

Iwona Czerska

ORCID: 0000-0002-9680-6695

Wrocław University of Economics and Business

iwona.czerska@ue.wroc.pl

Value-based medicine as an opportunity for the Polish healthcare system in a post-pandemic reality on the example of selected health programs

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Abstract

The article aims to present the concept of value-based medicine (VBM) in the Polish health care system. The author reviewed the literature on the subject and formulated a research problem and two research questions to solve it. The issue of considering is health programs of the National Health Fund based on value. The author used professional scientific databases: Taylor & Francis online, PubMed, and Google Scholar to collect the bibliography. The literature on the subject covers mainly the years 2020–2022. First, the author presented the study's theoretical framework by defining the EBM and VBM concepts, discussing the three main pillars of VBM, and highlighting its value limitations. Next, the author referred to the coronavirus pandemic and its impact on global health systems. The author characterized the current state of the health care system in Poland and listed its prospects for the post-pandemic future. Finally, the author presented three selected health programs based on the VBM model implemented in Polish healthcare: comprehensive coordinated care after myocardial infarction (KOS-Zawał), POZ PLUS model, and comprehensive treatment of chronic wounds (KLRP-1 and KLRP-2). Of course, the discussed programs require further improvement and modification and may constitute the basis for developing other, new value-based programs. The value-based medicine model can complement the three branches of medicine — evidence-based, narrative, and integrative. Including these elements in the VBM model could benefit the entire health system, primarily medical staff and patients.

Introduction

This study aimed to synthesize the state of knowledge about value-based medicine (VBM) by reviewing the literature on the subject — regarding the health system in Poland in the current pandemic reality. The research problem is to determine whether there are implementations of the VBM model in the Polish healthcare system. To solve the research problem, the author posed the following questions:

1. What is the current state of implementing the selected VBM models in the Polish health system?

2. Will there be a chance to develop the VBM models in the Polish health sector in the post-pandemic reality?

The subject of consideration is selected examples of implementations of the value-based medicine model in the health sector in Poland. The object of the research is the Polish healthcare system.

1. Theoretical framework of the research

Shared clinical decision-making and patient empowerment are considered essential features of the value concept, which has played a crucial role in the health care system for over a decade. However, the lack of a standard and widely accepted definition of value translates into a failure to identify a unique model of care in the health care system. Despite the lack of unanimity on the purpose of value, researchers commonly consider it a normative guideline that helps medical professionals evaluate actions or situations, influencing the decision-making process (Marzorati and Pravettoni, 2017, 101). Values are normative cues for considering activities, objects, or conditions as good, desirable, pleasurable, convenient, or helpful in achieving specific goals. Identifying values relevant to daily medical practice can achieve through collaboration between two different paradigms: evidence-based medicine (EBM) and value-based medicine (VBM) (Altamirano-Bustamante et al., 2013).

Within the framework of evidence-based medicine, the literature distinguishes three basic principles (Kus et al., 2018, 340): making clinical decisions based on systematic summaries of available scientific and medical data and their high quality; use of the literature according to the hierarchy of so-called scientific evidence; criticism of scientific research to make rational and justified clinical decisions. According to Vandenberghe (2008, 377), evidence-based medicine is an algorithm that integrates information technology and research findings into the clinical work of medical professionals. EBM is a valuable and critical bottom-up method by which a physician can consciously choose the optimal treatment. The EBM method integrates the individual patient and crucial analysis of the relevant literature. Medical professionals should use it critically and be aware of its limi-

tations, namely attaching more importance to the biomedical sciences, empirics, and quantitative research than to the humanities, hermeneutics, and qualitative research. Thus, EBM focuses on internal validity but ignores qualitative changes which are difficult to measure, making it challenging to generalize research findings to clinical practice. Hence, the contemporary debate on the status of evidence-based medicine criticizes it for “scientism,” epistemological inconsistency, rigidity, and disregard for non-numerical sources of knowledge. In response, many alternative frameworks are proposed, including value-based medicine, narrative medicine, patient-centered care, and person-centered medicine (Little, Lipworth, Gordon and Markham, 2011). Ideally, the EBM concept should be used with value-based medicine (VBM) because EBM does not teach utility or value. At the same time, VBM helps clarify and weigh the values the doctor has at stake in the treatment process (Vandenberghe, 2008, 377).

According to Bae (2015):

The team defined VBM as “the practice of medicine incorporating the highest level of evidence-based data with the patient-perceived value conferred by healthcare interventions for the resources expended.” In the above sentence, three major components of VBM are highlighted. First, EBM principles are thoroughly selected based on the best research evidence available and applied as treatment options. Second, patients’ values are converted into measurable utility values to facilitate the integration. Third, [...] the ultimate goal pursued by VBM is to provide cost effective, science-based healthcare that incorporates patient values.

Porter and Olmsted Teisberg (2006) claim that the focus should be on value for patients, not merely on reducing the cost of the treatment process. Treatment outcomes are essential and high-quality care should be less costly. Additionally, value as a product of provider experience, scale, and science should be regional and national, not only local. Finally, the performance and pricing information needed to build value should be widely available.

The value in the VBM model can be measured by objectively quantifying the improvement in quality of life and/or the improvement in life expectancy resulting from the intervention (Brown, Brown and Sharma, 2003, 157). The utility analysis is the methodology for quantifying the patient’s quality of life. This way, the improvement obtained for a given medical intervention can quantify. This approach uses data on the effectiveness of therapy and changes in quality of life due to side effects. After identifying the determinants of a patient’s quality of life, these data can combine with evidence from relevant clinical trials in a decision model (Center for Value-Based Medicine, 2020).

The VBM model actively considers patient values and their quality of life and has excellent potential to improve healthcare quality due to compliance with the principles of medical ethics. Value-based medicine can also reduce the uncertainty of clinical decisions. Nevertheless, VBM has its limitations in terms of values, namely: 1. the values of various stakeholders may conflict with one another; 2. different values may change over time; 3. the availability of different treatment options

for comorbidities is not guaranteed; 4. there is no standardized value-in-use database; 5. the threshold for the cost-utility index is unclear; 6. it is impossible to compare countries with different economic structures and health systems (Bae, 2015).

In summary, reducing medicine to an evidence-based technological paradigm, i.e., rigorous clinical methods with only objective perspectives and quantitative measurement seeking one final objective, “truth,” stands in opposition to person-centered, value-based medicine. It includes flexible methods, qualitative approaches, and an awareness of the relativity of “truths” (Grassi, McFarland and Riba, 2022, 11). That is why it is essential to integrate two concepts in the treatment process: EBM and VBM. Evidence-based medicine alone often measures improvements in life expectancy, usually ignoring the role of gain or loss of quality of life. On the other hand, value-based medicine incorporates the best features of evidence-based medicine, taking evidence-based data to the next level by combining patients’ perceptions of quality of life with a disease to assess clinical value (Rajkumar, 2022).

2. Research methodology

The author used the desk research method to gather information about the value-based medicine model. During the analysis, the author studied scientific articles, industry literature and reports (25), and electronic sources (13), mainly from 2020 to 2022. To gather relevant scientific literature, the author used the following professional databases (brackets show the number of cited publications in a given database): Taylor & Francis Online (3), PubMed (17), and Google Scholar (11). The author used these scientific databases due to the possibility of collecting the literature for this article.

3. The COVID-19 pandemic and its impact on global health systems

In December 2019, epidemiologists identified pneumonia of unknown origin in Wuhan, China’s Hubei province. After careful study, scientists isolated a new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Since then, the new virus has spread globally, and the World Health Organization declared a pandemic on March 12, 2020 (Ciotti et al., 2020, 365). In Poland, the first case of COVID-19 was diagnosed on March 4, 2020, and since then, the coronavirus has started spreading gradually throughout the country (Sozański et al., 2021).

The coronavirus pandemic has exposed considerable weaknesses in the performance of health systems worldwide and has changed healthcare priorities (Khetrapal and Bhatia, 2020, 396–397). Access to planned healthcare was seriously at risk. This situation has had a devastating effect on basic healthcare needs

in poorer countries, particularly for groups such as children, women, and people living on the poverty line. Therefore, in a post-pandemic reality, ensuring universal and properly functioning health infrastructure for the population will be challenging even for rich countries (Jain, 2021, 2). The COVID-19 pandemic has shown that every country remains vulnerable to public health threats. The pursuit of a healthier and safer society requires all countries to develop and implement a coherent health policy strategy to improve the management of public health crises. Increase your capacity to build public health systems and minimize upstream fragmentation in addressing structural problems. This solution is possible thanks to a primary care approach that ensures universal and equitable health prophylactic and preventive services (Assefa et al., 2022). Rađenović et al. (2022, 7) indicate that efficient and comprehensive healthcare systems capable of dealing with public health emergencies are necessary for strengthening global health security. Shamasunder et al. (2020, 1087) state that the COVID-19 pandemic offers the potential for a fundamental change in global healthcare systems. Hence, a new global health paradigm, guided by genuine cooperation, solidarity, and justice, is indispensable for our health and the world's health.

4. Polish healthcare system — current state and prospects for a post-pandemic future

The current state of the health care system in Poland indicates the need for urgent changes, i.e., quick actions related to the financing and organization of healthcare. This system is not patient-friendly as it does not treat the patient holistically. It does not ensure the effective use of public funds and generates problems for the managers of medical entities and the staff employed there. Everyday issues include the lack of medical staff, burnout, insufficient availability, quality and comprehensiveness of services, and unused resources in the equipment purchased, which stands still because there is no contract for the extension of services. There is a lack of long-term care and proper coordination of care benefits. Another serious issue is insufficient money to develop an epidemiological treatment for nosocomial infections and antibiotic therapy (Najwyższa Izba Kontroli, 2019).

In the context of medical staff development and increasing their number, merely increasing enrollment at universities is not enough. It is essential to define the path of medical staff development and implement a system that motivates people to undertake particularly scarce specializations. According to Prof. Aleksander Woźny (2021/2022, 23), a cultural anthropologist, philosopher, and media expert, such activities should be mandatory in training medical staff in Poland in the context of their development. Young adepts of medical art should be prepared through narrative medicine to listen carefully to the patient. The literature points out the importance of narrative therapy as the key to ensuring a higher standard of

healthcare in a post-pandemic reality. Through narratives in healthcare, the patient is treated holistically — as a person, not as a symptom complex. The doctor can better recognize the patient's fears, emotions, and feelings about their condition (Czerska, 2021, 949).

In addition to narrative medicine, the future of the Polish healthcare system may turn out to be integrative medicine, which is a new, innovative approach to therapy, combining conventional (Western) medicine with alternative methods of scientifically proven effectiveness. The integrative medicine model responds to the need for an individualized, holistic approach to the patient (Czerska and Skweres-Kuchta, 2021, 800). Integrative medicine integrates elements of lifestyle medicine — as a pro-health trend of the modern prosumer (Czerska, Trojanowska and Korpak, 2020, 23) and traditional treatment with clinical medicine and academic medicine (Jeżewski, 2021).

4.1. Value-based medicine in Poland — selected examples of implementations and limitations

Value-based medicine seems to be the future of the Polish health system. Such a VBM model allows healthcare providers to better respond to the needs of patients, and the value created is economical and ethical. Under performance-based contracts, health service providers receive bonuses for improving patients' health, reducing the effects and incidence of chronic diseases, and proven healthier lifestyles (Pracodawcy Medycyny Prywatnej and Deloitte, 2020, 34). So far, various value-based programs have appeared in the Polish healthcare system. Among them are comprehensive health care (KOZ), coordinated ambulatory healthcare (KAOZ), comprehensive outpatient specialty care for patients with diabetes (KAOS-Cukrzyca), children's coordinated care (DOK), coordinated care for pregnant women (KOC), coordinated care for patients with chronic kidney disease (coordinated nephrology care), "fast track" for cancer patients (oncology package), as well as comprehensive, coordinated care after myocardial infarction (KOS-Zawał), POZ PLUS model, comprehensive treatment of chronic wounds (KLRP-1 and KLRP-2).

The mentioned health programs are not developing very dynamically and still pose new challenges for medical entities and the public payer. The author chose the last three health programs for analysis because of their particular importance during the coronavirus pandemic and prospects for further development. Because according to Dr. Jacek Krajewski, president of the organization Porozumienie Zielonogórskie, primary healthcare (POZ) saved the entire health system in Poland during the difficult pandemic period (*HCC Online...*, 2020). The KOS-Zawał program is one of the first coordinated care programs in Central Europe and the first in Poland to be widely and consistently implemented. It has been and continues to be a significant weapon in the fight against deadly pneumonia that is the aftermath of COVID-19 infection (Pelc, 2021). Finally, the sudden emergence of

COVID-19 has made managing chronic wounds much more difficult. Therefore, the conflict between the need to control the injury and the risk of contracting infectious diseases during COVID-19 prevention and control appears to be a dilemma for patients with chronic wounds (Wang et al., 2020, 1). According to Marek Kucharzewski (2020), M.D., head of the Chronic Wound Treatment Institute at the Dr. Stanisław Sakiel Burn Treatment Center in Siemianowice Śląskie, a patient's neglect of a chronic wound in the era of the coronavirus pandemic can lead to many serious complications, including amputation of the limb. Therefore, it is essential to continuously and dynamically develop the program of comprehensive treatment of chronic wounds to monitor the condition of sick patients on an ongoing basis.

Comprehensive coordinated care after myocardial infarction (KOS-Zawał)

An example of the implementation of value-based medicine is the comprehensive program of coordinated care after myocardial infarction (KOS-Zawał) or otherwise the Managed Care in Acute Myocardial Infarction (MC-AMI) (Wita et al., 2019a, 551; 2019b, 8). MC-AMI is the Polish Cardiac Society, National Health Fund, and Ministry of Health program implemented in the fourth quarter of 2017 to improve hospital and post-discharge care in acute myocardial infarction patients (Gąsior et al., 2022, 303; Wilkosz et al., 2021). This program arose because of Poland's high morbidity and mortality from cardiovascular diseases. This innovative program aims to reduce the number of deaths and disabilities as well as speed up recovery and return to working life. The KOS-Zawał program contains revascularization, cardiological rehabilitation, and implantation of an implantable cardioverter-defibrillator. This program also includes patient education and comprehensive specialist outpatient care within 12 months after a heart attack (Feusette et al., 2019, 568).

From 1 October 2017 to 31 August 2018, 521 patients with myocardial infarction treated at the Department of Cardiology of the University Hospital in Opole took part in the KOS-Zawał program. From 22 June 2018 to 31 August 2018, 150 consecutive patients entered the study. Based on the obtained results, participation in the program improved the patient's health and increased their sense of security after a history of myocardial infarction. Most patients thought all the program elements were essential and assessed them well. Many patients have reported wanting to continue the program 12 months after the cardiovascular event (Feusette et al., 2019, 570).

The study (Kubiela, Diakowska and Uchmanowicz, 2022, 321) showed that patients in the KOS-Zawał group were significantly less likely to die than patients in the group without KOS-Zawał. This study showed that the KOS-Zawał program reduces the risk of death in patients after myocardial infarction by 29%. According to Wita et al. (2020), the participation of patients in the MC-AMI program caused a 38% reduction in mortality in the 12-month follow-up period. In

a 3-month follow-up, this program reduced significant adverse cardiovascular by 45% (Wita et al., 2019a, 551).

To sum up, the implementation of the nationwide program of comprehensive coordinated care after myocardial infarction (KOS-Zawał) was to extend the life of patients. A unique feature of this program is the requirement to report indicators that demonstrate the quality of medical care and have the most significant impact on patient prognosis (Jankowski, Legutko and Tomkiewicz-Pająk, 2021, 59). In the future, i.e., the post-pandemic reality, these indicators will be able to be analyzed by the National Health Fund to confirm the validity of introducing value-based medicine in Poland.

POZ PLUS model

POZ PLUS or PHC (Primary Health Care) PLUS is a model developed with the involvement of many stakeholders, including the Ministry of Health and the National Health Fund. This model of coordinated patient care at the primary care level began piloting in 2018. The model contains prevention, care coordination, and chronic diseases. POZ PLUS is an added value for patients because the program includes health balances during which medical personnel inquires in detail about their health status, past illnesses, and those that often occurred in the family. The staff orders some basic tests and invites patients to visit a GP with the results (Narodowy Fundusz Zdrowia, 2019).

The POZ PLUS model includes a team consisting of a doctor, a nurse, health educators, nutritionists, and physiotherapists. These new teams are responsible for coordinating patient care pathways, including post-hospital treatment and rehabilitation. The model employs special coordinators who support the patient and the entire primary care team in the correct flow of information between the patient and the team and between the group and other healthcare providers involved in the care process (Badora-Musiał, Sagan, Domagała and Kowalska-Bobko, 2021, 186).

The quality and effectiveness of the POZ PLUS model proved the indicators of patient satisfaction surveys and many other indicators, such as the percentage of hospitalized patients or specialist consultations outside the program. The program's basic national statistics are developed, periodically updated, and presented on the website of the National Health Fund dedicated to this program (Akademia NFZ, n.d.).

Comprehensive Treatment of Chronic Wounds (KLRP-1 and KLRP-2)

Comprehensive Treatment of Chronic Wounds 2 (KLRP-2) improves the quality of care for a patient with a chronic wound, the basic assumption of which is effective wound closure. Contrary to the current scope of the Comprehensive Treatment of Chronic Wounds (KLRP-1), KLRP-2 carries out through the comprehensive application of available effective treatment methods, integration of the

service provision process with the participation of outpatient and inpatient services (hospital), and optimization of the costs incurred by monitoring and managing the treatment process at the involvement of the ICT system (dedicated to the application process) for the transfer and evaluation of medical data (Mroczek, 2020; Narodowy Fundusz Zdrowia, 2020). The application will enable contact in the relationships between medical personnel and medical personnel, as well as between the recipient of the service and medical personnel (Rokicińska, 2021).

The criterion for qualifying a patient for the KLRP-2 service is the diagnosis of a chronic wound, i.e., one that has not healed more than six weeks after its occurrence despite applying local treatment. The National Health Fund introduced the so-called color wound rating system to define the healing stage of a chronic injury. Depending on the condition of the damage and the treatment effects, the patient moves to a given next step, where he receives appropriate services assigned therein (Czeczulewska, 23.02.2021).

According to Mitura (2021, 1077), comprehensive treatment of chronic wounds based on a dedicated program with an experienced, multidisciplinary team of specialists allows for much better results in wound area reduction. It can also be an effective treatment. Frequent, scheduled outpatient visits, access to inpatient treatment, and regular patient education based on a standardized form improve treatment outcomes.

Limitations of implementing value-based medicine in Poland

Further development of the above three examples of implementing the VBM concept in the Polish health care system is not without certain limitations. Due to the aging of the population, the incidence of chronic diseases is increasing. As well as the pace of introducing innovations in medicine, one can notice the intention of payers to reduce expenses and cut costs. This situation, in turn, creates a vicious circle of growing expectations of the health care system and frustration on the part of medical staff, related, among other things, to the lack of free choice of the most effective treatment method. This situation, in turn, translates into the quality of services while increasing patient dissatisfaction (Skrzekowska-Baran, 2019, 14). These budgetary constraints negatively affect the functioning of the KOS-Zawał, POZ PLUS, and KLRP-2 programs.

In addition to the financial constraints indicated above, one must first deal with organizational issues in the Polish healthcare system to focus on value. The patient has a chance to receive complete treatment in the scope of the selected program only thanks to specially dedicated interdisciplinary units with deep knowledge and a wide range of skills. On the one hand, such organizational changes will facilitate development of the knowledge necessary to obtain better short- and long-term treatment outcomes. On the other hand, it will allow the measurement and optimization of care costs (Skrzekowska-Baran, 2019, 23).

Other limitations in the effective functioning of the VBM model in Poland are the amount and structure of resources, and the method of managing health processes. Małgorzata Gałązka-Sobotka, director of the Institute of Healthcare Management and director of the Center of Value-Based Healthcare (CoVBHC) at the Łazarski University, without good management in health care, it is impossible to achieve satisfactory results of therapy. One can fully develop the VBM model in our country only when all health care system participants agree to redefine its fundamental goal. This goal is not to guarantee economic efficiency but to provide patients with the highest medical effectiveness through the efficient use of resources (Kuta, 2020).

Conclusions

The Polish healthcare system is challenging due to the ongoing COVID-19 pandemic, with the mutating SARS-CoV-2 virus. Secondly, over two million refugees have migrated to Poland due to the war in Ukraine, which has burdened the health system. Considering these conditions, it seems an excellent solution to modify the current healthcare system into a value-oriented model. This solution would first translate into improving the quality, availability, and treatment outcomes. Secondly, it could translate into enhanced coordination and integration of therapeutic processes. Finally, value-based medicine would allow for increased cost-effectiveness.

Building a patient-centered and value-oriented healthcare system requires constant monitoring of service quality. For this purpose, there are various solutions and tools: patient surveys after medical appointments, analysis of complaints, information from medical professionals, and phone calls from patients. Such a feedback analysis improves the quality of medical services and reduces the waiting time for a medical visit.

Narrative, integrative, and evidence-based medicine can significantly complement the value-based medicine model. Integrating these elements with value-based medicine can bring tangible benefits to the health system, medical professionals, and patients.

Regarding the research problem formulated in the article, the author determined that the Polish health care system implements the VBM model in the following programs: KOS-Zawał, POZ PLUS, KLRP-1/KLRP-2, as well as KOZ, KAOZ, KAOS-Cukrzyca, DOK, KOC, coordinated nephrology care, and oncology package. By verifying the research questions, the author presented the current state of the first three programs mentioned. Moreover, the author states, based on the announcements of the National Health Fund, that there is a chance to continue these programs in a post-pandemic reality. Still, they require changes, modifications, and further improvement. According to the author, these discussed pro-

grams can be the starting point for developing other programs of this type, where value for the patient is crucial. This value comes from organizing multidisciplinary teams around the patient's complete medical profile, systematic transfer of medical data, monitoring costs, identifying areas for improvement, and sustained improvement in care delivery processes.

In conclusion, the main contribution of this study is gathering information about all value-based health programs that have been implemented, to a greater or lesser extent, on Polish soil to date (the author also provided the names of these programs). Another one is presenting three selected value-based programs implemented in the Polish health system, which, in a post-pandemic reality, will work ideally to improve the population's health.

The study also contains some limitations. Firstly, the author did not present all the value-based health programs mentioned in the article. This impacts the conclusions and recommendations and is, indeed, material for future studies. Secondly, the author used only three scientific databases — Taylor & Francis Online, PubMed, and Google Scholar — to gather scientific literature, which probably limited their ability to conduct a comprehensive research theoretical framework. In the future, other researchers could use more databases to deepen their analyses of value-based medicine, considering evidence-based, narrative, and integrative medicine. Thirdly, the access to some publications was restricted, either by logging in with an institutional account or by a paywall. It is not out of the question that these texts could be crucial in discussing the issues of the article's topic. Nonetheless, these access limitations did not hinder the study.

Given the study's limitations, this article can be a basis for more complete research in the future. A new study could include a literature review based on other scientific databases and a presentation of other mentioned, but not discussed in the article, value-based health programs in the Polish healthcare system. According to the author, it would be possible to integrate evidence-based, narrative, and integrative medicine issues with the value-based medicine model. This could help develop an innovative, holistic approach to address the patient's treatment.

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