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Evaluating the availability of cataract treatment in Poland in the light of institutional changes

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HIGHLIGHTS

Increased amount of contracts reduces the number of people waiting for cataract surgery in Poland, but does not reduce the number of patients who go abroad for the treatment.

ABSTRACT

The aim of the article is to assess the access to health services in light of European Union regulatory changes, with particular emphasis on cataract procedures implemented in Poland during the years 2015–2017.

Statistical data from the National Health Fund for the years 2015–2017 was analyzed by means of statistical description, graphical and table presentation. For parametric queues, a Student's t-test ($\alpha = 0.05$) was used. For the number of submitted and paid applications under the directive, the linear trend model and the significance of the directional coefficient ($\alpha = 0.05$) were used.

The waiting queue for cataract surgery regarding the period from the second quarter of 2015 to the fourth quarter of 2016 had an upward trend.

In 2017, a drop in number of waiting patients was observed, with a simultaneous increase in the number of applications submitted under the directive. At the same time, contract growth was observed, which was translated into a decrease in the number of patients waiting for surgery in Poland. Nevertheless, no decreasing trend in the number of patients treated under the cross-border directive was observed.

Key words: cross-border healthcare, patient's rights, cataract treatment, one day ophthalmic treatment, reimbursement

INTRODUCTION

The establishment of the European Union allowed free movement of goods between countries, including in the areas of trade, services, capital or work. Nevertheless, for a decade, individual Member States have regulated their health issues on their own. This caused unequal access to health services between EU countries. Only the implementation of Directive 2011/24/EU of the European Parliament and of the Council of March 9th, 2011 on the application of patients' rights in cross-border healthcare [1] has been effective since April 24th, 2011 (hereinafter: the Directive) to overcame this barrier by guaranteeing all citizens of the EU equal access to high-quality cross-border healthcare, in particular the availability of standardized health services throughout the Community.

In accordance with the provisions of the Directive the Member State of treatment shall ensure refund of cross-border healthcare on the basis of Chapter III of the Directive [1].

Member States were obliged to bring into effect the laws, regulations and administrative provisions necessary to comply with this Directive by October 25th, 2013. Member States were responsible to establish the rules of reimbursement of cross-border healthcare provided in another Member State.

Nevertheless, the implementation of the Directive into Polish law took place in 2014, by the provisions of the Act amending the Act on healthcare services financed from public funds [2]. This means that the application of the Directive in Poland was possible after more than a year of delay.

Polish regulations define the rules for receiving a refund for performing abroad the treatment of a patient insured in Poland. In the case of guaranteed services in Poland, the National Health Fund (NFZ) is obliged to reimburse costs [3, 4], in accordance with the procedure described in the law, in the amount of funding for a given benefit under a health care service contract concluded between the NFZ and the service provider in Poland (in accordance with the payer's guidelines indicated in ordinances of the NFZ President [5]), but no more than the value of the costs incurred.

For some benefits, the list of which was specified in the content of the Regulation of the Minister of Health (MZ) [6], it is necessary earlier (before the performance of the benefit) to obtain from the NFZ consent for treatment outside the country. In the case of ophthalmic services for outpatient treatment and ophthalmic surgery in one day (where discharge from the hospital takes place on the day of admission), the NFZ's prior consent for treatment outside the country is not required. Therefore, in accordance with the provisions of the Directive and the provisions of national law, patients referred for treatment of cataracts in the course of one day, without any formal obstacles, may perform and then request reimbursement for the costs of the surgery performed outside Poland.

The cataract's health problem primarily affects older patients, often lonely, socially excluded and uninformed. According to the authors of the report *Treatment of cataracts one of the largest unmet health needs of Polish society* [7] the largest percentage of patients with cataracts are people over 80 years of age. Considering the number of patients suffering from cataracts in Poland (about 260,000–300,000 thousand treatments per year) access to health services was limited. On the other hand, the introduction of a cataract reimbursement under the cross-border directive has opened up wide possibilities for the implementation of the treatment throughout the EU.

An important element seems to be the introduction of an effective system of monitoring expenditure levels per capita because a qualitative analysis of resource allocation processes from the national level to a sub-national level is important in identifying potential problems with access to discussed health services [8].

Patients' knowledge of their rights under the new regulations in the first months of their application was limited. Patients' knowledge was supported by studies and social campaigns of patient organizations, such as the *Charter of Patient Rights with Cataract* developed in 2017 by the Institute of Patient Rights and Health Education [9].

OBJECTIVE OF THE ARTICLE

The aim of the study is to evaluate the availability of medical treatment in Poland in the light of institutional solutions and changes in EU law, with particular emphasis on the problem of patients with cataract disease in Poland, in 2015–2017.

MATERIALS AND METHODS

We analyzed the statistical data received for the years 2015–2017 from the Headquarters of the National Health Fund. The data includes information concerning the value of contracts for cataract surgeries and the level of their implementation, as well as the number of Polish patients who have undergone cataract removal under the cross-border directive and the value of the procedures to be reimbursed. The analyzed period concerns the first 3 full years of implementation of the directive in Poland. In the area of all the variables, the data was analyzed using a statistical description supported by graphical and table presentation. In addition, the parametric Student's t-test ($\alpha = 0.05$) for related samples comparing the aver-

age levels was used regarding the waiting time in queue. In turn, the linear trend model and the significance of the directional factor ($\alpha = 0.05$) were used regarding variables: number of submitted and paid applications.
The data was collected in Microsoft Excel and some analysis and charts were also done using this software. Other analysis was made in the R environment on the basis of own codes with the use of functions of the Basic package (t.test, lm, shapiro.test, plot).

RESULTS

The number of cataract medical procedures in Poland in years 2015–2017 increased from 227,073 to 300,265 hospitalizations. In the analyzed period, the number of healthcare providers performing treatments across the country also increased, from 244 in 2015 to 253 in 2017.

An increase in the value of contracts and their performance in the years 2015–2017 can be observed in table 1. The difference between the performance and the value of contracts for cataract removal medical services concluded with the National Health Fund in 2015 and 2016 did not exceed 0.6%.
In 2017 the situation changed dramatically, as the value of performance was lower than the contracts' value by 4.89% (tab. 1, fig. 1).

The waiting queue for cataract surgery from the second quarter of 2015 had an upward trend. Such trend continued until the fourth quarter of 2016. In 2017, we can observe a systematic decrease in the number of patients expecting a surgery in Poland, and simultaneously, growth in number of applications submitted under the Directive. At the same time, the analyzed area showed a sig-

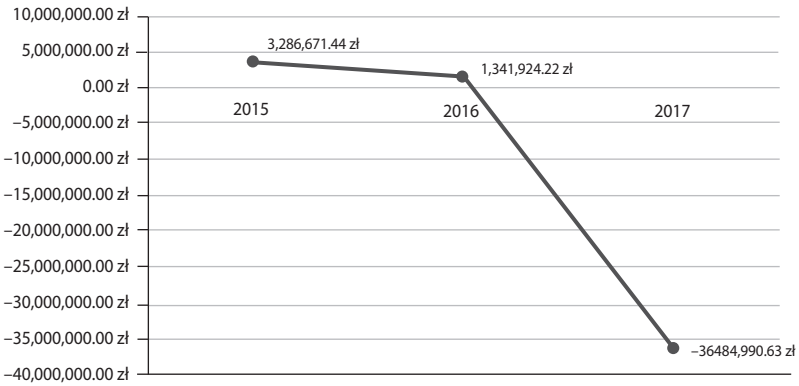
TABLE 1

The value of contracts for the treatment of cataracts, concluded by health entities with the National Health Fund and the value of their implementation in 2015–2017.

Year	Contract's value	Performance value	Difference (performance – contract)
2015	549,634,591.00 PLN	552,921,262.44 PLN	3,286,671.44 PLN
2016	571,732,549.00 PLN	573,074,473.22 PLN	1,341,924.22 PLN
2017	746,243,503.00 PLN	709,758,512.37 PLN	-36,484,990.63 PLN

FIGURE 1

The difference in the value of performance and contracts for cataract treatment, concluded between medical entities and the National Health Fund in 2015–2017.



nificant increase in contracts, which directly was translated into a decrease in the number of patients waiting for surgery in Poland. Despite the growth of contracts in 2017 (increased availability of benefits), there was no declining trend in the number of patients treated under the cross-border directive in 2017 (fig. 2).

When analyzing the queue phenomenon in terms of comparing the annual average levels with the Student's t-test (data matched with unanimous months), statistical significance was obtained in the periods of 2015 vs. 2016 (Shapiro-Wilk normality test, p-value = 0.3177) at the level of p-value = 0.001114 and 2016 vs. 2017 (Shapiro-Wilk normality test, p-value = 0.1845) at the p-value = 0.0008548 level. On the other hand, no statistical significance was obtained for the period of 2015 vs. 2017 (Shapiro-Wilk normality test, p-value = 0.963) at a p-value = 0.4459. The lack of this last significance is most probably due to the fact that the trends of the phenomenon in 2015 and 2017 are opposite and oscillate in a similar value range.

In the discussed area, an increase in the number of submitted and reimbursed applications for cataract surgery performed under the cross-border directive in the period of 2015–2017 can be observed. The difference for the years 2015 and 2016, between the paid and the requested amounts for reimbursement was 26.08% and 21.50% respectively. In 2017, this difference accounted for only 3.35% (tab. 2).

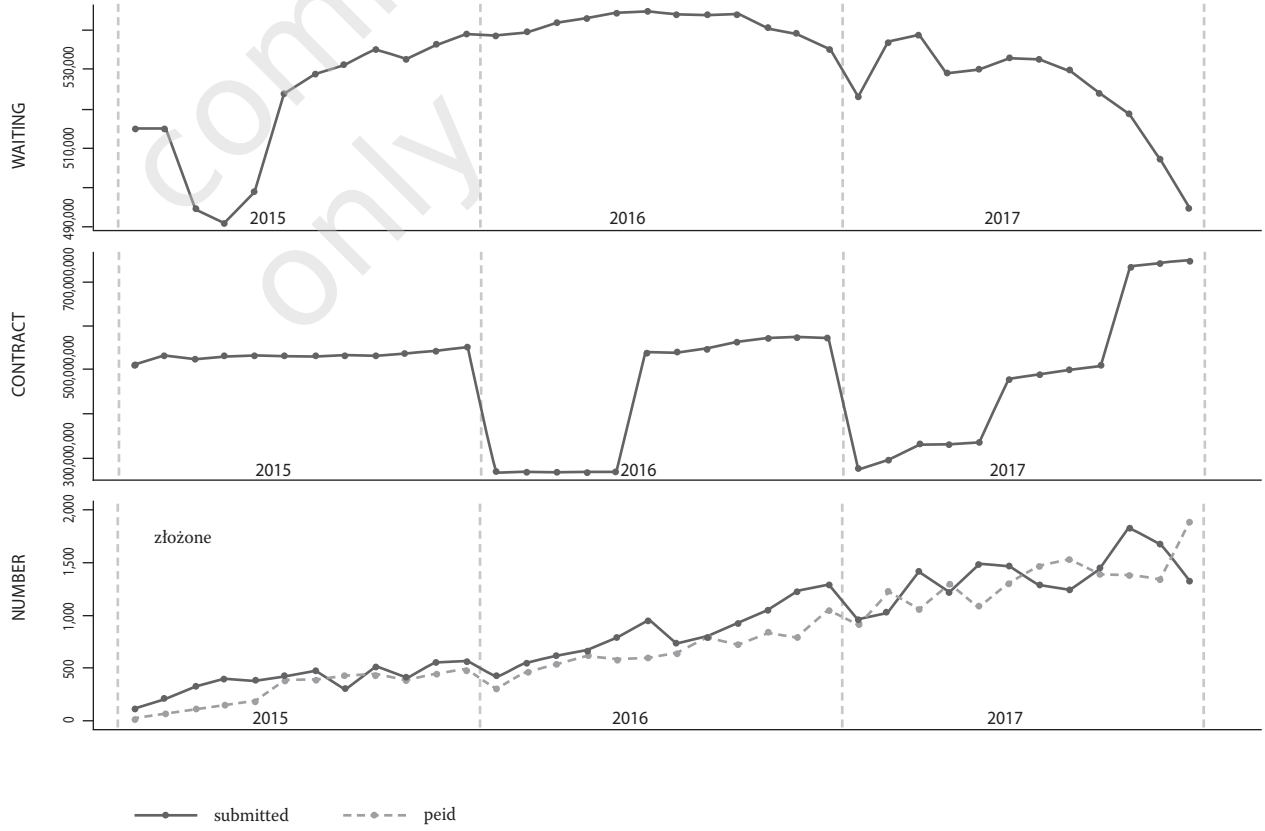
TABLE 2

Number of applications submitted and paid in the years 2015–2017.

Year	Number of applications	Number of reimbursement	Difference (reimbursement – applications)
2015	4,543	3,358	-1,185
2016	9,924	7,790	-2,134
2017	16,275	15,729	-546

FIGURE 2

The number of patients waiting for cataract surgery in Poland, the value of contracts for cataract treatment in Poland and the number of applications for reimbursement of cataract treatment submitted and paid within the framework of the cross-border directive in 2015–2017.



Linear regression coefficient, reflecting the trend of the phenomenon – the number of applications submitted in 2015–2017, can be considered significant ($p < 0.05$) on the assumption that the residual distribution is normal (Shapiro-Wilk test p-value = 0.836). Therefore, it can be assumed that the number of applications filed is about 42 a month. At the same time, the R-squared model is 0.9114, which means that the model matches the data (fig. 3).

Linear regression coefficient, reflecting the trend of the phenomenon in the years 2015–2017, can be considered significant ($p < 0.05$) with the premise that the residual distribution is normal (Shapiro-Wilk test p-value = 0.1601). Therefore, it can be assumed that the growth of the number of refunded applications was about 44 per month. The R-squared model is 0.9327, which means that the model matches the data (fig. 4).

In the period of 2015–2017, Polish patients most often performed cataract removal medical procedures in Czech Republic (93%). In 2017, in comparison to previous years, the number of patients performing the services in Lithuania increased more than a hundred times (from 6 in 2016 to 643 in 2017). Another country in which patients with the discussed disease are treated is Germany (an increase of 107% in 2017 in comparison to 2015) (tab. 3).

FIGURE 3

Number of applications for refund of cataract removal medical procedure submitted under the cross-border directive in 2015–2017.

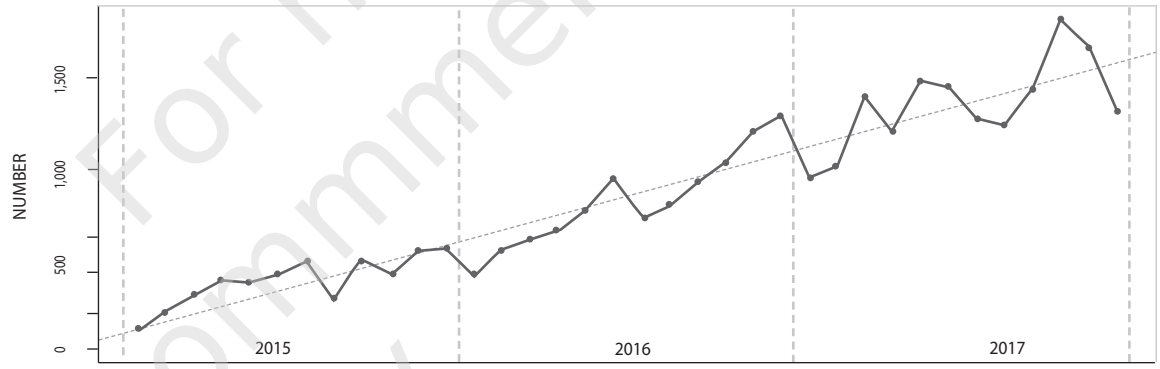


FIGURE 4

Number of refunded applications for cataract treatment performed under the cross-border directive in 2015–2017.

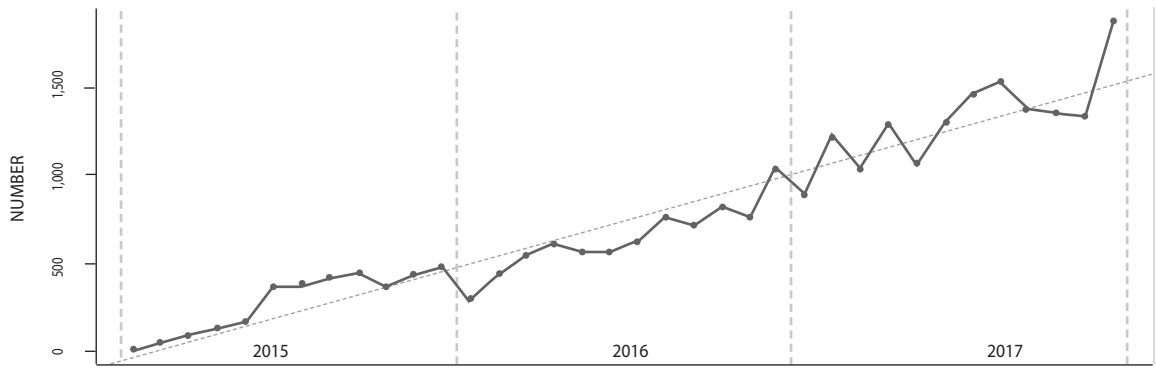


TABLE 3

Number and value of submitted applications regarding cataract treatment under the cross-border directive by EU countries in 2015–2017.

OW NFZ	2015		2016		2017	
	Number	Value	Number	Value	Number	Value
Czech Republic	3,065	6,778,737.61 PLN	7,404	16,008,388.89 PLN	14,433	30,921,422.99 PLN
Lithuania	0	0.00 PLN	6	12,764.46 PLN	643	1,363,963.37 PLN
Deutschland	281	620,350.06 PLN	374	797,239.07 PLN	582	1,238,759.08 PLN
Slovakia	3	6,589.33 PLN	3	6,416.88 PLN	65	140,310.97 PLN
Austria	3	6,754.74 PLN	0	0.00 PLN	0	0.00 PLN
France	3	2,996.03 PLN	0	0.00 PLN	5	8,993.32 PLN
Cyprus	1	2,207.37 PLN	0	0.00 PLN	0	0.00,PLN
Romania	2	4,674.14 PLN	0	0.00 PLN	0	0.00 PLN
Grat Britain	0	0.00 PLN	1	2,403.58 PLN	0	0.00 PLN
Italy	0	0.00 PLN	2	4,318.52 PLN	0	0.00 PLN
Belgium	0	0.00 PLN	0	0.00 PLN	1	2,111.15 PLN
Total	**3,358**	**7,422,309.28 PLN**	**7,790**	**16,831,531.40 PLN**	**15,729**	**33,675,560.88 PLN**

DISCUSSION

According to the directive, cross-border patients from the EU shall be guaranteed free access to medical treatment in the Member States. Determining the detailed conditions for obtaining such benefits outside the country remains the responsibility of each state. In Poland, appropriate guidelines are limited to the rules concerning Polish patients who obtain medical benefits in the EU [2].

In accordance with the recommendations of the European Commission, equal access to health services should be provided by adjusting the allocation of healthcare resources to health needs of regions (voivodships). Regions with higher health needs (lower state of health and higher unsatisfied health needs) should benefit from higher level of public expenditures per capita in the area [8].

The period of the first 3 years of the validity of the cross-border directive in Poland was analyzed, what enabled to present new regulations in their initial period.

Data obtained from the National Health Fund for 2015–2017 show the increasing activity of the patients in the framework of cross-border directive. The highest number of patients travelled to Czech Republic, Lithuania and Germany. At the same time, an increase in funds for cataract surgery in Poland can be observed.

According to the analyzed data, the number of cataract procedures in Poland in the years 2015–2017 increased by 73,192 hospitalizations, with an increased number of healthcare providers performing such treatments at the same time. Wilczyńska et al. indicated that 4,469 procedures per 1 million inhabitants were performed in Poland in 2011, with the EU average of 7,652 per 1 million inhabitants in 2008 [7].

From 2011 to 2017, the number of health services provided in Poland increased by 75% and in 2017 it amounted to 7,836 procedures per 1 million inhabitants. This was due, inter alia, to the increase in the value of contracts in the analyzed period, i.e. 4% increase in 2016 and over 30% increase in 2017. It should be emphasized that in 2017 almost 5% of contracts was not performed. This phenomenon was the effect of the fact that the value of contracts was increased in the fourth quarter of 2017, thus the medical entities could not complete such a large number of treatments in such a short time.

The wait time for cataract removal medical procedure was increasing until the fourth quarter of 2016, to reach the level lower by 40,000 people in 2017 (compared to January 2015). Despite the growing contracts and the declining waiting queue in the country, the number of patients travelling abroad to obtain cataract treatment under the cross-border directive has not decreased. The analyzed data show that the number of applications for reimbursement of a cataract treatment performed under the cross-border directive increases by over 12,000. The patients most often performed cataract surgeries in border regions, i.e. in the Czech Republic, Germany, Lithuania and Slovakia (in total over 99,93%).

Another important aspect of medical treatment under the cross-border directive is the issue of the quality of medical services offered to patients in medical entities located outside of Poland. This issue is even more important, as the financial consequences of possible complications after the procedure performed abroad, with no supervision of Polish public institutions (Ministry of Health, Ombudsman) shall be incurred by a public payer, in this case the National Health Fund. Therefore, as Grzybowski and the authors note, the key to the transparency of the provisions of the cross-border directive is "defining the principles of responsibility for the negative consequences of the therapeutic process, including undesirable medical events" [10].

Data analyzed both in this article and other publications concerning the subject matter [11] confirm that the limitations availability to cataract treatment should be assessed not only by the terms of the waiting queue for the procedure, but also by the lack of the ability to apply various types of intraocular lenses, including those enabling simultaneous correction of astigmatism. The valuation of cataract removal procedures in Poland in 2015–2017 and legal regulations which prevent Polish institutions to charge patients for the cost of lenses of higher quality during publicly funded service, in practice eliminated the use of corrective lenses for astigmatism or presbyopia. Meanwhile, people undergoing cataract treatment in other countries could pay for toric or multifocal lenses. It should be emphasized that since the fourth quarter of 2017, the public payer has declared a systematic increase in the financing level of cataract treatment. Moreover, since July 2018, the use of toric lenses has been introduced into the public reimbursement system in Poland [5].

The regulations indicate the medical procedures which require prior approval of the National Health Fund [6]. Same day surgeries are not treated as regular hospital stays, therefore the prior consent of the public payer to perform a cataract surgery in a single-day is not required [6]. However, at the level of internal regulations, both the Ministry of Health and the National Health Fund have introduced many practical obstacles, the aim of which was to discourage Polish patients from performing procedures abroad. Iwona Kowalska-Bobko et al. also indicate the problems related to the application of the cross-border directive in practice [12]. The authors remark that Poland belongs to the group of 14 out of 26 European Union countries, in which the patient has to obtain the public payer's consent, before the benefit is provided [12].

In order to discourage patients to perform cataract surgery outside Poland, it was decided to reduce the rate of refundable procedures, determining the average level of the cost of the described benefit as the refund value in Poland. The average value of refund, underestimated by the level of refunds made to private entities, resulted in a reduction of the amount reimbursed to patients under the Directive. The creation of the difference between the costs of treatment abroad and the value of the actual refund by the NHF was, according to Natasha Azzopardi-Muscat et al., one of the ideas to reduce the number of patients travelling abroad for medical treatment [13].

Patient support organizations propagate social awareness about Polish patients' rights under the provisions of the cross-border directive. The activity of social organizations dealing with the subject of patient education seems substantively justified. Grzybowski et al. [14] draw attention to the fact that difficult access to cataract treatment in Poland is not only a health risk, but also the social cost expressed by the number of days of sick leave due to a cataract.

The issue becomes even more interesting if we take into account that the unemployment rate at the end of July 2018 in Poland was at a low level and amounted to 961,800 people (5.9%). When the queue waiting for the procedure amounts to 500,000 patients, the waiting time is important. Thus, it seems natural that people at risk of blindness as a result of cataracts search for help outside Poland.

In order to keep patients in Poland the limits for cataract removal medical procedures were abolished in April 2019, what in the opinion of the Ministry of Health and the NHF significantly decreased the queues to health services [5]. The change in approach of the public payer to the subject of broadly understood accessibility to this group of medical procedures in the country, translating into the scope of application of the cross-border directive, indicates the legitimacy of further research in this area. Therefore, the authors plan to analyze the period 2018–2020 in the next article.

CONCLUSIONS

The following conclusions can be made on the basis of the analysis:

1. In the analyzed period, the number of patients awaiting cataract treatment in Poland decreased, especially in 2017.
2. Due to the growing number of applications for reimbursement of cataract treatment outside the country, submitted by Polish patients, the National Health Fund decided to allocate additional funds for cataract treatment in Poland, what improved the availability of these medical procedures.
3. In 2017, the value of contracts for cataract surgery financed from public funds increased significantly in Poland. At the same time nearly 5% of the increased value of these contracts was not implemented. This may indicate a lack of sufficient ability of medical fa-

cilities to perform (or patients themselves to obtain) the surgery earlier than originally scheduled.
4. Significant increase in contracts in 2017 in Poland did not reduce the number of applications for reimbursement of cataract treatment outside the country. During this period there was a further intensification of this phenomenon, which resulted in an increase of public payer's expenses for the implementation of the provisions of the cross-border directive.

Figures: from the author's own materials.

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Authors' contributions:

Michał Chrobot: devising the project and the main conceptual ideas (35%), data's collecting and interpretation (30%), statistical analysis and preparation the research results for analysis (30%), critical review (40%), collecting of the references (20%), acceptance of the final version (25%); Arnold Maciejewski: devising the project and the main conceptual ideas (25%), data's collecting and interpretation (30%), statistical analysis and preparation the research results for analysis (10%), critical review (10%), collecting of the references (20%), acceptance of the final version (25%); Kamila Kocańda: devising the project and the main conceptual ideas (10%), data's collecting and interpretation (10%), statistical analysis and preparation the research results for analysis (10%), critical review (10%), collecting of the references (40%), acceptance of the final version (25%); Agnieszka Strzelecka: devising the project and the main conceptual ideas (30%), data's collecting and interpretation (30%), statistical analysis and preparation the research results for analysis (50%), critical review (40%), collecting of the references (20%), acceptance of the final version (25%).

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None.

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Ethics:

The content presented in the article complies with the principles of the Helsinki Declaration, EU directives and harmonized requirements for biomedical journals.