

# Co-payment Strategies for Chronic Medications: A Qualitative and Comparative Analysis at European Level

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**Abstract**—The management of pharmacotherapy and the process of dispensing medicines is becoming critical in clinical pharmacy due to the increase of incidence and prevalence of chronic diseases, the complexity and customization of therapeutic regimens, the introduction of innovative and more expensive medicines, the unbalanced relation between expenditure and revenue as well as due to the lack of rationalization associated with medication use. For these reasons, co-payments emerged in Europe in the 70s and have been applied over the past few years in healthcare. Co-payments lead to a rationing and rationalization of user's access under healthcare services and products, and simultaneously, to a qualification and improvement of the services and products for the end-user. This analysis, under hospital practices particularly and co-payment strategies in general, was carried out on all the European regions and identified four reference countries, that apply repeatedly this tool and with different approaches. The structure, content and adaptation of European co-payments were analyzed through 7 qualitative attributes and 19 performance indicators, and the results expressed in a scorecard, allowing to conclude that the German models (total score of 68,2% and 63,6% in both elected co-payments) can collect more compliance and effectiveness, the English models (total score of 50%) can be more accessible, and the French models (total score of 50%) can be more adequate to the socio-economic and legal framework. Other European models did not show the same quality and/or performance, so were not taken as a standard in the future design of co-payments strategies. In this sense, we can see in the co-payments a strategy not only to moderate the consumption of healthcare products and services, but especially to improve them, as well as a strategy to increment the value that the end-user assigns to these services and products, such as medicines.

**Keywords**—Clinical pharmacy, co-payments, healthcare, medicines.

## I. INTRODUCTION

THE concept of co-payment emerged in Europe in the 70s as a measure to moderate the consumption of health services. Portugal shows a decreasing trend in the resources allocated to the health sector since 2009, after the economic crisis. This derives from government efforts as an attempt to reduce the budget deficit. However, the budget spent still puts Portugal among the EU (European Union) countries with higher costs in the healthcare sector [1].

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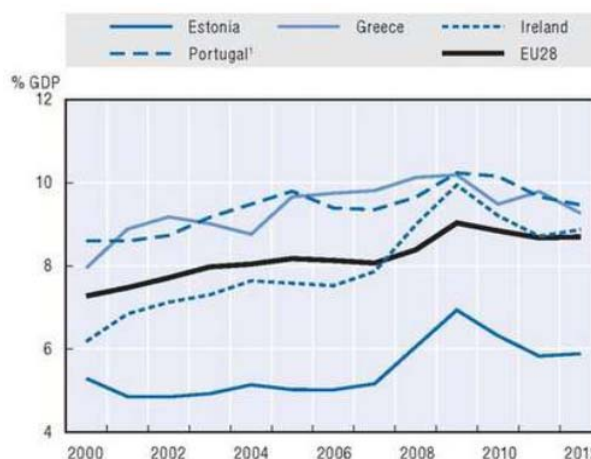


Fig. 1 Health expenditure as a percentage of GDP (Gross Domestic Product) between 2000-2012, in the countries listed [2]

Allied to the moderation of excessive and indiscriminated use of health services, co-payments also lead to an appreciation by the end-user of the services. This lead to an increase in the quality of the health services (more specialized) and an increase in the rationalization of access (focused on major and/or emergency situations). Given the demand from end-users, the need for a valuation or tax becomes condition, which leads to the subsistence of a doubt that was linked to the possible delay of the search of healthcare services by people with lower incomes or chronic diseases [1].

The co-payment policies are intended to achieve two main objectives: the reduction of excessive and unnecessary use of health services and the transfer of the financing in healthcare from the public to the private [3].

Increased cost-sharing of medicines for chronic diseases reduce their use, however there is little evidence on which mechanisms and factors lead to the reduction and which are the effects [4]. Basic factors of cost-adhesion are mainly related to patient characteristics, type of medicine used, clinical factors and factors related to the health system [5].

Over the year's co-payments have been applied to the health sector, making the consumers more cost-conscious, especially to costs related to medicines [6]. As the medicines represent a significant proportion of health expenditure, cost-sharing strategies have been implemented with the intention of reducing costs of the pharmaceuticals products. These strategies include: [7]

- Co-payment - Consists of the patients' payment of a certain amount for medicine or prescription.
- Fixed co-payment - Patient pay a fixed value or set by drug or prescription.
- Co-insurance - System where the patient pays a fixed percentage for the medicine or prescription.
- Full medicine insurance - Policy in which the patient does not pay any expense for the medicines.
- Cap - It is a threshold below which the patient does not pay the entire prescription or pay only a portion. When the cap is reached, the patient pays the entire prescription.
- Coverage gap - Gap between a cap and a cover in which the patient is responsible for the total cost of the drug.
- Deductible - Maximum limit in which patient pays the total cost of the drug. When the deductible is reached, the patient does not pay or has a reduction in the amount of money to pay.

Medicine/Drug dispensing in Portuguese hospital pharmacies are ensured by the National Healthcare System (NHS), performed under pharmaceutical supervision, free of charge, in situations and special products, and mainly for chronic diseases. Over time, the number of chronic ill patients covered by these special schemes of administration at home have increased exponentially, as well as the NHS spending on these drugs [8].

The dispensing process in hospitals is based on complex processes, which are carried out by pharmacists with training in this area. One of the pharmacist's tasks is to do follow-ups of the patients, not only for safety reasons, due to the fact that many medicines show narrow therapeutic windows, but also for economic reasons, because of the high cost of certain medicines. There must be a responsible engagement by the patient, which includes filling out an accountability document. Previously to the fill out of the mentioned document, the patient is informed about the process of monitoring of therapeutic compliance, reporting of adverse effects, consequences of non-compliance with the treatment plan in progress, the no-show appointments and procedures in case of loss or theft of medication [9].

## II. OBJECTIVES

The aim of this research was to evaluate new participation strategies applicable to chronic patients who acquire their medication in hospitals under a system of 100% public contribution as well as the creation of a feasible co-payment system to apply to these patients at the time of medicine acquisition.

For structuring the co-payment, the evaluation and qualification of co-payments policies, present in four European reference countries (in the health sector) were used as a basis.

The structural design of the co-payment had as first determinant the implementation of their essentials and/or philosophy, having as a second determinant their implementation.

## III. MATERIAL AND METHODS

A retrospective study with prospective implications was conducted to evaluate new strategies of co-payments of chronically ill patients, whose medicines are provided for free in hospitals. The analysis has an observational nature, and it is based on bibliographic research and analysis of public health policies of four European countries.

Current co-payments in health sector were identified and selected for analysis. For this purpose, the project used four countries with reference healthcare systems, one of each European quadrant (North, South, East and West), thereby allowing an involvement and parallelism of factors with the Portuguese reality (including political, social, technological and economic factors). Among the eligible countries, England, Italy, Germany and France were chosen as reference countries. In a first step two inclusion criteria were used. The criteria were that the co-payment of comparison must be related to services that include (or are intended to include) pharmacological treatment, or the dispensing of the medicines for chronically ill patients or in hospital outpatient service. Services that were not performed in a hospital and / or with a limited timeframe of application were excluded of the analysis.

In a second step, relatively to the identified co-payments, those that fell within the scope of this work and were subjected to analysis fell under three filters: Quality Attributes> Performance Indicators> Criteria. For the analysis of co-payments, the Portuguese State perspective (Public perspective) was considered, given the institutional nature intended to be the final result. The evaluation of co-payments is obtained through a numerical and percentage score assigned individually for each attribute and in the overall analysis. Seven quality attributes were put on evaluation, and identified 19 Indicators, allocated under three different classifications, namely: Structure Indicator (SI), Process Indicator (PI) and Results Indicator (RI). For each of the indicators a binomial and trinomial criterion was assigned for evaluation.

## IV. RESULTS

The selected countries of our analysis have a total of 13 active co-payment strategies in the health sector, corresponding to: 2 co-payment strategies in England, 4 in France, 4 in Germany and 3 in Italy. The inclusion and exclusion criteria were applied on all these co-payment strategies, leading to the conclusion that only 4 were eligible for analysis.

- 1 English co-payment related to dentistry services - payment is made according to different co-payment levels, which means, the more specific the service is, the higher the co-payment [10].
- 1 French co-payment related to an extra tax of 0,50€ for each medicine (applied to all individual with an age  $\geq$  18 years). The maximum value of this extra tax is 50,00€, over this amount the patient doesn't need to pay any further tax [11].
- 2 German co-payments, being the first related to a co-

payment of 5,00€ to 10,00€ for each medicine, except in cases where the price of the medicine is 30% below the reference price; and the second one related to the payment of 5,00€ to 10,00€ to receive a medical prescription [12]. The analysis of these data is detailed in Appendix.

#### V. DISCUSSION

After analysis of the results, it was noted that regarding the accessibility attribute, the English co-payment had the highest score. These results come from the flexibility of the payment according to a scale and service provided (i.e., the amount to be paid by the patient depends on the type of healthcare provided); from its ability to adjust the payment (expressed by its fractionation throughout the treatment); and from the definition of maximum and minimum prices. These topics contribute for the stability of the co-payment and system as well as for the rational use of healthcare.

The adequacy as a quality attribute aims to demonstrate the proximity between the policy measures (co-payment) and the reality, revealing a top score in the French co-payment system (score 75%). The similarities and simple scale-up to the Portuguese reality, is mainly due to sociological, labor and cultural characteristics.

The quality characterized by the continuity attribute is higher in copayment 3 (Germany), where a payment of 5.00 € to 10.00 € is made *per* prescription. This system is updated on a quarterly basis due to constant variation in the price of medicines. This is related to the fact that medicines with prices 30% below their reference price are not covered by the co-payment. This update reinforces a justice mechanism to patients or end-users, because it takes into account the market variations.

The German co-payment of 5.00 € to 10.00 € *per* prescription is the one that stands for the total score in continuity attribute. Its maturity and continuity converge to the public health framework.

Regarding the effectiveness, co-payments 3 and 4, both in force in Germany have the same score of 66.7%, higher than the others under analysis. This attribute revealed that, regardless the fact of the co-payment is applied directly at the purchase of the medicines (product), or on the medical prescription (service), what contributes to its reduction is the monetary amount applied.

Regarding the involvement attribute, several co-payments reached the highest score. However, the English co-payment proved to be unfavorable, in terms of the understanding of the co-payment policy by the patients/end-users and in the level of acceptability by the healthcare professionals. This is related with lack of literacy, with misunderstanding of the concept and reluctance about the implementation, affecting the impact of the policy.

The equity attribute, which is based on a balance between participation and impact on individuals. This was based on the assessment of the ratio State participation (Public domain)/Total participation, and the ratio User participation/Total participation. After these calculations, it was possible to identify who bears the higher burden of the co-

payment. After analysis of the co-payment systems, it was found that the majority of the co-payments are directly supported by the State (Public domain). This topic leads to the worsening of the health expenditure, but is fundamental for equity in the health access, because certain social classes cannot bear this kind of costs.

Finally, when it comes to the opportunity attribute, copayments 3 and 4 in Germany, and co-payment 1 in England stand out. Both countries stand out with innovative technological solutions, developed over the past few years, creating a membership opportunity with a system that is inherently making resource management.

After analysis of all the established indicators, a total score was calculated. It was found that co-payment 3 had 15 in 22 points with a percentage of 68.2%, being the co-payment with the highest score. Overall, the German co-payment turns out to be the one with more conditions of transposition to the Portuguese reality. A co-payment of 5.00 € to 10.00 € per medicine (unless the price is at least 30% below the reference price) acts as an incentive to the consumption of more affordable medicines, contributing to a balance of the Public health expenditure.

There is a philosophy behind this German co-payment as well as in other co-payments applied in hospital outpatient area, and this philosophy is based on the education for the use of the product and the appreciation of the product. These two topics seem to be more relevant than just the increased consumption, this given the critical profile of these products.

The second-best co-payment, given the indicators, was the German co-payment 4 (14 in 22 points), placing Germany as a reference country in the implementation of these policies.

#### VI. CONCLUSIONS

The structurally most feasible co-payment for implementation in chronically ill patients that receive their treatment through the hospital outpatient system and, regarding Portuguese reality, is the German co-payment (5.00 € to 10.00 € per prescription, unless the price is at least 30% below the reference price), but it would be necessary to make several adjustments to its implementation in Portugal:

- 1) Hospital protocol adaptation that complement and justify a co-payment.
- 2) Redefinition of the margin from which the user does not need to pay for the medicine.
- 3) Payment adjustment to Portuguese reality, trying to find amounts to be applied and accepted by both the population and healthcare professionals.
- 4) Keeping the philosophy and inherent practice of the "social state" protecting underprivileged people.

#### APPENDIX

Regarding the evaluation of co-payment policies – Fig. 2.

Countries					England [10]-[17]	France [18]-[22]	Germany [23]-[31]		
Co-payments					1	2	3	4	
Attribute	Accessibility	Indicators	Capacity of fractionation/flexibility at the time of payment (PI)	Criteria	Existent = 1; Nonexistent = 0	1	0	0	0
			Variation in patient's expense depending on the cost of the medicine (RI)		Existent = 1; Nonexistent = 0	1	0	1	1
			Establishing an minimum and maximum monetary range expended by the patient (RI)		Existent = 1; Nonexistent = 0	1	1	1	1
			Level of coverage of third parties given the total or partial fraction of co-payment by the patient (PI e RI)		Existent = 1; Nonexistent = 0	1	1	1	1
			Level of accession/demand of Health care covered by the co-payment (RI)		High = 0; Stable = 1; Low = 2	2	1	1	1
Score of Attribute				Numeric	6	3	4	4	
				Percentage	100%	50%	66,7%	66,7%	
Attribute	Adequacy	Indicators	Capacity of adjustment to economic reality (RI)	Criteria	Existent (+ exemption; application ≥ 4 years) = 1 Nonexistent (- exemption; application < 4 years) = 0	1	1	1	1
			Compliance with Portuguese legislation (PI)		High = 1; Low = 0	0	0	0	1
			Level of technical and professional experience co-payment application (SI)		High = 1; Low = 0	0	1	1	1
			Average time of implementing (PI)		High (≥ 1 year) = 0; Low (< 1 year) = 1	0	1	0	0
			Score of Attribute				Numeric	1	3
				Percentage	25%	75%	50%	50%	
Attribute	Continuity	Indicators	Update of the co-payment (PI)	Criteria	High (Yearly)= 2; Low (cadence > 1 year)=1; Not updated = 0	1	0	2	0
			Maturity of the co-payment in public health policy context (RI)		High (≥4 anos) = 1; Low (<4 anos) = 0	1	1	1	1
Score of Attribute				Numeric	2	1	3	1	
				Percentage	66,7%	33,3%	100%	33,3%	
Attribute	Effectiveness	Indicators	Impact on medicines consumption (RI)	Criteria	High consumption = 0; Stable consumption = 1 Low consumption = 2	NA	0	1	1
			Compliance of the co-payment policy compared to its purpose (RI)		Effective = 1; Not effective = 0	0	1	1	1
Score of Attribute				Numeric	0	1	2	2	
				Percentage	0%	33,3%	66,7%	66,7%	
Attribute	Involvement	Indicators	Understanding of the co-payment policy by the patient (RI)	Criteria	High = 1; Low = 0	0	1	1	1
			Professional acceptability of co-payment policies in healthcare (PI e RI)		High = 1; Low = 0	0	1	1	1
Score of Attribute				Numeric	0	2	2	2	
				Percentage	0%	100%	100%	100%	
Attribute	Equity	Indicators	Ratio - State participation versus total participation (SI)	Criteria	High (≥0.5) = 0; Low (<0.5) = 1	0	0	0	NA
			Ratio - Patient participation (or third parties) versus total participation (SI)		High (≥0.5) = 1; Low (<0.5) = 0	0	0	0	NA
			Geographical coverage level of co-payment (PI)		Universal = 1; Not universal = 0	1	1	1	1
Score of Attribute				Numeric	1	1	1	1	
				Percentage	33,3%	33,3%	33,3%	33,3%	
Attribute	Opportunity	Indicators	Degree of availability and /or technological mash-up for co-payment implementation (SI)	Criteria	High = 1; Low = 0	1	0	1	1
			Score of Attribute				Numeric	1	0
				Percentage	100%	0%	100%	100%	
Total Score				Numeric	11	11	15	14	
				Percentage	50%	50%	68,2%	63,6%	

Fig. 2 Evaluation of selected co-payment policies. (NA: Not applicable) [10]-[31]

REFERENCES

[1] Catarino, I. (2012). Co-pagamentos: Da teoria à prática. Research presented to the Medicine College of Porto University to obtain approval in the 6th year Option Project, guided by Guilhermina Rego, Porto.

[2] Biondi, N., Lafortune, G., Biondi, N., Devaux, M., Cecchini, M., Sassi, F. et al., (2014). Health at a Glance: Europe 2014. (3a ed.). Paris: OECD Publishing.

[3] Simon-Tuval, T., Triki, N., Chodick, G. & Greenberg, D. (2014). Determinants of cost-related nonadherence to medications among chronically ill patients in Maccabi Healthcare Services, Israel. *Value in health regional issues*, 4, 41-46.

[4] Solomon, M., Goldman, D., Joyce, G. & Escarce, J. (2009). Cost-sharing and the initiation of drug therapy for the chronically ill. *Arch Intern Med*, 169(8), 740-749.

[5] Piettea, J., Heisler, M., Horne, R. & Alexander G. (2005). A conceptually based approach to understanding chronically ill patients' responses to medication cost pressures. *Social Science & Medicine*, 62, 846-857.

[6] Teixeira, I. & Vieira, I. (2008). Pharmaceutical pricing and reimbursement information. INFARMED, I.P.

[7] Mann, B.S., Barnieh, L., Tang, K., Campbell, D., Clement, F., Hemmelgarn, B., et al. (2014). Association between drug insurance cost sharing strategies and outcomes in patients with chronic diseases: A systematic review. *PLoS One*, 3(9).

[8] Despacho n.º 13382/2012, de 4 de outubro (DR, 2.ª série, n.º 198, de 12 de outubro de 2012). Determina que a prescrição de medicamentos, para dispensa em regime de ambulatório pelas farmácias hospitalares, é obrigatoriamente realizada através de sistemas de prescrição eletrónica.

[9] Health Ministry. (2012). Procedimentos de cedência de medicamentos no ambulatório hospitalar. INFARMED, I.P.

[10] Boyle, S. (2011). United Kingdom (England): Health system review. *Health Systems in Transition*, 13(1), 1-486.

[11] Chevrel, K., Durand-Zaleski, I., Bahrami, S., Hernández-Quevedo, C. & Mladovsky, P. (2010). France: Health system review. *Health Systems in Transition*, 12(6), 1-291.

[12] Busse, R. & Blümel, M. (2014). Germany: Health system review. *Health Systems in Transition*, 16(2), 1-296.

[13] Smith, M. (2014). Improving dental care and oral health – a call to action. Leeds: NHS England

- [14] UK Government. (2014). How much will I pay for NHS dental treatment? <http://www.nhs.uk/chq/Pages/1781.aspx?CategoryID=74>. Accessed in October 30, 2015 in [www.gov.uk/](http://www.gov.uk/).
- [15] Lacey, R. (2013). NHS Dental cost - how much you should be paying and how In <http://www.moneywise.co.uk/>. Accessed in October 30, 2015 in <http://www.moneywise.co.uk/cut-your-costs/family-life/nhs-dental-cost-how-much-youshould- be-paying-and-how>.
- [16] British Dental Health Foundation. (2015). Paying for dental treatment. <https://www.dentalhealth.org/tell-me-about/topic/routine-treatment/paying-for-dental-treatment>. Accessed in October 31, 2015 in [www.dentalhealth.org](http://www.dentalhealth.org).
- [17] Age UK. (2015). Dental care: NHS and private treatment. London.
- [18] Organização para a Cooperação e Desenvolvimento Económico (OCDE). (2014a). How does the United Kingdom compare? Paris: OECD Publishing.
- [19] United Health Group. (2015). Health4Me Mobile App Now Enables UnitedHealthcare Plan Participants to Pay Their Medical Bills with Their Smartphones. Accessed in December 6, 2015 in <http://www.unitedhealthgroup.com/newsroom/articles/feed/unitedhealth-care/2015/0216health4mepay>
- [20] Kambia-Chopin, B. & Perronnin, M. (2013). Deductibles and the demand for prescription drugs: evidence from french data. Paris: IRDES.
- [21] Centre des Liaisons Européennes et Internationales de Sécurité Sociale (CLEISS). (2015). <http://www.cleiss.fr/>. Accessed November 2, 2015 in [http://www.cleiss.fr/docs/regimes/regime\\_france/an\\_1.html](http://www.cleiss.fr/docs/regimes/regime_france/an_1.html).
- [22] Organização para a Cooperação e Desenvolvimento Económico (OCDE). (2015). How does health spending in France compare?. Paris: OECD Publishing.
- [23] Green, D., Irvine, B., Clarke, E. & Bidgood E. (2013). Healthcare Systems: France. CIVITAS.
- [24] Organização para a Cooperação e Desenvolvimento Económico (OCDE). (2014b). How does Germany compare?. Paris: OECD Publishing
- [25] Schreyögg, J. & Grabka, M. (2008) Copayments for ambulatory care in Germany: a natural experiment using a difference-in-difference approach. Berlin: DIW.
- [26] Organização para a Cooperação e Desenvolvimento Económico (OCDE). (2011). Health at a Glance 2011 - OECD Indicators. Paris: OECD Publishing.
- [27] Paris, P., & Docteur, E. (2008). Pharmaceutical pricing and reimbursement policies in Germany. Paris: OECD Publishing.
- [28] Herr, A. & Suppliet, M. (2011). Pharmaceutical prices under regulation: Co-payment exemptions and reference prices in Germany. Duesseldorf: Editorial Express.
- [29] The Henry J. Kaiser Family Foundation. (2009). Cost sharing for health care: France, Germany, and Switzerland. California: Autor
- [30] Augurzky, B., Bauer, T. & Schaffner, S. (2006). Copayments in the German Health System: Does it work?. Bonn: IZA.
- [31] How To Germany. (2015). Paying Medical Expenses/Health Insurance Claims in Germany. Accessed in December 6, 2015 in <http://www.howtgermany.com/pages/healthinsurance-claims.html>