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Adaptation of informed consent for anaesthesia to plain language standard

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Introduction. The paper describes the process of editing and validating documents on the basis of which a patient gives their informed consent for anaesthesia before surgery. Our objective was to adapt such documents to plain language standards, thanks to which they will be more accessible to an average patient.

Material and methods. Two documents were drafted: *Information about anaesthesia* and *Informed consent for anaesthesia*. Within the editing process, we applied the principles of Plain Polish worked out for the Polish language.

Results. Similar documents available in Polish medical institutions were collected. For the comparison of the texts, the readability formula – Plain Language Index (PLI) – recently available in Poland was used. This algorithm assesses 10 properties of the style and, based on these, it measures the simplicity of the text.

Conclusions. Both documents which we designed obtained the standard of plain language (PLI 50% and more). They turned out to be the most accessible out of all the texts examined.

Key words: plain language, readability, informed consent, anaesthesia

Introduction

The quality of the information communicated to a patient is frequently addressed in the rulings of the Supreme Court of Poland [1–5]. This paper discusses the linguistic aspect of those documents to which an adult patient gives their informed consent for a planned surgery. Our objective was to plan and then verify the documentation that meets the requirements of the international standard for plain language (while this text was being written, the ISO standard for plain language was almost ready: https://www.iso.org/standard/78907.html).

Literature overview

In healthcare, informed consent is an important document both for the author and the recipient. Well-informed patients make conscious decisions with respect to their own health. They have also more realistic expectations, more satisfaction after a procedure, and, moreover, they tend to be more co-operative during the treatment [6]. On the other hand, high insurance costs against potential errors force the healthcare services providers to inform the patients about planned medical procedures connected with some risk of health complications, in a precise and effective manner.

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For this reason, in many countries, the institutions responsible for healthcare create the standards for drafting the informed consent forms [7–9]; yet, in some other countries, the adaptation of language to the level of education of an average citizen, with the status of 6–8 years of education on average, is imposed by legal regulations [10]. Therefore, it seems justified to prepare this information in Polish in such a way as to allow communication to be understood by the largest possible group of patients.

Unfortunately, research in the field of *health literacy* points to the fact that in many countries, the ability to understand medical information is poor or too diversified. The WHO research conducted in Europe, showed that in 10 countries, the rate of people with inadequate or problematic levels of reading competencies varies between 30% (Netherlands) and 60% (Bulgaria) – with a mean of approx. 48% [11].

The low level of *health literacy* in a population is not the sole problem. It is generally assumed that the incomprehensibility of informed consent is also the outcome of the manner in which these documents have been prepared for the patients [12]. The research confirms that the informed consents have a very low level of *readability* [13–15], failing to communicate all the required information (also in the field of language) [16]; that said, after reading, the patients themselves are satisfied with the information provided, yet they remember very little of the contents [17–18]. Difficult language, verbosity and poor composition result in the patients' lack of motivation to read the communications thoroughly [19]. In some way, it might be more effective to change the semiotic form of the document from verbal to a multimodal communication – especially, a more visual one [20].

This paper describes the process of drafting and validating the Polish-language documents which communicate the required medical information to the patient, in accordance with the plain language standard, i.e. in an accessible and structured manner. We also assume that such texts should be understandable for the average patient [21].

Legal context

Regulations of Polish law require the patient to grant informed consent for a medical procedure, but they also stipulate that the forms of this consent may vary: written, oral or even implied [22]. In the case of surgical procedures and the procedures bearing an increased risk, it is required by law to obtain written consent from a patient [23].

In legal medical practice, it is unquestionable that a consent of a patient for anaesthesia before a medical procedure requires a written form. This standpoint is also the outcome of content of the regulation of the Minister of Health of 16th December 2016 on the organisational standard in anaesthesiology and intensive care, which stipulate that "a document containing the patient's consent to anaesthesia" must be included in the patient's medical file [24]. Hence it is necessary to draft the document of a consent for anaesthesia.

What is more – the regulations of Polish law, in some way, stipulate the requirements for the patient's consent in order to make it effective. And therefore, on the basis of the analysis of the sphere of *de lege lata*, the consent may be regarded as effective, provided that:

- the patient is authorised to grant the consent,
- the consent was granted before the procedure covered by the consent,
- the consent was granted consciously,
- The patient granted the consent in a situation that allowed for making a free decision [25–26].

What is especially vital for consideration and significant from the point of view of this paper, is the aspect of the patient's awareness, which was defined in legal terms. As it stems from the law, before giving consent, the patient must be informed about the *diagnosis, proposed and possible diagnostic and treatment methods, the outcomes which can be predicted once these methods are applied or abandoned, the treatment results and prognosis* [27–28].

What matters here is that the law directly requires that the consent be stipulated in an accessible manner [27–28]. Informing the patient in an appropriate way before the procedure has primary significance, as in court judicial practice, it is emphasised that the patient's very consent for a procedure, granted in such a situation when no accessible information was provided, cannot be treated as consent as defined by articles 32 and 34 of the Act of 1996 on the profession of a doctor and a dentist [3, 29].

The notion of *accessibility* of information so far has not received any extensive consideration in legal literature, although the majority of authors emphasise that the issue concerns the method of communicating information to the patient by a doctor, which must be adapted to the specific recipient in a specific health situation [26, 30]. What matters here is that the patient should understand the delivered information. Therefore, when communicating the information, a doctor should not only take into consideration the health condition of the patient (e.g. the effect of pain on the patient's awareness), but also their educational status, mental condition or the type and character of procedure [26, 30].

Given the above, the authors made the assumption that the essence of the obligation to inform a patient before a medical procedure is to make them aware of its necessity, course, risk and possible alternatives. However, in accordance with the guidelines formulated in the legal publications, *all the information obtained for the preparation of the consent forms, should be processed in a way that makes them understandable – even for a person with limited knowledge in medical, biological, physical and other fields* [31].

Also, the authors are aware that even the best wording of documents cannot replace a conversation between a doctor and a patient, yet they have the evidentiary significance, i.e. they point to the scope of information which was presented to the patient.

Anaesthesiologic context

Anaesthesia is required for many surgical procedures. Before any surgery, a patient is consulted by an anaesthesiologist in order to be fully qualified for anaesthesia. Before the conversation with the anaesthesiologist, the patients fills in a questionnaire concerning their health status and reads some written information about anaesthesia. The conversation with the doctor is usually completed by the patient signing their consent for the agreed method of anaesthesia.

The described procedure, which makes up the core of standard preoperative procedures, may be modified to a large degree in many aspects and adapted to the needs and characteristics of a specific medical institution. That is why, both the questionnaire and the informed consent form are often prepared by the specific healthcare centres. Nevertheless, a common feature of these documents is specialist vocabulary and related medical issues.

On account of the assumed objective, the communicated information about the anaesthesia must be structured in the patient's mind – which can be done by means of legible titles given to specific paragraphs, their logical connection and the comprehensibility of reasoning. This issued is discussed in a further part of the paper. In the information about the types of anaesthesia, one must abandon, for example, a detailed explanation of the difference between a subarachnoid and epidural anaesthesia. From the patient's point of view, the description of both types of anaesthesia is similar, which also concerns a significant number of possible complications. If an anaesthesiologist predicts which type of anaesthesia will be applied, they should, during the obligatory talk with the patient, introduce to them to the details of the specific procedure. A detailed description of both types of anaesthesia will significantly reduce the possibilities of understanding and seems to be unnecessary at this stage.

A lack of understanding seems to be noticeable when the submitted text *forces* the patient for interaction. It happens, for example, when a medical questionnaire is filled in. Frequently, no answers are provided, wrong information is ticked or the instructions are misunderstood. Such situations definitely point to the necessity of a talk with a doctor and the need for an explanation of the problematic issues before signing the consent for anaesthesiologic procedures.

Our practice shows that the most difficult part of the information about anaesthesia is the description of the risk involved, including the list of possible complications and adverse reactions. It is quite difficult to explain to a lay person many medical expressions, without complex descriptions. Apart from this, the number of possible complications and the degree of their influence on the health condition and probability of occurrence pose the next challenges for the authors of medical documents. What is more, during anaesthesia, a lot of medication is used, with each of them having their own list of possible adverse reactions. This means that it is impossible to present and explain all the possible complication to a patient [32].

A recommendation worth paying attention to, observed by practitioners, is the expression of the degree of probability of a specific complication relayed in the form of percentages or fractions [33]. Some anaesthesiologic coursebooks or brochures go one step further than a percentage evaluation, providing situations from real life, which correspond to a given value, such as a one person per a large city, the chance of throwing a six with a dice in a game, the chance of winning the jackpot. Infographics added to the text, could improve its understandability [34].

We would like to stress once again that written information remains merely a tool thanks to which the level of patient information may be higher; that said, personal contact between a doctor and a patient is necessary. Given the above challenges it seems that the key to solving them is the conversation between the anaesthesiologist and the patient. The talk should be personalised with time devoted to the analysis of the answers in the questionnaire, for questions to be asked by the patient, for explanations and for the selection of an optimal type of anaesthesia and procedure. Well-constructed information about the anaesthesia should be the starting point for the talk with the patient who may then ask questions which are suitable for their particular personality, health condition and cognitive needs. The task to present the final information, in particular referring to the type of anaesthesia is at the anaesthesiologist's discretion, as they are familiar with the patient's condition, medical history and results of the additional tests [35].

The patient's needs for information, safety, emotional and control depend on the communicative skills of the doctor, their experience and the amount of time devoted to the conversation with the patient. A doctor should always remember that non-verbal elements can foster the relationship with the patient, i.e. physical distance, body posture, look, touch, gestures and facial expressions all have an important influence on the sense of understanding and respect, belief in the doctor's competencies and the confidence in the proposed treatment [36].

Material and methods

Initial objectives

The authors' objective was to design and draft an anaesthesiologic set of documents which is compliant with plain language standards, addressed to adult patients expecting elective surgery, who are Polish speakers.

Before the works on editing a few significant assumptions were made.

1. The set of documents should consist of two texts:
   - informative part – i.e. a description of the procedures performed on the patient in connection with the anaesthesia,
   - consent part – i.e. a formal declaration of intent in which the patient confirms the receipt of all the communicated information and accepts all the proposed anaesthesiologic procedures.

2. The medical questionnaire was excluded from the designed set of documents as this questionnaire does not have a form of a continuous text, making it impossible to perform any reliable quantitative research.
3. Conclusions resulting from the literature review convinced the authors to use a more radical linguistic approach, expressed by the opinion that the use of the method simplifying the existing text, with the method generally accepted in the studies of plain language and medical practice will not be sufficient [37–38]. Re-editing the original text would cause an effect of superficial explanation, and so it would not solve the problem with an inadequate text composition or excessively formal relations between a doctor and the patient. Working out an effective consent from requires designing a text from the start – taking into consideration structural and relational problems.
4. Finally, the authors decided to give up defining education as the factor verifying the communicativeness of the language of documentation. In Poland, the rate of persons with higher education increases quickly, yet the data concerning literacy have not been improving. In 2009, in Poland, 9.9% of people had higher education status, in 2011 – 16.8%, whilst in 2020, this rate was 39% (among people aged 25–54). In spite of this, book readership has remained at the same level since 2008 (7 and more books are read by 9–12% population) [39–41]. This disparity puts a question mark next to the readability formulas based on education, which, in Poland, do not seem to be a credible indicator of literacy.
5. New documents were prepared in accordance with the plain Polish language model worked out at the University of Wroclaw.

The methods of text editing

When editing the text with procedure information and consent, we used three strategies of plain language, with special editing techniques ascribed to each of them. This method was prepared by the Plain Polish Lab at the University of Wroclaw [42–43] and was used successfully not only by the major Polish offices, but also banks, insurance companies and even authors of scientific texts [44–45].

The first strategy consists of the preparation of a text for multiple browsing in search of necessary information. At this level, the principle of effective text structurisation was introduced, such as headings, listings, tables, etc.

The second strategy consists of using grammar patterns that makes the text similar to the most popular texts, i.e. those read in one's free time (e.g. popular Internet services, daily and weekly papers). This linguistic accommodation concerns first of all the length of a sentence and the frequency of grammatical structures, such as passive voice, nominalisation or participles.

The third strategy leads to enhancing the interpersonal dimension of the text, which is obtained by direct reference to the reader and the use of the first person plural, and also various lexicography choices, for example the avoidance of official language and its substitution with everyday expressions or the use of empathic expressions.

A detailed list of editing techniques corresponding to specific strategies is presented in table I. The techniques are illustrated with examples from the text.

Results

Documents validation method

The next stage, after editing the documents, was the verification of their simplicity with the use of the Plain Language Index (PLI),

Table I. Plain language strategies and techniques applied for editing new documents

Plain language strategy	Text editing technique	Example (in English)
The text should be edited in such a way that a patient could browse it quickly.	1. The document should begin with an educational introduction.	*You are going to have a surgery soon. This document contains the most important information about the anaesthesia. Please, read the document carefully. You don't have to remember all the information. Just keep the copy to be able to refer to it later. Keep with you during the consultation with an anaesthesiologist.*
	2. Headings should have the form of questions.	*What is an anaesthesia?* *Who is an anaesthesiologist?* *How do I get prepared for the consultation?* *What kind of complications can occur after transfusion?*
	3. Complex events should be presented as chronological processes.	The text of the chapter: *What is general anaesthesia like?* were divided into three parts: Before the surgery, During the surgery, After surgery.
	4. Lengthy texts should be changed into tables.	In one table the complications after the two types of anaesthesia are compared (they are ordered with regards to the probability of occurrence).
	5. Lengthy texts should be changed into lists with numbers.	The information leaflet contains one list per page on average. The entire text of the consent has a form of a list with consecutive numbers.
Imitate the grammar of the texts which are read for pleasure.	6. Write short sentences (below words). One idea should be contained in one sentence.	*Remove your make-up. Do not put new make-up. Do not apply cream on the face or hands. Remove nail polish.*
	7. Avoid grammar constructions typical of impersonal and formal style (official language).	*to give consent -> to agree* *in order to select an anaesthesia -> to choose anaesthesia* *you will be taken -> the nurse will take you*

→

Table I. cont. Plain language strategies and techniques applied for editing new documents

Plain language strategy	Text editing technique	Example (in English)
Imitate the grammar of the texts which are read for pleasure.	8. Increase cohesion between sentences – show logical relations (use pronouns, conjunctions, words of reference).	*Some small procedures and exams may be performed without anaesthesia. Doctors will tell you about such an option. You can choose if you want to get anaesthesia. The majority of procedures and surgeries require anaesthesia.*
	9. Avoid medical terminology or explain it.	*Sometimes during a surgery you may lose a lot of blood. Then you will need a transfusion (in other words: you will have to get blood). Transfusion means giving new blood through an infusion (in a drip). Sometimes other blood products are given.*
	10. Avoid 2-word terms consisting of an adjective + noun.	*On the surgery day a nurse will take you to the operating room. She can propose to take you there on a wheeled stretcher. In the operating room you will lie down on an operating bed.* ->*On the surgery day a nurse will take you to the operating room. She can propose to take you there on a wheeled stretcher. In the operating room you will lie down on an operating bed.*
Ensure interpersonal relations.	11. Address the reader directly.	*Just before the surgery the anaesthesiologist will give you an oxygen mask to breathe. From this moment you will begin getting anaesthesia. You will fall asleep a few moments later. Then the doctor will put a tube for breathing through your mouth. The anaesthesia machine will do the breathing for you. You will get the necessary drugs.*
	12. Avoid using male gender. Use neutral language.	specific for Polish
	13. When speaking about your institution, write "we".	*The research shows that some complications are more frequent, and others occur very rarely. Here we describe the majority of complications. We do not do this to scare you. We simply want to warn you.*
	14. Avoid formal (official) vocabulary.	*I am aware that the reaction of my body to anaesthesia is unpredictable.* ->*I understand that it is not possible to predict the reaction of my body to anaesthesia.*
	15. Speak openly and with compassion.	*If you have any complaints, please tell the medical staff about it. They are here to give you relief and to take care of you. After some time, the nurses will take you to the surgical department.*

i.e. the index which assesses the percentage degree in which the examined text meets the requirements of Plain Polish Standard. The PLI index measures 10 properties of style, whilst meeting the standard by each of the properties, means scoring 10 percentage points by the text. PLI assesses texts written in Polish and it is available with Logios applications (https://logios.dev/).

The PLI percentage score is calculated on the basis of 10 properties of style.

Vocabulary selection

1. Formal words (FORMAL) – this parameter shows how many formal words there are in the text. These words make the style formal and official.
2. Terminology (TERMS) – this parameter shows how many 2-word specialist expressions, such as: adjective + noun there are in the text. They make the text incomprehensible for non-professionals.
3. Most frequent words (TOP100) – this parameter calculates how many of the most frequent words there are in the text (from the frequency list of 100 words). They make the subject matter of the text easier to understand.
4. Difficult words (DWORDS) – this parameter shows how many infrequent and at the same time long words there are in the text. Their presence increases the vagueness of the language.
5. Pronouns (PRON) – this parameter measures the rate of pronouns in the text. A high frequency of this part of speech makes the language sound natural and the text coherent.

Sentence construction

6. Verbalization (N/V) – this parameter shows whether the style of the text is more verb-oriented (a desired property) or noun-oriented (undesired property). The verbs are the informative core of a sentence so there should be as many verbs in the text as possible.
7. Confusing grammar (GRAM) – this parameter shows how many names of actions are present in the text in the form of participles, passive voice, gerunds and impersonal verbs.
8. Sentence length (ASL) – this parameter calculates the mean sentence length, i.e. the number of words within a sentence. Attractive texts do not contain sentences which are longer than 15 words.

Relations

9. The presence of the sender (SENDER) – this parameter shows how often the sender reveals their presence in the sentence. In Polish this can be manifested by the use of pronouns (I, me, our) or verbs (I would like to ask, I welcome

you) referring to the first person. The larger presence of the sender, the more relational the text is.

10. The presence of the receiver (RECEIVER) – this parameter shows how often the sender addresses the receiver directly. In Polish this can be done with the use of pronouns (you, your) or verbs (send, take) referring to the second person. The more such expressions are used, the more relational the text is.

The text designed by the authors was compared, with reference to the PLI index and its 10 components, to analogous texts currently used in Poland in public and non-public healthcare centres. With the Google search engine, we collected 20 educational information leaflets and 15 consent forms. One of the consent forms was excluded from the study on account of its inadequate text length (less than 30 words). Finally, 20 educational information leaflets and 14 consent forms were collected.

Results

Information leaflets about anaesthesia

The analysis of the readability of the information concerning anaesthesia shows that the texts which are currently used, realise only to a minor degree, the plain language standard (tab. II). The typical information, as expressed with median value, obtains 10% PLI, whilst the simplest information about the anaesthesia: 28% PLI (hospital 3). The text designed by the authors, obtained a PLI of 50%, which is an acceptable level of plain language (defined as a level of at least 40%). In our version, the plain language standards were obtained by five out of ten features: pronoun presence, noun to verb ratio, inaccessible grammar and addressing the reader. Other properties did not reach the standard values of plain language, although they ranked much higher than typical information leaflets (as expressed by the median calculated for the examined documents).

Table II. The ranking list of the accessibility of information concerning anaesthesia. The table presents Plain Language Index (PLI) and its 10 constituents

Text	PLI	FORMAL	TERMS	TOP100	DWORDS	PRON	N/V	GRAM	ASL	SENDER	RECEIVER
our version	50%	3,55%	39.40%	40.60%	8.42%	4.02%	1.61	16.60%	8.51	1.12%	10%
hospital 3	28%	9.07%	63.10%	30.70%	16.30%	1.05%	2.09	48.40%	17.1	0.26%	2%
hospital 1	24%	8.22%	53.40%	30.30%	15.40%	0.77%	2.41	49.70%	14.2	0.39%	2.57%
hospital 11	20%	7.46%	53.50%	32.30%	12.30%	1.22%	2.27	44.20%	18.6	1.37%	1.29%
hospital l 2	20%	5.68%	47.10%	33.30%	14.50%	0%	2.09	40.90%	12.4	0.46%	0.68%
hospital 6	17%	7.98%	59%	26.90%	16.40%	0.50%	2.49	51.90%	15	0.82%	2.23%
hospital 9	17%	7.93%	54.50%	28.20%	17.90%	1.01%	2.16	48.30%	16.7	0%	0%
hospital 16	16%	8.72%	55.80%	28.70%	15.80%	0.54%	2.45	49.40%	16.9	0.86%	2.21%
hospital 4	15%	7.71%	52.10%	30.10%	13.60%	1.15%	2.51	46.50%	18.6	0%	0.53%
hospital 12	11%	8.60%	58.80%	30.90%	15.30%	0.46%	2.32	48%	15.1	0.53%	1.70%
hospital 17	10%	9.64%	53.20%	28.60%	18.10%	0.53%	2.02	52.10%	16.4	0.60%	0.30%
hospital 18	10%	12.30%	63.30%	24.70%	20.80%	1.39%	3.41	56.90%	16	0%	0%
hospital 10	6%	8.54%	56.90%	27.70%	15.10%	0.36%	2.48	46.50%	16	0.62%	0.41%
hospital 19	6%	9.90%	54%	27.60%	17.10%	0.17%	2.48	53.70%	15.7	0%	0.39%
hospital 20	6%	8.89%	58.50%	30.90%	14.10%	0.28%	2.44	50.80%	17.4	0.48%	0.64%
hospital 7	6%	6.69%	59.10%	29.80%	13%	0.55%	2.47	46.60%	18.7	0.63%	1.03%
hospital 8	5%	5.61%	57%	28.80%	13.30%	0.41%	2.52	40%	16.1	0.64%	0.48%
hospital 15	4%	7.93%	56.70%	27.10%	17.80%	0.18%	2.56	52.40%	19.7	0%	0.10%
hospital 14	3%	8.35%	49.50%	31.10%	15.80%	0.78%	2.71	52%	17.9	0.76%	1.39%
hospital 13	0%	6.46%	58%	28.20%	13.30%	0.53%	3.19	43.90%	19.9	0.12%	0.85%
hospital 5	0%	7.96%	61.70%	26.80%	15.20%	0.58%	2.98	56.40%	19.2	0.90%	0.11%
mean	11.2%	8.2%	56.3%	29.1%	15.6%	0.6%	2.5	48.9%	16.9	0.5%	0.9%
median	10.0%	8.1%	56.8%	28.8%	15.4%	0.5%	2.5	48.9%	16.8	0.5%	0.7%

The abbreviations in the headings are explained in section Material and methods. The data in the table were sorted from the highest to the lowest according to the value of the Plain Language Index (PLI). With our version of the text about the anaesthesia (the first line in the table) the values which reached the standards of the plain language are underlined. The mean and median values are calculated for the compared texts: hospital 1 to hospital 20.

Table III. The ranking list of the accessibility of consents for anaesthesia. The table presents Plain Language Index (PLI) and its 10 constituents

Institution	PLI	FORMAL	TERMS	TOP100	DWORDS	PRON	N/V	GRAM	ASL	SENDER	RECEIVER
our version	50%	6.55%	24.00%	43.90%	10%	2.17%	1.95	34%	12.6	10.90%	0.87%
hospital 10	45%	14.10%	42.90%	33.80%	11.30%	3.53%	1.05	45.80%	14.2	12.70%	2.82%
hospital 9	43%	13.60%	28.60%	33.90%	13.60%	1.41%	0.818	39.10%	14.8	16.90%	0%
hospital 3	38%	8.25%	44.40%	39.20%	10.30%	3.54%	1.58	40.90%	13.6	9.28%	0%
hospital 12	36%	10.80%	33.30%	36.50%	16.20%	2.38%	1.73	57.90%	18.5	10.80%	0%
hospital 8	35%	9.03%	50%	33.30%	16%	2.37%	2.04	48.30%	14.1	9.03%	0%
hospital 1	30%	10.20%	46.70%	40.60%	14.20%	4%	1.15	37.80%	25.4	13.40%	0%
hospital 11	30%	13.70%	37.50%	36.60%	14.90%	2.53%	1.87	55.30%	21.1	7.43%	0%
hospital 13	30%	11.10%	52.90%	34.40%	19.40%	1.30%	1.65	55.20%	16.9	10.30%	0%
hospital 14	30%	11.70%	40%	41.70%	16.70%	3.55%	1	42.50%	17.1	15.80%	0%
hospital 6	30%	9.29%	41.20%	40.40%	14.20%	3.30%	1.43	42.60%	17.4	11.90%	0%
hospital 7	30%	9.33%	53.30%	42%	19.20%	3.03%	1.21	48.30%	17.5	13%	0%
hospital 2	27%	8.80%	60%	28%	22.40%	1.31%	2.43	59.30%	15.6	6.40%	0%
hospital 4	27%	11.60%	45.80%	33.50%	13.40%	1.02%	1.68	51.20%	18.2	10.40%	0%
hospital 5	27%	15.70%	52.40%	30.90%	21.90%	1.46%	2.38	56.40%	17.4	6.18%	0%
mean	32.7%	11.2%	44.93%	36.06%	15.98%	2.48%	1.57	48.61%	17.27	10.97%	0.20%
median	30.0%	11.0%	45.1%	35.5%	15.5%	2.5%	1.62	48.3%	17.25	10.6%	0.0%

The abbreviations in the headings are explained in section Material and methods. The data in the table were sorted from the highest to the lowest according to the value of the Plain Language Index (PLI). With our version of the text with the consent for anaesthesia (the first line in the table) the values which reached the standards of the plain language are underlined. The mean and median values are calculated for the compared texts: hospital 1 to hospital 14.

Consent for anaesthesia

In the case of consents for anaesthesia, the differences between the analysed texts of consent forms in comparison with the text of our consent form are not that large (tab. III). An average consent, as expressed by the median, obtains 30% PLI, whilst two best consent documents obtained the satisfactory level of simplicity (PLI 40%), i.e. 43% (hospital 9) and 45% (hospital 10). The consent form edited by the authors ranks first with a PLI at a level of 50%.

In comparison with the information leaflet – our consent gained the plain language standard in reference to the terminology and the sender's presence, scoring worse with regards to confusing grammar and addressing the reader. The differences, however, are easy to explain. The text of the consent form is a declaration of intent and therefore is subject to a formal requirement which is greater than in the text of information about anaesthesia. Hence the level of confusing grammar is higher (information: 16.6% GRAM, consent: 34% GRAM). The specifics of this type of text also explains the failure to meet the standard to the relational forms in addressing the reader. As the consent is granted by the patient themself, the text is written from the perspective of the first person singular (me). Therefore, frequent addressing the patient directly is not possible.

Discussion and conclusions

Anaesthesiologic documents edited in accordance with the plain language standards, turned out to be accessible enough. What is more, both the information document and the consent had similar levels of plain language. In comparison with the analysed documents used currently by Polish medical institutions, we managed to simplify the text about the anaesthesia (50% PLI *vs.* median of the analysed texts: 10% PLI). Difference of 40 p.p. PLI guarantees a good readability of text.

The high value of the Plain Language Index does not mean, however, that the texts edited by the authors are understandable. Understandability, or rather the efficiency of such documents, cannot be examined without the users. Understandability can be appreciated only after clinical verification. The next step of the validation should therefore be the tests with potential and real patients. The method of recalling text from memory and solving tasks may be promising.

The next stage in designing the examined documents should be completing the text of the information leaflet with some other semiotic codes, such as infographics or illustrations, the selection of appropriate font size and type and final graphic layout. The connection of our text with the visual

graphic elements listed here should become the subject of separate studies.

A separate objective should be the radical simplification of the processed documents in a way they can be understandable for persons with special communication needs, such as people with aphasia, dementia or intellectual impairment. The principles of communication with such a diverse group of recipients are regulated by dedicated standard: *easy language*, and in Poland – the act on guaranteeing accessibility [46]. From this perspective, both information and the consent should be presented in two variations, with the first being the plain language standard and the other – easy language.

The documents used for obtaining informed consent should be periodically updated and verified by competent interdisciplinary teams. Currently, medicine is developing not only in technical and substantive terms (evidence based medicine – EBM), but also with respect to medical communication (e.g. the awareness of the significance of soft competencies) as well as an holistic and individual approach to a patient (evidenced for example by the multidisciplinary Heart Teams), or the healthcare organisations (enhanced recovery after surgery protocol [ERAS] – a comprehensive form of perioperative care for the improvement of the treatment results). This gives hope, especially for patients and their families, for better results of treatment, emotional support and filling in the often confusing information gap.

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