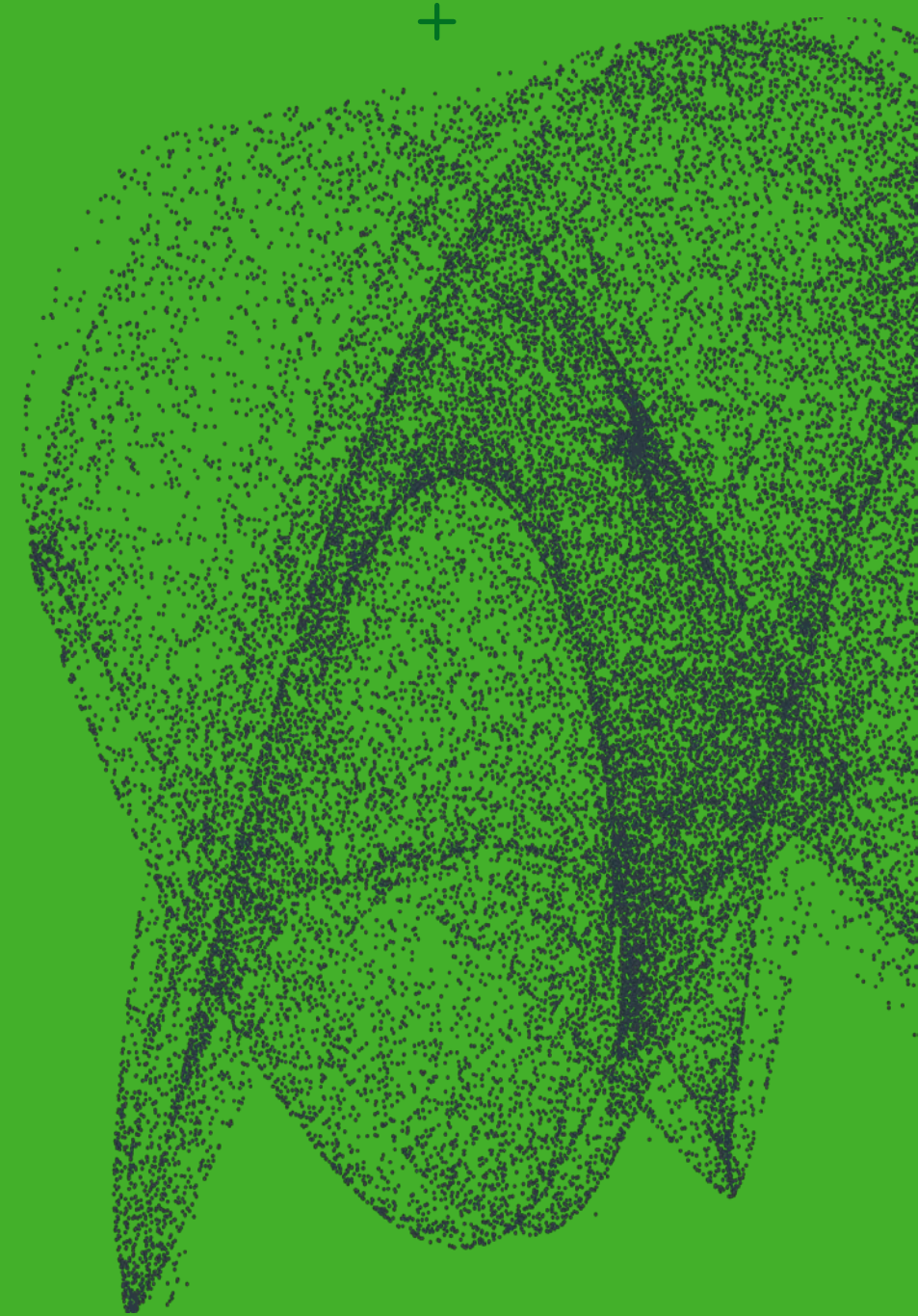# IQVIA INSTITUTE
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Drug Expenditure Dynamics 1995-2020

Understanding Medicine Spending in Context
**Country Detail Appendix:**

UK

Introduction

- This document is intended as an accompanying appendix to the report Understanding the Dynamics of Drug Expenditure 1995-2020.

- The report includes analyses of 11 major countries and provides cross-country and aggregate analyses of these markets.

- This document includes specific country analyses mirroring the main report and intended to illustrate the same dynamics in each country that are shown across countries.

- In some cases, there are important differences from cross-country trends and those are illustrated and highlighted.

- The key findings in relation to each country are summarized and each page represents a specific analysis of interest.

- This document is not an exhaustive analysis or summary of the country, and the primary purpose is to provide the long-history analyses which are unique to this report.

- The exhibits in this report are sometimes complex or include multiple graphics per page. This document ends with several annotated examples of the layout of important exhibits to enable the reader to better understand how to read and understand them.

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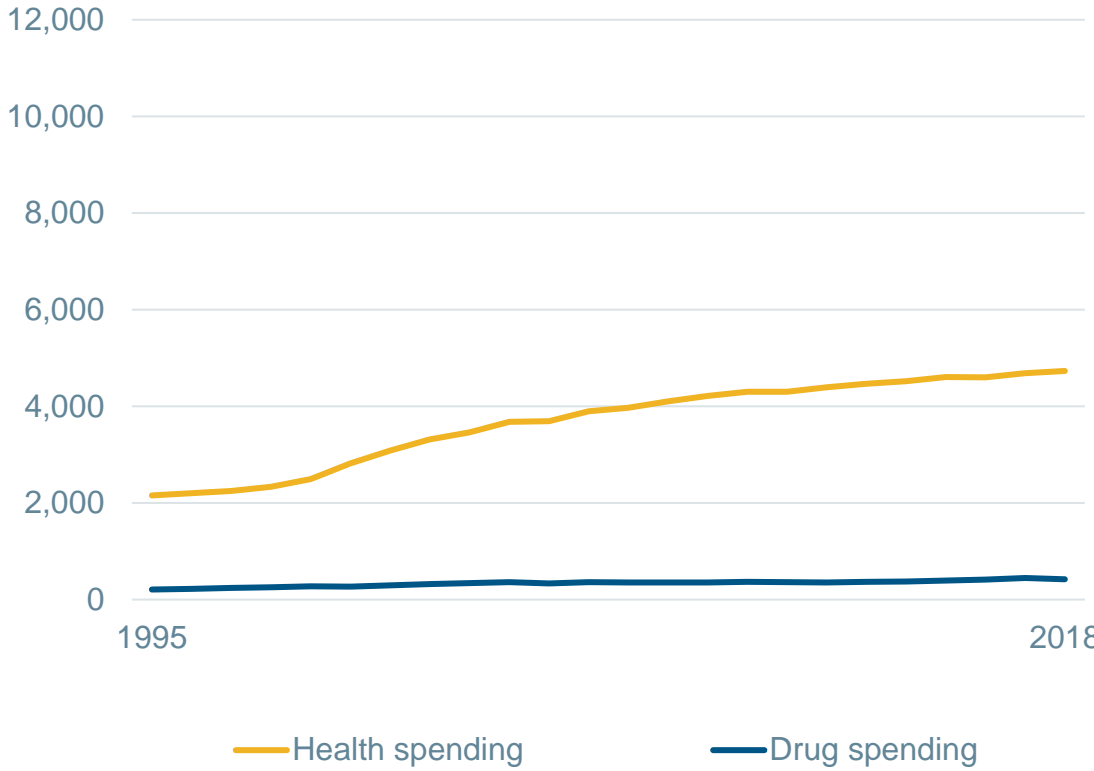INSTITUTE
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UK
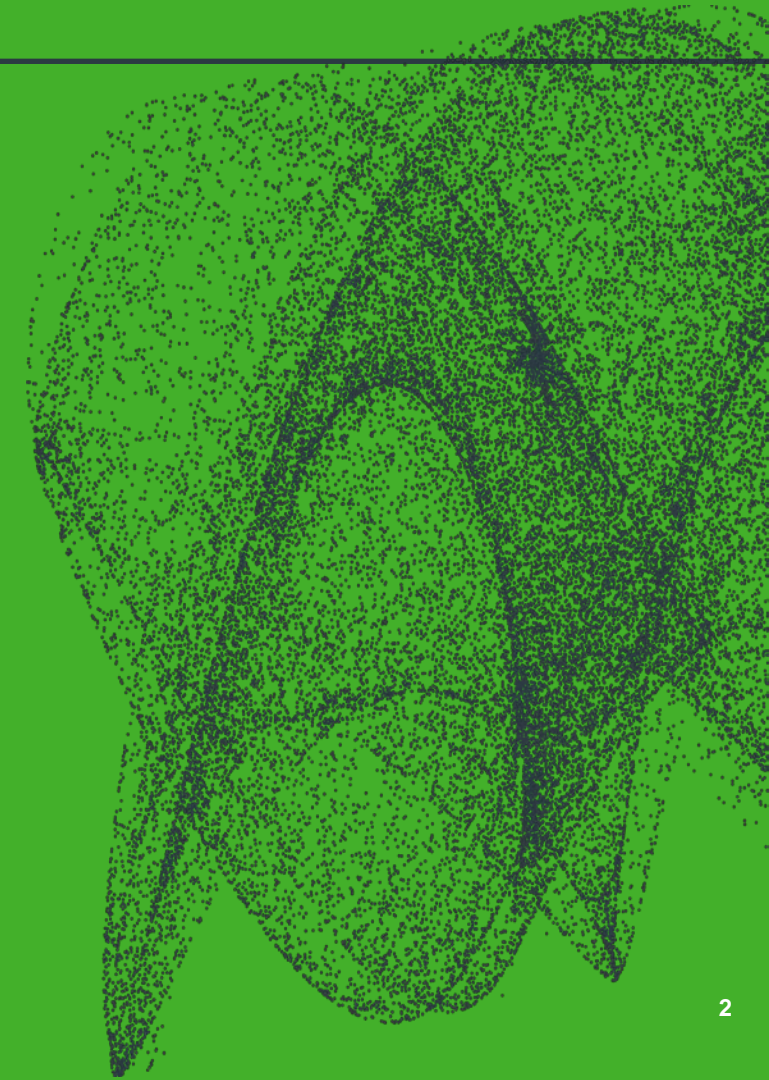
Key findings

- The UK has the lowest drug share of healthcare spending of 11 countries analyzed at 9%; the drug share has remained stable since 2005, consistent with efforts undertaken by the UK government to maintain the trends of healthcare and drug spending.

- Spending has been distributed between brands and generics in relatively unchanged patterns for the past 10 years, despite protected and new brands being the growth drivers as generic volume continues to increase.

- The composition of overall drug expenditure in the UK has shifted from a focus on cardiovascular, anti-ulcerants, and pain in 1995, to a distribution that is much more focused on oncology, auto-immune and other specialty treatments in 2020.

- For protected brands, therapy classes such as oncology and immunology together contributed nearly 40% of the drug spending in 2020, up from 2% in 1995 due to the continuous introduction of new treatment options.

- Some classes (i.e., cholesterol, anti-ulcerants) which had important innovation in early periods have since seen their overall spending decline significantly over the period of 25 years, however the use of therapies has continued to increase.

- In other classes such as diabetes and oncology, spending has increased with the successive wave of new agents and mechanism of actions introduced in recent periods, but has been offset by the declining spend from traditional therapies.

- In therapy classes such as hypertension, spending has declined over the period of 25 years although utilization has continued to increase as a result of the introduction of NICE guidelines for managing hypertension in 2004.

- In other classes such as immunology, the significant increase in spending is due to higher utilization, which has quintupled over the last 10 years, with cost per day remaining almost unchanged.

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UK drug spending represents a 9% share of overall healthcare, which is lowest compared to other developed countries analyzed

Drug and Healthcare Spending 1995-2018

Per Capita Drug and Health Spending in Real PPP 2020$, 1995-2018

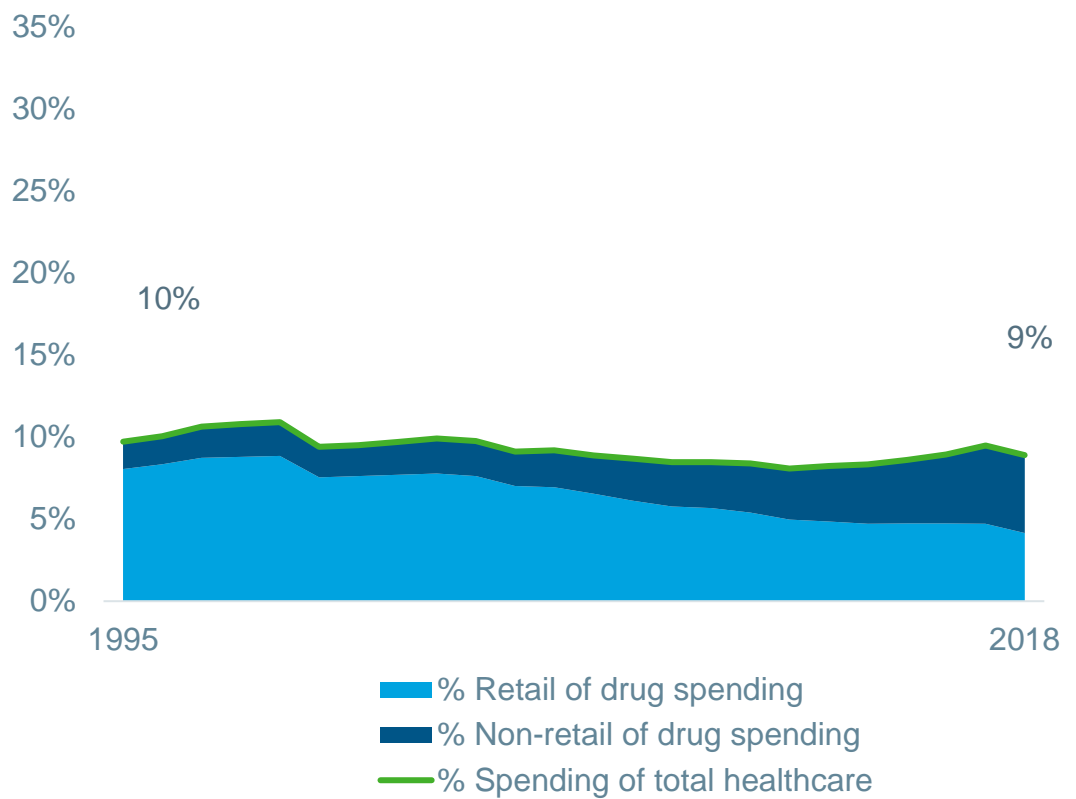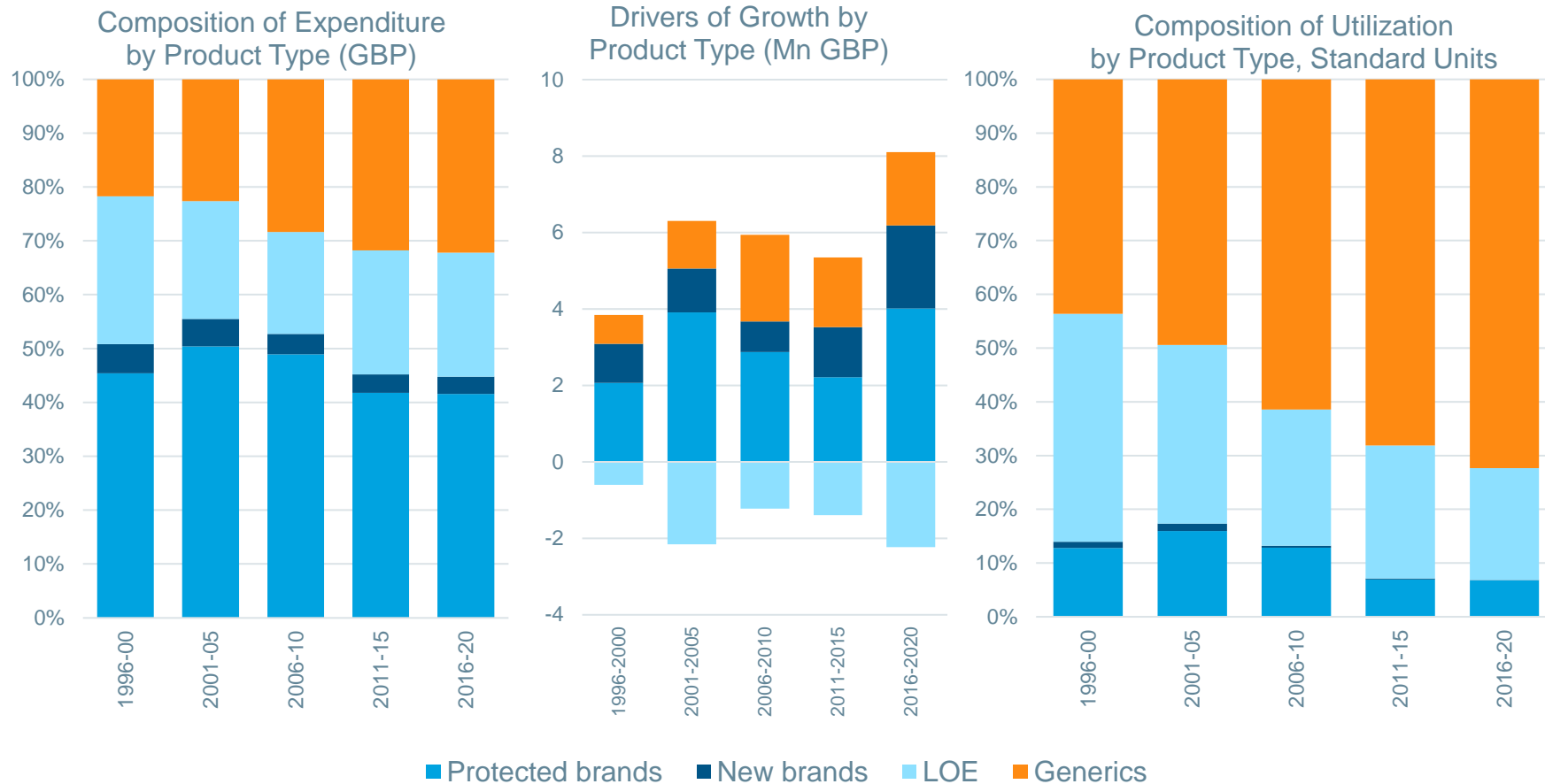Drug Share of Healthcare Spending in Real PPP 2020$,1995-2018

— Health spending — Drug spending

10%

9%

■ % Retail of drug spending
■ % Non-retail of drug spending
— % Spending of total healthcare

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With continuous increase in the generic utilization, growth from protected and new brands did not impact the total spend

UK Drug Spending and Utilization 1995-2020

Composition of Expenditure by Product Type (GBP)

Drivers of Growth by Product Type (Mn GBP)

Composition of Utilization by Product Type, Standard Units
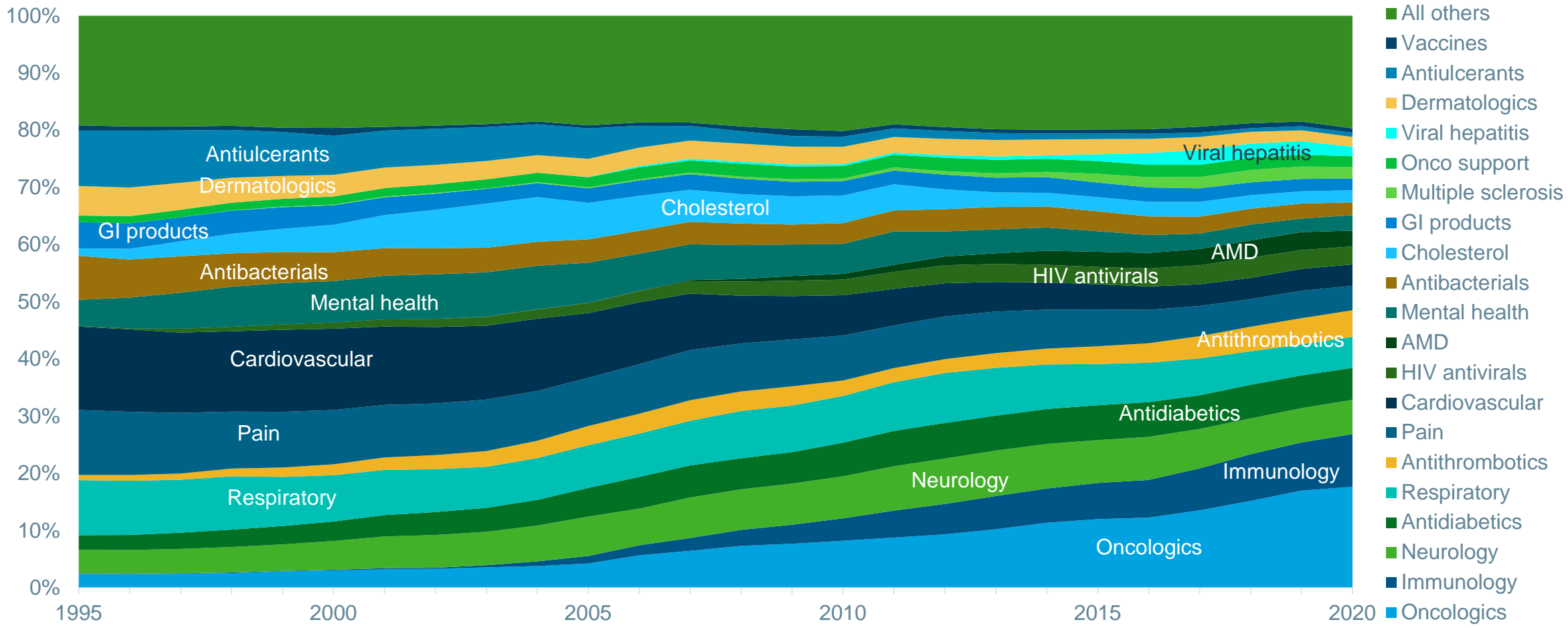

- Protected brands, including new brands, generics and LOE, have a steady share of spending in the last 2 periods

- Utilization of generics increased to 72% in recent period; up from ~45% during 1996-2000

- Growth is majorly driven by protected brands, including new products, and offset by losses of exclusivity

Legend: ■ Protected brands ■ New brands ■ LOE ■ Generics

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Top 7 therapies account for more than half of overall spending in 2020, up from ~30% in 1995

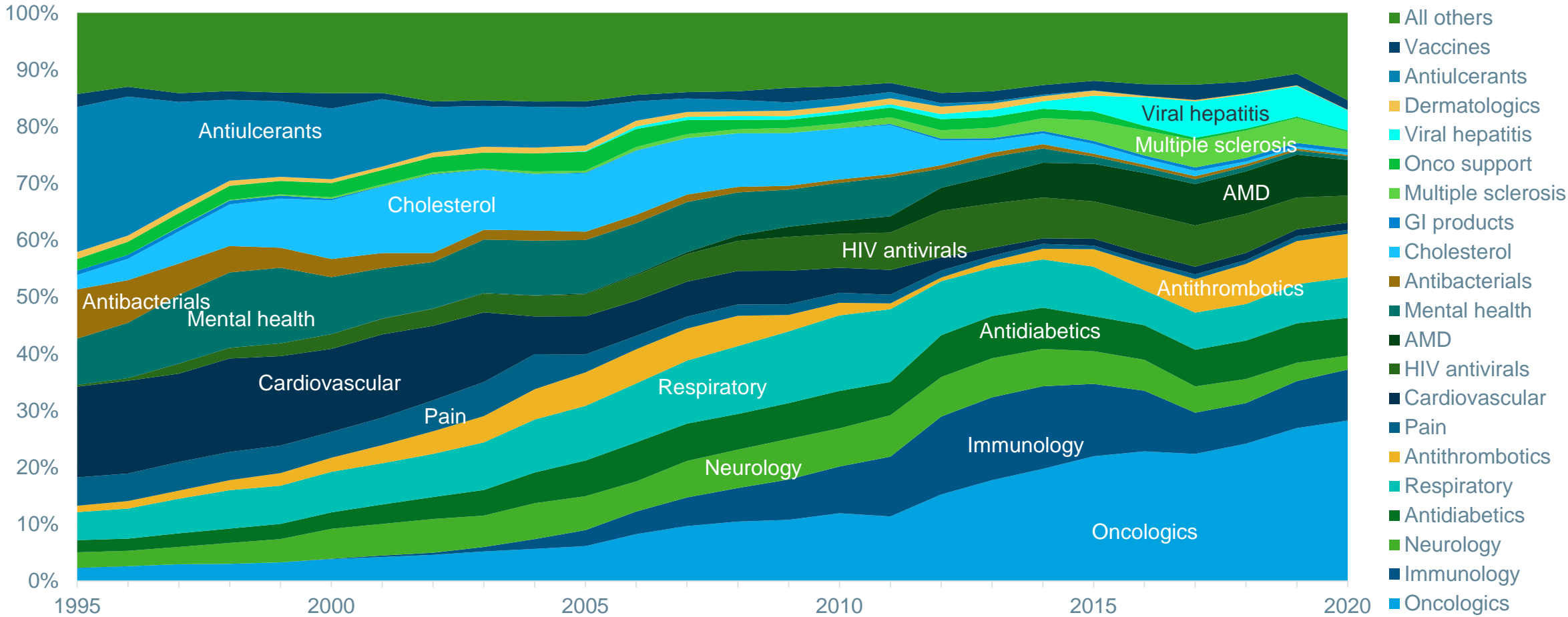*UK Composition of Drug Real Local Currency Spending by Drug Class, 1995-2020*

Source: IQVIA MIDAS; IQVIA Institute, Dec 2020

Drug Expenditure Dynamics 1995-2020: Understanding Medicine Spending in Context U.K. Detail Appendix

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With continuous introduction of new treatments, oncologic share of spending has increased from 2% in 1995 to 28% in 2020

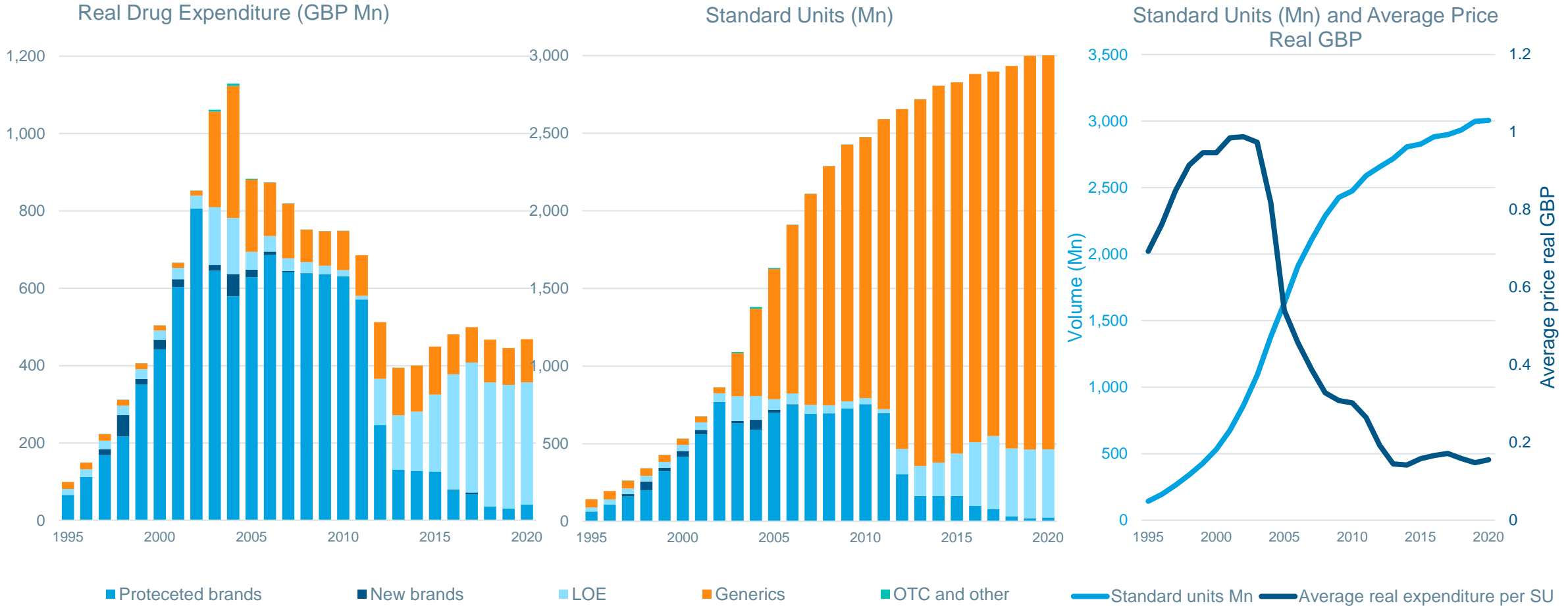*UK Composition of Protected Brands Real Local Currency Spending by Drug Class, 1995-2020*

Source: IQVIA MIDAS; IQVIA Institute, Dec 2020

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While the spending of cholesterol drugs declined significantly, their utilization continues to increase, driven by generics

UK Cholesterol Volumes, Average Prices and Spending by Product Type, 1995-2020

Real Drug Expenditure (GBP Mn)

Standard Units (Mn)

Standard Units (Mn) and Average Price Real GBP

■ Proteceted brands   ■ New brands   ■ LOE   ■ Generics   ■ OTC and other   — Standard units Mn   — Average real expenditure per SU

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With few new anti-bacterial treatment options, the therapy area has become largely genericized

UK Anti-bacterial Volumes, Average Prices and Spending by Product Type, 1995-2020

Real Drug Spending (GBP Mn)

Standard Units (Mn)

Standard Units (Mn) and Average Price Real GBP

■ Protected brands   ■ New brands   ■ LOE   ■ Generics   — Standard units Mn   — Average real expenditure per SU

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9
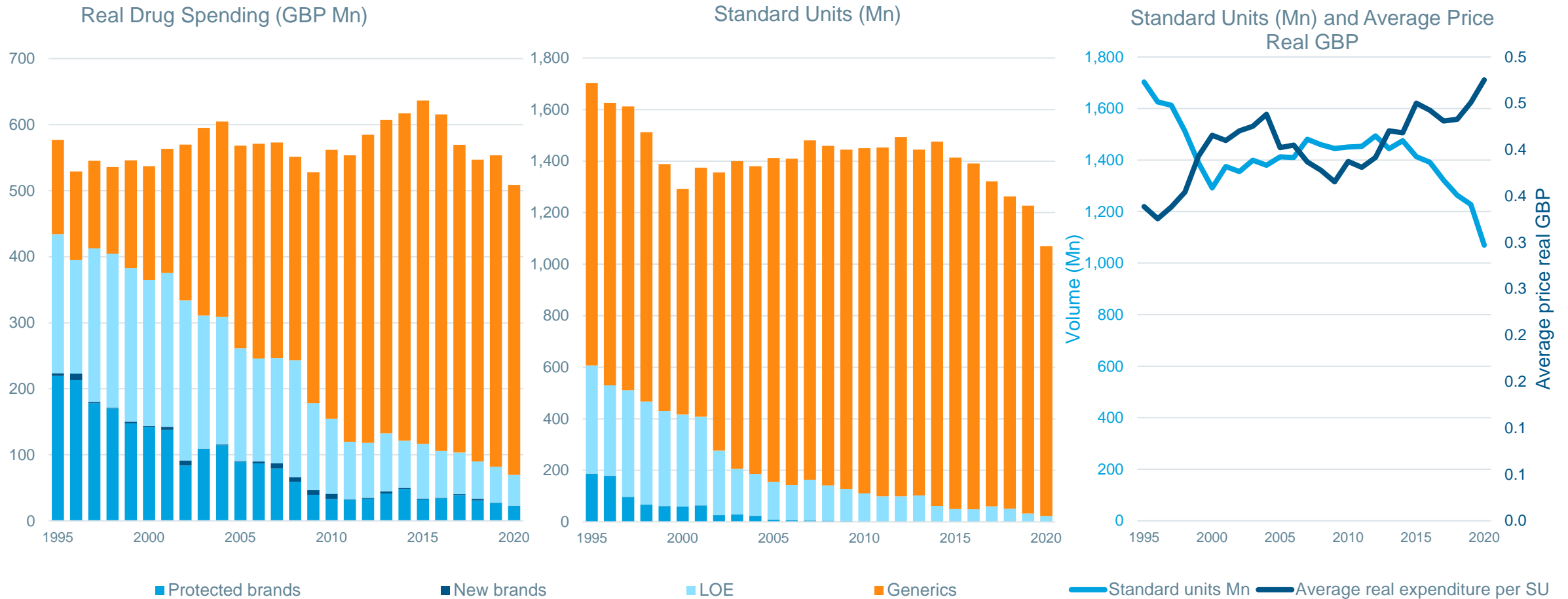
Anti-ulcerant spending has declined through genericization and OTC switches and lower costs, while volume tripled

UK Anti-Ulcerants Volumes, Average Prices and Spending by Product Type, 1995-2020

Real Drug Spending (GBP Mn)

Standard Units (Mn)

Standard Units (Mn) and Average Price Real GBP

Legend: Protected brands | New brands | LOE | Generics | OTC and other

Standard units Mn | Average real expenditure per SU

Source: IQVIA MIDAS; IQVIA Institute, Dec 2020

Drug Expenditure Dynamics 1995-2020: Understanding Medicine Spending in Context U.K. Detail Appendix
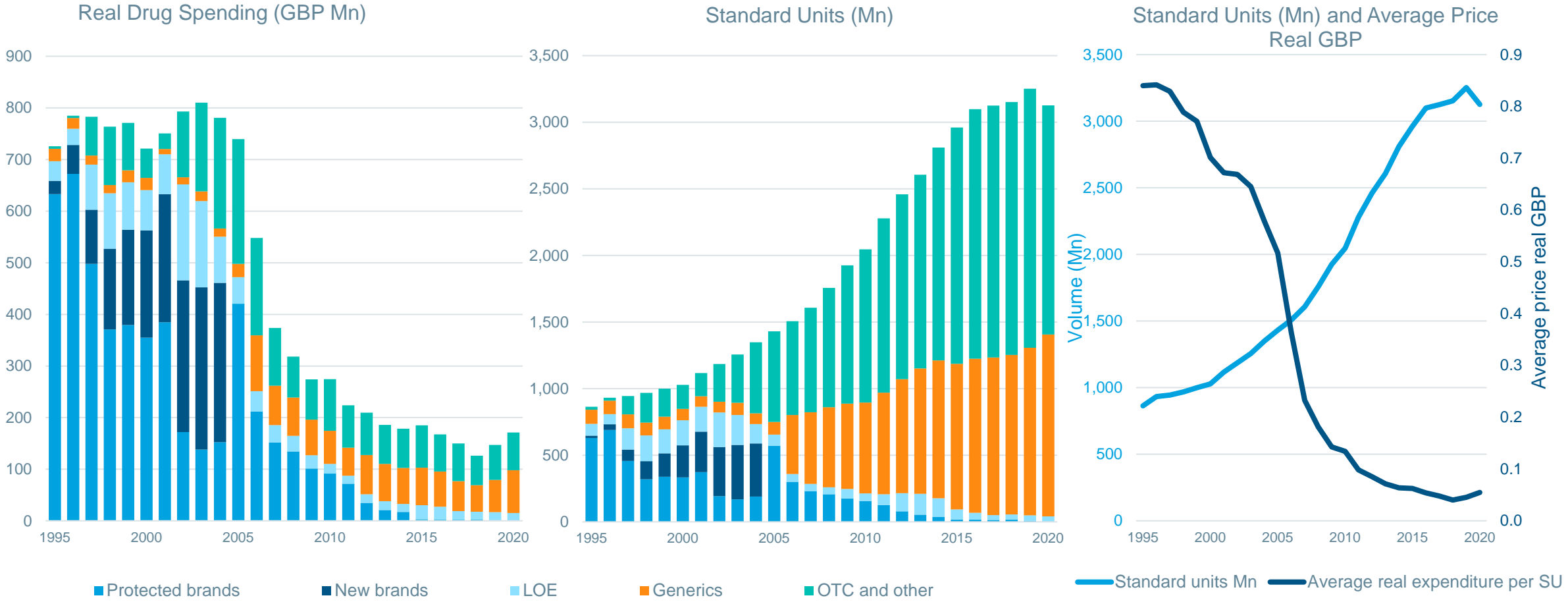
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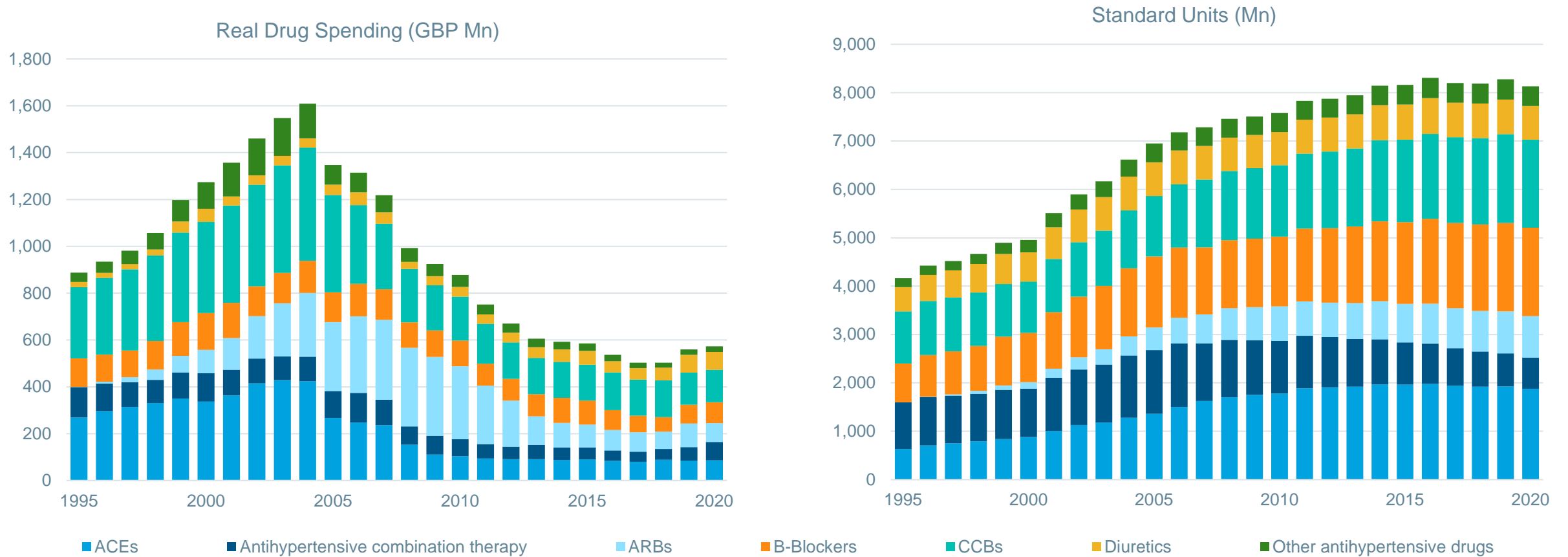# A dip in ADP receptor antagonists spending in 2012 was followed by a steep uptake in Factor Xa inhibitors

UK Antithrombotics Spending and Volumes by Drug Type, 1995-2020

Real Spending (GBP Mn)

Volume Standard Units (Mn)

- ■ All other antithrombotics
- ■ Other platelet aggregation inhibitors
- ■ ADP receptor antagonists
- ■ Factor Xa inhibitors
- ■ Heparins
- ■ Vitamnin K antagonists
- ■ Thrombin inhibitors

Source: IQVIA MIDAS; IQVIA Institute, Dec 2020

Drug Expenditure Dynamics 1995-2020: Understanding Medicine Spending in Context U.K. Detail Appendix

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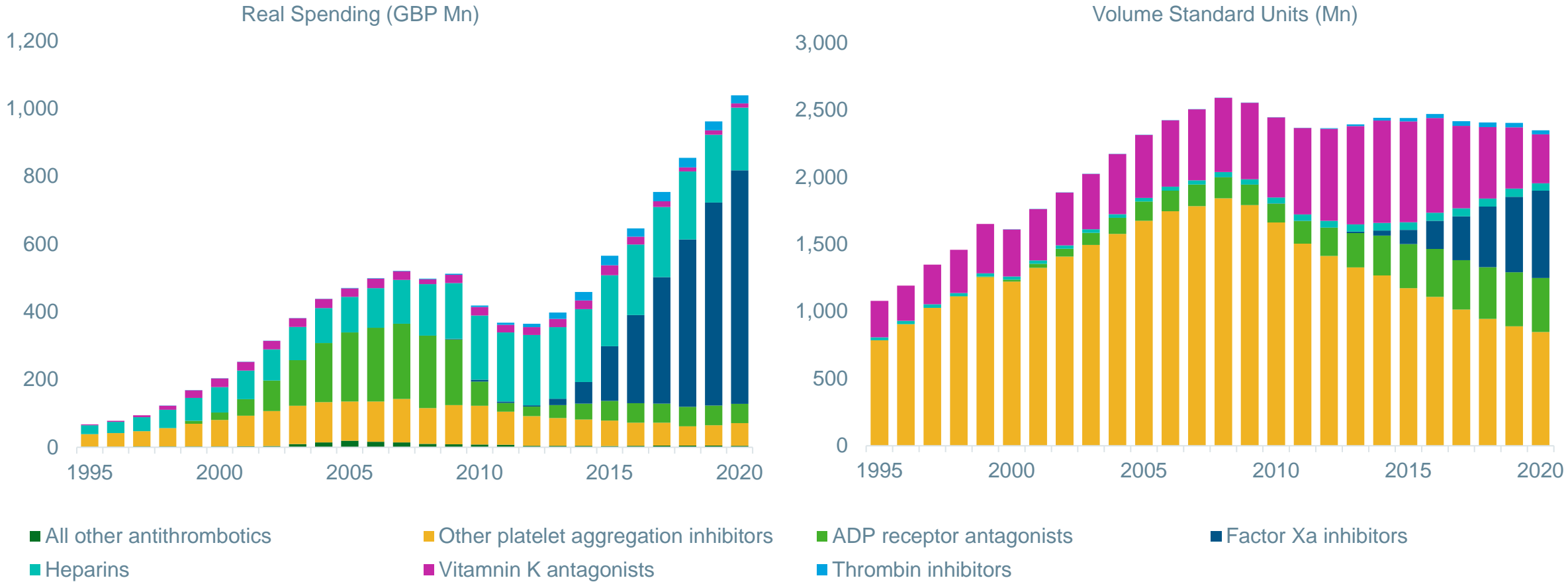
Hypertension spending has declined more than 64% as older mechanisms continue to be used while becoming less costly

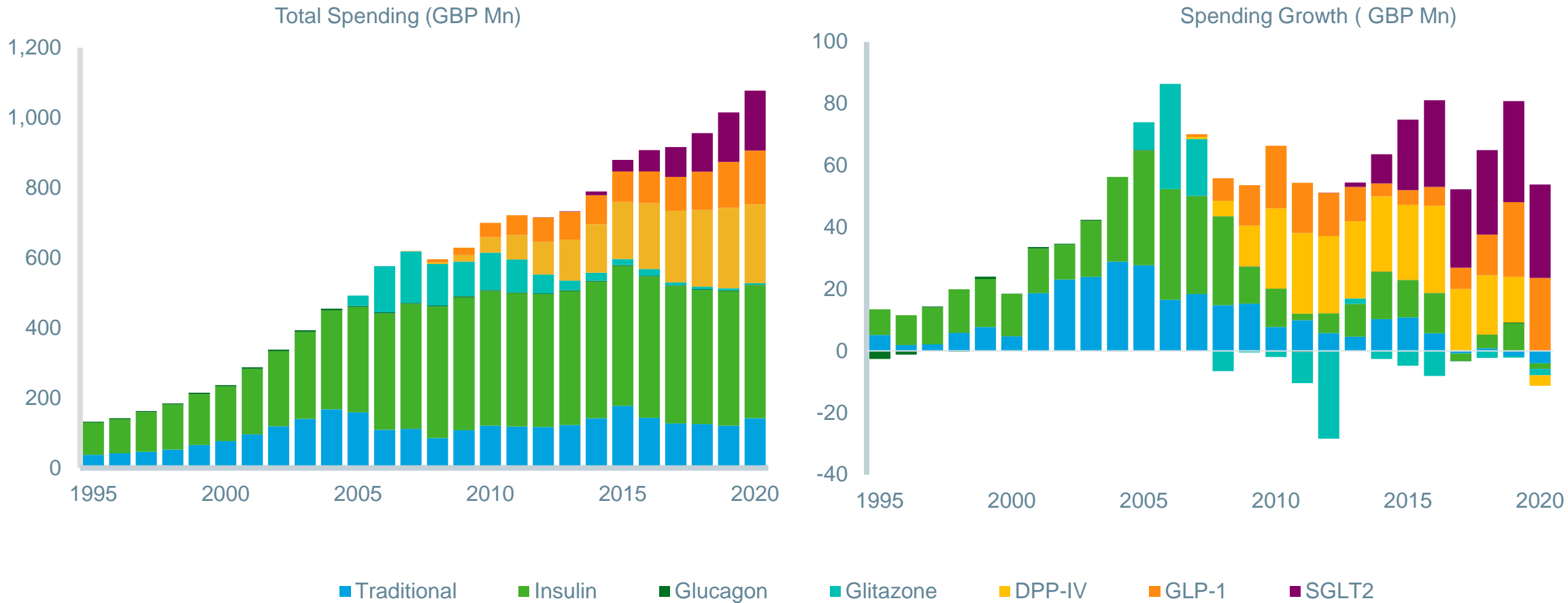*UK Hypertension Spending and Volume by Mechanism, 1995-2020*

Real Drug Spending (GBP Mn)

Standard Units (Mn)

Legend: ACEs ■ Antihypertensive combination therapy ■ ARBs ■ B-Blockers ■ CCBs ■ Diuretics ■ Other antihypertensive drugs

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Diabetes spending has been flat for insulins and traditional therapies with almost all growth from newer classes

*UK Diabetes Real Spending and Growth GBP (Mn) by Drug Type, 1995-2020*

Total Spending (GBP Mn)

Spending Growth (GBP Mn)

Legend: Traditional · Insulin · Glucagon · Glitazone · DPP-IV · GLP-1 · SGLT2

Drug Expenditure Dynamics 1995-2020: Understanding Medicine Spending in Context U.K. Detail Appendix

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Auto-immune biologics spending is driven by a five-fold increase in usage and offset by a slow decline in average cost per day

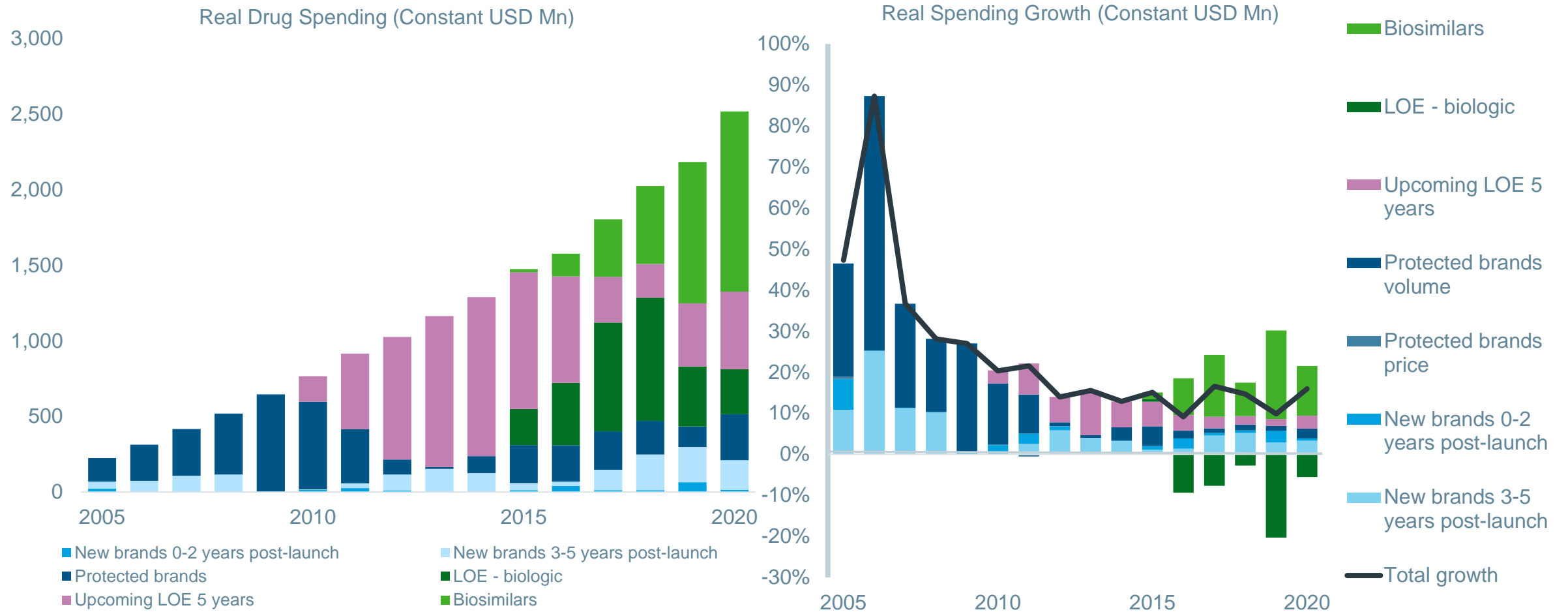UK Auto-immune Biologic Spending, DDD and Cost, 2009-2020

Legend: —— WHO/DDD —— Spending Real GBP Bn —— Spending GBP per DDD
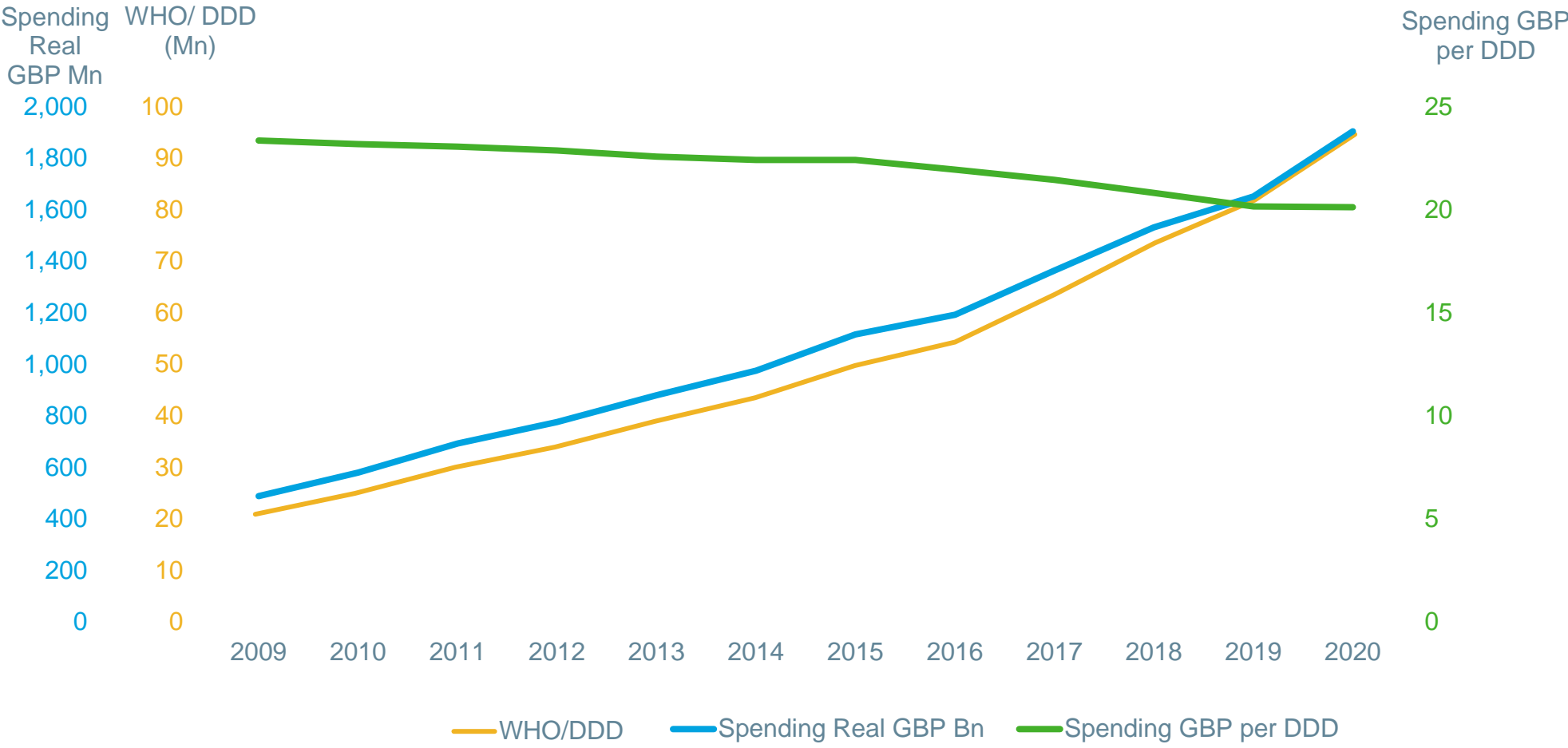
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Auto-immune spending growth slows as biosimilar impact has been dramatic since 2015

UK Auto-immune Biologic Invoice Spending and Growth Drivers, 2005-2020

Real Drug Spending (Constant USD Mn)

Real Spending Growth (Constant USD Mn)

Legend:
- New brands 0-2 years post-launch
- New brands 3-5 years post-launch
- Protected brands
- LOE - biologic
- Upcoming LOE 5 years
- Biosimilars

- Biosimilars
- LOE - biologic
- Upcoming LOE 5 years
- Protected brands volume
- Protected brands price
- New brands 0-2 years post-launch
- New brands 3-5 years post-launch
- Total growth

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Meningitis, shingles, hepatitis and HPV vaccines contribute to 40% of overall spending in 2020

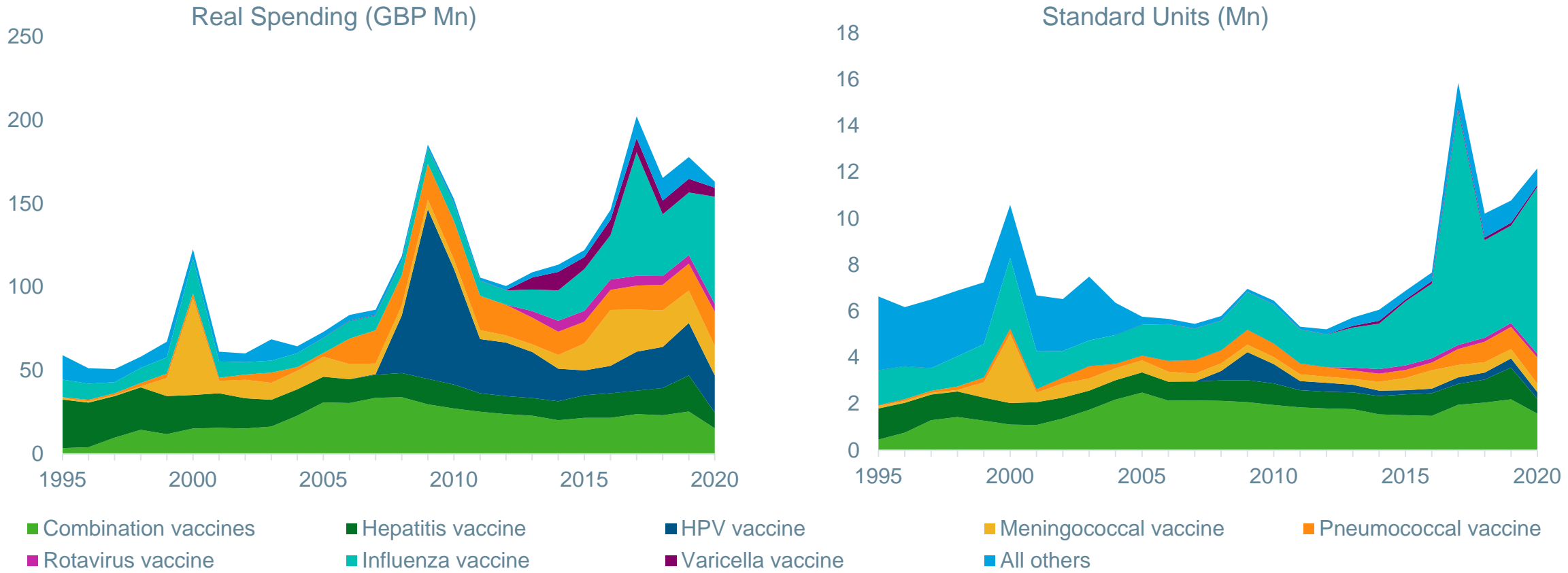*UK Vaccine Spending and Volumes by Drug Type 1995-2020*

Real Spending (GBP Mn)

Standard Units (Mn)

Legend:
- Combination vaccines
- Hepatitis vaccine
- HPV vaccine
- Meningococcal vaccine
- Pneumococcal vaccine
- Rotavirus vaccine
- Influenza vaccine
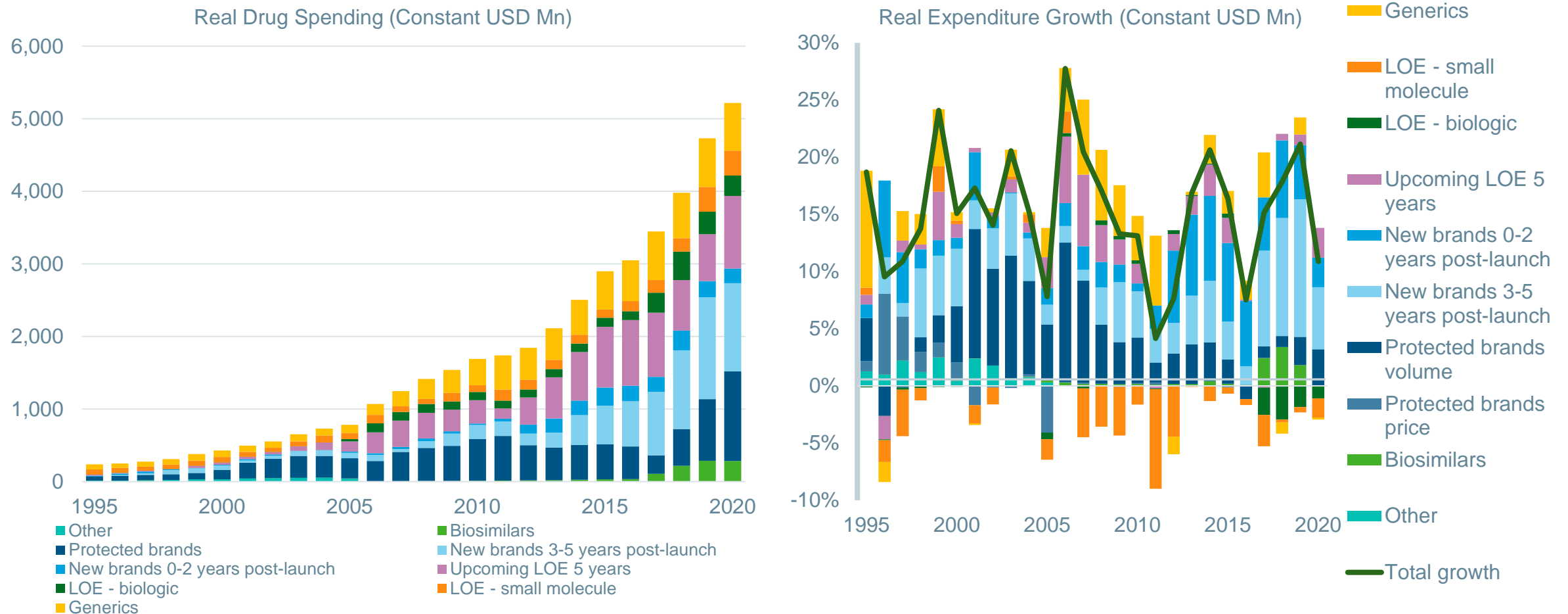- Varicella vaccine
- All others

Chart notes: Combination vaccines represent combined vaccines (with measles, mumps, tetanus or other); HPV vaccine for human papillomavirus; Meningococcal vaccine for meningitis; Pneumococcal vaccine for pneumonia; Rotavirus vaccine for rotavirus; Influenza vaccine for the flu; Varicella vaccine for shingles; and All others for cholera, tetanus, typhoid and other viral/bacterial vaccines.

Source: IQVIA MIDAS; IQVIA Institute, Dec 2020

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Oncology spending increases from newer brands and limited generic and biosimilar impact

UK Oncology Invoice Spending and Spending Growth Drivers, 1995-2020

Source: IQVIA MIDAS; IQVIA Institute, Dec 2020

Drug Expenditure Dynamics 1995-2020: Understanding Medicine Spending in Context U.K. Detail Appendix

New oncology therapies have been increasingly adopted over the past 5-10 years, especially PD-1/PD-L1 and other new modalities

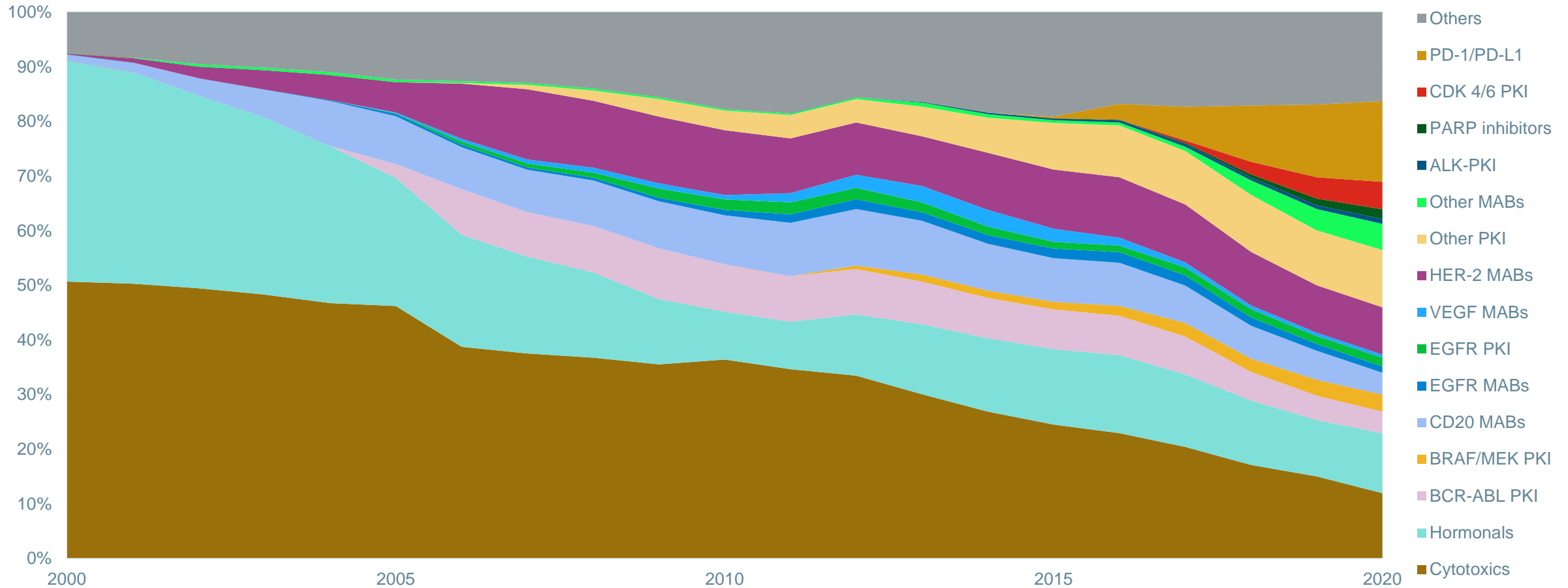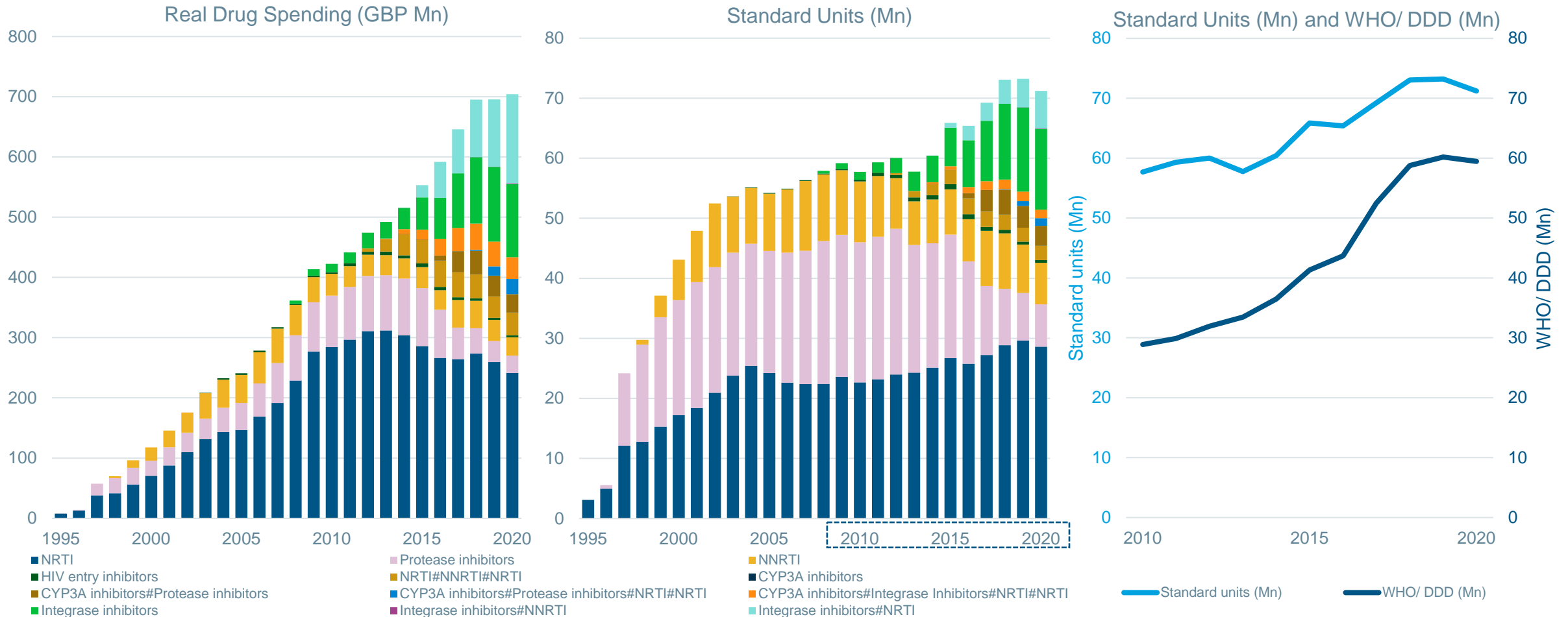*UK Oncology Real Local Currency Spending by Mechanism, 2000-2020*

Chart notes: Cytotoxics include antimetabolites, taxane, alkylating agents, camptothecin, platinum, lidomide, podophyllotoxin, vinca alkaloid and other antineoplastics, aromatase inhibitors; Hormonals include cytostatic anti-androgens, gonadotropins, gonadotropin releasing hormones, progestogens, estrogens, anti-estrogens; others include all other neoplastics.

Source: IQVIA MIDAS; IQVIA Institute, Dec 2020

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HIV days of therapy are increasing, shifting to newer combinations, but use of older single-ingredient drugs continues

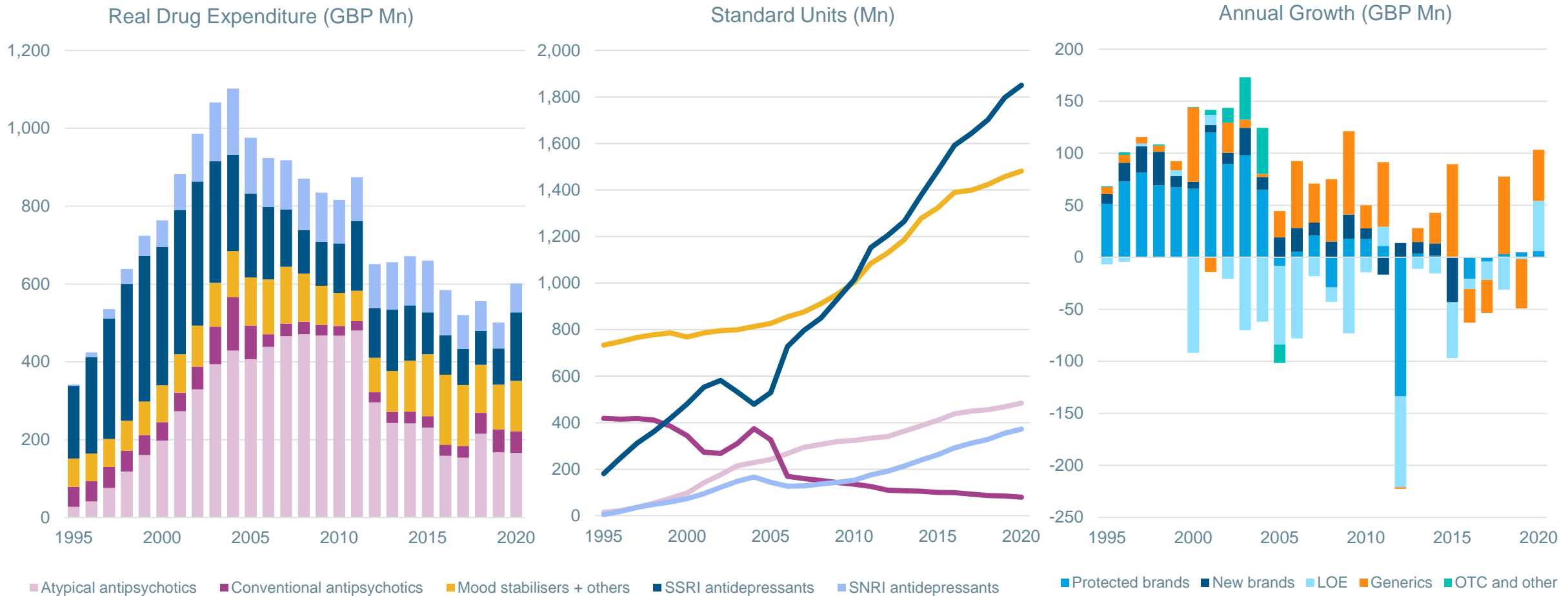*UK HIV Spending and Volume by Mechanism, 1995-2020*

Source: IQVIA MIDAS; IQVIA Institute, Dec 2020

Drug Expenditure Dynamics 1995-2020: Understanding Medicine Spending in Context U.K. Detail Appendix

Due to mental health patent expiries and the predominance of generics, overall drug spending has declined in the last decade

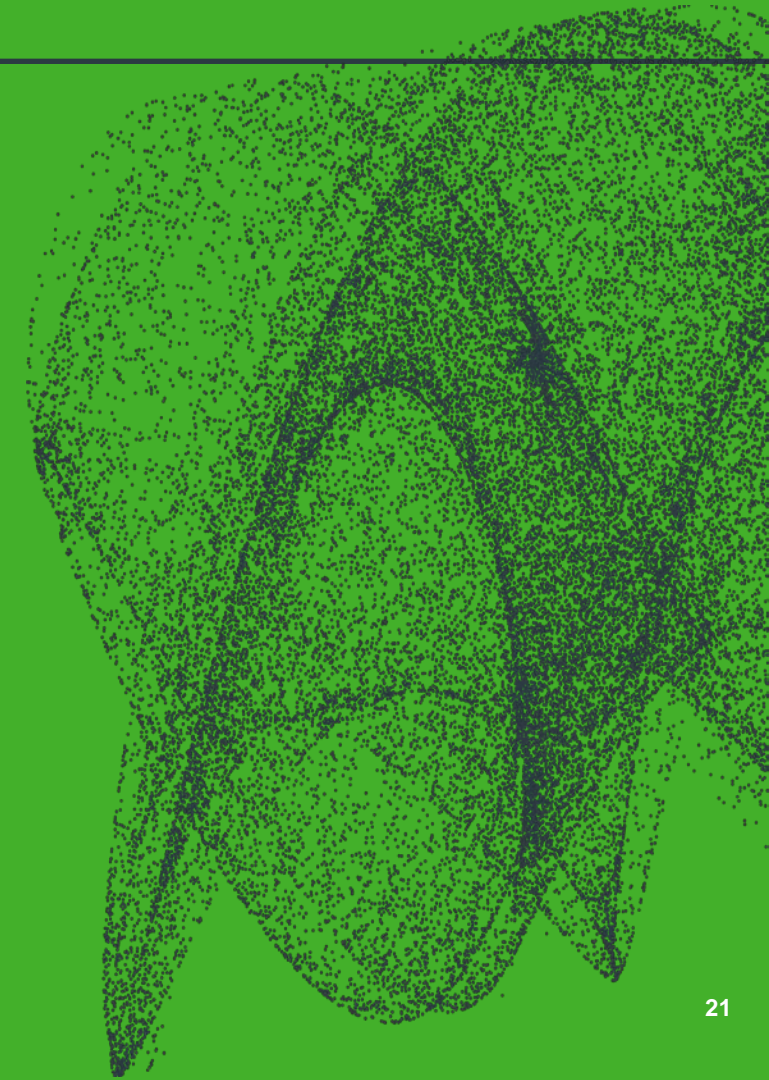*UK Mental Health Spending by Mechanism, Volume and Annual Growth by Product Type, 1995-2020*

Real Drug Expenditure (GBP Mn)

Standard Units (Mn)

Annual Growth (GBP Mn)

Atypical antipsychotics • Conventional antipsychotics • Mood stabilisers + others • SSRI antidepressants • SNRI antidepressants

Protected brands • New brands • LOE • Generics • OTC and other

Source: IQVIA MIDAS; IQVIA Institute, Dec 2020

Drug Expenditure Dynamics 1995-2020: Understanding Medicine Spending in Context U.K. Detail Appendix

Illustration and explanation of data and chart layouts

Drug and Healthcare Spending Analyses

Key elements to note for interpreting charts

Drug and Healthcare Spending 1995-2018

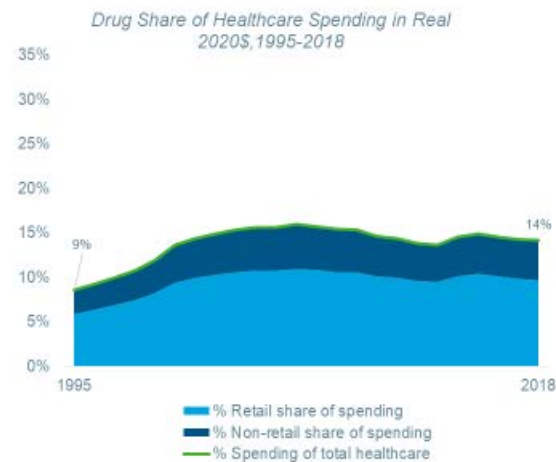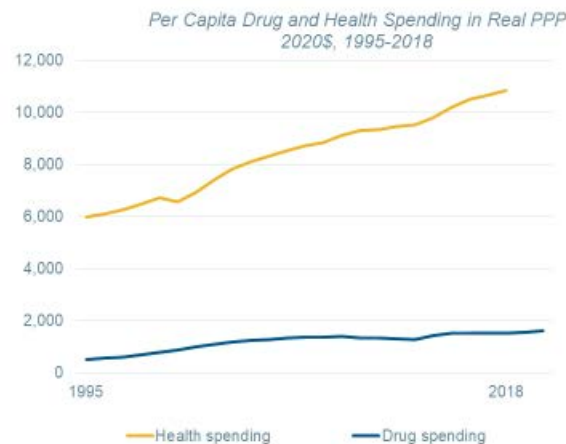Per Capita Drug and Health Spending in Real PPP 2020$, 1995-2018

Chart Note: Methodology described in main report *Drug Expenditure Dynamics 1995-2020: Understanding Medicine Spending in Context*
Source: IQVIA Institute for Human Data Science, Sep 2021

Drug Expenditure Dynamics 1995-2020: Understanding Medicine Spending in Context U.S Detail Appendix

Drug Share of Healthcare Spending in Real 2020$, 1995-2018

- % Retail share of spending
- % Non-retail share of spending
- % Spending of total healthcare

- **Drug and healthcare spend have been adjusted for economic growth ('real' GDP growth has been removed), population growth, and for cost of living differences (Purchasing Power Parity – PPP).**
- **Drug spending as a percentage of healthcare spending uses estimates of total drug spending in all channels (retail and hospital) and after discounts and rebates.**
- **The hospital drug spend adds 1-11 percentage points, depending on the country, to the retail drug share of healthcare that is most often reported by governments (OECD).**
- **The right-most chart illustrates how much of overall drug spending is attributable to non-retail spending, which is significant and varies over time.**

Drug spending is segmented by type of product, changing over time for some products to enable more complex analyses

Illustrating the Drug Type Segmentation Used in the Report
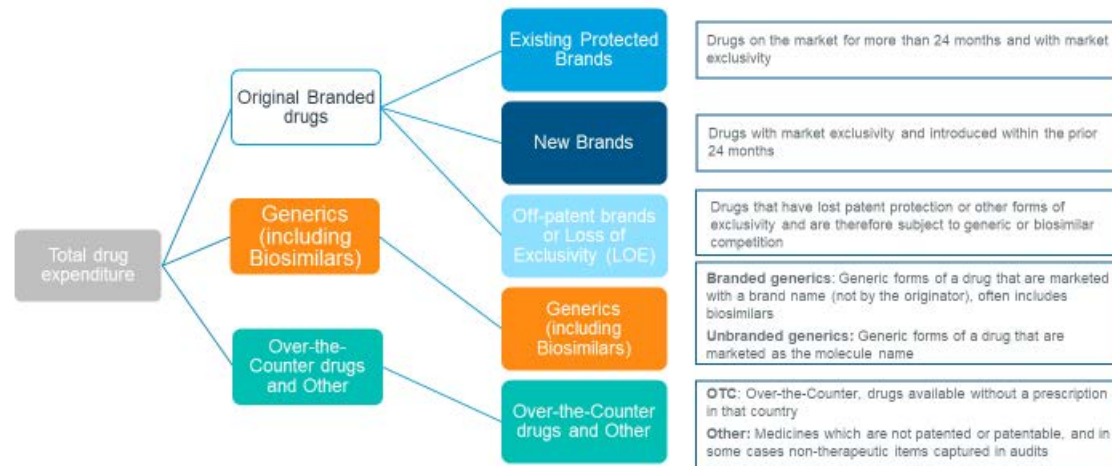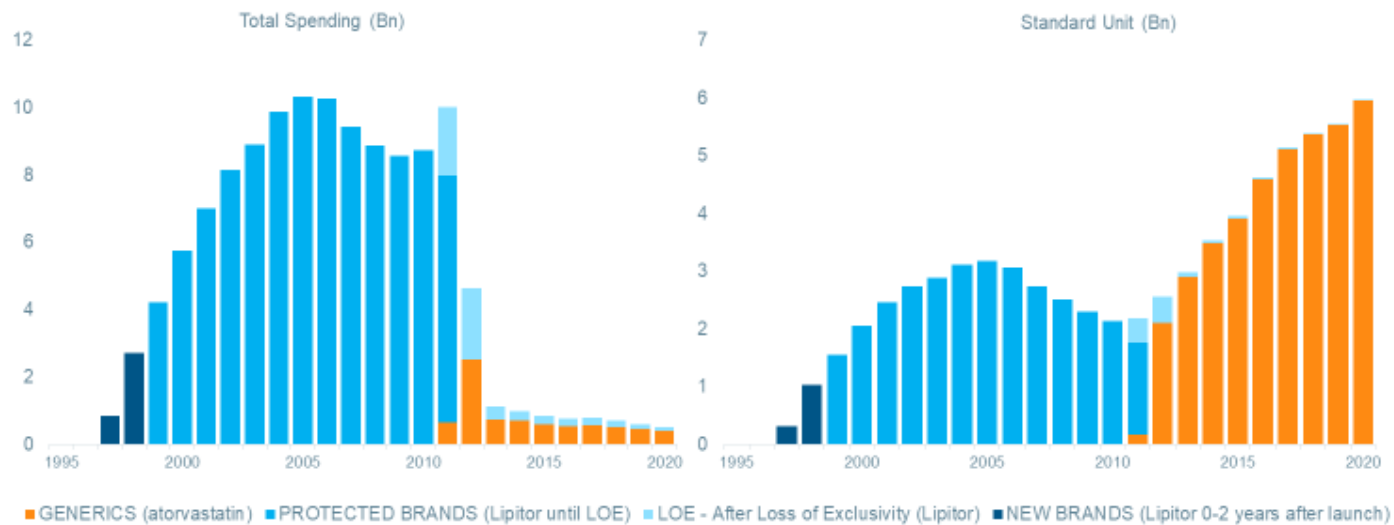

Drug Expenditure Segmented by Type of Drug

Total drug expenditure

Original Branded drugs
- **Existing Protected Brands** — Drugs on the market for more than 24 months and with market exclusivity
- **New Brands** — Drugs with market exclusivity and introduced within the prior 24 months
- **Off-patent brands or Loss of Exclusivity (LOE)** — Drugs that have lost patent protection or other forms of exclusivity and are therefore subject to generic or biosimilar competition

Generics (including Biosimilars)
- **Generics (including Biosimilars)** — Branded generics: Generic forms of a drug that are marketed with a brand name (not by the originator), often includes biosimilars. Unbranded generics: Generic forms of a drug that are marketed as the molecule name

Over-the-Counter drugs and Other
- **Over-the-Counter drugs and Other** — OTC: Over-the-Counter, drugs available without a prescription in that country. Other: Medicines which are not patented or patentable, and in some cases non-therapeutic items captured in audits

Chart notes: Protected brands include original protected brands, upcoming LOE and vaccines, New brands include original new brands; LOE include drugs that lost patent protection; Generics include non-original branded products as well as drugs that are marketed using the molecule name; OTC and other include non-prescription bound products and not patentable products. Due to the methods of combining multiple archived databases, products which are no longer marketed but had spending or volume in 2005 or earlier are included in the 'other' segment as specific segmentation was not possible.

- Analyses in this report that use product segmentations as shown here are based on IQVIA audited data. They do not reflect payer net spending due to the confidential nature of some of the discounts and rebates. Unless a page indicates a non-IQVIA source, the analysis would not be adjusted for off-invoice discounts and rebates.
- Products have been segmented both by the way they are marketed (brands, generics, biosimilars, Over-the-counter) as well as by the status of their patent or other types of protection.
- Existing Protected brands are those which are no longer 'new' and are not yet off-patent.
- Nnew brands are defined as those products within their first 2 years in the market; however, some analytics in this report specifically identify older new brands from 3-5 years after launch.
- Loss of exclusivity is the status for branded products that are off-patent or no longer protected (but still had sales in the market) and these terms are used interchangeably in the report.
- Generics and biosimilars are treated in the same segment unless noted specifically on the chart.
- Over-the-counter status is a country-specific regulatory status and some drugs have both prescription-bound and OTC packs in the market.
- Other is a status where products either do not have typical brand or generic or protection statuses or where the product is no longer marketed and it was not possible to apply segmentation.

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Illustration: product segmentation drug lifecycle dynamics

Example of Drug Type Segmentation using a single medicine

Exhibit x: Illustration of U.S. branded and generic segmentation, Lipitor and Atorvastatin generics

- GENERICS (atorvastatin) ■ PROTECTED BRANDS (Lipitor until LOE) ■ LOE - After Loss of Exclusivity (Lipitor) ■ NEW BRANDS (Lipitor 0-2 years after launch)

- **In this example, the drug 'atorvastatin' begins life as a New Brand when Lipitor launched.**
- **The segmentation changes after 24 months to 'Protected Brand'. Analyses are based on quarterly time periods and a product may be considered new in 3 calendar years depending on the timing of launch in a country.**
- **At the point of patent expiry, the brand Lipitor becomes LOE, and new competing Generics enter the market.**
- **The left chart shows 'spending,' which is reflected in the currency noted on each chart. In the report the currencies. are most often normalized to real 2020$ with constant US$ exchange rates, but in the country appendix local currencies are used.**
- **The right chart shows values in standard units. Standard units vary by form and are generally not recommended to report in this aggregated way. However most drugs in the therapy areas were similar enough to enable this analysis.**

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Illustration of data and charts in this report

Country level overview of product types

Drug Spending and Utilization 1995-2020
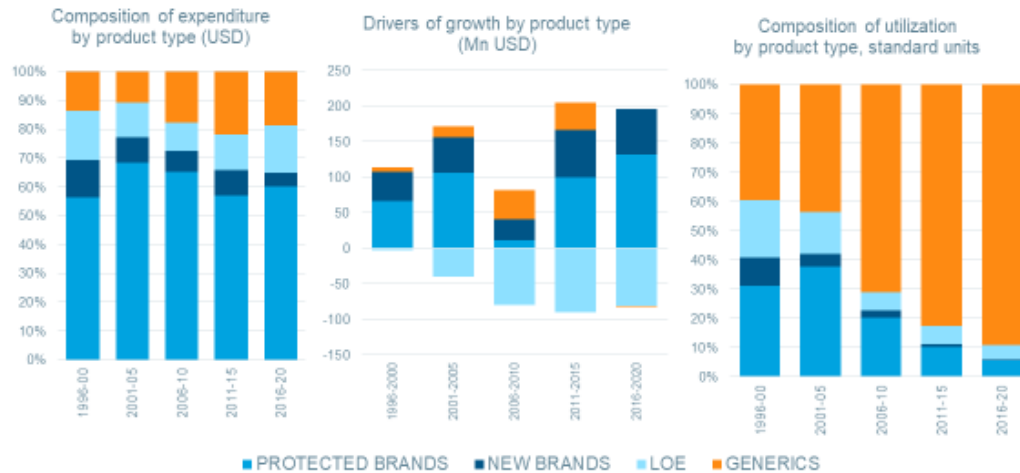
- Protected brands including new products average less than 70% of spending consistently
- Generic share of combined generic and LOE segments increasing steadily over time
- Generic share of volume increasing as generations of products shift to off-patent
- Most growth is driven by protected brands including new products, and offset by losses of exclusivity

- This analysis includes three views of drug spending, growth and volume in standard units, each present in the cross-country comparison section of the report and repeated in the beginning of each country section of the appendix.
- Spending is IQVIA audited sales and does not reflect off-invoice discounts and rebates.
- The drivers of growth chart is represented in absolute values of the currency noted.
- Products each have a segment status in each time period, and growth is a representation of the current group of products and their growth compared to prior periods. The product status in the prior period is not considered.
- Growth on an annual basis has been added together into 5-year groupings.
- Standard units are highly dissimilar by formulation and not recommended.

Illustration of data and charts in this report

Total drug spending over time on 100% scale by top 20 Therapy areas

US Composition of Drug Real Local Currency Spending by Drug Class, 1995-2020
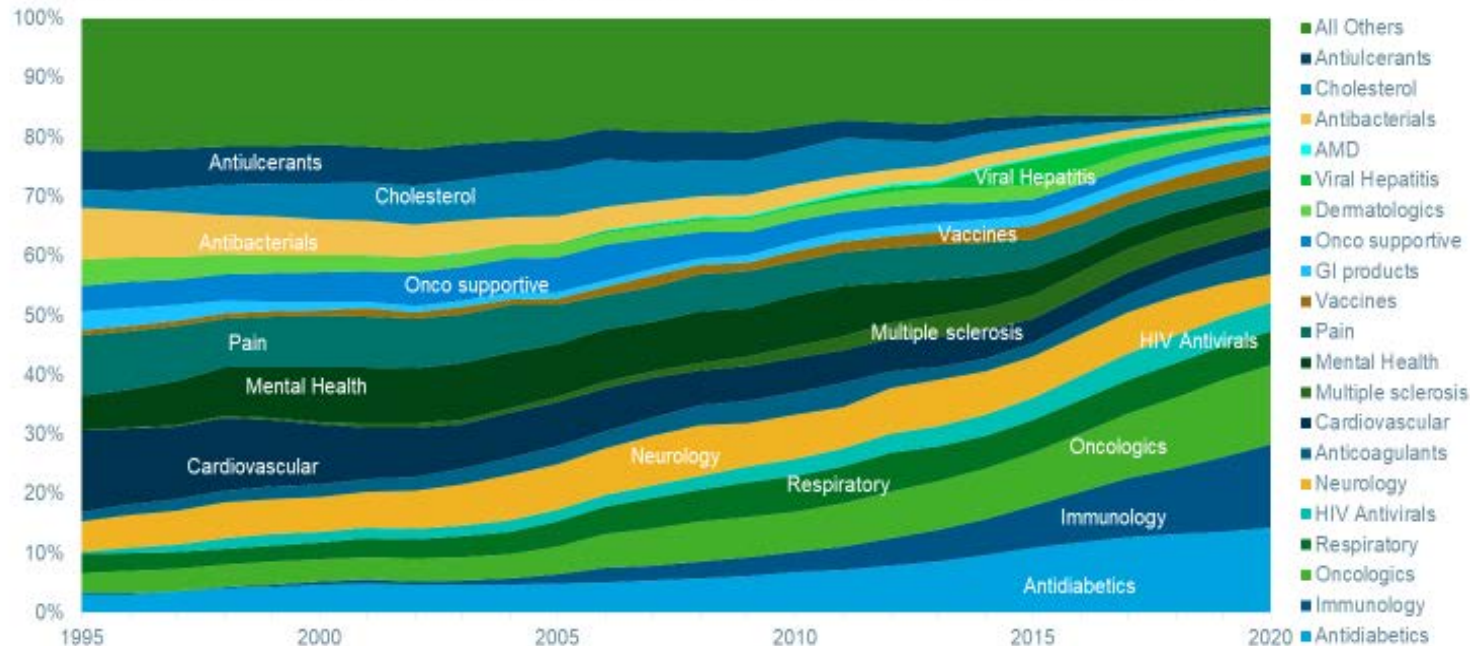
- **Total IQVIA audited spending over 25 years has been collated and grouped by therapy areas.**

- **The therapy areas are defined by IQVIA with details of the definitions in the main report methodology section.**

- **The therapy areas called out by name are the classes that were ranked in the top 20 the most often across the eleven countries studied across the 25 years. This can mean that some classes which have declined in sales outside the top 20 in the most recent period are still shown.**

Therapy area charts with sales, volume and cost by type of drug

Example of single therapy area with multiple metrics analyzed

US Cholesterol Volumes, Average Prices and Spending by Product Type, 1995-2020
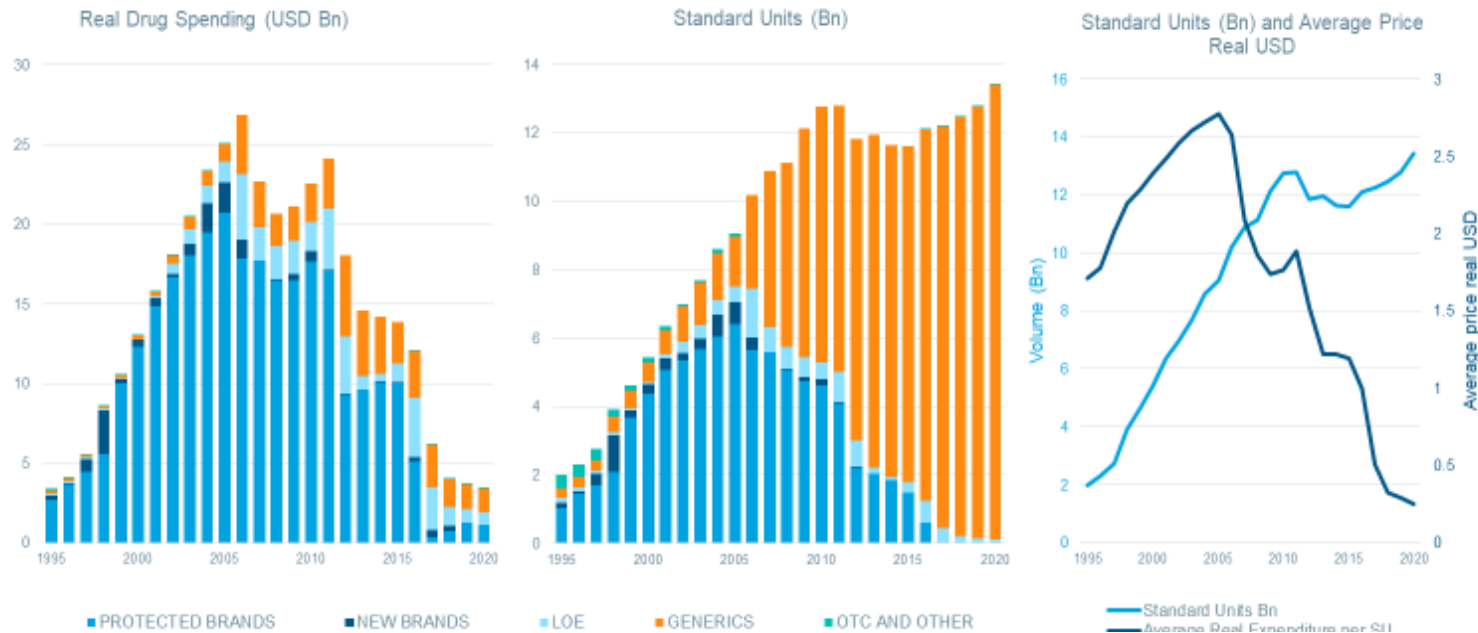
- **Some analyses show three charts in this orientation, with spending, standard unit volume and finally a chart of volume and average cost per standard unit.**
- **Spending and cost are based on IQVIA audited data and do not reflect discounts and rebates.**
- **The segmentations shown in the charts are the same as described earlier.**
- **The average cost calculation is at the therapy area level.**

Therapy areas showing subclasses by mechanism of action

Illustration of a therapy area using multiple analysis metrics

U.S. Diabetes Real Spending, Volume and Growth USD (Mn) by Drug Type, 1995-2020

Legend: Traditional, Insulin, Glucagon, Glitazone, DPP-IV, GLP-1, SGLT2
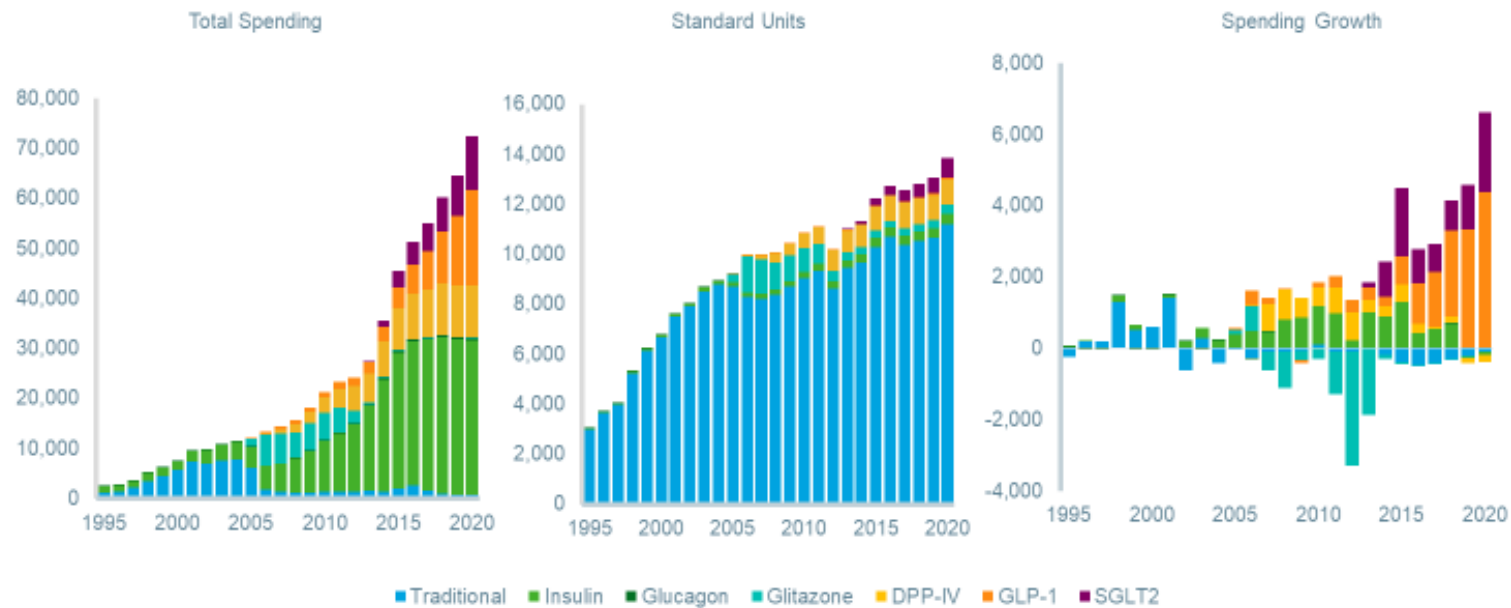
- **Some therapy area charts include spending, standard units and spending growth.**
- **All are shown in the currency value noted.**
- **The colors of the chart indicate therapy sub segments, typically indicating shifts in the types of medicines used over time.**

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Autoimmune biologic charts

Illustration of three metrics on three axes on the same chart

Cost per day in immunology had been rising rapidly but has slowed since the first introduction of biosimilars in 2016

US Auto-immune Biologic Spending, DDD and Cost 2009-2020
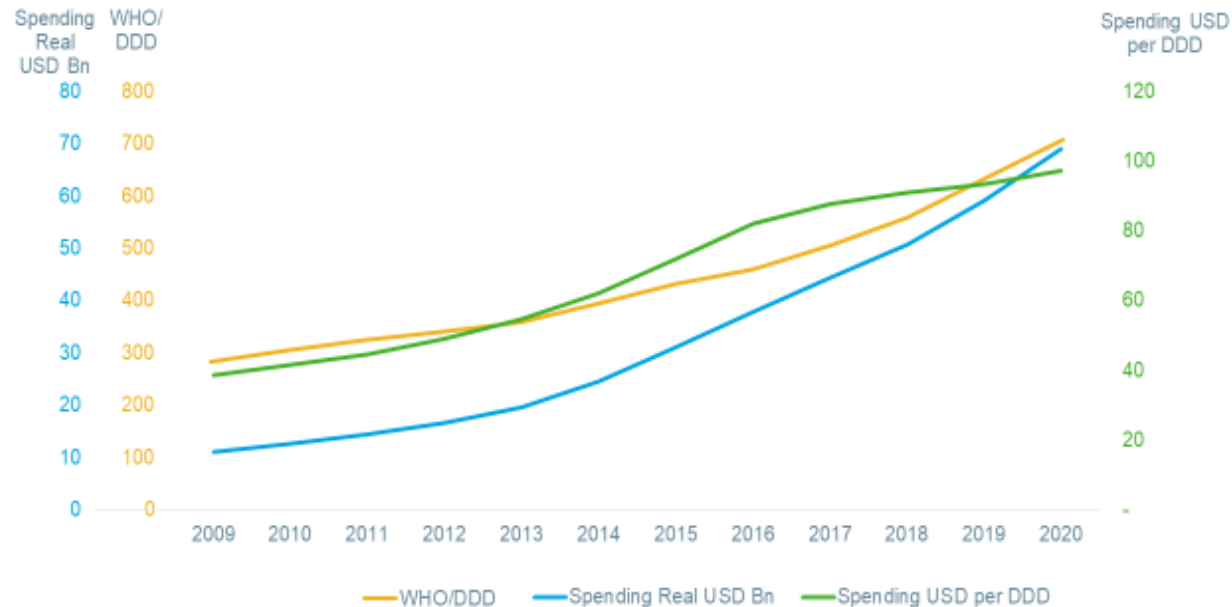
Sources: IQVIA MIDAS, IQVIA Institute, December 2020

- This chart layout is used for the autoimmune biologic market.
- It has 3 axes which are color-matched to the lines
- Two axes are on the left (sales and volume in WHO Defined Daily Doses – WHODDD). The color of the lines matches the color used on the axis to show increments.
- WHODDD represent a standardized dose used for all patients and normalized for packaging and formulation differences which are common with some products in this therapy area.
- WHODDD is particularly helpful for comparisons when original and biosimilar products are packaged differently from each other.

Charts using a more granular product type view

Illustration of product type segmentation with forward-looking segment

More than half of autoimmune biologic spending is due to lose exclusivity in next 5 years

U.S. Auto-immune Biologic Invoice Spending and Growth Drivers, 2005-2020

Source: IQVIA National Sales Perspectives, Dec 2020
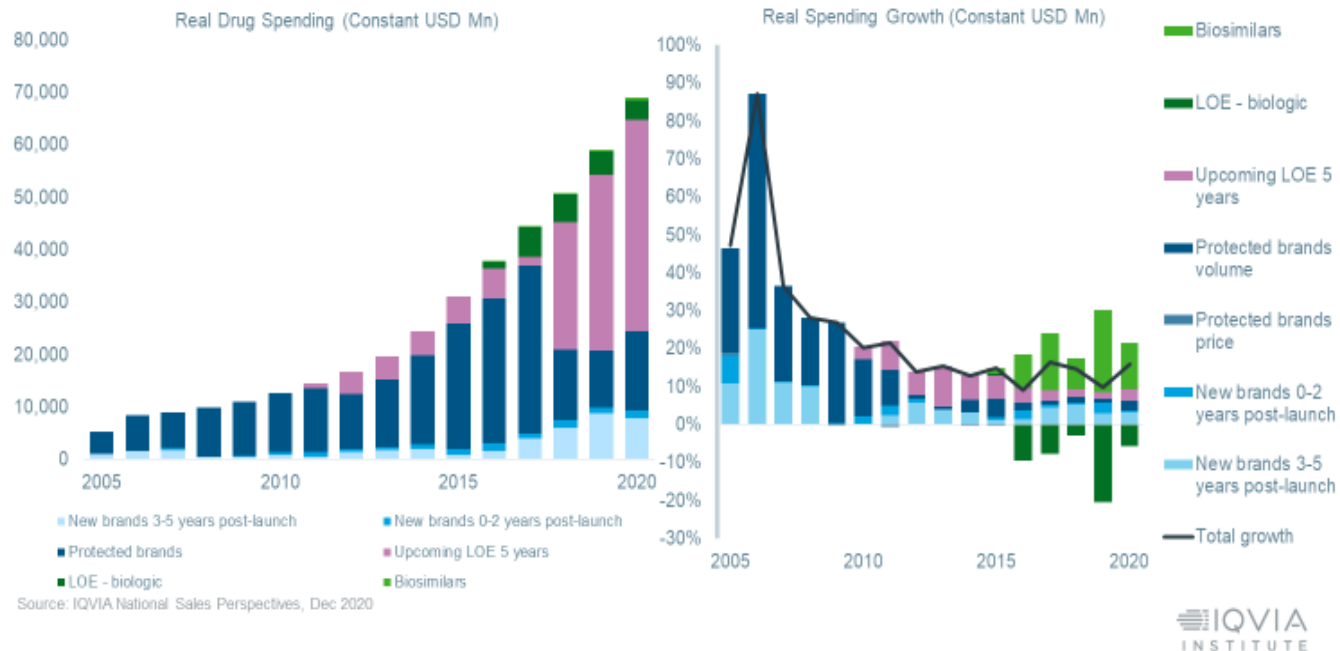
- Oncology and Autoimmune charts employ a more granular time-dependent segmentation of product type than other analyses in the report.

- Original biologics and small molecules when off-patent are identified separately as well as generics (small molecule) and biosimilars.

- The autoimmune charts are limited to biologic products and therefore exclude some small molecule products that could be relevant in some analyses such as JAK inhibitors.

- The upcoming LOE 5 years segment is composed of different products each year as their status changes, and refers to the expected entry of biosimilars in key products in future years.

- New products are shown with both 0-2 years and 3-5 year segments.

- Brands that are not 'new' and not LOE are shown as 'protected' and growth charts are split by price and volume.

HIV market charts

Illustration of products with varying mechanisms of action

New combination treatments with low dosing regimens led to reduction in volume, offset by an increase of days of therapy

US HIV Spending and Volume by Mechanism 1995-2020 and DDD, 2010-2020
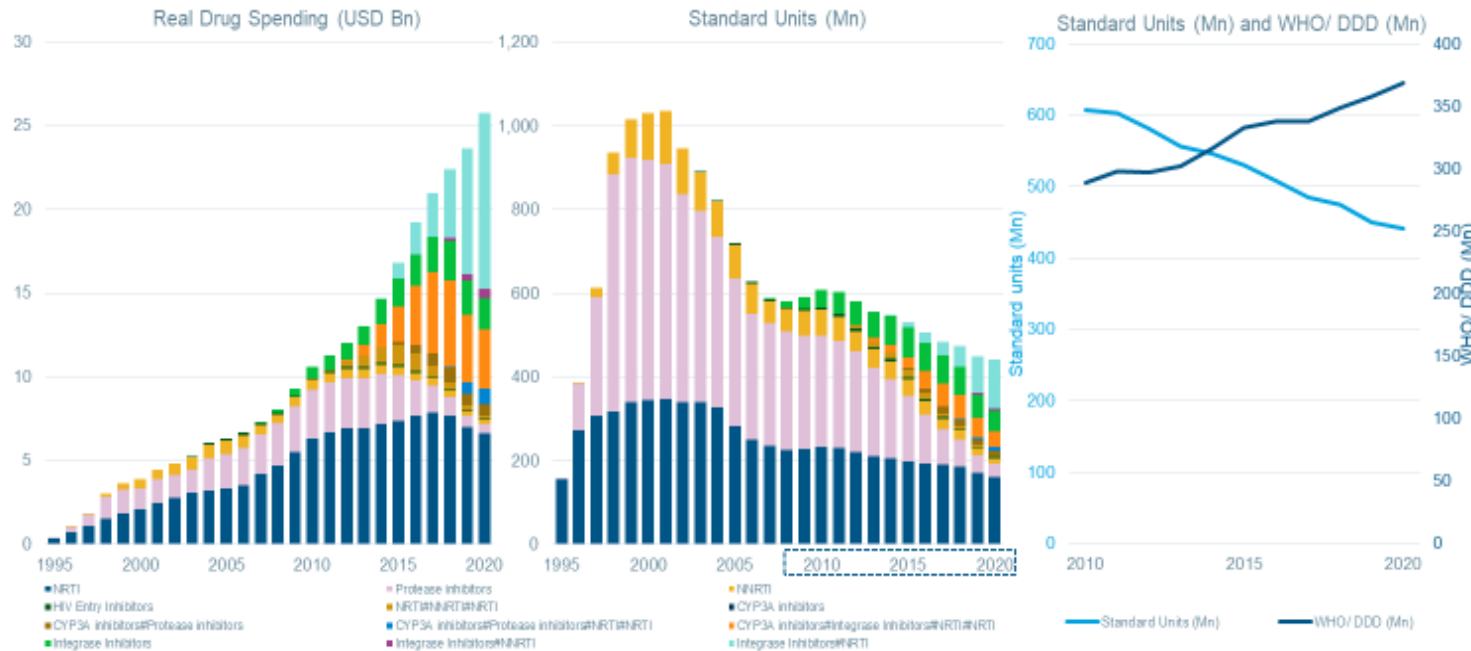
- Products in this market have been grouped by mechanism of action.
- Fixed-dose combination products are grouped by the type of mechanism of each ingredient, with each mechanism separated by a '#' symbol.
- Volume is measured in standard units in the middle chart.
- In the right chart, volume is in both standard units and WHO DDD, and the shift in the trajectory of these two measures suggests a changing number of doses per day as combination products become more common.

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