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Shifting towards Value Based Healthcare – Analysis of theoretical concepts and implementation possibilities in Poland

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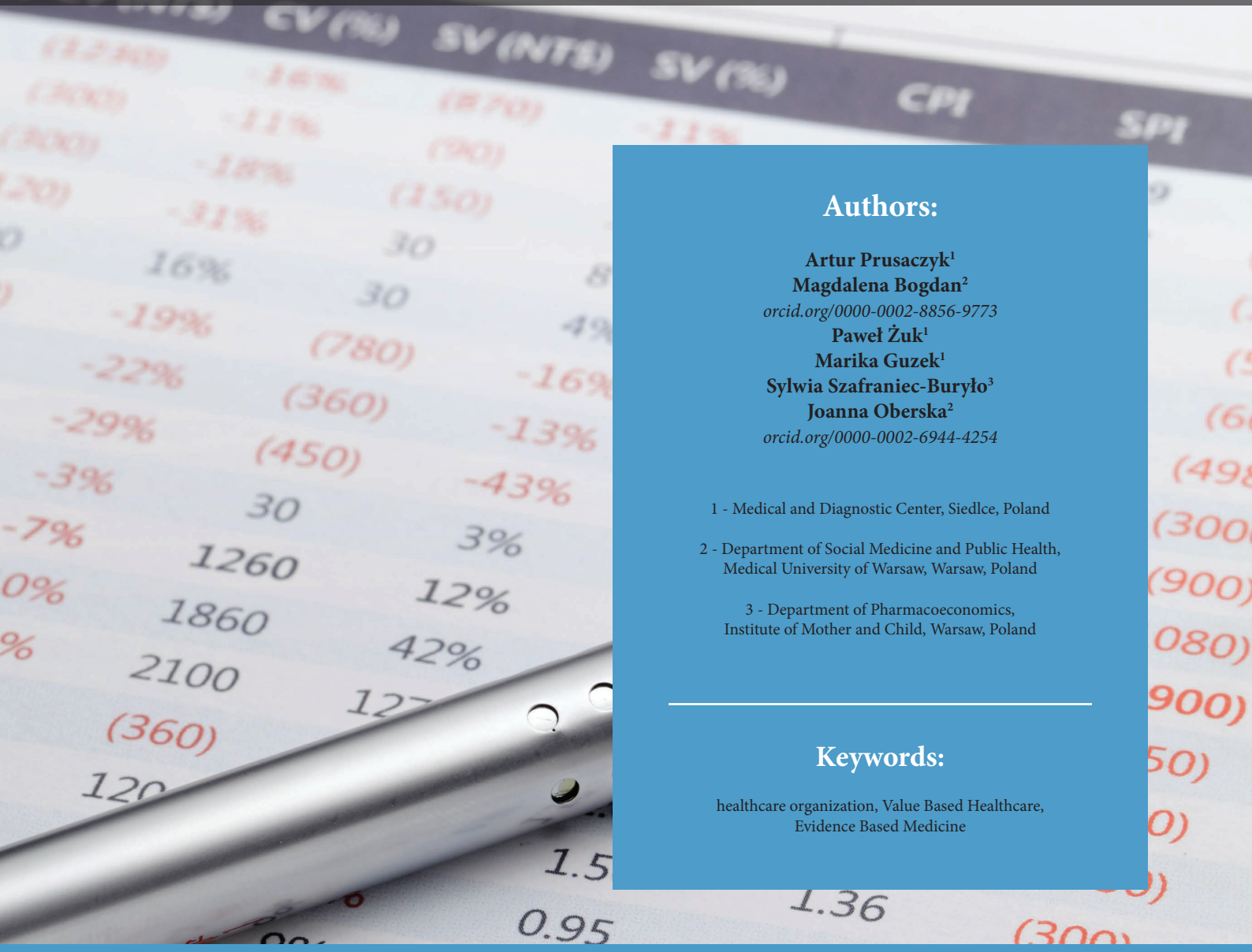

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Abstract

The term 'Value Based Healthcare' was first used in 2001 to describe a situation where payor demands that only services providing the best health outcomes for patients are offered. Since then, it evolved to include safety of services, equity in healthcare access, mutual respect between caregivers and patients and improvement of work life of healthcare professionals. In this article, we present a history of Value-Based Healthcare concepts and highlight the main differences between successive models. Then we proceed to point out the main constraints and problems with the implementation of VBHC. In the end, we evaluate the implementation of this concept in Poland.

Introduction

Recent decades have brought an incredible development in medicine thanks to technological improvements and increased funds for healthcare.[1] OECD Health Statistics show a constant growth in health spending with an average of 8.8% of GDP since 2017.[2] In the world where new and better ways of treatment constantly emerge, increasing demand is put on the episode-of-care payment systems to spend more and more.[2] But with the progressive informatization improving outcomes together with controlling costs at a reasonable level is more likely than before.[2,3]

Therefore, quality is becoming increasingly more important than quantity. This article provides an analysis of Value Based Healthcare models and possibilities of their implementation in Poland.

Methodology of systematic review

A systematic search was carried out in two electronic databases (PubMed and Scopus) to identify published studies on value based healthcare, its implementation, main objectives and outcomes. Used key words included "value based healthcare", "healthcare organization", "healthcare quality", "healthcare policy" and "implementation". Initial search was performed on 15.12.2019. We excluded articles a) in languages other than Polish and English, b) focusing on a specific group of patients (e.g. only diabetic patients), c) focusing on singular disease, d) published more than 5 years before the search. We performed additional search on 10.03.2021, using the same key words and performing search in the same databases to identify newly published studies and reviews. In addition, we reviewed the references of analyzed articles in order to identify additional studies or reports not found by the initial searches.

Considering a commercial and widely discussed nature of the subject, a Google search was performed as a supplementary strategy of identifying articles. First five pages of results were scanned for relevance. From that search, OECD and EIU reports and EXPH opinion were included in the analysis.

A total of 4376 citations were identified in the initial search, followed by 479 identified during second search. After assessment of titles and abstracts and later a full text analysis, we decided to include 24 articles.

Evidence Based Medicine vs. Value Based Healthcare

Importance of quality in healthcare emerged first in 1980 when Avedis Donabedian developed a concept of the point of optimality which is the most advantageous balance of patient's benefits and provider's costs. Increasing spending beyond that point still generates additional value to the patient, but the costs outweigh the benefits.[3] According to OECD, at last 10% of health spending is ineffective or wasted.[4] Effective management of healthcare system finances requires evaluation of costs and outcomes of medical services. Scientific literature uses three terms to define the value related to these services: efficacy, effectiveness and efficiency. Efficiency means performance or functioning that produces the most value and is the least wasteful of time, money and effort.[7] Effectiveness describes the level of accomplishment of goals of clinical practice in comparison to intended or expected results.[5]

Efficacy is the ability to achieve an intended result by using a particular pharmaceutical product or health practice.[7]

Evidence Based Medicine is a concept according to which only the most efficacious interventions and medicines, that is those based on the best available external evidence and individual clinical expertise, are used to treat patients.[6] The term 'Value Based Healthcare' was first used in 2001 to describe a situation where payor demands that only services providing the best health outcomes for patients are offered.[7] Michael Porter and Elizabeth Teisberg helped to spread this concept by publishing Redefining Healthcare in 2006. They defined value as health outcomes that matter to a patient in relation to the cost of delivering those outcomes. Main principles of this model involve:

- focus on the value for patients, not only costs reduction,
- unrestricted competition (national and local) based on the health outcomes for patients over the full care cycle,
- value driven by provider's experience, scale of performed services and constant improvement based on observation of patients,
- public and widely available information about outcomes and costs of certain medical services,
- rewarding innovation which aim at increasing value.[8]

Under agreements based on value-based healthcare, providers are rewarded for short-term and long-term results that are the most relevant to patients. Porter proposed measuring outcomes for a single medical condition using three hierarchical tiers:

- health status achieved or retained,
- process of recovery,
- sustainability of health.

Care for medical condition is usually associated with multiple specialties and interventions. Responsibility for value should be shared by all providers involved, creating a base for the coordinated care concept.[9] Combination of these two approaches creates a chance for healthcare system improvement, regardless of a country or the model of healthcare functioning.

Triple Aim in value-based healthcare

The model proposed by Porter and Teisberg focused on a single patient and showed to have limitations when applied to the universal healthcare system, which has to meet the needs of the entire population using a finite budget.[10]

In 2008, the Institute for Healthcare Improvement (IHI) defined a new healthcare model: the Triple Aim. It owes its name to three major goals that it promises to accomplish: improvement of patient's satisfaction and experience of care, improvement of populations' health and reduction of the cost of care for whole populations. These objectives are mutually interdependent and change within one of them influences the other two in a positive or negative way. The main constraint in the implementation of this model should be the equity in access to medical services in every subpopulation.[11]

Implementation of the Triple Aim model requires three basic elements:

- a suitable foundation for population management,
- management of services while considering the whole population,
- an educational system that "will drive and sustain work over time".[12]

Triple Aim framework looks at the value from three different perspectives:

1. allocative value (at the level of the population) – allocation of resources to different groups in a way that maximizes value for the whole population,
2. technical value (at the level of the intervention) – improvement of quality and safety of services to increase the value derived from resources allocated to particular services,
3. personal value (at the level of the patient) – making decisions based on best current evidence, careful assessment of an individual's clinical condition and an individual's values.[13]

Healthcare centers that successfully introduced the Triple Aim in the care for specific populations observed reduced spending on that particular subpopulation.[12]

In the IHI model, the value is measured in relation to a defined population, whereas in Porter's and Teisberg's model it refers to a single medical condition. Quality improvement is achieved through the collaboration between patients and healthcare providers, not by unconstrained competition between healthcare centers. Transformation is a result of a culture change instead of reorganization and additional financial recourses.[10]

Discussions about the Triple Aim often revolve around the qualities that healthcare providers should demonstrate while delivering their services. Authors of the "Triple C" describe those qualities as "compassionate, collaborative care"[14] or care aimed at sustaining patient's

functional capabilities, relieving a patient from physical and psychological pain and facilitating a therapy, so that a patient can continue to live life in peace.[15] Both these definitions focus on the way the interventions are carried out, not only on the results of the interventions. Triple C calls for a shift from a physician-centered model with a healthcare professional in the position of power to a model fostering cooperation between physician and patient, that is a partnership between two equal parties. It is crucial to recognize the three C's qualities as equally important. According to Lown et al. (2016), „Compassion without collaboration may result in uncoordinated care, while collaboration without compassion may result in technically correct but depersonalized care that fails to meet the unique emotional and psychosocial needs of all involved".[14] Extensive research shows that there is a link between empathy in patient-physician communication and patient's satisfaction and stress level.[16] The remaining question is whether empathy and compassion influence patient's health outcomes, not only patient's perception of a physician. Results obtained by Hojat et al. indicate that there is such a relationship in diabetic patients, as physicians with high empathy scores were associated with good control of hemoglobin A1c and LDL-C [17], although these results were not confirmed in another research group.[18]

Shifting to patient-centered care requires numerous changes in the healthcare system. A wide gap between the expectations for healthcare providers and the reality causes a burn-out in a significant share of healthcare professionals. Research shows that burn-out is correlated with lower patient satisfaction and decreased quality and safety of care.[19, 20] It has also been implied to cause higher costs due to the overuse of resources, e.g. increased rates of referrals for diagnostic tests and specialist clinics.[21] Value Based Healthcare execution is undoubtfully connected with the improvement of the work life of healthcare professionals, which constitutes the fourth dimension of this model. While the first three values justify the existence of the universal health system, the fourth one is fundamental to their implementation.[22, 23] When the European Union Expert Panel on effective ways of investing in Health (EXPH) issued an opinion on Value Based Healthcare in 2019, it noted the imperative of introducing fourth value in healthcare described as societal value. This value is based on "solidarity, mutual respect and inclusion of diversity in healthcare".[1]

Elizabeth Teisberg et al. have recently proposed a model based on comprehensive solutions to patients' needs, which are organized in clusters concerning common set of needs, such as "people with knee pain" or "elderly people with multiple chronic conditions". The model strongly supports the notion of creating integrated multidisciplinary teams and creating additional value from partnerships with clinical organizations. Authors suggest that health outcomes for every patient group should be measured by 3 to 5 indexes which correspond to patients' definition of health - capability, comfort and calm.[24]

Value Based Healthcare is currently becoming one of the most important concepts of healthcare functioning and management. Nevertheless, existing literature still lacks in-depth research on the subject. Frederiksson et al. notes that none of analyzed texts presented understanding of the idea of VBHC at the level sufficient to implement that concept. Researchers suggest that the essence of VBHC is undergoing a process of dilution rather than diffusion.[25] Because of the Porter's definition of value (benefit to cost ratio), Value Based Healthcare is often referred to as a financing model, not a culture change. Lack of understanding of VBHC concept can be best illustrated by the example of rural hospitals in Maryland, USA. The main goal of Total Patient Revenue (TRP) program was efficient management of resources by hospitals. The objective was to decrease spending while disposing of finite global budget. Hospitals which treated fewer patients or performed fewer services than planned, could increase prices in the following year to recompense the shortfall. Hospitals were not rewarded for providing additional services or treating more patients. As the result, TRP hospitals admitted less patients compared with control hospitals, even though they had provided more services than control hospitals before the program started.[26] Based on those results, experts drew a conclusion that fee for service method payment is ineffective and often leads to overconsumption.[27]

Moving from fee for service to value-based systems very often involve bundled payments as a way of optimizing healthcare costs. Time-driven activity-based costing (TDABC) is another cost-assessment method. It allows evaluation of real healthcare costs by measuring two parameters: unit cost of resource inputs and the time and quantity of resources required to perform a transaction or an activity. In successful implementation, TDABC can identify and reduce resources used based on patient demand and therefore improve efficiency of patient care. Recent systematic review concluded that TDABC was adequately applied in all analyzed studies to improve cost-effectiveness of care.[28]

Implementation of VBHC in Poland

There are many discussions on the topic of Value Based Healthcare in Poland. VBHC is one of the topics addressed at the majority of healthcare conferences. Only

in 2019, there were two new extensive reports published in this area: "New definition of Healthcare and its influence on the quality of care"[29] and „The road to Value-Based Healthcare"[30], which proves how important and current this topic is.

Some elements of VBHC like implementation of the electronic sick leave certificates are already being implemented into the Polish healthcare system[31] and elements of the institutional framework have been studied.[32] The Agency for Health Technology Assessment and Tariff System (AOTMiT) is working on new methods of reimbursement, the so-called bundle payments, which would cover the full care cycle, e.g. cardiovascular procedures. However, as researchers have noticed, hospital payments based on Diagnosis Related Groups (DRG), launched mid-2008 have not resulted in significant differences in stroke outcomes between incentivized and non-incentivized units. Moreover, authors point out the possibility of up-coding and reclassifying patients into more expensive groups, which can have negative consequences of patients health while it sustains hospitals' need for higher reimbursement.[33] Another example of change is coordinated care, aiming to "provide care for the patients at the different levels and sites of care within the health system, and according to their needs, throughout their whole life".[34] Outcome determinants of implementation of coordinated care have been studied in Poland.[35] The authors concluded that indispensable factors to achieve success of implementation of a new integrated healthcare delivery system should be defined in advance to avoid failure.

Programs currently running in Poland include: Fast Oncological Therapy[36], coordinated care over pregnant women[37] and POZ PLUS (Expanded Primary Healthcare Program) [38-40]. Some disease-specific coordinated care programs are running in Poland like in cardiovascular disease[41] and in diabetes.[42] Empirical validation of outcome determinants of the success of the implementation was also conducted.[43]

Health Technology Assessment plays an important role in delivering best health technologies to patients. In Polish setting, authors like Orlewska have been evaluating cost-effectiveness of therapeutic strategies in different conditions, e.g. treatments for hepatitis B and C, heparin use in acute coronary syndrome, somatostatin analogues in acromegaly and multiple sclerosis. Kolasa et al. have been reviewing HTA assessments of public health programs and drug therapies.[44, 45] Most recently they have analyzed potential of multiple-criteria decision analysis (MCDA) to replace standard HTA assessment of orphan drugs.[46] Only in 2020 an extensive report was published on the topic and use of MCDA in reimbursement processes in Poland and in the world.[47] MCDA has higher potential for meeting the needs of patients as, apart from clinical and cost effectiveness, it considers multiple criteria by quantifying and weighing decision items.

Despite great interest, Economist Intelligence Unit report shows that Poland demonstrates moderate alignment with value-based care approaches. The report highlights that the country lacks high-level policy or plan enabling implementation of VBHC as well as education and training of healthcare professionals in this matter. Existing examples that enable implementation of VBHC include bundled payments, quality standardization, development of Electronic Health Records and national policy that supports organizing healthcare delivery into integrated and patient-focused units. EIU indicates that evidence-based guidelines for healthcare, and methods of measuring outcomes and costs are the areas that still need improvement. The report shows that only Sweden has implemented Value-Based Healthcare approach with very high alignment, whereas the UK is the only country with high alignment.[48]

Limitations

While we believe that this review contributes to understanding of Value Based Healthcare concepts, it has limitations. Firstly, the article focuses on implementation models of Value Based Healthcare and discusses their benefits and constraints. Therefore, our review does not focus on real-life evidence analysis and comparison of those models based on literature data. As a result, none of the analyzed models could be presented as the most desirable for implementation in Poland. Secondly, our highly theoretical approach caused difficulty in analyzing existing literature data from Poland as authors of those studies focus on analyzing cost-effectiveness of therapeutic strategies rather than implementation of Value Based Healthcare models.

Conclusions

The Value-Based Healthcare model has been changed many times since the beginning of this concept in order to better cover the need of everyone involved in healthcare: from individual patients to whole populations to health professionals. The straightforward outcomes to cost ratio was augmented with new pillars: safety of services, equity in healthcare access, mutual respect and improvement of work life of healthcare professionals. Although VBHC concept has existed for almost 20 years, only a few countries in the world have managed to implement this model. The road to complete the implementation of VBHC in all countries is still long. Discussions on that topic are undoubtfully an important contribution to the completion of the process. One must not forget though that a cul-

ture change is an imperative to the proper functioning of VBHC. Without appropriate tools for their development, healthcare professionals are exposed to burn-out. Similarly, lack of correct use of EBM, knowledge sharing, and cooperation does not contribute to value improvement. If these preconditions are not met, the idea of Value-Based Healthcare will only remain a slogan that has little to do with reality.

Conflict of interest: none declared

References

1. Expert Panel on effective ways of investing in Health (EXPH). Defining value in "value-based healthcare" 2019 [cited: 29.11.2020]; Available from: https://ec.europa.eu/health/expert_panel/sites/expertpanel/files/docsdir/024_defining-value-vbhc_en.pdf.
2. Organisation for Economic Co-operation and Development (OECD). Health Expenditure OECD Health Statistics 20192019 [cited: 29.11.2020]; Available from: https://www.oecd.org/els/health-systems/health-expenditure.htm.
3. Donabedian A. Explorations in Quality Assessment and Monitoring: The definition of quality and approaches to its assessment. . Health Administration Press. 1980.
4. Organisation for Economic Co-operation and Development (OECD). Tackling Wasteful Spending on Health 2017 [cited: 29.11.2020]; Available from: https://www.oecd.org/health/tackling-wasteful-spending-on-health-9789264266414-en.htm.
5. Fantini B, Vaccaro CM. Value based healthcare for rare diseases: Efficiency, efficacy, equity. Annali dell'Istituto Superiore di Sanita. 2019;55(3):251-7.
6. Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. British Medical Journal Publishing Group; 1996.
7. Gray JA, Chambers LW. Evidence-based healthcare: how to make health policy & management decisions: Churchill Livingstone, 2 edycja; 2001. 480 p.
8. Porter ME. Redefining Health Care: Creating Value-Based Competition on Results 2006 [cited: 29.11.2020]; Available from: https://www.hbs.edu/faculty/Publication%20Files/20060502%20NACDS%20-%20Final%2005012006%20for%20On%20Point_db5ede1d-3d06-41f0-85e3-c11658534a63.pdf.
9. Porter ME. What is value in health care. N Engl J Med. 2010;363(26):2477-81.
10. Jani A, Jungmann S, Gray M. Shifting to triple value healthcare: Reflections from England. Z Evid Fortbild Qual Gesundhwes. 2018;130:2-7.
11. Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. Health Aff (Millwood). 2008;27(3):759-69.
12. Whittington JW, Nolan K, Lewis N, Torres T. Pursuing the Triple Aim: The First 7 Years. The Milbank Quarterly. 2015;93(2):263-300.
13. Gray JAM, Bevan G, Cripps M, Jani A, Ricciardi W. How to get better value healthcare: Offox; 2017.
14. Lown BA, McIntosh S, Gaines ME, McGuinn K, Hatem DS. Integrating Compassionate, Collaborative Care (the "Triple C") Into Health Professional Education to Advance the Triple Aim of Health Care. Acad Med. 2016;91(3):310-6.
15. Liu TC, Bozic KJ, Teisberg EO. Value-based Healthcare: Person-centered Measurement: Focusing on the Three C's. Clinical Orthopaedics and Related Research. 2017;475(2):315-7.
16. Derksen F, Bensing J, Lagro-Janssen A. Effectiveness of empathy in general practice: a systematic review. British Journal of General Practice. 2013;63(606):e76.
17. Hojat M, Louis DZ, Markham FW, Wender R, Rabinowitz C, Gonnella JS. Physicians' empathy and clinical outcomes for diabetic patients. Academic Medicine. 2011;86(3):359-64.
18. Chaitoff A, Rothberg MB, Windover AK, Calabrese L, Misra-Hebert AD, Martinez KA. Physician Empathy Is Not Associated with Laboratory Outcomes in Diabetes: a Cross-sectional Study. Journal of General Internal Medicine. 2019;34(1):75-81.
19. Haas JS, Cook EF, Puopolo AL, Burstin HR, Cleary PD, Brennan TA. Is the professional satisfaction of general internists associated with patient satisfaction? J Gen Intern Med. 2000;15(2):122-8.
20. Salyers MP, Bonfils KA, Luther L, Firmin RL, White DA, Adams EL, et al. The Relationship Between Professional Burnout and Quality and Safety in Healthcare: A Meta-Analysis. Journal of General Internal Medicine. 2017;32(4):475-82.
21. Kushnir T, Greenberg D, Madjar N, Hadari I, Yermiahu Y, Bachner YG. Is burnout associated with referral rates among primary care physicians in community clinics? Family Practice. 2013;31(1):44-50.
22. Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. Ann Fam Med. 2014;12(6):573-6.
23. Sikka R, Morath JM, Leape L. The quadruple aim: Care, health, cost and meaning in work. BMJ Quali-

ty and Safety. 2015;24(10):608-10.

24. Teisberg E, Wallace S, O'Hara S. Defining and implementing value-based health care: a strategic framework. Academic Medicine. 2020;95(5):682.

25. Fredriksson JJ, Ebbevi D, Savage C. Pseudo-understanding: An analysis of the dilution of value in healthcare. BMJ Quality and Safety. 2015;24(7):451-7.

26. Pines JM, Vats S, Zocchi MS, Black B. Maryland's Experiment With Capitated Payments For Rural Hospitals: Large Reductions In Hospital-Based Care. Health Affairs. 2019;38(4):594-603.

27. Di Guida S, Gyrd-Hansen D, Oxholm AS. Testing the myth of fee-for-service and overprovision in health care. Health Econ. 2019;28(5):717-22.

28. Etges A, Ruschel KB, Polanczyk CA, et al. Advances in Value-Based Healthcare by the Application of Time-Driven Activity-Based Costing for Inpatient Management: A Systematic Review. Value Health. 2020;23(6):812-23.

29. Nojszewska E, Walewski J. Nowa definicja ochrony zdrowia i jej wspływ na poprawę jakości leczenia. Raport otwarcia Value Based Healthcare. 2019.

30. Łukomska E, Władysiuk M, Rolska-Wójcik P, al. e. Droga do Value-Based Healthcare. 2019.

31. Szafraniec-Buryło S, Gluchowski P, Bukato G, et al. Nationwide implementation of the electronic sick leave certificates in Poland: quality improvement initiative towards value-based primary care resulting in rapid implementation in integrated care. International Journal of Integrated Care. 2019;19(4).

32. Hermanowski TR, Drozdowska AK, Kowalczyk M. Institutional framework for integrated Pharmaceutical Benefits Management: results from a systematic review. International journal of integrated care. 2015;15.

33. Bystrov V, Staszewska-Bystrova A, Rutkowski D, et al. Effects of DRG-based hospital payment in Poland on treatment of patients with stroke. Health Policy. 2015;119(8):1119-25.

34. World Health Organization. What are integrated people-centred health services? [cited: 29.11.2020]; Available from: https://www.who.int/servicedeliverysafety/areas/people-centred-care/ipchs-what/en/.

35. Krancberg A, Szafraniec-Burylo S, Orlewska E, et al. Outcome determinants of health systems integration: case studies in USA, Germany and Poland. International Journal of Integrated Care (IJIC). 2014;14.

36. Rozporządzenie Ministra Zdrowia z dnia 13 grudnia 2018 r. w sprawie programu pilotażowego opieki nad świadczeniobiorcą w ramach sieci onkologicznej 2018 [cited: 29.11.2020]; Available from: http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20180002423/O/D20182423.pdf.

37. Zarządzenie Nr 125/2016/DSOZ Prezesa Narodowego Funduszu Zdrowia z dnia 22 grudnia 2016 r. w sprawie określenia warunków zawierania i realizacji umów o udzielanie świadczeń opieki zdrowotnej przez podmioty realizujące świadczenia koordynowanej opieki nad kobietą i dzieckiem oraz zmiany niektórych zarządzeń Prezesa Narodowego Funduszu Zdrowia w związku z przepisami ustawy o wsparciu kobiet w ciąży i rodzin „Za życiem" 2016 [cited: 29.11.2020]; Available from: https://www.nfz.gov.pl/zarzadzenia-prezesa/zarzadzenia-prezesa-nfz/zarzadzenie-nr-1252016dsoz,6547.html.

38. Zarządzenie Nr 23/2018/DAiS Prezesa Narodowego Funduszu Zdrowia z dnia 16 marca 2018 r. w sprawie programu pilotażowego opieki koordynowanej w podstawowej opiece zdrowotnej „POZ PLUS" 2018 [cited: 29.11.2020]; Available from: https://www.nfz.gov.pl/zarzadzenia-prezesa/zarzadzenia-prezesa-nfz/zarzadzenie-nr-232018dais,6741.html.

39. Wiktorzak K, Szafraniec-Buryło S, Kurpas D. The status of the Primary Health Care Plus pilot project in Poland. Medical Science Pulse. 2019;13(3):22-8.

40. Wiktorzak K, Kozieł A, Szafraniec-Buryło SI, et al. How to design and implement integrated care programmes: Coordinated care models and Primary Health Care PLUS project in Poland. International Journal of Integrated Care (IJIC). 2018;18.

41. Szafraniec-Burylo S, Sliwczynski A, Tyszko P, et al. The implementation of integrated care for cardiovascular diseases in Poland. International Journal of Integrated Care. 2016;16(6).

42. Szafraniec-Burylo S, Sliwczynski A, Prusaczyk A, et al. Integrated care for diabetes patients in Poland. International Journal of Integrated Care. 2016;16(6).

43. Orlewska E, Szafraniec-Burylo SI, Prusaczyk A, et al. Implementation of integrated care organization in Poland: empirical validation of the model for integrated care. International Journal of Integrated Care. 2015;15(5).

44. Kolasa K, Schubert S, Manca A, et al. A review of Health Technology Assessment (HTA) recommendations for drug therapies issued between 2007 and 2009 and their impact on policymaking processes in Poland. Health Policy. 2011;102(2-3):145-51.

45. Kolasa K, Turlej A, Hermanowski T. Health technology assessment of public health programmes

in Poland, years 2010 and 2013. Przegl Epidemiol. 2016;70(1):77-81, 151-4.

46. Kolasa K, Zwolinski KM, Kalo Z, et al. Potential impact of the implementation of multiple-criteria decision analysis (MCDA) on the Polish pricing and reimbursement process of orphan drugs. Orphanet Journal of Rare Diseases. 2016;11(1):23.

47. Wielokryterialna analiza decyzyjna (MCDA), Konsorcjum MCDA. Multi-criteria Decision Analysis w ocenie technologii stosowanych w nieonkologicznych chorobach rzadkich. 2020.

48. The Economist Intelligence Unit. Value-based healthcare: A global assessment [cited: 29.11.2020]; Available from: https://perspectives.eiu.com/sites/default/files/EIU_Medtronic_Findings-and-Methodology_1.pdf.