registered with GPs responsible for non-emergency care and referrals. A patient is registered at birth or at first encounter with the GP.
4	Healthcare setting / type of data	Primary care – gps. Data is collected from primary care EHR. This includes demographic information, complaints and

#	Section	Description
		symptoms, diagnoses, laboratory test results, lifestyle factors (in limited amount), and correspondence with secondary care, such as referral and discharge letters.
5	Data collection process	Outpatient electronic health records. Data is entered into the EHR system by the GPs, during or after the visit. Data is aggregated by Erasmus MC data managers and combined in one harmonized database. Several checks are done on this database to ensure correct data processing. Persons are mostly uniquely identified, with the exception of when persons change GP practice (when the same individual can receive several different identifiers).
6	General representativeness	More than 99% of the Dutch population has health insurance, and almost all citizens are registered with a general practitioner. Over 12 months, around 78% of the population has at least one contact with their GP. IPCI included around 350 GP practices out of around 5000 in the country (~ 7%). The demographic composition of the IPCI population mirrors that of the general Dutch population in terms of age and sex.
7	Data content /source coding	Dutch GPs use mainly Dutch standard codes, like ICPC-1 and Diagnostische Bepalingen maintained by NHG. And for therapy the G-Standard is used, maintained by ZIndex.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network. Patients can be registered under different IDs. However, in the Netherlands, patients typically have one GP and changing practice is uncommon.
9	Quality control (database specific)	Prior to each data release, extensive quality control steps are performed, e.g. comparison of patient characteristics between practices, and checks to identify abnormal temporal data patterns in practices. For each practice, around 200 quality indicators are obtained. Of these indicators, a quarter refer to population characteristics, e.g. number of birth and mortalities relative to practice size, temporal consistency. The other indicators are based on medical data, e.g. distribution of measurement values, frequencies of diagnoses and procedures relative to age, completeness of data. The indicators are combined in a couple of quality scores for each practice. For these scores, cut-off values for acceptable quality have been defined. Practices with a score below a cut-off are excluded for research. This approach has shown to be very important, for example to check if data from practices that just joined the database are at an acceptable level of quality. The details of the approach, like the cut-off values for acceptance, are based on years of experience. In addition, trends are compared with the previous database release. Extensive quality control steps are performed before each data release. These include comparing patient characteristics between practices and checks to identify abnormal temporal data patterns in practices. Additional checks include over 200 indicators related to population characteristics (e.g. reliability of birth and mortality rates) and medical data (e.g. availability of durations of prescriptions and completeness of laboratory results). Records of low quality are excluded from the database.
10	Linkage	Linkage requires additional approval steps and needs to be assessed on a case-by-case basis. IPCI is not routinely linked with other databases.
11	Vital status	Vital status (death date and cause) is collected based on GP records.
12	Limitations	The main limitation comes with the fact that IPCI is limited to GP records, and although it contains information on referrals and discharge letters, it may not fully capture specific hospital information. IPCI does not include coded/detailed data about medications/procedures/test results from the hospital or other care-providers.
13	Main references	de Ridder MAJ, de Wilde M,de Ben C,Leyba AR,Mosseveld BMT,Verhamme KMC,van der Lei J,Rijnbeek PR "Data Resource Profile: The Integrated Primary Care Information (IPCI) database, The Netherlands." International journal of epidemiology (2022): 35182143
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/42618 Website: http://www.ipci.nl

Norway: Norwegian Linked Health Registry data (NLHR)

#	Section	Description
1	Database Identification and country	NLHR (Norwegian Linked Health Registry data) Norway
2	Data partner information section	University of Oslo Faculty of Mathematics and Natural Science – Department of Pharmacy
3	Coverage and timespan	Different registries have different timespans: National registry to identify the population: 2018 – 2023 Diagnosis from secondary care (incl. history of disease): since 2008 Extent: Nation-wide. Norway has a universal public health care system, consisting of primary and specialist health care services covering a population of approximately 5.4 million inhabitants.
4	Healthcare setting / type of data	Primary care – gps, and primary care specialists (e.g. paediatricians), and secondary care – specialists (ambulatory or hospital outpatient care), and hospital inpatient care. The following registries (relevant in this study) are included: the Norwegian Prescription Registry (NorPD), the Norwegian Patient Registry (NPR), Norway Control and Payment of Health Reimbursement (KUHR), the Norwegian Surveillance System for Communicable Diseases (MSIS), and the National Registry (NR).
5	Data collection process	Registries. Many population-based health registries were established in the 1960s, with use of unique personal identifiers facilitating linkage between registries. Data in these health registries are used for health analysis, health statistics, improving the quality of healthcare, research, administration, and emergency preparedness.
6	General representativeness	The NLHR data covers the full Norwegian population.
7	Data content /source coding	NPR: ICD-10 for diagnosis, ATC and some special codes for drug use, Norwegian codes for clinical procedures (surgery (NCSP), medicine (NCMP) and diagnostic imaging, image-guided intervention, and nuclear medicine (NCRP)). KUHR: ICD-10 and ICPC-2 and ICPC-2B for diagnosis/procedure. NorPD: ATC.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network. Linkage between the registries was facilitated using project-specific person IDs generated from unique personal identification assigned at birth or immigration for all legal residents in Norway.
9	Quality control (database specific)	In-house data quality checks of rates of common conditions, drug exposures, and outcomes. We compare obtained rates with official national statistics (e.g. birth statistics, yearly rates of drug dispensing, and diagnosis by age and gender). We also review missing data and outliers and inform registry holders of any unusual patterns.
10	Linkage	The NLHR is, by definition, a linkage of datasets. Helsedata.no is one central portal to apply for 11 national health registries, including all the registries that have been mapped to the OMOP CDM.
11	Vital status	The national death registry is linked.
12	Limitations	NLHR data sources do not have data on drug brands or strength available. BMI is largely incomplete as weight measurements are only recorded in pregnant women at the start of pregnancy. Primary care data in NLHR starts from 2008, while drug data and secondary care data start from 2018, and in all of datasets are available to the end of 2023.
13	Main references	Trinh NT, et al. Harmonizing Norwegian registries onto OMOP common data model: Mapping challenges and opportunities for pregnancy and COVID-19 research. *Int J Med Inform*. 2024;191:105602. doi:10.1016/j.ijmedinf.2024.105602

#	Section	Description
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/1000000409 Website: https://www.mn.uio.no/farmasi/english/research/groups/pharma-safe/

Spain: The Information System for Research in Primary Care (SIDIAP)

#	Section	Description
1	Database Identification and country	SIDIAP (The Information System for Research in Primary Care) Catalunya, Spain
2	Data partner information section	Fundació Institut Universitari per a la recerca a l'Atenció Primària de Salut Jordi Gol i Gurina (IDIAPJGol)
3	Coverage and timespan	Data collection since: 2006 Extent: Regional. The SIDIAP database contains records of around 6 million people residing in Catalonia, estimated to be representing around 76% of the Catalan population.
4	Healthcare setting / type of data	Primary care – gps, and hospital inpatient care. SIDIAP captured data includes routine visits, demographics, diagnoses, laboratory tests, drugs (prescribed and dispensed), referrals, and lifestyle information.
5	Data collection process	Outpatient electronic health records, and Inpatient hospital electronic health records, among other. Data is entered by primary care physicians upon healthcare contact, supplemented with hospital discharge records. The Institut Catala de la Salut is the owner of the data and acts as the data controller.
6	General representativeness	It was previously shown that the captured SIDIAP population is highly representative of the entire Catalan region in terms of geographic, age, and sex distributions.
7	Data content /source coding	SIDIAP data covers all services that occur at the Primary Care Centres, as well as support services, such as sexual and reproductive health or home end-of-life care. Drugs are coded in ATC-WHO terminology in the source data. Health outcomes are captured in ICD-10CM codes. The SIDIAP contains all laboratory tests and results performed in primary health centres. Demographics, geographical, as well as socio-economic factors are recorded for each patient.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network.
9	Quality control (database specific)	Internal and external validation processes are carried out to determine the data quality of the SIDIAP information at each data update. These include stratifying the data by geographical regions and year in order to identify differences in data collection that need to be harmonized (e.g. recording of specific information under different codes). The measurement units of variables measuring one characteristic are also homogenised (e.g. transformation of the data from every laboratory that measures haemoglobin to grams per decilitre). Visual inspection of all data included in the database by week is also conducted, allowing one to see temporal patterns of a certain variable in the registry. With this information, the SIDIAP team can issue recommendations to researchers about the which variables are likely to record certain information (e.g. there are several variables with information concerning the women's menopausal status and with these visual inspection tools the SIDIAP team can inform the researchers about which related variables have the largest number of records and could be more helpful to capture menopause). Data availability (longitudinally and reliability), plausibility (range checks and unusual values), and consistency are inspected through visualisation tools. In addition, before accessing the data for a requested project, research teams have access to a quality-control report. This document contains counts, years, percentiles, maximums and minimums, incidences, and prevalence of the data requested for the project, allowing detection

#	Section	Description
		of inconsistencies in the data extraction prior to data delivery. External validation processes of the SIDIAP database mainly include assessing the data recorded in SIDIAP through linkage to external gold standard data sources, by analysing free text, or by sending questionnaires to health professionals.
10	Linkage	SIDIAP is linked to a hospital discharge database, pharmacy dispensation, and primary care laboratories. It can also be linked to other registries in Catalonia on a project-by-project basis.
11	Vital status	Mortality is fully captured in SIDIAP. The cause of death is not available but can be linked to the Spanish death registry on a project-by-project basis.
12	Limitations	The SIDIAP data is not representative of individuals not using public primary care, and conditions that are usually followed by specialist care might not be properly captured. In addition, there is limited information on lifestyle variables. Patients are followed until Death or when transferring to another primary health care centre that does not contribute to SIDIAP.
13	Main references	Recalde M, Rodríguez C,Burn E,Far M,García D,Carrere-Molina J,Benítez M,Moleras A,Pistillo A,Bolíbar B,Aragón M,Duarte-Salles T "Data Resource Profile: The Information System for Research in Primary Care (SIDIAP)." International journal of epidemiology (2022): 35415748
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/50190 Website: https://www.sidiap.org/index.php/en

Sweden: Health Impact - Swedish Population Evidence Enabling Data-linkage (HI-SPEED)

#	Section	Description
1	Database Identification and country	HI-SPEED (Health Impact - Swedish Population Evidence Enabling Data-linkage) Sweden
2	Data partner information section	SMPA-GU, Läkemedelsverket, Box 26 Pharmacoepidemiology and Analysis Department (FeA)
3	Coverage and timespan	Data collection since: 2020 Extent: Nation-wide. The catchment area includes the whole of Sweden, covering the full population of approximately 10 million.
4	Healthcare setting / type of data	Primary care – gps, and secondary care – specialists (ambulatory or hospital outpatient care), and hospital inpatient care. The following data elements are collected: Socio-demographics, drug use and prescriptions, diagnoses, cause of death, primary care procedures and visits, as well as secondary care and inpatient visits or clinical events.
5	Data collection process	Registries. The data is acquired from the Swedish nation and regional registries, only once all legislative, GDPR and ethical approvals have been granted. Therefore, only relevant data is passed on, which will then be entered and processed by the study team. The data are updated several times annually.
6	General representativeness	The coverage includes all patients of all sociodemographic characteristics. Therefore, it should mirror the source population to a very good extent.
7	Data content /source coding	Medicines are coded with ATC, ICD10 is used for diagnoses, and the Swedish procedure coding system (KVA) is used for clinical procedures.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network.
9	Quality control (database specific)	The source data is obtained from the Swedish National and Regional Registers. The registers perform some regular quality controls on their data. After receiving the data, we perform additional checks and cleaning. We also run regular quality checks on the data we manage.

#	Section	Description
10	Linkage	Data on specialist care is acquired from the National Patient Register; mortality information is provided by the Cause-Of-Death Registry; drugdata is provided by the Patient Drug Register.
11	Vital status	Data on death and cause-of-death are extracted from the Cause-of-Death registry.
12	Limitations	Study period in HI-SPEED starts in 2018. Due to this data availability, incidence rates will be restricted to 2019–onwards.
13	Main references	No main reference provided.
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/node/4463/ Website: https://www.gu.se/en/research/scifi-pearl

The United Kingdom: Clinical Practice Research Datalink Aurum (CPRD Aurum)

#	Section	Description
1	Database Identification and country	CPRD Aurum (Clinical Practice Research Datalink Aurum) England, United Kingdom
2	Data partner information section	Clinical Practice Research Datalink (CPRD) Safety and Surveillance
3	Coverage and timespan	Data collection since: 1995 Extent: Nation-wide. The CPRD Aurum database includes just over 17M currently registered patients, or around 25.5% of the UK population. All currently contributing practices (n= 1645) are in England, but coverage varies between English regions. The Aurum OMOP CDM database covers the period from 01/01/1995 to the most recent data collection (June-July 2025). For the Aurum + linked HES APC database, the coverage period is truncated to ensure that all patients are under observation in both the primary care and linked HES data, therefore the maximum allowable coverage period is currently 01/04/1997 to 31/03/2023 NB this will be updated in the next release, expected Jan 2026. https://www.cprd.com/doi/cprd-aurum-september-2025
4	Healthcare setting / type of data	Primary care – General Practitioner, and secondary care – specialists (ambulatory or hospital outpatient care). CPRD Aurum includes data captured in UK primary care. In the UK, almost all individuals are registered with a single general practitioner (GP), and around 90% of all healthcare contacts with the UK National Health Service (NHS) occur in primary care (also known as general practice). GPs have a central role as gatekeepers for access to secondary and tertiary services, and other community based services and intervention programmes. Widespread adoption of dedicated computer software in UK primary care began in the late 1980s and was almost universal by 1995. GPs and general practice staff use these software to manage patients' electronic health records which include registration and demographic information, symptoms, diagnoses, clinical investigations and laboratory tests, prescriptions for medicines and appliances, a wide range of behavioural and social factors relevant to health and wellbeing, and administrative information. Some information is captured on contacts with other health services, including referral details and discharge summaries and other communications from those services. CPRD Aurum does not include any associated free text notes, scanned documents or images from the patient record. Hospital Episode Statistics Admitted Patient Care (HES APC) data captures information on inpatient care delivered in NHS hospitals and independent treatment centres funded by the NHS. Key variables include age; sex; ethnicity, episode start/end date; a single primary diagnosis (ICD-10), with up to 19 other comorbidity diagnoses; up to 24 procedures and other interventions (with date), coded using the UK Office of Population Censuses and Surveys Classification of Interventions and Procedures classification (OPCS-4). Medical treatments (drugs and devices) and lab values are not recorded in HES APC.
5	Data collection process	Outpatient electronic health records, and Inpatient hospital electronic health records. Patient EHR data are entered by practice staff using the EMIS Web GP practice management software. Data may also be captured automatically via electronic links from pathology and diagnostic laboratories. EMIS Web is a cloud based system, and practice data are uploaded to

#	Section	Description
		the vendor data centre. Pseudonymised data is extracted from the vendor system and downloaded to CPRD via a dedicated cloud based interface. CPRD undertake additional checks to ensure data conform to specification, and comply with established data quality metrics, and apply additional pseudomymisation steps. HES APC data are derived from hospital activity data which are abstracted from clinical records and discharge summaries by trained clinical coders according to centrally issued coding rules and standards. The data is collected centrally for monitoring, planning, and payment purposes. For secondary uses including research, additional cleaning and curation is undertaken to generate the HES APC data. This includes linking episodes for the same individual, and addition of a Master Person Service identifier (MPS ID) which allows linkage to primary care and other health datasets for research.
6	General representativeness	CPRD Aurum provides a purposive sample of English general practices using EMIS Web GP software. EMIS Web has an uneven regional coverage. Participation in the CPRD data collection is voluntary. While not a random sample, CPRD Aurum is broadly representative of the overall population in terms of age and gender (https://pubmed.ncbi.nlm.nih.gov/30859197/), with minor differences in terms of area based deprivation and urban-rural distribution. (https://pubmed.ncbi.nlm.nih.gov/35902219/)
7	Data content /source coding	Data is captured using READ, EMIS2, SNOMED, DM+D codes.
8	Data Harmonization	The data has been mapped to the OMOP CDM v5 and the OMOP standard vocabularies. The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network. Patients can move and receive a different ID number upon changing practice, but a patient can only be registered at one practice at a time. Upon registering at a new practice, a patient's records will be transferred with them, and they will be deregistered at their previous practice. CPRD cannot track patients across practices as the data is de-identified and a patient key is generated for each patient at a practice level, not a country level. The patient key will remain the same for as long as the patient is registered at the practice. The main impact of patients changing practice is to reduce the average follow up time available for each analytical unit (i.e. patient-within-practice). A secondary issue is that records for the same individual split across two or more practices are not strictly independent. The impact on inferential statistics is likely to be very limited, and analytical adjustment is typically not required (or applied).
9	Quality control (database specific)	CPRD follows the same three-staged processing pipeline for all the data that it curates: curate individual data collections; integrate data into master database; and extract study specific datasets. For each part of the processing pipeline, CPRD applies checks to ensure that the quality of the data is maintained. At the data curation stage, conducted at both a collection level and at a record level, the data is verified to ensure that the data conforms to an agreed specification. Collection level verification ensures that the collection contains only expected data files, that the collection files are from a known source, and that the collections' files are in the correct sequence. The record level verifications performed at Level 1 are structural in nature and are applied to every data element that CPRD receives without considering the context of the data item against the entirety of the master database. These checks include that the data item is of the correct type, that fields that should have values do indeed contain a value, and that, where specified, the format and length of the data is accurate. Any violations of these checks result in the collection being rejected, the data not being integrated into the master database, and further inspection or recollection of the data taking place. At the data integration stage, the actual content of the data is validated, considering any existing content already collected. These validations are contextual in nature and consider the values of multiple data items within the master database. As CPRD provide real world data no data is modified before being made available for research. The data is either rejected (as per the data curation checks) or integrated. Once integrated, data is not corrected, but patient, practice, and database level data quality metrics and markers are put in place, based on internal consistency of the data, to aid researchers in deciding if the data is suitable for research. There are some exceptions to this no modification principle. In the case that a patient is validated as being opted out, then their data is removed from future versions of the database to ensure their wishes are respected. Further validation and cleaning of study specific datasets may be undertaken by researchers or as part of

#	Section	Description
		good data management, and is dependent upon the research question and the researchers performing the analysis.
10	Linkage	Linkage of CPRD Aurum to HES APC is undertaken by NHS England. Identifiers for patients in CPRD Aurum (NHS number, gender, full date of birth, residential postcode) flow directly from the vendor data centre to NHS England, and are linked to HES APC via the MPS ID. A bridging file of patient index numbers for each dataset is returned to CPRD to allow linkage of the clinical data. Linkage is undertaken at approximately 6-month intervals, but this may be impacted by organisation factors external to CPRD. Linkage to additional datasets is expected over the next 12-24 months, including linked death registrations (for accurate cause of death), hospital outpatient activity, and cancer registrations.
11	Vital status	The great majority of deaths are eventually captured in patients' primary care record. Published comparisons found that over 98% of national death registrations (the gold standard) were also captured in the CPRD GOLD primary care database https://pubmed.ncbi.nlm.nih.gov/30908785/, and results are similar for CPRD Aurum (unpublished). Estimated date of death in the primary care record shows good agreement with registered date of death (within 30 days in 98.8% of occurrences after 2013) but cause of death is captured inconsistently.
12	Limitations	CPRD Aurum uses data collected for the primary purpose of managing and delivering safe and effective patient care in general practice. There are requirements and incentives for practice staff to record high quality information, but there is heterogeneity between practices and over time. UK primary care databases have been extensively validated and found to be of sufficient quality to support observational research. Information about care and treatments in settings other than primary care is likely to be captured only partially in CPRD Aurum. Practice staff may code key information about important diagnoses or treatments in other settings. However, discharge summaries may simply be scanned or stored as electronic documents or summarised as free text notes. None of these sources are available in CPRD Aurum. CPRD Aurum captures information on prescriptions issued by practice staff, from which drug exposures can only be inferred. There is no information about drug exposures in secondary care via the HES APC.
13	Main references	Wolf A, Dedman D, Campbell J, Booth H, Lunn D, Chapman J, Myles P "Data resource profile: Clinical Practice Research Datalink (CPRD) Aurum." International journal of epidemiology (2019): 30859197
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/30008 Website: https://www.cprd.com/data/primary-care-data/cprd-aurum

The United Kingdom: Clinical Practice Research Datalink GOLD (CPRD GOLD)

#	Section	Description
1	Database Identification and country	CPRD GOLD (Clinical Practice Research Datalink GOLD) The United Kingdom
2	Data partner information section	University of Oxford NDORMS
3	Coverage and timespan	Data collection since: 1987 Extent: Nation-wide. CPRD GOLD consists of patients in contributing practices using Vision software. Historically this covered the whole of the UK, but the number of contributing practices in the England is dropping. In January 2025 only 3 practices from England were a part of CPRD GOLD, while historical patient data were from the whole of the UK, and will continue to be so. In the future, no practices from England will be present, only practices from Scotland, Wales, and Northern Ireland.
4	Healthcare setting / type of data	Primary care – gps, and primary care specialists (e.g. paediatricians), and secondary care – specialists (ambulatory or hospital outpatient care), and hospital inpatient care. CPRD GOLD data include patient demographics, biological measurements, clinical symptoms

#	Section	Description
		and diagnoses, referrals to specialist/hospital and their outcome, laboratory tests/results, and prescribed medications.
5	Data collection process	Outpatient electronic health records. Data is entered by clinicians into the EHR. Data is processed by CPRD and provides data releases for research.
6	General representativeness	CPRD GOLD has been assessed and found to be broadly representative of the UK general population in terms of age, gender, and ethnicity. In CPRD GOLD in January 2025 there were 2,730,707 current acceptable patients (i.e. registered at currently contributing practices that use Vision software, excluding transferred out, deceased patients, and those flagged by CPRD as not acceptable for clinical research for data quality issues). This equals to 4.07%, based on the UK population estimates of 67,026,300 from the Office of National Statistics (mid-2023). Current patients are only from Scotland, Wales, and Northern Ireland. Historically, GOLD does contain data from England as well.
7	Data content /source coding	Gemscript, Read, dm+d
8	Data Harmonization	The data has been mapped to the OMOP CDM v5.4 and the OMOP standard vocabularies (SNOMED, RxNorm, LOINC). The format, structural and semantic conformance has been verified upon onboarding into the DARWIN EU® data Network. In GOLD, a patient can be registered under different ID numbers upon changing practice or re-registration. Researchers are not able to identify these patients, as the data are anonymised. However, GOLD covers less than 5% of the current UK GP practices and it is unlikely that an individual who does change GP practice ends up in another GP practice which uses the Vision software and accepts the CPRD data collection agreement. The very small number of duplicated IDs will have different observation periods and should not have an impact on the data analyses.
9	Quality control (database specific)	CPRD GOLD only includes practices whose data quality is assessed to be up-to-standard (uts). Each practice is associated to an uts date set when the data quality standards become satisfactory, and CPRD recommend using only longitudinal data starting from this uts date. Every time CPRD collect the EHR from a practice, checks are run for the data quality standards and if they are not adequate, the EHR is not accepted. When the data quality becomes acceptable again, CPRD updates the practice uts date. CPRD also check data quality standards at the patient level and associate each patient to a flag, reporting if its data is acceptable for clinical research. Only patients with acceptable data quality are included in the population to be mapped to CDM.
10	Linkage	CPRD GOLD can be linked to several sources, however our Oxford OMOP CDM is only linked to the CPRD GOLD Ethnicity Record and to the CPRD Townsend Deprivation Index at Practice Level
11	Vital status	Vital status is retrieved from the GP records. Population registry (ONS) data can be requested on a study-by-study basis and linked. This data only covers England and is planned to be mapped to OMOP in the future. The cause of death is not captured.
12	Limitations	The main limitation is due to the fact that CPRD GOLD is limited to GP records, and although it contains information on referrals and discharge letters, it may not fully capture specific hospital information. Events from hospital and specialist care are not covered.
13	Main references	Sanchez-Santos MT, Axson EL,Dedman D,Delmestri A "Data Resource Profile Update: CPRD GOLD." International journal of epidemiology (2025): 40499193
14	Link to HMA-EMA catalogue and database webpage	HMA-EMA Catalogue entry: https://catalogues.ema.europa.eu/data-source/1111113 Website: https://cprd.com

ANNEX II. Operational and reporting considerations

DATA MANAGEMENT

Data management

All data sources have previously mapped their data to the OMOP common data model. This enabled the use of standardised analytics and using DARWIN EU® tools across the Network since the structure of the data and the terminology system was harmonised. The OMOP CDM was developed and maintained by the Observational Health Data Sciences and Informatics (OHDSI) initiative and is described in detail on the wiki page of the CDM: https://ohdsi.github.io/CommonDataModel and in The Book of OHDSI: http://book.ohdsi.org

The analytic code for this study was written in R and used standardised analytics wherever possible. Each data partner executed the study code against their data source containing individual data and then returned the results (csv files) which only contained aggregated data. The results from each of the contributing data sites were then combined in tables and figures for the study report.

Data storage and protection

For this study, personal data from individuals in various EU member states were processed, using information collected from national/regional electronic health record data sources. Due to the sensitive nature of this personal medical data, it is important to be fully aware of ethical and regulatory aspects and to strive to take all reasonable measures to ensure compliance with ethical and regulatory issues on privacy.

All data sources used in this study were already used for pharmaco-epidemiological research and have a well-developed mechanism to ensure that European and local regulations dealing with ethical use of the data and adequate privacy control were adhered to. In agreement with these regulations, rather than combining person level data and performing only a central analysis, local analyses were run, which generate non-identifiable aggregate summary results.

The output files are stored in the DARWIN EU® Digital Research Environment (DRE). These output files do not contain any data that allow identification of subjects included in the study. The DRE implements further security measures to ensure a high level of stored data protection to comply with the local implementation of the General Data Protection Regulation (GDPR) (EU) 679/2016 in the various member states.

QUALITY CONTROL

General data source quality control

A number of open-source quality control mechanisms for the OMOP CDM have been developed (see Chapter 15 of The Book of OHDSI http://book.ohdsi.org/DataQuality.html). In particular, it is expected that data partners will have run the OHDSI Data Quality Dashboard tool (https://github.com/OHDSI/DataQualityDashboard). This tool provides numerous checks relating to the conformance, completeness, and plausibility of the mapped data. Conformance focuses on checks that describe the compliance of the representation of data against internal or external formatting, relational, or computational definitions; completeness in the sense of data quality is solely focused on quantifying missingness, or the absence of data; finally, plausibility seeks to determine the believability or truthfulness of data values. Each of these categories has one or more subcategories and are evaluated in two contexts: validation and verification. Validation relates to how well data align with external benchmarks with expectations derived from known true standards, while verification relates to how well data conform to local knowledge, metadata descriptions, and system assumptions.

Study specific quality control

When defining cohorts for indications, a systematic search of possible codes for inclusion was identified using *CodelistGenerator* R package (https://github.com/darwin-eu/CodelistGenerator). This software allows the user to define a search strategy and using this was then query the vocabulary tables of the OMOP common data model so as to find potentially relevant codes. In addition, *PhenotypeR* (https://github.com/OHDSI/PhenotypeR) and *DrugExposureDiagnostics* R package (https://github.com/darwin-eu/DrugExposureDiagnostics) were run as diagnostics the use of different codes across the data sources contributing to the study and identify any codes potentially omitted in error.

The study code was based on five R packages developed to (1) estimate incidence and prevalence (*IncidencePrevalence*),[11] (2) describe new users characteristics (*CohortCharacteristics*),[13] and (3) characterise drug utilisation using the OMOP common data model (*DrugUtilization*, *TreatmentPatterns*, and *CohortSurvival*).[12, 14, 15] These packages includes numerous automated unit tests to ensure the validity of the codes, alongside software peer review and user testing. The R packages are publicly available via GitHub.

ANNEX III. Supplementary tables and figures

Supplementary tables

Table S1. Comorbidities and indications of new users of GLP-1 by GLP-1 RA ingredient and per 12 data sources: A) in the overall period and B) in the last reported year.

A) Overall period

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
IQVIA LPD Belgium	Comorbidities	ADHD	N (%)	68 (0.85%)	<5	0 (0.00%)	8 (0.53%)	0 (0.00%)	58 (1.02%)	–
		Activity limitation	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Alzheimer	N (%)	20 (0.25%)	14 (0.79%)	<5	<5	<5	5 (0.09%)	–
		Anaemia and haematinic deficiency	N (%)	578 (7.26%)	126 (7.07%)	18 (8.74%)	123 (8.19%)	8 (6.45%)	411 (7.26%)	–
		Anorexia	N (%)	11 (0.14%)	<5	0 (0.00%)	0 (0.00%)	0 (0.00%)	10 (0.18%)	–
		Anxiety	N (%)	1,351 (16.97%)	253 (14.20%)	31 (15.05%)	279 (18.59%)	17 (13.71%)	1,013 (17.88%)	–
		Arthritis	N (%)	429 (5.39%)	81 (4.55%)	<5	94 (6.26%)	<5	330 (5.83%)	–
		Asthma	N (%)	1,724 (21.66%)	290 (16.27%)	35 (16.99%)	275 (18.32%)	21 (16.94%)	1,357 (23.95%)	–
		Atrial fibrillation	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Bulimia	N (%)	13 (0.16%)	0 (0.00%)	0 (0.00%)	5 (0.33%)	0 (0.00%)	10 (0.18%)	–
		CKD	N (%)	126 (1.58%)	49 (2.75%)	8 (3.88%)	14 (0.93%)	<5	87 (1.54%)	–
		COPD	N (%)	1,445 (18.15%)	339 (19.02%)	32 (15.53%)	275 (18.32%)	29 (23.39%)	1,050 (18.53%)	–
		CVD	N (%)	5,080 (63.81%)	1,375 (77.16%)	151 (73.30%)	898 (59.83%)	96 (77.42%)	3,548 (62.63%)	–
		Cancer	N (%)	247 (3.10%)	65 (3.65%)	10 (4.85%)	55 (3.66%)	5 (4.03%)	162 (2.86%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Cerebrovascular disease	N (%)	274 (3.44%)	82 (4.60%)	7 (3.40%)	48 (3.20%)	8 (6.45%)	184 (3.25%)	–
		Chronic liver disease	N (%)	132 (1.66%)	38 (2.13%)	<5	22 (1.47%)	<5	99 (1.75%)	–
		Chronic respiratory disease	N (%)	2,519 (31.64%)	515 (28.90%)	55 (26.70%)	440 (29.31%)	39 (31.45%)	1,902 (33.57%)	–
		Crohn	N (%)	44 (0.55%)	5 (0.28%)	0 (0.00%)	15 (1.00%)	<5	28 (0.49%)	–
		Dementia	N (%)	38 (0.48%)	20 (1.12%)	<5	<5	<5	15 (0.26%)	–
		Depression	N (%)	549 (6.90%)	82 (4.60%)	7 (3.40%)	128 (8.53%)	5 (4.03%)	407 (7.18%)	–
		Dizziness	N (%)	402 (5.05%)	80 (4.49%)	8 (3.88%)	81 (5.40%)	<5	319 (5.63%)	–
		Dyslipidaemia	N (%)	3,627 (45.56%)	1,126 (63.19%)	134 (65.05%)	607 (40.44%)	74 (59.68%)	2,507 (44.25%)	–
		Dyspnoea	N (%)	35 (0.44%)	8 (0.45%)	0 (0.00%)	<5	0 (0.00%)	29 (0.51%)	–
		Falls	N (%)	17 (0.21%)	10 (0.56%)	<5	<5	0 (0.00%)	18 (0.32%)	–
		Foot problem	N (%)	28 (0.35%)	<5	0 (0.00%)	8 (0.53%)	0 (0.00%)	24 (0.42%)	–
		Fragility fracture	N (%)	115 (1.44%)	29 (1.63%)	<5	32 (2.13%)	<5	79 (1.39%)	–
		Gallbladder disorders	N (%)	37 (0.46%)	7 (0.39%)	<5	10 (0.67%)	0 (0.00%)	25 (0.44%)	–
		HIV	N (%)	14 (0.18%)	<5	0 (0.00%)	<5	0 (0.00%)	12 (0.21%)	–
		Has given birth	N (%)	10 (0.13%)	0 (0.00%)	0 (0.00%)	5 (0.33%)	0 (0.00%)	6 (0.11%)	–
		Hearing impairment	N (%)	9 (0.11%)	<5	<5	0 (0.00%)	0 (0.00%)	5 (0.09%)	–
		Heart failure	N (%)	387 (4.86%)	141 (7.91%)	15 (7.28%)	46 (3.06%)	10 (8.06%)	253 (4.47%)	–
		Heart valve disease	N (%)	<5	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	<5	–
		Hemiplegia	N (%)	<5	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	<5	–
		Housebound	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Hypertension	N (%)	4,471 (56.16%)	1,282 (71.94%)	140 (67.96%)	775 (51.63%)	89 (71.77%)	3,086 (54.47%)	–
		Hypotension syncope	N (%)	135 (1.70%)	28 (1.57%)	<5	38 (2.53%)	<5	93 (1.64%)	–
		Insomnia broad	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Lupus erythematosus	N (%)	7 (0.09%)	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	6 (0.11%)	–
		MACE	N (%)	290 (3.64%)	89 (4.99%)	11 (5.34%)	51 (3.40%)	8 (6.45%)	202 (3.57%)	–
		MASLD	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Memory cognitive problems	N (%)	49 (0.62%)	15 (0.84%)	<5	8 (0.53%)	<5	30 (0.53%)	–
		Mobility transfer problems	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Myocardial infarction	N (%)	132 (1.66%)	47 (2.64%)	8 (3.88%)	21 (1.40%)	5 (4.03%)	92 (1.62%)	–
		Osteoarthritis	N (%)	1,323 (16.62%)	318 (17.85%)	26 (12.62%)	228 (15.19%)	10 (8.06%)	996 (17.58%)	–
		Osteoporosis	N (%)	384 (4.82%)	91 (5.11%)	9 (4.37%)	79 (5.26%)	7 (5.65%)	260 (4.59%)	–
		PAD	N (%)	14 (0.18%)	7 (0.39%)	<5	<5	0 (0.00%)	7 (0.12%)	–
		PCOS	N (%)	<5	<5	0 (0.00%)	<5	0 (0.00%)	<5	–
		PVD	N (%)	96 (1.21%)	32 (1.80%)	<5	12 (0.80%)	<5	66 (1.17%)	–
		Pancreatic cancer broad	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Paraplegia	N (%)	<5	<5	0 (0.00%)	0 (0.00%)	0 (0.00%)	<5	–
		Parkinsons disease	N (%)	39 (0.49%)	9 (0.51%)	<5	5 (0.33%)	0 (0.00%)	26 (0.46%)	–
		Peptic ulcer	N (%)	202 (2.54%)	42 (2.36%)	<5	53 (3.53%)	<5	140 (2.47%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Psoriasis	N (%)	373 (4.69%)	87 (4.88%)	7 (3.40%)	61 (4.06%)	5 (4.03%)	298 (5.26%)	–
		Psoriatic arthritis	N (%)	22 (0.28%)	<5	0 (0.00%)	<5	0 (0.00%)	17 (0.30%)	–
		Renal impairment	N (%)	145 (1.82%)	55 (3.09%)	8 (3.88%)	15 (1.00%)	5 (4.03%)	104 (1.84%)	–
		Requirement for care	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Rheumatoid arthritis	N (%)	93 (1.17%)	19 (1.07%)	<5	17 (1.13%)	0 (0.00%)	75 (1.32%)	–
		Schizophrenia	N (%)	35 (0.44%)	14 (0.79%)	<5	<5	0 (0.00%)	27 (0.48%)	–
		Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Sleep apnoea	N (%)	205 (2.58%)	63 (3.54%)	8 (3.88%)	36 (2.40%)	<5	147 (2.59%)	–
		Sleep disorder	N (%)	2,587 (32.50%)	544 (30.53%)	59 (28.64%)	515 (34.31%)	26 (20.97%)	1,909 (33.70%)	–
		Sleep disturbance	N (%)	364 (4.57%)	66 (3.70%)	6 (2.91%)	58 (3.86%)	<5	290 (5.12%)	–
		Social vulnerability	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Stroke	N (%)	167 (2.10%)	43 (2.41%)	<5	31 (2.07%)	<5	119 (2.10%)	–
		Thyroid disorders	N (%)	1,268 (15.93%)	271 (15.21%)	22 (10.68%)	279 (18.59%)	20 (16.13%)	906 (15.99%)	–
		Urinary incontinence	N (%)	306 (3.84%)	90 (5.05%)	10 (4.85%)	51 (3.40%)	<5	226 (3.99%)	–
		Urinary system disease	N (%)	630 (7.91%)	132 (7.41%)	10 (4.85%)	118 (7.86%)	8 (6.45%)	479 (8.46%)	–
		Visual impairment	N (%)	88 (1.11%)	33 (1.85%)	8 (3.88%)	11 (0.73%)	<5	60 (1.06%)	–
	Indication	Both	N (%)	2,079 (26.11%)	467 (26.21%)	48 (23.30%)	298 (19.85%)	38 (30.65%)	1,641 (28.97%)	–
		Neither	N (%)	1,085 (13.63%)	246 (13.80%)	22 (10.68%)	216 (14.39%)	21 (16.94%)	720 (12.71%)	–
		Obesity	N (%)	2,426 (30.47%)	137 (7.69%)	16 (7.77%)	638 (42.50%)	<5	1,887 (33.31%)	–
		T2DM	N (%)	2,371 (29.78%)	932 (52.30%)	120 (58.25%)	349 (23.25%)	61 (49.19%)	1,417 (25.01%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
NAJS	Comorbidities	ADHD	N (%)	19 (0.03%)	<5	0 (0.00%)	<5	<5	15 (0.04%)	–
		Activity limitation	N (%)	6 (0.01%)	<5	0 (0.00%)	0 (0.00%)	0 (0.00%)	<5	–
		Alzheimer	N (%)	184 (0.30%)	81 (0.35%)	0 (0.00%)	32 (0.27%)	10 (0.36%)	117 (0.29%)	–
		Anaemia and haematinic deficiency	N (%)	12,802 (20.63%)	5,174 (22.39%)	41 (8.45%)	2,024 (17.06%)	598 (21.40%)	9,044 (22.10%)	–
		Anorexia	N (%)	11 (0.02%)	5 (0.02%)	0 (0.00%)	<5	0 (0.00%)	7 (0.02%)	–
		Anxiety	N (%)	17,397 (28.03%)	6,657 (28.81%)	86 (17.73%)	3,062 (25.81%)	839 (30.03%)	12,043 (29.43%)	–
		Arthritis	N (%)	4,766 (7.68%)	1,840 (7.96%)	18 (3.71%)	711 (5.99%)	204 (7.30%)	3,542 (8.66%)	–
		Asthma	N (%)	6,765 (10.90%)	2,590 (11.21%)	39 (8.04%)	1,289 (10.86%)	295 (10.56%)	4,743 (11.59%)	–
		Atrial fibrillation	N (%)	3,430 (5.53%)	1,453 (6.29%)	<5	470 (3.96%)	110 (3.94%)	2,361 (5.77%)	–
		Bulimia	N (%)	5 (0.01%)	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	5 (0.01%)	–
		CKD	N (%)	6,287 (10.13%)	2,764 (11.96%)	20 (4.12%)	1,271 (10.71%)	312 (11.17%)	3,951 (9.66%)	–
		COPD	N (%)	9,427 (15.19%)	3,879 (16.78%)	49 (10.10%)	1,845 (15.55%)	439 (15.71%)	6,238 (15.25%)	–
		CVD	N (%)	58,796 (94.73%)	22,184 (95.99%)	447 (92.16%)	11,320 (95.41%)	2,702 (96.71%)	38,793 (94.81%)	–
		Cancer	N (%)	8,047 (12.96%)	3,283 (14.21%)	42 (8.66%)	1,344 (11.33%)	411 (14.71%)	5,504 (13.45%)	–
		Cerebrovascular disease	N (%)	8,284 (13.35%)	3,753 (16.24%)	28 (5.77%)	1,684 (14.19%)	403 (14.42%)	5,462 (13.35%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Chronic liver disease	N (%)	5,782 (9.32%)	2,257 (9.77%)	20 (4.12%)	917 (7.73%)	246 (8.80%)	4,264 (10.42%)	–
		Chronic respiratory disease	N (%)	13,996 (22.55%)	5,520 (23.89%)	75 (15.46%)	2,642 (22.27%)	619 (22.15%)	9,575 (23.40%)	–
		Crohn	N (%)	240 (0.39%)	83 (0.36%)	0 (0.00%)	31 (0.26%)	12 (0.43%)	177 (0.43%)	–
		Dementia	N (%)	899 (1.45%)	401 (1.74%)	<5	140 (1.18%)	44 (1.57%)	603 (1.47%)	–
		Depression	N (%)	11,420 (18.40%)	4,567 (19.76%)	65 (13.40%)	2,006 (16.91%)	523 (18.72%)	7,978 (19.50%)	–
		Dizziness	N (%)	12,027 (19.38%)	4,742 (20.52%)	35 (7.22%)	1,792 (15.10%)	513 (18.36%)	8,691 (21.24%)	–
		Dyslipidaemia	N (%)	22,236 (35.83%)	9,006 (38.97%)	106 (21.86%)	4,088 (34.46%)	1,012 (36.22%)	15,187 (37.12%)	–
		Dyspnoea	N (%)	5,040 (8.12%)	2,063 (8.93%)	15 (3.09%)	651 (5.49%)	168 (6.01%)	3,740 (9.14%)	–
		Falls	N (%)	1,865 (3.00%)	726 (3.14%)	<5	243 (2.05%)	70 (2.51%)	1,427 (3.49%)	–
		Foot problem	N (%)	1,533 (2.47%)	640 (2.77%)	<5	270 (2.28%)	82 (2.93%)	1,107 (2.71%)	–
		Fragility fracture	N (%)	4,172 (6.72%)	1,732 (7.49%)	8 (1.65%)	590 (4.97%)	211 (7.55%)	2,918 (7.13%)	–
		Gallbladder disorders	N (%)	3,725 (6.00%)	1,445 (6.25%)	12 (2.47%)	571 (4.81%)	136 (4.87%)	2,635 (6.44%)	–
		HIV	N (%)	31 (0.05%)	<5	0 (0.00%)	<5	0 (0.00%)	29 (0.07%)	–
		Has given birth	N (%)	83 (0.13%)	16 (0.07%)	0 (0.00%)	21 (0.18%)	<5	61 (0.15%)	–
		Hearing impairment	N (%)	4,864 (7.84%)	2,039 (8.82%)	10 (2.06%)	776 (6.54%)	234 (8.38%)	3,418 (8.35%)	–
		Heart failure	N (%)	8,423 (13.57%)	3,590 (15.53%)	38 (7.84%)	1,626 (13.71%)	352 (12.60%)	5,476 (13.38%)	–
		Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Hemiplegia	N (%)	1,837 (2.96%)	819 (3.54%)	6 (1.24%)	295 (2.49%)	90 (3.22%)	1,164 (2.84%)	–
		Housebound	N (%)	107 (0.17%)	48 (0.21%)	<5	12 (0.10%)	8 (0.29%)	73 (0.18%)	–
		Hypertension	N (%)	56,954 (91.76%)	21,685 (93.83%)	426 (87.84%)	10,993 (92.66%)	2,631 (94.17%)	37,553 (91.78%)	–
		Hypotension syncope	N (%)	495 (0.80%)	201 (0.87%)	<5	76 (0.64%)	18 (0.64%)	367 (0.90%)	–
		Insomnia broad	N (%)	2,459 (3.96%)	1,011 (4.37%)	7 (1.44%)	383 (3.23%)	103 (3.69%)	1,803 (4.41%)	–
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Lupus erythematosus	N (%)	79 (0.13%)	29 (0.13%)	<5	14 (0.12%)	<5	51 (0.12%)	–
		MACE	N (%)	9,117 (14.69%)	3,651 (15.80%)	26 (5.36%)	1,537 (12.96%)	345 (12.35%)	6,026 (14.73%)	–
		MASLD	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Memory cognitive problems	N (%)	727 (1.17%)	323 (1.40%)	<5	94 (0.79%)	31 (1.11%)	511 (1.25%)	–
		Mobility transfer problems	N (%)	57 (0.09%)	26 (0.11%)	0 (0.00%)	15 (0.13%)	0 (0.00%)	37 (0.09%)	–
		Myocardial infarction	N (%)	5,658 (9.12%)	2,143 (9.27%)	15 (3.09%)	936 (7.89%)	168 (6.01%)	3,888 (9.50%)	–
		Osteoarthritis	N (%)	22,320 (35.96%)	8,849 (38.29%)	114 (23.51%)	3,704 (31.22%)	1,008 (36.08%)	15,865 (38.77%)	–
		Osteoporosis	N (%)	5,261 (8.48%)	2,327 (10.07%)	16 (3.30%)	811 (6.84%)	303 (10.84%)	3,655 (8.93%)	–
		PAD	N (%)	2,763 (4.45%)	1,260 (5.45%)	6 (1.24%)	475 (4.00%)	134 (4.80%)	1,838 (4.49%)	–
		PCOS	N (%)	289 (0.47%)	67 (0.29%)	0 (0.00%)	42 (0.35%)	<5	223 (0.54%)	–
		PVD	N (%)	7,510 (12.10%)	3,410 (14.76%)	27 (5.57%)	1,666 (14.04%)	443 (15.86%)	4,820 (11.78%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Pancreatic cancer broad	N (%)	58 (0.09%)	23 (0.10%)	0 (0.00%)	10 (0.08%)	<5	34 (0.08%)	–
		Paraplegia	N (%)	368 (0.59%)	151 (0.65%)	<5	61 (0.51%)	19 (0.68%)	258 (0.63%)	–
		Parkinsons disease	N (%)	531 (0.86%)	230 (1.00%)	<5	112 (0.94%)	25 (0.89%)	343 (0.84%)	–
		Peptic ulcer	N (%)	3,263 (5.26%)	1,261 (5.46%)	7 (1.44%)	612 (5.16%)	155 (5.55%)	2,182 (5.33%)	–
		Psoriasis	N (%)	2,743 (4.42%)	1,066 (4.61%)	11 (2.27%)	449 (3.78%)	115 (4.12%)	1,973 (4.82%)	–
		Psoriatic arthritis	N (%)	398 (0.64%)	153 (0.66%)	<5	73 (0.62%)	14 (0.50%)	306 (0.75%)	–
		Renal impairment	N (%)	7,888 (12.71%)	3,554 (15.38%)	29 (5.98%)	1,687 (14.22%)	415 (14.85%)	4,996 (12.21%)	–
		Requirement for care	N (%)	229 (0.37%)	87 (0.38%)	0 (0.00%)	35 (0.30%)	10 (0.36%)	173 (0.42%)	–
		Rheumatoid arthritis	N (%)	2,254 (3.63%)	864 (3.74%)	12 (2.47%)	379 (3.19%)	108 (3.87%)	1,573 (3.84%)	–
		Schizophrenia	N (%)	981 (1.58%)	410 (1.77%)	7 (1.44%)	197 (1.66%)	61 (2.18%)	583 (1.42%)	–
		Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Sleep apnoea	N (%)	3,437 (5.54%)	1,498 (6.48%)	23 (4.74%)	546 (4.60%)	114 (4.08%)	2,781 (6.80%)	–
		Sleep disorder	N (%)	12,347 (19.89%)	5,096 (22.05%)	67 (13.81%)	2,037 (17.17%)	531 (19.01%)	9,004 (22.00%)	–
		Sleep disturbance	N (%)	9,732 (15.68%)	3,995 (17.29%)	49 (10.10%)	1,619 (13.65%)	452 (16.18%)	6,978 (17.05%)	–
		Social vulnerability	N (%)	<5	<5	0 (0.00%)	0 (0.00%)	0 (0.00%)	<5	–
		Stroke	N (%)	4,020 (6.48%)	1,780 (7.70%)	12 (2.47%)	699 (5.89%)	189 (6.76%)	2,498 (6.10%)	–
		Thyroid disorders	N (%)	17,976 (28.96%)	7,051 (30.51%)	100 (20.62%)	3,149 (26.54%)	788 (28.20%)	12,578 (30.74%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Urinary incontinence	N (%)	6,879 (11.08%)	2,939 (12.72%)	21 (4.33%)	1,307 (11.02%)	369 (13.21%)	4,665 (11.40%)	–
		Urinary system disease	N (%)	13,588 (21.89%)	5,670 (24.53%)	48 (9.90%)	2,205 (18.59%)	616 (22.05%)	9,737 (23.80%)	–
		Visual impairment	N (%)	8,907 (14.35%)	3,537 (15.31%)	23 (4.74%)	1,290 (10.87%)	383 (13.71%)	6,375 (15.58%)	–
	Indication	Both	N (%)	24,833 (40.01%)	9,465 (40.96%)	241 (49.69%)	4,945 (41.68%)	960 (34.36%)	17,198 (42.03%)	–
		Neither	N (%)	4,668 (7.52%)	1,764 (7.63%)	39 (8.04%)	1,450 (12.22%)	431 (15.43%)	2,321 (5.67%)	–
		Obesity	N (%)	4,125 (6.65%)	1,725 (7.46%)	60 (12.37%)	1,646 (13.87%)	407 (14.57%)	2,242 (5.48%)	–
		T2DM	N (%)	28,442 (45.82%)	10,156 (43.95%)	145 (29.90%)	3,823 (32.22%)	996 (35.65%)	19,157 (46.82%)	–
DK-DHR	Comorbidities	ADHD	N (%)	8,152 (2.66%)	81 (1.44%)	<5	1,392 (2.49%)	0 (0.00%)	7,565 (2.62%)	5 (20.00%)
		Activity limitation	N (%)	20 (0.01%)	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	21 (0.01%)	0 (0.00%)
		Alzheimer	N (%)	643 (0.21%)	39 (0.69%)	0 (0.00%)	117 (0.21%)	0 (0.00%)	638 (0.22%)	0 (0.00%)
		Anaemia and haematinic deficiency	N (%)	12,638 (4.13%)	401 (7.13%)	10 (3.48%)	2,569 (4.60%)	7 (8.75%)	12,401 (4.29%)	<5
		Anorexia	N (%)	250 (0.08%)	8 (0.14%)	0 (0.00%)	59 (0.11%)	0 (0.00%)	215 (0.07%)	<5
		Anxiety	N (%)	44,954 (14.69%)	839 (14.91%)	40 (13.94%)	8,869 (15.87%)	14 (17.50%)	41,941 (14.52%)	7 (28.00%)
		Arthritis	N (%)	74,104 (24.21%)	1,788 (31.77%)	90 (31.36%)	15,155 (27.12%)	16 (20.00%)	70,669 (24.46%)	<5

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Asthma	N (%)	81,773 (26.71%)	1,461 (25.96%)	73 (25.44%)	15,645 (28.00%)	22 (27.50%)	77,152 (26.71%)	10 (40.00%)
		Atrial fibrillation	N (%)	6,246 (2.04%)	159 (2.83%)	<5	978 (1.75%)	<5	6,299 (2.18%)	0 (0.00%)
		Bulimia	N (%)	1,399 (0.46%)	16 (0.28%)	<5	335 (0.60%)	<5	1,268 (0.44%)	<5
		CKD	N (%)	5,174 (1.69%)	220 (3.91%)	8 (2.79%)	1,080 (1.93%)	5 (6.25%)	5,299 (1.83%)	0 (0.00%)
		COPD	N (%)	23,942 (7.82%)	706 (12.54%)	32 (11.15%)	4,864 (8.70%)	8 (10.00%)	23,159 (8.02%)	<5
		CVD	N (%)	179,960 (58.79%)	4,571 (81.22%)	211 (73.52%)	34,591 (61.90%)	64 (80.00%)	173,643 (60.11%)	18 (72.00%)
		Cancer	N (%)	27,643 (9.03%)	715 (12.70%)	31 (10.80%)	4,843 (8.67%)	9 (11.25%)	27,254 (9.43%)	<5
		Cerebrovascular disease	N (%)	11,800 (3.85%)	382 (6.79%)	21 (7.32%)	2,370 (4.24%)	8 (10.00%)	11,512 (3.99%)	0 (0.00%)
		Chronic liver disease	N (%)	6,208 (2.03%)	210 (3.73%)	11 (3.83%)	1,167 (2.09%)	<5	6,083 (2.11%)	0 (0.00%)
		Chronic respiratory disease	N (%)	89,056 (29.09%)	1,688 (29.99%)	83 (28.92%)	17,041 (30.49%)	24 (30.00%)	84,199 (29.15%)	11 (44.00%)
		Crohn	N (%)	2,958 (0.97%)	33 (0.59%)	<5	663 (1.19%)	0 (0.00%)	2,690 (0.93%)	0 (0.00%)
		Dementia	N (%)	1,404 (0.46%)	75 (1.33%)	<5	267 (0.48%)	0 (0.00%)	1,389 (0.48%)	0 (0.00%)
		Depression	N (%)	88,677 (28.97%)	1,866 (33.16%)	97 (33.80%)	18,142 (32.46%)	22 (27.50%)	82,739 (28.64%)	7 (28.00%)
		Dizziness	N (%)	13,828 (4.52%)	278 (4.94%)	7 (2.44%)	2,540 (4.55%)	6 (7.50%)	13,319 (4.61%)	<5
		Dyslipidaemia	N (%)	126,978 (41.48%)	4,826 (85.75%)	222 (77.35%)	25,380 (45.42%)	70 (87.50%)	125,677 (43.50%)	<5
		Dyspnoea	N (%)	23,408 (7.65%)	576 (10.23%)	17 (5.92%)	4,402 (7.88%)	15 (18.75%)	22,847 (7.91%)	0 (0.00%)
		Falls	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Foot problem	N (%)	917 (0.30%)	26 (0.46%)	<5	183 (0.33%)	<5	874 (0.30%)	0 (0.00%)
		Fragility fracture	N (%)	8,719 (2.85%)	191 (3.39%)	<5	1,466 (2.62%)	<5	8,412 (2.91%)	0 (0.00%)
		Gallbladder disorders	N (%)	33,059 (10.80%)	618 (10.98%)	22 (7.67%)	6,576 (11.77%)	5 (6.25%)	31,207 (10.80%)	<5
		HIV	N (%)	367 (0.12%)	11 (0.20%)	0 (0.00%)	63 (0.11%)	0 (0.00%)	346 (0.12%)	0 (0.00%)
		Has given birth	N (%)	3,207 (1.05%)	6 (0.11%)	0 (0.00%)	521 (0.93%)	0 (0.00%)	2,781 (0.96%)	<5
		Hearing impairment	N (%)	14,093 (4.60%)	467 (8.30%)	13 (4.53%)	2,459 (4.40%)	6 (7.50%)	14,037 (4.86%)	<5
		Heart failure	N (%)	12,594 (4.11%)	498 (8.85%)	24 (8.36%)	2,675 (4.79%)	6 (7.50%)	12,485 (4.32%)	0 (0.00%)
		Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Hemiplegia	N (%)	275 (0.09%)	9 (0.16%)	0 (0.00%)	59 (0.11%)	0 (0.00%)	254 (0.09%)	0 (0.00%)
		Housebound	N (%)	9 (0.00%)	0 (0.00%)	0 (0.00%)	5 (0.01%)	0 (0.00%)	6 (0.00%)	0 (0.00%)
		Hypertension	N (%)	123,479 (40.34%)	3,922 (69.69%)	170 (59.23%)	24,077 (43.08%)	52 (65.00%)	121,658 (42.11%)	7 (28.00%)
		Hypotension syncope	N (%)	1,621 (0.53%)	66 (1.17%)	<5	353 (0.63%)	<5	1,600 (0.55%)	0 (0.00%)
		Insomnia broad	N (%)	76,615 (25.03%)	1,494 (26.55%)	75 (26.13%)	15,099 (27.02%)	19 (23.75%)	72,578 (25.12%)	7 (28.00%)
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Lupus erythematosus	N (%)	429 (0.14%)	<5	<5	88 (0.16%)	0 (0.00%)	393 (0.14%)	0 (0.00%)
		MACE	N (%)	23,516 (7.68%)	838 (14.89%)	46 (16.03%)	4,571 (8.18%)	6 (7.50%)	23,267 (8.05%)	<5
		MASLD	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Memory cognitive problems	N (%)	1,377 (0.45%)	50 (0.89%)	<5	266 (0.48%)	0 (0.00%)	1,360 (0.47%)	0 (0.00%)
		Mobility transfer problems	N (%)	238 (0.08%)	8 (0.14%)	0 (0.00%)	49 (0.09%)	0 (0.00%)	235 (0.08%)	0 (0.00%)
		Myocardial infarction	N (%)	12,749 (4.16%)	470 (8.35%)	27 (9.41%)	2,532 (4.53%)	<5	12,721 (4.40%)	<5
		Osteoarthritis	N (%)	55,551 (18.15%)	1,238 (22.00%)	58 (20.21%)	10,729 (19.20%)	20 (25.00%)	53,861 (18.64%)	<5
		Osteoporosis	N (%)	8,380 (2.74%)	226 (4.02%)	8 (2.79%)	1,531 (2.74%)	<5	8,055 (2.79%)	0 (0.00%)
		PAD	N (%)	3,384 (1.11%)	165 (2.93%)	<5	802 (1.44%)	<5	3,407 (1.18%)	0 (0.00%)
		PCOS	N (%)	5,279 (1.72%)	85 (1.51%)	<5	1,190 (2.13%)	0 (0.00%)	4,716 (1.63%)	0 (0.00%)
		PVD	N (%)	11,166 (3.65%)	662 (11.76%)	24 (8.36%)	2,739 (4.90%)	11 (13.75%)	11,757 (4.07%)	0 (0.00%)
		Pancreatic cancer broad	N (%)	1,703 (0.56%)	51 (0.91%)	11 (3.83%)	411 (0.74%)	0 (0.00%)	1,692 (0.59%)	0 (0.00%)
		Paraplegia	N (%)	552 (0.18%)	12 (0.21%)	0 (0.00%)	122 (0.22%)	0 (0.00%)	518 (0.18%)	0 (0.00%)
		Parkinsons disease	N (%)	1,975 (0.65%)	62 (1.10%)	19 (6.62%)	435 (0.78%)	<5	1,939 (0.67%)	0 (0.00%)
		Peptic ulcer	N (%)	69,274 (22.63%)	1,616 (28.71%)	91 (31.71%)	14,485 (25.92%)	25 (31.25%)	65,801 (22.78%)	6 (24.00%)
		Psoriasis	N (%)	28,177 (9.20%)	603 (10.71%)	32 (11.15%)	5,236 (9.37%)	5 (6.25%)	27,026 (9.36%)	<5
		Psoriatic arthritis	N (%)	2,908 (0.95%)	72 (1.28%)	5 (1.74%)	542 (0.97%)	0 (0.00%)	2,796 (0.97%)	0 (0.00%)
		Renal impairment	N (%)	7,903 (2.58%)	350 (6.22%)	18 (6.27%)	1,623 (2.90%)	5 (6.25%)	8,054 (2.79%)	0 (0.00%)
		Requirement for care	N (%)	127 (0.04%)	6 (0.11%)	0 (0.00%)	34 (0.06%)	0 (0.00%)	120 (0.04%)	0 (0.00%)
		Rheumatoid arthritis	N (%)	7,473 (2.44%)	194 (3.45%)	9 (3.14%)	1,436 (2.57%)	<5	7,156 (2.48%)	<5
		Schizophrenia	N (%)	4,926 (1.61%)	204 (3.62%)	13 (4.53%)	1,026 (1.84%)	0 (0.00%)	4,553 (1.58%)	<5
		Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Sleep apnoea	N (%)	30,322 (9.91%)	785 (13.95%)	25 (8.71%)	5,958 (10.66%)	11 (13.75%)	29,734 (10.29%)	5 (20.00%)
		Sleep disorder	N (%)	102,024 (33.33%)	2,119 (37.65%)	93 (32.40%)	19,904 (35.62%)	27 (33.75%)	97,379 (33.71%)	11 (44.00%)
		Sleep disturbance	N (%)	2,003 (0.65%)	45 (0.80%)	5 (1.74%)	381 (0.68%)	0 (0.00%)	1,947 (0.67%)	<5
		Social vulnerability	N (%)	178 (0.06%)	0 (0.00%)	0 (0.00%)	23 (0.04%)	0 (0.00%)	169 (0.06%)	0 (0.00%)
		Stroke	N (%)	12,122 (3.96%)	419 (7.44%)	22 (7.67%)	2,330 (4.17%)	6 (7.50%)	11,917 (4.13%)	0 (0.00%)
		Thyroid disorders	N (%)	35,785 (11.69%)	741 (13.17%)	24 (8.36%)	7,165 (12.82%)	10 (12.50%)	34,016 (11.78%)	<5
		Urinary incontinence	N (%)	20,288 (6.63%)	484 (8.60%)	23 (8.01%)	4,051 (7.25%)	8 (10.00%)	19,504 (6.75%)	0 (0.00%)
		Urinary system disease	N (%)	95,032 (31.04%)	1,755 (31.18%)	77 (26.83%)	17,719 (31.71%)	31 (38.75%)	90,724 (31.41%)	9 (36.00%)
		Visual impairment	N (%)	5,316 (1.74%)	177 (3.14%)	<5	1,004 (1.80%)	<5	5,317 (1.84%)	0 (0.00%)
	Indication	Both	N (%)	61,717 (20.16%)	2,637 (46.86%)	141 (49.13%)	14,471 (25.90%)	37 (46.25%)	61,673 (21.35%)	14 (56.00%)
		Neither	N (%)	2,176 (0.71%)	14 (0.25%)	<5	836 (1.50%)	<5	1,437 (0.50%)	<5
		Obesity	N (%)	171,176 (55.92%)	38 (0.68%)	5 (1.74%)	28,248 (50.55%)	–	155,899 (53.97%)	10 (40.00%)
		T2DM	N (%)	71,049 (23.21%)	2,939 (52.22%)	140 (48.78%)	12,328 (22.06%)	42 (52.50%)	69,872 (24.19%)	–
FinOMOP-THL	Comorbidities	ADHD	N (%)	3,321 (1.38%)	192 (0.68%)	43 (0.35%)	1,052 (1.44%)	<5	2,639 (1.51%)	–
		Activity limitation	N (%)	30,623 (12.71%)	4,898 (17.24%)	2,018 (16.32%)	10,076 (13.78%)	26 (13.13%)	21,263 (12.20%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Alzheimer	N (%)	1,269 (0.53%)	310 (1.09%)	118 (0.95%)	399 (0.55%)	<5	740 (0.42%)	–
		Anaemia and haematinic deficiency	N (%)	18,239 (7.57%)	3,013 (10.61%)	1,182 (9.56%)	5,692 (7.78%)	21 (10.61%)	13,032 (7.48%)	–
		Anorexia	N (%)	324 (0.13%)	27 (0.10%)	6 (0.05%)	117 (0.16%)	0 (0.00%)	254 (0.15%)	–
		Anxiety	N (%)	25,517 (10.59%)	2,277 (8.01%)	679 (5.49%)	7,771 (10.63%)	12 (6.06%)	19,921 (11.43%)	–
		Arthritis	N (%)	6,451 (2.68%)	885 (3.11%)	337 (2.72%)	1,940 (2.65%)	6 (3.03%)	4,791 (2.75%)	–
		Asthma	N (%)	39,163 (16.26%)	4,972 (17.50%)	1,923 (15.55%)	12,718 (17.39%)	29 (14.65%)	28,471 (16.34%)	–
		Atrial fibrillation	N (%)	3,243 (1.35%)	518 (1.82%)	88 (0.71%)	776 (1.06%)	0 (0.00%)	2,710 (1.56%)	–
		Bulimia	N (%)	1,187 (0.49%)	85 (0.30%)	35 (0.28%)	447 (0.61%)	0 (0.00%)	886 (0.51%)	–
		CKD	N (%)	5,582 (2.32%)	1,000 (3.52%)	266 (2.15%)	1,930 (2.64%)	<5	3,908 (2.24%)	–
		COPD	N (%)	10,303 (4.28%)	1,622 (5.71%)	692 (5.60%)	3,428 (4.69%)	8 (4.04%)	6,978 (4.00%)	–
		CVD	N (%)	170,738 (70.88%)	22,904 (80.62%)	9,277 (75.01%)	52,246 (71.45%)	148 (74.75%)	123,386 (70.81%)	–
		Cancer	N (%)	15,098 (6.27%)	2,451 (8.63%)	942 (7.62%)	4,440 (6.07%)	16 (8.08%)	10,810 (6.20%)	–
		Cerebrovascular disease	N (%)	10,769 (4.47%)	1,790 (6.30%)	723 (5.85%)	3,307 (4.52%)	12 (6.06%)	7,573 (4.35%)	–
		Chronic liver disease	N (%)	8,750 (3.63%)	1,456 (5.12%)	498 (4.03%)	2,402 (3.28%)	8 (4.04%)	6,754 (3.88%)	–
		Chronic respiratory disease	N (%)	44,488 (18.47%)	5,730 (20.17%)	2,270 (18.36%)	14,420 (19.72%)	36 (18.18%)	32,140 (18.44%)	–
		Crohn	N (%)	1,539 (0.64%)	170 (0.60%)	52 (0.42%)	473 (0.65%)	<5	1,160 (0.67%)	–
		Dementia	N (%)	2,421 (1.01%)	569 (2.00%)	247 (2.00%)	783 (1.07%)	6 (3.03%)	1,406 (0.81%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Depression	N (%)	46,296 (19.22%)	4,916 (17.30%)	1,680 (13.58%)	14,481 (19.80%)	22 (11.11%)	34,926 (20.04%)	–
		Dizziness	N (%)	25,706 (10.67%)	3,742 (13.17%)	1,109 (8.97%)	7,737 (10.58%)	22 (11.11%)	19,132 (10.98%)	–
		Dyslipidaemia	N (%)	72,979 (30.30%)	11,715 (41.23%)	3,943 (31.88%)	20,567 (28.13%)	73 (36.87%)	54,513 (31.28%)	–
		Dyspnoea	N (%)	39,918 (16.57%)	5,392 (18.98%)	1,915 (15.48%)	12,807 (17.51%)	38 (19.19%)	29,066 (16.68%)	–
		Falls	N (%)	4,149 (1.72%)	430 (1.51%)	113 (0.91%)	1,114 (1.52%)	0 (0.00%)	3,354 (1.92%)	–
		Foot problem	N (%)	6,141 (2.55%)	1,167 (4.11%)	509 (4.12%)	1,958 (2.68%)	8 (4.04%)	4,204 (2.41%)	–
		Fragility fracture	N (%)	9,826 (4.08%)	1,384 (4.87%)	428 (3.46%)	2,818 (3.85%)	6 (3.03%)	7,374 (4.23%)	–
		Gallbladder disorders	N (%)	14,131 (5.87%)	1,636 (5.76%)	515 (4.16%)	4,221 (5.77%)	5 (2.53%)	10,900 (6.26%)	–
		HIV	N (%)	180 (0.07%)	23 (0.08%)	12 (0.10%)	42 (0.06%)	0 (0.00%)	137 (0.08%)	–
		Has given birth	N (%)	842 (0.35%)	28 (0.10%)	6 (0.05%)	270 (0.37%)	0 (0.00%)	608 (0.35%)	–
		Hearing impairment	N (%)	3,953 (1.64%)	661 (2.33%)	156 (1.26%)	1,051 (1.44%)	6 (3.03%)	3,020 (1.73%)	–
		Heart failure	N (%)	15,220 (6.32%)	2,644 (9.31%)	1,094 (8.85%)	5,330 (7.29%)	12 (6.06%)	9,934 (5.70%)	–
		Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Hemiplegia	N (%)	405 (0.17%)	53 (0.19%)	33 (0.27%)	131 (0.18%)	0 (0.00%)	298 (0.17%)	–
		Housebound	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Hypertension	N (%)	135,931 (56.43%)	20,059 (70.60%)	8,050 (65.09%)	41,736 (57.07%)	135 (68.18%)	97,105 (55.72%)	–
		Hypotension syncope	N (%)	2,323 (0.96%)	453 (1.59%)	159 (1.29%)	751 (1.03%)	<5	1,644 (0.94%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Insomnia broad	N (%)	20,591 (8.55%)	1,988 (7.00%)	525 (4.25%)	5,854 (8.01%)	6 (3.03%)	16,619 (9.54%)	–
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Lupus erythematosus	N (%)	266 (0.11%)	20 (0.07%)	10 (0.08%)	86 (0.12%)	0 (0.00%)	196 (0.11%)	–
		MACE	N (%)	16,655 (6.91%)	3,010 (10.59%)	1,078 (8.72%)	4,991 (6.83%)	19 (9.60%)	11,624 (6.67%)	–
		MASLD	N (%)	773 (0.32%)	132 (0.46%)	36 (0.29%)	201 (0.27%)	0 (0.00%)	657 (0.38%)	–
		Memory cognitive problems	N (%)	1,638 (0.68%)	375 (1.32%)	172 (1.39%)	534 (0.73%)	<5	964 (0.55%)	–
		Mobility transfer problems	N (%)	429 (0.18%)	93 (0.33%)	21 (0.17%)	142 (0.19%)	0 (0.00%)	284 (0.16%)	–
		Myocardial infarction	N (%)	8,623 (3.58%)	1,544 (5.43%)	510 (4.12%)	2,503 (3.42%)	14 (7.07%)	6,150 (3.53%)	–
		Osteoarthritis	N (%)	66,467 (27.59%)	9,094 (32.01%)	3,379 (27.32%)	20,708 (28.32%)	54 (27.27%)	48,838 (28.03%)	–
		Osteoporosis	N (%)	1,115 (0.46%)	211 (0.74%)	60 (0.49%)	376 (0.51%)	<5	760 (0.44%)	–
		PAD	N (%)	6,137 (2.55%)	1,180 (4.15%)	477 (3.86%)	1,993 (2.73%)	6 (3.03%)	4,186 (2.40%)	–
		PCOS	N (%)	2,049 (0.85%)	122 (0.43%)	20 (0.16%)	598 (0.82%)	0 (0.00%)	1,659 (0.95%)	–
		PVD	N (%)	8,820 (3.66%)	1,684 (5.93%)	699 (5.65%)	2,838 (3.88%)	8 (4.04%)	6,014 (3.45%)	–
		Pancreatic cancer broad	N (%)	92 (0.04%)	19 (0.07%)	<5	26 (0.04%)	0 (0.00%)	64 (0.04%)	–
		Paraplegia	N (%)	212 (0.09%)	29 (0.10%)	32 (0.26%)	64 (0.09%)	0 (0.00%)	146 (0.08%)	–
		Parkinsons disease	N (%)	811 (0.34%)	152 (0.54%)	61 (0.49%)	305 (0.42%)	<5	498 (0.29%)	–
		Peptic ulcer	N (%)	2,930 (1.22%)	511 (1.80%)	170 (1.37%)	903 (1.23%)	0 (0.00%)	2,093 (1.20%)	–
		Psoriasis	N (%)	8,908 (3.70%)	1,302 (4.58%)	497 (4.02%)	2,670 (3.65%)	8 (4.04%)	6,481 (3.72%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Psoriatic arthritis	N (%)	2,390 (0.99%)	347 (1.22%)	147 (1.19%)	730 (1.00%)	0 (0.00%)	1,759 (1.01%)	–
		Renal impairment	N (%)	10,141 (4.21%)	1,791 (6.30%)	536 (4.33%)	3,377 (4.62%)	10 (5.05%)	7,159 (4.11%)	–
		Requirement for care	N (%)	85 (0.04%)	13 (0.05%)	17 (0.14%)	24 (0.03%)	0 (0.00%)	43 (0.02%)	–
		Rheumatoid arthritis	N (%)	4,992 (2.07%)	671 (2.36%)	279 (2.26%)	1,586 (2.17%)	8 (4.04%)	3,587 (2.06%)	–
		Schizophrenia	N (%)	3,341 (1.39%)	726 (2.56%)	350 (2.83%)	926 (1.27%)	<5	2,135 (1.23%)	–
		Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Sleep apnoea	N (%)	67,837 (28.16%)	8,704 (30.64%)	3,210 (25.96%)	21,187 (28.97%)	42 (21.21%)	50,967 (29.25%)	–
		Sleep disorder	N (%)	90,852 (37.72%)	10,757 (37.86%)	3,823 (30.91%)	27,747 (37.94%)	52 (26.26%)	69,070 (39.64%)	–
		Sleep disturbance	N (%)	39,351 (16.34%)	4,112 (14.47%)	1,152 (9.32%)	11,517 (15.75%)	14 (7.07%)	31,098 (17.85%)	–
		Social vulnerability	N (%)	29 (0.01%)	9 (0.03%)	<5	10 (0.01%)	0 (0.00%)	15 (0.01%)	–
		Stroke	N (%)	8,921 (3.70%)	1,663 (5.85%)	639 (5.17%)	2,761 (3.78%)	8 (4.04%)	6,048 (3.47%)	–
		Thyroid disorders	N (%)	30,844 (12.80%)	3,936 (13.85%)	1,418 (11.47%)	9,740 (13.32%)	31 (15.66%)	22,896 (13.14%)	–
		Urinary incontinence	N (%)	10,123 (4.20%)	1,612 (5.67%)	553 (4.47%)	3,223 (4.41%)	12 (6.06%)	7,299 (4.19%)	–
		Urinary system disease	N (%)	23,779 (9.87%)	3,252 (11.45%)	1,133 (9.16%)	7,145 (9.77%)	15 (7.58%)	18,008 (10.33%)	–
		Visual impairment	N (%)	4,799 (1.99%)	770 (2.71%)	205 (1.66%)	1,376 (1.88%)	7 (3.54%)	3,670 (2.11%)	–
	Indication	Both	N (%)	70,564 (29.29%)	11,906 (41.91%)	5,713 (46.20%)	22,334 (30.54%)	76 (38.38%)	49,395 (28.35%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Neither	N (%)	26,489 (11.00%)	1,032 (3.63%)	495 (4.00%)	6,641 (9.08%)	8 (4.04%)	20,693 (11.87%)	–
		Obesity	N (%)	66,849 (27.75%)	1,286 (4.53%)	369 (2.98%)	24,734 (33.82%)	<5	49,568 (28.44%)	–
		T2DM	N (%)	76,983 (31.96%)	14,187 (49.93%)	5,790 (46.82%)	19,417 (26.55%)	111 (56.06%)	54,604 (31.33%)	–
InGef RDB	Comorbidities	ADHD	N (%)	271 (0.22%)	73 (0.14%)	<5	37 (0.21%)	–	164 (0.24%)	73 (0.31%)
		Activity limitation	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
		Alzheimer	N (%)	217 (0.18%)	114 (0.22%)	<5	23 (0.13%)	–	92 (0.13%)	33 (0.14%)
		Anaemia and haematinic deficiency	N (%)	8,582 (7.03%)	3,510 (6.78%)	100 (7.27%)	1,196 (6.79%)	–	4,854 (7.05%)	1,893 (7.99%)
		Anorexia	N (%)	108 (0.09%)	47 (0.09%)	<5	16 (0.09%)	–	61 (0.09%)	25 (0.11%)
		Anxiety	N (%)	3,454 (2.83%)	1,240 (2.39%)	37 (2.69%)	444 (2.52%)	–	2,195 (3.19%)	855 (3.61%)
		Arthritis	N (%)	69 (0.06%)	23 (0.04%)	<5	7 (0.04%)	–	43 (0.06%)	21 (0.09%)
		Asthma	N (%)	4,835 (3.96%)	1,797 (3.47%)	59 (4.29%)	646 (3.67%)	–	2,999 (4.35%)	1,231 (5.19%)
		Atrial fibrillation	N (%)	6,890 (5.64%)	2,954 (5.70%)	60 (4.36%)	1,019 (5.78%)	–	3,850 (5.59%)	1,427 (6.02%)
		Bulimia	N (%)	97 (0.08%)	26 (0.05%)	<5	21 (0.12%)	–	65 (0.09%)	37 (0.16%)
		CKD	N (%)	11,496 (9.42%)	5,054 (9.76%)	125 (9.09%)	2,062 (11.70%)	–	6,226 (9.04%)	2,283 (9.63%)
		COPD	N (%)	7,740 (6.34%)	3,190 (6.16%)	72 (5.24%)	1,193 (6.77%)	–	4,416 (6.41%)	1,552 (6.55%)
		CVD	N (%)	67,245 (55.09%)	27,721 (53.52%)	752 (54.69%)	9,620 (54.60%)	–	39,217 (56.92%)	14,546 (61.38%)
		Cancer	N (%)	7,039 (5.77%)	2,876 (5.55%)	85 (6.18%)	879 (4.99%)	–	4,251 (6.17%)	1,580 (6.67%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Cerebrovascular disease	N (%)	4,959 (4.06%)	2,093 (4.04%)	45 (3.27%)	694 (3.94%)	–	2,797 (4.06%)	1,003 (4.23%)
		Chronic liver disease	N (%)	7,955 (6.52%)	3,252 (6.28%)	103 (7.49%)	1,203 (6.83%)	–	4,621 (6.71%)	1,755 (7.41%)
		Chronic respiratory disease	N (%)	11,370 (9.32%)	4,532 (8.75%)	114 (8.29%)	1,668 (9.47%)	–	6,673 (9.69%)	2,485 (10.49%)
		Crohn	N (%)	417 (0.34%)	149 (0.29%)	<5	50 (0.28%)	–	259 (0.38%)	92 (0.39%)
		Dementia	N (%)	935 (0.77%)	473 (0.91%)	16 (1.16%)	132 (0.75%)	–	399 (0.58%)	141 (0.59%)
		Depression	N (%)	11,985 (9.82%)	4,595 (8.87%)	142 (10.33%)	1,712 (9.72%)	–	7,418 (10.77%)	2,833 (11.95%)
		Dizziness	N (%)	4,705 (3.85%)	1,875 (3.62%)	49 (3.56%)	633 (3.59%)	–	2,732 (3.97%)	1,128 (4.76%)
		Dyslipidaemia	N (%)	32,963 (27.01%)	13,850 (26.74%)	389 (28.29%)	4,969 (28.20%)	–	19,335 (28.06%)	7,499 (31.64%)
		Dyspnoea	N (%)	5,356 (4.39%)	2,045 (3.95%)	60 (4.36%)	764 (4.34%)	–	3,089 (4.48%)	1,267 (5.35%)
		Falls	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
		Foot problem	N (%)	121 (0.10%)	35 (0.07%)	<5	52 (0.30%)	–	58 (0.08%)	50 (0.21%)
		Fragility fracture	N (%)	767 (0.63%)	327 (0.63%)	5 (0.36%)	100 (0.57%)	–	414 (0.60%)	165 (0.70%)
		Gallbladder disorders	N (%)	4,668 (3.82%)	1,779 (3.43%)	59 (4.29%)	568 (3.22%)	–	2,834 (4.11%)	1,149 (4.85%)
		HIV	N (%)	107 (0.09%)	49 (0.09%)	<5	15 (0.09%)	–	54 (0.08%)	19 (0.08%)
		Has given birth	N (%)	271 (0.22%)	91 (0.18%)	<5	35 (0.20%)	–	135 (0.20%)	48 (0.20%)
		Hearing impairment	N (%)	519 (0.43%)	214 (0.41%)	<5	65 (0.37%)	–	309 (0.45%)	121 (0.51%)
		Heart failure	N (%)	15,225 (12.47%)	6,464 (12.48%)	169 (12.29%)	2,376 (13.48%)	–	8,377 (12.16%)	3,184 (13.44%)
		Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Hemiplegia	N (%)	2,227 (1.82%)	989 (1.91%)	23 (1.67%)	340 (1.93%)	–	1,166 (1.69%)	397 (1.68%)
		Housebound	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
		Hypertension	N (%)	62,080 (50.86%)	25,794 (49.80%)	696 (50.62%)	8,975 (50.94%)	–	36,151 (52.47%)	13,450 (56.76%)
		Hypotension syncope	N (%)	2,065 (1.69%)	801 (1.55%)	19 (1.38%)	266 (1.51%)	–	1,218 (1.77%)	573 (2.42%)
		Insomnia broad	N (%)	322 (0.26%)	111 (0.21%)	<5	47 (0.27%)	–	199 (0.29%)	87 (0.37%)
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
		Lupus erythematosus	N (%)	74 (0.06%)	31 (0.06%)	0 (0.00%)	7 (0.04%)	–	42 (0.06%)	17 (0.07%)
		MACE	N (%)	9,671 (7.92%)	4,040 (7.80%)	82 (5.96%)	1,470 (8.34%)	–	5,372 (7.80%)	1,974 (8.33%)
		MASLD	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
		Memory cognitive problems	N (%)	6,002 (4.92%)	2,426 (4.68%)	67 (4.87%)	751 (4.26%)	–	3,367 (4.89%)	1,598 (6.74%)
		Mobility transfer problems	N (%)	829 (0.68%)	379 (0.73%)	12 (0.87%)	127 (0.72%)	–	465 (0.67%)	194 (0.82%)
		Myocardial infarction	N (%)	5,543 (4.54%)	2,198 (4.24%)	45 (3.27%)	864 (4.90%)	–	3,180 (4.62%)	1,197 (5.05%)
		Osteoarthritis	N (%)	12,714 (10.42%)	4,917 (9.49%)	164 (11.93%)	1,643 (9.32%)	–	7,845 (11.39%)	3,170 (13.38%)
		Osteoporosis	N (%)	842 (0.69%)	355 (0.69%)	12 (0.87%)	110 (0.62%)	–	477 (0.69%)	206 (0.87%)
		PAD	N (%)	5,575 (4.57%)	2,425 (4.68%)	58 (4.22%)	1,000 (5.68%)	–	3,081 (4.47%)	1,133 (4.78%)
		PCOS	N (%)	131 (0.11%)	33 (0.06%)	0 (0.00%)	21 (0.12%)	–	81 (0.12%)	44 (0.19%)
		PVD	N (%)	7,271 (5.96%)	3,195 (6.17%)	74 (5.38%)	1,361 (7.72%)	–	4,019 (5.83%)	1,534 (6.47%)
		Pancreatic cancer broad	N (%)	63 (0.05%)	29 (0.06%)	<5	0 (0.00%)	–	33 (0.05%)	12 (0.05%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Paraplegia	N (%)	287 (0.24%)	111 (0.21%)	5 (0.36%)	40 (0.23%)	–	171 (0.25%)	71 (0.30%)
		Parkinsons disease	N (%)	471 (0.39%)	217 (0.42%)	9 (0.65%)	83 (0.47%)	–	233 (0.34%)	76 (0.32%)
		Peptic ulcer	N (%)	1,364 (1.12%)	570 (1.10%)	17 (1.24%)	170 (0.96%)	–	749 (1.09%)	288 (1.22%)
		Psoriasis	N (%)	1,291 (1.06%)	528 (1.02%)	17 (1.24%)	180 (1.02%)	–	774 (1.12%)	317 (1.34%)
		Psoriatic arthritis	N (%)	409 (0.34%)	153 (0.30%)	6 (0.44%)	57 (0.32%)	–	253 (0.37%)	101 (0.43%)
		Renal impairment	N (%)	15,285 (12.52%)	6,583 (12.71%)	165 (12.00%)	2,586 (14.68%)	–	8,355 (12.13%)	3,077 (12.98%)
		Requirement for care	N (%)	9,488 (7.77%)	3,894 (7.52%)	117 (8.51%)	1,270 (7.21%)	–	5,359 (7.78%)	2,209 (9.32%)
		Rheumatoid arthritis	N (%)	1,471 (1.21%)	590 (1.14%)	18 (1.31%)	195 (1.11%)	–	880 (1.28%)	378 (1.60%)
		Schizophrenia	N (%)	679 (0.56%)	264 (0.51%)	5 (0.36%)	99 (0.56%)	–	398 (0.58%)	113 (0.48%)
		Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
		Sleep apnoea	N (%)	12,700 (10.40%)	4,834 (9.33%)	142 (10.33%)	1,809 (10.27%)	–	7,974 (11.57%)	3,358 (14.17%)
		Sleep disorder	N (%)	16,311 (13.36%)	6,250 (12.07%)	194 (14.11%)	2,294 (13.02%)	–	10,064 (14.61%)	4,122 (17.39%)
		Sleep disturbance	N (%)	1,052 (0.86%)	383 (0.74%)	17 (1.24%)	153 (0.87%)	–	645 (0.94%)	258 (1.09%)
		Social vulnerability	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
		Stroke	N (%)	4,536 (3.72%)	2,010 (3.88%)	41 (2.98%)	670 (3.80%)	–	2,422 (3.52%)	849 (3.58%)
		Thyroid disorders	N (%)	18,057 (14.79%)	7,290 (14.08%)	200 (14.55%)	2,559 (14.52%)	–	10,997 (15.96%)	4,258 (17.97%)
		Urinary incontinence	N (%)	3,299 (2.70%)	1,450 (2.80%)	49 (3.56%)	486 (2.76%)	–	1,764 (2.56%)	619 (2.61%)
		Urinary system disease	N (%)	8,900 (7.29%)	3,790 (7.32%)	102 (7.42%)	1,308 (7.42%)	–	4,967 (7.21%)	1,896 (8.00%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Visual impairment	N (%)	1,549 (1.27%)	648 (1.25%)	20 (1.45%)	216 (1.23%)	–	950 (1.38%)	378 (1.60%)
	Indication	Both	N (%)	33,933 (27.80%)	14,786 (28.55%)	409 (29.75%)	6,023 (34.18%)	–	19,700 (28.59%)	7,456 (31.46%)
		Neither	N (%)	45,353 (37.16%)	18,896 (36.48%)	488 (35.49%)	5,576 (31.65%)	–	25,571 (37.12%)	8,252 (34.82%)
		Obesity	N (%)	12,225 (10.02%)	5,051 (9.75%)	120 (8.73%)	2,003 (11.37%)	–	5,878 (8.53%)	1,816 (7.66%)
		T2DM	N (%)	30,547 (25.03%)	13,060 (25.22%)	358 (26.04%)	4,018 (22.80%)	–	17,746 (25.76%)	6,174 (26.05%)
IQVIA DA Germany	Comorbidities	ADHD	N (%)	537 (0.66%)	220 (0.70%)	<5	37 (0.27%)	15 (0.61%)	292 (0.71%)	111 (0.84%)
		Activity limitation	N (%)	<5	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Alzheimer	N (%)	296 (0.36%)	134 (0.42%)	<5	44 (0.32%)	18 (0.73%)	117 (0.28%)	50 (0.38%)
		Anaemia and haematinic deficiency	N (%)	8,976 (10.99%)	3,679 (11.62%)	135 (11.57%)	1,329 (9.74%)	253 (10.26%)	4,317 (10.51%)	1,420 (10.81%)
		Anorexia	N (%)	240 (0.29%)	95 (0.30%)	<5	36 (0.26%)	5 (0.20%)	122 (0.30%)	33 (0.25%)
		Anxiety	N (%)	6,317 (7.73%)	2,241 (7.08%)	60 (5.14%)	881 (6.45%)	145 (5.88%)	3,355 (8.17%)	1,170 (8.91%)
		Arthritis	N (%)	1,763 (2.16%)	728 (2.30%)	30 (2.57%)	208 (1.52%)	56 (2.27%)	811 (1.97%)	295 (2.25%)
		Asthma	N (%)	9,399 (11.51%)	3,251 (10.27%)	113 (9.68%)	1,337 (9.80%)	198 (8.03%)	5,023 (12.23%)	1,658 (12.62%)
		Atrial fibrillation	N (%)	2,109 (2.58%)	844 (2.67%)	30 (2.57%)	345 (2.53%)	79 (3.20%)	1,052 (2.56%)	346 (2.63%)
		Bulimia	N (%)	107 (0.13%)	33 (0.10%)	<5	21 (0.15%)	0 (0.00%)	58 (0.14%)	26 (0.20%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		CKD	N (%)	11,508 (14.09%)	4,862 (15.36%)	126 (10.80%)	2,566 (18.80%)	510 (20.67%)	5,809 (14.14%)	1,749 (13.31%)
		COPD	N (%)	12,123 (14.84%)	4,913 (15.52%)	223 (19.11%)	1,931 (14.15%)	319 (12.93%)	5,839 (14.21%)	1,921 (14.62%)
		CVD	N (%)	65,755 (80.49%)	26,628 (84.12%)	996 (85.35%)	11,200 (82.06%)	2,130 (86.34%)	32,777 (79.79%)	10,487 (79.83%)
		Cancer	N (%)	8,496 (10.40%)	3,442 (10.87%)	125 (10.71%)	1,359 (9.96%)	273 (11.07%)	4,274 (10.40%)	1,387 (10.56%)
		Cerebrovascular disease	N (%)	7,208 (8.82%)	3,014 (9.52%)	139 (11.91%)	1,261 (9.24%)	264 (10.70%)	3,502 (8.52%)	1,034 (7.87%)
		Chronic liver disease	N (%)	14,946 (18.30%)	5,966 (18.85%)	239 (20.48%)	2,726 (19.97%)	490 (19.86%)	7,919 (19.28%)	2,434 (18.53%)
		Chronic respiratory disease	N (%)	18,017 (22.05%)	6,847 (21.63%)	283 (24.25%)	2,760 (20.22%)	438 (17.75%)	9,067 (22.07%)	3,031 (23.07%)
		Crohn	N (%)	399 (0.49%)	134 (0.42%)	6 (0.51%)	56 (0.41%)	8 (0.32%)	233 (0.57%)	66 (0.50%)
		Dementia	N (%)	1,538 (1.88%)	750 (2.37%)	15 (1.29%)	276 (2.02%)	92 (3.73%)	569 (1.39%)	178 (1.35%)
		Depression	N (%)	11,774 (14.41%)	4,143 (13.09%)	139 (11.91%)	1,934 (14.17%)	347 (14.07%)	6,236 (15.18%)	1,998 (15.21%)
		Dizziness	N (%)	8,684 (10.63%)	3,291 (10.40%)	112 (9.60%)	1,202 (8.81%)	269 (10.90%)	4,321 (10.52%)	1,497 (11.40%)
		Dyslipidaemia	N (%)	37,226 (45.57%)	15,567 (49.18%)	551 (47.22%)	6,638 (48.63%)	1,208 (48.97%)	19,026 (46.31%)	5,855 (44.57%)
		Dyspnoea	N (%)	5,846 (7.16%)	2,026 (6.40%)	78 (6.68%)	784 (5.74%)	163 (6.61%)	2,981 (7.26%)	1,091 (8.30%)
		Falls	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Foot problem	N (%)	653 (0.80%)	291 (0.92%)	12 (1.03%)	94 (0.69%)	33 (1.34%)	295 (0.72%)	101 (0.77%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Fragility fracture	N (%)	2,100 (2.57%)	809 (2.56%)	32 (2.74%)	282 (2.07%)	75 (3.04%)	1,027 (2.50%)	353 (2.69%)
		Gallbladder disorders	N (%)	6,544 (8.01%)	2,550 (8.06%)	101 (8.65%)	1,040 (7.62%)	178 (7.22%)	3,390 (8.25%)	1,119 (8.52%)
		HIV	N (%)	196 (0.24%)	47 (0.15%)	<5	46 (0.34%)	<5	117 (0.28%)	28 (0.21%)
		Has given birth	N (%)	20 (0.02%)	<5	0 (0.00%)	<5	0 (0.00%)	16 (0.04%)	5 (0.04%)
		Hearing impairment	N (%)	2,090 (2.56%)	928 (2.93%)	42 (3.60%)	333 (2.44%)	68 (2.76%)	951 (2.31%)	317 (2.41%)
		Heart failure	N (%)	9,783 (11.98%)	4,089 (12.92%)	144 (12.34%)	1,866 (13.67%)	391 (15.85%)	4,639 (11.29%)	1,398 (10.64%)
		Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Hemiplegia	N (%)	856 (1.05%)	387 (1.22%)	12 (1.03%)	156 (1.14%)	36 (1.46%)	383 (0.93%)	99 (0.75%)
		Housebound	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Hypertension	N (%)	57,167 (69.98%)	23,783 (75.13%)	915 (78.41%)	9,944 (72.86%)	1,922 (77.91%)	28,190 (68.62%)	8,946 (68.10%)
		Hypotension syncope	N (%)	1,931 (2.36%)	687 (2.17%)	20 (1.71%)	238 (1.74%)	55 (2.23%)	1,016 (2.47%)	334 (2.54%)
		Insomnia broad	N (%)	263 (0.32%)	79 (0.25%)	<5	27 (0.20%)	<5	139 (0.34%)	63 (0.48%)
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Lupus erythematosus	N (%)	62 (0.08%)	22 (0.07%)	<5	8 (0.06%)	<5	29 (0.07%)	11 (0.08%)
		MACE	N (%)	6,597 (8.08%)	2,940 (9.29%)	99 (8.48%)	1,202 (8.81%)	251 (10.17%)	3,001 (7.31%)	908 (6.91%)
		MASLD	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Memory cognitive problems	N (%)	1,374 (1.68%)	652 (2.06%)	20 (1.71%)	235 (1.72%)	83 (3.36%)	523 (1.27%)	179 (1.36%)
		Mobility transfer problems	N (%)	668 (0.82%)	275 (0.87%)	8 (0.69%)	107 (0.78%)	39 (1.58%)	296 (0.72%)	113 (0.86%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Myocardial infarction	N (%)	2,624 (3.21%)	1,150 (3.63%)	33 (2.83%)	478 (3.50%)	80 (3.24%)	1,196 (2.91%)	425 (3.24%)
		Osteoarthritis	N (%)	19,483 (23.85%)	7,894 (24.94%)	318 (27.25%)	2,856 (20.92%)	611 (24.77%)	9,492 (23.11%)	3,206 (24.40%)
		Osteoporosis	N (%)	2,133 (2.61%)	879 (2.78%)	39 (3.34%)	376 (2.75%)	67 (2.72%)	1,022 (2.49%)	328 (2.50%)
		PAD	N (%)	3,021 (3.70%)	1,395 (4.41%)	27 (2.31%)	582 (4.26%)	123 (4.99%)	1,452 (3.53%)	418 (3.18%)
		PCOS	N (%)	529 (0.65%)	90 (0.28%)	0 (0.00%)	119 (0.87%)	<5	308 (0.75%)	120 (0.91%)
		PVD	N (%)	14,511 (17.76%)	6,386 (20.17%)	205 (17.57%)	3,062 (22.43%)	652 (26.43%)	7,238 (17.62%)	2,101 (15.99%)
		Pancreatic cancer broad	N (%)	93 (0.11%)	46 (0.15%)	<5	19 (0.14%)	6 (0.24%)	41 (0.10%)	12 (0.09%)
		Paraplegia	N (%)	156 (0.19%)	61 (0.19%)	<5	33 (0.24%)	<5	61 (0.15%)	34 (0.26%)
		Parkinsons disease	N (%)	589 (0.72%)	259 (0.82%)	10 (0.86%)	104 (0.76%)	27 (1.09%)	242 (0.59%)	73 (0.56%)
		Peptic ulcer	N (%)	1,965 (2.41%)	788 (2.49%)	29 (2.49%)	342 (2.51%)	63 (2.55%)	960 (2.34%)	280 (2.13%)
		Psoriasis	N (%)	3,222 (3.94%)	1,242 (3.92%)	42 (3.60%)	472 (3.46%)	91 (3.69%)	1,641 (3.99%)	588 (4.48%)
		Psoriatic arthritis	N (%)	570 (0.70%)	206 (0.65%)	6 (0.51%)	73 (0.53%)	18 (0.73%)	303 (0.74%)	118 (0.90%)
		Renal impairment	N (%)	14,925 (18.27%)	6,242 (19.72%)	165 (14.14%)	3,262 (23.90%)	636 (25.78%)	7,555 (18.39%)	2,221 (16.91%)
		Requirement for care	N (%)	633 (0.77%)	290 (0.92%)	<5	104 (0.76%)	19 (0.77%)	281 (0.68%)	96 (0.73%)
		Rheumatoid arthritis	N (%)	2,838 (3.47%)	1,100 (3.48%)	55 (4.71%)	418 (3.06%)	98 (3.97%)	1,398 (3.40%)	435 (3.31%)
		Schizophrenia	N (%)	453 (0.55%)	200 (0.63%)	11 (0.94%)	65 (0.48%)	16 (0.65%)	211 (0.51%)	61 (0.46%)
		Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Sleep apnoea	N (%)	11,594 (14.19%)	4,422 (13.97%)	154 (13.20%)	1,881 (13.78%)	290 (11.76%)	6,038 (14.70%)	2,337 (17.79%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Sleep disorder	N (%)	18,480 (22.62%)	6,850 (21.64%)	242 (20.74%)	2,865 (20.99%)	455 (18.44%)	9,638 (23.46%)	3,488 (26.55%)
		Sleep disturbance	N (%)	6,966 (8.53%)	2,369 (7.48%)	84 (7.20%)	961 (7.04%)	158 (6.40%)	3,762 (9.16%)	1,201 (9.14%)
		Social vulnerability	N (%)	9 (0.01%)	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	6 (0.01%)	<5
		Stroke	N (%)	4,259 (5.21%)	1,919 (6.06%)	69 (5.91%)	788 (5.77%)	175 (7.09%)	1,924 (4.68%)	514 (3.91%)
		Thyroid disorders	N (%)	23,784 (29.11%)	8,824 (27.88%)	317 (27.16%)	4,055 (29.71%)	610 (24.73%)	12,237 (29.79%)	4,144 (31.54%)
		Urinary incontinence	N (%)	3,889 (4.76%)	1,761 (5.56%)	57 (4.88%)	631 (4.62%)	181 (7.34%)	1,655 (4.03%)	594 (4.52%)
		Urinary system disease	N (%)	11,012 (13.48%)	4,046 (12.78%)	162 (13.88%)	1,447 (10.60%)	289 (11.71%)	5,729 (13.95%)	2,057 (15.66%)
		Visual impairment	N (%)	4,897 (5.99%)	2,151 (6.80%)	86 (7.37%)	764 (5.60%)	197 (7.99%)	2,282 (5.55%)	740 (5.63%)
	Indication	Both	N (%)	42,823 (52.42%)	18,867 (59.60%)	742 (63.58%)	8,221 (60.23%)	1,428 (57.88%)	21,320 (51.90%)	6,833 (52.01%)
		Neither	N (%)	6,262 (7.67%)	1,248 (3.94%)	31 (2.66%)	796 (5.83%)	83 (3.36%)	3,595 (8.75%)	1,104 (8.40%)
		Obesity	N (%)	10,161 (12.44%)	1,226 (3.87%)	43 (3.68%)	1,325 (9.71%)	38 (1.54%)	6,376 (15.52%)	2,243 (17.07%)
		T2DM	N (%)	22,447 (27.48%)	10,313 (32.58%)	351 (30.08%)	3,307 (24.23%)	918 (37.21%)	9,790 (23.83%)	2,957 (22.51%)
IPCI	Comorbidities	ADHD	N (%)	266 (1.45%)	12 (0.77%)	0 (0.00%)	131 (2.54%)	<5	150 (1.10%)	19 (2.33%)
		Activity limitation	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Alzheimer	N (%)	20 (0.11%)	<5	0 (0.00%)	5 (0.10%)	<5	18 (0.13%)	0 (0.00%)
		Anaemia and haematinic deficiency	N (%)	2,086 (11.38%)	229 (14.76%)	<5	531 (10.28%)	17 (12.14%)	1,631 (11.96%)	84 (10.29%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Anorexia	N (%)	5 (0.03%)	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	<5	<5
		Anxiety	N (%)	1,625 (8.86%)	119 (7.67%)	<5	574 (11.12%)	16 (11.43%)	1,125 (8.25%)	80 (9.80%)
		Arthritis	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Asthma	N (%)	2,073 (11.31%)	186 (11.99%)	9 (16.98%)	621 (12.03%)	18 (12.86%)	1,494 (10.96%)	98 (12.01%)
		Atrial fibrillation	N (%)	869 (4.74%)	95 (6.13%)	<5	189 (3.66%)	<5	717 (5.26%)	34 (4.17%)
		Bulimia	N (%)	61 (0.33%)	5 (0.32%)	0 (0.00%)	31 (0.60%)	0 (0.00%)	28 (0.21%)	<5
		CKD	N (%)	2,276 (12.42%)	158 (10.19%)	0 (0.00%)	311 (6.02%)	<5	2,104 (15.43%)	86 (10.54%)
		COPD	N (%)	1,062 (5.79%)	107 (6.90%)	<5	242 (4.69%)	6 (4.29%)	860 (6.31%)	30 (3.68%)
		CVD	N (%)	9,853 (53.75%)	886 (57.12%)	18 (33.96%)	2,458 (47.60%)	82 (58.57%)	7,735 (56.73%)	351 (43.01%)
		Cancer	N (%)	1,864 (10.17%)	137 (8.83%)	<5	432 (8.37%)	<5	1,522 (11.16%)	63 (7.72%)
		Cerebrovascular disease	N (%)	929 (5.07%)	80 (5.16%)	<5	177 (3.43%)	5 (3.57%)	800 (5.87%)	21 (2.57%)
		Chronic liver disease	N (%)	860 (4.69%)	98 (6.32%)	<5	169 (3.27%)	<5	708 (5.19%)	40 (4.90%)
		Chronic respiratory disease	N (%)	2,771 (15.12%)	251 (16.18%)	12 (22.64%)	775 (15.01%)	21 (15.00%)	2,069 (15.18%)	117 (14.34%)
		Crohn	N (%)	73 (0.40%)	5 (0.32%)	0 (0.00%)	27 (0.52%)	0 (0.00%)	51 (0.37%)	<5
		Dementia	N (%)	69 (0.38%)	12 (0.77%)	<5	16 (0.31%)	<5	67 (0.49%)	0 (0.00%)
		Depression	N (%)	1,838 (10.03%)	150 (9.67%)	<5	601 (11.64%)	16 (11.43%)	1,298 (9.52%)	88 (10.78%)
		Dizziness	N (%)	1,971 (10.75%)	161 (10.38%)	5 (9.43%)	539 (10.44%)	16 (11.43%)	1,522 (11.16%)	66 (8.09%)
		Dyslipidaemia	N (%)	1,837 (10.02%)	152 (9.80%)	5 (9.43%)	477 (9.24%)	21 (15.00%)	1,391 (10.20%)	70 (8.58%)
		Dyspnoea	N (%)	2,694 (14.70%)	259 (16.70%)	<5	777 (15.05%)	7 (5.00%)	2,019 (14.81%)	107 (13.11%)
		Falls	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Foot problem	N (%)	622 (3.39%)	69 (4.45%)	<5	149 (2.89%)	<5	481 (3.53%)	21 (2.57%)
		Fragility fracture	N (%)	341 (1.86%)	28 (1.81%)	0 (0.00%)	84 (1.63%)	<5	266 (1.95%)	15 (1.84%)
		Gallbladder disorders	N (%)	130 (0.71%)	13 (0.84%)	0 (0.00%)	35 (0.68%)	0 (0.00%)	105 (0.77%)	5 (0.61%)
		HIV	N (%)	14 (0.08%)	<5	0 (0.00%)	<5	0 (0.00%)	10 (0.07%)	5 (0.61%)
		Has given birth	N (%)	129 (0.70%)	<5	0 (0.00%)	72 (1.39%)	0 (0.00%)	58 (0.43%)	13 (1.59%)
		Hearing impairment	N (%)	435 (2.37%)	45 (2.90%)	<5	97 (1.88%)	<5	355 (2.60%)	17 (2.08%)
		Heart failure	N (%)	765 (4.17%)	74 (4.77%)	<5	167 (3.23%)	8 (5.71%)	632 (4.64%)	16 (1.96%)
		Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Hemiplegia	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Housebound	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Hypertension	N (%)	5,997 (32.71%)	544 (35.07%)	12 (22.64%)	1,520 (29.43%)	53 (37.86%)	4,665 (34.22%)	191 (23.41%)
		Hypotension syncope	N (%)	1,207 (6.58%)	113 (7.29%)	<5	335 (6.49%)	8 (5.71%)	935 (6.86%)	42 (5.15%)
		Insomnia broad	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Lupus erythematosus	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		MACE	N (%)	1,594 (8.70%)	132 (8.51%)	<5	306 (5.93%)	12 (8.57%)	1,352 (9.92%)	43 (5.27%)
		MASLD	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Memory cognitive problems	N (%)	38 (0.21%)	6 (0.39%)	<5	6 (0.12%)	0 (0.00%)	40 (0.29%)	0 (0.00%)
		Mobility transfer problems	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Myocardial infarction	N (%)	1,001 (5.46%)	78 (5.03%)	<5	199 (3.85%)	9 (6.43%)	842 (6.18%)	29 (3.55%)
		Osteoarthritis	N (%)	2,897 (15.80%)	275 (17.73%)	9 (16.98%)	752 (14.56%)	27 (19.29%)	2,239 (16.42%)	115 (14.09%)
		Osteoporosis	N (%)	232 (1.27%)	20 (1.29%)	0 (0.00%)	60 (1.16%)	6 (4.29%)	179 (1.31%)	8 (0.98%)
		PAD	N (%)	254 (1.39%)	33 (2.13%)	0 (0.00%)	51 (0.99%)	<5	213 (1.56%)	13 (1.59%)
		PCOS	N (%)	78 (0.43%)	0 (0.00%)	0 (0.00%)	41 (0.79%)	0 (0.00%)	36 (0.26%)	7 (0.86%)
		PVD	N (%)	1,361 (7.42%)	177 (11.41%)	<5	188 (3.64%)	21 (15.00%)	1,238 (9.08%)	49 (6.00%)
		Pancreatic cancer broad	N (%)	9 (0.05%)	<5	0 (0.00%)	<5	0 (0.00%)	6 (0.04%)	0 (0.00%)
		Paraplegia	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Parkinsons disease	N (%)	22 (0.12%)	<5	0 (0.00%)	<5	0 (0.00%)	20 (0.15%)	0 (0.00%)
		Peptic ulcer	N (%)	212 (1.16%)	22 (1.42%)	<5	62 (1.20%)	<5	154 (1.13%)	<5
		Psoriasis	N (%)	688 (3.75%)	65 (4.19%)	<5	168 (3.25%)	5 (3.57%)	543 (3.98%)	35 (4.29%)
		Psoriatic arthritis	N (%)	15 (0.08%)	0 (0.00%)	0 (0.00%)	6 (0.12%)	0 (0.00%)	10 (0.07%)	<5
		Renal impairment	N (%)	3,631 (19.81%)	315 (20.31%)	<5	552 (10.69%)	7 (5.00%)	3,288 (24.12%)	118 (14.46%)
		Requirement for care	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
		Rheumatoid arthritis	N (%)	332 (1.81%)	25 (1.61%)	<5	97 (1.88%)	<5	243 (1.78%)	14 (1.72%)
		Schizophrenia	N (%)	91 (0.50%)	5 (0.32%)	0 (0.00%)	25 (0.48%)	<5	75 (0.55%)	<5
		Skin ulcer	N (%)	390 (2.13%)	42 (2.71%)	<5	85 (1.65%)	<5	328 (2.41%)	11 (1.35%)
		Sleep apnoea	N (%)	1,792 (9.78%)	145 (9.35%)	<5	557 (10.79%)	7 (5.00%)	1,314 (9.64%)	80 (9.80%)
		Sleep disorder	N (%)	4,011 (21.88%)	307 (19.79%)	10 (18.87%)	1,217 (23.57%)	27 (19.29%)	2,957 (21.69%)	165 (20.22%)
		Sleep disturbance	N (%)	2,302 (12.56%)	174 (11.22%)	9 (16.98%)	682 (13.21%)	17 (12.14%)	1,700 (12.47%)	94 (11.52%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Social vulnerability	N (%)	540 (2.95%)	53 (3.42%)	<5	75 (1.45%)	<5	503 (3.69%)	13 (1.59%)
		Stroke	N (%)	677 (3.69%)	62 (4.00%)	<5	122 (2.36%)	<5	585 (4.29%)	15 (1.84%)
		Thyroid disorders	N (%)	1,360 (7.42%)	111 (7.16%)	<5	406 (7.86%)	7 (5.00%)	995 (7.30%)	65 (7.97%)
		Urinary incontinence	N (%)	1,690 (9.22%)	157 (10.12%)	<5	465 (9.00%)	10 (7.14%)	1,330 (9.76%)	67 (8.21%)
		Urinary system disease	N (%)	3,735 (20.37%)	354 (22.82%)	6 (11.32%)	1,073 (20.78%)	23 (16.43%)	2,832 (20.77%)	146 (17.89%)
		Visual impairment	N (%)	1,872 (10.21%)	204 (13.15%)	<5	339 (6.56%)	17 (12.14%)	1,626 (11.93%)	59 (7.23%)
	Indication	Both	N (%)	9,266 (50.55%)	995 (64.15%)	33 (62.26%)	1,425 (27.59%)	93 (66.43%)	8,066 (59.16%)	309 (37.87%)
		Neither	N (%)	1,396 (7.62%)	87 (5.61%)	9 (16.98%)	418 (8.09%)	9 (6.43%)	1,057 (7.75%)	115 (14.09%)
		Obesity	N (%)	6,396 (34.89%)	357 (23.02%)	7 (13.21%)	3,160 (61.19%)	31 (22.14%)	3,373 (24.74%)	362 (44.36%)
		T2DM	N (%)	1,274 (6.95%)	112 (7.22%)	<5	161 (3.12%)	7 (5.00%)	1,138 (8.35%)	30 (3.68%)
NLHR	Comorbidities	ADHD	N (%)	9,069 (4.36%)	111 (1.63%)	9 (1.83%)	3,616 (5.96%)	<5	6,744 (3.90%)	–
		Activity limitation	N (%)	16,536 (7.95%)	516 (7.59%)	61 (12.37%)	5,131 (8.45%)	28 (10.37%)	13,741 (7.95%)	–
		Alzheimer	N (%)	258 (0.12%)	30 (0.44%)	0 (0.00%)	79 (0.13%)	0 (0.00%)	201 (0.12%)	–
		Anaemia and haematinic deficiency	N (%)	35,618 (17.11%)	1,367 (20.12%)	81 (16.43%)	11,407 (18.79%)	65 (24.07%)	29,752 (17.21%)	–
		Anorexia	N (%)	459 (0.22%)	16 (0.24%)	<5	171 (0.28%)	0 (0.00%)	349 (0.20%)	–
		Anxiety	N (%)	37,038 (17.80%)	877 (12.91%)	69 (14.00%)	13,380 (22.04%)	31 (11.48%)	28,910 (16.73%)	–
		Arthritis	N (%)	2,974 (1.43%)	111 (1.63%)	<5	849 (1.40%)	<5	2,524 (1.46%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Asthma	N (%)	52,104 (25.04%)	1,441 (21.21%)	97 (19.68%)	16,961 (27.94%)	74 (27.41%)	42,625 (24.66%)	–
		Atrial fibrillation	N (%)	5,920 (2.84%)	325 (4.78%)	18 (3.65%)	1,640 (2.70%)	11 (4.07%)	5,134 (2.97%)	–
		Bulimia	N (%)	1,078 (0.52%)	13 (0.19%)	<5	468 (0.77%)	0 (0.00%)	809 (0.47%)	–
		CKD	N (%)	5,101 (2.45%)	321 (4.72%)	19 (3.85%)	1,629 (2.68%)	28 (10.37%)	4,448 (2.57%)	–
		COPD	N (%)	18,160 (8.73%)	795 (11.70%)	56 (11.36%)	5,417 (8.92%)	49 (18.15%)	15,391 (8.90%)	–
		CVD	N (%)	134,897 (64.82%)	5,610 (82.56%)	411 (83.37%)	39,110 (64.42%)	240 (88.89%)	114,388 (66.18%)	–
		Cancer	N (%)	23,262 (11.18%)	1,166 (17.16%)	74 (15.01%)	5,997 (9.88%)	48 (17.78%)	20,263 (11.72%)	–
		Cerebrovascular disease	N (%)	12,707 (6.11%)	730 (10.74%)	52 (10.55%)	3,581 (5.90%)	39 (14.44%)	10,825 (6.26%)	–
		Chronic liver disease	N (%)	4,135 (1.99%)	160 (2.35%)	12 (2.43%)	1,320 (2.17%)	8 (2.96%)	3,474 (2.01%)	–
		Chronic respiratory disease	N (%)	59,518 (28.60%)	1,793 (26.39%)	123 (24.95%)	18,983 (31.27%)	91 (33.70%)	49,014 (28.36%)	–
		Crohn	N (%)	1,666 (0.80%)	35 (0.52%)	<5	512 (0.84%)	<5	1,373 (0.79%)	–
		Dementia	N (%)	977 (0.47%)	116 (1.71%)	<5	304 (0.50%)	<5	732 (0.42%)	–
		Depression	N (%)	29,397 (14.13%)	569 (8.37%)	52 (10.55%)	11,024 (18.16%)	23 (8.52%)	22,664 (13.11%)	–
		Dizziness	N (%)	50,425 (24.23%)	1,429 (21.03%)	104 (21.10%)	15,757 (25.95%)	54 (20.00%)	41,500 (24.01%)	–
		Dyslipidaemia	N (%)	8,742 (4.20%)	344 (5.06%)	16 (3.25%)	2,319 (3.82%)	23 (8.52%)	8,004 (4.63%)	–
		Dyspnoea	N (%)	49,450 (23.76%)	1,557 (22.91%)	123 (24.95%)	15,384 (25.34%)	65 (24.07%)	41,140 (23.80%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Falls	N (%)	<5	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	<5	–
		Foot problem	N (%)	3,725 (1.79%)	118 (1.74%)	11 (2.23%)	1,122 (1.85%)	5 (1.85%)	3,165 (1.83%)	–
		Fragility fracture	N (%)	20,514 (9.86%)	573 (8.43%)	30 (6.09%)	6,235 (10.27%)	24 (8.89%)	16,955 (9.81%)	–
		Gallbladder disorders	N (%)	9,699 (4.66%)	269 (3.96%)	21 (4.26%)	3,292 (5.42%)	10 (3.70%)	7,929 (4.59%)	–
		HIV	N (%)	338 (0.16%)	11 (0.16%)	0 (0.00%)	97 (0.16%)	<5	286 (0.17%)	–
		Has given birth	N (%)	2,039 (0.98%)	10 (0.15%)	<5	665 (1.10%)	<5	1,454 (0.84%)	–
		Hearing impairment	N (%)	7,338 (3.53%)	302 (4.44%)	20 (4.06%)	2,081 (3.43%)	10 (3.70%)	6,266 (3.63%)	–
		Heart failure	N (%)	12,955 (6.22%)	769 (11.32%)	51 (10.34%)	3,769 (6.21%)	39 (14.44%)	11,261 (6.52%)	–
		Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Hemiplegia	N (%)	294 (0.14%)	14 (0.21%)	<5	89 (0.15%)	<5	244 (0.14%)	–
		Housebound	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Hypertension	N (%)	98,677 (47.41%)	4,838 (71.20%)	352 (71.40%)	28,070 (46.24%)	209 (77.41%)	84,971 (49.16%)	–
		Hypotension syncope	N (%)	4,101 (1.97%)	208 (3.06%)	13 (2.64%)	1,254 (2.07%)	7 (2.59%)	3,452 (2.00%)	–
		Insomnia broad	N (%)	655 (0.31%)	8 (0.12%)	<5	222 (0.37%)	0 (0.00%)	545 (0.32%)	–
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Lupus erythematosus	N (%)	384 (0.18%)	7 (0.10%)	<5	138 (0.23%)	0 (0.00%)	301 (0.17%)	–
		MACE	N (%)	15,693 (7.54%)	991 (14.58%)	72 (14.60%)	4,181 (6.89%)	54 (20.00%)	13,702 (7.93%)	–
		MASLD	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Memory cognitive problems	N (%)	1,687 (0.81%)	152 (2.24%)	10 (2.03%)	508 (0.84%)	6 (2.22%)	1,368 (0.79%)	–
		Mobility transfer problems	N (%)	46 (0.02%)	<5	0 (0.00%)	12 (0.02%)	0 (0.00%)	44 (0.03%)	–
		Myocardial infarction	N (%)	8,785 (4.22%)	569 (8.37%)	43 (8.72%)	2,256 (3.72%)	27 (10.00%)	7,880 (4.56%)	–
		Osteoarthritis	N (%)	44,269 (21.27%)	1,762 (25.93%)	103 (20.89%)	13,246 (21.82%)	60 (22.22%)	37,694 (21.81%)	–
		Osteoporosis	N (%)	5,459 (2.62%)	231 (3.40%)	7 (1.42%)	1,502 (2.47%)	9 (3.33%)	4,731 (2.74%)	–
		PAD	N (%)	3,728 (1.79%)	278 (4.09%)	18 (3.65%)	1,056 (1.74%)	16 (5.93%)	3,299 (1.91%)	–
		PCOS	N (%)	5,437 (2.61%)	64 (0.94%)	8 (1.62%)	2,257 (3.72%)	<5	4,025 (2.33%)	–
		PVD	N (%)	8,547 (4.11%)	563 (8.29%)	39 (7.91%)	2,312 (3.81%)	35 (12.96%)	7,749 (4.48%)	–
		Pancreatic cancer broad	N (%)	177 (0.09%)	13 (0.19%)	<5	42 (0.07%)	<5	138 (0.08%)	–
		Paraplegia	N (%)	180 (0.09%)	6 (0.09%)	0 (0.00%)	69 (0.11%)	0 (0.00%)	133 (0.08%)	–
		Parkinsons disease	N (%)	1,065 (0.51%)	69 (1.02%)	13 (2.64%)	327 (0.54%)	<5	861 (0.50%)	–
		Peptic ulcer	N (%)	10,117 (4.86%)	415 (6.11%)	22 (4.46%)	3,103 (5.11%)	13 (4.81%)	8,556 (4.95%)	–
		Psoriasis	N (%)	20,081 (9.65%)	736 (10.83%)	60 (12.17%)	5,949 (9.80%)	28 (10.37%)	17,027 (9.85%)	–
		Psoriatic arthritis	N (%)	3,340 (1.60%)	139 (2.05%)	9 (1.83%)	1,030 (1.70%)	5 (1.85%)	2,789 (1.61%)	–
		Renal impairment	N (%)	7,757 (3.73%)	460 (6.77%)	28 (5.68%)	2,382 (3.92%)	37 (13.70%)	6,792 (3.93%)	–
		Requirement for care	N (%)	65 (0.03%)	<5	0 (0.00%)	16 (0.03%)	0 (0.00%)	60 (0.03%)	–
		Rheumatoid arthritis	N (%)	14,620 (7.02%)	560 (8.24%)	38 (7.71%)	4,317 (7.11%)	17 (6.30%)	12,287 (7.11%)	–
		Schizophrenia	N (%)	2,130 (1.02%)	108 (1.59%)	16 (3.25%)	757 (1.25%)	<5	1,684 (0.97%)	–
		Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Sleep apnoea	N (%)	36,949 (17.75%)	1,070 (15.75%)	94 (19.07%)	12,805 (21.09%)	43 (15.93%)	30,965 (17.91%)	–
		Sleep disorder	N (%)	82,760 (39.77%)	2,267 (33.36%)	187 (37.93%)	27,050 (44.56%)	90 (33.33%)	68,133 (39.42%)	–
		Sleep disturbance	N (%)	77,156 (37.07%)	2,034 (29.93%)	162 (32.86%)	25,221 (41.54%)	76 (28.15%)	63,421 (36.69%)	–
		Social vulnerability	N (%)	16 (0.01%)	0 (0.00%)	0 (0.00%)	8 (0.01%)	0 (0.00%)	10 (0.01%)	–
		Stroke	N (%)	7,873 (3.78%)	487 (7.17%)	37 (7.51%)	2,190 (3.61%)	32 (11.85%)	6,667 (3.86%)	–
		Thyroid disorders	N (%)	31,707 (15.24%)	948 (13.95%)	63 (12.78%)	9,994 (16.46%)	38 (14.07%)	26,401 (15.27%)	–
		Urinary incontinence	N (%)	26,029 (12.51%)	967 (14.23%)	59 (11.97%)	8,193 (13.50%)	46 (17.04%)	21,723 (12.57%)	–
		Urinary system disease	N (%)	4,990 (2.40%)	170 (2.50%)	11 (2.23%)	1,500 (2.47%)	<5	4,289 (2.48%)	–
		Visual impairment	N (%)	18,336 (8.81%)	810 (11.92%)	66 (13.39%)	5,250 (8.65%)	37 (13.70%)	15,680 (9.07%)	–
	Indication	Both	N (%)	39,489 (18.97%)	2,013 (29.62%)	171 (34.69%)	9,245 (15.23%)	78 (28.89%)	38,600 (22.33%)	–
		Neither	N (%)	17,079 (8.21%)	93 (1.37%)	5 (1.01%)	2,013 (3.32%)	5 (1.85%)	15,710 (9.09%)	–
		Obesity	N (%)	107,806 (51.80%)	186 (2.74%)	8 (1.62%)	41,282 (68.00%)	<5	78,984 (45.70%)	–
		T2DM	N (%)	43,740 (21.02%)	4,503 (66.27%)	309 (62.68%)	8,169 (13.46%)	186 (68.89%)	39,551 (22.88%)	–
SIDIAP	Comorbidities	ADHD	N (%)	213 (0.36%)	47 (0.19%)	<5	90 (0.44%)	<5	118 (0.45%)	–
		Activity limitation	N (%)	4,954 (8.35%)	2,362 (9.46%)	153 (7.37%)	1,580 (7.79%)	63 (7.28%)	2,545 (9.61%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Alzheimer	N (%)	107 (0.18%)	69 (0.28%)	7 (0.34%)	21 (0.10%)	<5	35 (0.13%)	–
		Anaemia and haematinic deficiency	N (%)	11,054 (18.62%)	5,121 (20.52%)	333 (16.04%)	3,718 (18.34%)	163 (18.84%)	5,074 (19.16%)	–
		Anorexia	N (%)	126 (0.21%)	52 (0.21%)	<5	42 (0.21%)	<5	57 (0.22%)	–
		Anxiety	N (%)	20,088 (33.84%)	7,441 (29.81%)	486 (23.41%)	7,338 (36.19%)	220 (25.43%)	9,795 (36.99%)	–
		Arthritis	N (%)	1,757 (2.96%)	779 (3.12%)	38 (1.83%)	564 (2.78%)	23 (2.66%)	887 (3.35%)	–
		Asthma	N (%)	4,318 (7.27%)	1,569 (6.29%)	99 (4.77%)	1,633 (8.05%)	36 (4.16%)	2,134 (8.06%)	–
		Atrial fibrillation	N (%)	3,386 (5.70%)	1,715 (6.87%)	104 (5.01%)	939 (4.63%)	52 (6.01%)	1,607 (6.07%)	–
		Bulimia	N (%)	514 (0.87%)	168 (0.67%)	13 (0.63%)	239 (1.18%)	0 (0.00%)	238 (0.90%)	–
		CKD	N (%)	7,891 (13.29%)	4,312 (17.28%)	176 (8.48%)	2,105 (10.38%)	131 (15.14%)	3,786 (14.30%)	–
		COPD	N (%)	4,864 (8.19%)	2,408 (9.65%)	150 (7.23%)	1,473 (7.27%)	63 (7.28%)	2,302 (8.69%)	–
		CVD	N (%)	40,786 (68.70%)	18,458 (73.96%)	1,346 (64.84%)	13,148 (64.85%)	609 (70.40%)	18,811 (71.03%)	–
		Cancer	N (%)	6,321 (10.65%)	2,943 (11.79%)	166 (8.00%)	1,876 (9.25%)	87 (10.06%)	3,134 (11.83%)	–
		Cerebrovascular disease	N (%)	1,683 (2.84%)	869 (3.48%)	50 (2.41%)	541 (2.67%)	22 (2.54%)	803 (3.03%)	–
		Chronic liver disease	N (%)	10,784 (18.17%)	5,093 (20.41%)	330 (15.90%)	3,312 (16.34%)	136 (15.72%)	5,250 (19.82%)	–
		Chronic respiratory disease	N (%)	8,655 (14.58%)	3,718 (14.90%)	237 (11.42%)	2,948 (14.54%)	93 (10.75%)	4,168 (15.74%)	–
		Crohn	N (%)	146 (0.25%)	57 (0.23%)	5 (0.24%)	56 (0.28%)	<5	63 (0.24%)	–
		Dementia	N (%)	299 (0.50%)	185 (0.74%)	15 (0.72%)	79 (0.39%)	7 (0.81%)	114 (0.43%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Depression	N (%)	11,651 (19.63%)	4,826 (19.34%)	343 (16.52%)	4,071 (20.08%)	164 (18.96%)	5,583 (21.08%)	–
		Dizziness	N (%)	11,489 (19.35%)	4,927 (19.74%)	268 (12.91%)	3,976 (19.61%)	133 (15.38%)	5,501 (20.77%)	–
		Dyslipidaemia	N (%)	14,939 (25.17%)	6,995 (28.03%)	495 (23.84%)	4,556 (22.47%)	200 (23.12%)	7,078 (26.73%)	–
		Dyspnoea	N (%)	7,053 (11.88%)	3,227 (12.93%)	160 (7.71%)	2,275 (11.22%)	90 (10.40%)	3,420 (12.91%)	–
		Falls	N (%)	2,755 (4.64%)	1,307 (5.24%)	74 (3.56%)	925 (4.56%)	37 (4.28%)	1,277 (4.82%)	–
		Foot problem	N (%)	545 (0.92%)	265 (1.06%)	15 (0.72%)	192 (0.95%)	11 (1.27%)	256 (0.97%)	–
		Fragility fracture	N (%)	768 (1.29%)	365 (1.46%)	27 (1.30%)	240 (1.18%)	12 (1.39%)	361 (1.36%)	–
		Gallbladder disorders	N (%)	5,179 (8.72%)	2,160 (8.65%)	140 (6.74%)	1,824 (9.00%)	59 (6.82%)	2,489 (9.40%)	–
		HIV	N (%)	137 (0.23%)	52 (0.21%)	<5	31 (0.15%)	<5	86 (0.32%)	–
		Has given birth	N (%)	136 (0.23%)	27 (0.11%)	<5	59 (0.29%)	0 (0.00%)	55 (0.21%)	–
		Hearing impairment	N (%)	5,245 (8.84%)	2,433 (9.75%)	171 (8.24%)	1,669 (8.23%)	79 (9.13%)	2,437 (9.20%)	–
		Heart failure	N (%)	4,207 (7.09%)	2,202 (8.82%)	125 (6.02%)	1,124 (5.54%)	57 (6.59%)	2,071 (7.82%)	–
		Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Hemiplegia	N (%)	139 (0.23%)	76 (0.30%)	<5	43 (0.21%)	0 (0.00%)	53 (0.20%)	–
		Housebound	N (%)	28 (0.05%)	11 (0.04%)	<5	9 (0.04%)	<5	11 (0.04%)	–
		Hypertension	N (%)	26,731 (45.03%)	12,178 (48.79%)	870 (41.91%)	8,336 (41.11%)	350 (40.46%)	12,561 (47.43%)	–
		Hypotension syncope	N (%)	667 (1.12%)	294 (1.18%)	12 (0.58%)	204 (1.01%)	10 (1.16%)	358 (1.35%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Insomnia broad	N (%)	8,477 (14.28%)	3,525 (14.12%)	216 (10.40%)	2,792 (13.77%)	94 (10.87%)	4,245 (16.03%)	–
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Lupus erythematosus	N (%)	188 (0.32%)	64 (0.26%)	<5	63 (0.31%)	<5	104 (0.39%)	–
		MACE	N (%)	4,935 (8.31%)	2,602 (10.43%)	151 (7.27%)	1,355 (6.68%)	87 (10.06%)	2,368 (8.94%)	–
		MASLD	N (%)	44 (0.07%)	21 (0.08%)	<5	10 (0.05%)	0 (0.00%)	25 (0.09%)	–
		Memory cognitive problems	N (%)	945 (1.59%)	500 (2.00%)	22 (1.06%)	290 (1.43%)	18 (2.08%)	447 (1.69%)	–
		Mobility transfer problems	N (%)	500 (0.84%)	275 (1.10%)	12 (0.58%)	129 (0.64%)	9 (1.04%)	246 (0.93%)	–
		Myocardial infarction	N (%)	2,831 (4.77%)	1,452 (5.82%)	80 (3.85%)	744 (3.67%)	53 (6.13%)	1,403 (5.30%)	–
		Osteoarthritis	N (%)	15,224 (25.65%)	7,149 (28.64%)	462 (22.25%)	4,938 (24.36%)	238 (27.51%)	6,982 (26.37%)	–
		Osteoporosis	N (%)	1,487 (2.50%)	632 (2.53%)	45 (2.17%)	483 (2.38%)	29 (3.35%)	723 (2.73%)	–
		PAD	N (%)	112 (0.19%)	62 (0.25%)	<5	28 (0.14%)	<5	67 (0.25%)	–
		PCOS	N (%)	782 (1.32%)	172 (0.69%)	7 (0.34%)	381 (1.88%)	5 (0.58%)	367 (1.39%)	–
		PVD	N (%)	3,053 (5.14%)	1,689 (6.77%)	111 (5.35%)	872 (4.30%)	50 (5.78%)	1,451 (5.48%)	–
		Pancreatic cancer broad	N (%)	28 (0.05%)	9 (0.04%)	<5	<5	<5	20 (0.08%)	–
		Paraplegia	N (%)	29 (0.05%)	5 (0.02%)	<5	12 (0.06%)	<5	14 (0.05%)	–
		Parkinsons disease	N (%)	204 (0.34%)	107 (0.43%)	8 (0.39%)	58 (0.29%)	<5	89 (0.34%)	–
		Peptic ulcer	N (%)	948 (1.60%)	411 (1.65%)	31 (1.49%)	286 (1.41%)	15 (1.73%)	449 (1.70%)	–
		Psoriasis	N (%)	2,694 (4.54%)	1,174 (4.70%)	80 (3.85%)	905 (4.46%)	32 (3.70%)	1,314 (4.96%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Psoriatic arthritis	N (%)	284 (0.48%)	122 (0.49%)	7 (0.34%)	104 (0.51%)	6 (0.69%)	130 (0.49%)	–
		Renal impairment	N (%)	8,223 (13.85%)	4,479 (17.95%)	191 (9.20%)	2,188 (10.79%)	133 (15.38%)	3,952 (14.92%)	–
		Requirement for care	N (%)	1,436 (2.42%)	769 (3.08%)	26 (1.25%)	371 (1.83%)	18 (2.08%)	734 (2.77%)	–
		Rheumatoid arthritis	N (%)	436 (0.73%)	187 (0.75%)	8 (0.39%)	138 (0.68%)	6 (0.69%)	214 (0.81%)	–
		Schizophrenia	N (%)	351 (0.59%)	159 (0.64%)	15 (0.72%)	94 (0.46%)	<5	158 (0.60%)	–
		Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Sleep apnoea	N (%)	46 (0.08%)	17 (0.07%)	0 (0.00%)	15 (0.07%)	0 (0.00%)	23 (0.09%)	–
		Sleep disorder	N (%)	16,931 (28.52%)	7,117 (28.52%)	464 (22.35%)	5,785 (28.53%)	200 (23.12%)	8,394 (31.70%)	–
		Sleep disturbance	N (%)	8,026 (13.52%)	3,366 (13.49%)	204 (9.83%)	2,658 (13.11%)	88 (10.17%)	4,004 (15.12%)	–
		Social vulnerability	N (%)	1,238 (2.09%)	718 (2.88%)	37 (1.78%)	334 (1.65%)	22 (2.54%)	509 (1.92%)	–
		Stroke	N (%)	2,279 (3.84%)	1,255 (5.03%)	75 (3.61%)	660 (3.26%)	35 (4.05%)	1,046 (3.95%)	–
		Thyroid disorders	N (%)	10,196 (17.18%)	3,928 (15.74%)	270 (13.01%)	3,756 (18.53%)	116 (13.41%)	4,911 (18.54%)	–
		Urinary incontinence	N (%)	6,659 (11.22%)	3,292 (13.19%)	195 (9.39%)	2,098 (10.35%)	91 (10.52%)	3,089 (11.66%)	–
		Urinary system disease	N (%)	18,369 (30.94%)	7,976 (31.96%)	465 (22.40%)	6,326 (31.20%)	249 (28.79%)	8,881 (33.54%)	–
		Visual impairment	N (%)	7,939 (13.37%)	3,700 (14.82%)	157 (7.56%)	2,592 (12.78%)	89 (10.29%)	3,733 (14.10%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
	Indication	Both	N (%)	34,364 (57.89%)	17,973 (72.01%)	1,290 (62.14%)	9,056 (44.67%)	504 (58.27%)	16,191 (61.14%)	–
		Neither	N (%)	1,359 (2.29%)	279 (1.12%)	36 (1.73%)	457 (2.25%)	18 (2.08%)	665 (2.51%)	–
		Obesity	N (%)	22,368 (37.68%)	6,091 (24.41%)	711 (34.25%)	10,569 (52.13%)	327 (37.80%)	9,013 (34.03%)	–
		T2DM	N (%)	1,273 (2.14%)	615 (2.46%)	39 (1.88%)	193 (0.95%)	16 (1.85%)	613 (2.31%)	–
HI-SPEED	Comorbidities	ADHD	N (%)	10,023 (3.25%)	1,420 (2.89%)	<5	3,285 (4.11%)	27 (2.13%)	7,574 (2.90%)	–
		Activity limitation	N (%)	7,453 (2.42%)	1,457 (2.96%)	<5	2,228 (2.79%)	42 (3.32%)	6,683 (2.55%)	–
		Alzheimer	N (%)	511 (0.17%)	158 (0.32%)	<5	109 (0.14%)	<5	463 (0.18%)	–
		Anaemia and haematinic deficiency	N (%)	25,779 (8.36%)	4,764 (9.69%)	6 (3.70%)	7,030 (8.80%)	140 (11.07%)	22,482 (8.59%)	–
		Anorexia	N (%)	135 (0.04%)	21 (0.04%)	0 (0.00%)	33 (0.04%)	0 (0.00%)	112 (0.04%)	–
		Anxiety	N (%)	38,990 (12.64%)	5,032 (10.23%)	15 (9.26%)	12,424 (15.56%)	104 (8.22%)	30,227 (11.56%)	–
		Arthritis	N (%)	3,027 (0.98%)	504 (1.02%)	<5	771 (0.97%)	13 (1.03%)	2,666 (1.02%)	–
		Asthma	N (%)	28,418 (9.22%)	4,477 (9.10%)	8 (4.94%)	8,406 (10.53%)	79 (6.25%)	23,464 (8.97%)	–
		Atrial fibrillation	N (%)	10,291 (3.34%)	2,116 (4.30%)	<5	2,164 (2.71%)	42 (3.32%)	9,662 (3.69%)	–
		Bulimia	N (%)	823 (0.27%)	93 (0.19%)	0 (0.00%)	300 (0.38%)	<5	599 (0.23%)	–
		CKD	N (%)	11,689 (3.79%)	2,876 (5.85%)	6 (3.70%)	2,753 (3.45%)	75 (5.93%)	11,414 (4.36%)	–
		COPD	N (%)	10,522 (3.41%)	2,178 (4.43%)	7 (4.32%)	2,456 (3.08%)	66 (5.22%)	9,634 (3.68%)	–
		CVD	N (%)	153,482 (49.77%)	28,145 (57.23%)	88 (54.32%)	37,004 (46.35%)	784 (61.98%)	137,707 (52.65%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Cancer	N (%)	26,313 (8.53%)	5,094 (10.36%)	14 (8.64%)	5,599 (7.01%)	114 (9.01%)	24,535 (9.38%)	–
		Cerebrovascular disease	N (%)	7,389 (2.40%)	1,642 (3.34%)	6 (3.70%)	1,561 (1.96%)	47 (3.72%)	6,836 (2.61%)	–
		Chronic liver disease	N (%)	8,322 (2.70%)	1,541 (3.13%)	<5	2,096 (2.63%)	42 (3.32%)	7,406 (2.83%)	–
		Chronic respiratory disease	N (%)	35,427 (11.49%)	5,948 (12.09%)	13 (8.02%)	9,963 (12.48%)	128 (10.12%)	29,939 (11.45%)	–
		Crohn	N (%)	1,884 (0.61%)	342 (0.70%)	0 (0.00%)	515 (0.65%)	7 (0.55%)	1,599 (0.61%)	–
		Dementia	N (%)	1,432 (0.46%)	435 (0.88%)	<5	288 (0.36%)	18 (1.42%)	1,274 (0.49%)	–
		Depression	N (%)	42,596 (13.81%)	5,913 (12.02%)	19 (11.73%)	13,553 (16.97%)	124 (9.80%)	33,437 (12.78%)	–
		Dizziness	N (%)	32,428 (10.52%)	5,172 (10.52%)	14 (8.64%)	9,100 (11.40%)	126 (9.96%)	27,311 (10.44%)	–
		Dyslipidaemia	N (%)	61,686 (20.00%)	12,917 (26.26%)	43 (26.54%)	12,552 (15.72%)	411 (32.49%)	59,101 (22.59%)	–
		Dyspnoea	N (%)	34,968 (11.34%)	6,038 (12.28%)	14 (8.64%)	9,466 (11.86%)	148 (11.70%)	29,936 (11.44%)	–
		Falls	N (%)	19,725 (6.40%)	3,573 (7.27%)	5 (3.09%)	5,231 (6.55%)	71 (5.61%)	16,748 (6.40%)	–
		Foot problem	N (%)	3,589 (1.16%)	645 (1.31%)	<5	708 (0.89%)	40 (3.16%)	3,441 (1.32%)	–
		Fragility fracture	N (%)	5,490 (1.78%)	965 (1.96%)	<5	1,390 (1.74%)	25 (1.98%)	4,773 (1.82%)	–
		Gallbladder disorders	N (%)	13,950 (4.52%)	2,268 (4.61%)	<5	4,034 (5.05%)	37 (2.92%)	11,476 (4.39%)	–
		HIV	N (%)	422 (0.14%)	81 (0.16%)	0 (0.00%)	109 (0.14%)	0 (0.00%)	354 (0.14%)	–
		Has given birth	N (%)	2,518 (0.82%)	139 (0.28%)	0 (0.00%)	1,022 (1.28%)	<5	1,519 (0.58%)	–
		Hearing impairment	N (%)	8,440 (2.74%)	1,443 (2.93%)	5 (3.09%)	2,018 (2.53%)	37 (2.92%)	7,480 (2.86%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Heart failure	N (%)	18,474 (5.99%)	4,187 (8.51%)	7 (4.32%)	4,049 (5.07%)	123 (9.72%)	17,428 (6.66%)	–
		Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Hemiplegia	N (%)	2,183 (0.71%)	565 (1.15%)	<5	436 (0.55%)	8 (0.63%)	1,980 (0.76%)	–
		Housebound	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Hypertension	N (%)	122,067 (39.58%)	23,799 (48.39%)	74 (45.68%)	27,722 (34.72%)	693 (54.78%)	112,857 (43.15%)	–
		Hypotension syncope	N (%)	4,238 (1.37%)	938 (1.91%)	<5	1,141 (1.43%)	23 (1.82%)	3,820 (1.46%)	–
		Insomnia broad	N (%)	2,427 (0.79%)	343 (0.70%)	0 (0.00%)	698 (0.87%)	10 (0.79%)	1,948 (0.74%)	–
		Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Lupus erythematosus	N (%)	387 (0.13%)	63 (0.13%)	0 (0.00%)	122 (0.15%)	<5	318 (0.12%)	–
		MACE	N (%)	18,922 (6.14%)	4,323 (8.79%)	10 (6.17%)	3,816 (4.78%)	117 (9.25%)	17,741 (6.78%)	–
		MASLD	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Memory cognitive problems	N (%)	3,056 (0.99%)	727 (1.48%)	<5	701 (0.88%)	25 (1.98%)	2,754 (1.05%)	–
		Mobility transfer problems	N (%)	3,781 (1.23%)	842 (1.71%)	<5	910 (1.14%)	31 (2.45%)	3,461 (1.32%)	–
		Myocardial infarction	N (%)	10,879 (3.53%)	2,473 (5.03%)	7 (4.32%)	2,124 (2.66%)	69 (5.45%)	10,284 (3.93%)	–
		Osteoarthritis	N (%)	38,911 (12.62%)	6,653 (13.53%)	17 (10.49%)	10,105 (12.66%)	127 (10.04%)	33,945 (12.98%)	–
		Osteoporosis	N (%)	2,715 (0.88%)	551 (1.12%)	<5	650 (0.81%)	16 (1.26%)	2,461 (0.94%)	–
		PAD	N (%)	3,638 (1.18%)	904 (1.84%)	<5	824 (1.03%)	37 (2.92%)	3,544 (1.35%)	–
		PCOS	N (%)	4,895 (1.59%)	466 (0.95%)	0 (0.00%)	2,134 (2.67%)	<5	3,226 (1.23%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		PVD	N (%)	6,803 (2.21%)	1,722 (3.50%)	5 (3.09%)	1,506 (1.89%)	76 (6.01%)	6,689 (2.56%)	–
		Pancreatic cancer broad	N (%)	233 (0.08%)	58 (0.12%)	0 (0.00%)	44 (0.06%)	<5	213 (0.08%)	–
		Paraplegia	N (%)	503 (0.16%)	118 (0.24%)	0 (0.00%)	144 (0.18%)	<5	446 (0.17%)	–
		Parkinsons disease	N (%)	623 (0.20%)	147 (0.30%)	8 (4.94%)	147 (0.18%)	<5	571 (0.22%)	–
		Peptic ulcer	N (%)	4,370 (1.42%)	848 (1.72%)	<5	1,087 (1.36%)	23 (1.82%)	3,873 (1.48%)	–
		Psoriasis	N (%)	11,250 (3.65%)	2,021 (4.11%)	7 (4.32%)	2,837 (3.55%)	46 (3.64%)	10,024 (3.83%)	–
		Psoriatic arthritis	N (%)	3,344 (1.08%)	602 (1.22%)	<5	864 (1.08%)	11 (0.87%)	2,959 (1.13%)	–
		Renal impairment	N (%)	16,112 (5.22%)	3,912 (7.95%)	9 (5.56%)	3,756 (4.70%)	106 (8.38%)	15,572 (5.95%)	–
		Requirement for care	N (%)	591 (0.19%)	128 (0.26%)	0 (0.00%)	146 (0.18%)	5 (0.40%)	507 (0.19%)	–
		Rheumatoid arthritis	N (%)	3,543 (1.15%)	640 (1.30%)	<5	868 (1.09%)	21 (1.66%)	3,148 (1.20%)	–
		Schizophrenia	N (%)	1,693 (0.55%)	423 (0.86%)	7 (4.32%)	343 (0.43%)	12 (0.95%)	1,553 (0.59%)	–
		Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
		Sleep apnoea	N (%)	26,730 (8.67%)	4,987 (10.14%)	14 (8.64%)	6,695 (8.39%)	92 (7.27%)	24,047 (9.19%)	–
		Sleep disorder	N (%)	54,946 (17.82%)	8,877 (18.05%)	19 (11.73%)	15,375 (19.26%)	195 (15.42%)	46,285 (17.69%)	–
		Sleep disturbance	N (%)	31,421 (10.19%)	4,340 (8.82%)	6 (3.70%)	9,569 (11.98%)	112 (8.85%)	25,022 (9.57%)	–
		Social vulnerability	N (%)	72 (0.02%)	14 (0.03%)	0 (0.00%)	13 (0.02%)	0 (0.00%)	63 (0.02%)	–
		Stroke	N (%)	8,850 (2.87%)	2,057 (4.18%)	<5	1,866 (2.34%)	56 (4.43%)	8,194 (3.13%)	–
		Thyroid disorders	N (%)	27,966 (9.07%)	4,516 (9.18%)	16 (9.88%)	8,333 (10.44%)	90 (7.11%)	23,353 (8.93%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Urinary incontinence	N (%)	15,264 (4.95%)	2,490 (5.06%)	10 (6.17%)	4,633 (5.80%)	63 (4.98%)	12,774 (4.88%)	–
		Urinary system disease	N (%)	34,550 (11.20%)	5,729 (11.65%)	11 (6.79%)	10,115 (12.67%)	128 (10.12%)	28,951 (11.07%)	–
		Visual impairment	N (%)	10,239 (3.32%)	1,871 (3.80%)	5 (3.09%)	2,518 (3.15%)	46 (3.64%)	9,380 (3.59%)	–
	Indication	Both	N (%)	56,023 (18.17%)	12,038 (24.48%)	38 (23.46%)	10,568 (13.24%)	409 (32.33%)	56,018 (21.42%)	–
		Neither	N (%)	84,964 (27.55%)	7,546 (15.34%)	26 (16.05%)	24,050 (30.12%)	32 (2.53%)	63,298 (24.20%)	–
		Obesity	N (%)	48,997 (15.89%)	3,039 (6.18%)	<5	26,601 (33.32%)	14 (1.11%)	25,773 (9.85%)	–
		T2DM	N (%)	118,394 (38.39%)	26,557 (54.00%)	94 (58.02%)	18,625 (23.33%)	810 (64.03%)	116,483 (44.53%)	–
CPRD Aurum	Comorbidities	ADHD	N (%)	3,169 (0.94%)	99 (0.17%)	5 (0.10%)	108 (0.31%)	<5	645 (0.59%)	2,617 (1.32%)
		Activity limitation	N (%)	440 (0.13%)	73 (0.13%)	10 (0.20%)	26 (0.07%)	<5	219 (0.20%)	359 (0.18%)
		Alzheimer	N (%)	319 (0.09%)	115 (0.20%)	9 (0.18%)	46 (0.13%)	5 (0.12%)	159 (0.14%)	95 (0.05%)
		Anaemia and haematinic deficiency	N (%)	38,012 (11.27%)	8,818 (15.24%)	798 (15.74%)	4,950 (14.13%)	564 (13.30%)	15,332 (13.97%)	19,586 (9.91%)
		Anorexia	N (%)	168 (0.05%)	23 (0.04%)	<5	18 (0.05%)	0 (0.00%)	36 (0.03%)	100 (0.05%)
		Anxiety	N (%)	56,141 (16.64%)	7,058 (12.20%)	588 (11.60%)	4,828 (13.78%)	471 (11.11%)	16,270 (14.82%)	36,449 (18.44%)
		Arthritis	N (%)	5,325 (1.58%)	1,311 (2.27%)	117 (2.31%)	684 (1.95%)	87 (2.05%)	2,184 (1.99%)	2,562 (1.30%)
		Asthma	N (%)	52,752 (15.63%)	9,774 (16.89%)	879 (17.34%)	6,193 (17.68%)	778 (18.35%)	18,060 (16.45%)	30,167 (15.26%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Atrial fibrillation	N (%)	10,491 (3.11%)	3,072 (5.31%)	280 (5.52%)	1,507 (4.30%)	173 (4.08%)	4,864 (4.43%)	4,513 (2.28%)
		Bulimia	N (%)	799 (0.24%)	82 (0.14%)	<5	88 (0.25%)	<5	205 (0.19%)	471 (0.24%)
		CKD	N (%)	25,517 (7.56%)	8,104 (14.01%)	637 (12.57%)	4,345 (12.40%)	469 (11.06%)	12,218 (11.13%)	10,117 (5.12%)
		COPD	N (%)	10,754 (3.19%)	3,272 (5.66%)	280 (5.52%)	1,707 (4.87%)	234 (5.52%)	4,731 (4.31%)	4,415 (2.23%)
		CVD	N (%)	163,139 (48.35%)	39,166 (67.69%)	3,475 (68.55%)	21,229 (60.61%)	2,803 (66.11%)	65,701 (59.86%)	78,756 (39.85%)
		Cancer	N (%)	19,456 (5.77%)	4,484 (7.75%)	418 (8.25%)	2,305 (6.58%)	292 (6.89%)	8,234 (7.50%)	9,575 (4.84%)
		Cerebrovascular disease	N (%)	9,025 (2.67%)	2,712 (4.69%)	226 (4.46%)	1,393 (3.98%)	180 (4.25%)	4,118 (3.75%)	3,643 (1.84%)
		Chronic liver disease	N (%)	33,518 (9.93%)	7,737 (13.37%)	590 (11.64%)	3,743 (10.69%)	369 (8.70%)	14,911 (13.59%)	17,968 (9.09%)
		Chronic respiratory disease	N (%)	59,636 (17.67%)	11,895 (20.56%)	1,064 (20.99%)	7,233 (20.65%)	926 (21.84%)	21,135 (19.26%)	32,924 (16.66%)
		Crohn	N (%)	1,226 (0.36%)	188 (0.32%)	15 (0.30%)	124 (0.35%)	10 (0.24%)	450 (0.41%)	704 (0.36%)
		Dementia	N (%)	768 (0.23%)	322 (0.56%)	22 (0.43%)	101 (0.29%)	13 (0.31%)	366 (0.33%)	244 (0.12%)
		Depression	N (%)	101,343 (30.03%)	15,700 (27.13%)	1,372 (27.07%)	10,756 (30.71%)	1,161 (27.38%)	31,555 (28.75%)	61,274 (31.00%)
		Dizziness	N (%)	45,117 (13.37%)	9,084 (15.70%)	794 (15.66%)	5,230 (14.93%)	597 (14.08%)	16,400 (14.94%)	25,248 (12.77%)
		Dyslipidaemia	N (%)	35,561 (10.54%)	8,960 (15.49%)	753 (14.86%)	4,856 (13.86%)	636 (15.00%)	15,311 (13.95%)	16,427 (8.31%)
		Dyspnoea	N (%)	58,931 (17.46%)	13,271 (22.94%)	1,140 (22.49%)	7,632 (21.79%)	879 (20.73%)	22,854 (20.82%)	30,704 (15.54%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Falls	N (%)	22,366 (6.63%)	5,755 (9.95%)	546 (10.77%)	2,925 (8.35%)	362 (8.54%)	9,241 (8.42%)	11,018 (5.57%)
		Foot problem	N (%)	54,657 (16.20%)	17,010 (29.40%)	1,596 (31.49%)	9,570 (27.32%)	1,313 (30.97%)	26,651 (24.28%)	22,322 (11.29%)
		Fragility fracture	N (%)	5,318 (1.58%)	1,138 (1.97%)	88 (1.74%)	549 (1.57%)	73 (1.72%)	1,972 (1.80%)	2,806 (1.42%)
		Gallbladder disorders	N (%)	21,330 (6.32%)	3,687 (6.37%)	348 (6.87%)	2,299 (6.56%)	246 (5.80%)	7,595 (6.92%)	12,152 (6.15%)
		HIV	N (%)	499 (0.15%)	94 (0.16%)	<5	40 (0.11%)	<5	190 (0.17%)	272 (0.14%)
		Has given birth	N (%)	3,256 (0.96%)	99 (0.17%)	8 (0.16%)	168 (0.48%)	9 (0.21%)	383 (0.35%)	2,626 (1.33%)
		Hearing impairment	N (%)	20,681 (6.13%)	4,704 (8.13%)	431 (8.50%)	2,530 (7.22%)	358 (8.44%)	8,417 (7.67%)	10,596 (5.36%)
		Heart failure	N (%)	7,910 (2.34%)	2,610 (4.51%)	211 (4.16%)	1,299 (3.71%)	143 (3.37%)	3,783 (3.45%)	3,134 (1.59%)
		Heart valve disease	N (%)	55 (0.02%)	14 (0.02%)	0 (0.00%)	10 (0.03%)	5 (0.12%)	31 (0.03%)	27 (0.01%)
		Hemiplegia	N (%)	170 (0.05%)	42 (0.07%)	<5	33 (0.09%)	7 (0.17%)	80 (0.07%)	62 (0.03%)
		Housebound	N (%)	2,156 (0.64%)	727 (1.26%)	51 (1.01%)	291 (0.83%)	21 (0.50%)	1,116 (1.02%)	858 (0.43%)
		Hypertension	N (%)	119,380 (35.38%)	31,344 (54.17%)	2,825 (55.73%)	16,422 (46.88%)	2,232 (52.64%)	51,232 (46.68%)	54,178 (27.41%)
		Hypotension syncope	N (%)	7,705 (2.28%)	1,830 (3.16%)	146 (2.88%)	976 (2.79%)	108 (2.55%)	3,014 (2.75%)	4,043 (2.05%)
		Insomnia broad	N (%)	29,193 (8.65%)	5,726 (9.90%)	534 (10.53%)	3,597 (10.27%)	419 (9.88%)	10,493 (9.56%)	16,121 (8.16%)
		Ischeamic heart disease	N (%)	10,521 (3.12%)	3,616 (6.25%)	329 (6.49%)	2,153 (6.15%)	282 (6.65%)	5,101 (4.65%)	3,216 (1.63%)
		LADA	N (%)	99 (0.03%)	28 (0.05%)	<5	9 (0.03%)	0 (0.00%)	49 (0.04%)	47 (0.02%)
		Lupus erythematosus	N (%)	364 (0.11%)	67 (0.12%)	<5	38 (0.11%)	5 (0.12%)	131 (0.12%)	206 (0.10%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		MACE	N (%)	13,764 (4.08%)	4,276 (7.39%)	359 (7.08%)	2,213 (6.32%)	278 (6.56%)	6,582 (6.00%)	5,031 (2.55%)
		MASLD	N (%)	17,926 (5.31%)	4,314 (7.46%)	345 (6.81%)	2,113 (6.03%)	239 (5.64%)	8,180 (7.45%)	9,392 (4.75%)
		Memory cognitive problems	N (%)	1,504 (0.45%)	518 (0.90%)	48 (0.95%)	176 (0.50%)	17 (0.40%)	727 (0.66%)	660 (0.33%)
		Mobility transfer problems	N (%)	7,536 (2.23%)	2,051 (3.54%)	179 (3.53%)	968 (2.76%)	75 (1.77%)	3,544 (3.23%)	3,954 (2.00%)
		Myocardial infarction	N (%)	8,927 (2.65%)	2,733 (4.72%)	244 (4.81%)	1,457 (4.16%)	176 (4.15%)	4,348 (3.96%)	3,136 (1.59%)
		Osteoarthritis	N (%)	66,265 (19.64%)	15,671 (27.08%)	1,481 (29.22%)	8,511 (24.30%)	1,126 (26.56%)	27,561 (25.11%)	33,081 (16.74%)
		Osteoporosis	N (%)	2,577 (0.76%)	701 (1.21%)	70 (1.38%)	299 (0.85%)	37 (0.87%)	1,157 (1.05%)	1,113 (0.56%)
		PAD	N (%)	805 (0.24%)	256 (0.44%)	27 (0.53%)	122 (0.35%)	10 (0.24%)	403 (0.37%)	327 (0.17%)
		PCOS	N (%)	12,114 (3.59%)	1,187 (2.05%)	122 (2.41%)	1,179 (3.37%)	94 (2.22%)	3,201 (2.92%)	8,307 (4.20%)
		PVD	N (%)	3,675 (1.09%)	1,298 (2.24%)	125 (2.47%)	682 (1.95%)	90 (2.12%)	1,776 (1.62%)	1,242 (0.63%)
		Pancreatic cancer broad	N (%)	43 (0.01%)	18 (0.03%)	<5	5 (0.01%)	0 (0.00%)	20 (0.02%)	19 (0.01%)
		Paraplegia	N (%)	113 (0.03%)	36 (0.06%)	<5	14 (0.04%)	0 (0.00%)	48 (0.04%)	47 (0.02%)
		Parkinsons disease	N (%)	351 (0.10%)	111 (0.19%)	34 (0.67%)	46 (0.13%)	<5	156 (0.14%)	132 (0.07%)
		Peptic ulcer	N (%)	4,357 (1.29%)	1,021 (1.76%)	88 (1.74%)	583 (1.66%)	70 (1.65%)	1,753 (1.60%)	2,017 (1.02%)
		Psoriasis	N (%)	16,990 (5.04%)	3,233 (5.59%)	336 (6.63%)	1,914 (5.46%)	233 (5.50%)	5,935 (5.41%)	9,462 (4.79%)
		Psoriatic arthritis	N (%)	2,112 (0.63%)	438 (0.76%)	40 (0.79%)	254 (0.73%)	31 (0.73%)	805 (0.73%)	1,150 (0.58%)
		Renal impairment	N (%)	29,976 (8.88%)	9,223 (15.94%)	715 (14.11%)	4,874 (13.91%)	522 (12.31%)	14,218 (12.95%)	12,269 (6.21%)
		Requirement for care	N (%)	6,727 (1.99%)	2,080 (3.59%)	156 (3.08%)	916 (2.62%)	115 (2.71%)	3,287 (2.99%)	2,954 (1.49%)
		Rheumatoid arthritis	N (%)	4,376 (1.30%)	996 (1.72%)	84 (1.66%)	521 (1.49%)	78 (1.84%)	1,830 (1.67%)	2,219 (1.12%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Schizophrenia	N (%)	1,595 (0.47%)	598 (1.03%)	32 (0.63%)	193 (0.55%)	39 (0.92%)	773 (0.70%)	500 (0.25%)
		Skin ulcer	N (%)	1,327 (0.39%)	456 (0.79%)	46 (0.91%)	268 (0.77%)	23 (0.54%)	589 (0.54%)	465 (0.24%)
		Sleep apnoea	N (%)	23,257 (6.89%)	5,333 (9.22%)	475 (9.37%)	3,331 (9.51%)	325 (7.67%)	9,732 (8.87%)	12,233 (6.19%)
		Sleep disorder	N (%)	59,809 (17.73%)	11,972 (20.69%)	1,101 (21.72%)	7,570 (21.61%)	825 (19.46%)	22,454 (20.46%)	32,969 (16.68%)
		Sleep disturbance	N (%)	20,469 (6.07%)	3,630 (6.27%)	313 (6.17%)	2,216 (6.33%)	232 (5.47%)	7,388 (6.73%)	12,293 (6.22%)
		Social vulnerability	N (%)	8,245 (2.44%)	2,168 (3.75%)	161 (3.18%)	872 (2.49%)	67 (1.58%)	3,582 (3.26%)	4,336 (2.19%)
		Stroke	N (%)	5,308 (1.57%)	1,702 (2.94%)	123 (2.43%)	828 (2.36%)	108 (2.55%)	2,470 (2.25%)	2,055 (1.04%)
		Thyroid disorders	N (%)	29,722 (8.81%)	5,928 (10.25%)	501 (9.88%)	3,640 (10.39%)	459 (10.83%)	11,054 (10.07%)	15,971 (8.08%)
		Urinary incontinence	N (%)	34,132 (10.12%)	6,679 (11.54%)	547 (10.79%)	3,869 (11.05%)	412 (9.72%)	12,544 (11.43%)	19,440 (9.84%)
		Urinary system disease	N (%)	46,599 (13.81%)	8,861 (15.31%)	860 (16.97%)	5,791 (16.53%)	663 (15.64%)	15,805 (14.40%)	26,145 (13.23%)
		Visual impairment	N (%)	13,145 (3.90%)	4,035 (6.97%)	363 (7.16%)	1,841 (5.26%)	237 (5.59%)	6,155 (5.61%)	5,647 (2.86%)
	Indication	Both	N (%)	100,731 (29.85%)	32,794 (56.68%)	3,103 (61.22%)	17,436 (49.78%)	2,604 (61.42%)	48,620 (44.30%)	37,992 (19.22%)
		Neither	N (%)	108,527 (32.16%)	1,169 (2.02%)	111 (2.19%)	3,723 (10.63%)	79 (1.86%)	15,577 (14.19%)	91,507 (46.30%)
		Obesity	N (%)	57,692 (17.10%)	998 (1.72%)	95 (1.87%)	4,130 (11.79%)	68 (1.60%)	9,861 (8.98%)	45,532 (23.04%)

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		T2DM	N (%)	70,474 (20.89%)	22,899 (39.58%)	1,760 (34.72%)	9,738 (27.80%)	1,489 (35.12%)	35,699 (32.53%)	22,612 (11.44%)
CPRD GOLD	Comorbidities	ADHD	N (%)	80 (0.22%)	22 (0.19%)	<5	15 (0.18%)	<5	60 (0.27%)	–
		Activity limitation	N (%)	6 (0.02%)	<5	<5	<5	0 (0.00%)	<5	–
		Alzheimer	N (%)	57 (0.16%)	32 (0.28%)	<5	9 (0.11%)	<5	31 (0.14%)	–
		Anaemia and haematinic deficiency	N (%)	3,525 (9.74%)	1,271 (10.96%)	193 (10.52%)	847 (10.01%)	93 (9.78%)	2,236 (10.05%)	–
		Anorexia	N (%)	14 (0.04%)	<5	<5	<5	0 (0.00%)	9 (0.04%)	–
		Anxiety	N (%)	5,664 (15.66%)	1,774 (15.29%)	293 (15.97%)	1,333 (15.75%)	115 (12.09%)	3,587 (16.12%)	–
		Arthritis	N (%)	762 (2.11%)	281 (2.42%)	53 (2.89%)	190 (2.24%)	35 (3.68%)	427 (1.92%)	–
		Asthma	N (%)	4,399 (12.16%)	1,412 (12.17%)	228 (12.43%)	1,064 (12.57%)	120 (12.62%)	2,725 (12.25%)	–
		Atrial fibrillation	N (%)	1,535 (4.24%)	525 (4.53%)	63 (3.43%)	310 (3.66%)	30 (3.15%)	1,022 (4.59%)	–
		Bulimia	N (%)	37 (0.10%)	10 (0.09%)	0 (0.00%)	<5	<5	27 (0.12%)	–
		CKD	N (%)	4,267 (11.79%)	1,626 (14.02%)	204 (11.12%)	1,008 (11.91%)	123 (12.93%)	2,505 (11.26%)	–
		COPD	N (%)	1,928 (5.33%)	681 (5.87%)	125 (6.81%)	404 (4.77%)	49 (5.15%)	1,134 (5.10%)	–
		CVD	N (%)	20,030 (55.37%)	6,724 (57.97%)	1,031 (56.19%)	4,370 (51.63%)	542 (56.99%)	12,587 (56.57%)	–
		Cancer	N (%)	2,678 (7.40%)	943 (8.13%)	117 (6.38%)	513 (6.06%)	56 (5.89%)	1,723 (7.74%)	–
		Cerebrovascular disease	N (%)	1,699 (4.70%)	579 (4.99%)	78 (4.25%)	365 (4.31%)	31 (3.26%)	1,083 (4.87%)	–
		Chronic liver disease	N (%)	3,506 (9.69%)	1,051 (9.06%)	107 (5.83%)	600 (7.09%)	74 (7.78%)	2,565 (11.53%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Chronic respiratory disease	N (%)	5,777 (15.97%)	1,895 (16.34%)	318 (17.33%)	1,350 (15.95%)	157 (16.51%)	3,523 (15.83%)	–
		Crohn	N (%)	119 (0.33%)	32 (0.28%)	5 (0.27%)	28 (0.33%)	<5	80 (0.36%)	–
		Dementia	N (%)	146 (0.40%)	78 (0.67%)	9 (0.49%)	25 (0.30%)	<5	71 (0.32%)	–
		Depression	N (%)	9,130 (25.24%)	3,058 (26.36%)	545 (29.70%)	2,363 (27.92%)	246 (25.87%)	5,360 (24.09%)	–
		Dizziness	N (%)	5,082 (14.05%)	1,783 (15.37%)	295 (16.08%)	1,145 (13.53%)	133 (13.99%)	3,109 (13.97%)	–
		Dyslipidaemia	N (%)	4,223 (11.67%)	1,537 (13.25%)	251 (13.68%)	931 (11.00%)	128 (13.46%)	2,526 (11.35%)	–
		Dyspnoea	N (%)	7,665 (21.19%)	2,730 (23.53%)	455 (24.80%)	1,754 (20.72%)	213 (22.40%)	4,552 (20.46%)	–
		Falls	N (%)	2,904 (8.03%)	1,130 (9.74%)	187 (10.19%)	688 (8.13%)	83 (8.73%)	1,690 (7.60%)	–
		Foot problem	N (%)	7,796 (21.55%)	3,212 (27.69%)	537 (29.26%)	1,980 (23.39%)	240 (25.24%)	4,452 (20.01%)	–
		Fragility fracture	N (%)	634 (1.75%)	207 (1.78%)	29 (1.58%)	135 (1.59%)	16 (1.68%)	418 (1.88%)	–
		Gallbladder disorders	N (%)	2,052 (5.67%)	668 (5.76%)	97 (5.29%)	459 (5.42%)	54 (5.68%)	1,339 (6.02%)	–
		HIV	N (%)	23 (0.06%)	8 (0.07%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	19 (0.09%)	–
		Has given birth	N (%)	74 (0.20%)	16 (0.14%)	<5	26 (0.31%)	0 (0.00%)	33 (0.15%)	–
		Hearing impairment	N (%)	2,187 (6.05%)	811 (6.99%)	118 (6.43%)	491 (5.80%)	60 (6.31%)	1,369 (6.15%)	–
		Heart failure	N (%)	1,296 (3.58%)	458 (3.95%)	58 (3.16%)	289 (3.41%)	35 (3.68%)	816 (3.67%)	–
		Heart valve disease	N (%)	<5	<5	0 (0.00%)	0 (0.00%)	0 (0.00%)	<5	–
		Hemiplegia	N (%)	26 (0.07%)	12 (0.10%)	<5	8 (0.09%)	<5	11 (0.05%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Housebound	N (%)	328 (0.91%)	149 (1.28%)	17 (0.93%)	59 (0.70%)	<5	197 (0.89%)	–
		Hypertension	N (%)	13,184 (36.44%)	4,394 (37.88%)	706 (38.47%)	2,750 (32.49%)	347 (36.49%)	8,302 (37.31%)	–
		Hypotension syncope	N (%)	1,060 (2.93%)	437 (3.77%)	44 (2.40%)	251 (2.97%)	34 (3.58%)	659 (2.96%)	–
		Insomnia broad	N (%)	3,625 (10.02%)	1,193 (10.28%)	227 (12.37%)	897 (10.60%)	112 (11.78%)	2,210 (9.93%)	–
		Ischeamic heart disease	N (%)	1,511 (4.18%)	518 (4.47%)	81 (4.41%)	355 (4.19%)	54 (5.68%)	909 (4.09%)	–
		LADA	N (%)	24 (0.07%)	5 (0.04%)	<5	6 (0.07%)	0 (0.00%)	18 (0.08%)	–
		Lupus erythematosus	N (%)	41 (0.11%)	8 (0.07%)	0 (0.00%)	13 (0.15%)	<5	30 (0.13%)	–
		MACE	N (%)	2,726 (7.54%)	909 (7.84%)	118 (6.43%)	574 (6.78%)	56 (5.89%)	1,717 (7.72%)	–
		MASLD	N (%)	2,192 (6.06%)	673 (5.80%)	77 (4.20%)	393 (4.64%)	53 (5.57%)	1,603 (7.20%)	–
		Memory cognitive problems	N (%)	226 (0.62%)	96 (0.83%)	16 (0.87%)	35 (0.41%)	5 (0.53%)	129 (0.58%)	–
		Mobility transfer problems	N (%)	532 (1.47%)	248 (2.14%)	36 (1.96%)	106 (1.25%)	8 (0.84%)	294 (1.32%)	–
		Myocardial infarction	N (%)	1,838 (5.08%)	601 (5.18%)	76 (4.14%)	395 (4.67%)	41 (4.31%)	1,141 (5.13%)	–
		Osteoarthritis	N (%)	7,061 (19.52%)	2,468 (21.28%)	391 (21.31%)	1,591 (18.80%)	207 (21.77%)	4,469 (20.09%)	–
		Osteoporosis	N (%)	383 (1.06%)	146 (1.26%)	19 (1.04%)	79 (0.93%)	11 (1.16%)	243 (1.09%)	–
		PAD	N (%)	104 (0.29%)	27 (0.23%)	<5	21 (0.25%)	<5	80 (0.36%)	–
		PCOS	N (%)	577 (1.59%)	150 (1.29%)	31 (1.69%)	173 (2.04%)	13 (1.37%)	368 (1.65%)	–
		PVD	N (%)	701 (1.94%)	236 (2.03%)	37 (2.02%)	175 (2.07%)	25 (2.63%)	423 (1.90%)	–
		Pancreatic cancer broad	N (%)	9 (0.02%)	<5	0 (0.00%)	<5	0 (0.00%)	5 (0.02%)	–
		Paraplegia	N (%)	17 (0.05%)	7 (0.06%)	<5	<5	<5	13 (0.06%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
		Parkinsons disease	N (%)	74 (0.20%)	32 (0.28%)	<5	15 (0.18%)	0 (0.00%)	45 (0.20%)	–
		Peptic ulcer	N (%)	540 (1.49%)	165 (1.42%)	25 (1.36%)	139 (1.64%)	13 (1.37%)	350 (1.57%)	–
		Psoriasis	N (%)	1,906 (5.27%)	620 (5.34%)	129 (7.03%)	458 (5.41%)	44 (4.63%)	1,187 (5.34%)	–
		Psoriatic arthritis	N (%)	239 (0.66%)	85 (0.73%)	14 (0.76%)	52 (0.61%)	<5	157 (0.71%)	–
		Renal impairment	N (%)	4,822 (13.33%)	1,851 (15.96%)	219 (11.93%)	1,111 (13.13%)	154 (16.19%)	2,837 (12.75%)	–
		Requirement for care	N (%)	580 (1.60%)	266 (2.29%)	29 (1.58%)	108 (1.28%)	15 (1.58%)	341 (1.53%)	–
		Rheumatoid arthritis	N (%)	549 (1.52%)	183 (1.58%)	25 (1.36%)	109 (1.29%)	21 (2.21%)	330 (1.48%)	–
		Schizophrenia	N (%)	162 (0.45%)	66 (0.57%)	14 (0.76%)	20 (0.24%)	<5	93 (0.42%)	–
		Skin ulcer	N (%)	222 (0.61%)	104 (0.90%)	14 (0.76%)	63 (0.74%)	5 (0.53%)	121 (0.54%)	–
		Sleep apnoea	N (%)	2,609 (7.21%)	889 (7.66%)	135 (7.36%)	561 (6.63%)	81 (8.52%)	1,750 (7.87%)	–
		Sleep disorder	N (%)	6,656 (18.40%)	2,221 (19.15%)	387 (21.09%)	1,571 (18.56%)	207 (21.77%)	4,153 (18.67%)	–
		Sleep disturbance	N (%)	1,237 (3.42%)	434 (3.74%)	89 (4.85%)	291 (3.44%)	28 (2.94%)	749 (3.37%)	–
		Social vulnerability	N (%)	629 (1.74%)	174 (1.50%)	26 (1.42%)	110 (1.30%)	10 (1.05%)	456 (2.05%)	–
		Stroke	N (%)	998 (2.76%)	345 (2.97%)	47 (2.56%)	208 (2.46%)	16 (1.68%)	638 (2.87%)	–
		Thyroid disorders	N (%)	3,201 (8.85%)	1,039 (8.96%)	189 (10.30%)	829 (9.79%)	90 (9.46%)	1,929 (8.67%)	–
		Urinary incontinence	N (%)	4,039 (11.16%)	1,474 (12.71%)	250 (13.62%)	1,024 (12.10%)	127 (13.35%)	2,360 (10.61%)	–
		Urinary system disease	N (%)	4,481 (12.39%)	1,635 (14.09%)	238 (12.97%)	1,086 (12.83%)	118 (12.41%)	2,723 (12.24%)	–
		Visual impairment	N (%)	1,893 (5.23%)	761 (6.56%)	98 (5.34%)	387 (4.57%)	49 (5.15%)	1,162 (5.22%)	–

Data source	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
				overall	overall	overall	overall	overall	overall	overall
	Indication	Both	N (%)	15,892 (43.93%)	5,330 (45.95%)	929 (50.63%)	3,606 (42.60%)	466 (49.00%)	9,910 (44.54%)	–
		Neither	N (%)	4,495 (12.43%)	1,185 (10.22%)	141 (7.68%)	1,418 (16.75%)	84 (8.83%)	2,645 (11.89%)	–
		Obesity	N (%)	3,158 (8.73%)	1,000 (8.62%)	170 (9.26%)	1,186 (14.01%)	107 (11.25%)	1,657 (7.45%)	–
		T2DM	N (%)	12,632 (34.92%)	4,085 (35.22%)	595 (32.43%)	2,254 (26.63%)	294 (30.91%)	8,037 (36.12%)	–

B) Last reported year

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
IQVIA LPD Belgium	2025	Comorbidities	ADHD	N (%)	7 (1.07%)	0 (0.00%)	-	<5	-	5 (0.86%)	–
			Activity limitation	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Alzheimer	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	<5	–
			Anaemia and haematinic deficiency	N (%)	61 (9.33%)	8 (11.27%)	-	9 (12.68%)	-	54 (9.28%)	–
			Anorexia	N (%)	5 (0.76%)	0 (0.00%)	-	0 (0.00%)	-	6 (1.03%)	–
			Anxiety	N (%)	134 (20.49%)	15 (21.13%)	-	17 (23.94%)	-	121 (20.79%)	–
			Arthritis	N (%)	43 (6.57%)	<5	-	<5	-	39 (6.70%)	–
			Asthma	N (%)	182 (27.83%)	11 (15.49%)	<5	15 (21.13%)	-	170 (29.21%)	–
			Atrial fibrillation	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Bulimia	N (%)	<5	0 (0.00%)	-	0 (0.00%)	-	<5	–
			CKD	N (%)	10 (1.53%)	<5	-	0 (0.00%)	-	12 (2.06%)	–
			COPD	N (%)	142 (21.71%)	12 (16.90%)	-	18 (25.35%)	-	126 (21.65%)	–
			CVD	N (%)	444 (67.89%)	61 (85.92%)	<5	37 (52.11%)	<5	402 (69.07%)	–
			Cancer	N (%)	29 (4.43%)	<5	-	6 (8.45%)	-	26 (4.47%)	–
			Cerebrovascular disease	N (%)	25 (3.82%)	5 (7.04%)	-	<5	-	23 (3.95%)	–
			Chronic liver disease	N (%)	19 (2.91%)	<5	-	<5	-	15 (2.58%)	–
			Chronic respiratory disease	N (%)	251 (38.38%)	18 (25.35%)	<5	27 (38.03%)	-	229 (39.35%)	–
			Crohn	N (%)	<5	0 (0.00%)	-	0 (0.00%)	-	<5	–
			Dementia	N (%)	<5	<5	-	<5	-	<5	–
			Depression	N (%)	64 (9.79%)	<5	-	12 (16.90%)	-	53 (9.11%)	–
			Dizziness	N (%)	47 (7.19%)	<5	<5	5 (7.04%)	-	42 (7.22%)	–
			Dyslipidaemia	N (%)	329 (50.31%)	46 (64.79%)	<5	28 (39.44%)	<5	305 (52.41%)	–
			Dyspnoea	N (%)	7 (1.07%)	<5	-	0 (0.00%)	-	6 (1.03%)	–
			Falls	N (%)	<5	0 (0.00%)	-	0 (0.00%)	-	<5	–
			Foot problem	N (%)	<5	0 (0.00%)	-	0 (0.00%)	-	<5	–
			Fragility fracture	N (%)	11 (1.68%)	<5	-	<5	-	8 (1.37%)	–
			Gallbladder disorders	N (%)	<5	0 (0.00%)	-	0 (0.00%)	-	<5	–
			HIV	N (%)	<5	0 (0.00%)	-	<5	-	<5	–
			Has given birth	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Hearing impairment	N (%)	<5	0 (0.00%)	-	0 (0.00%)	-	<5	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Heart failure	N (%)	45 (6.88%)	9 (12.68%)	<5	0 (0.00%)	<5	39 (6.70%)	–
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	<5	–
			Hemiplegia	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Housebound	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Hypertension	N (%)	395 (60.40%)	56 (78.87%)	<5	32 (45.07%)	-	361 (62.03%)	–
			Hypotension syncope	N (%)	14 (2.14%)	<5	<5	<5	-	8 (1.37%)	–
			Insomnia broad	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			LADA	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Lupus erythematosus	N (%)	<5	0 (0.00%)	-	0 (0.00%)	-	<5	–
			MACE	N (%)	24 (3.67%)	6 (8.45%)	-	<5	-	20 (3.44%)	–
			MASLD	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Memory cognitive problems	N (%)	8 (1.22%)	<5	-	<5	-	7 (1.20%)	–
			Mobility transfer problems	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Myocardial infarction	N (%)	8 (1.22%)	<5	-	0 (0.00%)	-	7 (1.20%)	–
			Osteoarthritis	N (%)	141 (21.56%)	14 (19.72%)	-	14 (19.72%)	-	130 (22.34%)	–
			Osteoporosis	N (%)	46 (7.03%)	8 (11.27%)	-	5 (7.04%)	-	38 (6.53%)	–
			PAD	N (%)	<5	0 (0.00%)	-	0 (0.00%)	-	<5	–
			PCOS	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			PVD	N (%)	5 (0.76%)	<5	-	0 (0.00%)	-	<5	–
			Pancreatic cancer broad	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Paraplegia	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Parkinsons disease	N (%)	<5	0 (0.00%)	-	0 (0.00%)	-	<5	–
			Peptic ulcer	N (%)	17 (2.60%)	<5	-	<5	-	14 (2.41%)	–
			Psoriasis	N (%)	41 (6.27%)	<5	-	<5	-	41 (7.04%)	–
			Psoriatic arthritis	N (%)	5 (0.76%)	<5	-	0 (0.00%)	-	<5	–
			Renal impairment	N (%)	12 (1.83%)	<5	-	0 (0.00%)	-	14 (2.41%)	–
			Requirement for care	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Rheumatoid arthritis	N (%)	13 (1.99%)	<5	-	0 (0.00%)	-	12 (2.06%)	–
			Schizophrenia	N (%)	<5	0 (0.00%)	-	<5	-	<5	–
			Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Sleep apnoea	N (%)	17 (2.60%)	<5	-	<5	-	16 (2.75%)	–
			Sleep disorder	N (%)	251 (38.38%)	30 (42.25%)	<5	24 (33.80%)	-	223 (38.32%)	–
			Sleep disturbance	N (%)	38 (5.81%)	<5	-	5 (7.04%)	-	35 (6.01%)	–
			Social vulnerability	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
			Stroke	N (%)	17 (2.60%)	5 (7.04%)	-	<5	-	14 (2.41%)	–
			Thyroid disorders	N (%)	100 (15.29%)	11 (15.49%)	<5	13 (18.31%)	-	91 (15.64%)	–
			Urinary incontinence	N (%)	29 (4.43%)	7 (9.86%)	-	<5	-	32 (5.50%)	–
			Urinary system disease	N (%)	56 (8.56%)	<5	-	5 (7.04%)	-	55 (9.45%)	–
			Visual impairment	N (%)	13 (1.99%)	<5	-	<5	-	11 (1.89%)	–
		Indication	Both	N (%)	225 (34.40%)	12 (16.90%)	<5	16 (22.54%)	<5	208 (35.74%)	–
			Neither	N (%)	107 (16.36%)	17 (23.94%)	–	22 (30.99%)	–	77 (13.23%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Obesity	N (%)	146 (22.32%)	5 (7.04%)	–	17 (23.94%)	–	133 (22.85%)	–
			T2DM	N (%)	176 (26.91%)	37 (52.11%)	<5	16 (22.54%)	–	164 (28.18%)	–
NAJS	2025	Comorbidities	ADHD	N (%)	7 (0.08%)	0 (0.00%)	–	<5	0 (0.00%)	6 (0.07%)	–
			Activity limitation	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Alzheimer	N (%)	38 (0.41%)	11 (0.48%)	–	<5	<5	33 (0.39%)	–
			Anaemia and haematinic deficiency	N (%)	2,326 (25.40%)	653 (28.64%)	–	77 (30.80%)	39 (40.21%)	2,169 (25.49%)	–
			Anorexia	N (%)	<5	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	<5	–
			Anxiety	N (%)	2,838 (30.99%)	733 (32.15%)	–	94 (37.60%)	38 (39.18%)	2,678 (31.47%)	–
			Arthritis	N (%)	911 (9.95%)	217 (9.52%)	–	25 (10.00%)	14 (14.43%)	884 (10.39%)	–
			Asthma	N (%)	1,125 (12.28%)	285 (12.50%)	–	38 (15.20%)	10 (10.31%)	1,047 (12.30%)	–
			Atrial fibrillation	N (%)	579 (6.32%)	167 (7.32%)	–	21 (8.40%)	11 (11.34%)	529 (6.22%)	–
			Bulimia	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	<5	–
			CKD	N (%)	1,094 (11.94%)	336 (14.74%)	–	53 (21.20%)	24 (24.74%)	994 (11.68%)	–
			COPD	N (%)	1,405 (15.34%)	386 (16.93%)	–	56 (22.40%)	15 (15.46%)	1,313 (15.43%)	–
			CVD	N (%)	8,623 (94.15%)	2,173 (95.31%)	–	242 (96.80%)	95 (97.94%)	8,048 (94.57%)	–
			Cancer	N (%)	1,316 (14.37%)	388 (17.02%)	–	53 (21.20%)	21 (21.65%)	1,201 (14.11%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Cerebrovascular disease	N (%)	1,189 (12.98%)	386 (16.93%)	–	43 (17.20%)	18 (18.56%)	1,127 (13.24%)	–
			Chronic liver disease	N (%)	1,074 (11.73%)	290 (12.72%)	–	33 (13.20%)	9 (9.28%)	1,038 (12.20%)	–
			Chronic respiratory disease	N (%)	2,208 (24.11%)	572 (25.09%)	–	74 (29.60%)	20 (20.62%)	2,087 (24.52%)	–
			Crohn	N (%)	41 (0.45%)	11 (0.48%)	–	<5	0 (0.00%)	37 (0.43%)	–
			Dementia	N (%)	169 (1.85%)	50 (2.19%)	–	<5	<5	154 (1.81%)	–
			Depression	N (%)	1,809 (19.75%)	476 (20.88%)	–	53 (21.20%)	24 (24.74%)	1,726 (20.28%)	–
			Dizziness	N (%)	2,212 (24.15%)	567 (24.87%)	–	66 (26.40%)	22 (22.68%)	2,066 (24.28%)	–
			Dyslipidaemia	N (%)	3,493 (38.14%)	954 (41.84%)	–	102 (40.80%)	38 (39.18%)	3,283 (38.58%)	–
			Dyspnoea	N (%)	1,025 (11.19%)	274 (12.02%)	–	31 (12.40%)	9 (9.28%)	969 (11.39%)	–
			Falls	N (%)	369 (4.03%)	81 (3.55%)	–	5 (2.00%)	5 (5.15%)	364 (4.28%)	–
			Foot problem	N (%)	272 (2.97%)	76 (3.33%)	–	6 (2.40%)	<5	278 (3.27%)	–
			Fragility fracture	N (%)	753 (8.22%)	216 (9.47%)	–	28 (11.20%)	16 (16.49%)	699 (8.21%)	–
			Gallbladder disorders	N (%)	723 (7.89%)	188 (8.25%)	–	18 (7.20%)	6 (6.19%)	687 (8.07%)	–
			HIV	N (%)	7 (0.08%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	7 (0.08%)	–
			Has given birth	N (%)	7 (0.08%)	<5	–	0 (0.00%)	0 (0.00%)	6 (0.07%)	–
			Hearing impairment	N (%)	827 (9.03%)	232 (10.18%)	–	34 (13.60%)	7 (7.22%)	779 (9.15%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Heart failure	N (%)	1,331 (14.53%)	376 (16.49%)	–	60 (24.00%)	19 (19.59%)	1,221 (14.35%)	–
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Hemiplegia	N (%)	285 (3.11%)	97 (4.25%)	–	11 (4.40%)	6 (6.19%)	247 (2.90%)	–
			Housebound	N (%)	27 (0.29%)	7 (0.31%)	–	0 (0.00%)	0 (0.00%)	24 (0.28%)	–
			Hypertension	N (%)	8,303 (90.65%)	2,118 (92.89%)	–	230 (92.00%)	94 (96.91%)	7,753 (91.10%)	–
			Hypotension syncope	N (%)	98 (1.07%)	31 (1.36%)	–	<5	<5	87 (1.02%)	–
			Insomnia broad	N (%)	501 (5.47%)	125 (5.48%)	–	14 (5.60%)	6 (6.19%)	485 (5.70%)	–
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			LADA	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Lupus erythematosus	N (%)	15 (0.16%)	5 (0.22%)	–	<5	0 (0.00%)	14 (0.16%)	–
			MACE	N (%)	1,375 (15.01%)	364 (15.96%)	–	46 (18.40%)	24 (24.74%)	1,268 (14.90%)	–
			MASLD	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Memory cognitive problems	N (%)	142 (1.55%)	45 (1.97%)	–	<5	<5	129 (1.52%)	–
			Mobility transfer problems	N (%)	7 (0.08%)	<5	–	<5	0 (0.00%)	8 (0.09%)	–
			Myocardial infarction	N (%)	872 (9.52%)	201 (8.82%)	–	27 (10.80%)	13 (13.40%)	829 (9.74%)	–
			Osteoarthritis	N (%)	3,716 (40.57%)	993 (43.55%)	–	103 (41.20%)	49 (50.52%)	3,521 (41.37%)	–
			Osteoporosis	N (%)	822 (8.97%)	254 (11.14%)	–	20 (8.00%)	21 (21.65%)	783 (9.20%)	–
			PAD	N (%)	459 (5.01%)	147 (6.45%)	–	26 (10.40%)	8 (8.25%)	422 (4.96%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			PCOS	N (%)	60 (0.66%)	14 (0.61%)	–	<5	0 (0.00%)	52 (0.61%)	–
			PVD	N (%)	1,022 (11.16%)	315 (13.82%)	–	61 (24.40%)	25 (25.77%)	975 (11.46%)	–
			Pancreatic cancer broad	N (%)	9 (0.10%)	5 (0.22%)	–	<5	0 (0.00%)	7 (0.08%)	–
			Paraplegia	N (%)	57 (0.62%)	17 (0.75%)	–	<5	0 (0.00%)	55 (0.65%)	–
			Parkinsons disease	N (%)	72 (0.79%)	25 (1.10%)	–	7 (2.80%)	<5	62 (0.73%)	–
			Peptic ulcer	N (%)	484 (5.28%)	133 (5.83%)	–	15 (6.00%)	7 (7.22%)	436 (5.12%)	–
			Psoriasis	N (%)	486 (5.31%)	127 (5.57%)	–	14 (5.60%)	<5	459 (5.39%)	–
			Psoriatic arthritis	N (%)	72 (0.79%)	17 (0.75%)	–	<5	0 (0.00%)	82 (0.96%)	–
			Renal impairment	N (%)	1,283 (14.01%)	411 (18.03%)	–	60 (24.00%)	26 (26.80%)	1,165 (13.69%)	–
			Requirement for care	N (%)	45 (0.49%)	15 (0.66%)	–	0 (0.00%)	0 (0.00%)	42 (0.49%)	–
			Rheumatoid arthritis	N (%)	379 (4.14%)	89 (3.90%)	–	7 (2.80%)	<5	367 (4.31%)	–
			Schizophrenia	N (%)	139 (1.52%)	50 (2.19%)	–	6 (2.40%)	5 (5.15%)	115 (1.35%)	–
			Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Sleep apnoea	N (%)	661 (7.22%)	193 (8.46%)	–	14 (5.60%)	<5	684 (8.04%)	–
			Sleep disorder	N (%)	2,220 (24.24%)	612 (26.84%)	–	64 (25.60%)	20 (20.62%)	2,132 (25.05%)	–
			Sleep disturbance	N (%)	1,734 (18.93%)	475 (20.83%)	–	51 (20.40%)	19 (19.59%)	1,647 (19.35%)	–
			Social vulnerability	N (%)	<5	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	<5	–
			Stroke	N (%)	587 (6.41%)	188 (8.25%)	–	23 (9.20%)	12 (12.37%)	516 (6.06%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Thyroid disorders	N (%)	2,976 (32.49%)	766 (33.60%)	–	93 (37.20%)	34 (35.05%)	2,814 (33.07%)	–
			Urinary incontinence	N (%)	1,170 (12.77%)	361 (15.83%)	–	57 (22.80%)	24 (24.74%)	1,079 (12.68%)	–
			Urinary system disease	N (%)	2,356 (25.72%)	641 (28.11%)	–	64 (25.60%)	29 (29.90%)	2,210 (25.97%)	–
			Visual impairment	N (%)	1,626 (17.75%)	454 (19.91%)	–	62 (24.80%)	25 (25.77%)	1,507 (17.71%)	–
		Indication	Both	N (%)	3,764 (41.10%)	906 (39.74%)	–	78 (31.20%)	20 (20.62%)	3,661 (43.02%)	–
			Neither	N (%)	389 (4.25%)	128 (5.61%)	–	29 (11.60%)	11 (11.34%)	362 (4.25%)	–
			Obesity	N (%)	340 (3.71%)	89 (3.90%)	–	26 (10.40%)	5 (5.15%)	370 (4.35%)	–
			T2DM	N (%)	4,666 (50.94%)	1,157 (50.75%)	–	117 (46.80%)	61 (62.89%)	4,117 (48.38%)	–
DK-DHR	2024	Comorbidities	ADHD	N (%)	2,615 (3.62%)	5 (1.39%)	–	55 (4.77%)	–	2,659 (3.56%)	5 (20.00%)
			Activity limitation	N (%)	5 (0.01%)	0 (0.00%)	–	0 (0.00%)	–	5 (0.01%)	0 (0.00%)
			Alzheimer	N (%)	67 (0.09%)	<5	–	<5	–	92 (0.12%)	0 (0.00%)
			Anaemia and haematinic deficiency	N (%)	2,428 (3.37%)	29 (8.03%)	–	78 (6.77%)	–	2,633 (3.52%)	<5
			Anorexia	N (%)	81 (0.11%)	<5	–	<5	–	80 (0.11%)	<5
			Anxiety	N (%)	10,715 (14.85%)	50 (13.85%)	–	248 (21.53%)	–	11,087 (14.83%)	7 (28.00%)
			Arthritis	N (%)	13,980 (19.38%)	113 (31.30%)	–	286 (24.83%)	–	14,811 (19.81%)	<5

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Asthma	N (%)	19,244 (26.67%)	102 (28.25%)	–	397 (34.46%)	–	19,933 (26.67%)	10 (40.00%)
			Atrial fibrillation	N (%)	1,183 (1.64%)	7 (1.94%)	–	17 (1.48%)	–	1,278 (1.71%)	0 (0.00%)
			Bulimia	N (%)	370 (0.51%)	<5	–	6 (0.52%)	–	378 (0.51%)	<5
			CKD	N (%)	807 (1.12%)	25 (6.93%)	–	23 (2.00%)	–	939 (1.26%)	0 (0.00%)
			COPD	N (%)	4,055 (5.62%)	43 (11.91%)	–	82 (7.12%)	–	4,367 (5.84%)	<5
			CVD	N (%)	35,764 (49.57%)	299 (82.83%)	–	679 (58.94%)	–	37,879 (50.68%)	18 (72.00%)
			Cancer	N (%)	5,430 (7.53%)	54 (14.96%)	–	131 (11.37%)	–	5,810 (7.77%)	<5
			Cerebrovascular disease	N (%)	1,980 (2.74%)	30 (8.31%)	–	40 (3.47%)	–	2,159 (2.89%)	0 (0.00%)
			Chronic liver disease	N (%)	1,072 (1.49%)	9 (2.49%)	–	28 (2.43%)	–	1,139 (1.52%)	0 (0.00%)
			Chronic respiratory disease	N (%)	20,485 (28.39%)	118 (32.69%)	–	419 (36.37%)	–	21,277 (28.46%)	11 (44.00%)
			Crohn	N (%)	739 (1.02%)	<5	–	59 (5.12%)	–	728 (0.97%)	0 (0.00%)
			Dementia	N (%)	174 (0.24%)	<5	–	<5	–	222 (0.30%)	0 (0.00%)
			Depression	N (%)	19,904 (27.59%)	112 (31.02%)	–	474 (41.15%)	–	20,655 (27.63%)	7 (28.00%)
			Dizziness	N (%)	3,123 (4.33%)	18 (4.99%)	–	70 (6.08%)	–	3,304 (4.42%)	<5
			Dyslipidaemia	N (%)	18,871 (26.15%)	311 (86.15%)	–	373 (32.38%)	–	20,846 (27.89%)	<5
			Dyspnoea	N (%)	4,715 (6.53%)	33 (9.14%)	–	110 (9.55%)	–	5,015 (6.71%)	0 (0.00%)
			Falls	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Foot problem	N (%)	184 (0.26%)	<5	–	<5	–	192 (0.26%)	0 (0.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Fragility fracture	N (%)	1,985 (2.75%)	14 (3.88%)	–	34 (2.95%)	–	2,085 (2.79%)	0 (0.00%)
			Gallbladder disorders	N (%)	7,310 (10.13%)	39 (10.80%)	–	221 (19.18%)	–	7,594 (10.16%)	<5
			HIV	N (%)	82 (0.11%)	0 (0.00%)	–	<5	–	84 (0.11%)	0 (0.00%)
			Has given birth	N (%)	1,272 (1.76%)	0 (0.00%)	–	26 (2.26%)	–	1,261 (1.69%)	<5
			Hearing impairment	N (%)	2,641 (3.66%)	41 (11.36%)	–	57 (4.95%)	–	2,853 (3.82%)	<5
			Heart failure	N (%)	1,793 (2.49%)	36 (9.97%)	–	29 (2.52%)	–	2,021 (2.70%)	0 (0.00%)
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Hemiplegia	N (%)	63 (0.09%)	0 (0.00%)	–	<5	–	66 (0.09%)	0 (0.00%)
			Housebound	N (%)	<5	0 (0.00%)	–	<5	–	<5	0 (0.00%)
			Hypertension	N (%)	21,159 (29.33%)	258 (71.47%)	–	381 (33.07%)	–	22,926 (30.67%)	7 (28.00%)
			Hypotension syncope	N (%)	251 (0.35%)	5 (1.39%)	–	11 (0.95%)	–	289 (0.39%)	0 (0.00%)
			Insomnia broad	N (%)	17,582 (24.37%)	109 (30.19%)	–	413 (35.85%)	–	18,327 (24.52%)	7 (28.00%)
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			LADA	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Lupus erythematosus	N (%)	108 (0.15%)	0 (0.00%)	–	<5	–	111 (0.15%)	0 (0.00%)
			MACE	N (%)	3,682 (5.10%)	68 (18.84%)	–	67 (5.82%)	–	4,088 (5.47%)	<5
			MASLD	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Memory cognitive problems	N (%)	205 (0.28%)	<5	–	<5	–	254 (0.34%)	0 (0.00%)
			Mobility transfer problems	N (%)	42 (0.06%)	0 (0.00%)	–	<5	–	46 (0.06%)	0 (0.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Myocardial infarction	N (%)	1,881 (2.61%)	41 (11.36%)	–	29 (2.52%)	–	2,107 (2.82%)	<5
			Osteoarthritis	N (%)	11,181 (15.50%)	91 (25.21%)	–	250 (21.70%)	–	11,910 (15.93%)	<5
			Osteoporosis	N (%)	1,701 (2.36%)	18 (4.99%)	–	54 (4.69%)	–	1,802 (2.41%)	0 (0.00%)
			PAD	N (%)	431 (0.60%)	10 (2.77%)	–	7 (0.61%)	–	502 (0.67%)	0 (0.00%)
			PCOS	N (%)	1,229 (1.70%)	6 (1.66%)	–	39 (3.39%)	–	1,249 (1.67%)	0 (0.00%)
			PVD	N (%)	1,299 (1.80%)	45 (12.47%)	–	35 (3.04%)	–	1,619 (2.17%)	0 (0.00%)
			Pancreatic cancer broad	N (%)	232 (0.32%)	<5	–	6 (0.52%)	–	251 (0.34%)	0 (0.00%)
			Paraplegia	N (%)	118 (0.16%)	0 (0.00%)	–	<5	–	125 (0.17%)	0 (0.00%)
			Parkinsons disease	N (%)	319 (0.44%)	<5	–	12 (1.04%)	–	345 (0.46%)	0 (0.00%)
			Peptic ulcer	N (%)	13,727 (19.03%)	101 (27.98%)	–	361 (31.34%)	–	14,461 (19.35%)	6 (24.00%)
			Psoriasis	N (%)	6,150 (8.52%)	43 (11.91%)	–	126 (10.94%)	–	6,378 (8.53%)	<5
			Psoriatic arthritis	N (%)	593 (0.82%)	8 (2.22%)	–	18 (1.56%)	–	609 (0.81%)	0 (0.00%)
			Renal impairment	N (%)	1,263 (1.75%)	36 (9.97%)	–	37 (3.21%)	–	1,453 (1.94%)	0 (0.00%)
			Requirement for care	N (%)	23 (0.03%)	0 (0.00%)	–	0 (0.00%)	–	28 (0.04%)	0 (0.00%)
			Rheumatoid arthritis	N (%)	1,529 (2.12%)	16 (4.43%)	–	48 (4.17%)	–	1,597 (2.14%)	<5
			Schizophrenia	N (%)	943 (1.31%)	7 (1.94%)	–	24 (2.08%)	–	995 (1.33%)	<5
			Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Sleep apnoea	N (%)	5,926 (8.21%)	39 (10.80%)	–	130 (11.28%)	–	6,278 (8.40%)	5 (20.00%)
			Sleep disorder	N (%)	22,580 (31.30%)	145 (40.17%)	–	515 (44.70%)	–	23,580 (31.55%)	11 (44.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Sleep disturbance	N (%)	491 (0.68%)	6 (1.66%)	–	10 (0.87%)	–	519 (0.69%)	<5
			Social vulnerability	N (%)	66 (0.09%)	0 (0.00%)	–	<5	–	65 (0.09%)	0 (0.00%)
			Stroke	N (%)	1,970 (2.73%)	36 (9.97%)	–	41 (3.56%)	–	2,176 (2.91%)	0 (0.00%)
			Thyroid disorders	N (%)	7,809 (10.82%)	64 (17.73%)	–	180 (15.62%)	–	8,182 (10.95%)	<5
			Urinary incontinence	N (%)	4,201 (5.82%)	22 (6.09%)	–	102 (8.85%)	–	4,489 (6.01%)	0 (0.00%)
			Urinary system disease	N (%)	22,805 (31.61%)	136 (37.67%)	–	467 (40.54%)	–	23,813 (31.86%)	9 (36.00%)
			Visual impairment	N (%)	1,007 (1.40%)	13 (3.60%)	–	32 (2.78%)	–	1,135 (1.52%)	0 (0.00%)
		Indication	Both	N (%)	6,745 (9.35%)	150 (41.55%)	–	210 (18.23%)	–	7,702 (10.30%)	14 (56.00%)
			Neither	N (%)	333 (0.46%)	–	–	141 (12.24%)	–	207 (0.28%)	<5
			Obesity	N (%)	58,960 (81.72%)	6 (1.66%)	–	697 (60.50%)	–	59,672 (79.83%)	10 (40.00%)
			T2DM	N (%)	6,113 (8.47%)	205 (56.79%)	–	104 (9.03%)	–	7,167 (9.59%)	–
DK-DHR	2024	Comorbidities	ADHD	N (%)	2,615 (3.62%)	5 (1.39%)	–	55 (4.77%)	–	2,659 (3.56%)	5 (20.00%)
			Activity limitation	N (%)	5 (0.01%)	0 (0.00%)	–	0 (0.00%)	–	5 (0.01%)	0 (0.00%)
			Alzheimer	N (%)	67 (0.09%)	<5	–	<5	–	92 (0.12%)	0 (0.00%)
			Anaemia and haematinic deficiency	N (%)	2,428 (3.37%)	29 (8.03%)	–	78 (6.77%)	–	2,633 (3.52%)	<5
			Anorexia	N (%)	81 (0.11%)	<5	–	<5	–	80 (0.11%)	<5
			Anxiety	N (%)	10,715 (14.85%)	50 (13.85%)	–	248 (21.53%)	–	11,087 (14.83%)	7 (28.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Arthritis	N (%)	13,980 (19.38%)	113 (31.30%)	–	286 (24.83%)	–	14,811 (19.81%)	<5
			Asthma	N (%)	19,244 (26.67%)	102 (28.25%)	–	397 (34.46%)	–	19,933 (26.67%)	10 (40.00%)
			Atrial fibrillation	N (%)	1,183 (1.64%)	7 (1.94%)	–	17 (1.48%)	–	1,278 (1.71%)	0 (0.00%)
			Bulimia	N (%)	370 (0.51%)	<5	–	6 (0.52%)	–	378 (0.51%)	<5
			CKD	N (%)	807 (1.12%)	25 (6.93%)	–	23 (2.00%)	–	939 (1.26%)	0 (0.00%)
			COPD	N (%)	4,055 (5.62%)	43 (11.91%)	–	82 (7.12%)	–	4,367 (5.84%)	<5
			CVD	N (%)	35,764 (49.57%)	299 (82.83%)	–	679 (58.94%)	–	37,879 (50.68%)	18 (72.00%)
			Cancer	N (%)	5,430 (7.53%)	54 (14.96%)	–	131 (11.37%)	–	5,810 (7.77%)	<5
			Cerebrovascular disease	N (%)	1,980 (2.74%)	30 (8.31%)	–	40 (3.47%)	–	2,159 (2.89%)	0 (0.00%)
			Chronic liver disease	N (%)	1,072 (1.49%)	9 (2.49%)	–	28 (2.43%)	–	1,139 (1.52%)	0 (0.00%)
			Chronic respiratory disease	N (%)	20,485 (28.39%)	118 (32.69%)	–	419 (36.37%)	–	21,277 (28.46%)	11 (44.00%)
			Crohn	N (%)	739 (1.02%)	<5	–	59 (5.12%)	–	728 (0.97%)	0 (0.00%)
			Dementia	N (%)	174 (0.24%)	<5	–	<5	–	222 (0.30%)	0 (0.00%)
			Depression	N (%)	19,904 (27.59%)	112 (31.02%)	–	474 (41.15%)	–	20,655 (27.63%)	7 (28.00%)
			Dizziness	N (%)	3,123 (4.33%)	18 (4.99%)	–	70 (6.08%)	–	3,304 (4.42%)	<5
			Dyslipidaemia	N (%)	18,871 (26.15%)	311 (86.15%)	–	373 (32.38%)	–	20,846 (27.89%)	<5
			Dyspnoea	N (%)	4,715 (6.53%)	33 (9.14%)	–	110 (9.55%)	–	5,015 (6.71%)	0 (0.00%)
			Falls	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Foot problem	N (%)	184 (0.26%)	<5	–	<5	–	192 (0.26%)	0 (0.00%)
			Fragility fracture	N (%)	1,985 (2.75%)	14 (3.88%)	–	34 (2.95%)	–	2,085 (2.79%)	0 (0.00%)
			Gallbladder disorders	N (%)	7,310 (10.13%)	39 (10.80%)	–	221 (19.18%)	–	7,594 (10.16%)	<5
			HIV	N (%)	82 (0.11%)	0 (0.00%)	–	<5	–	84 (0.11%)	0 (0.00%)
			Has given birth	N (%)	1,272 (1.76%)	0 (0.00%)	–	26 (2.26%)	–	1,261 (1.69%)	<5
			Hearing impairment	N (%)	2,641 (3.66%)	41 (11.36%)	–	57 (4.95%)	–	2,853 (3.82%)	<5
			Heart failure	N (%)	1,793 (2.49%)	36 (9.97%)	–	29 (2.52%)	–	2,021 (2.70%)	0 (0.00%)
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Hemiplegia	N (%)	63 (0.09%)	0 (0.00%)	–	<5	–	66 (0.09%)	0 (0.00%)
			Housebound	N (%)	<5	0 (0.00%)	–	<5	–	<5	0 (0.00%)
			Hypertension	N (%)	21,159 (29.33%)	258 (71.47%)	–	381 (33.07%)	–	22,926 (30.67%)	7 (28.00%)
			Hypotension syncope	N (%)	251 (0.35%)	5 (1.39%)	–	11 (0.95%)	–	289 (0.39%)	0 (0.00%)
			Insomnia broad	N (%)	17,582 (24.37%)	109 (30.19%)	–	413 (35.85%)	–	18,327 (24.52%)	7 (28.00%)
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			LADA	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Lupus erythematosus	N (%)	108 (0.15%)	0 (0.00%)	–	<5	–	111 (0.15%)	0 (0.00%)
			MACE	N (%)	3,682 (5.10%)	68 (18.84%)	–	67 (5.82%)	–	4,088 (5.47%)	<5
			MASLD	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Memory cognitive problems	N (%)	205 (0.28%)	<5	–	<5	–	254 (0.34%)	0 (0.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Mobility transfer problems	N (%)	42 (0.06%)	0 (0.00%)	–	<5	–	46 (0.06%)	0 (0.00%)
			Myocardial infarction	N (%)	1,881 (2.61%)	41 (11.36%)	–	29 (2.52%)	–	2,107 (2.82%)	<5
			Osteoarthritis	N (%)	11,181 (15.50%)	91 (25.21%)	–	250 (21.70%)	–	11,910 (15.93%)	<5
			Osteoporosis	N (%)	1,701 (2.36%)	18 (4.99%)	–	54 (4.69%)	–	1,802 (2.41%)	0 (0.00%)
			PAD	N (%)	431 (0.60%)	10 (2.77%)	–	7 (0.61%)	–	502 (0.67%)	0 (0.00%)
			PCOS	N (%)	1,229 (1.70%)	6 (1.66%)	–	39 (3.39%)	–	1,249 (1.67%)	0 (0.00%)
			PVD	N (%)	1,299 (1.80%)	45 (12.47%)	–	35 (3.04%)	–	1,619 (2.17%)	0 (0.00%)
			Pancreatic cancer broad	N (%)	232 (0.32%)	<5	–	6 (0.52%)	–	251 (0.34%)	0 (0.00%)
			Paraplegia	N (%)	118 (0.16%)	0 (0.00%)	–	<5	–	125 (0.17%)	0 (0.00%)
			Parkinsons disease	N (%)	319 (0.44%)	<5	–	12 (1.04%)	–	345 (0.46%)	0 (0.00%)
			Peptic ulcer	N (%)	13,727 (19.03%)	101 (27.98%)	–	361 (31.34%)	–	14,461 (19.35%)	6 (24.00%)
			Psoriasis	N (%)	6,150 (8.52%)	43 (11.91%)	–	126 (10.94%)	–	6,378 (8.53%)	<5
			Psoriatic arthritis	N (%)	593 (0.82%)	8 (2.22%)	–	18 (1.56%)	–	609 (0.81%)	0 (0.00%)
			Renal impairment	N (%)	1,263 (1.75%)	36 (9.97%)	–	37 (3.21%)	–	1,453 (1.94%)	0 (0.00%)
			Requirement for care	N (%)	23 (0.03%)	0 (0.00%)	–	0 (0.00%)	–	28 (0.04%)	0 (0.00%)
			Rheumatoid arthritis	N (%)	1,529 (2.12%)	16 (4.43%)	–	48 (4.17%)	–	1,597 (2.14%)	<5
			Schizophrenia	N (%)	943 (1.31%)	7 (1.94%)	–	24 (2.08%)	–	995 (1.33%)	<5
			Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Sleep apnoea	N (%)	5,926 (8.21%)	39 (10.80%)	–	130 (11.28%)	–	6,278 (8.40%)	5 (20.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Sleep disorder	N (%)	22,580 (31.30%)	145 (40.17%)	–	515 (44.70%)	–	23,580 (31.55%)	11 (44.00%)
			Sleep disturbance	N (%)	491 (0.68%)	6 (1.66%)	–	10 (0.87%)	–	519 (0.69%)	<5
			Social vulnerability	N (%)	66 (0.09%)	0 (0.00%)	–	<5	–	65 (0.09%)	0 (0.00%)
			Stroke	N (%)	1,970 (2.73%)	36 (9.97%)	–	41 (3.56%)	–	2,176 (2.91%)	0 (0.00%)
			Thyroid disorders	N (%)	7,809 (10.82%)	64 (17.73%)	–	180 (15.62%)	–	8,182 (10.95%)	<5
			Urinary incontinence	N (%)	4,201 (5.82%)	22 (6.09%)	–	102 (8.85%)	–	4,489 (6.01%)	0 (0.00%)
			Urinary system disease	N (%)	22,805 (31.61%)	136 (37.67%)	–	467 (40.54%)	–	23,813 (31.86%)	9 (36.00%)
			Visual impairment	N (%)	1,007 (1.40%)	13 (3.60%)	–	32 (2.78%)	–	1,135 (1.52%)	0 (0.00%)
		Indication	Both	N (%)	6,745 (9.35%)	150 (41.55%)	–	210 (18.23%)	–	7,702 (10.30%)	14 (56.00%)
			Neither	N (%)	333 (0.46%)	–	–	141 (12.24%)	–	207 (0.28%)	<5
			Obesity	N (%)	58,960 (81.72%)	6 (1.66%)	–	697 (60.50%)	–	59,672 (79.83%)	10 (40.00%)
			T2DM	N (%)	6,113 (8.47%)	205 (56.79%)	–	104 (9.03%)	–	7,167 (9.59%)	–
InGef RDB	2025	Comorbidities	ADHD	N (%)	62 (0.35%)	<5	0 (0.00%)	<5	–	49 (0.36%)	23 (0.32%)
			Activity limitation	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Alzheimer	N (%)	27 (0.15%)	5 (0.19%)	0 (0.00%)	<5	–	21 (0.15%)	8 (0.11%)
			Anaemia and haematinic deficiency	N (%)	1,505 (8.52%)	256 (9.94%)	<5	58 (13.18%)	–	1,118 (8.22%)	584 (8.24%)
			Anorexia	N (%)	15 (0.08%)	<5	0 (0.00%)	<5	–	11 (0.08%)	8 (0.11%)
			Anxiety	N (%)	661 (3.74%)	84 (3.26%)	<5	19 (4.32%)	–	533 (3.92%)	270 (3.81%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Arthritis	N (%)	14 (0.08%)	0 (0.00%)	0 (0.00%)	<5	–	13 (0.10%)	<5
			Asthma	N (%)	830 (4.70%)	118 (4.58%)	0 (0.00%)	10 (2.27%)	–	642 (4.72%)	384 (5.42%)
			Atrial fibrillation	N (%)	1,100 (6.23%)	214 (8.31%)	0 (0.00%)	37 (8.41%)	–	839 (6.17%)	403 (5.69%)
			Bulimia	N (%)	26 (0.15%)	<5	0 (0.00%)	<5	–	15 (0.11%)	17 (0.24%)
			CKD	N (%)	1,620 (9.17%)	323 (12.54%)	<5	69 (15.68%)	–	1,213 (8.92%)	662 (9.34%)
			COPD	N (%)	1,240 (7.02%)	205 (7.96%)	<5	33 (7.50%)	–	973 (7.15%)	455 (6.42%)
			CVD	N (%)	10,704 (60.60%)	1,689 (65.57%)	9 (90.00%)	311 (70.68%)	–	8,309 (61.08%)	4,302 (60.69%)
			Cancer	N (%)	1,304 (7.38%)	196 (7.61%)	0 (0.00%)	34 (7.73%)	–	1,020 (7.50%)	509 (7.18%)
			Cerebrovascular disease	N (%)	843 (4.77%)	164 (6.37%)	<5	22 (5.00%)	–	619 (4.55%)	319 (4.50%)
			Chronic liver disease	N (%)	1,280 (7.25%)	205 (7.96%)	<5	48 (10.91%)	–	1,036 (7.62%)	511 (7.21%)
			Chronic respiratory disease	N (%)	1,845 (10.45%)	288 (11.18%)	<5	40 (9.09%)	–	1,442 (10.60%)	752 (10.61%)
			Crohn	N (%)	72 (0.41%)	9 (0.35%)	0 (0.00%)	<5	–	62 (0.46%)	25 (0.35%)
			Dementia	N (%)	115 (0.65%)	26 (1.01%)	0 (0.00%)	5 (1.14%)	–	83 (0.61%)	38 (0.54%)
			Depression	N (%)	2,099 (11.88%)	298 (11.57%)	<5	62 (14.09%)	–	1,669 (12.27%)	840 (11.85%)
			Dizziness	N (%)	920 (5.21%)	170 (6.60%)	<5	20 (4.55%)	–	698 (5.13%)	359 (5.06%)
			Dyslipidaemia	N (%)	5,334 (30.20%)	898 (34.86%)	7 (70.00%)	188 (42.73%)	–	4,225 (31.06%)	2,139 (30.18%)
			Dyspnoea	N (%)	966 (5.47%)	154 (5.98%)	<5	27 (6.14%)	–	728 (5.35%)	399 (5.63%)
			Falls	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Foot problem	N (%)	19 (0.11%)	<5	0 (0.00%)	<5	–	9 (0.07%)	18 (0.25%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Fragility fracture	N (%)	138 (0.78%)	30 (1.16%)	0 (0.00%)	7 (1.59%)	–	99 (0.73%)	45 (0.63%)
			Gallbladder disorders	N (%)	895 (5.07%)	145 (5.63%)	0 (0.00%)	23 (5.23%)	–	716 (5.26%)	344 (4.85%)
			HIV	N (%)	19 (0.11%)	<5	0 (0.00%)	<5	–	12 (0.09%)	7 (0.10%)
			Has given birth	N (%)	30 (0.17%)	<5	0 (0.00%)	0 (0.00%)	–	20 (0.15%)	16 (0.23%)
			Hearing impairment	N (%)	97 (0.55%)	14 (0.54%)	0 (0.00%)	<5	–	75 (0.55%)	27 (0.38%)
			Heart failure	N (%)	2,459 (13.92%)	450 (17.47%)	<5	89 (20.23%)	–	1,888 (13.88%)	932 (13.15%)
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Hemiplegia	N (%)	350 (1.98%)	51 (1.98%)	0 (0.00%)	12 (2.73%)	–	263 (1.93%)	121 (1.71%)
			Housebound	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Hypertension	N (%)	9,813 (55.56%)	1,580 (61.34%)	9 (90.00%)	290 (65.91%)	–	7,648 (56.22%)	3,937 (55.54%)
			Hypotension syncope	N (%)	451 (2.55%)	87 (3.38%)	0 (0.00%)	16 (3.64%)	–	332 (2.44%)	180 (2.54%)
			Insomnia broad	N (%)	58 (0.33%)	9 (0.35%)	0 (0.00%)	<5	–	50 (0.37%)	17 (0.24%)
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Lupus erythematosus	N (%)	7 (0.04%)	<5	0 (0.00%)	<5	–	<5	<5
			MACE	N (%)	1,673 (9.47%)	290 (11.26%)	<5	60 (13.64%)	–	1,310 (9.63%)	585 (8.25%)
			MASLD	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Memory cognitive problems	N (%)	1,206 (6.83%)	215 (8.35%)	0 (0.00%)	38 (8.64%)	–	892 (6.56%)	499 (7.04%)
			Mobility transfer problems	N (%)	142 (0.80%)	38 (1.48%)	0 (0.00%)	6 (1.36%)	–	105 (0.77%)	52 (0.73%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Myocardial infarction	N (%)	1,002 (5.67%)	168 (6.52%)	<5	38 (8.64%)	–	807 (5.93%)	363 (5.12%)
			Osteoarthritis	N (%)	2,267 (12.84%)	354 (13.74%)	<5	64 (14.55%)	–	1,766 (12.98%)	946 (13.35%)
			Osteoporosis	N (%)	131 (0.74%)	23 (0.89%)	0 (0.00%)	<5	–	103 (0.76%)	59 (0.83%)
			PAD	N (%)	814 (4.61%)	139 (5.40%)	<5	40 (9.09%)	–	634 (4.66%)	328 (4.63%)
			PCOS	N (%)	22 (0.12%)	<5	0 (0.00%)	<5	–	8 (0.06%)	21 (0.30%)
			PVD	N (%)	1,041 (5.89%)	179 (6.95%)	<5	53 (12.05%)	–	805 (5.92%)	449 (6.33%)
			Pancreatic cancer broad	N (%)	14 (0.08%)	<5	0 (0.00%)	0 (0.00%)	–	12 (0.09%)	5 (0.07%)
			Paraplegia	N (%)	50 (0.28%)	10 (0.39%)	0 (0.00%)	<5	–	36 (0.26%)	23 (0.32%)
			Parkinsons disease	N (%)	76 (0.43%)	18 (0.70%)	0 (0.00%)	6 (1.36%)	–	51 (0.37%)	19 (0.27%)
			Peptic ulcer	N (%)	249 (1.41%)	41 (1.59%)	0 (0.00%)	<5	–	190 (1.40%)	80 (1.13%)
			Psoriasis	N (%)	203 (1.15%)	27 (1.05%)	0 (0.00%)	<5	–	166 (1.22%)	95 (1.34%)
			Psoriatic arthritis	N (%)	61 (0.35%)	7 (0.27%)	0 (0.00%)	0 (0.00%)	–	60 (0.44%)	33 (0.47%)
			Renal impairment	N (%)	2,270 (12.85%)	429 (16.65%)	<5	86 (19.55%)	–	1,726 (12.69%)	882 (12.44%)
			Requirement for care	N (%)	1,717 (9.72%)	293 (11.37%)	<5	55 (12.50%)	–	1,307 (9.61%)	675 (9.52%)
			Rheumatoid arthritis	N (%)	238 (1.35%)	37 (1.44%)	0 (0.00%)	5 (1.14%)	–	186 (1.37%)	119 (1.68%)
			Schizophrenia	N (%)	114 (0.65%)	18 (0.70%)	0 (0.00%)	<5	–	93 (0.68%)	27 (0.38%)
			Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Sleep apnoea	N (%)	2,164 (12.25%)	300 (11.65%)	<5	58 (13.18%)	–	1,725 (12.68%)	986 (13.91%)
			Sleep disorder	N (%)	2,822 (15.98%)	413 (16.03%)	<5	78 (17.73%)	–	2,208 (16.23%)	1,243 (17.54%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Sleep disturbance	N (%)	185 (1.05%)	32 (1.24%)	0 (0.00%)	5 (1.14%)	–	149 (1.10%)	78 (1.10%)
			Social vulnerability	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
			Stroke	N (%)	748 (4.24%)	134 (5.20%)	<5	27 (6.14%)	–	560 (4.12%)	243 (3.43%)
			Thyroid disorders	N (%)	3,012 (17.05%)	469 (18.21%)	<5	81 (18.41%)	–	2,337 (17.18%)	1,309 (18.47%)
			Urinary incontinence	N (%)	559 (3.16%)	107 (4.15%)	<5	16 (3.64%)	–	411 (3.02%)	184 (2.60%)
			Urinary system disease	N (%)	1,477 (8.36%)	261 (10.13%)	<5	58 (13.18%)	–	1,124 (8.26%)	605 (8.54%)
			Visual impairment	N (%)	276 (1.56%)	53 (2.06%)	0 (0.00%)	15 (3.41%)	–	205 (1.51%)	105 (1.48%)
		Indication	Both	N (%)	4,451 (25.20%)	720 (27.95%)	<5	165 (37.50%)	–	3,654 (26.86%)	2,027 (28.60%)
			Neither	N (%)	6,724 (38.07%)	832 (32.30%)	<5	97 (22.05%)	–	4,978 (36.59%)	2,663 (37.57%)
			Obesity	N (%)	1,521 (8.61%)	132 (5.12%)	–	16 (3.64%)	–	1,036 (7.62%)	625 (8.82%)
			T2DM	N (%)	4,966 (28.12%)	892 (34.63%)	<5	162 (36.82%)	–	3,936 (28.93%)	1,773 (25.01%)
IQVIA DA Germany	2025	Comorbidities	ADHD	N (%)	100 (1.00%)	9 (0.80%)	-	<5	<5	70 (1.08%)	42 (0.97%)
			Activity limitation	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
			Alzheimer	N (%)	31 (0.31%)	5 (0.44%)	-	0 (0.00%)	<5	19 (0.29%)	13 (0.30%)
			Anaemia and haematinic deficiency	N (%)	1,217 (12.18%)	188 (16.71%)	<5	14 (10.07%)	19 (14.84%)	749 (11.53%)	538 (12.37%)
			Anorexia	N (%)	27 (0.27%)	7 (0.62%)	-	0 (0.00%)	0 (0.00%)	20 (0.31%)	8 (0.18%)
			Anxiety	N (%)	1,026 (10.27%)	101 (8.98%)	-	11 (7.91%)	13 (10.16%)	636 (9.79%)	467 (10.74%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Arthritis	N (%)	253 (2.53%)	33 (2.93%)	-	<5	<5	161 (2.48%)	96 (2.21%)
			Asthma	N (%)	1,459 (14.60%)	150 (13.33%)	-	13 (9.35%)	15 (11.72%)	935 (14.39%)	662 (15.23%)
			Atrial fibrillation	N (%)	231 (2.31%)	26 (2.31%)	-	5 (3.60%)	5 (3.91%)	160 (2.46%)	95 (2.18%)
			Bulimia	N (%)	22 (0.22%)	<5	-	0 (0.00%)	0 (0.00%)	13 (0.20%)	11 (0.25%)
			CKD	N (%)	1,043 (10.44%)	229 (20.36%)	-	33 (23.74%)	30 (23.44%)	716 (11.02%)	393 (9.04%)
			COPD	N (%)	1,600 (16.01%)	205 (18.22%)	<5	21 (15.11%)	17 (13.28%)	1,029 (15.84%)	687 (15.80%)
			CVD	N (%)	7,532 (75.36%)	954 (84.80%)	<5	108 (77.70%)	107 (83.59%)	4,981 (76.68%)	3,247 (74.68%)
			Cancer	N (%)	995 (9.95%)	155 (13.78%)	-	19 (13.67%)	17 (13.28%)	640 (9.85%)	432 (9.94%)
			Cerebrovascular disease	N (%)	792 (7.92%)	122 (10.84%)	<5	16 (11.51%)	16 (12.50%)	512 (7.88%)	316 (7.27%)
			Chronic liver disease	N (%)	1,726 (17.27%)	247 (21.96%)	<5	18 (12.95%)	25 (19.53%)	1,192 (18.35%)	756 (17.39%)
			Chronic respiratory disease	N (%)	2,519 (25.20%)	289 (25.69%)	<5	30 (21.58%)	24 (18.75%)	1,602 (24.66%)	1,134 (26.08%)
			Crohn	N (%)	72 (0.72%)	8 (0.71%)	-	0 (0.00%)	<5	50 (0.77%)	25 (0.57%)
			Dementia	N (%)	136 (1.36%)	35 (3.11%)	-	<5	7 (5.47%)	72 (1.11%)	47 (1.08%)
			Depression	N (%)	1,725 (17.26%)	173 (15.38%)	-	27 (19.42%)	31 (24.22%)	1,114 (17.15%)	744 (17.11%)
			Dizziness	N (%)	1,265 (12.66%)	152 (13.51%)	-	17 (12.23%)	11 (8.59%)	798 (12.28%)	573 (13.18%)
			Dyslipidaemia	N (%)	4,076 (40.78%)	625 (55.56%)	<5	63 (45.32%)	67 (52.34%)	2,803 (43.15%)	1,624 (37.35%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Dyspnoea	N (%)	942 (9.42%)	95 (8.44%)	<5	8 (5.76%)	11 (8.59%)	582 (8.96%)	424 (9.75%)
			Falls	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
			Foot problem	N (%)	81 (0.81%)	17 (1.51%)	-	<5	<5	51 (0.79%)	27 (0.62%)
			Fragility fracture	N (%)	290 (2.90%)	31 (2.76%)	<5	<5	<5	178 (2.74%)	128 (2.94%)
			Gallbladder disorders	N (%)	902 (9.02%)	114 (10.13%)	-	15 (10.79%)	8 (6.25%)	561 (8.64%)	415 (9.54%)
			HIV	N (%)	33 (0.33%)	<5	-	<5	0 (0.00%)	25 (0.38%)	12 (0.28%)
			Has given birth	N (%)	6 (0.06%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	<5	<5
			Hearing impairment	N (%)	231 (2.31%)	36 (3.20%)	-	<5	<5	148 (2.28%)	95 (2.18%)
			Heart failure	N (%)	1,040 (10.41%)	164 (14.58%)	<5	21 (15.11%)	19 (14.84%)	673 (10.36%)	420 (9.66%)
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
			Hemiplegia	N (%)	87 (0.87%)	15 (1.33%)	-	<5	<5	56 (0.86%)	31 (0.71%)
			Housebound	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
			Hypertension	N (%)	6,194 (61.97%)	846 (75.20%)	<5	94 (67.63%)	97 (75.78%)	4,155 (63.96%)	2,630 (60.49%)
			Hypotension syncope	N (%)	295 (2.95%)	18 (1.60%)	-	<5	<5	198 (3.05%)	144 (3.31%)
			Insomnia broad	N (%)	67 (0.67%)	5 (0.44%)	-	0 (0.00%)	0 (0.00%)	36 (0.55%)	30 (0.69%)
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
			LADA	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
			Lupus erythematosus	N (%)	10 (0.10%)	<5	-	0 (0.00%)	0 (0.00%)	<5	5 (0.11%)
			MACE	N (%)	621 (6.21%)	116 (10.31%)	-	16 (11.51%)	15 (11.72%)	400 (6.16%)	241 (5.54%)
			MASLD	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Memory cognitive problems	N (%)	149 (1.49%)	33 (2.93%)	-	<5	6 (4.69%)	76 (1.17%)	56 (1.29%)
			Mobility transfer problems	N (%)	97 (0.97%)	14 (1.24%)	-	<5	7 (5.47%)	63 (0.97%)	32 (0.74%)
			Myocardial infarction	N (%)	250 (2.50%)	43 (3.82%)	-	7 (5.04%)	6 (4.69%)	166 (2.56%)	104 (2.39%)
			Osteoarthritis	N (%)	2,411 (24.12%)	299 (26.58%)	<5	35 (25.18%)	32 (25.00%)	1,539 (23.69%)	1,079 (24.82%)
			Osteoporosis	N (%)	253 (2.53%)	31 (2.76%)	<5	<5	<5	169 (2.60%)	110 (2.53%)
			PAD	N (%)	295 (2.95%)	74 (6.58%)	-	12 (8.63%)	7 (5.47%)	187 (2.88%)	104 (2.39%)
			PCOS	N (%)	126 (1.26%)	8 (0.71%)	-	<5	0 (0.00%)	66 (1.02%)	68 (1.56%)
			PVD	N (%)	1,229 (12.30%)	252 (22.40%)	<5	30 (21.58%)	40 (31.25%)	890 (13.70%)	470 (10.81%)
			Pancreatic cancer broad	N (%)	8 (0.08%)	<5	-	0 (0.00%)	<5	5 (0.08%)	6 (0.14%)
			Paraplegia	N (%)	20 (0.20%)	6 (0.53%)	-	0 (0.00%)	0 (0.00%)	10 (0.15%)	15 (0.34%)
			Parkinsons disease	N (%)	72 (0.72%)	18 (1.60%)	-	<5	<5	39 (0.60%)	24 (0.55%)
			Peptic ulcer	N (%)	227 (2.27%)	32 (2.84%)	-	<5	<5	144 (2.22%)	111 (2.55%)
			Psoriasis	N (%)	412 (4.12%)	44 (3.91%)	-	<5	<5	258 (3.97%)	203 (4.67%)
			Psoriatic arthritis	N (%)	94 (0.94%)	10 (0.89%)	-	0 (0.00%)	<5	55 (0.85%)	47 (1.08%)
			Renal impairment	N (%)	1,417 (14.18%)	282 (25.07%)	-	42 (30.22%)	38 (29.69%)	969 (14.92%)	553 (12.72%)
			Requirement for care	N (%)	67 (0.67%)	15 (1.33%)	-	<5	<5	31 (0.48%)	33 (0.76%)
			Rheumatoid arthritis	N (%)	391 (3.91%)	40 (3.56%)	-	6 (4.32%)	6 (4.69%)	247 (3.80%)	168 (3.86%)
			Schizophrenia	N (%)	49 (0.49%)	8 (0.71%)	-	<5	<5	29 (0.45%)	22 (0.51%)
			Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Sleep apnoea	N (%)	1,491 (14.92%)	186 (16.53%)	-	18 (12.95%)	13 (10.16%)	928 (14.29%)	756 (17.39%)
			Sleep disorder	N (%)	2,553 (25.54%)	287 (25.51%)	<5	34 (24.46%)	21 (16.41%)	1,619 (24.92%)	1,198 (27.55%)
			Sleep disturbance	N (%)	1,129 (11.30%)	106 (9.42%)	<5	15 (10.79%)	9 (7.03%)	731 (11.25%)	473 (10.88%)
			Social vulnerability	N (%)	<5	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	<5	<5
			Stroke	N (%)	398 (3.98%)	77 (6.84%)	-	11 (7.91%)	9 (7.03%)	254 (3.91%)	143 (3.29%)
			Thyroid disorders	N (%)	3,119 (31.21%)	333 (29.60%)	<5	47 (33.81%)	44 (34.38%)	1,974 (30.39%)	1,461 (33.60%)
			Urinary incontinence	N (%)	452 (4.52%)	88 (7.82%)	-	9 (6.47%)	15 (11.72%)	254 (3.91%)	199 (4.58%)
			Urinary system disease	N (%)	1,714 (17.15%)	194 (17.24%)	<5	23 (16.55%)	14 (10.94%)	1,082 (16.66%)	779 (17.92%)
			Visual impairment	N (%)	535 (5.35%)	95 (8.44%)	-	9 (6.47%)	12 (9.38%)	353 (5.43%)	201 (4.62%)
		Indication	Both	N (%)	3,920 (39.22%)	630 (56.00%)	–	63 (45.32%)	76 (59.38%)	2,730 (42.03%)	1,735 (39.90%)
			Neither	N (%)	1,258 (12.59%)	35 (3.11%)	–	11 (7.91%)	<5	772 (11.88%)	565 (12.99%)
			Obesity	N (%)	2,764 (27.65%)	45 (4.00%)	–	20 (14.39%)	<5	1,665 (25.63%)	1,284 (29.53%)
			T2DM	N (%)	2,053 (20.54%)	415 (36.89%)	<5	45 (32.37%)	48 (37.50%)	1,329 (20.46%)	764 (17.57%)
IPCI	2025	Comorbidities	ADHD	N (%)	72 (1.85%)	0 (0.00%)	–	29 (3.16%)	-	42 (1.46%)	14 (2.13%)
			Activity limitation	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Alzheimer	N (%)	<5	0 (0.00%)	–	<5	-	<5	0 (0.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Anaemia and haematinic deficiency	N (%)	415 (10.65%)	<5	–	89 (9.69%)	-	326 (11.36%)	65 (9.89%)
			Anorexia	N (%)	<5	0 (0.00%)	–	<5	-	<5	<5
			Anxiety	N (%)	363 (9.32%)	<5	–	123 (13.40%)	-	235 (8.19%)	70 (10.65%)
			Arthritis	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Asthma	N (%)	399 (10.24%)	6 (14.63%)	–	104 (11.33%)	-	281 (9.79%)	80 (12.18%)
			Atrial fibrillation	N (%)	160 (4.11%)	5 (12.20%)	–	20 (2.18%)	-	134 (4.67%)	28 (4.26%)
			Bulimia	N (%)	13 (0.33%)	0 (0.00%)	–	8 (0.87%)	-	6 (0.21%)	0 (0.00%)
			CKD	N (%)	583 (14.97%)	<5	–	63 (6.86%)	-	524 (18.26%)	66 (10.05%)
			COPD	N (%)	173 (4.44%)	<5	–	23 (2.51%)	-	151 (5.26%)	23 (3.50%)
			CVD	N (%)	1,942 (49.86%)	26 (63.41%)	–	372 (40.52%)	-	1,566 (54.56%)	269 (40.94%)
			Cancer	N (%)	393 (10.09%)	<5	–	73 (7.95%)	-	321 (11.18%)	44 (6.70%)
			Cerebrovascular disease	N (%)	159 (4.08%)	<5	–	17 (1.85%)	-	142 (4.95%)	17 (2.59%)
			Chronic liver disease	N (%)	169 (4.34%)	6 (14.63%)	–	23 (2.51%)	-	147 (5.12%)	28 (4.26%)
			Chronic respiratory disease	N (%)	520 (13.35%)	6 (14.63%)	–	122 (13.29%)	-	384 (13.38%)	95 (14.46%)
			Crohn	N (%)	14 (0.36%)	0 (0.00%)	–	<5	-	13 (0.45%)	<5
			Dementia	N (%)	11 (0.28%)	0 (0.00%)	–	<5	-	9 (0.31%)	0 (0.00%)
			Depression	N (%)	370 (9.50%)	<5	–	113 (12.31%)	-	247 (8.61%)	69 (10.50%)
			Dizziness	N (%)	417 (10.71%)	6 (14.63%)	–	106 (11.55%)	-	316 (11.01%)	48 (7.31%)
			Dyslipidaemia	N (%)	391 (10.04%)	7 (17.07%)	–	87 (9.48%)	-	286 (9.97%)	60 (9.13%)
			Dyspnoea	N (%)	538 (13.81%)	5 (12.20%)	–	123 (13.40%)	-	404 (14.08%)	81 (12.33%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Falls	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Foot problem	N (%)	150 (3.85%)	<5	–	35 (3.81%)	-	111 (3.87%)	18 (2.74%)
			Fragility fracture	N (%)	66 (1.69%)	<5	–	8 (0.87%)	-	54 (1.88%)	12 (1.83%)
			Gallbladder disorders	N (%)	25 (0.64%)	0 (0.00%)	–	5 (0.54%)	-	21 (0.73%)	<5
			HIV	N (%)	<5	0 (0.00%)	–	0 (0.00%)	-	<5	5 (0.76%)
			Has given birth	N (%)	47 (1.21%)	0 (0.00%)	–	24 (2.61%)	-	19 (0.66%)	10 (1.52%)
			Hearing impairment	N (%)	94 (2.41%)	<5	–	14 (1.53%)	-	76 (2.65%)	11 (1.67%)
			Heart failure	N (%)	121 (3.11%)	<5	–	15 (1.63%)	-	109 (3.80%)	12 (1.83%)
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Hemiplegia	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Housebound	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Hypertension	N (%)	1,166 (29.94%)	22 (53.66%)	–	227 (24.73%)	-	943 (32.86%)	140 (21.31%)
			Hypotension syncope	N (%)	249 (6.39%)	5 (12.20%)	–	58 (6.32%)	-	195 (6.79%)	36 (5.48%)
			Insomnia broad	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			LADA	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Lupus erythematosus	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			MACE	N (%)	293 (7.52%)	10 (24.39%)	–	27 (2.94%)	-	270 (9.41%)	33 (5.02%)
			MASLD	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Memory cognitive problems	N (%)	6 (0.15%)	0 (0.00%)	–	<5	-	5 (0.17%)	0 (0.00%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Mobility transfer problems	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Myocardial infarction	N (%)	198 (5.08%)	6 (14.63%)	–	21 (2.29%)	-	178 (6.20%)	21 (3.20%)
			Osteoarthritis	N (%)	586 (15.04%)	7 (17.07%)	–	129 (14.05%)	-	446 (15.54%)	93 (14.16%)
			Osteoporosis	N (%)	43 (1.10%)	<5	–	9 (0.98%)	-	35 (1.22%)	7 (1.07%)
			PAD	N (%)	45 (1.16%)	<5	–	5 (0.54%)	-	40 (1.39%)	11 (1.67%)
			PCOS	N (%)	24 (0.62%)	0 (0.00%)	–	10 (1.09%)	-	11 (0.38%)	6 (0.91%)
			PVD	N (%)	226 (5.80%)	<5	–	9 (0.98%)	-	223 (7.77%)	41 (6.24%)
			Pancreatic cancer broad	N (%)	<5	0 (0.00%)	–	0 (0.00%)	-	<5	0 (0.00%)
			Paraplegia	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Parkinsons disease	N (%)	5 (0.13%)	0 (0.00%)	–	0 (0.00%)	-	5 (0.17%)	0 (0.00%)
			Peptic ulcer	N (%)	43 (1.10%)	<5	–	10 (1.09%)	-	34 (1.18%)	<5
			Psoriasis	N (%)	142 (3.65%)	0 (0.00%)	–	28 (3.05%)	-	115 (4.01%)	27 (4.11%)
			Psoriatic arthritis	N (%)	<5	0 (0.00%)	–	<5	-	<5	<5
			Renal impairment	N (%)	799 (20.51%)	12 (29.27%)	–	94 (10.24%)	<5	712 (24.81%)	93 (14.16%)
			Requirement for care	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
			Rheumatoid arthritis	N (%)	54 (1.39%)	0 (0.00%)	–	6 (0.65%)	-	45 (1.57%)	12 (1.83%)
			Schizophrenia	N (%)	12 (0.31%)	0 (0.00%)	–	<5	-	9 (0.31%)	<5
			Skin ulcer	N (%)	56 (1.44%)	<5	–	5 (0.54%)	-	49 (1.71%)	8 (1.22%)
			Sleep apnoea	N (%)	405 (10.40%)	6 (14.63%)	–	117 (12.75%)	-	300 (10.45%)	59 (8.98%)
			Sleep disorder	N (%)	870 (22.34%)	14 (34.15%)	–	224 (24.40%)	-	651 (22.68%)	127 (19.33%)
			Sleep disturbance	N (%)	506 (12.99%)	10 (24.39%)	–	120 (13.07%)	-	381 (13.28%)	74 (11.26%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Social vulnerability	N (%)	116 (2.98%)	0 (0.00%)	–	14 (1.53%)	-	103 (3.59%)	11 (1.67%)
			Stroke	N (%)	106 (2.72%)	5 (12.20%)	–	8 (0.87%)	-	100 (3.48%)	13 (1.98%)
			Thyroid disorders	N (%)	275 (7.06%)	<5	–	71 (7.73%)	-	197 (6.86%)	51 (7.76%)
			Urinary incontinence	N (%)	372 (9.55%)	<5	–	69 (7.52%)	-	304 (10.59%)	57 (8.68%)
			Urinary system disease	N (%)	746 (19.15%)	9 (21.95%)	–	170 (18.52%)	-	569 (19.83%)	118 (17.96%)
			Visual impairment	N (%)	347 (8.91%)	8 (19.51%)	–	37 (4.03%)	-	312 (10.87%)	47 (7.15%)
		Indication	Both	N (%)	1,529 (39.26%)	28 (68.29%)	–	57 (6.21%)	–	1,460 (50.87%)	219 (33.33%)
			Neither	N (%)	382 (9.81%)	<5	–	73 (7.95%)	<5	271 (9.44%)	100 (15.22%)
			Obesity	N (%)	1,704 (43.75%)	<5	–	783 (85.29%)	–	871 (30.35%)	314 (47.79%)
			T2DM	N (%)	280 (7.19%)	5 (12.20%)	–	5 (0.54%)	–	268 (9.34%)	24 (3.65%)
NLHR	2023	Comorbidities	ADHD	N (%)	3,765 (4.53%)	25 (2.29%)	–	363 (6.07%)	0 (0.00%)	4,215 (4.60%)	–
			Activity limitation	N (%)	6,369 (7.66%)	89 (8.14%)	–	493 (8.25%)	0 (0.00%)	7,213 (7.87%)	–
			Alzheimer	N (%)	68 (0.08%)	5 (0.46%)	–	10 (0.17%)	0 (0.00%)	72 (0.08%)	–
			Anaemia and haematinic deficiency	N (%)	13,108 (15.77%)	230 (21.04%)	–	1,057 (17.68%)	<5	15,086 (16.46%)	–
			Anorexia	N (%)	176 (0.21%)	<5	–	17 (0.28%)	0 (0.00%)	193 (0.21%)	–
			Anxiety	N (%)	14,289 (17.20%)	156 (14.27%)	–	1,221 (20.42%)	0 (0.00%)	16,186 (17.66%)	–
			Arthritis	N (%)	1,205 (1.45%)	26 (2.38%)	–	92 (1.54%)	0 (0.00%)	1,350 (1.47%)	–
			Asthma	N (%)	20,027 (24.10%)	239 (21.87%)	–	1,611 (26.94%)	<5	22,597 (24.66%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Atrial fibrillation	N (%)	2,103 (2.53%)	46 (4.21%)	–	168 (2.81%)	0 (0.00%)	2,406 (2.63%)	–
			Bulimia	N (%)	397 (0.48%)	<5	–	44 (0.74%)	0 (0.00%)	478 (0.52%)	–
			CKD	N (%)	1,459 (1.76%)	63 (5.76%)	–	182 (3.04%)	0 (0.00%)	1,687 (1.84%)	–
			COPD	N (%)	6,338 (7.63%)	141 (12.90%)	–	509 (8.51%)	0 (0.00%)	7,180 (7.83%)	–
			CVD	N (%)	49,821 (59.95%)	914 (83.62%)	–	3,724 (62.28%)	5 (100.00%)	56,113 (61.23%)	–
			Cancer	N (%)	9,055 (10.90%)	202 (18.48%)	–	707 (11.82%)	<5	10,067 (10.99%)	–
			Cerebrovascular disease	N (%)	4,337 (5.22%)	119 (10.89%)	–	411 (6.87%)	<5	4,803 (5.24%)	–
			Chronic liver disease	N (%)	1,423 (1.71%)	27 (2.47%)	–	143 (2.39%)	<5	1,600 (1.75%)	–
			Chronic respiratory disease	N (%)	22,644 (27.25%)	300 (27.45%)	–	1,797 (30.06%)	<5	25,533 (27.86%)	–
			Crohn	N (%)	672 (0.81%)	<5	–	52 (0.87%)	0 (0.00%)	762 (0.83%)	–
			Dementia	N (%)	253 (0.30%)	19 (1.74%)	–	39 (0.65%)	0 (0.00%)	258 (0.28%)	–
			Depression	N (%)	11,258 (13.55%)	113 (10.34%)	–	989 (16.54%)	0 (0.00%)	12,792 (13.96%)	–
			Dizziness	N (%)	20,118 (24.21%)	242 (22.14%)	–	1,503 (25.14%)	0 (0.00%)	22,628 (24.69%)	–
			Dyslipidaemia	N (%)	3,359 (4.04%)	79 (7.23%)	–	271 (4.53%)	0 (0.00%)	3,798 (4.14%)	–
			Dyspnoea	N (%)	19,088 (22.97%)	293 (26.81%)	–	1,511 (25.27%)	<5	21,511 (23.47%)	–
			Falls	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Foot problem	N (%)	1,459 (1.76%)	24 (2.20%)	–	117 (1.96%)	0 (0.00%)	1,654 (1.80%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Fragility fracture	N (%)	8,575 (10.32%)	113 (10.34%)	–	677 (11.32%)	<5	9,492 (10.36%)	–
			Gallbladder disorders	N (%)	3,860 (4.65%)	52 (4.76%)	–	296 (4.95%)	0 (0.00%)	4,490 (4.90%)	–
			HIV	N (%)	133 (0.16%)	<5	–	9 (0.15%)	0 (0.00%)	147 (0.16%)	–
			Has given birth	N (%)	956 (1.15%)	0 (0.00%)	–	61 (1.02%)	0 (0.00%)	941 (1.03%)	–
			Hearing impairment	N (%)	2,831 (3.41%)	53 (4.85%)	–	199 (3.33%)	0 (0.00%)	3,143 (3.43%)	–
			Heart failure	N (%)	4,152 (5.00%)	132 (12.08%)	–	395 (6.61%)	<5	4,732 (5.16%)	–
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Hemiplegia	N (%)	111 (0.13%)	<5	–	9 (0.15%)	0 (0.00%)	127 (0.14%)	–
			Housebound	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Hypertension	N (%)	34,255 (41.22%)	763 (69.81%)	–	2,635 (44.07%)	5 (100.00%)	38,971 (42.52%)	–
			Hypotension syncope	N (%)	1,556 (1.87%)	47 (4.30%)	–	121 (2.02%)	0 (0.00%)	1,769 (1.93%)	–
			Insomnia broad	N (%)	282 (0.34%)	<5	–	19 (0.32%)	0 (0.00%)	325 (0.35%)	–
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			LADA	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Lupus erythematosus	N (%)	147 (0.18%)	<5	–	15 (0.25%)	0 (0.00%)	159 (0.17%)	–
			MACE	N (%)	5,104 (6.14%)	161 (14.73%)	–	480 (8.03%)	<5	5,631 (6.14%)	–
			MASLD	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Memory cognitive problems	N (%)	491 (0.59%)	23 (2.10%)	–	64 (1.07%)	0 (0.00%)	534 (0.58%)	–
			Mobility transfer problems	N (%)	17 (0.02%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	21 (0.02%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Myocardial infarction	N (%)	2,806 (3.38%)	97 (8.87%)	–	248 (4.15%)	<5	3,129 (3.41%)	–
			Osteoarthritis	N (%)	16,479 (19.83%)	287 (26.26%)	–	1,222 (20.44%)	0 (0.00%)	19,024 (20.76%)	–
			Osteoporosis	N (%)	2,095 (2.52%)	40 (3.66%)	–	164 (2.74%)	<5	2,357 (2.57%)	–
			PAD	N (%)	1,115 (1.34%)	43 (3.93%)	–	105 (1.76%)	<5	1,250 (1.36%)	–
			PCOS	N (%)	1,936 (2.33%)	9 (0.82%)	–	173 (2.89%)	0 (0.00%)	2,265 (2.47%)	–
			PVD	N (%)	2,738 (3.29%)	95 (8.69%)	–	245 (4.10%)	<5	3,117 (3.40%)	–
			Pancreatic cancer broad	N (%)	70 (0.08%)	<5	–	8 (0.13%)	0 (0.00%)	71 (0.08%)	–
			Paraplegia	N (%)	68 (0.08%)	<5	–	7 (0.12%)	0 (0.00%)	72 (0.08%)	–
			Parkinsons disease	N (%)	352 (0.42%)	12 (1.10%)	–	42 (0.70%)	0 (0.00%)	380 (0.41%)	–
			Peptic ulcer	N (%)	3,721 (4.48%)	82 (7.50%)	–	333 (5.57%)	0 (0.00%)	4,186 (4.57%)	–
			Psoriasis	N (%)	7,683 (9.25%)	129 (11.80%)	–	588 (9.83%)	0 (0.00%)	8,650 (9.44%)	–
			Psoriatic arthritis	N (%)	1,205 (1.45%)	25 (2.29%)	–	109 (1.82%)	0 (0.00%)	1,351 (1.47%)	–
			Renal impairment	N (%)	2,373 (2.86%)	85 (7.78%)	–	284 (4.75%)	0 (0.00%)	2,707 (2.95%)	–
			Requirement for care	N (%)	27 (0.03%)	0 (0.00%)	–	<5	0 (0.00%)	33 (0.04%)	–
			Rheumatoid arthritis	N (%)	5,480 (6.59%)	107 (9.79%)	–	409 (6.84%)	0 (0.00%)	6,174 (6.74%)	–
			Schizophrenia	N (%)	703 (0.85%)	18 (1.65%)	–	94 (1.57%)	0 (0.00%)	799 (0.87%)	–
			Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Sleep apnoea	N (%)	13,101 (15.77%)	184 (16.83%)	–	1,085 (18.15%)	0 (0.00%)	15,668 (17.10%)	–
			Sleep disorder	N (%)	32,246 (38.80%)	391 (35.77%)	–	2,563 (42.87%)	<5	36,706 (40.05%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Sleep disturbance	N (%)	30,528 (36.74%)	369 (33.76%)	–	2,433 (40.69%)	<5	34,680 (37.84%)	–
			Social vulnerability	N (%)	6 (0.01%)	0 (0.00%)	–	<5	0 (0.00%)	6 (0.01%)	–
			Stroke	N (%)	2,591 (3.12%)	81 (7.41%)	–	261 (4.37%)	<5	2,820 (3.08%)	–
			Thyroid disorders	N (%)	11,873 (14.29%)	145 (13.27%)	–	908 (15.19%)	0 (0.00%)	13,601 (14.84%)	–
			Urinary incontinence	N (%)	9,718 (11.69%)	164 (15.00%)	–	782 (13.08%)	0 (0.00%)	11,127 (12.14%)	–
			Urinary system disease	N (%)	2,044 (2.46%)	30 (2.74%)	–	173 (2.89%)	0 (0.00%)	2,313 (2.52%)	–
			Visual impairment	N (%)	7,025 (8.45%)	162 (14.82%)	–	584 (9.77%)	0 (0.00%)	7,844 (8.56%)	–
		Indication	Both	N (%)	10,846 (13.05%)	302 (27.63%)	–	807 (13.50%)	<5	13,201 (14.40%)	–
			Neither	N (%)	10,729 (12.91%)	24 (2.20%)	–	466 (7.79%)	–	10,739 (11.72%)	–
			Obesity	N (%)	49,783 (59.91%)	38 (3.48%)	–	3,693 (61.77%)	–	55,333 (60.38%)	–
			T2DM	N (%)	11,740 (14.13%)	729 (66.70%)	–	1,013 (16.94%)	<5	12,370 (13.50%)	–
SIDIAP	2024	Comorbidities	ADHD	N (%)	66 (0.60%)	10 (0.30%)	0 (0.00%)	17 (0.89%)	0 (0.00%)	52 (0.54%)	–
			Activity limitation	N (%)	1,050 (9.53%)	362 (10.95%)	<5	164 (8.63%)	<5	987 (10.34%)	–
			Alzheimer	N (%)	19 (0.17%)	8 (0.24%)	0 (0.00%)	<5	<5	17 (0.18%)	–
			Anaemia and haematinic deficiency	N (%)	2,039 (18.50%)	746 (22.56%)	<5	328 (17.26%)	5 (12.50%)	1,843 (19.31%)	–
			Anorexia	N (%)	37 (0.34%)	17 (0.51%)	0 (0.00%)	6 (0.32%)	0 (0.00%)	29 (0.30%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Anxiety	N (%)	4,678 (42.44%)	1,193 (36.07%)	6 (35.29%)	908 (47.79%)	18 (45.00%)	4,066 (42.61%)	–
			Arthritis	N (%)	346 (3.14%)	121 (3.66%)	0 (0.00%)	58 (3.05%)	0 (0.00%)	321 (3.36%)	–
			Asthma	N (%)	942 (8.55%)	218 (6.59%)	0 (0.00%)	174 (9.16%)	7 (17.50%)	877 (9.19%)	–
			Atrial fibrillation	N (%)	569 (5.16%)	228 (6.89%)	<5	55 (2.89%)	<5	545 (5.71%)	–
			Bulimia	N (%)	109 (0.99%)	31 (0.94%)	0 (0.00%)	28 (1.47%)	0 (0.00%)	88 (0.92%)	–
			CKD	N (%)	1,271 (11.53%)	596 (18.02%)	<5	120 (6.32%)	5 (12.50%)	1,205 (12.63%)	–
			COPD	N (%)	880 (7.98%)	353 (10.67%)	<5	127 (6.68%)	<5	819 (8.58%)	–
			CVD	N (%)	7,611 (69.05%)	2,569 (77.68%)	14 (82.35%)	1,170 (61.58%)	34 (85.00%)	6,812 (71.39%)	–
			Cancer	N (%)	1,266 (11.49%)	450 (13.61%)	<5	188 (9.89%)	<5	1,135 (11.89%)	–
			Cerebrovascular disease	N (%)	297 (2.69%)	157 (4.75%)	0 (0.00%)	36 (1.89%)	<5	278 (2.91%)	–
			Chronic liver disease	N (%)	2,202 (19.98%)	807 (24.40%)	<5	344 (18.11%)	6 (15.00%)	1,978 (20.73%)	–
			Chronic respiratory disease	N (%)	1,707 (15.49%)	532 (16.09%)	<5	282 (14.84%)	9 (22.50%)	1,577 (16.53%)	–
			Crohn	N (%)	38 (0.34%)	8 (0.24%)	0 (0.00%)	7 (0.37%)	0 (0.00%)	29 (0.30%)	–
			Dementia	N (%)	47 (0.43%)	24 (0.73%)	0 (0.00%)	7 (0.37%)	<5	53 (0.56%)	–
			Depression	N (%)	2,455 (22.27%)	719 (21.74%)	5 (29.41%)	438 (23.05%)	15 (37.50%)	2,173 (22.77%)	–
			Dizziness	N (%)	2,492 (22.61%)	830 (25.10%)	5 (29.41%)	454 (23.89%)	10 (25.00%)	2,116 (22.18%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Dyslipidaemia	N (%)	2,982 (27.05%)	1,048 (31.69%)	7 (41.18%)	437 (23.00%)	7 (17.50%)	2,693 (28.22%)	–
			Dyspnoea	N (%)	1,532 (13.90%)	547 (16.54%)	5 (29.41%)	241 (12.68%)	9 (22.50%)	1,348 (14.13%)	–
			Falls	N (%)	568 (5.15%)	207 (6.26%)	<5	108 (5.68%)	<5	489 (5.12%)	–
			Foot problem	N (%)	100 (0.91%)	41 (1.24%)	0 (0.00%)	22 (1.16%)	0 (0.00%)	82 (0.86%)	–
			Fragility fracture	N (%)	141 (1.28%)	68 (2.06%)	0 (0.00%)	19 (1.00%)	<5	127 (1.33%)	–
			Gallbladder disorders	N (%)	1,046 (9.49%)	330 (9.98%)	<5	189 (9.95%)	5 (12.50%)	940 (9.85%)	–
			HIV	N (%)	31 (0.28%)	9 (0.27%)	0 (0.00%)	5 (0.26%)	<5	30 (0.31%)	–
			Has given birth	N (%)	29 (0.26%)	<5	0 (0.00%)	5 (0.26%)	0 (0.00%)	26 (0.27%)	–
			Hearing impairment	N (%)	1,013 (9.19%)	374 (11.31%)	<5	146 (7.68%)	5 (12.50%)	920 (9.64%)	–
			Heart failure	N (%)	777 (7.05%)	360 (10.89%)	<5	70 (3.68%)	<5	737 (7.72%)	–
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Hemiplegia	N (%)	20 (0.18%)	7 (0.21%)	0 (0.00%)	<5	0 (0.00%)	17 (0.18%)	–
			Housebound	N (%)	5 (0.05%)	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	5 (0.05%)	–
			Hypertension	N (%)	5,211 (47.27%)	1,774 (53.64%)	8 (47.06%)	749 (39.42%)	22 (55.00%)	4,697 (49.22%)	–
			Hypotension syncope	N (%)	160 (1.45%)	54 (1.63%)	0 (0.00%)	20 (1.05%)	<5	146 (1.53%)	–
			Insomnia broad	N (%)	2,054 (18.63%)	602 (18.20%)	<5	343 (18.05%)	5 (12.50%)	1,831 (19.19%)	–
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			LADA	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Lupus erythematosus	N (%)	46 (0.42%)	11 (0.33%)	<5	9 (0.47%)	<5	42 (0.44%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			MACE	N (%)	827 (7.50%)	351 (10.61%)	<5	79 (4.16%)	<5	813 (8.52%)	–
			MASLD	N (%)	11 (0.10%)	7 (0.21%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	12 (0.13%)	–
			Memory cognitive problems	N (%)	179 (1.62%)	79 (2.39%)	0 (0.00%)	25 (1.32%)	<5	174 (1.82%)	–
			Mobility transfer problems	N (%)	124 (1.12%)	52 (1.57%)	0 (0.00%)	10 (0.53%)	0 (0.00%)	118 (1.24%)	–
			Myocardial infarction	N (%)	488 (4.43%)	191 (5.78%)	0 (0.00%)	41 (2.16%)	<5	478 (5.01%)	–
			Osteoarthritis	N (%)	2,929 (26.57%)	1,039 (31.42%)	<5	489 (25.74%)	19 (47.50%)	2,626 (27.52%)	–
			Osteoporosis	N (%)	292 (2.65%)	98 (2.96%)	<5	41 (2.16%)	<5	254 (2.66%)	–
			PAD	N (%)	25 (0.23%)	9 (0.27%)	0 (0.00%)	<5	<5	28 (0.29%)	–
			PCOS	N (%)	189 (1.71%)	33 (1.00%)	<5	46 (2.42%)	<5	149 (1.56%)	–
			PVD	N (%)	452 (4.10%)	225 (6.80%)	<5	39 (2.05%)	<5	471 (4.94%)	–
			Pancreatic cancer broad	N (%)	5 (0.05%)	<5	0 (0.00%)	0 (0.00%)	0 (0.00%)	6 (0.06%)	–
			Paraplegia	N (%)	6 (0.05%)	<5	0 (0.00%)	<5	0 (0.00%)	<5	–
			Parkinsons disease	N (%)	31 (0.28%)	12 (0.36%)	0 (0.00%)	<5	0 (0.00%)	33 (0.35%)	–
			Peptic ulcer	N (%)	203 (1.84%)	72 (2.18%)	0 (0.00%)	34 (1.79%)	<5	155 (1.62%)	–
			Psoriasis	N (%)	570 (5.17%)	189 (5.72%)	<5	106 (5.58%)	<5	484 (5.07%)	–
			Psoriatic arthritis	N (%)	54 (0.49%)	22 (0.67%)	0 (0.00%)	11 (0.58%)	0 (0.00%)	44 (0.46%)	–
			Renal impairment	N (%)	1,349 (12.24%)	617 (18.66%)	<5	128 (6.74%)	5 (12.50%)	1,278 (13.39%)	–
			Requirement for care	N (%)	339 (3.08%)	135 (4.08%)	0 (0.00%)	41 (2.16%)	<5	324 (3.40%)	–
			Rheumatoid arthritis	N (%)	92 (0.83%)	29 (0.88%)	0 (0.00%)	19 (1.00%)	<5	86 (0.90%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Schizophrenia	N (%)	75 (0.68%)	23 (0.70%)	<5	8 (0.42%)	0 (0.00%)	63 (0.66%)	–
			Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Sleep apnoea	N (%)	14 (0.13%)	5 (0.15%)	0 (0.00%)	<5	0 (0.00%)	10 (0.10%)	–
			Sleep disorder	N (%)	3,704 (33.60%)	1,162 (35.14%)	8 (47.06%)	617 (32.47%)	12 (30.00%)	3,341 (35.01%)	–
			Sleep disturbance	N (%)	1,876 (17.02%)	559 (16.90%)	<5	315 (16.58%)	<5	1,682 (17.63%)	–
			Social vulnerability	N (%)	211 (1.91%)	104 (3.14%)	0 (0.00%)	24 (1.26%)	<5	194 (2.03%)	–
			Stroke	N (%)	363 (3.29%)	172 (5.20%)	<5	40 (2.11%)	<5	363 (3.80%)	–
			Thyroid disorders	N (%)	2,114 (19.18%)	591 (17.87%)	<5	422 (22.21%)	7 (17.50%)	1,862 (19.51%)	–
			Urinary incontinence	N (%)	1,293 (11.73%)	532 (16.09%)	<5	193 (10.16%)	8 (20.00%)	1,174 (12.30%)	–
			Urinary system disease	N (%)	3,975 (36.06%)	1,231 (37.22%)	7 (41.18%)	709 (37.32%)	20 (50.00%)	3,546 (37.16%)	–
			Visual impairment	N (%)	1,783 (16.18%)	622 (18.81%)	<5	321 (16.89%)	7 (17.50%)	1,520 (15.93%)	–
		Indication	Both	N (%)	6,093 (55.28%)	2,553 (77.20%)	10 (58.82%)	531 (27.95%)	35 (87.50%)	5,816 (60.95%)	–
			Neither	N (%)	330 (2.99%)	30 (0.91%)	<5	61 (3.21%)	–	258 (2.70%)	–
			Obesity	N (%)	4,317 (39.16%)	626 (18.93%)	6 (35.29%)	1,292 (68.00%)	5 (12.50%)	3,219 (33.74%)	–
			T2DM	N (%)	283 (2.57%)	98 (2.96%)	–	16 (0.84%)	–	249 (2.61%)	–
HI-SPEED	2025	Comorbidities	ADHD	N (%)	2,194 (4.37%)	72 (3.40%)	–	361 (7.17%)	<5	1,988 (4.13%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Activity limitation	N (%)	1,135 (2.26%)	96 (4.53%)	–	85 (1.69%)	<5	1,145 (2.38%)	–
			Alzheimer	N (%)	74 (0.15%)	6 (0.28%)	–	<5	0 (0.00%)	75 (0.16%)	–
			Anaemia and haematinic deficiency	N (%)	4,392 (8.74%)	249 (11.75%)	–	478 (9.49%)	<5	4,260 (8.85%)	–
			Anorexia	N (%)	37 (0.07%)	<5	–	5 (0.10%)	0 (0.00%)	31 (0.06%)	–
			Anxiety	N (%)	7,609 (15.14%)	259 (12.22%)	–	1,020 (20.25%)	<5	7,063 (14.68%)	–
			Arthritis	N (%)	575 (1.14%)	23 (1.08%)	–	57 (1.13%)	0 (0.00%)	549 (1.14%)	–
			Asthma	N (%)	4,846 (9.64%)	223 (10.52%)	–	607 (12.05%)	0 (0.00%)	4,587 (9.53%)	–
			Atrial fibrillation	N (%)	1,588 (3.16%)	98 (4.62%)	–	108 (2.14%)	0 (0.00%)	1,608 (3.34%)	–
			Bulimia	N (%)	160 (0.32%)	<5	–	22 (0.44%)	0 (0.00%)	147 (0.31%)	–
			CKD	N (%)	1,777 (3.54%)	149 (7.03%)	–	108 (2.14%)	<5	1,840 (3.82%)	–
			COPD	N (%)	1,579 (3.14%)	119 (5.61%)	–	141 (2.80%)	<5	1,551 (3.22%)	–
			CVD	N (%)	23,861 (47.49%)	1,347 (63.54%)	–	2,168 (43.04%)	6 (66.67%)	23,394 (48.62%)	–
			Cancer	N (%)	4,345 (8.65%)	241 (11.37%)	–	326 (6.47%)	<5	4,304 (8.94%)	–
			Cerebrovascular disease	N (%)	1,210 (2.41%)	83 (3.92%)	–	95 (1.89%)	0 (0.00%)	1,201 (2.50%)	–
			Chronic liver disease	N (%)	1,477 (2.94%)	72 (3.40%)	–	139 (2.76%)	<5	1,455 (3.02%)	–
			Chronic respiratory disease	N (%)	5,851 (11.65%)	297 (14.01%)	–	681 (13.52%)	<5	5,582 (11.60%)	–
			Crohn	N (%)	314 (0.62%)	17 (0.80%)	–	34 (0.68%)	0 (0.00%)	303 (0.63%)	–
			Dementia	N (%)	202 (0.40%)	23 (1.08%)	–	7 (0.14%)	<5	193 (0.40%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Depression	N (%)	8,047 (16.02%)	281 (13.25%)	–	1,042 (20.69%)	0 (0.00%)	7,563 (15.72%)	–
			Dizziness	N (%)	6,035 (12.01%)	287 (13.54%)	–	701 (13.92%)	0 (0.00%)	5,764 (11.98%)	–
			Dyslipidaemia	N (%)	9,398 (18.70%)	645 (30.42%)	–	641 (12.73%)	<5	9,601 (19.95%)	–
			Dyspnoea	N (%)	6,348 (12.63%)	329 (15.52%)	–	743 (14.75%)	<5	6,051 (12.58%)	–
			Falls	N (%)	3,772 (7.51%)	214 (10.09%)	–	420 (8.34%)	0 (0.00%)	3,583 (7.45%)	–
			Foot problem	N (%)	566 (1.13%)	33 (1.56%)	–	42 (0.83%)	0 (0.00%)	575 (1.19%)	–
			Fragility fracture	N (%)	1,045 (2.08%)	69 (3.25%)	–	111 (2.20%)	0 (0.00%)	990 (2.06%)	–
			Gallbladder disorders	N (%)	2,673 (5.32%)	130 (6.13%)	–	327 (6.49%)	0 (0.00%)	2,516 (5.23%)	–
			HIV	N (%)	69 (0.14%)	8 (0.38%)	–	8 (0.16%)	0 (0.00%)	64 (0.13%)	–
			Has given birth	N (%)	492 (0.98%)	6 (0.28%)	–	89 (1.77%)	0 (0.00%)	412 (0.86%)	–
			Hearing impairment	N (%)	1,516 (3.02%)	70 (3.30%)	–	143 (2.84%)	0 (0.00%)	1,460 (3.03%)	–
			Heart failure	N (%)	2,797 (5.57%)	221 (10.42%)	–	185 (3.67%)	0 (0.00%)	2,784 (5.79%)	–
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Hemiplegia	N (%)	346 (0.69%)	26 (1.23%)	–	30 (0.60%)	0 (0.00%)	343 (0.71%)	–
			Housebound	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Hypertension	N (%)	18,121 (36.07%)	1,147 (54.10%)	–	1,463 (29.05%)	6 (66.67%)	18,052 (37.52%)	–
			Hypotension syncope	N (%)	772 (1.54%)	59 (2.78%)	–	67 (1.33%)	0 (0.00%)	749 (1.56%)	–
			Insomnia broad	N (%)	487 (0.97%)	10 (0.47%)	–	63 (1.25%)	0 (0.00%)	455 (0.95%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Ischeamic heart disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			LADA	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Lupus erythematosus	N (%)	64 (0.13%)	<5	–	6 (0.12%)	0 (0.00%)	66 (0.14%)	–
			MACE	N (%)	2,927 (5.83%)	258 (12.17%)	–	179 (3.55%)	<5	2,909 (6.05%)	–
			MASLD	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Memory cognitive problems	N (%)	524 (1.04%)	43 (2.03%)	–	40 (0.79%)	<5	503 (1.05%)	–
			Mobility transfer problems	N (%)	666 (1.33%)	46 (2.17%)	–	58 (1.15%)	0 (0.00%)	661 (1.37%)	–
			Myocardial infarction	N (%)	1,684 (3.35%)	157 (7.41%)	–	95 (1.89%)	<5	1,659 (3.45%)	–
			Osteoarthritis	N (%)	6,699 (13.33%)	341 (16.08%)	–	721 (14.31%)	<5	6,461 (13.43%)	–
			Osteoporosis	N (%)	425 (0.85%)	32 (1.51%)	–	31 (0.62%)	0 (0.00%)	434 (0.90%)	–
			PAD	N (%)	496 (0.99%)	41 (1.93%)	–	24 (0.48%)	0 (0.00%)	508 (1.06%)	–
			PCOS	N (%)	823 (1.64%)	19 (0.90%)	–	148 (2.94%)	0 (0.00%)	745 (1.55%)	–
			PVD	N (%)	914 (1.82%)	81 (3.82%)	–	43 (0.85%)	0 (0.00%)	947 (1.97%)	–
			Pancreatic cancer broad	N (%)	46 (0.09%)	5 (0.24%)	–	<5	0 (0.00%)	50 (0.10%)	–
			Paraplegia	N (%)	87 (0.17%)	6 (0.28%)	–	9 (0.18%)	0 (0.00%)	84 (0.17%)	–
			Parkinsons disease	N (%)	94 (0.19%)	5 (0.24%)	–	8 (0.16%)	0 (0.00%)	94 (0.20%)	–
			Peptic ulcer	N (%)	770 (1.53%)	63 (2.97%)	–	81 (1.61%)	0 (0.00%)	747 (1.55%)	–
			Psoriasis	N (%)	1,875 (3.73%)	104 (4.91%)	–	173 (3.43%)	<5	1,811 (3.76%)	–
			Psoriatic arthritis	N (%)	545 (1.08%)	34 (1.60%)	–	54 (1.07%)	0 (0.00%)	517 (1.07%)	–
			Renal impairment	N (%)	2,500 (4.98%)	207 (9.76%)	–	155 (3.08%)	<5	2,552 (5.30%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Requirement for care	N (%)	103 (0.20%)	14 (0.66%)	–	9 (0.18%)	0 (0.00%)	92 (0.19%)	–
			Rheumatoid arthritis	N (%)	595 (1.18%)	35 (1.65%)	–	60 (1.19%)	0 (0.00%)	578 (1.20%)	–
			Schizophrenia	N (%)	289 (0.58%)	25 (1.18%)	–	20 (0.40%)	0 (0.00%)	290 (0.60%)	–
			Skin ulcer	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	0 (0.00%)	–
			Sleep apnoea	N (%)	4,551 (9.06%)	238 (11.23%)	–	436 (8.66%)	0 (0.00%)	4,529 (9.41%)	–
			Sleep disorder	N (%)	9,986 (19.88%)	395 (18.63%)	–	1,141 (22.65%)	<5	9,641 (20.04%)	–
			Sleep disturbance	N (%)	6,033 (12.01%)	193 (9.10%)	–	772 (15.33%)	<5	5,692 (11.83%)	–
			Social vulnerability	N (%)	15 (0.03%)	<5	–	<5	0 (0.00%)	12 (0.02%)	–
			Stroke	N (%)	1,371 (2.73%)	113 (5.33%)	–	93 (1.85%)	0 (0.00%)	1,376 (2.86%)	–
			Thyroid disorders	N (%)	4,440 (8.84%)	223 (10.52%)	–	521 (10.34%)	<5	4,241 (8.81%)	–
			Urinary incontinence	N (%)	2,552 (5.08%)	122 (5.75%)	–	329 (6.53%)	<5	2,451 (5.09%)	–
			Urinary system disease	N (%)	5,923 (11.79%)	292 (13.77%)	–	683 (13.56%)	<5	5,687 (11.82%)	–
			Visual impairment	N (%)	1,789 (3.56%)	110 (5.19%)	–	151 (3.00%)	0 (0.00%)	1,760 (3.66%)	–
		Indication	Both	N (%)	7,548 (15.02%)	545 (25.71%)	–	298 (5.92%)	<5	8,146 (16.93%)	–
			Neither	N (%)	20,256 (40.32%)	157 (7.41%)	–	2,336 (46.38%)	–	18,541 (38.53%)	–
			Obesity	N (%)	6,973 (13.88%)	98 (4.62%)	–	1,949 (38.69%)	–	5,533 (11.50%)	–
			T2DM	N (%)	15,467 (30.78%)	1,320 (62.26%)	–	454 (9.01%)	7 (77.78%)	15,898 (33.04%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
CPRD Aurum	2025	Comorbidities	ADHD	N (%)	1,898 (1.45%)	<5	–	8 (2.31%)	–	182 (1.21%)	1,812 (1.43%)
			Activity limitation	N (%)	165 (0.13%)	<5	–	<5	–	41 (0.27%)	166 (0.13%)
			Alzheimer	N (%)	41 (0.03%)	<5	–	<5	–	13 (0.09%)	37 (0.03%)
			Anaemia and haematinic deficiency	N (%)	11,376 (8.70%)	137 (18.12%)	–	55 (15.85%)	–	1,725 (11.45%)	11,289 (8.91%)
			Anorexia	N (%)	74 (0.06%)	0 (0.00%)	–	0 (0.00%)	–	<5	69 (0.05%)
			Anxiety	N (%)	24,927 (19.07%)	105 (13.89%)	–	62 (17.87%)	–	2,514 (16.68%)	24,001 (18.95%)
			Arthritis	N (%)	1,461 (1.12%)	20 (2.65%)	–	5 (1.44%)	–	237 (1.57%)	1,453 (1.15%)
			Asthma	N (%)	19,285 (14.76%)	136 (17.99%)	–	67 (19.31%)	–	2,375 (15.76%)	18,777 (14.83%)
			Atrial fibrillation	N (%)	2,371 (1.81%)	55 (7.28%)	–	15 (4.32%)	–	556 (3.69%)	2,302 (1.82%)
			Bulimia	N (%)	332 (0.25%)	0 (0.00%)	–	<5	–	20 (0.13%)	295 (0.23%)
			CKD	N (%)	4,840 (3.70%)	123 (16.27%)	–	55 (15.85%)	–	1,289 (8.55%)	4,903 (3.87%)
			COPD	N (%)	2,315 (1.77%)	49 (6.48%)	–	17 (4.90%)	–	465 (3.09%)	2,331 (1.84%)
			CVD	N (%)	46,662 (35.70%)	514 (67.99%)	–	199 (57.35%)	–	7,648 (50.75%)	45,622 (36.02%)
			Cancer	N (%)	5,724 (4.38%)	62 (8.20%)	–	32 (9.22%)	–	990 (6.57%)	5,544 (4.38%)
			Cerebrovascular disease	N (%)	1,864 (1.43%)	45 (5.95%)	–	24 (6.92%)	–	403 (2.67%)	1,851 (1.46%)
			Chronic liver disease	N (%)	9,636 (7.37%)	138 (18.25%)	–	46 (13.26%)	–	1,791 (11.88%)	9,827 (7.76%)
			Chronic respiratory disease	N (%)	20,759 (15.88%)	168 (22.22%)	–	73 (21.04%)	–	2,678 (17.77%)	20,247 (15.99%)
			Crohn	N (%)	441 (0.34%)	<5	–	<5	–	55 (0.36%)	435 (0.34%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Dementia	N (%)	116 (0.09%)	8 (1.06%)	–	<5	–	30 (0.20%)	111 (0.09%)
			Depression	N (%)	40,445 (30.94%)	209 (27.65%)	–	122 (35.16%)	–	4,418 (29.31%)	38,994 (30.79%)
			Dizziness	N (%)	15,845 (12.12%)	141 (18.65%)	–	44 (12.68%)	–	2,089 (13.86%)	15,559 (12.29%)
			Dyslipidaemia	N (%)	9,323 (7.13%)	115 (15.21%)	–	40 (11.53%)	–	1,730 (11.48%)	9,174 (7.24%)
			Dyspnoea	N (%)	18,383 (14.06%)	190 (25.13%)	–	94 (27.09%)	–	2,731 (18.12%)	18,137 (14.32%)
			Falls	N (%)	6,407 (4.90%)	85 (11.24%)	–	36 (10.37%)	–	999 (6.63%)	6,430 (5.08%)
			Foot problem	N (%)	10,181 (7.79%)	224 (29.63%)	–	76 (21.90%)	–	2,430 (16.12%)	10,756 (8.49%)
			Fragility fracture	N (%)	1,814 (1.39%)	22 (2.91%)	–	9 (2.59%)	–	271 (1.80%)	1,703 (1.34%)
			Gallbladder disorders	N (%)	7,695 (5.89%)	66 (8.73%)	–	40 (11.53%)	–	973 (6.46%)	7,399 (5.84%)
			HIV	N (%)	165 (0.13%)	0 (0.00%)	–	<5	–	21 (0.14%)	159 (0.13%)
			Has given birth	N (%)	2,068 (1.58%)	<5	–	<5	–	88 (0.58%)	1,993 (1.57%)
			Hearing impairment	N (%)	6,402 (4.90%)	73 (9.66%)	–	23 (6.63%)	–	996 (6.61%)	6,246 (4.93%)
			Heart failure	N (%)	1,411 (1.08%)	36 (4.76%)	–	13 (3.75%)	–	361 (2.40%)	1,486 (1.17%)
			Heart valve disease	N (%)	11 (0.01%)	0 (0.00%)	–	0 (0.00%)	–	<5	11 (0.01%)
			Hemiplegia	N (%)	36 (0.03%)	<5	–	0 (0.00%)	–	8 (0.05%)	33 (0.03%)
			Housebound	N (%)	364 (0.28%)	15 (1.98%)	–	12 (3.46%)	–	112 (0.74%)	353 (0.28%)
			Hypertension	N (%)	30,369 (23.24%)	410 (54.23%)	–	152 (43.80%)	–	5,686 (37.73%)	30,108 (23.77%)
			Hypotension syncope	N (%)	2,350 (1.80%)	27 (3.57%)	–	9 (2.59%)	–	356 (2.36%)	2,327 (1.84%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Insomnia broad	N (%)	9,990 (7.64%)	72 (9.52%)	–	40 (11.53%)	–	1,324 (8.79%)	9,796 (7.74%)
			Ischeamic heart disease	N (%)	1,474 (1.13%)	35 (4.63%)	–	12 (3.46%)	–	431 (2.86%)	1,491 (1.18%)
			LADA	N (%)	19 (0.01%)	<5	–	0 (0.00%)	–	<5	21 (0.02%)
			Lupus erythematosus	N (%)	147 (0.11%)	0 (0.00%)	–	0 (0.00%)	–	21 (0.14%)	141 (0.11%)
			MACE	N (%)	2,463 (1.88%)	70 (9.26%)	–	32 (9.22%)	–	656 (4.35%)	2,426 (1.92%)
			MASLD	N (%)	4,864 (3.72%)	83 (10.98%)	–	29 (8.36%)	–	948 (6.29%)	5,037 (3.98%)
			Memory cognitive problems	N (%)	342 (0.26%)	14 (1.85%)	–	<5	–	81 (0.54%)	328 (0.26%)
			Mobility transfer problems	N (%)	1,965 (1.50%)	45 (5.95%)	–	17 (4.90%)	–	453 (3.01%)	2,007 (1.58%)
			Myocardial infarction	N (%)	1,492 (1.14%)	34 (4.50%)	–	14 (4.03%)	–	432 (2.87%)	1,473 (1.16%)
			Osteoarthritis	N (%)	19,434 (14.87%)	202 (26.72%)	–	83 (23.92%)	–	3,345 (22.19%)	19,130 (15.11%)
			Osteoporosis	N (%)	675 (0.52%)	<5	–	<5	–	121 (0.80%)	652 (0.51%)
			PAD	N (%)	146 (0.11%)	5 (0.66%)	–	<5	–	30 (0.20%)	154 (0.12%)
			PCOS	N (%)	5,484 (4.20%)	14 (1.85%)	–	10 (2.88%)	–	471 (3.13%)	5,364 (4.24%)
			PVD	N (%)	545 (0.42%)	22 (2.91%)	–	10 (2.88%)	–	134 (0.89%)	573 (0.45%)
			Pancreatic cancer broad	N (%)	12 (0.01%)	<5	–	<5	–	<5	13 (0.01%)
			Paraplegia	N (%)	25 (0.02%)	0 (0.00%)	–	0 (0.00%)	–	6 (0.04%)	23 (0.02%)
			Parkinsons disease	N (%)	74 (0.06%)	<5	–	<5	–	16 (0.11%)	73 (0.06%)
			Peptic ulcer	N (%)	1,173 (0.90%)	15 (1.98%)	–	<5	–	189 (1.25%)	1,144 (0.90%)
			Psoriasis	N (%)	6,037 (4.62%)	43 (5.69%)	–	16 (4.61%)	–	720 (4.78%)	5,939 (4.69%)
			Psoriatic arthritis	N (%)	669 (0.51%)	<5	–	0 (0.00%)	–	82 (0.54%)	694 (0.55%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Renal impairment	N (%)	5,985 (4.58%)	139 (18.39%)	–	61 (17.58%)	–	1,480 (9.82%)	6,044 (4.77%)
			Requirement for care	N (%)	1,436 (1.10%)	42 (5.56%)	–	12 (3.46%)	–	353 (2.34%)	1,427 (1.13%)
			Rheumatoid arthritis	N (%)	1,279 (0.98%)	13 (1.72%)	–	6 (1.73%)	–	222 (1.47%)	1,244 (0.98%)
			Schizophrenia	N (%)	243 (0.19%)	10 (1.32%)	–	<5	–	81 (0.54%)	218 (0.17%)
			Skin ulcer	N (%)	212 (0.16%)	<5	–	<5	–	42 (0.28%)	231 (0.18%)
			Sleep apnoea	N (%)	6,493 (4.97%)	83 (10.98%)	–	43 (12.39%)	–	1,135 (7.53%)	6,668 (5.27%)
			Sleep disorder	N (%)	19,785 (15.14%)	173 (22.88%)	–	92 (26.51%)	–	2,808 (18.63%)	19,606 (15.48%)
			Sleep disturbance	N (%)	7,734 (5.92%)	64 (8.47%)	–	28 (8.07%)	–	1,057 (7.01%)	7,588 (5.99%)
			Social vulnerability	N (%)	2,426 (1.86%)	41 (5.42%)	–	18 (5.19%)	–	460 (3.05%)	2,402 (1.90%)
			Stroke	N (%)	1,048 (0.80%)	38 (5.03%)	–	20 (5.76%)	–	243 (1.61%)	1,025 (0.81%)
			Thyroid disorders	N (%)	9,848 (7.53%)	71 (9.39%)	–	40 (11.53%)	–	1,378 (9.14%)	9,619 (7.60%)
			Urinary incontinence	N (%)	12,055 (9.22%)	112 (14.81%)	–	51 (14.70%)	–	1,651 (10.95%)	11,793 (9.31%)
			Urinary system disease	N (%)	17,051 (13.05%)	110 (14.55%)	–	52 (14.99%)	–	1,934 (12.83%)	16,599 (13.11%)
			Visual impairment	N (%)	2,965 (2.27%)	77 (10.19%)	–	17 (4.90%)	–	674 (4.47%)	2,891 (2.28%)
		Indication	Both	N (%)	14,908 (11.41%)	380 (50.26%)	–	134 (38.62%)	–	3,745 (24.85%)	16,844 (13.30%)
			Neither	N (%)	70,624 (54.03%)	14 (1.85%)	–	73 (21.04%)	–	4,820 (31.98%)	67,231 (53.09%)
			Obesity	N (%)	34,211 (26.18%)	8 (1.06%)	–	53 (15.27%)	–	2,815 (18.68%)	32,462 (25.63%)

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			T2DM	N (%)	10,958 (8.38%)	354 (46.83%)	–	87 (25.07%)	–	3,691 (24.49%)	10,106 (7.98%)
CPRD GOLD	2025	Comorbidities	ADHD	N (%)	7 (0.30%)	<5	–	<5	–	6 (0.27%)	–
			Activity limitation	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	–
			Alzheimer	N (%)	<5	0 (0.00%)	–	0 (0.00%)	–	<5	–
			Anaemia and haematinic deficiency	N (%)	188 (8.10%)	17 (9.09%)	–	<5	–	190 (8.43%)	–
			Anorexia	N (%)	<5	0 (0.00%)	–	0 (0.00%)	–	<5	–
			Anxiety	N (%)	331 (14.27%)	30 (16.04%)	–	6 (12.00%)	–	326 (14.47%)	–
			Arthritis	N (%)	40 (1.72%)	<5	–	0 (0.00%)	–	39 (1.73%)	–
			Asthma	N (%)	276 (11.90%)	30 (16.04%)	–	<5	–	271 (12.03%)	–
			Atrial fibrillation	N (%)	122 (5.26%)	9 (4.81%)	–	<5	–	117 (5.19%)	–
			Bulimia	N (%)	<5	0 (0.00%)	–	0 (0.00%)	–	<5	–
			CKD	N (%)	223 (9.61%)	24 (12.83%)	–	6 (12.00%)	–	213 (9.45%)	–
			COPD	N (%)	126 (5.43%)	9 (4.81%)	–	<5	–	125 (5.55%)	–
			CVD	N (%)	1,333 (57.46%)	112 (59.89%)	–	29 (58.00%)	–	1,295 (57.48%)	–
			Cancer	N (%)	219 (9.44%)	10 (5.35%)	–	<5	–	213 (9.45%)	–
			Cerebrovascular disease	N (%)	132 (5.69%)	10 (5.35%)	–	7 (14.00%)	–	127 (5.64%)	–
			Chronic liver disease	N (%)	292 (12.59%)	24 (12.83%)	–	<5	–	285 (12.65%)	–
			Chronic respiratory disease	N (%)	374 (16.12%)	35 (18.72%)	–	8 (16.00%)	–	368 (16.33%)	–
			Crohn	N (%)	12 (0.52%)	<5	–	<5	–	9 (0.40%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Dementia	N (%)	8 (0.34%)	0 (0.00%)	–	0 (0.00%)	–	8 (0.36%)	–
			Depression	N (%)	450 (19.40%)	49 (26.20%)	–	12 (24.00%)	–	444 (19.71%)	–
			Dizziness	N (%)	295 (12.72%)	35 (18.72%)	–	<5	–	284 (12.61%)	–
			Dyslipidaemia	N (%)	239 (10.30%)	24 (12.83%)	–	5 (10.00%)	–	226 (10.03%)	–
			Dyspnoea	N (%)	413 (17.80%)	47 (25.13%)	–	7 (14.00%)	–	401 (17.80%)	–
			Falls	N (%)	140 (6.03%)	17 (9.09%)	–	5 (10.00%)	–	131 (5.81%)	–
			Foot problem	N (%)	312 (13.45%)	40 (21.39%)	–	5 (10.00%)	–	294 (13.05%)	–
			Fragility fracture	N (%)	44 (1.90%)	<5	–	<5	–	44 (1.95%)	–
			Gallbladder disorders	N (%)	126 (5.43%)	14 (7.49%)	–	<5	–	124 (5.50%)	–
			HIV	N (%)	<5	<5	–	0 (0.00%)	–	<5	–
			Has given birth	N (%)	<5	0 (0.00%)	–	0 (0.00%)	–	<5	–
			Hearing impairment	N (%)	128 (5.52%)	7 (3.74%)	–	<5	–	127 (5.64%)	–
			Heart failure	N (%)	78 (3.36%)	5 (2.67%)	–	<5	–	83 (3.68%)	–
			Heart valve disease	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	–
			Hemiplegia	N (%)	<5	0 (0.00%)	–	0 (0.00%)	–	<5	–
			Housebound	N (%)	17 (0.73%)	<5	–	<5	–	18 (0.80%)	–
			Hypertension	N (%)	875 (37.72%)	69 (36.90%)	–	14 (28.00%)	–	859 (38.13%)	–
			Hypotension syncope	N (%)	56 (2.41%)	7 (3.74%)	–	<5	–	55 (2.44%)	–
			Insomnia broad	N (%)	191 (8.23%)	19 (10.16%)	–	<5	–	183 (8.12%)	–
			Ischeamic heart disease	N (%)	84 (3.62%)	<5	–	<5	–	85 (3.77%)	–
			LADA	N (%)	<5	<5	–	0 (0.00%)	–	<5	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Lupus erythematosus	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	–
			MACE	N (%)	201 (8.66%)	11 (5.88%)	–	10 (20.00%)	–	192 (8.52%)	–
			MASLD	N (%)	180 (7.76%)	18 (9.63%)	–	0 (0.00%)	–	174 (7.72%)	–
			Memory cognitive problems	N (%)	21 (0.91%)	<5	–	0 (0.00%)	–	21 (0.93%)	–
			Mobility transfer problems	N (%)	21 (0.91%)	<5	–	<5	–	20 (0.89%)	–
			Myocardial infarction	N (%)	125 (5.39%)	7 (3.74%)	–	5 (10.00%)	–	120 (5.33%)	–
			Osteoarthritis	N (%)	440 (18.97%)	37 (19.79%)	–	15 (30.00%)	–	424 (18.82%)	–
			Osteoporosis	N (%)	24 (1.03%)	<5	–	0 (0.00%)	–	23 (1.02%)	–
			PAD	N (%)	11 (0.47%)	<5	–	0 (0.00%)	–	10 (0.44%)	–
			PCOS	N (%)	34 (1.47%)	<5	–	<5	–	33 (1.46%)	–
			PVD	N (%)	41 (1.77%)	5 (2.67%)	–	<5	–	40 (1.78%)	–
			Pancreatic cancer broad	N (%)	<5	0 (0.00%)	–	0 (0.00%)	–	<5	–
			Paraplegia	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	–
			Parkinsons disease	N (%)	5 (0.22%)	<5	–	0 (0.00%)	–	<5	–
			Peptic ulcer	N (%)	37 (1.59%)	<5	–	<5	–	34 (1.51%)	–
			Psoriasis	N (%)	120 (5.17%)	13 (6.95%)	–	0 (0.00%)	–	114 (5.06%)	–
			Psoriatic arthritis	N (%)	14 (0.60%)	0 (0.00%)	–	0 (0.00%)	–	15 (0.67%)	–
			Renal impairment	N (%)	248 (10.69%)	28 (14.97%)	–	7 (14.00%)	–	237 (10.52%)	–
			Requirement for care	N (%)	18 (0.78%)	<5	–	0 (0.00%)	–	17 (0.75%)	–
			Rheumatoid arthritis	N (%)	33 (1.42%)	<5	–	0 (0.00%)	–	32 (1.42%)	–
			Schizophrenia	N (%)	8 (0.34%)	<5	–	<5	–	10 (0.44%)	–

Data source	Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
					GLP-1 RA	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Skin ulcer	N (%)	7 (0.30%)	<5	–	0 (0.00%)	–	<5	–
			Sleep apnoea	N (%)	170 (7.33%)	20 (10.70%)	–	<5	–	169 (7.50%)	–
			Sleep disorder	N (%)	379 (16.34%)	33 (17.65%)	–	7 (14.00%)	–	374 (16.60%)	–
			Sleep disturbance	N (%)	70 (3.02%)	10 (5.35%)	–	0 (0.00%)	–	64 (2.84%)	–
			Social vulnerability	N (%)	59 (2.54%)	8 (4.28%)	–	<5	–	61 (2.71%)	–
			Stroke	N (%)	84 (3.62%)	5 (2.67%)	–	5 (10.00%)	–	79 (3.51%)	–
			Thyroid disorders	N (%)	193 (8.32%)	13 (6.95%)	–	6 (12.00%)	–	189 (8.39%)	–
			Urinary incontinence	N (%)	185 (7.97%)	19 (10.16%)	–	5 (10.00%)	–	178 (7.90%)	–
			Urinary system disease	N (%)	224 (9.66%)	20 (10.70%)	–	<5	–	221 (9.81%)	–
			Visual impairment	N (%)	114 (4.91%)	5 (2.67%)	–	5 (10.00%)	–	112 (4.97%)	–
		Indication	Both	N (%)	1,010 (43.53%)	83 (44.39%)	–	21 (42.00%)	–	979 (43.45%)	–
			Neither	N (%)	225 (9.70%)	19 (10.16%)	–	8 (16.00%)	–	219 (9.72%)	–
			Obesity	N (%)	98 (4.22%)	6 (3.21%)	–	<5	–	100 (4.44%)	–
			T2DM	N (%)	987 (42.54%)	79 (42.25%)	–	18 (36.00%)	–	955 (42.39%)	–

GLP-1 RA class includes use of any GLP-1 RA ingredient. Last reported year references the last calendar year that was observed, which may not be a complete year (see **Table 1** for full details of the study period). Comorbidities were diagnosed any time before or on the index date (i.e. date of first GLP-1 RA prescription).
– = not applicable; ADHD = Attention-Deficit/Hyperactivity Disorder; AIDS = Acquired Immunodeficiency Syndrome; Both = patients with type 2 diabetes mellitus and obesity; CPRD = Clinical Practice Research Datalink; CVD = Cardiovascular Disease; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; LADA = Latent Autoimmune Diabetes in Adults; MACE = Major Adverse Cardiovascular Event; MASLD = Metabolic Dysfunction-Associated Steatotic Liver; Neither = patients had no record of type 2 diabetes mellitus nor obesity; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; PCOS = Polycystic Ovary Syndrome; SIDIAP = The Information System for Research in Primary Care; T2DM = Type 2 diabetes mellitus.

Table S2. Characteristics of new users of GLP-1 by GLP-1 RA ingredient and per 12 data sources in the last reported year.

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
IQVIA LPD Belgium										
2025	Age	–	Median [Q25 – Q75]	60.00 [48.00 - 70.00]	69.00 [62.00 - 76.00]	-	54.00 [43.00 - 66.50]	-	60.00 [49.00 - 70.00]	–
			Mean (SD)	58.48 (13.81)	68.87 (10.00)	-	54.14 (14.60)	-	58.75 (13.68)	–
	Age group	0 to 17	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
		18 to 44	N (%)	119 (18.20%)	<5	-	19 (26.76%)	-	103 (17.70%)	–
		45 to 54	N (%)	126 (19.27%)	5 (7.04%)	<5	18 (25.35%)	-	109 (18.73%)	–
		55 to 64	N (%)	172 (26.30%)	18 (25.35%)	<5	15 (21.13%)	-	155 (26.63%)	–
		65+	N (%)	237 (36.24%)	47 (66.20%)	-	19 (26.76%)	<5	215 (36.94%)	–
	BMI	–	Median [Q25 – Q75]	33.10 [30.34 - 36.67]	30.55 [28.31 - 33.01]	-	32.45 [28.67 - 34.81]	-	33.21 [30.41 - 36.72]	–
			Mean (SD)	33.64 (5.29)	30.43 (3.98)	-	32.46 (5.40)	-	33.85 (5.26)	–
	BMI group	27–29	N (%)	29 (4.43%)	<5	–	5 (7.04%)	–	28 (4.81%)	–
		30–34	N (%)	101 (15.44%)	<5	<5	14 (19.72%)	–	90 (15.46%)	–
		35–39	N (%)	48 (7.34%)	<5	–	<5	–	45 (7.73%)	–
		≤26	N (%)	19 (2.91%)	<5	–	<5	–	16 (2.75%)	–
		≥40	N (%)	30 (4.59%)	–	–	<5	–	29 (4.98%)	–
	Comedication	Alpha glucosidase	N (%)	0 (0.00%)	0 (0.00%)	-	0 (0.00%)	-	0 (0.00%)	–
		Biguanides	N (%)	252 (38.53%)	37 (52.11%)	<5	17 (23.94%)	<5	249 (42.78%)	–
		Combinations	N (%)	16 (2.45%)	<5	-	<5	-	15 (2.58%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		DPP4 inhibitors	N (%)	26 (3.98%)	0 (0.00%)	-	0 (0.00%)	-	26 (4.47%)	–
		Insulin	N (%)	62 (9.48%)	17 (23.94%)	-	6 (8.45%)	<5	67 (11.51%)	–
		Other blood sugar-lowering medications	N (%)	18 (2.75%)	6 (8.45%)	-	<5	-	14 (2.41%)	–
		Other weight loss medications	N (%)	5 (0.76%)	0 (0.00%)	-	<5	-	<5	–
		SGLT2 inhibitors	N (%)	69 (10.55%)	15 (21.13%)	<5	<5	<5	64 (11.00%)	–
		Sulfonylureas	N (%)	84 (12.84%)	17 (23.94%)	<5	8 (11.27%)	<5	83 (14.26%)	–
		Thiazolidinediones	N (%)	<5	<5	-	0 (0.00%)	-	<5	–
	Sex	Female	N (%)	339 (51.83%)	28 (39.44%)	–	46 (64.79%)	–	295 (50.69%)	–
		Male	N (%)	315 (48.17%)	43 (60.56%)	<5	25 (35.21%)	<5	287 (49.31%)	–
NAJS										
2025	Age	–	Median [Q25 – Q75]	63 [55 - 70]	65 [57 - 72]	–	68 [59 - 75]	71 [65 - 76]	63 [55 - 70]	–
			Mean (SD)	61.97 (11.41)	63.88 (10.85)	–	66.56 (12.50)	70.38 (9.61)	61.70 (11.18)	–
	Age group	0 to 17	N (%)	<5	0 (0.00%)	–	<5	0 (0.00%)	<5	–
		18 to 44	N (%)	710 (7.75%)	119 (5.22%)	–	14 (5.60%)	<5	657 (7.72%)	–
		45 to 54	N (%)	1,494 (16.31%)	314 (13.77%)	–	26 (10.40%)	<5	1,418 (16.66%)	–
		55 to 64	N (%)	2,806 (30.64%)	661 (28.99%)	–	53 (21.20%)	19 (19.59%)	2,670 (31.37%)	–
		65+	N (%)	4,147 (45.28%)	1,186 (52.02%)	–	156 (62.40%)	73 (75.26%)	3,764 (44.23%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
			Mean (SD)	–	–	–	–	–	–	–
	Comedication	Alpha glucosidase	N (%)	<5	<5	–	0 (0.00%)	0 (0.00%)	<5	–
		Biguanides	N (%)	3,865 (42.20%)	1,034 (45.35%)	–	105 (42.00%)	38 (39.18%)	3,788 (44.51%)	–
		Combinations	N (%)	5,260 (57.43%)	1,298 (56.93%)	–	102 (40.80%)	49 (50.52%)	4,806 (56.47%)	–
		DPP4 inhibitors	N (%)	1,657 (18.09%)	365 (16.01%)	–	23 (9.20%)	14 (14.43%)	1,372 (16.12%)	–
		Insulin	N (%)	1,625 (17.74%)	676 (29.65%)	–	115 (46.00%)	59 (60.82%)	1,758 (20.66%)	–
		Other blood sugar-lowering medications	N (%)	202 (2.21%)	48 (2.11%)	–	13 (5.20%)	8 (8.25%)	208 (2.44%)	–
		Other weight loss medications	N (%)	<5	0 (0.00%)	–	0 (0.00%)	0 (0.00%)	<5	–
		SGLT2 inhibitors	N (%)	2,054 (22.43%)	569 (24.96%)	–	47 (18.80%)	20 (20.62%)	1,882 (22.12%)	–
		Sulfonylureas	N (%)	1,976 (21.57%)	551 (24.17%)	–	68 (27.20%)	27 (27.84%)	1,680 (19.74%)	–
		Thiazolidinediones	N (%)	1,296 (14.15%)	400 (17.54%)	–	36 (14.40%)	14 (14.43%)	1,256 (14.76%)	–
	Sex	Female	N (%)	4,233 (46.22%)	1,079 (47.32%)	–	127 (50.80%)	62 (63.92%)	3,997 (46.97%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Male	N (%)	4,926 (53.78%)	1,201 (52.68%)	–	123 (49.20%)	35 (36.08%)	4,513 (53.03%)	–
DK-DHR										
2024	Age	–	Median [Q25 – Q75]	50 [38 - 60]	64 [56 - 73]	–	52 [41 - 60]	–	51 [39 - 60]	46 [40 - 60]
			Mean (SD)	49.48 (14.65)	63.76 (12.47)	–	50.88 (13.63)	–	50.02 (14.86)	48.80 (12.69)
	Age group	0 to 17	N (%)	218 (0.30%)	0 (0.00%)	–	<5	–	223 (0.30%)	0 (0.00%)
		18 to 44	N (%)	25,939 (35.95%)	27 (7.48%)	–	359 (31.16%)	–	26,107 (34.93%)	10 (40.00%)
		45 to 54	N (%)	18,025 (24.98%)	51 (14.13%)	–	304 (26.39%)	–	18,375 (24.58%)	<5
		55 to 64	N (%)	16,948 (23.49%)	108 (29.92%)	–	304 (26.39%)	–	17,657 (23.62%)	8 (32.00%)
		65+	N (%)	11,021 (15.27%)	175 (48.48%)	–	181 (15.71%)	–	12,386 (16.57%)	<5
	BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
			Mean (SD)	–	–	–	–	–	–	–
	Comedication	Alpha glucosidase	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
		Biguanides	N (%)	8,663 (12.01%)	276 (76.45%)	–	155 (13.45%)	–	10,220 (13.67%)	<5
		Combinations	N (%)	4,081 (5.66%)	160 (44.32%)	–	59 (5.12%)	–	4,785 (6.40%)	0 (0.00%)
		DPP4 inhibitors	N (%)	1,231 (1.71%)	45 (12.47%)	–	16 (1.39%)	–	1,282 (1.72%)	0 (0.00%)

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Insulin	N (%)	2,015 (2.79%)	154 (42.66%)	–	84 (7.29%)	–	3,927 (5.25%)	<5
		Other blood sugar-lowering medications	N (%)	16 (0.02%)	0 (0.00%)	–	0 (0.00%)	–	21 (0.03%)	0 (0.00%)
		Other weight loss medications	N (%)	280 (0.39%)	<5	–	<5	–	281 (0.38%)	0 (0.00%)
		SGLT2 inhibitors	N (%)	5,975 (8.28%)	229 (63.43%)	–	101 (8.77%)	–	7,072 (9.46%)	0 (0.00%)
		Sulfonylureas	N (%)	573 (0.79%)	35 (9.70%)	–	9 (0.78%)	–	686 (0.92%)	0 (0.00%)
		Thiazolidinediones	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	0 (0.00%)
	Sex	Female	N (%)	46,908 (65.01%)	180 (49.86%)	–	845 (73.35%)	–	48,362 (64.70%)	10 (40.00%)
		Male	N (%)	25,243 (34.99%)	181 (50.14%)	–	307 (26.65%)	–	26,386 (35.30%)	15 (60.00%)
FinOMOP-THL										
2024	Age	–	Median [Q25 - Q75]	55 [45 - 63]	64 [55 - 72]	65 [57 - 75]	53 [43 - 61]	–	55 [45 - 63]	–
			Mean (SD)	53.78 (13.35)	63.00 (12.44)	64.58 (13.04)	51.71 (13.09)	–	54.04 (13.31)	–
	Age group	0 to 17	N (%)	21 (0.07%)	0 (0.00%)	0 (0.00%)	11 (0.32%)	–	15 (0.06%)	–
		18 to 44	N (%)	6,911 (24.26%)	143 (8.00%)	31 (8.61%)	958 (28.05%)	–	6,410 (23.68%)	–
		45 to 54	N (%)	7,224 (25.36%)	273 (15.28%)	43 (11.94%)	910 (26.65%)	–	6,853 (25.31%)	–
		55 to 64	N (%)	8,502 (29.85%)	526 (29.43%)	96 (26.67%)	1,008 (29.52%)	–	8,134 (30.04%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		65+	N (%)	5,829 (20.46%)	845 (47.29%)	190 (52.78%)	528 (15.46%)	–	5,661 (20.91%)	–
	BMI	–	Median [Q25 - Q75]	–	–	–	–	–	–	–
			Mean (SD)	–	–	–	–	–	–	–
	Comedication	Alpha glucosidase	N (%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–
		Biguanides	N (%)	4,913 (17.25%)	660 (36.93%)	154 (42.78%)	225 (6.59%)	–	5,054 (18.67%)	–
		Combinations	N (%)	5,114 (17.95%)	657 (36.77%)	149 (41.39%)	219 (6.41%)	–	5,203 (19.22%)	–
		DPP4 inhibitors	N (%)	1,999 (7.02%)	292 (16.34%)	62 (17.22%)	59 (1.73%)	–	2,033 (7.51%)	–
		Insulin	N (%)	1,905 (6.69%)	586 (32.79%)	116 (32.22%)	110 (3.22%)	–	3,049 (11.26%)	–
		Other blood sugar-lowering medications	N (%)	22 (0.08%)	7 (0.39%)	<5	<5	–	24 (0.09%)	–
		Other weight loss medications	N (%)	98 (0.34%)	<5	0 (0.00%)	27 (0.79%)	–	83 (0.31%)	–
		SGLT2 inhibitors	N (%)	2,963 (10.40%)	485 (27.14%)	114 (31.67%)	92 (2.69%)	–	3,025 (11.17%)	–
		Sulfonylureas	N (%)	11 (0.04%)	<5	<5	0 (0.00%)	–	11 (0.04%)	–
		Thiazolidinediones	N (%)	104 (0.37%)	24 (1.34%)	6 (1.67%)	<5	–	119 (0.44%)	–
	Sex	Female	N (%)	17,771 (62.38%)	899 (50.31%)	195 (54.17%)	2,459 (72.01%)	–	16,780 (61.98%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Male	N (%)	10,716 (37.62%)	888 (49.69%)	165 (45.83%)	956 (27.99%)	–	10,293 (38.02%)	–
InGef RDB										
2025	Age	–	Median [Q25 – Q75]	60 [52 - 68]	63 [55 - 71]	70 [57 - 76]	63 [54 - 70]	–	61 [53 - 68]	59 [51 - 66]
			Mean (SD)	59.43 (12.09)	62.51 (11.97)	66.70 (10.06)	60.71 (14.29)	–	59.80 (11.56)	57.98 (11.82)
	Age group	0 to 17	N (%)	29 (0.16%)	<5	0 (0.00%)	13 (2.95%)	–	11 (0.08%)	<5
		18 to 44	N (%)	1,961 (11.10%)	179 (6.95%)	0 (0.00%)	29 (6.59%)	–	1,345 (9.89%)	930 (13.12%)
		45 to 54	N (%)	3,385 (19.17%)	414 (16.07%)	<5	71 (16.14%)	–	2,578 (18.95%)	1,503 (21.20%)
		55 to 64	N (%)	6,152 (34.83%)	833 (32.34%)	<5	146 (33.18%)	–	4,862 (35.74%)	2,543 (35.88%)
		65+	N (%)	6,135 (34.74%)	1,146 (44.49%)	6 (60.00%)	181 (41.14%)	–	4,808 (35.34%)	2,109 (29.75%)
	BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
			Mean (SD)	–	–	–	–	–	–	–
	Comedication	Alpha glucosidase	N (%)	20 (0.11%)	5 (0.19%)	0 (0.00%)	<5	–	12 (0.09%)	6 (0.08%)
		Biguanides	N (%)	10,614 (60.10%)	1,610 (62.50%)	8 (80.00%)	295 (67.05%)	–	8,642 (63.53%)	4,045 (57.07%)
		Combinations	N (%)	4,514 (25.56%)	714 (27.72%)	<5	101 (22.95%)	–	3,503 (25.75%)	1,538 (21.70%)
		DPP4 inhibitors	N (%)	3,883 (21.99%)	631 (24.50%)	<5	90 (20.45%)	–	2,826 (20.77%)	1,028 (14.50%)

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Insulin	N (%)	5,110 (28.93%)	858 (33.31%)	5 (50.00%)	237 (53.86%)	–	4,313 (31.70%)	2,459 (34.69%)
		Other blood sugar-lowering medications	N (%)	18 (0.10%)	73 (2.83%)	0 (0.00%)	15 (3.41%)	–	425 (3.12%)	8 (0.11%)
		Other weight loss medications	N (%)	<5	0 (0.00%)	0 (0.00%)	0 (0.00%)	–	<5	0 (0.00%)
		SGLT2 inhibitors	N (%)	8,110 (45.92%)	1,373 (53.30%)	6 (60.00%)	232 (52.73%)	–	6,433 (47.29%)	3,083 (43.50%)
		Sulfonylureas	N (%)	616 (3.49%)	119 (4.62%)	0 (0.00%)	17 (3.86%)	–	499 (3.67%)	210 (2.96%)
		Thiazolidinediones	N (%)	6 (0.03%)	<5	0 (0.00%)	0 (0.00%)	–	<5	<5
	Sex	Female	N (%)	7,612 (43.10%)	1,098 (42.62%)	5 (50.00%)	198 (45.00%)	–	5,780 (42.49%)	3,206 (45.23%)
		Male	N (%)	10,050 (56.90%)	1,478 (57.38%)	5 (50.00%)	242 (55.00%)	–	7,824 (57.51%)	3,882 (54.77%)
IQVIA DA Germany										
2025	Age	–	Median [Q25 – Q75]	58.00 [47.00 - 67.00]	65.00 [56.00 - 73.00]	-	64.00 [57.00 - 70.00]	69.00 [60.00 - 76.25]	58.00 [48.00 - 67.00]	57.00 [47.00 - 65.00]
			Mean (SD)	56.75 (14.13)	63.96 (12.40)	-	62.31 (13.88)	67.98 (11.83)	57.10 (13.87)	55.71 (13.67)
	Age group	0 to 17	N (%)	10 (0.10%)	0 (0.00%)	-	<5	0 (0.00%)	7 (0.11%)	<5
		18 to 44	N (%)	2,064 (20.65%)	84 (7.47%)	-	11 (7.91%)	6 (4.69%)	1,272 (19.58%)	937 (21.55%)
		45 to 54	N (%)	1,968 (19.69%)	154 (13.69%)	<5	14 (10.07%)	12 (9.38%)	1,291 (19.87%)	909 (20.91%)

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		55 to 64	N (%)	2,880 (28.81%)	319 (28.36%)	-	51 (36.69%)	28 (21.88%)	1,885 (29.02%)	1,305 (30.01%)
		65+	N (%)	3,073 (30.75%)	568 (50.49%)	<5	61 (43.88%)	82 (64.06%)	2,041 (31.42%)	1,195 (27.48%)
	BMI	–	Median [Q25 – Q75]	33.51 [29.83 - 37.70]	32.45 [29.62 - 36.88]	-	35.80 [32.87 - 38.38]	32.95 [31.59 - 35.93]	33.28 [29.78 - 37.59]	34.51 [30.48 - 39.45]
			Mean (SD)	34.37 (6.59)	33.59 (7.12)	-	35.56 (4.09)	34.00 (3.97)	34.26 (6.43)	35.34 (7.03)
	BMI group	27–29	N (%)	101 (1.01%)	7 (0.62%)	–	<5	–	69 (1.06%)	37 (0.85%)
		30–34	N (%)	239 (2.39%)	21 (1.87%)	–	<5	7 (5.47%)	160 (2.46%)	96 (2.21%)
		35–39	N (%)	164 (1.64%)	11 (0.98%)	–	<5	<5	114 (1.75%)	69 (1.59%)
		≤26	N (%)	80 (0.80%)	9 (0.80%)	<5	–	<5	52 (0.80%)	31 (0.71%)
		≥40	N (%)	124 (1.24%)	8 (0.71%)	–	<5	<5	77 (1.19%)	69 (1.59%)
	Comedication	Alpha glucosidase	N (%)	10 (0.10%)	<5	-	0 (0.00%)	0 (0.00%)	8 (0.12%)	<5
		Biguanides	N (%)	2,688 (26.89%)	494 (43.91%)	<5	67 (48.20%)	42 (32.81%)	1,933 (29.76%)	1,203 (27.67%)
		Combinations	N (%)	1,109 (11.10%)	240 (21.33%)	<5	9 (6.47%)	13 (10.16%)	791 (12.18%)	407 (9.36%)
		DPP4 inhibitors	N (%)	805 (8.05%)	179 (15.91%)	<5	11 (7.91%)	15 (11.72%)	504 (7.76%)	260 (5.98%)
		Insulin	N (%)	1,517 (15.18%)	306 (27.20%)	<5	52 (37.41%)	52 (40.62%)	1,172 (18.04%)	801 (18.42%)
		Other blood sugar-lowering medications	N (%)	9 (0.09%)	53 (4.71%)	-	<5	<5	297 (4.57%)	6 (0.14%)

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Other weight loss medications	N (%)	18 (0.18%)	<5	-	0 (0.00%)	0 (0.00%)	15 (0.23%)	8 (0.18%)
		SGLT2 inhibitors	N (%)	2,178 (21.79%)	446 (39.64%)	<5	44 (31.65%)	46 (35.94%)	1,513 (23.29%)	957 (22.01%)
		Sulfonylureas	N (%)	155 (1.55%)	39 (3.47%)	-	<5	<5	116 (1.79%)	50 (1.15%)
		Thiazolidinediones	N (%)	5 (0.05%)	0 (0.00%)	-	0 (0.00%)	0 (0.00%)	<5	5 (0.11%)
	Sex	Female	N (%)	5,465 (54.68%)	525 (46.67%)	<5	74 (53.24%)	62 (48.44%)	3,511 (54.05%)	2,422 (55.70%)
		Male	N (%)	4,530 (45.32%)	600 (53.33%)	–	65 (46.76%)	66 (51.56%)	2,985 (45.95%)	1,926 (44.30%)
IPCI										
2025	Age	–	Median [Q25 – Q75]	59 [49 - 67]	66 [60 - 70]	–	52 [40 - 60]	-	61 [52 - 69]	56 [46 - 64]
			Mean (SD)	57.19 (13.88)	65.37 (9.66)	–	50.36 (13.97)	-	59.91 (12.82)	54.51 (13.16)
	Age group	0 to 17	N (%)	10 (0.26%)	0 (0.00%)	–	6 (0.65%)	-	<5	<5
		18 to 44	N (%)	683 (17.54%)	<5	–	303 (33.01%)	-	337 (11.74%)	143 (21.77%)
		45 to 54	N (%)	808 (20.74%)	<5	–	222 (24.18%)	-	557 (19.41%)	144 (21.92%)
		55 to 64	N (%)	1,154 (29.63%)	15 (36.59%)	–	249 (27.12%)	<5	871 (30.35%)	211 (32.12%)
		65+	N (%)	1,240 (31.84%)	22 (53.66%)	–	138 (15.03%)	-	1,102 (38.40%)	158 (24.05%)
	BMI	–	Median [Q25 – Q75]	34.50 [31.00 - 38.59]	32.20 [29.10 - 34.62]	–	37.20 [34.56 - 40.88]	-	33.60 [30.48 - 37.50]	34.77 [31.38 - 39.06]
			Mean (SD)	35.11 (5.92)	32.17 (4.64)	–	37.82 (5.44)	-	34.34 (5.78)	35.78 (6.23)

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
	BMI group	27–29	N (%)	361 (9.27%)	7 (17.07%)	–	29 (3.16%)	<5	322 (11.22%)	62 (9.44%)
		30–34	N (%)	1,278 (32.81%)	16 (39.02%)	–	191 (20.81%)	–	1,040 (36.24%)	195 (29.68%)
		35–39	N (%)	965 (24.78%)	7 (17.07%)	–	328 (35.73%)	–	642 (22.37%)	146 (22.22%)
		≤26	N (%)	204 (5.24%)	<5	–	11 (1.20%)	–	179 (6.24%)	18 (2.74%)
		≥40	N (%)	673 (17.28%)	<5	–	276 (30.07%)	–	392 (13.66%)	117 (17.81%)
	Comedication	Alpha glucosidase	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	0 (0.00%)	0 (0.00%)
		Biguanides	N (%)	1,959 (50.30%)	36 (87.80%)	–	55 (5.99%)	<5	1,881 (65.54%)	304 (46.27%)
		Combinations	N (%)	37 (0.95%)	0 (0.00%)	–	0 (0.00%)	-	37 (1.29%)	<5
		DPP4 inhibitors	N (%)	58 (1.49%)	<5	–	<5	-	56 (1.95%)	<5
		Insulin	N (%)	490 (12.58%)	10 (24.39%)	–	16 (1.74%)	<5	475 (16.55%)	139 (21.16%)
		Other blood sugar-lowering medications	N (%)	<5	0 (0.00%)	–	5 (0.54%)	-	9 (0.31%)	0 (0.00%)
		Other weight loss medications	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	-	<5	0 (0.00%)
		SGLT2 inhibitors	N (%)	722 (18.54%)	10 (24.39%)	–	24 (2.61%)	<5	688 (23.97%)	93 (14.16%)
		Sulfonylureas	N (%)	1,363 (34.99%)	26 (63.41%)	–	21 (2.29%)	<5	1,314 (45.78%)	203 (30.90%)
		Thiazolidinediones	N (%)	<5	0 (0.00%)	–	0 (0.00%)	-	<5	<5
	Sex	Female	N (%)	2,304 (59.15%)	18 (43.90%)	–	718 (78.21%)	<5	1,538 (53.59%)	393 (59.82%)

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Male	N (%)	1,591 (40.85%)	23 (56.10%)	–	200 (21.79%)	–	1,332 (46.41%)	264 (40.18%)
NLHR										
2023	Age	–	Median [Q25 – Q75]	51 [40 - 60]	62 [54 - 71]	–	50 [38 - 60]	66 [63 - 71]	51 [40 - 60]	–
			Mean (SD)	50.35 (14.29)	61.98 (12.58)	–	49.35 (16.04)	66.20 (7.33)	50.56 (14.06)	–
	Age group	0 to 17	N (%)	447 (0.54%)	0 (0.00%)	–	166 (2.78%)	0 (0.00%)	353 (0.39%)	–
		18 to 44	N (%)	27,338 (32.90%)	97 (8.87%)	–	2,053 (34.34%)	0 (0.00%)	29,571 (32.27%)	–
		45 to 54	N (%)	22,156 (26.66%)	189 (17.29%)	–	1,454 (24.32%)	0 (0.00%)	24,819 (27.08%)	–
		55 to 64	N (%)	19,221 (23.13%)	332 (30.38%)	–	1,225 (20.49%)	<5	21,623 (23.59%)	–
		65+	N (%)	13,936 (16.77%)	475 (43.46%)	–	1,081 (18.08%)	<5	15,277 (16.67%)	–
	BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
			Mean (SD)	–	–	–	–	–	–	–
	Comedication	Alpha glucosidase	N (%)	12 (0.01%)	0 (0.00%)	–	<5	0 (0.00%)	10 (0.01%)	–
		Biguanides	N (%)	13,714 (16.50%)	662 (60.57%)	–	1,028 (17.19%)	<5	15,496 (16.91%)	–
		Combinations	N (%)	3,720 (4.48%)	261 (23.88%)	–	345 (5.77%)	<5	3,879 (4.23%)	–
		DPP4 inhibitors	N (%)	2,717 (3.27%)	165 (15.10%)	–	276 (4.62%)	<5	2,732 (2.98%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Insulin	N (%)	3,605 (4.34%)	236 (21.59%)	–	694 (11.61%)	<5	4,722 (5.15%)	–
		Other blood sugar-lowering medications	N (%)	<5	0 (0.00%)	–	<5	0 (0.00%)	8 (0.01%)	–
		Other weight loss medications	N (%)	710 (0.85%)	<5	–	84 (1.40%)	0 (0.00%)	769 (0.84%)	–
		SGLT2 inhibitors	N (%)	5,911 (7.11%)	425 (38.88%)	–	644 (10.77%)	<5	6,812 (7.43%)	–
		Sulfonylureas	N (%)	1,646 (1.98%)	144 (13.17%)	–	186 (3.11%)	<5	1,781 (1.94%)	–
		Thiazolidinediones	N (%)	96 (0.12%)	9 (0.82%)	–	13 (0.22%)	0 (0.00%)	115 (0.13%)	–
	Sex	Female	N (%)	52,677 (63.39%)	467 (42.73%)	–	3,762 (62.92%)	<5	58,840 (64.21%)	–
		Male	N (%)	30,421 (36.61%)	626 (57.27%)	–	2,217 (37.08%)	<5	32,803 (35.79%)	–
SIDIAP										
2024	Age	–	Median [Q25 – Q75]	58 [49 - 67]	63 [55 - 70]	67 [56 - 71]	54 [45 - 63]	67 [57 - 74]	59 [50 - 67]	–
			Mean (SD)	57.36 (12.96)	61.87 (11.81)	63.18 (10.36)	53.50 (13.48)	65.28 (11.44)	58.07 (12.57)	–
	Age group	0 to 17	N (%)	24 (0.22%)	0 (0.00%)	0 (0.00%)	14 (0.74%)	0 (0.00%)	13 (0.14%)	–
		18 to 44	N (%)	1,688 (15.31%)	265 (8.01%)	<5	423 (22.26%)	<5	1,310 (13.73%)	–
		45 to 54	N (%)	2,603 (23.61%)	550 (16.63%)	<5	543 (28.58%)	6 (15.00%)	2,181 (22.86%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		55 to 64	N (%)	3,247 (29.46%)	1,022 (30.90%)	5 (29.41%)	514 (27.05%)	9 (22.50%)	2,868 (30.06%)	–
		65+	N (%)	3,461 (31.40%)	1,470 (44.45%)	10 (58.82%)	406 (21.37%)	23 (57.50%)	3,170 (33.22%)	–
	BMI	–	Median [Q25 – Q75]	35.64 [32.02 - 40.12]	34.72 [31.28 - 38.99]	34.52 [32.08 - 36.33]	36.89 [32.95 - 41.54]	35.67 [32.16 - 38.44]	35.49 [31.96 - 40.02]	–
			Mean (SD)	36.44 (6.15)	35.62 (5.87)	34.56 (4.63)	37.55 (6.46)	35.97 (5.37)	36.34 (6.16)	–
	BMI group	27–29	N (%)	872 (7.91%)	338 (10.22%)	<5	117 (6.16%)	<5	795 (8.33%)	–
		30–34	N (%)	3,333 (30.24%)	1,196 (36.17%)	8 (47.06%)	461 (24.26%)	14 (35.00%)	2,988 (31.31%)	–
		35–39	N (%)	2,894 (26.25%)	891 (26.94%)	<5	515 (27.11%)	14 (35.00%)	2,453 (25.71%)	–
		≤26	N (%)	344 (3.12%)	106 (3.21%)	<5	58 (3.05%)	<5	297 (3.11%)	–
		≥40	N (%)	2,580 (23.41%)	663 (20.05%)	<5	566 (29.79%)	8 (20.00%)	2,194 (22.99%)	–
	Comedication	Alpha glucosidase	N (%)	9 (0.08%)	<5	0 (0.00%)	<5	0 (0.00%)	9 (0.09%)	–
		Biguanides	N (%)	3,109 (28.20%)	1,385 (41.88%)	6 (35.29%)	307 (16.16%)	18 (45.00%)	3,055 (32.02%)	–
		Combinations	N (%)	2,399 (21.76%)	1,149 (34.74%)	<5	173 (9.11%)	14 (35.00%)	2,244 (23.52%)	–
		DPP4 inhibitors	N (%)	837 (7.59%)	351 (10.61%)	0 (0.00%)	66 (3.47%)	<5	580 (6.08%)	–
		Insulin	N (%)	2,223 (20.17%)	1,194 (36.11%)	10 (58.82%)	204 (10.74%)	17 (42.50%)	2,438 (25.55%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Other blood sugar-lowering medications	N (%)	368 (3.34%)	178 (5.38%)	0 (0.00%)	41 (2.16%)	<5	358 (3.75%)	–
		Other weight loss medications	N (%)	<5	0 (0.00%)	0 (0.00%)	<5	0 (0.00%)	0 (0.00%)	–
		SGLT2 inhibitors	N (%)	2,572 (23.33%)	1,240 (37.50%)	7 (41.18%)	214 (11.26%)	11 (27.50%)	2,460 (25.78%)	–
		Sulfonylureas	N (%)	996 (9.04%)	523 (15.81%)	<5	112 (5.89%)	10 (25.00%)	822 (8.61%)	–
		Thiazolidinediones	N (%)	171 (1.55%)	87 (2.63%)	<5	16 (0.84%)	<5	216 (2.26%)	–
	Sex	Female	N (%)	6,334 (57.46%)	1,698 (51.35%)	10 (58.82%)	1,309 (68.89%)	29 (72.50%)	5,377 (56.35%)	–
		Male	N (%)	4,689 (42.54%)	1,609 (48.65%)	7 (41.18%)	591 (31.11%)	11 (27.50%)	4,165 (43.65%)	–
HI-SPEED										
2025	Age	–	Median [Q25 – Q75]	55 [43 - 65]	63 [53 - 72]	–	49 [37 - 59]	69 [65 - 74]	55 [44 - 65]	–
			Mean (SD)	53.75 (15.17)	61.32 (13.99)	–	48.23 (15.69)	65.56 (13.87)	54.46 (14.90)	–
	Age group	0 to 17	N (%)	265 (0.53%)	<5	–	157 (3.12%)	0 (0.00%)	126 (0.26%)	–
		18 to 44	N (%)	13,792 (27.45%)	269 (12.69%)	–	1,896 (37.64%)	<5	12,452 (25.88%)	–
		45 to 54	N (%)	10,980 (21.85%)	329 (15.52%)	–	1,090 (21.64%)	<5	10,536 (21.90%)	–
		55 to 64	N (%)	12,308 (24.50%)	549 (25.90%)	–	1,130 (22.43%)	0 (0.00%)	12,033 (25.01%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		65+	N (%)	12,899 (25.67%)	969 (45.71%)	–	764 (15.17%)	7 (77.78%)	12,971 (26.96%)	–
	BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
			Mean (SD)	–	–	–	–	–	–	–
	Comedication	Alpha glucosidase	N (%)	15 (0.03%)	<5	–	<5	0 (0.00%)	17 (0.04%)	–
		Biguanides	N (%)	18,909 (37.63%)	1,431 (67.50%)	–	614 (12.19%)	7 (77.78%)	19,584 (40.70%)	–
		Combinations	N (%)	22,213 (44.21%)	1,750 (82.55%)	–	782 (15.53%)	8 (88.89%)	22,963 (47.72%)	–
		DPP4 inhibitors	N (%)	4,326 (8.61%)	385 (18.16%)	–	85 (1.69%)	<5	4,173 (8.67%)	–
		Insulin	N (%)	6,144 (12.23%)	683 (32.22%)	–	359 (7.13%)	<5	6,710 (13.94%)	–
		Other blood sugar-lowering medications	N (%)	596 (1.19%)	76 (3.58%)	–	20 (0.40%)	0 (0.00%)	626 (1.30%)	–
		Other weight loss medications	N (%)	1,251 (2.49%)	28 (1.32%)	–	389 (7.72%)	0 (0.00%)	1,000 (2.08%)	–
		SGLT2 inhibitors	N (%)	11,480 (22.85%)	1,052 (49.62%)	–	429 (8.52%)	7 (77.78%)	11,947 (24.83%)	–
		Sulfonylureas	N (%)	626 (1.25%)	61 (2.88%)	–	16 (0.32%)	<5	652 (1.36%)	–
		Thiazolidinediones	N (%)	414 (0.82%)	44 (2.08%)	–	26 (0.52%)	0 (0.00%)	441 (0.92%)	–
	Sex	Female	N (%)	28,765 (57.25%)	991 (46.75%)	–	3,556 (70.60%)	5 (55.56%)	26,911 (55.93%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Male	N (%)	21,479 (42.75%)	1,129 (53.25%)	–	1,481 (29.40%)	<5	21,207 (44.07%)	–
CPRD Aurum										
2025	Age	–	Median [Q25 – Q75]	47 [37 - 57]	61 [54 - 69]	–	56 [46 - 64]	–	55 [44 - 64]	47 [37 - 57]
			Mean (SD)	47.48 (13.32)	60.53 (12.56)	–	54.84 (13.51)	–	54.04 (13.81)	47.49 (13.24)
	Age group	0 to 17	N (%)	73 (0.06%)	7 (0.93%)	–	–	–	38 (0.25%)	28 (0.02%)
		18 to 44	N (%)	56,412 (43.16%)	74 (9.79%)	–	–	–	3,760 (24.95%)	54,518 (43.05%)
		45 to 54	N (%)	31,858 (24.37%)	120 (15.87%)	–	–	–	3,504 (23.25%)	30,843 (24.35%)
		55 to 64	N (%)	28,709 (21.97%)	254 (33.60%)	–	–	–	4,217 (27.98%)	28,126 (22.21%)
		65+	N (%)	13,649 (10.44%)	301 (39.81%)	–	–	–	3,552 (23.57%)	13,128 (10.37%)
	BMI	–	Median [Q25 – Q75]	–	–	–	–	–	–	–
			Mean (SD)	–	–	–	–	–	–	–
	Comedication	Alpha glucosidase	N (%)	22 (0.02%)	0 (0.00%)	–	<5	–	8 (0.05%)	19 (0.02%)
		Biguanides	N (%)	22,246 (17.02%)	622 (82.28%)	–	170 (48.99%)	–	6,378 (42.32%)	22,919 (18.10%)
		Combinations	N (%)	501 (0.38%)	13 (1.72%)	–	7 (2.02%)	–	167 (1.11%)	478 (0.38%)
		DPP4 inhibitors	N (%)	6,023 (4.61%)	198 (26.19%)	–	48 (13.83%)	–	2,217 (14.71%)	4,787 (3.78%)
		Insulin	N (%)	4,690 (3.59%)	213 (28.17%)	–	90 (25.94%)	–	1,119 (7.42%)	6,125 (4.84%)

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Other blood sugar-lowering medications	N (%)	30 (0.02%)	<5	–	<5	–	15 (0.10%)	36 (0.03%)
		Other weight loss medications	N (%)	5,010 (3.83%)	13 (1.72%)	–	8 (2.31%)	–	540 (3.58%)	4,725 (3.73%)
		SGLT2 inhibitors	N (%)	13,743 (10.51%)	469 (62.04%)	–	119 (34.29%)	–	4,601 (30.53%)	14,110 (11.14%)
		Sulfonylureas	N (%)	5,962 (4.56%)	218 (28.84%)	–	63 (18.16%)	–	2,036 (13.51%)	6,076 (4.80%)
		Thiazolidinediones	N (%)	608 (0.47%)	29 (3.84%)	–	10 (2.88%)	–	230 (1.53%)	602 (0.48%)
	Sex	Female	N (%)	96,839 (74.09%)	389 (51.46%)	–	235 (67.72%)	–	9,401 (62.38%)	93,978 (74.21%)
		Male	N (%)	33,862 (25.91%)	367 (48.54%)	–	112 (32.28%)	–	5,670 (37.62%)	32,665 (25.79%)
CPRD GOLD										
2025	Age	–	Median [Q25 – Q75]	62 [54 - 69]	62 [52 - 68]	–	63 [57 - 72]	–	62 [54 - 70]	–
			Mean (SD)	61.02 (12.12)	59.87 (11.82)	–	61.84 (14.05)	–	61.11 (12.11)	–
	Age group	0 to 17	N (%)	<5	0 (0.00%)	–	0 (0.00%)	–	<5	–
		18 to 44	N (%)	245 (10.56%)	20 (10.70%)	–	6 (12.00%)	–	235 (10.43%)	–
		45 to 54	N (%)	380 (16.38%)	35 (18.72%)	–	<5	–	367 (16.29%)	–
		55 to 64	N (%)	712 (30.69%)	57 (30.48%)	–	17 (34.00%)	–	694 (30.80%)	–
		65+	N (%)	982 (42.33%)	75 (40.11%)	–	23 (46.00%)	–	956 (42.43%)	–
	BMI	–	Median [Q25 – Q75]	34.50 [30.60 - 39.60]	34.40 [30.60 - 39.05]	–	32.80 [28.50 - 37.00]	–	34.50 [30.60 - 39.70]	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
			Mean (SD)	35.67 (7.07)	35.42 (7.13)	–	33.88 (6.86)	–	35.71 (7.08)	–
	BMI group	27–29	N (%)	298 (12.84%)	25 (13.37%)	–	13 (26.00%)	–	288 (12.78%)	–
		30–34	N (%)	702 (30.26%)	54 (28.88%)	–	16 (32.00%)	–	680 (30.18%)	–
		35–39	N (%)	533 (22.97%)	46 (24.60%)	–	7 (14.00%)	–	515 (22.86%)	–
		≤26	N (%)	165 (7.11%)	18 (9.63%)	–	<5	–	159 (7.06%)	–
		≥40	N (%)	533 (22.97%)	40 (21.39%)	–	9 (18.00%)	–	524 (23.26%)	–
	Comedication	Alpha glucosidase	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	–
		Biguanides	N (%)	1,834 (79.05%)	141 (75.40%)	–	33 (66.00%)	–	1,797 (79.76%)	–
		Combinations	N (%)	41 (1.77%)	<5	–	<5	–	40 (1.78%)	–
		DPP4 inhibitors	N (%)	495 (21.34%)	32 (17.11%)	–	6 (12.00%)	–	475 (21.08%)	–
		Insulin	N (%)	276 (11.90%)	36 (19.25%)	–	14 (28.00%)	–	273 (12.12%)	–
		Other blood sugar-lowering medications	N (%)	0 (0.00%)	0 (0.00%)	–	0 (0.00%)	–	0 (0.00%)	–
		Other weight loss medications	N (%)	22 (0.95%)	<5	–	0 (0.00%)	–	22 (0.98%)	–
		SGLT2 inhibitors	N (%)	1,366 (58.88%)	102 (54.55%)	–	27 (54.00%)	–	1,331 (59.08%)	–
		Sulfonylureas	N (%)	703 (30.30%)	58 (31.02%)	–	25 (50.00%)	–	692 (30.71%)	–
		Thiazolidinediones	N (%)	55 (2.37%)	<5	–	<5	–	55 (2.44%)	–
	Sex	Female	N (%)	1,118 (48.19%)	102 (54.55%)	–	28 (56.00%)	–	1,084 (48.11%)	–

Calendar year	Variable name	Variable level	Estimate name	New users of GLP-1						
				GLP-1 RA class	Dulaglutide	Exenatide	Liraglutide	Lixisenatide	Semaglutide	Tirzepatide
		Male	N (%)	1,202 (51.81%)	85 (45.45%)	–	22 (44.00%)	–	1,169 (51.89%)	–

GLP-1 RA class includes use of any GLP-1 RA ingredient. Last reported year references the last calendar year that was observed, which may not be a complete year (see **Table 1** for full details of the study period).
The percentages of new GLP-1 RA users across BMI groups sum to less than 100%. The difference represents users who had no available on body mass index data, like is presented in Figure S1 for the GLP-1 RA class users.
– = not applicable; BMI = Body mass index; Combinations = ATC group A10BD – combinations of oral blood glucose lowering drugs; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; DPP-4 inhibitors = Dipeptidyl Peptidase 4 inhibitors; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SGLT2 inhibitors = Sodium-Glucose co-Transporter 2 inhibitors; SIDIAP = The Information System for Research in Primary Care.

Table S3. Initial and cumulative dose by GLP-1 RA ingredient and per data source in the last reported year.

Calendar year	Variable name	Estimate name	IQVIA LPD Belgium	NAJS	DK-DHR	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
Dulaglutide													
2025	number records	N	71	2,280	–	2,576	1,125	41	–	–	2,120	756	187
	number subjects	N	71	2,280	–	2,576	1,125	41	–	–	2,120	756	187
	cumulative dose milligram	Median (Q25 – Q75)	18.00 (6.00 - 24.00)	24.00 (9.00 - 66.00)	–	–	21.00 (12.00 - 36.00)	20.28 (8.23 - 49.37)	–	–	–	10.71 (4.26 - 21.00)	7.50 (5.25 - 12.00)
	initial daily dose milligram	Median (Q25 – Q75)	6.00 (3.00 - 12.00)	0.10 (0.10 - 0.10)	–	–	0.16 (0.16 - 0.16)	0.21 (0.21 - 0.42)	–	–	–	0.11 (0.11 - 0.21)	0.21 (0.11 - 0.21)
2024	number records	N	–	–	361	–	–	–	–	3,307	–	–	–
	number subjects	N	–	–	361	–	–	–	–	3,307	–	–	–
2023	number records	N	–	–	–	–	–	–	1,093	–	–	–	–
	number subjects	N	–	–	–	–	–	–	1,093	–	–	–	–
2024	cumulative dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	–	337.50 (112.50 - 672.00)	–	–	–
	initial daily dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	–	3.00 (1.50 - 3.00)	–	–	–
Exenatide													

Calendar year	Variable name	Estimate name	IQVIA LPD Belgium	NAJS	DK-DHR	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
2025	number records	N	<5	–	–	10	<5	–	–	–	–	–	–
	number subjects	N	<5	–	–	10	<5	–	–	–	–	–	–
	cumulative dose milligram	Median (Q25 – Q75)	8.00 (8.00 - 12.00)	–	–	–	0.03 (0.00 - 10.04)	–	–	–	–	–	–
	initial daily dose milligram	Median (Q25 – Q75)	8.00 (4.57 - 12.00)	–	–	–	0.00 (0.00 - 0.07)	–	–	–	–	–	–
2024	number records	N	–	–	–	–	–	–	–	17	–	–	–
	number subjects	N	–	–	–	–	–	–	–	17	–	–	–
	cumulative dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	–	0.00 (0.00 - 0.00)	–	–	–
	initial daily dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	–	0.00 (0.00 - 0.00)	–	–	–
Liraglutide													
2025	number records	N	71	250	–	440	139	918	–	–	5,037	347	50
	number subjects	N	71	250	–	440	139	918	–	–	5,037	347	50
	cumulative dose milligram	Median (Q25 – Q75)	90.00 (90.00 - 180.00)	32.40 (11.10 - 54.00)	–	–	138.00 (36.00 - 180.00)	90.00 (26.25 - 185.60)	–	–	180.00 (90.00 - 294.55)	36.00 (1.80 - 94.50)	64.80 (32.40 - 105.30)

Calendar year	Variable name	Estimate name	IQVIA LPD Belgium	NAJS	DK-DHR	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
	initial daily dose milligram	Median (Q25 – Q75)	12.86 (12.86 - 90.00)	0.36 (0.36 - 0.36)	–	–	1.50 (1.50 - 1.50)	1.00 (0.60 - 1.96)	–	–	8.18 (2.31 - 8.18)	1.29 (0.06 - 1.93)	10.80 (10.80 - 18.00)
2024	number records	N	–	–	1,152	–	–	–	–	1,900	–	–	–
	number subjects	N	–	–	1,152	–	–	–	–	1,900	–	–	–
	cumulative dose milligram	Median (Q25 – Q75)	–	–	0.00 (0.00 - 90.00)	–	–	–	–	375.00 (0.00 - 1,158.75)	–	–	–
	initial daily dose milligram	Median (Q25 – Q75)	–	–	0.00 (0.00 - 1.50)	–	–	–	–	6.00 (0.00 - 6.00)	–	–	–
2023	number records	N	–	–	–	–	–	–	5,979	–	–	–	–
	number subjects	N	–	–	–	–	–	–	5,979	–	–	–	–
	cumulative dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	1,080.00 (360.00 - 2,451.47)	–	–	–	–
	initial daily dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	5.90 (5.90 - 5.90)	–	–	–	–
Lixisenatide													
2025	number records	N	<5	97	–	–	128	<5	–	–	9	–	–
	number subjects	N	<5	97	–	–	128	<5	–	–	9	–	–

Calendar year	Variable name	Estimate name	IQVIA LPD Belgium	NAJS	DK-DHR	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
	cumulative dose milligram	Median (Q25 – Q75)	1.68 (1.68 - 1.68)	0.30 (0.15 - 0.75)	–	–	0.00 (0.00 - 0.00)	0.26 (0.26 - 0.26)	–	–	–	–	–
	initial daily dose milligram	Median (Q25 – Q75)	1.68 (1.68 - 1.68)	0.00 (0.00 - 0.00)	–	–	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	–	–	–	–	–
2023	number records	N	–	–	–	–	–	–	5	–	–	–	–
	number subjects	N	–	–	–	–	–	–	5	–	–	–	–
	cumulative dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	9.11 (6.33 - 11.20)	–	–	–	–
	initial daily dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	0.05 (0.03 - 0.18)	–	–	–	–
2024	number records	N	–	–	–	–	–	–	–	40	–	–	–
	number subjects	N	–	–	–	–	–	–	–	40	–	–	–
Semaglutide													
2025	number records	N	582	8,510	–	13,604	6,496	2,870	–	–	48,118	15,071	2,253
	number subjects	N	582	8,510	–	13,604	6,496	2,870	–	–	48,118	15,071	2,253
	cumulative dose milligram	Median (Q25 – Q75)	–	4.02 (1.34 - 210.00)	–	–	1.50 (1.00 - 3.01)	4.41 (0.26 - 19.16)	–	–	0.00 (0.00 - 0.00)	2.01 (0.00 - 90.00)	8.23 (3.00 - 17.00)
	initial daily dose milligram	Median (Q25 – Q75)	–	0.01 (0.01 - 0.09)	–	–	0.03 (0.02 - 0.05)	0.04 (0.01 - 0.25)	–	–	0.00 (0.00 - 0.00)	0.07 (0.00 - 3.00)	0.19 (0.10 - 0.67)

Calendar year	Variable name	Estimate name	IQVIA LPD Belgium	NAJS	DK-DHR	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
2024	number records	N	–	–	74,748	–	–	–	–	9,542	–	–	–
	number subjects	N	–	–	74,748	–	–	–	–	9,542	–	–	–
	cumulative dose milligram	Median (Q25 – Q75)	–	–	0.00 (0.00 - 0.00)	–	–	–	–	80.00 (28.00 - 166.00)	–	–	–
	initial daily dose milligram	Median (Q25 – Q75)	–	–	0.00 (0.00 - 0.00)	–	–	–	–	1.00 (0.25 - 1.00)	–	–	–
2023	number records	N	–	–	–	–	–	–	91,643	–	–	–	–
	number subjects	N	–	–	–	–	–	–	91,643	–	–	–	–
	cumulative dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	9.09 (0.00 - 47.73)	–	–	–	–
	initial daily dose milligram	Median (Q25 – Q75)	–	–	–	–	–	–	0.23 (0.00 - 0.23)	–	–	–	–
Tirzepatide													
2024	number records	N	–	–	25	–	–	–	–	–	–	–	–
	number subjects	N	–	–	25	–	–	–	–	–	–	–	–
2025	number records	N	–	–	–	7,088	4,348	657	–	–	–	126,643	–

Calendar year	Variable name	Estimate name	IQVIA LPD Belgium	NAJS	DK-DHR	InGef RDB	IQVIA DA Germany	IPCI	NLHR	SIDIAP	HI-SPEED	CPRD Aurum	CPRD GOLD
	number subjects	N	–	–	–	7,088	4,348	657	–	–	–	126,643	–
	cumulative dose milligram	Median (Q25 – Q75)	–	–	–	–	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	–	–	–	0.10 (0.00 - 11.46)	–
	initial daily dose milligram	Median (Q25 – Q75)	–	–	–	–	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	–	–	–	0.00 (0.00 - 0.36)	–

Last reported year references the last calendar year that was observed, which may not be a complete year (see **Table 1** for full details of the study period).
Cumulative dose in FinOMOP-THL is expected to be incorrect, as duration of treatment episodes is not correctly captured in the data source. Similarly, a substantial proportion of records were mapped at ingredient level in NAJS (i.e. high proportion of records do not contain information on dose/duration), which limits its interpretation in the drug utilisation analyses. In CPRD Aurum, exenatide and lixisenatide results were masked in accordance with minimum cell count disclosure rules of the data source.
– = not applicable; CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; DPP-4 inhibitors = Dipeptidyl Peptidase 4 inhibitors; FinOMOP-THL = Finnish Care Register for Health Care; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

Supplementary figures

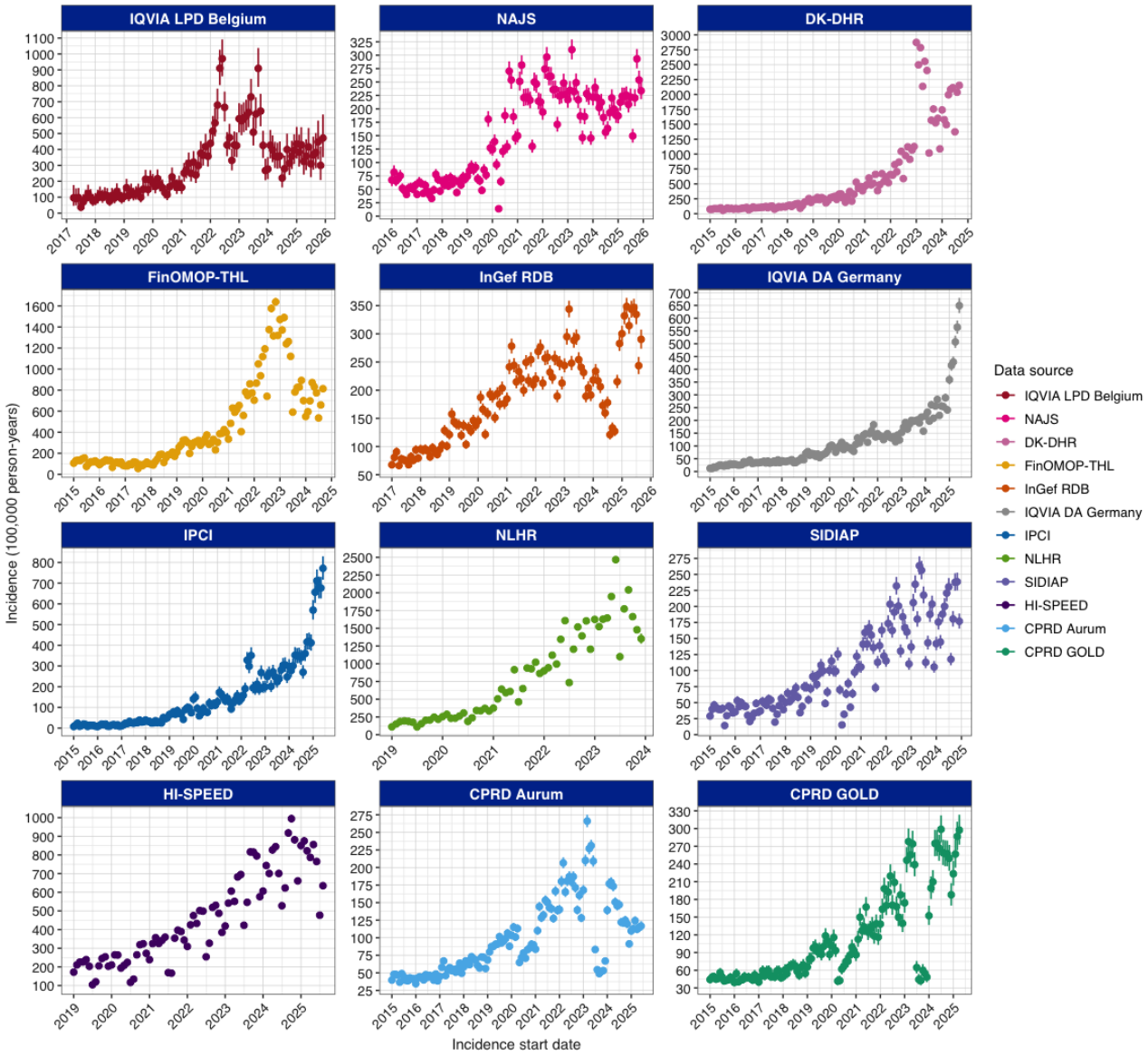

Figure S1. Incidence rates of GLP-1 RA class stratified by data source.

GLP-1 RA class includes use of any GLP-1 RA ingredient. Dots representing <5 cases were removed from the plot.
CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

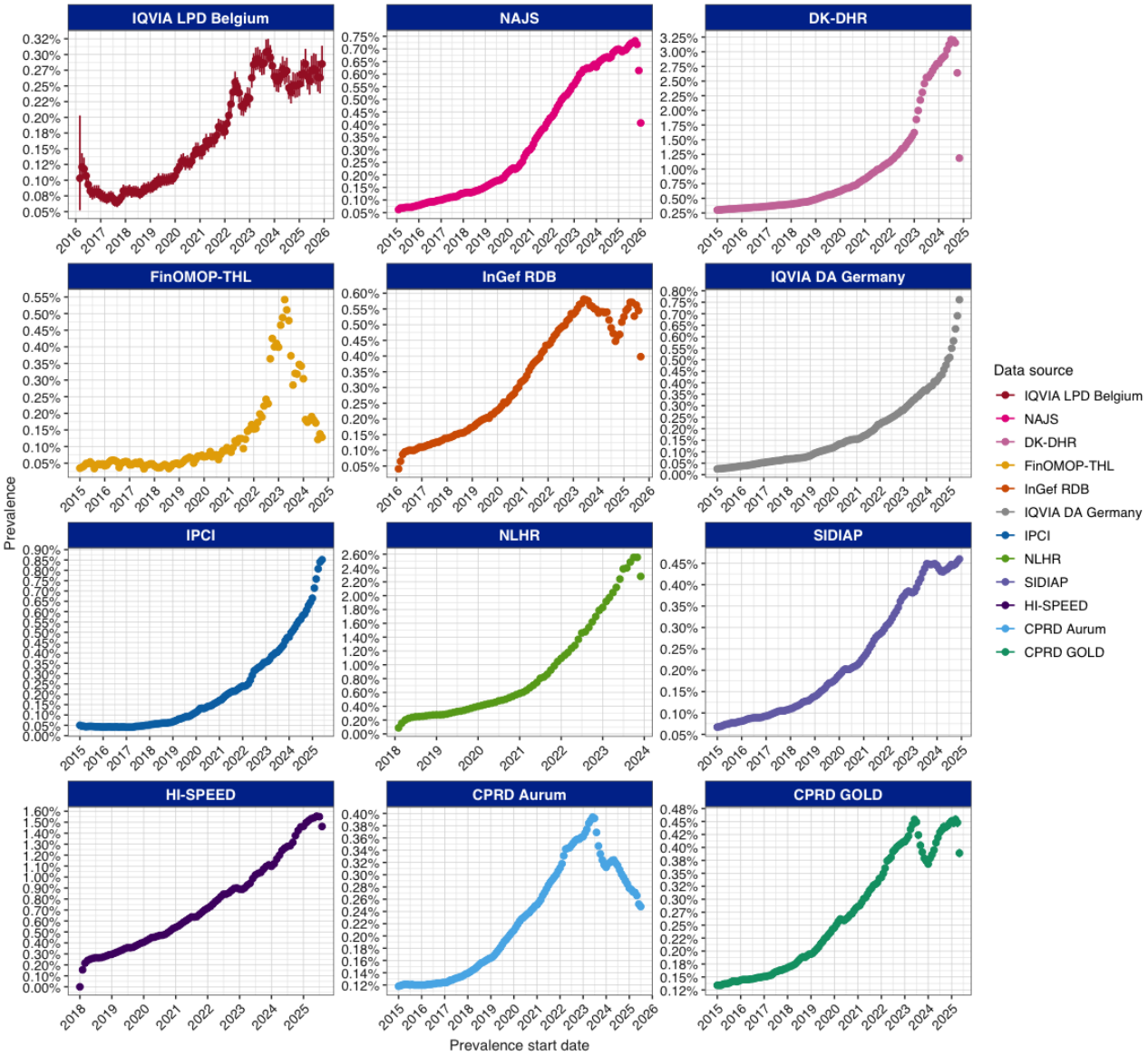

Figure S2. Prevalence of GLP-1 RA class stratified by data source.

GLP-1 RA class includes use of any GLP-1 RA ingredient. Dots representing <5 cases were removed from the plot.
CPRD Aurum = Clinical Practice Research Datalink Aurum; CPRD GOLD = Clinical Practice Research Datalink GOLD; DK-DHR = Danish Data Health Registries; FinOMOP-THL = Finnish Care Register for Health Care; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; HI-SPEED = Health Impact - Swedish Population Evidence Enabling Data-linkage; InGef RDB = InGef Research Database; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; NAJS = Croatian National Public Health Information System; NLHR = Norwegian Linked Health Registry data; SIDIAP = The Information System for Research in Primary Care.

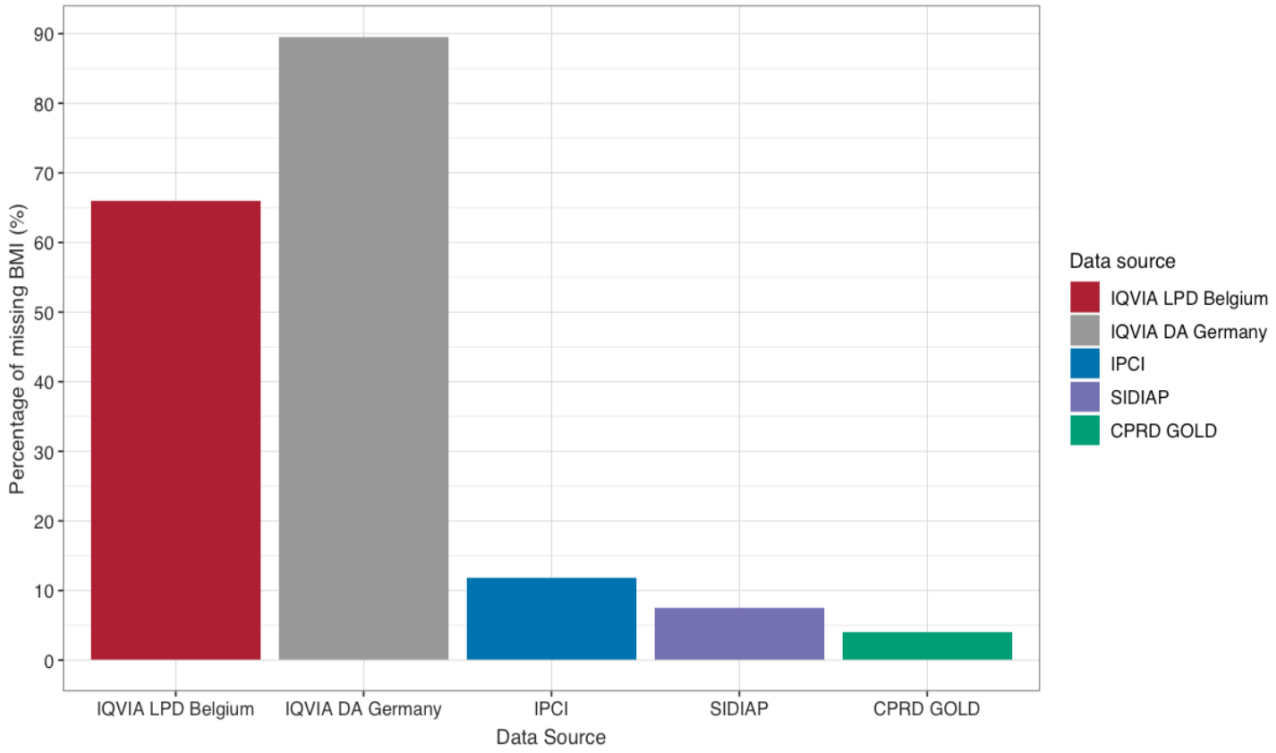

Figure S3. Percentage of new GLP-1 RA users with no available data on body mass index (overall period).

Data sources not included in the plot had no BMI available.
BMI = Body mass index; CPRD = Clinical Practice Research Datalink; GLP-1 RA = Glucagon-like peptide-1 receptor agonists; IPCI = Integrated Primary Care Information; IQVIA DA Germany = IQVIA Disease Analyzer Germany; IQVIA LPD Belgium = IQVIA Longitudinal Patient Database Belgium; SIDIAP = The Information System for Research in Primary Care.