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Does Belgium pay a ‘usual’ price for medicines of ATC class A10 “Drugs used in diabetes”?

Prepared by National Institute for Health and Disability Insurance (NIHDI)

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Executive summary

Belgium's decisions regarding pricing and reimbursement for pharmaceuticals are influenced by both pharmaco-medical and pharma-economical evaluations. These evaluations consider internal and external reference pricing, but primarily at a molecular level (ATC level 5). However, as the trend moves towards personalized medicine and an increased variety of authorized drugs with similar outcomes, relying solely on external reference pricing at the molecular level may present an incomplete perspective. It's essential to note that not all medications are reimbursed in every country, and prescription practices and preferences vary, making it challenging to directly transfer pricing that accounts for volume from one country to another.

Conversely, we can assume that the distribution of diseases is fairly consistent across countries, implying that the relative number of patients within a specific disease area is comparable. As a result, employing external reference pricing at a lower ATC level could offer a more comprehensive approach to compare prices.

In this policy brief, we utilized data from the EURIPID database to examine and compare the average unit prices of medicines in ATC class A10 that Belgium paid between 2017 and 2022 to other EURIPID countries. Our analysis revealed that the average unit prices in Belgium generally fall within the low to medium range and remain relatively stable. Nevertheless, we identified two specific groups of medicines, A10BD and A10BJ, displaying a noticeable trend that could lead towards higher annual expenditures.

Introduction

In the last decade, we've witnessed a noticeable and consistent increase in spending on medications for diabetes treatment (ATC A10). This has elevated them into the top 10 ATC groups in the annual expenditures of the 'National Institute for Health and Disability Insurance (NIHDI)' (Verzorging, 2022). Notably, medicines falling within the ATC group A10B make up almost two-thirds of these costs (Figure 2). Figure 1 illustrates that, since 2020, the rise in annual spending isn't tied to an increase of the volume, described as Defined Daily Doses (DDD). This suggests that patients might be shifting to different, possibly newer, treatment options. The consistent growth in annual net expenditure is cause for concern and reevaluation of the current price policies has to be considered.

To provide guidance to our government, we've conducted an analysis of the price trends for 'Drugs used in diabetes' between 2017 and 2022., exploring how Belgium's pricing within this therapeutic category compares to that in other EURIPID countries. We aimed to address the question of whether Belgium is paying a 'typical' price for these medicines, or if it should contemplate revising its pricing policy to reduce annual net expenditures.

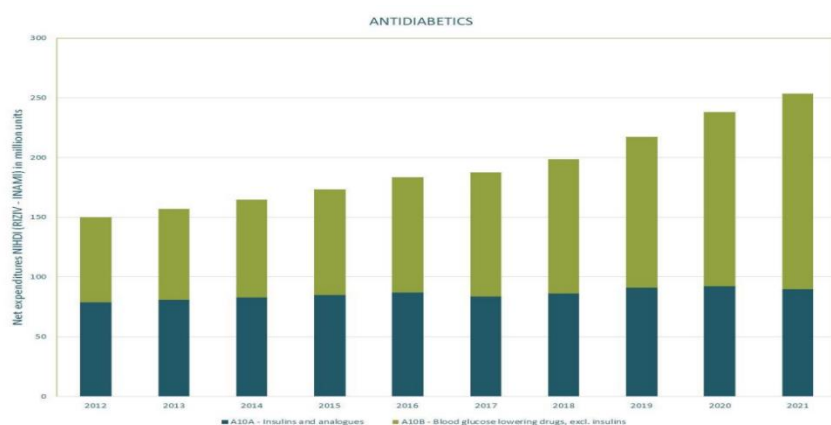


Figure 1 MORSE rapport 2021 Evolution of annual net expenditure for ATC group A10, DRUGS USED IN DIABETES (Verzorging, 2022)

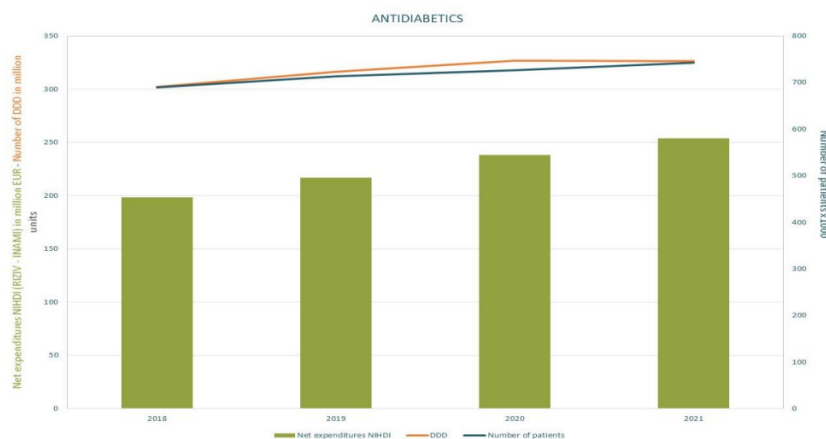


Figure 2 Evolution of annual net expenditure in ATC group A10 relative to the number of patients and DDD (public pharmacy) (Verzorging, 2022)

Methods/study design

Data sources

Main data source: EURPID database <https://database.euripid.eu>

Additional data source: WHO ATC/DDD index https://www.whocc.no/atc_ddd_index/

Search strategy

Requirement of the dataset

- Covering the period from 2017 until as recently as possible
- Cover all products within ACT group A10
- Including as much countries as possible, at least all EURPID countries with EURO as currency
- Practicable data size

Considering the requirements listed above, the decision was made to export a dataset that is captured with the query 'average price per unit'. This query involves grouping original products and generic equivalents with similar package sizes and calculating the average 'consumer price' per unit on a monthly or annual basis, depending on the user's preference. This approach significantly reduces the dataset's size, thereby enhancing the user experience.

Furthermore, this query has the added advantage of avoiding potential bias in reducing price variance within a disease area. This bias can occur when the same drug, marketed under different names and with slight variations in package sizes, is counted multiple times, giving the false impression of low variance.

For non-Euro countries, we only considered the EURO prices as provided by the EURPID database. To further downsize the dataset, we made the decision to work with annual average unit prices instead of monthly calculations. Consequently, data from the year 2023 could not be included in this analysis.

Search criteria

Table 1 Search criteria

Query	Average Unit Prices
Exported by	ANJA SONEMANN
Exported at	14-10-2023
Country	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom
Minimum number of days for which the virtual product must have a price record in a country to be displayed	days

Calculation parameters for year X*

Ireland P001 products: wholesale price + 0% from 01-2017 to -; P002 products: wholesale price + 13.5% from 01-2017 to -; P003 products: wholesale price + 23% from 03-2021 to -
Croatia wholesale price + 6.64 + 5% for all products from 01-2017 to -
Slovenia wholesale price + 1.07 + 10% for all products from 01-2017 to -

Finland net retail price + 2.17 + 10% for all products from 01-2017 to -
 Netherlands wholesale price + 7.00 + 9% for all products from 01-2017 to -
 Austria net retail price + 0% for all products from 01-2017 to -

Year X* (exact)
 Yearly or monthly average Yearly (exact)
 Minimum number of countries 1
 Exchange rate calculation Monthly (exact)
 ATC A10
 *X = 2017;2018;2019;2020;2021;2022

Records

Number of records¹ identified for the query used in the search strategy: 14989

Tool of collecting, modelling, and analysing searched data

All calculations and visualization has been performed with Microsoft® Excel® Version 2302.

Box plot visualization has been performed with default settings.

Method of analysis

Six datasets (2017; 2018; 2018; 2019; 2020; 2021; 2022) have been exported from the EURIPID database following the search criteria described in *Table 1*. These datasets have been combined in a table named 'Export'. In order to further reduce the size of the dataset only the following columns have been retained and renamed as indicated.

Route of Administration							Simple average unit price (in EUR)			
Country	Period	ATC	RoA	INN_Strength	Dosage_Form_Group	Packsize_group	Nr_of_products	Average_price_unit	Nr_of_countries	

Deletion:

A single extreme record has been excluded from the dataset right from the start.

Country	Period	ATC	RoA	INN_Strength	Dosage_Form_Group	Packsize_group	Nr_of_products	Average_price_unit	Nr_of_countries
Netherlands	2022	A10AB01	parenteral	insulin (human) 4000 iu	parenteral, liquid form	1-10	1	566,2005	1

Following the evaluation of A10B oral medications, the following orphan drugs were excluded from the analysis.

Country	Period	ATC	RoA	INN_Strength	Dosage_Form_Group	Packsize_group	Nr_of_products	Average_price_unit	Nr_of_countries
United Kingdom	2020	A10BB01	oral	glibenclamide 6 mg/ml	oral, liquid form	22-50	2	463,17 €	1
United Kingdom	2020	A10BB01	oral	glibenclamide 0,6 mg/ml	oral, liquid form	22-50	2	56,45 €	1
United Kingdom	2021	A10BB01	oral	glibenclamide 6 mg/ml	oral, liquid form	22-50	2	133,16 €	1
United Kingdom	2021	A10BB01	oral	glibenclamide 0,6 mg/ml	oral, liquid form	22-50	2	33,27 €	1
United Kingdom	2022	A10BB01	oral	glibenclamide 6 mg/ml	oral, liquid form	22-50	2	138,46 €	1
United Kingdom	2022	A10BB01	oral	glibenclamide 0,6 mg/ml	oral, liquid form	22-50	2	34,60 €	1

¹ A record is a single datapoint in the database. In this case a record displays the (calculated) annual 'average consumer price' that differs from other datapoints in at least one of these variables: 'country', 'period', 'ATC', 'RoA', 'INN- Strength', 'Dosage From Group', 'Packsize group'.

Visualization: Box Plots

Individual country average price evolution from 2017-2022

Data has been automatically filtered by Microsoft® Excel® with the following formula and visualized using Box Plot graphs with default setting.

```
=FILTER(Export[#Data];IF(LEFT(Export[ATC];LEN($B$1))=$B$1;IF(LEFT(Export[Dosage_Form_Group];LEN($B$2))=$B$2;IF(Export[Country]=B4;MATCH($B$3;Export[#Headers])));""))
```

Where B1, B2 and B4 referring to Microsoft Excel sheet cells defining the following:

- B1: ATC code (2nd level – 5th level)
- B2: Dosage From Group like i.e. 'oral', 'parenteral'; if field remains empty all form groups are taken into account
- B4: Country i.e. 'Belgium'; 'Spain'

Box plot chart has been created with 'average unit price' in the y-axis (series) and the 'period' in de horizontal category axis.

Combined country average price evolution from 2017-2022

Data has been automatically filtered by Microsoft® Excel® with the following formula:

```
=FILTER(Export[#Data];IF(LEFT(Export[ATC];LEN($B$1))=$B$1;IF(LEFT(Export[Dosage_Form_Group];LEN($B$2))=$B$2;MATCH($B$3;Export[#Headers])));""))
```

Where B1, B2 and B4 referring to Microsoft Excel sheet cells defining the following:

- B1: ATC code (2nd level – 5th level)
- B2: Dosage From Group like i.e. 'oral', 'parenteral'; if field remains empty all form groups are taken into account

Box plot chart has been created with 'average unit price' in the y-axis (series) and the 'period' in de horizontal category axis.

Calculated median and mean

Median:

```
=IFERROR(MEDIAN(IF(LEFT(Export[ATC];LEN(C11))=C11;IF(Export[Period]=$B$4;IF(LEFT(Export[Dosage_Form_Group];LEN(C12))=C12;IF(Export[Country]=C10;Export[Average_price_unit])));""))
```

Average:

```
=IFERROR(AVERAGEIFS(Export[Average_price_unit];Export[ATC];C11&"*";Export[Dosage_Form_Group];C12&"*";Export[Country];C10;Export[Period];$B$4);""))
```

Lowest value:

```
=IFERROR(AVERAGEIFS(Export[Average_price_unit];Export[ATC];C11&"*";Export[Dosage_Form_Group];C12&"*";Export[Country];C10;Export[Period];$B$4);""))
```

Highest value:

```
=IFERROR(MAXIFS(Export[Average_price_unit];Export[ATC];C11&"*";Export[Dosage_Form_Group];C12&"*";Export[Country];C10;Export[Period];$B$4);""))
```

- C11: ATC code (2nd level – 5th level)

- C12: Dosage Form Group like i.e. 'oral', 'parenteral'; if field remains empty all form groups are taken into account
- C10 : Country
- B4: Period i.e. '2017'; '2022';...

Limitations

Lack of MEA information

Due to the limited information available on Managed Entry Agreements (MEA), we did not include this aspect in our analysis. Specifically, in the context of non-insulin blood glucose-lowering medications (A10B), several pharmaceuticals in Belgium are subject to reimbursement through MEAs. We acknowledge that MEAs may be applicable to the same or different medications in some of the relevant countries.

It's important to note that not all average unit 'consumer prices' are provided by the countries. The calculation process is outlined in Table 1, as performed by the EURIPID database. Additionally, 'consumer prices' are distinct from manufacturer prices and may be influenced by various unidentified factors.

Our analysis focused on yearly averages, and as a result, data from the year 2023 was not considered. Recent trends may have been overlooked.

Results

How does Belgium consumer prices for medicines used in diabetes compare to other EURIPID countries Hiba! A könyvjelző nem létezik.?

ATC code A10A

Sidenote: no oral medication reimbursed in Belgium

The average² and median² of ACT code ATC A10A raised by 2.7 % (15.49 € to 15.91 €) respectively 9.5% (11.48 € to 12.57 €) between 2017 and 2022 within the EURIPID region and by 11.2 % (12.79 € to 14.22 €) respectively 31.7% (8.18 € to 10.77€) in Belgium. The average prices peaked in 2020 in all countries and decreased afterwards. Within this short period no general conclusion about price evolution can be drawn.

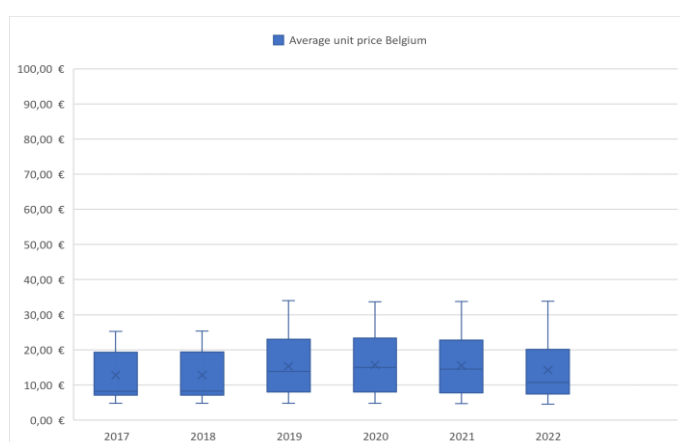


Figure 3 Evolution of the average unit consumer price, ATC code A10A, Belgium; 2017-2022

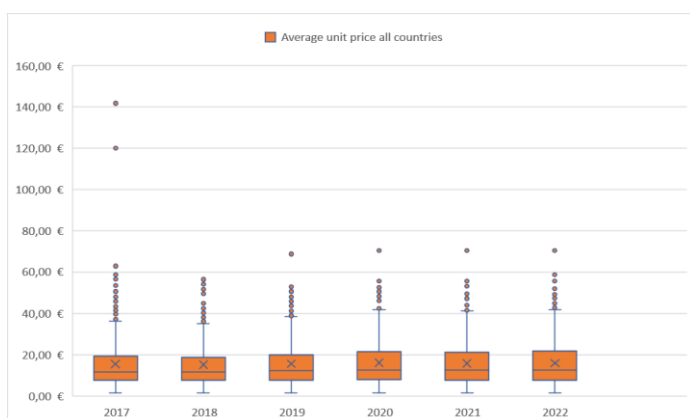


Figure 4 Evolution of the average unit consumer price, ATC code A10A, all countries; 2017-2022

Table 2 Evolution of average and median average unit prices of ATC code A10A between 2017 -2022

Average price per unit		
	all countries	Belgium
ATC	A10A	A10A
2017	15,49	12,79
2018	15,11	12,82
2019	15,61	15,30
2020	16,12	15,72
2021	15,72	15,52
2022	15,91	14,22
Median price per unit		
	all countries	Belgium
ATC	A10A	A10A
2017	11,48	8,18
2018	11,58	8,27
2019	12,31	13,89
2020	12,51	15,04
2021	12,41	14,50
2022	12,57	10,77

² During this report all analytical expression (average, median, min, max,..) refer to the average unit price. The calculated average calculated is the average of the average unit price exported from the EURIPDI database. All unit prices are 'consumer prices'

In ATC group A10A the median consumer price varies between countries but is relatively stable for each nation.

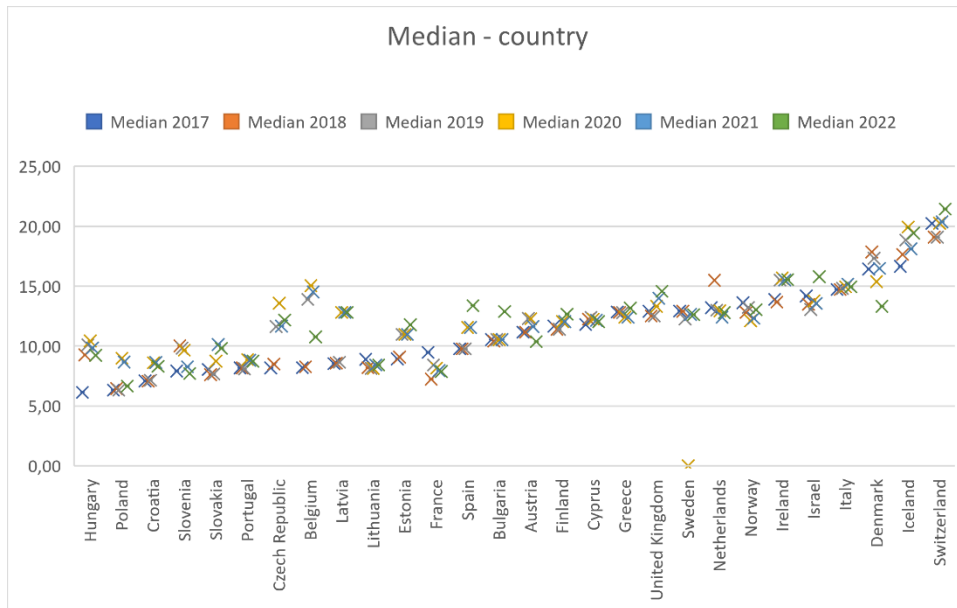


Figure 5 Median of the average unit consumer price, ATC code A10A, all countries; 2017-2022

In the ATC group A10A, the variance, calculated as the difference between the highest and lowest prices, remains relatively stable for most nations.

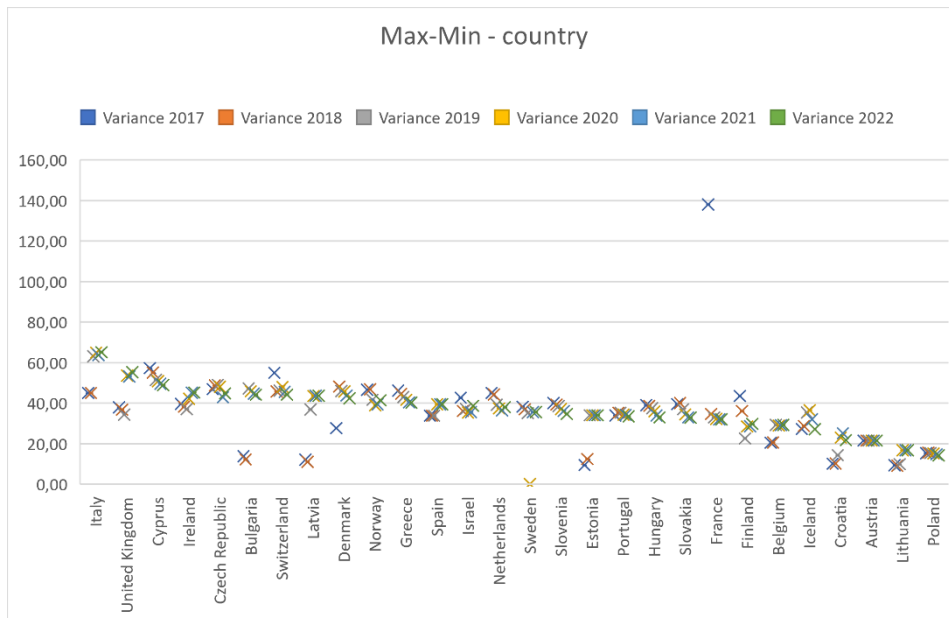


Figure 6 Variance in the average unit consumer price, ATC code A10A, all countries; 2017-2022

ATC code A10B

In contrary to ATC code A10A that only contains medicines for parenteral use, class A10B has been analysed split by dosage form group 'oral' and 'parenteral'.

A10B, oral

Median unit prices in ATC group A10B oral raised by 14.5 % (0.69 € to 0.79 €) within the EURIPID region and by 7.7 % (0.78 € to 0.84 €) in Belgium. Average prices raised by 48 % (0.75 € to 1.11 €) in the EURIPID region and by 30 % (0.87 € to 1.13 €) in Belgium. From 2020 onwards the liquid oral medicine 'Glibenclamide' significantly influenced the average and medium of prices of ATC group A10B oral. This drug is indicated for the treatment neonatal diabetes mellitus, for use in new-borns, infants and children. This drug is not reimbursed in any other country than the UK within the EURIPID region.

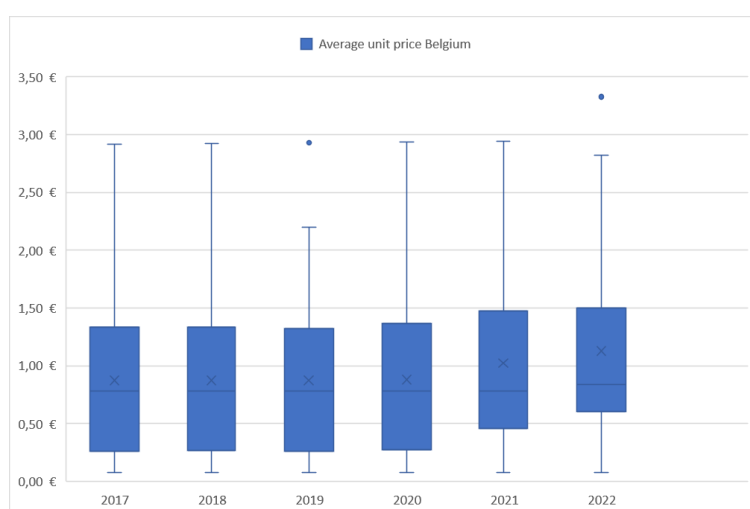


Figure 7 Evolution of the average unit consumer price, ATC code A10B oral, Belgium; 2017-2022

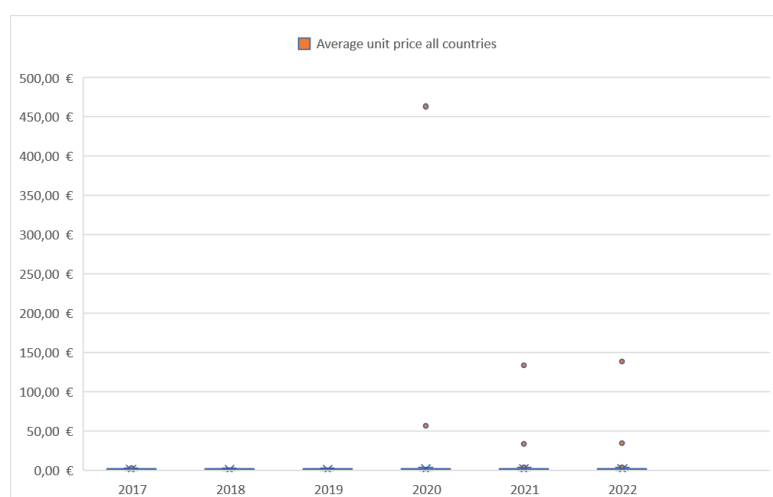


Figure 8 Evolution of the average unit consumer price, ATC code A10B oral, all countries; 2017-2022

Table 3 Evolution of average and median average unit prices of ATC code A10B, oral between 2017-2022

Average price per unit	all countries	Belgium
ATC	A10B	A10B
RoA	oral	oral
2017	0,75	0,87
2018	0,78	0,87
2019	0,84	0,87
2020	1,18	0,88
2021	1,03	1,02
2022	1,11	1,13
Median price per unit	all countries	Belgium
ATC	A10B	A10B
RoA	oral	oral
2017	0,69	0,78
2018	0,69	0,78
2019	0,73	0,78
2020	0,77	0,78
2021	0,78	0,78
2022	0,79	0,84

ATC group A10B, oral where the liquid oral medicine 'Glibenclamide' has been excluded from the dataset.

We notice that even after excluding the high priced liquid 'Glibenclamide' that is only reimbursed in the UK, average prices raised continuously in ATC group A10B oral medication in the EURIPID region by 36% (0.75 € to 1.02 €) and median prices by 14.5% (0.69 € to 0.79 €). The medicines that dominate the price can be found in ATC group A10BJ 'Glucagon-like peptide-1 (GLP-1) analogues', especially 'Semaglutide', followed by ATC group A10BD 'Combinations of oral blood glucose lowering drugs'.

In this group average and median prices are higher in Belgium than median and average prices in the whole EURIPD region.

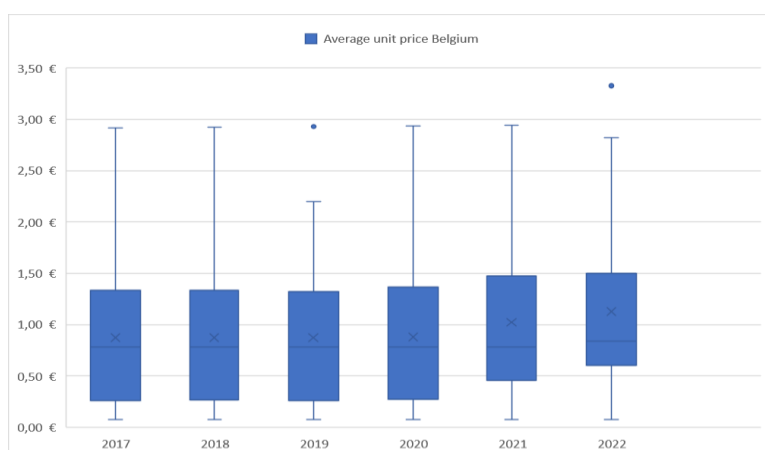


Figure 10 Evolution of the average unit consumer price, ATC code A10B oral, Belgium; 2017-2022

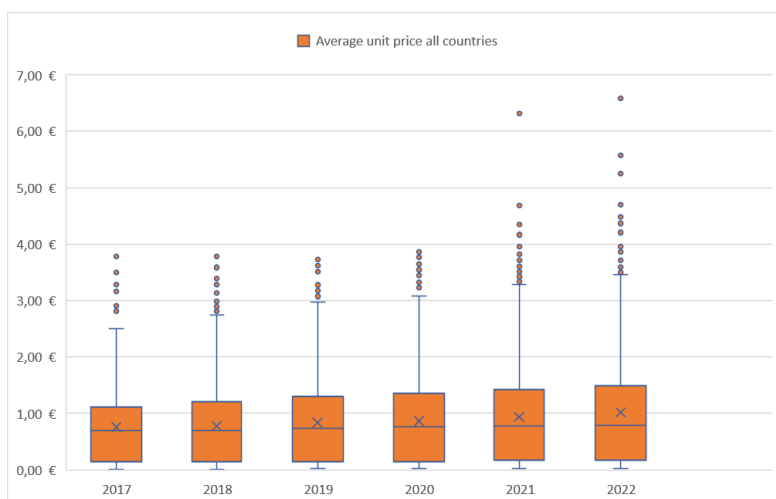


Figure 9 Evolution of the average unit consumer price, ATC code A10B oral, all countries; 2017-2022

Table 4 Evolution of average and median average unit prices of ATC code A10B, oral between 2017 - 2022

Average price per unit	all countries	Belgium
ATC	A10B	A10B
RoA	oral	oral
2017	0,75	0,87
2018	0,78	0,87
2019	0,84	0,87
2020	0,87	0,88
2021	0,94	1,02
2022	1,02	1,13
Median price per unit	all countries	Belgium
ATC	A10B	A10B
RoA	oral	oral
2017	0,69	0,78
2018	0,69	0,78
2019	0,73	0,78
2020	0,77	0,78
2021	0,78	0,78
2022	0,79	0,84

In ATC group A10B, oral medication, the median consumer price varies strongly between countries.

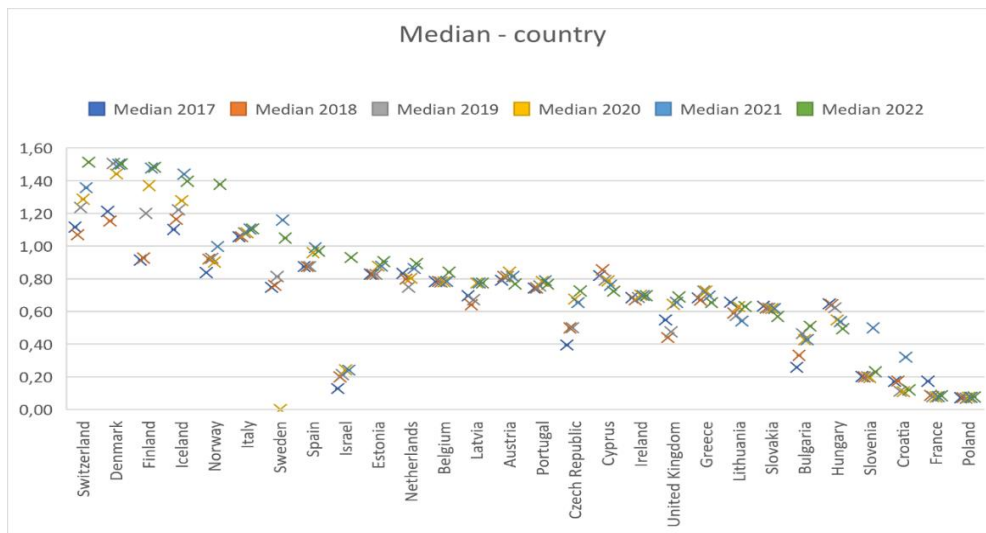


Figure 11 Median of the average unit consumer price, ATC code A10B (oral), all countries; 2017-2022

In the ATC group A10B for oral medications, the variance, calculated as the difference between the highest and lowest prices, remains relatively stable for Belgium. However, there is significant variation in this variance across other EURIPID countries, with an increase in variance observed in the year 2022.

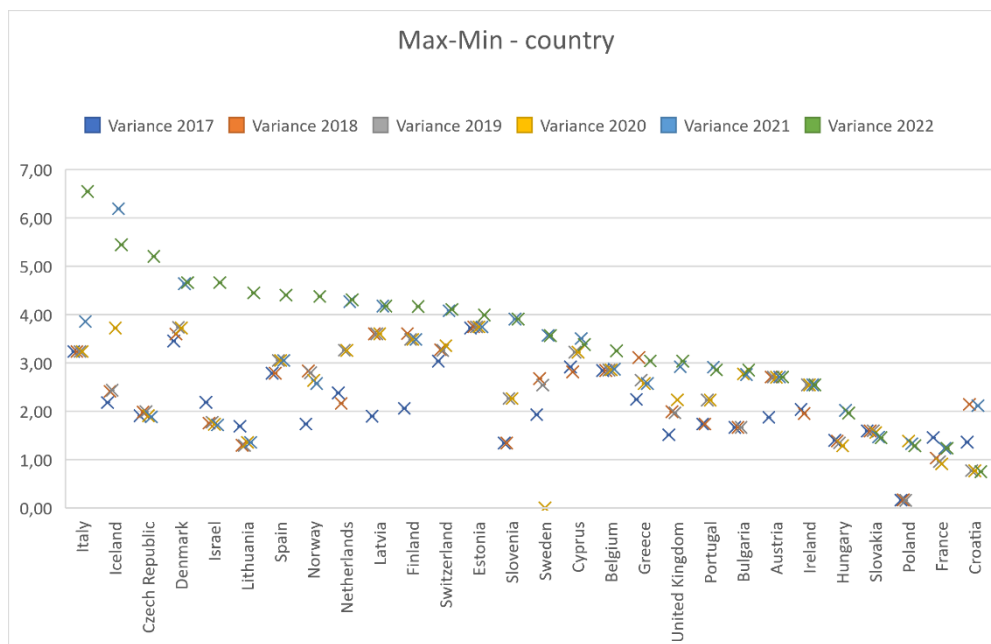


Figure 12 Variance in the average unit consumer price, ATC code A10B (oral), all countries; 2017-2022

A10B, parenteral

In ATC group A10B parenteral we notice that median prices raised in 2020 and 2021 in Belgium as well as in the whole EURIPID region but decreased again in 2022 with a net decrease by 0.08% (34.36 € to 34.08 €) in all countries and 2.3% (26.27€ to 25.67 €) in Belgium . The average prices raised by ca 19% (Belgium: 39.67 € to 47.15 €; all countries: 46.34 € to 55.50 €) in Belgium as well as in the whole EURIPID region. This evolution could indicate that more high priced medicines entered the market but prices of already reimbursed medicines decreased. All medicines in this group belong to the ATC subgroup A10BJ – ‘Glucagon-like peptide-1 (GLP-1) analogues’

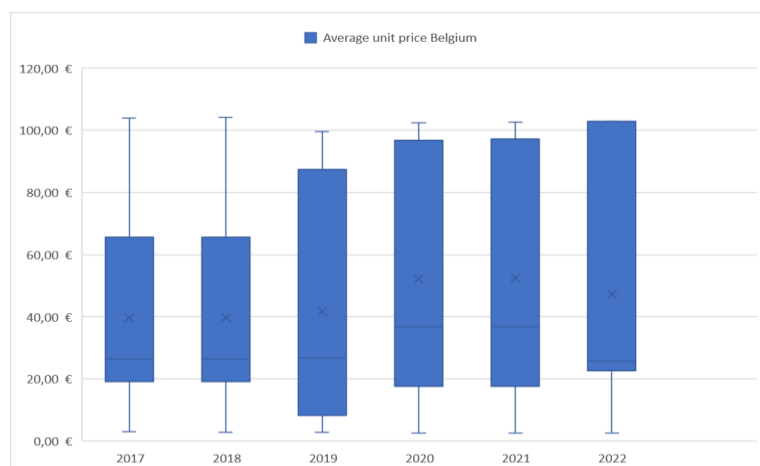


Figure 13 Evolution of the average unit consumer price ATC code A10B parenteral, Belgium; 2017-2022

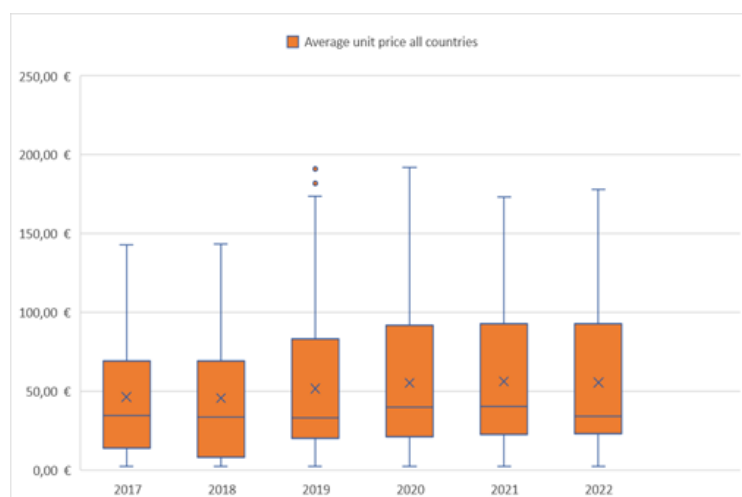


Figure 14 Evolution of the average unit consumer price ATC code A10B parenteral, all countries; 2017-2022

Table 5 Evolution of average and median average unit prices of ATC code A10B, parenteral between 2017 -2022

Average price per unit		
	all countries	Belgium
ATC	A10B	A10B
RoA	parenteral	parenteral
2017	46,34	39,67
2018	45,52	39,69
2019	51,50	41,61
2020	55,23	52,22
2021	56,21	52,35
2022	55,50	47,15
Median price per unit		
	all countries	Belgium
ATC	A10B	A10B
RoA	parenteral	parenteral
2017	34,36	26,27
2018	33,55	26,29
2019	33,11	26,78
2020	39,85	36,89
2021	40,39	36,75
2022	34,08	25,67

In ATC group A10B, parenteral medication, the median consumer price varies strongly over time in countries with rather high and low median prices. In countries like Belgium, with medium prices, the median is rather stable.

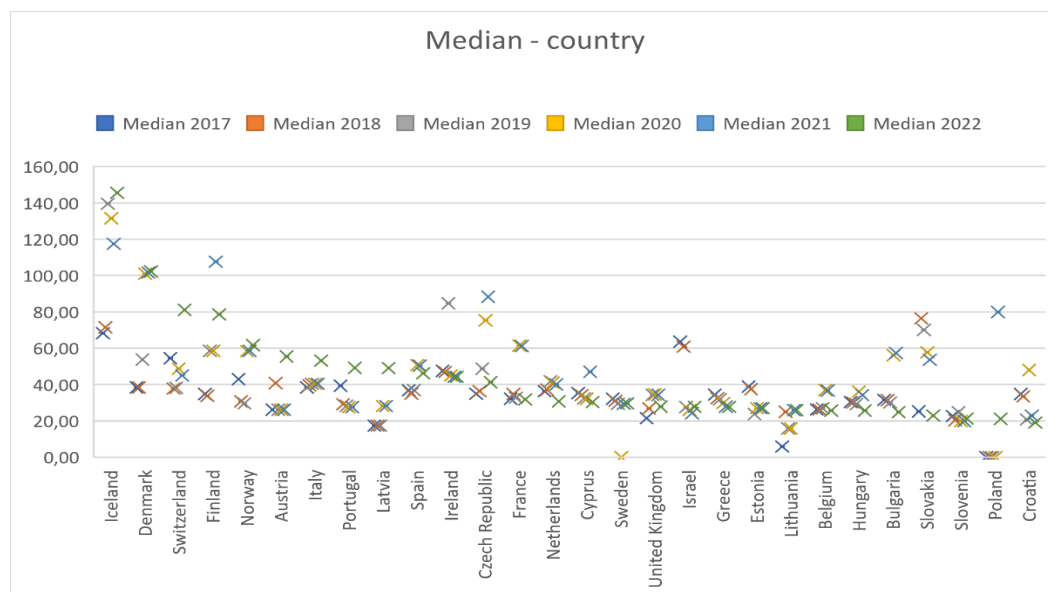


Figure 15 Median of the average unit consumer price, ATC code A10B (parenteral), all countries; 2017-2022

In the ATC group A10B for parenteral medications, the variance, calculated as the difference between the highest and lowest price, remains relatively stable for Belgium. However, in other EURIPID countries, variation in variance is more prominent

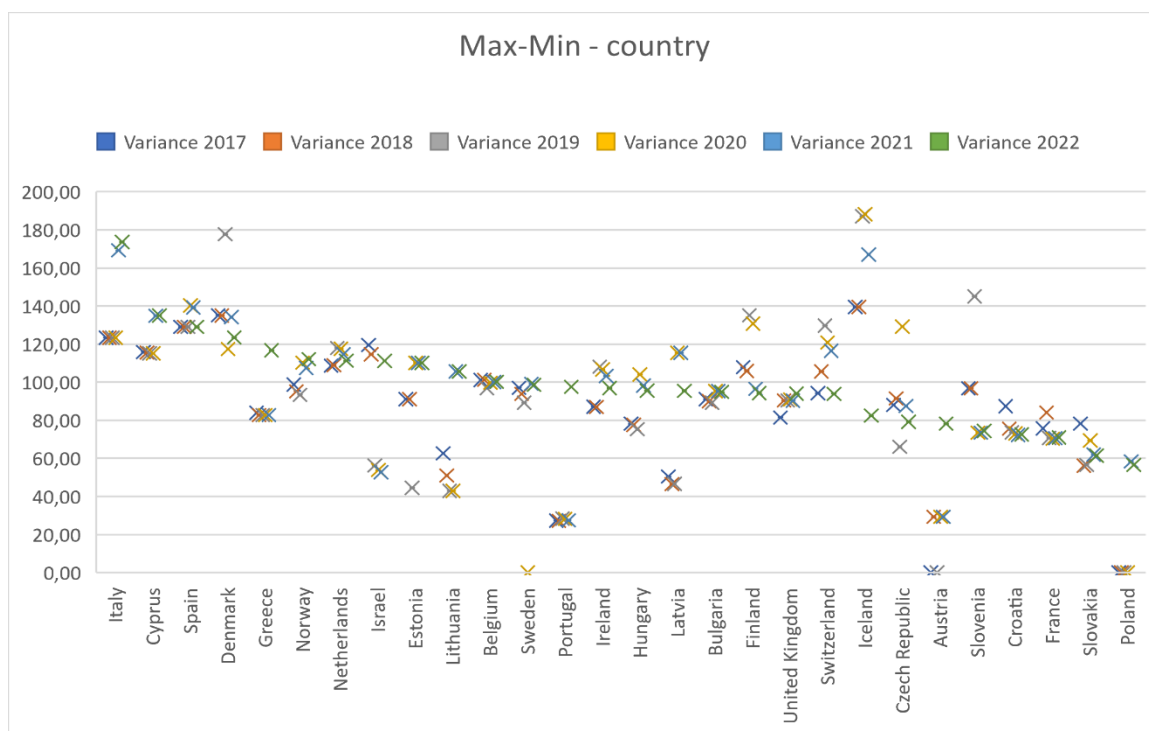


Figure 16 Variance in the average unit consumer price, ATC code A10B (parenteral), all countries; 2017-2022

Should Belgium revise national price policies in the group of medicines used for diabetes?

As outlined in the introduction, medications falling under the ATC group A10B have been the primary contributors to the annual net expenditure in the group of medicines used for diabetes, showing a consistent increase since 2012. As revealed earlier all medicines for parenteral use of the ATC group A10B belong to the subgroup AT10BJ. In light of this, we had a closer look of the chemical subgroups for oral use of ATC group A10B (ATC level 4.) We identified two specific subgroups that qualified for further analysis.

A10BD - Combinations of oral blood glucose lowering drugs, oral

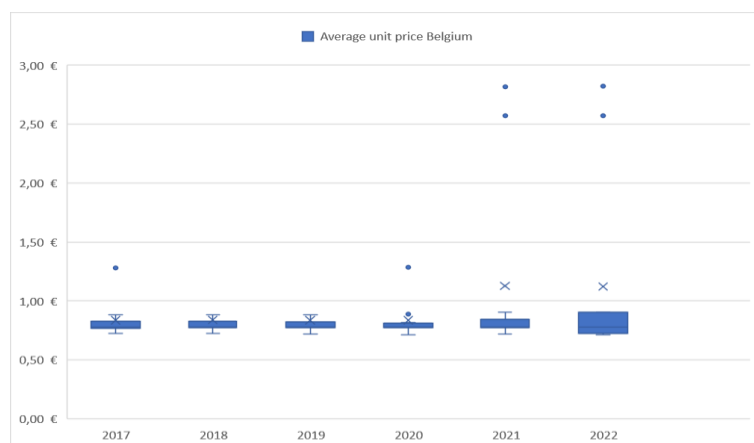


Table 6 Number of records per year in Belgium in ATC A10BD (oral)

YEAR	RECORDS
2017	20
2018	20
2019	20
2020	20
2021	22
2022	22

Figure 17 Evolution of the average unit consumer price ATC code A10BD (oral), Belgium; 2017-2022

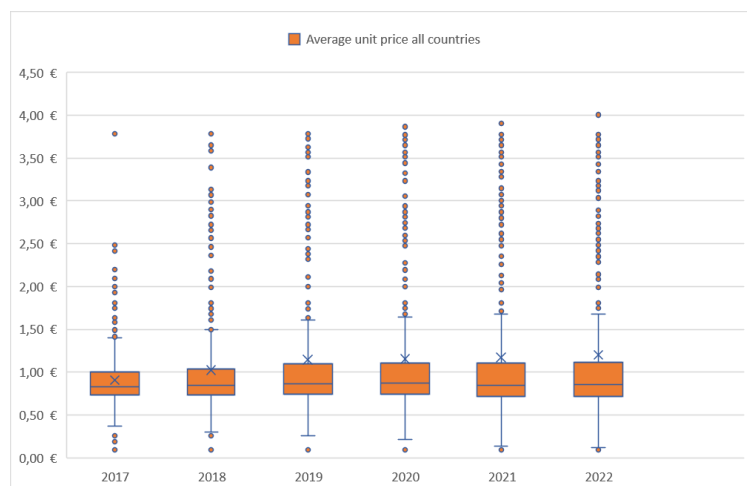


Table 7 Number of records per year in all countries in ATC A10BD (oral)

YEAR	RECORDS
2017	478
2018	516
2019	537
2020	542
2021	609
2022	608

Figure 18 Evolution of the average unit consumer price ATC code A10BD (oral), all countries; 2017-2022

An increase in records can be noted between 2017 – 2021 in all countries and since 2021 in Belgium.

In ATC group A10BD (oral) , the median consumer price is stable over time in all EURIPID countries but differs considerable. Zero values) reflect missing information.

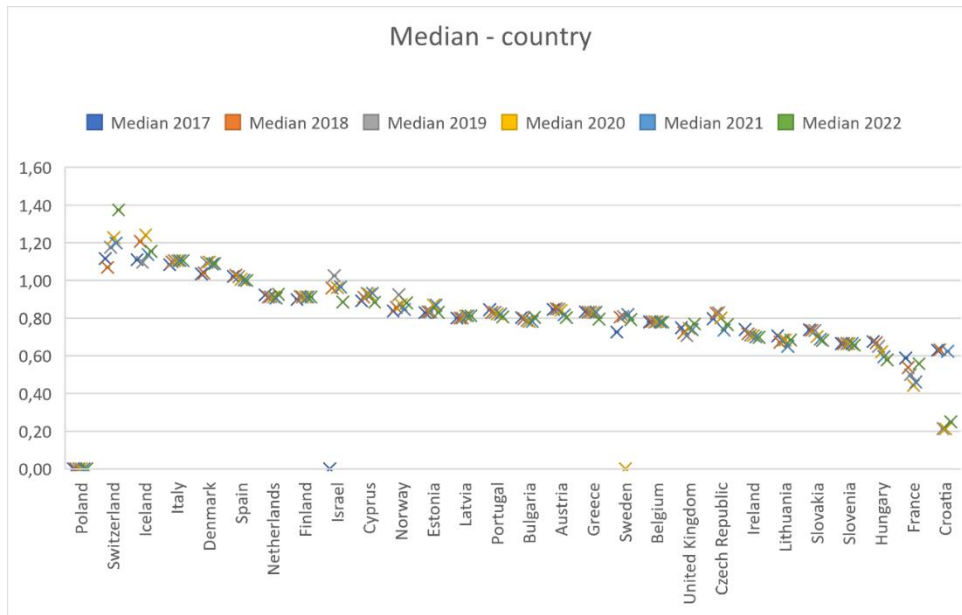


Figure 19 Median of the average unit consumer price, ATC code A10BD (oral), all countries; 2017-2022

In the ATC group A10BD (oral), the variance, calculated as the difference between the highest and lowest prices raised over time in almost all EURIPID countries with the highest variance being observed in 2022 Zero values reflect missing information.

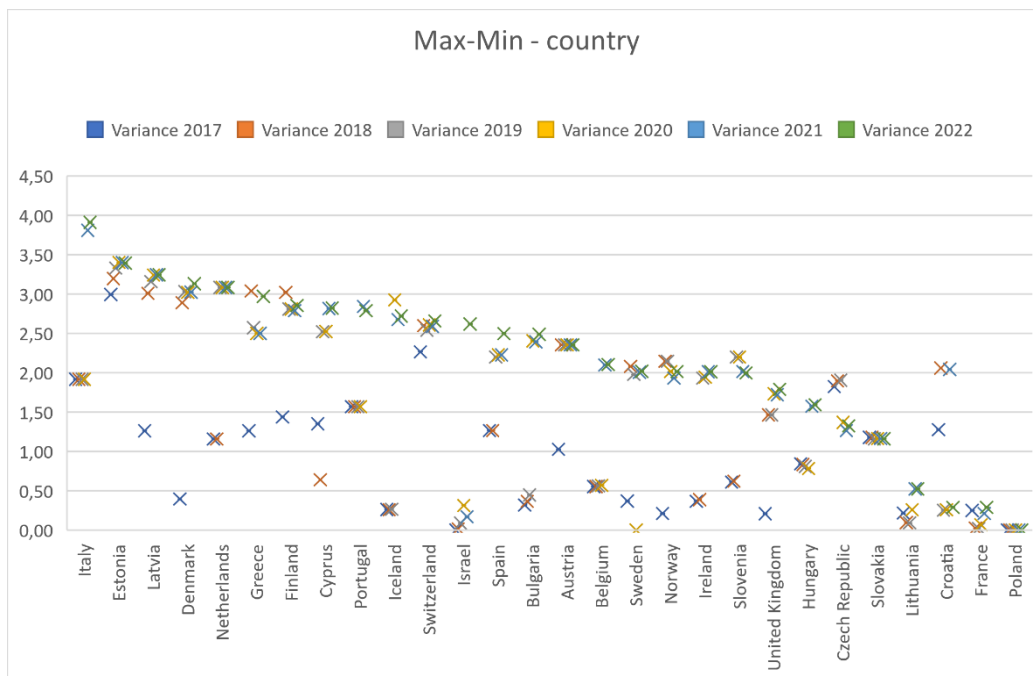


Figure 20 Variance in the average unit consumer price, ATC code A10BD (oral), all countries; 2017-2022

A10BJ Glucagon-like peptide-1 (GLP-1) analogues (oral)

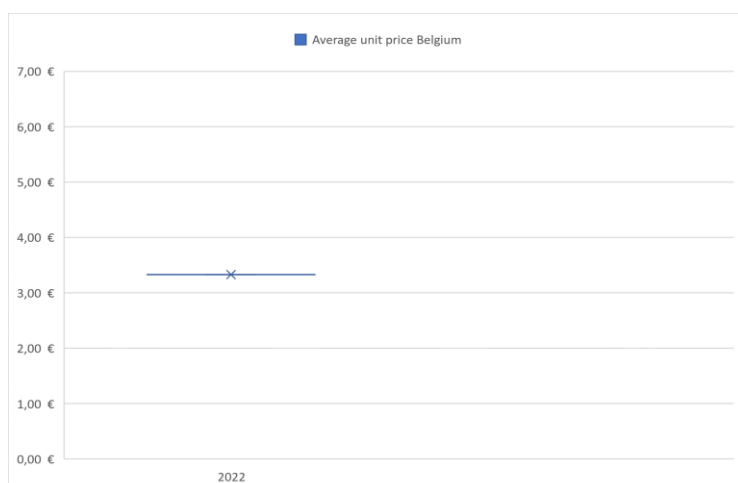


Figure 21 Evolution of the average unit consumer price ATC code A10BJ (oral), Belgium; 2017-2022; reimbursed since 2022

Table 8 Number of records per year in Belgium in ATC A10BJ (oral)

YEAR	RECORDS
2017	0
2018	0
2019	0
2020	0
2021	0
2022	3

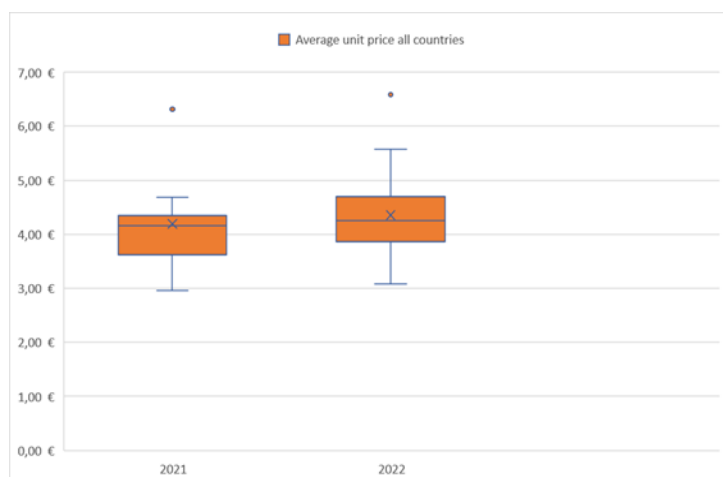


Figure 22 Evolution of the average unit consumer price ATC code A10BJ (oral), all countries; 2017-2022; reimbursed since 2021

Table 9 Number of records per year in all countries in ATC A10BD (oral)

YEAR	RECORDS
2017	0
2018	0
2019	0
2020	0
2021	28
2022	59

A new group of medicines, oral 'Glucagon-like peptide-1 (GLP-1) analogues' entered the market of the EURIPID countries in 2021 including only the active ingredient 'semaglutide' in different strengths. In Belgium the first record in this group has been registered in 2022.

Conclusions

Does Belgium pay a “typical” price for medicines that are used in diabetes , or does Belgium need to revise the prices to reduce annual net expenditures?

Belgium’s prices for medicines in ATC group A10 are in the normal to lower range when compared to EURIPID countries. Median prices raised in ATC group A10A by 14.5 % in the EURIPID region and by 7.7 % in Belgium. In group ATC A10B oral medication the median price did raise by 7.7 % but average price raised by 30% indicating that higher-priced medicines have entered the market within this class.

Even after excluding the high-priced liquid ‘*glibenclamide*’, average prices raised in ATC group A10B, (oral) in the EURIPID region by 36% and median by 14.5%. Medications that may drive these price increases can be found in ATC group A10BJ ‘*Glucagon-like peptide-1 (GLP-1) analogues*’ - especially ‘*semaglutide*’ - and ATC group A10BD ‘*Combinations of oral blood glucose lowering drugs*’. These groups are characterized by an increase in the number of available products over the past six years within the EURIPID region, indicating this subgroups being of high interest to the pharmaceutical industry.

In conclusion, Belgium appears to align with the overall trend observed in the EURIPID region. However, we recommend a more in-depth analysis of the contributions of ATC group A10BD and ATC group A10BJ to the current and future overall net expenditure.

References

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