1.1. Projection of public expenditure on reimbursed pharmaceuticals (S-21)

1.1.1. Documentation sheet

Description	Projected public expenditure for reimbursed pharmaceuticals up to 2033 (at current price, in 1 000 euros).
Calculation	PROMES (PROjecting Medical Spending) is a microsimulation model developed by the Federal Planning Bureau, in collaboration with RIZIV – INAMI. The model provides a detailed analytical insight in the determinants of the evolution of healthcare expenditure covered by compulsory health insurance and makes it possible to project these in the short and medium term.
	Expenditure for pharmaceuticals is modelled on the basis of micro data from the Permanent Sample (EPS) of IMA – AIM. The model consists of about 25 modules corresponding to different expenditure groups. In what follows, the module "pharmaceutical specialities" is used. Expenditure is modelled in three steps: estimation of the number of users by a behavioural model (step 1), estimation of the number of DDDs (defined daily doses) by multiplication with an average number of DDDs per user determined by trend extrapolation (step 2) and estimation of the expenditure by multiplication with an average cost per DDD (step 3).
	The estimate of the number of users is based on logistic regressions of the probability that an individual consumes a drug (from a given class) during a given month including the following exogenous characteristics (for more details, see Geerts et al. 2016 and 2018)[1, 2]: demographics (age group, gender, interaction age-gender), individual health status (general health status indicator, chronic illness/invalidity indicator, indicators on specific chronic conditions), flu epidemic (variable at the national level), socio-economic status (unemployment status, long-term unemployment status, isolated/cohabiting status, right to guaranteed income, primary work incapacity), insurance status (entitlement to increased reimbursement status, global medical file, maximum billing reimbursement), living environment (district, population density, medical density of physicians), previous care (hospitalisation in the preceding months, contacts with physicians in the preceding month) and period (year and month).
	Expenditure for pharmaceuticals is separated into three groups: expenditure for outpatient pharmaceuticals delivered by community pharmacies (hereafter referred to as retail pharmaceutical expenditure), outpatient pharmaceuticals delivered by hospital pharmacies to ambulatory patients (hereafter referred to as hospital outpatient pharmaceutical expenditure) and inpatient pharmaceuticals delivered by hospital pharmacies to hospitalised patients (hereafter referred to as hospital inpatient pharmaceutical expenditure). As the profile of the users (according to age, gender, health status, insurance status, etc.) strongly differs per class of pharmaceuticals, the model for retail pharmaceutical expenditure is estimated separately for 23 ATC[a] classes of drugs and the model for hospital outpatient pharmaceutical expenditure is estimated separately for 19 ATC classes of drugs.
	Trends in the number of users, the average number of DDDs per user and in the average cost per DDD are extrapolated up to 2033.
	Since 2010, managed entry agreements (MEAs) can be concluded at the request of the pharmaceutical company. These MEAs include most of the time financial compensation mechanisms that are confidential. The use of these MEAs is rising, especially for new innovative and expensive pharmaceuticals.[3] Because the compensation mechanisms are confidential, the actual expenditure for individual medicines is unknown. MEAs' compensations are separately included in the PROMES model, so that the projections of pharmaceutical expenditure can be reduced accordingly. To do so, EPS data are linked to a dataset containing the product names and start and end dates of the periods under agreement for drugs under

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[a] The ATC (Anatomical Therapeutic Chemical) classification is an international classification of medicines.

	MEA. Then MEA and non-MEAs pharmaceutical expenditures are modelled separately (with only non-MEA retail pharmaceuticals and hospital outpatient pharmaceuticals being modelled by ATC class). Up to 2024, MEAs' compensations are estimated using RIZIV – INAMI technical estimates. For subsequent years, the estimated growth rate for the total of MEA pharmaceuticals is applied.
Rationale	Pharmaceuticals play an important role in the healthcare system and are constantly evolving. An increasing number of new pharmaceuticals enter the market every year, with a cost that can be high, having significant implications for healthcare budget. Public policy makers need to strike the right balance between access to new drugs and incentives for professionals in the sector, while recognising the limits of health budgets.[4] In Europe, the growth of pharmaceutical expenditure has been reduced for some years following the 2008 crisis, due in part to a combination of cost-containment policies and market dynamics, including generic and biosimilar competition.[5] However, growth rates have returned to higher levels more recently, that can be explained by new high cost treatments such as for Hepatitis C and some cancer drugs (in Belgium usually under MEA).[6]
Data source	Federal Planning Bureau, RIZIV – INAMI, IMA – AIM
Technical definitions	The PROMES 2.17 estimates of September 2023 are based on the EPS release 17, which includes data up to 2021. Given the large impact of COVID-19 on healthcare use, the data for 2020-2021 were not included in the care consumption regression analyses.
	The insured population projections were aligned with the population and households projection data from the Federal Planning Bureau and Statbel of January 2023 and with the unemployment projections from the Federal Planning Bureau of July 2023, which take into account the impact of the COVID-19 pandemic.
	Only individuals residing in Belgium were included in the regression analyses. To obtain projection results for the entire insured population, including the insured persons residing abroad, a specific scaling factor is applied to the projection results for each expenditure group.
Limitations	Innovative pharmaceuticals: extrapolations of average cost per DDD are based on historic data that may lead to an underestimation of the cost of innovative pharmaceuticals.
	Missing determinants of care consumption: the model uses data from the Permanent Sample, which does not contain information on some individual characteristics that may influence demand for care: (household) income, level of education, lifestyle (diet, alcohol and tobacco consumption, physical activity, etc.), medical background, professional situation, etc.
	Quality of the projection of the exogenous variables: even if the PROMES model explains the consumption of care, it was primarily designed to carry out projections and simulations of policies. Consequently, the quality of the results of the model depends not only on the "completeness" of the estimated model, but also on the quality of the projection of the exogenous variables (those which are not explained by the model).
	Pharmaceuticals under MEA: even if efforts were made to better estimate the future expenditure related to these pharmaceuticals, the confidential aspect of MEA remains an obstacle to good estimates.
Dimension	Sustainability
Related indicators	S-3 Public funding of healthcare (% of current expenditure on health)
	S-20 Projection of public expenditure on health (% GDP), evolution in percentage points
Reviewers	Joanna Geerts (Federal Planning Bureau); Karen Geurts (Federal Planning Bureau); Irina Odnoletkova (KCE)

1.1.2. Results

In 2022, public expenditure on pharmaceuticals amounts to 6.20 billion € in Belgium (see Table 1), the major parts being retail pharmaceutical expenditure (2.92 billion €) and hospital outpatient pharmaceutical expenditure (2.86 billion €). Hospital inpatient pharmaceutical expenditure is projected to amount to 420 million €.

All three types of pharmaceutical expenditure are expected to increase in the future (see Table 2 and Figure 1) but a large difference is expected in the growth path of hospital outpatient pharmaceutical expenditure compared to both other categories. Retail pharmaceutical expenditure is expected to increase by 23.5% between 2022 and 2027 and hospital inpatient pharmaceutical expenditure by 25.3%. However, hospital outpatient pharmaceutical expenditure is expected to increase by 78.4% during the same period. This outstanding difference of growth rate between hospital and retail pharmaceutical expenditure is also observed in other European countries (see for instance OECD/EU, 2020).[6]

Globally, total pharmaceutical expenditure is expected to increase by 48.9% between 2022 and 2027.

The above numbers are likely overestimated. Indeed, since 2010, managed entry agreements (MEAs) can be concluded at the applicant request. These MEAs include most of the time financial compensation mechanisms that are confidential. The use of these MEAs is rising, especially for new innovative and expensive pharmaceuticals.[3] Because the compensation mechanisms are confidential, the actual expenditure is unknown. In the MORSE report[7], RIZIV – INAMI publishes the firms' turnover for pharmaceuticals under MEAs as well as the amounts paid by the firms within the framework of these MEAs. An estimation of the average compensation rate can therefore be calculated. For the period 2014-2021, this average compensation rate was around 29%. An increase in the compensation rate can also be observed over the years (from 18.4% in 2014 to 53.8% in 2021). The report also highlights that while the increase in public expenditures for pharmaceuticals during the 2016-2021 period was 36.7%, after having deduced the compensations received from MEAs, the increase would be reduced to 16.7%.

MEAs' compensations are separately included in the PROMES model, so that the projections of pharmaceutical expenditure can be reduced accordingly. When correcting for the MEAs' compensations, pharmaceutical expenditure is projected to amount to 4.94 billion € in Belgium in Belgium in 2022 (see Table 1) and the expected growth rate between 2022 and 2027 is 36.6% (see Table 2). As most MEAs concern outpatient drugs delivered in hospital, the growth rates of expenditure for this category of pharmaceuticals in Table 2 is likely overestimated.

Table 1 – Projected public expenditure on pharmaceuticals in Belgium (2023-2033) in thousand euros

	Retail pharmacies	Hospital (outpatient)	Hospital (inpatient)	Total	Total net from MEAs' compen-sations
2022	2 923 760	2 855 060	420 044	6 198 863	4 941 662
2023	3 046 729	3 252 686	460 889	6 760 304	5 142 025
2024	3 165 004	3 620 277	480 475	7 265 756	5 574 052
2025	3 295 874	4 041 550	499 259	7 836 682	5 910 493
2026	3 455 653	4 544 139	512 838	8 512 630	6 326 381
2027	3 611 894	5 093 262	526 326	9 231 482	6 751 517
2028	3 773 644	5 665 695	540 911	9 980 250	7 196 524
2029	3 949 204	6 216 369	554 542	10 720 116	7 640 247
2030	4 143 041	6 712 153	566 596	11 421 790	8 073 527
2031	4 349 846	7 251 356	582 738	12 183 939	8 546 075
2032	4 578 510	7 726 566	600 813	12 905 889	9 003 913
2033	4 826 047	8 136 782	623 515	13 586 343	9 447 717

Source: Federal Planning Bureau, PROMES model estimates September 2023 based on EPS 17.

Table 2 – Projected yearly increase in public expenditure on pharmaceuticals in Belgium (2023-2033)

	Retail	Hospital (outpatient)	Hospital (inpatient)	Total	Total net from MEAs' compensations
2023	4.2%	13.9%	9.7%	9.1%	4.1%
2024	3.9%	11.3%	4.2%	7.5%	8.4%
2025	4.1%	11.6%	3.9%	7.9%	6.0%
2026	4.8%	12.4%	2.7%	8.6%	7.0%
2027	4.5%	12.1%	2.6%	8.4%	6.7%
2028	4.5%	11.2%	2.8%	8.1%	6.6%
2029	4.7%	9.7%	2.5%	7.4%	6.2%
2030	4.9%	8.0%	2.2%	6.5%	5.7%
2031	5.0%	8.0%	2.8%	6.7%	5.9%
2032	5.3%	6.6%	3.1%	5.9%	5.4%
2033	5.4%	5.3%	3.8%	5.3%	4.9%
Projected five-year increase					
22-27	23.5%	78.4%	25.3%	48.9%	36.6%
27-32	26.8%	51.7%	14.2%	39.8%	33.4%

Source: Federal Planning Bureau, PROMES model estimates September 2023 based on EPS 17.

Figure 1 – Projected public expenditure on pharmaceuticals in Belgium (2023-2033) in thousand euros
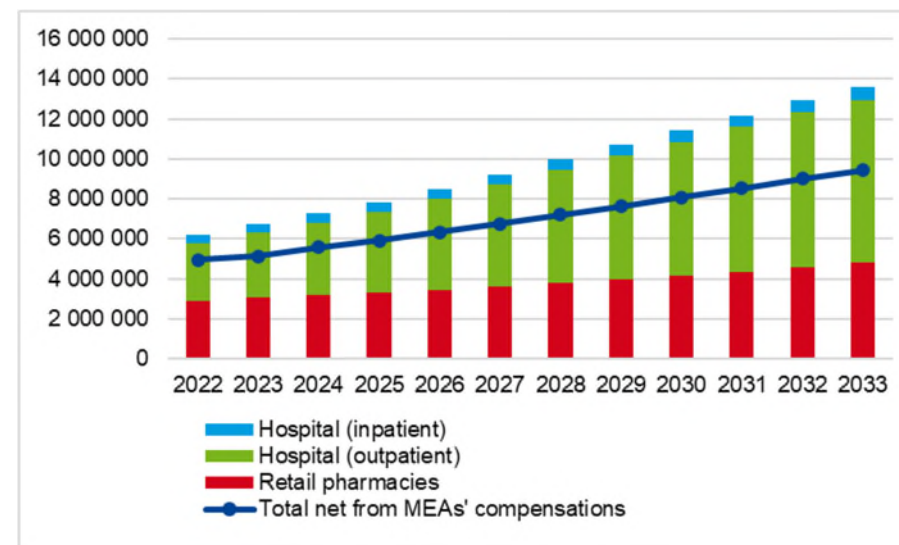
Source: Federal Planning Bureau, PROMES model estimates September 2023 based on EPS 17.

Key points

- **In 2022, public expenditure on pharmaceuticals amounts to 6.20 billion € in Belgium (2.92 billion € for retail pharmaceutical expenditure, 2.86 billion € for hospital outpatient pharmaceutical expenditure and 420 million € for hospital inpatient pharmaceutical expenditure).**

- **When correcting for the MEAs' compensations, pharmaceutical expenditure amounts to 4.94 billion € in Belgium in 2022.**

- **Total pharmaceutical expenditure is expected to increase by 48.9% between 2022 and 2027. When correcting for the MEAs' compensations it is expected to increase by 36.6%.**

- **A large difference is expected in the growth rate of hospital outpatient pharmaceutical expenditure (+ 78.4% between 2022 and 2027) compared to retail pharmaceutical expenditure (+23.5%) and hospital inpatient pharmaceutical expenditure (+25.3%). This result must be nuanced as most MEAs concern outpatient pharmaceuticals delivered by hospital pharmacies.**

- **Although efforts are made to model financial compensations in MEAs, the confidential nature of the compensation remains an obstacle to obtain reliable estimates.**

References

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