CURATIO INTERNATIONAL FOUNDATION

25 Years for Better Health Systems

External Reference Pricing Policy:

A Possible Pharmaceutical Price Regulation Policy in Georgia

Review of International Experience

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Executive Summary

Problem statement

Georgia is one of the leading countries in the world in terms of pharmaceutical expenditure with more than a third (36%) of total health expenditure being spent on pharmaceuticals. In contrast to developed countries, where the financial burden of pharmaceutical expenditure is lessened by the state, 96% of the pharmaceutical expenses in Georgia is born by population as out-of-pocket payments and the state contribution to this cost is only 2% (Ministry of IDPs from the Occupied Territories Labour Health and Social Issues of Georgia, 2018).

Pharmaceutical expenditure is a heavy financial burden and one of the factors of impoverishment of Georgian population. Out of each 10 Georgian Lari (GeL) spent out of pocket on healthcare 7 is devoted to pharmaceuticals (Goginashvili, Nadareishvili, & Habicht, 2021). Affordability to medicines has been mentioned as one of the major problems for the third of the Georgian population and 50% of citizens are not able to purchase prescribed medicines due to their high price (National Democratic Institute, 2019). Pharmaceutical expenses comprise the heaviest financial burden for the poorest households accounting for 90% of their out-of-pocket payments and as a result of it become more impoverished (Goginashvili et al., 2021).

One of the leading factors contributing to the particularly high medicine expenditure in Georgia is a significant gap in pharmaceutical policy and regulations, which has created an environment conducive to both irrational use of medicines and uncontrolled growth of drug prices in the country (Curatio International Foundation, 2019b).

In line with recommendations made several times regarding the pharmaceutical sector (Curatio International Foundation, 2021), The purpose of this document is to review the implications of external reference pricing (ERP) – one of the most widely used mechanisms for regulating medicine prices – for improving access to medicines, and to summarize factors relevant for the ERP introduction so as to make policymakers avoid potential risks and dangers of the ERP introduction (if the latter is decided) by taking into account the existing international experience.

What is External Reference Pricing and how it affects the affordability to medicines?

External reference pricing (ERP) is one of the tools used to regulate pharmaceutical prices, which makes medicines more accessible to the citizens and saves both a portion of the country's budget spent on medicines and out-of-pocket pharmaceutical expenditure borne by the population (S. Vogler, Lepuschütz, Schneider, & Stühlinger, 2015).

ERP is used by almost all European Union (EU) member states (Van Der Gronde, Uyl-De Groot, & Pieters, 2017). ERP is also used to regulate medicine prices by non-EU countries - Australia, Canada, Brazil, Mexico, South Africa, Japan, Iran, Egypt, Jordan, Lebanon and others (S. M. Vogler, 2019). In recent years, ERP has also been applied in Central Asia and Eastern Europe: Kazakhstan, Ukraine, Azerbaijan, Belarus, Moldova (World Health Organization, 2020).

As a result of ERP introduction medicines prices decreased in many countries:

Country	% Decrease of medicines prices
Norway	2%
Moldova	3%
Greece	9.5%
Azerbaijan	1st year of ERP introduction: 27% 2nd year: 41%
Bulgaria	4% - 75.4%
The Netherlands	Before 2006 - 15%; 2007-2008 yy - 8%

ERP reduced medicines prices in

- **Romania**
- **Macedonia**
- **Kazakhstan**
- **Ukraine**

though the size of reduction is not indicated

While the scientific evidence about ERP's long-term effects on the medicine prices is limited some authors argue that even maintaining short-term effects will ultimately produce the desired result i.e., make medicines more affordable to the general population. It is also worth to note that ERP implementation gives better results in combination with other policy instruments for regulating medicine prices and, hence, its introduction should be considered along with other regulatory mechanisms (Kanavos, Fontrier, Gill, & Efthymiadou, 2020; Ruggeri & Nolte, 2013; S. Vogler et al., 2015).

External Reference Pricing does not much affect the consumption of pharmaceuticals, i.e., overall, it is not associated with the reduced use of medicines. Instead, it encourages the population to shift from non-reference to reference medicines. In other words, one type of pharmaceuticals is substituted with another type of medicines which are more affordable to people (Lee, Bloor, Hewitt, & Maynard, 2015):

Impact of ERP on medicine consumption

- The use (change in median consumption) of reference medicines increased by 15%
- whereas the consumption of non-reference drugs to be co-financed by patients out-of-pocket reported to drop by 39% (change in median consumption)

Overall, due to the reduction of medicine prices, ERP is seen as one of the effective mechanisms of cost-containment. The latter can be interpreted as either reducing pharmaceutical costs or containing their rate of growth. International experience shows that ERP contributes to the containment of expenses on pharmaceuticals, at least shortly after its introduction. While there is no empirical evidence concerning the long-term impact on cost-containment, according to the estimations it is likely that ERP has such an effect (Acosta et al., 2014; Kanavos et al., 2020; S. Vogler et al., 2015):

Impact of ERP on pharmaceutical expenditure

- Two years after the ERP introduction in **Macedonia** the country saved 7.3 million uros
- In the third year after the implementation of ERP in **Turkey** government expenditures on medicines reduced by USD 1 billion
- Expenditures on pharmaceuticals dropped in Switzerland, Greece, and Portugal, though the scale of reduction is not indicated

According to the simulations reduction in pharmaceutical expenditure is thought because of ERP in

- **Slovakia** – by 75 million Euro
- **USA** - 37.9 million USD (by 69%-of current spending on pharmaceuticals)

In conclusion, ERP does reduce pharmaceutical expenditure. However, the achievement of greatest possible impact depends on the design features of ERP policy (number of reference countries, price calculation method, frequency of the price checks, price transparency) and also whether the country applies policy measures (e.g., electronic prescription policy) regulating excessive drug use to contribute to rational consumption of medicines.

Implementation considerations while introducing external reference pricing

The international evidence shows that there is no gold standard for an ERP policy successful implementation. While planning for the ERP introduction each country should consider its local context considering, first and foremost, its healthcare needs and specific traits of the national pharmaceutical market. Existing scientific knowledge indicates that the achievement of the goals set by an ERP policy depends on several factors acting simultaneously, such as the criteria for choosing reference countries, the reference price calculation, the frequency of medicine price checks and the approaches to tackle price volatilities as a result to exchange rate fluctuations:

1. When choosing reference countries, countries take into consideration such (a) geographic proximity to the reference country, (b) comparability in economic conditions – e.g., comparable GDP levels in both countries, (c) choosing reference countries with low medicine price levels. Evidence shows that the selection of benchmark countries has significant impact on the ERP outcomes. For example, revision of reference country baskets in Croatia, Slovakia and Lithuania has resulted in considerable price reductions on pharmaceuticals

2. Price calculation methods. In general, under ERP a referencing country set the price of a particular drug as the average price of the same drug in the reference countries. An EU study analyzing the effect of ERP on price levels in seven European countries for 11 pharmaceutical products concluded that in four of the seven countries in which prices have reduced reference prices were calculated using the lowest available price or the average of the lowest prices in the basket of reference countries

3. Medicines selection for ERP. Routinely, ex-factory prices are used to identify the price of a specific medicine in a reference country. This is so because profit margins of wholesalers and pharmacies as well as tax regimes differ substantially across countries and, therefore, retail prices of medicines are not valid for ERP purposes

4. Frequency of price revision. it is necessary for the referencing country to have an effective system to observe changes in medicine prices in the reference countries which will help it to monitor price fluctuations. According to the simulations, when the referring country observes the change in prices in the reference countries and changes its own prices, every year instead of every three years, it almost doubles the price reduction coefficient

5. Exchange rate volatility is another factor affecting the successful implementation of the ERP. The issue of exchange rate volatility is obviously of particular importance to countries where the price of a medicine is set in the national currency. The solution may be to fix the exchange rate or to use special economic formulas applied to neighboring Turkey

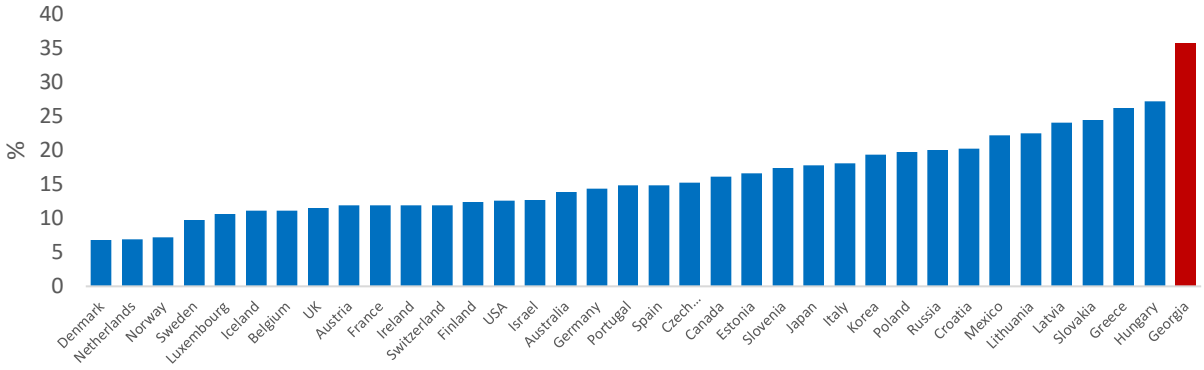
6. Response strategies of the pharmaceutical industry. The industry can launch products in countries with high pharmaceutical prices first; With this strategy the industry may affect prices in countries which include high-price countries, like Germany, in their reference country baskets. On the other hand, the industry players may postpone or not introduce their pharmaceuticals in countries where medicine prices are too low due to the applicable regulations.

In summary, the successful implementation of the ERP depends on the policy design, in other words, on such factors as the criteria for selecting reference countries, medicine price setting methodology and its revisions to achieve more desired results, frequency of price revisions and mechanisms to contain price fluctuations caused by exchange rate volatility. While taking into account local context is the starting point of the successful ERP implementation, consideration of international experience can insure us against potential risks and dangers.

Relevance of the topic: Pharmaceutical expenditure – a heavy financial burden for the population of Georgia

Georgia is one of the leading countries in the world in terms of pharmaceutical expenditure with more than a third (36%) of total health expenditure being spent on pharmaceuticals (Ministry of IDPs from the Occupied Territories Labour Health and Social Issues of Georgia, 2018), whereas the average value of the same indicator among the member countries of the Organization for Economic Cooperation and Development (OECD) was one sixth in 2019 (OECD, 2021).

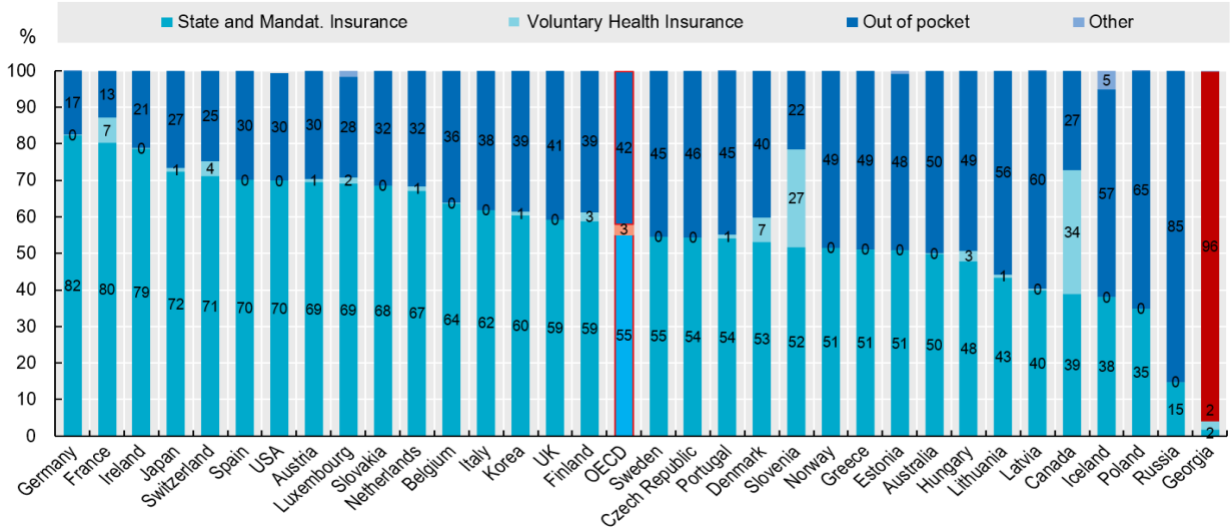
Figure 1 Share of pharmaceutical expenditures in total health expenditures, 2019



Source: OECD, Statistics Database 2019, National Health Account, 2018

In contrast to developed countries, where the financial burden of pharmaceutical expenditure is lessened by the state, 96% of the pharmaceutical expenses in Georgia is born by population as out-of-pocket payments and the state contribution to this cost is only 2% (Ministry of IDPs from the Occupied Territories Labour Health and Social Issues of Georgia, 2018). As of 2019, government contribution to population's pharmaceutical expenses on outpatient medicines in the OECD countries is about 55%, while out-of-pocket payments do not exceed 42% (OECD, 2021).

Figure 2. Pharmaceutical expenditures by sources, 2019

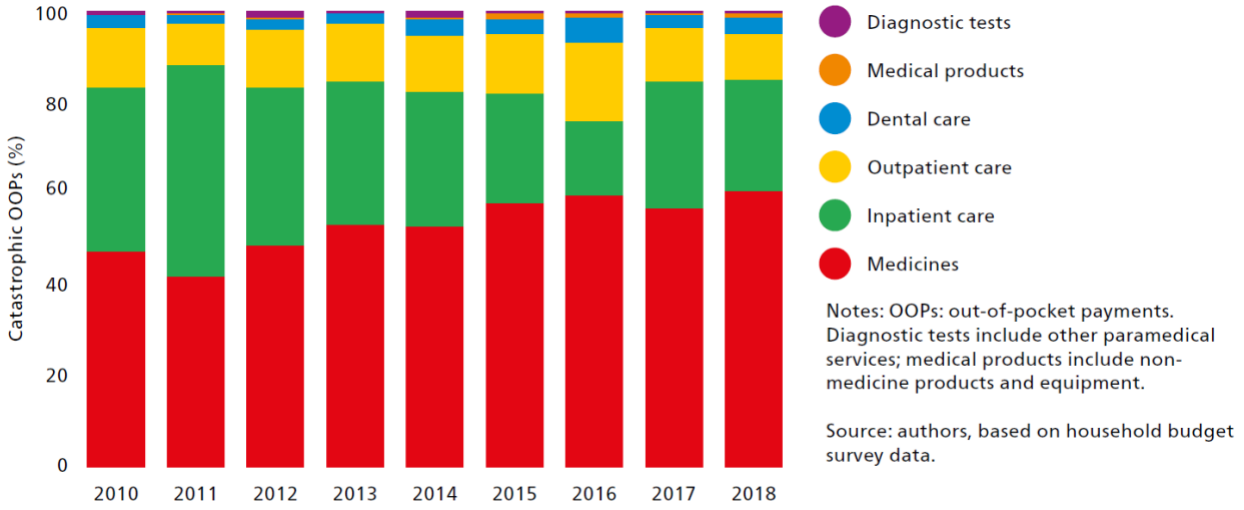


Source: OECD, Statistics Database 2019, National Health Account, 2018

Pharmaceutical expenditure is a heavy financial burden and one of the factors of impoverishment of Georgian population. In the report by the World Health Organization (WHO) Regional Office for Europe published in July 2021, the authors emphasize that Catastrophic[1] spending on healthcare is mainly driven by outpatient medicines and consider it as one of the causes of the impoverishment of the population. According to the report, despite the use of state-funded health services out-of-pocket health expenditure is still a heavy burden for the population and its largest share – about 69% accounts for medicine expenses. According to the report, pharmaceutical expenses comprise the heaviest financial burden for the poorest households accounting for 90% of their out-of-pocket payments (Goginashvili et al., 2021).

In 2018 the share of households with catastrophic out-of-pocket payments on healthcare services reached 17.4%. The largest share of catastrophic health expenditures falls on pharmaceutical expenses (see Figure 3). It is emphasized that this is due the scarce government funding of outpatient medicines: the enhanced coverage of medicines for chronic conditions introduced in 2017 was not enough to improve financial protection of poor households (Goginashvili et al., 2021).

Figure 3. The share of pharmaceutical expenses in catastrophic health expenditures, 2018 (Goginashvili et al., 2021)



One of the leading factors contributing to the particularly high medicine expenditure in Georgia is a significant gap in pharmaceutical policy and regulations, which has created an environment conducive to both irrational use of medicines and uncontrolled growth of drug prices in the country (Curatio International Foundation, 2019a; Social and Health Issues Committee of the Parliament of Georgia, 2019).

In 2019, based on stakeholders' views expressed during hearings under the thematic inquiry - Enforcement of the Law on Medicines and Pharmaceutical Activities – conducted by the Committee on Health and Social Affairs of the Parliament of Georgia within oversight of implementing normative acts, the committee issued recommendations one of which emphasized the need for establishing the framework for regulating medicine prices including the implementation of ERP for generic medicines (state-reimbursable medicines) (Social and Health Issues Committee of the Parliament of Georgia, 2019).

[1] The WHO (in the specific reports) defines the catastrophic health spending as the share of households with out-of-pocket payments that are greater than 40% of household capacity to pay for health care

At the end of 2019, Curatio International Foundation, in close cooperation with the Healthcare and Social Affairs Committee of the Parliament of Georgia, prepared a rapid response document on international policy instruments for pharmaceutical price regulation (Curatio International Foundation, 2019a) and also held a policy dialogue with an active engagement of stakeholders to discuss these instruments (Curatio International Foundation, 2019b). Considering the context of the Georgian pharmaceutical sector the dialogue participants preferred external reference pricing to all other discussed pharmaceutical price regulation policies as means to improving financial accessibility of medicines for the Georgian population (Curatio International Foundation, 2019a).

National Competition Agency of Georgia also points to the households' financial burden related to the cost of pharmaceuticals and the necessity to introduce mechanisms to regulate the pharmaceutical prices. According to its conclusion, nowadays, importer / manufacturer, wholesale and retail companies can get a substantial markup on pharmaceuticals which are imported at rather low prices. To address the existing situation and reduce pharmaceutical expenditure, the Agency makes a number of recommendations, including the replacement of the "free pricing" policy with various regulatory mechanisms, including external reference pricing (Georgian National Competition Agency, 2021).

In line with recommendations made several times regarding the pharmaceutical sector, the purpose of this document is to review the implications of external reference pricing for improving access to medicines, and to put together considerations important for the external reference pricing introduction.

What is External Reference Pricing?

External reference pricing (ERP) is one of the tools used to regulate pharmaceutical prices, which makes medicines more accessible to the citizens and saves both a portion of the country's budget spent on medicines and out-of-pocket pharmaceutical expenditure borne by the population. The working mechanism of the method is as follows: a country which introduces ERP collects information about medicine prices from different countries or country groups and by applying one or another price calculation method sets the price for certain medications. Via ERP a country determines the ceiling price of reimbursement for a certain group of medicines which is used by a state payer or insurance company for reimbursing medicine expenses for the population (S. Vogler et al., 2015).

ERP is used by almost all European Union (EU) member states (Van Der Gronde et al., 2017). ERP is also used to regulate medicine prices by non-EU countries - Australia, Canada, Brazil, Mexico, South Africa, Japan, Iran, Egypt, Jordan, Lebanon and others (S. M. Vogler, 2019). In recent years, ERP has also been applied in Central Asia and Eastern Europe: Kazakhstan, Ukraine, Azerbaijan, Belarus, Moldova (World Health Organization, 2020).

External Reference Pricing Policy Design

Country Selection

International experience shows that in order to define reference prices on pharmaceuticals countries chose a basket of economically comparable and geographically close countries with similar healthcare systems and well-established mechanisms for collecting data on medicine prices. In addition, most importantly the choice of countries pays special attention to medicine prices in order to select countries with the lowest prices on pharmaceuticals (S. Vogler et al., 2015).

Government institutions / implementing agencies of reference pricing policies also select countries pertaining to different income groups after applying special formulas to make countries' econometric indices comparable with each other.

The most-often referenced country in the EU Member States is France (referenced by 20 EU Member States), followed by Spain, Denmark, and Bulgaria (referenced by 18 EU Member States). Italy and the United Kingdom are also among the most often stated as reference countries (referenced by 17 countries). The least referenced countries are Switzerland (referenced by only 2 EU member states), Island and Norway (please, see the Table 1) (S. Vogler et al., 2015).

The number of reference countries in the basket for the comparison in ERP varies across countries (see Table 1 & Table 2). Estonia, Slovenia, and Portugal use 3 countries for ERP; France and the Netherlands use 4 countries. The country basket is widest for Poland and Hungary in the European Region – using 30 countries as a reference for ERP; followed by Finland (with 29 countries in reference country basket) and Austria, Belgium, and Slovakia (using 27 countries as reference). Kazakhstan is in the leading position in Asia Region having 39 countries in the reference county basket (see Table 2) (Rodwin, 2021; S. Vogler et al., 2015).

It should also be noted that the number of countries that have revised – mostly increased – the list of reference countries in the reference country baskets after the introduction of the ERP is quite high. Estonia was the only country to decrease the number of reference countries from four to three. The main reason for revising the list of reference countries is to get better results in terms of attaining sizable price reductions for reference medicines. In 15 out of 34 countries listed in Table 2 have increased the number of reference countries since the initial introduction of the ERP policy.

Table 1. Composition of country baskets applied in ERP (S. Vogler et al., 2015)

Countries	*Austria*	*Belgium*	*Bulgaria*	*Switzerland*	*Cyprus*	*Czech Republic*	*Germany*	*Denmark*	*Estonia*	*Greece*	*Espania*	*Finland*	*France*	*Croatia*	*Hungary*	*Ireland*	*Island*	*Italy*	*Lithuania*	*Luxemburg*	*Latvia*	*Malta*	*Netherlands*	*Norway*	*Poland*	*Portugal*	*Romania*	*Sweden*	*Slovenia*	*Slovakia*	*United Kingdom*
Austria		■	■		■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
Belgium	■		■		■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
Bulgaria		■				■		■	■	■	■	■	■		■			■	■		■				■	■	■		■	■	
Switzerland	■	■					■	■				■	■										■								■
Cyprus	■	■					■	■		■			■					■								■		■			
Czech Republic		■						■		■	■	■	■	■	■	■		■	■		■		■		■	■		■	■	■	■
Germany	■	■				■		■		■	■	■	■		■			■					■			■		■		■	■
Denmark	■	■					■					■			■								■	■				■			■
Estonia																			■		■									■	
Greece	■	■	■		■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■	■	■
Espania	■	■			■		■		■	■		■	■			■		■	■	■	■	■	■			■			■	■	
Finland	■	■	■		■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
France							■				■							■													■
Croatia						■					■		■					■												■	
Hungary	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Ireland	■	■					■	■			■	■	■										■								■
Island								■				■												■				■			
Italy	■	■			■	■		■	■	■	■	■	■		■	■	■		■		■		■	■	■	■	■	■	■	■	■
Lithuania			■			■			■						■						■				■		■			■	
Latvia						■		■	■						■				■								■			■	
Malta					■	■			■		■				■			■	■						■	■			■	■	■
Netherlands		■					■						■																		■
Norway	■	■					■	■				■				■							■					■			■
Poland	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■
Portugal											■		■																■		
Romania	■	■	■			■	■			■	■				■		■	■							■					■	
Slovenia	■						■						■																		
Slovakia	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■		■	■	■	■	■		■
Turkey										■	■		■					■								■					
N	16	18	9	2	10	15	16	18	13	14	18	15	20	8	13	13	4	17	15	8	13	8	15	6	12	15	11	14	14	16	17

Selection of Medicines

Different countries choose different types of medicines to apply ERP. However, according to the literature four main groups of pharmaceutical products subject to ERP regulations include: a) reimbursable medicines, b) prescription only medicines, c) generics, d) brand-name or innovative medicines which does not have any substitutes, etc. (Panteli et al., 2016).

The above classification of medicines is not mutually exclusive. For example, a group of prescription only drugs selected for ERP may contain generics as well as brand-name and / or new medicines. The choice of medicines to which the ERP applies depends mainly on the country's healthcare system arrangements and pharmaceutical policies pursued by the country. In most of the Eurozone countries (Austria, Croatia, the Czech Republic, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia and Switzerland) ERP applies to reimbursable medicines (see Table 2).

It is also noteworthy that ERP can be applied to both locally produced and foreign, so-called "imported" medicines. For example, ERP policy applies to all medicines in Luxembourg, Greece and Turkey (both to locally produced and imported drugs) (Atikeler & Özçelikay, 2016).

A number of countries apply ERP both to in-patient and/or out-patient pharmaceuticals. Some countries, like Denmark, apply ERP for hospital-only medicines. Contrary to Denmark, in Portugal, Austria and the Netherlands ERP applies only to out-patient medicines. In the Netherlands ERP also covers high-cost medicines and orphan drugs (Rémuzat et al., 2017).

In 2018, the Trump administration decided to apply the ERP to medicines to be reimbursed under federal health insurance scheme (Medicare) at prices taken from Canada, Japan, and Europe, particularly the UK (Leah Z. Rand, et al, 2021). An executive order was issued in September 2019 to expedite the development of the reference pricing procedure for prescription medicines included in the program (Medicare). The same executive order stipulated that for medicines under the ERP policy the federal government shall not pay more than their prices in the reference countries (Rand & Kesselheim, 2021).

It should also be noted that when choosing medicines for ERP countries tend to select reimbursable medicines (see Table 2), which in turn are set by the countries based on the essential / positive drug lists (Panteli et al., 2016). A positive drug list is actively used in 44 countries of the European region for full or partial reimbursement of medicines included in it (World Health Organization, 2018).

In the case of Georgia, it would also be advisable to apply ERP to a wider list of medicines than just to the existing limited list of pharmaceuticals to treat chronic conditions which are reimbursed under the state program for only a part of the population (socially vulnerable, retired, disabled).

Table 2. Drug types subject to the ERP policies, number of reference countries and their changes (Atikeler & Özçelikay, 2016; Carone, Schwierz, & Xavier, 2012; S. Vogler, Schneider, & Lepuschütz, 2020; World Health Organization, 2020)

#	Country	Positive drug list	Drug Types for ERP	Number of Reference Countries	Change in the Number of Reference Countries
1	Austria	√	Reimbursable medicines	24	27 ⇑
2	Belgium	√	All medicines	24	27 ⇑
3	Bulgaria	√	Prescription-only medicines	9	17 ⇑
4	Croatia	√		3	5 ⇑
5	Cyprus	√	Imported prescription-only medicines and OTC medicines (in the private sector)	4	9 ⇑
6	The Czech Republic	√	All medicines	8	19 ⇑
7	Germany		Selected reimbursable medicines	15	16 ⇑
8	Estonia	√	Innovative reimbursable medicines	4	3 ⇓
9	Greece	√	All except for generic medicines	22	26 ⇑
10	Spain	√	Reimbursable medicines (brand-name and generic drugs)		18
11	Finland	√	Reimbursable medicines	16	29 ⇑
12	France	√	Reimbursable medicines (brand-name and generic drugs)	4	4
13	Hungary	√	Reimbursable medicines	14	30 ⇑
14	Ireland	√	Prescription-only medicines, including generic medicines	9	9
15	Italy	√	Reimbursable medicines (brand-name and generic drugs)		25
16	Lithuania	√	Prescription-only medicines, including generic medicines	6	8 ⇑
17	Latvia	√	Reimbursable medicines	2	7 ⇑
18	Luxembourg	√	All medicines	1	1
19	Malta	√		12	12
20	The Netherlands	√	Prescription-only medicines	4	4
21	Norway	√			9
22	Poland	√	Reimbursable medicines	17	31 ⇑
23	Portugal	√	Prescription-only medicines and reimbursed medicines (brand-name and generic drugs). OTH drugs (except for generic medicines)	3	3
24	Romania	√	Prescription-only medicines, including generic medicines	12	12
25	Slovenia	√	Reimbursable medicines	3	3
26	Slovakia	√	Reimbursable medicines	26	27 ⇑

#	Country	Positive drug list	Drug Types for ERP	Number of Reference Countries	Change in the Number of Reference Countries
27	Switzerland	√		6	8 ⇑
28	Macedonia		Reimbursable medicines (brand-name and generic drugs)	4	
29	Turkey	√	Brand-name and generic drugs	5	
30	Azerbaijan	√	Reimbursable medicines	10	
31	Belarus	√	Generic medicines (31 INN)	14	
32	Kazakhstan	√	Reimbursable medicines	39	
33	Moldova	√	Reimbursable medicines	9	
34	Ukraine	√	• Reimbursable medicines (23 INN) • Insulin	• 5 • 8	

Price Calculation Method

Countries use different approaches for the implementing of external reference pricing mechanisms. However, it is possible to identify some basic principles and provisions around which various price calculation methodologies for ERP are constructed.

While designing the ERP countries typically try to set prices at the producer's level (ex-factory price), and sometimes at the wholesaler's level (pharmacy purchasing price, i.e. ex-factory price plus wholesaler's profit mark-up) or the pharmacy's level (pharmacy retail price, i.e. ex-factory price plus wholesaler's and pharmacist's profit mark-up plus VAT) (Carone et al., 2012).

In most cases, the ex-factory price has been the reference price used to calculate the 'ERP' price (17 countries use the ex-factory price), followed by the pharmacy purchasing price. The pharmacy retail price is used only in two countries: Luxembourg and Malta (Rémuzat et al., 2015). In Latvia, ERP was applied at ex-factory price and/or pharmacy purchasing price level depending on whether the drug was imported in the country or not (Rémuzat et al., 2015).

As it has been mentioned, external reference pricing envisages the establishment of comparison country list to be used as a reference for setting medicine prices. There are also several different approaches a referencing country can use to set prices based on the reference country basket. The method used to calculate the reference price usually differs across countries; often, reference price is calculated through the lowest price but it is not uncommon to use the average or the median (Kanavos et al., 2020). For instance, In Canada, the median price of the seven reference countries is used to determine the maximum price of the same medicine. As all reference countries use a different currency from that in Canada, price calculation also takes account of the average exchange rate of the past 36 months (Ruggeri & Nolte, 2013). Latvian medicine prices should be third lowest of the basket of seven reference countries but they should not exceed the price in Lithuania or Estonia (S. Vogler et al., 2020). The average price of reference countries was used in Austria, Belgium, Cyprus, Denmark, Iceland, Ireland, Portugal, Switzerland, and the Netherlands. The average of the three or four lowest prices of all reference countries in the basket was used in Greece, Norway, Slovakia, and Czech Republic (see Table 3). The lowest price among all reference

countries was used in Bulgaria, Hungary, Italy, Romania, Slovenia (for original drugs and biosimilars), and Spain (see Table 3) (Rémuzat et al., 2015).

GDP per capita in the reference countries is yet another important factor in determining the price calculation method. This approach is applied in Germany.

Medicines price monitoring and revision is also an important factor for the ERP. Prices could be updated and revised on a regular basis after the initial price has been set. The frequency and process of reviewing prices differed between countries. Revision frequencies varied from every 3 months (Greece) to every 5 years (Finland and France). In Slovenia, prices are revised twice a year in case changes in the price of reference countries occurred (Rémuzat et al., 2015; S. Vogler et al., 2020).

To conclude, there are a number of different approaches to calculate prices under external reference pricing that relate to the specific needs and economic characteristics of referencing countries.

Given the context of our country, where a large part of the population faces drug affordability problems, it would be important that the ERP opt for a proven approach used in many countries – to set prices at the lowest of the reference country prices. It is also important to consider the experience of Latvia which in addition to selecting the lowest reference basket price also takes into account prices in its immediate neighbors (Lithuania, Estonia) with quite similar economies and social-economic conditions. As for the price choice, since the Georgian pharmaceutical market depends on the import of medicines, it is advisable to use the "ex-factory" price to prevent reference prices from being pushed upwards due to the rise of wholesalers' and retail profit margins.

Table 3. Price calculation methodology for ERP and frequency of price revisions (S. Vogler et al., 2020; World Health Organization, 2020)

#	Country	Price levels for ERP	Calculation of reference price	Revision frequency
1	Austria	Ex-factory price	Average of all countries	No revision
2	Belgium	Ex-factory price	Average of all countries	No revision
3	Bulgaria	Ex-factory price	Average of 3 countries with the lowest drug prices	Twice a year
4	Croatia		Average of all countries	Annual
5	Cyprus	Pharmacy purchasing price	Average of all countries + 3%	Annual
6	The Czech Republic	Ex-factory price	Average for all countries	Every 3 years
7	Germany		Average for all countries	No revision
8	Estonia	Ex-factory price		Annual
9	Greece	Ex-factory price	Average for 3 countries with the lowest drug prices	Every 3 months
10	Spain	Ex-factory price	The lowest price	Annual
11	Finland	Pharmacy purchasing price	Average for all countries	Every 5 years
12	France	Ex-factory price	Average for all countries	Every 5 years
13	Hungary	Pharmacy purchasing price	The lowest price	No revision

#	Country	Price levels for ERP	Calculation of reference price	Revision frequency
14	Ireland	Pharmacy purchasing price	Average for all countries	Every 3 years
15	Italy	Ex-factory price	Average for all countries	Biannual
16	Lithuania	Ex-factory price	95% of average price	Annual
17	Latvia	Ex-factory price	The third lowest price for each basket	Biannual
18	Luxembourg	Pharmacy retail price	The lowest price	Annual
19	Malta			Every 1.5 years
20	The Netherlands	Pharmacy retail price	Average for all countries	Twice a year
21	Norway		Average for 3 countries with the lowest drug prices	Annual
22	Poland	Ex-factory price	The lowest price	Biannual
23	Portugal	Ex-factory price, pharmacy retail price	Average for all countries	Annual
24	Romania	Ex-factory price	The lowest price	Every 5 years
25	Slovenia	Ex-factory price	95% of the average price for 3 countries (with the lowest drug prices)	Twice a year
26	Slovakia	Ex-factory price	Average for 6 countries with the lowest drug prices	Twice a year
27	Switzerland		Average for all countries	Every 3 years
28	Macedonia	Wholesale Price	Average for all countries	
29	Turkey	Wholesale Price		
30	Azerbaijan	Ex-factory price	The lowest official ex-factory price without VAT	Annual
31	Belarus	Ex-factory price	Average for all countries	
32	Kazakhstan	Ex-factory price	Average for 5 countries with the lowest drug prices	Annual
33	Moldova	Ex-factory price	Average for 3 countries with the lowest drug prices	Annual
34	Ukraine	Wholesale Price	Median for 5 countries	

ERP Policy Outcomes

Impact on medicine prices

Scientific literature indicates that ERP policy reduces drug prices (Acosta et al., 2014; Kanavos et al., 2020; Leopold et al., 2012; Van Der Gronde et al., 2017; S. Vogler et al., 2015). This policy is actively pursued by most of the eurozone countries, Canada and Australia (Van Der Gronde et al., 2017) and recently has been implemented in some countries of Eastern Europe and Central Asia (World Health Organization, 2018).

Price reduction due to the ERP policy implementation varies considerably from one country to another (Kanavos et al., 2020; S. Vogler et al., 2020). For example, in 2000 Norway introduced the ERP policy for prescription-only medicines. The study conducted one year after its introduction revealed that the medicine price was reduced by 2.0% (S. Vogler et al., 2015). In Moldova the 2010 reform of ERP which set prices equal to the average price of the three lowest prices in the basket of reference countries, lowered prices by 3% (Kanavos et al., 2020). In Greece the ERP policy resulted in an average price decrease of 9.5% (Kanavos et al., 2020). In Azerbaijan the introduction of ERP in 2015 led to the reduction of medicine prices on average by 27% in first year and by 41% in the second year, though results for subsequent periods are not reported (World Health Organization, 2020). Medicine prices have also dropped significantly in Romania since the introduction of ERP though a percentage change is not reported. However, the same study indicates that since the application of ERP scheme in Romania in 2014 the prices of prescription pharmaceuticals were found to be lower than the EU average in the reference group for the same medicines (Kanavos et al., 2020). Medicine prices is also reported to drop in Kazakhstan, Ukraine and Moldova though the size of reduction is not indicated (World Health Organization, 2020). As a result of the ERP application in Macedonia in 2011 prices were reduced for a total of 415 generic drugs and 337 innovative drugs (Kostova, Chichevalieva, Ponce, Van Ginneken, & Winkelmann, 2017).

A price reduction is influenced by different factors, mainly by the size and composition of the reference country basket, the methodology of determining list prices and the frequency of price checks (revisions) in the reference (referencing) countries. It also depends on pharmaceutical regulations i.e., whether mechanisms other than ERP policies are also used to regulate medicine prices in the country (Kanavos et al., 2020; Ruggeri & Nolte, 2013; S. Vogler et al., 2015). In Bulgaria changes made to the ERP design in 2012, in particular the increase of the basket from 8 to 12 countries and the introduction of annual medicine price checks in the reference countries led to price reductions for reimbursed pharmaceuticals by between 4 and 75.4% (Kanavos et al., 2020). In Norway the ERP policy is applied along with the internal reference pricing system. One study which assessed the effects of ERP and internal reference pricing on pharmaceutical prices in Norway found that the operation of both mechanisms jointly led to the reduction of prices for originator brand medicines by 18% and generics for 8% (S. Vogler et al., 2015). Yet another source also indicates that ERP has a positive effect in terms of reducing medicine prices provided that it is used in conjunction with other price regulation mechanisms rather than being used as a sole pricing mechanism (Holtorf, Gialama, Wijaya, & Kaló, 2019).

Experience shows that ERP contributes to the reduction of pharmaceutical prices, however this effect is studied / supported by evidence collected shortly after (in 1-2 years) the introduction of ERP policies and some authors believe that the evidence about the long-term effects of ERP on the reduction of medicine prices is inconclusive (Acosta et al., 2014; Kanavos et al., 2020). Despite the lack of empirical evidence one of the studies assessing the impact of ERP introduction on pharmaceutical prices estimated (via simulation

exercises) that in all European countries applying ERP the expected drop in medicine prices would, on average, amount to 15% over 10 years (S. Vogler et al., 2015). It is also worth to note the experience of the Netherlands and Norway described in two different sources. For example, according to one review citing a study published in 2006, pharmaceutical prices in the Netherlands fell by 15% as a result of changes made to pharmaceutical regulations and the introduction of ERP policies in 1996 (S. Vogler et al., 2015). According to the other systematic review the introduction of ERP policy in the Netherlands resulted in declining pharmaceutical prices on average by 8% (Kanavos et al., 2020). These sources seem to prove that ERP in the Netherlands resulted in the pharmaceutical price reduction both before 2006 and for the next 2 years. As for Norway, in this case medicine prices reduced by 2% in the first year of the ERP introduction (in 2000) (S. Vogler et al., 2015). Later publications also indicate that in Norway ERP has been regarded as very successful since 2009, resulting in considerable and predictable price reductions (Kanavos et al., 2020).

To summarize, one could say that ERP introduction resulted in lowering medicine prices in various countries of the world. While the scientific evidence about ERP's long-term effects on the medicine prices is limited some authors argue that even maintaining short-term effects will ultimately produce the desired result i.e., make medicines more affordable to the general population. It is also worth to note that ERP implementation gives better results in combination with other policy instruments for regulating medicine prices and, hence, its introduction should be considered in conjunction with other regulatory mechanisms too.

Impact on medicine consumption

ERP can be considered as a mechanism to make patients switch to cheaper and generic drugs use, and make manufacturers/pharmaceutical industry lower their prices to compete with similar drugs available on the market (Van Der Gronde et al., 2017).

International experience proves that ERP does not much affect the consumption of pharmaceuticals, i.e., overall, it is not associated with the reduced use of medicines. The way it works is that people shift from non-reference to reference medicines. In other words, one type of pharmaceuticals is substituted with another type of medicines which are more affordable to people (Lee et al., 2015).

A similar result is described in another systematic review, according to which the reference pricing policy promotes the use of reference drugs which are available to patients free of charge and reduces the consumption of cost share medicines to be partially covered by patients out-of-pocket. Specifically, four studies investigating the effects of ERP on the consumption of medicines included in this review reported 15% increase in the use (change in median consumption) of reference medicines (range -14% to 166%), whereas the consumption of non-reference drugs to be co-financed by patients out-of-pocket reported to drop by 39% (change in median consumption) (range -87% to -17%) (Acosta et al., 2014).

When it comes to the ERP impact on drug use a number of authors point to risks that ERP may lead to the excess use of medicines or, conversely, to the problems in accessing them. Not surprisingly, the authors associate both risks with medicine prices:

- Lowering medicine prices increase the number of customers (since pharmaceuticals become more affordable for the population). Due to an unregulated and excessive demand this may lead to the undesired results both for the customers and the government. That is, to the contrary of

the main goal of ERP implementation, patient and/or government expenditures on pharmaceuticals may not go down in the face of growing demand for medicines and their excessive consumption stimulated by price reductions (Van Der Gronde et al., 2017). It is important to note that households' expenses on medicines are not expected to rise in Georgia since their share in the total spending on pharmaceuticals is already 96%. It is likely that the introduction of ERP will lead to a rise in the government spending on pharmaceuticals to the effect of alleviating households' financial burden.

- On the other hand, it is important to consider the risk that low prices may lead to access problems to medicines, as companies may postpone or not introduce medicines produced by them in the markets of low-price countries. Thus, population may face problems in accessing new medicines (Carone et al., 2012).

To reduce and / or avoid the risks described in the literature, countries need to design ERP properly and to complement this price control mechanism with other tools to regulate medicine consumption such as electronic prescriptions that monitor and facilitate rational use of medicines (Carone et al., 2012; Van Der Gronde et al., 2017).

Impact on pharmaceutical cost-containment

Overall, due to the reduction of medicine prices, ERP is seen as one of the effective mechanisms of cost-containment. The latter can be interpreted as either reducing pharmaceutical costs or containing their rate of growth. International experience shows that ERP contributes to the containment of expenses on pharmaceuticals, at least shortly after its introduction. While there is no empirical evidence concerning the long-term impact on cost-containment, according to the estimations it is likely that ERP has such an effect (Acosta et al., 2014; Kanavos et al., 2020; S. Vogler et al., 2015).

While ERP leads to pharmaceutical cost-containment the extent of savings varies from one country to another. For example, two years after the ERP introduction in Macedonia the country saved 7.3 million euros due to price reductions on generic and innovative medicines (Kostova et al., 2017). The implementation of ERP in Turkey in 2007 resulted in the reduction of government expenditures on medicines by USD 1 billion (in the third year after the introduction) (Kanavos, Fontrier, Gill, Efthymiadou, & Boekstein, 2017). The extent of savings largely depends on the ERP design, in particular, on the size of a reference country basket, the methodology of determining medicine prices and the frequency of price checks (revisions) in the reference (referencing) countries. International experience shows that the higher the number of countries considered in the basket is and the more frequently information about medicine prices in the reference countries are checked the lower the prices of medicines, and, consequently the higher the savings on pharmaceutical expenditures in the referencing countries are (Fontrier, Gill, & Kanavos, 2019; Kanavos et al., 2020). For example, upon introduction of the ERP in Slovakia pharmaceutical prices were set by calculating the average of the six lowest EU prices in the reference country basket. In 2012 the calculation method changed such that pharmaceutical prices are being set based on the average of the two lowest rather than six lowest country prices. This change expected to create savings estimated at 75 million euro by the end of 2012 due to medicine price reductions caused by ERP (Kanavos et al., 2020). Of note in the case of Switzerland where medicine prices were further declined and, consequently, expenditures went down during 2010-2011 in the result of increasing the number of reference basket countries and initiating more frequent price revisions (Kanavos et al., 2020). A 2019 US study estimating the ERP related medicine cost savings for the 79 brand-name pharmaceuticals

available under Medicare federal health insurance scheme established that purchasing the drugs at the prices set by ERP in 2018 (reference countries: UK, Japan and Canada) would result in the reduction of the US Medicare program costs by 69% - 37.9 billion US dollars (Kang, Distefano, Socal, & Anderson, 2019).

On the other hand, the extent of the pharmaceutical cost reduction hinges on price transparency. In particular, the savings depends on how much information is available about ex-factory prices and how much they differ from the prices used by countries to determine the (reference) medicine prices, which are often fictitious rather than effective prices (see details about price transparency in chapter – Factors to Consider during ERP Introduction and Implementation).

Along with the reduction of medicine prices their consumption (reduction of volumes consumed) is yet another important determinant of pharmaceutical cost-containment. Therefore, if an excessive or unnecessary consumption of drugs due to their improved affordability is not controlled it is likely that the desired cost-containment will not / cannot be achieved (Kanavos et al., 2020; S. Vogler et al., 2020). This is illustrated by the case of Greece where the introduction of the ERP in 1996 initially led to a reduction in public spending. However, after a while pharmaceutical expenditure started to rise at similar rates to those before the ERP introduction (Kanavos et al., 2017, 2020). Among others, the rise in the pharmaceutical expenditures was attributed to the emergence on the country's pharmaceutical market of new and more expensive medicines of similar therapeutic category as ERP medicines which were more widely prescribed by physicians (Kanavos et al., 2020). Like Greece, the impact of ERP on reducing pharmaceutical spending was short-term in Portugal, where government expenditure on medicines fell for 6-9 months after the introduction of ERP after which the growth rate of total pharmaceutical spending returned to its usual level. The rise in pharmaceutical costs was mainly due to the increase in patients' out-of-pocket expenses on medicines not falling under ERP regulations. The authors attribute Portuguese experience to pharmaceutical companies' ability to adjust to regulations imposed by the government and argue how important it is to introduce additional policy measures (e.g., electronic prescriptions) along with ERP to regulate pharmaceutical consumption (Barros & Nunes, 2010).

Factors to Consider during ERP Introduction and Implementation

Global experience shows that there is no one common rule for implementing an ERP policy successfully. While planning for the ERP introduction each country should consider its own situation and design the policy in accordance with its local context taking into account, first and foremost, its healthcare needs and specific traits of its national pharmaceutical market. Existing scientific knowledge indicates that the achievement of the goals set by an ERP policy depends on a number of factors acting simultaneously, such as the criteria for choosing reference countries, the reference price calculation, the frequency of medicine price checks and the approaches to tackle price volatilities as a result to exchange rate fluctuations (Atikeler & Özçelikay, 2016; Carone et al., 2012; Fontrier et al., 2019; Kanavos et al., 2020; Kang et al., 2019; Rémuzat et al., 2015). At the same time, countries need to consider strategies developed by pharmaceutical industries to avoid price reductions due to the ERP implementation (Barros, 2010; Carone et al., 2012; De Weerdt, Simoens, Hombroeckx, Casteels, & Huys, 2015; Fontrier et al., 2019; Kanavos et al., 2020; Leopold et al., 2012; Rand & Kesselheim, 2021)

1. As we've seen it, when choosing reference countries, referencing countries take into consideration such factors as geographic proximity to the benchmark country, comparable GDP levels, and similar socioeconomic conditions in both countries. At the same time, it is often the case that referencing

countries try to include benchmark countries with low medicine price levels (Fontrier et al., 2019; Kanavos et al., 2020; Rand & Kesselheim, 2021; Rémuzat et al., 2015). Experience shows that the selection of benchmark countries have significant impact on the ERP outcomes. For example, when in 2012 Croatian government modified its basket of reference countries by replacing France with the Czech Republic referenced medicine prices went down significantly (Fontrier et al., 2019). On the other hand, evidence from Spain indicates that to get medicine prices reduced it is desired in the reference basket to include countries having lower GDP than Spain (Fontrier et al., 2019). Slovakia presents an interesting example: Initially its reference country basket included countries producing referenced medicines and Germany with markedly high medicine prices and due to such selection pharmaceutical prices in Slovakia were higher relative to neighboring countries. In 2009 after the modification of the reference country mix by including six countries of Europe where medicines were characterized as having the lowest price medicine prices dropped significantly (Fontrier et al., 2019). Lithuania took similar approach in 2012 and included Bulgaria and Romania in its basket since medicine prices in these countries were low (Fontrier et al., 2019). Evidence also shows that the selection of countries based on geographical proximity alone does not yield the desired result (Fontrier et al., 2019).

2. As it was pointed out, the other important factor is a price calculation methodology. In general, under ERP a referencing country set the price of a particular drug as the average price of the same drug in the reference countries (De Weerdt et al., 2015; Kanavos et al., 2020). There are some other methods of price calculation as well, for example setting the price to equal the lowest in the basket or the average of the lowest quartile, quintile or decile of reference countries (Fontrier et al., 2019). An EU study analyzing the effect of ERP on price levels in seven European countries for 11 pharmaceutical products concluded that in four of the seven countries in which prices have reduced reference prices were calculated using the lowest available price or the average of the lowest prices in the basket of reference countries (Fontrier et al., 2019). However, there are cases when countries change the price calculation methodology from time to time, if the ERP does not result in price reductions. For example, in 2009, Slovakia switched from setting medicine prices based on the average prices in all reference basket countries to determining pharmaceutical prices based on the average of the two lowest prices in the reference country basket. Under this reform Slovakia expected to create savings estimated at €75 million (Fontrier et al., 2019). When developing a price calculation methodology, it should be taken into account that, if the price of a medicine is set too low there is a risk that manufacturers decide to withdraw from the country and the medicine may become unavailable (De Weerdt et al., 2015; Kanavos et al., 2020; Rémuzat et al., 2015). The second risk of the country setting a very low price for medicines is that it incites parallel export of the low-priced medicines which can result in drug shortages in the country as, for example, it happened in Bulgaria, where 200 pharmaceutical products disappeared from the market after the launch of the ERP (De Weerdt et al., 2015; Fontrier et al., 2019). An ERP modelling study conducted in the US indicates that using the average price among basket countries is the most optimal methodology for calculating prices both for its simplicity of implementation and the observance of a general fairness principle (Rand & Kesselheim, 2021).

3. In the context of price calculation methodology, it is noteworthy that comparing prices across different countries is often difficult, since a published list price of a specific medicine in a reference country may differ substantially from its effective price (Carone et al., 2012; Rand & Kesselheim,

2021). Routinely, ex-factory prices are used to identify the price of a specific medicine in a reference country. This is so because profit margins of wholesalers and pharmacies as well as tax regimes differ substantially across countries and, therefore, retail prices of medicines are not valid for ERP purposes (Fontrier et al., 2019; Leopold et al., 2012; Rand & Kesselheim, 2021). However, yet another problem is that ex-factory prices are also not fully transparent, as pharmaceutical companies offer confidential discounts and rebates to buyer countries and companies the extent of which is usually not disclosed publicly (Kanavos et al., 2020; Rand & Kesselheim, 2021). Case of Germany helps us understand the scale of these discounts since it publishes the amount paid to the drug manufacturers after getting a discount and, according to research, this amount is, in some cases, 24.5% less than the ex-factory price officially set by the manufacturer. (Rand & Kesselheim, 2021). To address the price transparency problem some countries, use a number of methods to determine the effective price of medicines: for example, Germany obliges drug manufacturers to reveal information about discounts they made to other countries (Rodwin, 2021); France relies on information collected by its intelligence agency to identify effective prices of medicines and the volume of discounts made by manufacturers to other countries (Rodwin, 2021); Canada obliges brand-name (new, innovative) drug manufacturers to publish foreign prices of their medicines every year.(Kang et al., 2019). It should be noted that according to the study which analyzed the impact of ERP in 21 countries in Europe, the Middle East, the Russian Federation, Brazil and South Africa, medicine prices were found to be lower when countries use discounted ex-factory prices rather than list prices; Modeling in the same study shows that a discount of 20% on pharmaceutical prices in countries with high GDP (Germany, France, the UK, Italy, Spain, the Netherlands and Switzerland) would deliver an average pharmaceutical price decline of 47% across EU countries which include in their reference baskets countries with such high GDP (Kanavos et al., 2020).

4. International experience shows that on top of the price calculation methodology the successful implementation of the ERP largely depends also on the frequency of price revision (Carone et al., 2012; Fontrier et al., 2019; Kanavos et al., 2020; Rand & Kesselheim, 2021; Rémuzat et al., 2015). Generally, price revision period should not exceed 3 years (Rand & Kesselheim, 2021). However, prices in reference countries often decline and these are not automatically translated into price decreases in referencing countries. This is because prices of pharmaceuticals in the reference countries are not reviewed regularly in the referring country. According to studies, it is necessary for the referencing country to have an effective system to observe changes in medicine prices in the reference countries which will help it to monitor price fluctuations (Carone et al., 2012). According to the simulations, when the referring country observes the change in prices in the reference countries and changes its own prices, every year instead of every three years, it almost doubles the price reduction coefficient (Fontrier et al., 2019). The simulation exercise in one of the studies found the higher medicine price decreases in countries which implemented frequent price revisions under their ERP system (Greece, Latvia, Lithuania and Slovakia) compared to countries that had implemented no or less frequent price revisions (Austria, Belgium, Cyprus, Denmark, Estonia, Germany, Hungary, Iceland, Luxembourg, and Poland). (Kanavos et al., 2020). In addition, according to the study, frequent price revisions (e.g. every 6 months) over a period of 10 years would result in a reduction of about 6% in pharmaceutical prices in European countries (Kanavos et al., 2020).

5. As mentioned above, yet another factor affecting the successful implementation of the ERP is the exchange rate volatility. (Atikeler & Özçelikay, 2016; Fontrier et al., 2019; Kanavos et al., 2020; Rémuzat et al., 2015). The issue of exchange rate volatility is obviously of particular importance to countries where the price of a medicine is set in the national currency. For example, In Switzerland, the reference price is based on prices existing in both Eurozone member states (Austria, France, Germany, and the Netherlands) and non-Eurozone member states (Denmark and the UK). Due to the appreciation of the Swiss Franc Swiss drug prices have fallen and it lagged behind the average medicine prices in its reference countries (Rémuzat et al., 2015). Turkey presents an opposite case, where due to the currency depreciation a fixed exchange rate (1.9595 Turkish lira = 1 Euro) was applied between 2009 till 2015 to set prices of reference pharmaceuticals (Atikeler & Özçelikay, 2016). According to recent data, Turkey applied the ERP model with a special formula to address the negative effects of exchange rate volatility (Atikeler & Özçelikay, 2016).

6. Experience shows that when developing of ERP designs countries must also take into account the response strategies of the pharmaceutical industry. Due to the widespread use of ERP policies, the pharmaceutical industry is trying to adapt and use different methods oppose price reductions under ERP arrangements (Barros, 2010; Carone et al., 2012; De Weerdt et al., 2015; Fontrier et al., 2019; Kanavos et al., 2020; Leopold et al., 2012; Rand & Kesselheim, 2021). The industry can launch products in countries with high pharmaceutical prices first (e.g. Germany); With this strategy the industry may affect prices in countries which include high-price countries, like Germany, in their reference country baskets (Carone et al., 2012). On the other hand, the industry players may postpone or not introduce their pharmaceuticals in countries where medicine prices are too low due to the applicable regulations (Carone et al., 2012).

In summary, the successful implementation of the ERP depends on the policy design, in other words, on such factors as the criteria for selecting reference countries, medicine price setting methodology and its revisions to achieve more desired results, frequency of price revisions and mechanisms to contain price fluctuations caused by exchange rate volatility. While taking into account local context is the starting point of the successful ERP implementation, consideration of international experience can insure us against potential risks and dangers.

Annex

Methodology

To prepare this document, a systematic search of the literature was carried out in the databases of scientific peer-reviewed journals using predefined search terms. The literature search conducted in the following databases: PubMed and Health Systems Evidence.

The following search terms were used to find relevant literature:

- Reference pricing OR reference price OR reference prices OR reference drug pricing

AND

- drug OR drugs OR pharmaceutic* OR medicines OR medicat*

Search filters:

- Publication date: 2000-2020 ֍
- Type of study articles: review, systematic review
- Language: English articles

The search resulted in the initial list of 232 scientific articles which was further narrowed down based on titles, abstracts and full texts considered by two people independently whose opinions regarding the relevance of one or another source was agreed upon at consensus meetings. Finally, 25 articles were short-listed to prepare a literature review document.

It should also be noted that the experience of Eastern Europe and the Central Asian region on the implementation of ERP policy has hardly been found in scientific peer-reviewed journals.

This document also draws on reports published by the World Health Organization when it comes to summaries concerning ERP impact and factors to be considered during its ERP implementation.

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