Evaluation of the Effects of Value-Based Purchasing Applications on Cost and Efficiency

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ABSTRACT

The importance and effectiveness of value-based procurement come to the forefront in terms of taking the studies based on value-based cost approach as the basis of the use of medicinal products and drugs, which constitute an important cost item in hospitals, and in particular to understand that the only factor in procurement is not the price.

The main purpose of this study is to show the applicability of cost-effectiveness and efficiency studies in medical supply chain management in hospitals by carrying out studies on value-based procurement applications within the scope of value-based health services.

The "non-price element" article is included in the Public Procurement Law, the main obstacle to value-based price implementation is the basis of the ceiling price procedure in the SUT (Health Implementation Communiqué). Calculating the actual cost and making decisions based on this account should be of priority. In order to avoid unpredictable cost risk, rational purchasing techniques will need to be applied. When we think that reimbursement systems have recently focused on materials and drug use and how they can reduce these costs, it is a fact that value-based payments will come to the fore in the coming period and many products will not be paid.

In this context, when evaluating value-based health services, it is necessary to evaluate the issue from a value-based perspective in all processes of the procurement and medical supply management chain and to ensure that decisions are made taking into consideration the side costs that may occur. In the value-based purchasing approach, patient benefit, efficiency, and innovative initiatives should be at the forefront. The correct realization of the results of these perspectives will be possible with the acquisition of a sustainable value-based purchasing approach. With this approach, medical supply chain processes should be considered as strategic basic processes, not as operational support processes.

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INTRODUCTION

Health care is an activity aimed at raising the level of health of the society and people, which includes the time from diagnosis to treatment and care of diseases. The purpose of health care is to raise the health standards of the society by ensuring that people stay away from diseases, protecting and improving this situation, and taking preventive measures (Karaçor, S., Arıkan, A. 2014). In all countries of the world, including developed countries, the large increase in resources allocated to health services every year has brought the restrictions to the agenda if necessary, by identifying priorities among the service options. Therefore, in all health care providers from the smallest to the largest, the selection of the interventions that ultimately create the best "value" with the available resources has become one of the most accepted approaches in health management (Özsarı, H. 2018:6-9).

The concept of the value of health came to the fore with the measurement of health outcomes in the 1980s, and with the developments around the world in the reimbursement and pricing of health services. As the issue of cost-effectiveness, which is defined as the 'fourth obstacle' in repayment decisions in health services, gains importance in many health systems, it is expected that those who produce health services will also reveal the value of this health service (Tatar, M. 2017).

The concept of "value", which can be mathematically formulated by converting the services offered in the field of health into numbers and proportionating the costs of results that are quite difficult compared to other areas, has begun to be discussed. On the other hand, the concept of "efficiency", which can be formulated by proportioning inputs to outputs, is discussed. Another important aspect of these discussions in the field of health is that they are balanced with the concept of "equity". The value-based management approach comes to the fore at this balancing point where decision-makers at every stage and every stage of health management have to take into account. Because, every intervention that creates equity in health services may not be efficient, and on the contrary, every efficient intervention may not create equity (Özsarı, H. 2018:6-9).

Value in health services is determined based on results (outcome), not inputs, and therefore it is necessary to measure the results obtained, not the number of services offered in the measurement of value. In other words, there is no connection between the service delivery process and the concept of the value and the improvements made concerning the process do not contribute as value unless they affect the health outcomes (Porter, M. 2010).

The health sector generally has an increasing share in the economy in line with the increasing share of the service sector. According to 2017 data, the share of health goods and services in the world economy has reached 38 percent. There are two health care companies among the top 10 major world companies. Unfortunately, productivity in the health sector, which has reached these sizes, has become a problem, and has led to very serious discussions (Özsarı, H. 2018:6- 9).

Throughout this process, the process of managing the patient, which can also be defined as "Accountable Care" aiming to manage the output in health, is to focus on how to spend the most valuable resource based on giving responsibility to the patient. In other words, a collaboration of all service providers, including funding from relevant health institutions, such as patients and hospitals, which are not aimed at direct spending or cost reduction, is a model that accepts as a principle. The method of the model is defined by 5 consecutive steps. At the beginning of the steps, a target group with common characteristics, which is planned to create value, is determined. In the second stage, the expected outcomes and effects (outcome) of the intervention planned for this target group are determined and related roadmaps (clinical guides) are created. In the third stage, which is the next stage, the differences towards these outputs are identified and measured. In the fourth stage, the treatment routes are determined by coordinating the service with a holistic view. In the fifth and final stage, new payment models and incentive routes are created for the added value formed after the intervention (Özsarı, H. 2018:6-9).

Healthcare enterprises can survive by providing effective, efficient, value-based services, and adapting to change. On the other hand, since health expenditures are one of the biggest items of the budget for the public, it is very important to examine, analyze, and find new searches in terms of business management. With increasing expectations in health care, new technologies are emerging day by day in diagnosis and treatment processes. For this reason, there is an increase in the cost of health services. With increasing costs, businesses tend to look for different things. One of the solutions is value-based health care. The ultimate goal is to establish a partnership based on trust and loyalty with high-value patients. Patient loyalty and patient outcomes, i.e. the satisfaction-cost common component, are important determinants of healthy business growth and profitability. In terms of business management, patients are assets, the longer they are held, the more value they create. As the quality of the service that the patient receives increases, the level of satisfaction will increase positively. Besides, meeting only the needs of patients is not enough to create value. Value generally increases not by developing each

intervention or service but by integrating maintenance throughout the chain (Seyfioğlu, E.F. 2019: 799-822).

In value-based health systems, policymakers need to adopt accountability and transparency towards all parties in the ecosystem. Besides, it is necessary to adopt broader quality measurements at each stage in value-based systems to accelerate the development of patient-centered measurements and data availability. As in all matters, when it comes to a value-based health system, systematic creation of patient records, collection, storage, and analysis of data becomes an even more important requirement. It is possible to say that the most basic tendency in the healthcare sector is to gradually move away from the hospital-centered approach. As mentioned in previous chapters on health industries, value focus and patient-centered approach also affect the health care sector. The tendency to move away from the hospital-centric approach is related to the fact that some of the health care services can be taken out of the hospital due to both their close relationship and the influence of new technologies. Both improving the quality of life and reducing costs by meeting some needs of the patients outside the hospital are increasingly strengthened with a value-based approach in health services (Memiş, SA. 2018).

General Information

In addition to the traditional marketing concept, the value-based marketing concept was founded in 1992 with Davidow and Malone and in 2003, but value-based marketing became meaningful with P. Doyle and came to the present day with Kotler in 2014. The value-based approach plays an important role in healthcare delivery. The concept of the value chain in health services in the world entered the literature with Porter in the 2000s (Seyfioğlu, E.F. 2019: 799- 822). Porter stated that new approaches started to emerge in health care delivery due to the problem of inability to achieve the desired results with increasing costs in health services and that medicine was carried out in the 21st century with the 19th-century management process, organizational structure, and measurement systems (Porter, M. 2008). Porter and some academics redefined health care and raised the concept of value in health care. In 2014, the value-based health care model started to be implemented in the world after Porter's seminar (Seyfioğlu, E.F. 2019: 799-822).

Value in health services is defined as patient health outcomes obtained according to the cost of care. Value-based health services include and combine important goals in health services such as health, quality, safety, patient-centered, and cost control (Porter, 2010; Lowe, 2018). Value-based health services aim to create a system that reduces the cost of health care per capita and improves patient care experience and population health by including quality and satisfaction in care (MacLean, 2017).

In the value-based management approach method, with the 360-degree method in the communication language, all relevant stakeholders participate in the process by focusing on the patient and it is aimed to achieve the implementation model that leads to the best result after the intervention. The responsibility to stay focused applies to all parties, from the healthcare provider to the insurance company that pays for the service, from the medical device used in the intervention to the medicine, and most importantly, the role of managing the health or disease of the patient himself/herself. In fact, with a value-based management approach, not only a model but an ecosystem that can give birth to different models are mentioned. Components of this ecosystem, which can be summarized as capacity, environment, and integrated service and coordination between steps, ultimately manifest itself by transforming the treatment that the person receives by taking care of his/her health into contributing to his/her life, that is to say, creating added value, that the patient or even the person is now engaged in his/her health (Özsarı, H. 2018:6-9). Value-based care, on the other hand, is a service delivery model that is desired to improve the health outcomes of patients by increasing the quality of care and result in low cost. Value-based healthcare providers are encouraged to communicate with the patient, provide individual-specific care, focus on new technologies, evaluate performance results and data, and give importance to teamwork (Caron, MA. 2017).

Before examining the concept of value-based repayment, it would be useful to know the main concepts such as value, value-based payment, value-based incentive payment arrangement, value-based insurance design, value-based payment converter in health services (Şimşir, İ. 2018).

Value: The term "value" is widely used to describe a joint assessment of both the quality and the cost of a single or a group of health care services. In the most general sense, the concept is considered as a function of the quality, efficiency, reliability, and cost of the service provided. In the context of value-based purchasing, value is to provide higher quality service without changing the cost or to provide the same quality service with lower cost (Tanenbaum, SJ. 2016).

Value-Based Payment: A generic term used to describe a payment model in which the amount of payment to be made for a service varies in some way according to the quality or cost of that service. There is no accepted standard for how variable payment will be or what type of value measurement should be used. Therefore, some payment models are defined as "value-based", although there is little difference in payment amounts based on differences in quality and costs.

Value-Based Incentive Payment Adjustment: Value-based incentive payment regulation in the Medicare Hospital Value-based Payment Program refers to a percentage assigned to that hospital each year based on the scores received by the hospital in a series of performance measures. Subsequently, the payment to be made to the hospital is arranged upwards or downwards according to this percentage.

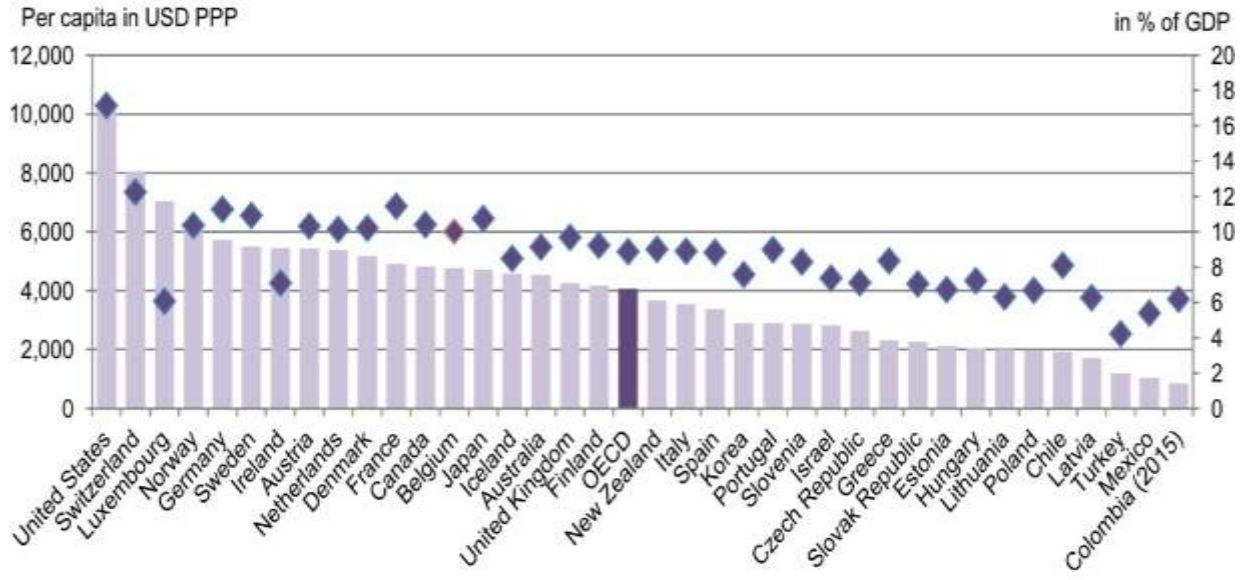
Value-Based Insurance Design: This term is used to describe the terms of the benefit design of the health insurance plan structured to encourage health plan members to use high-quality and low-cost services. The concept includes some elements such as reducing patient cost-sharing for services that are considered to be of high value, removing services that are considered to be of low value, or encouraging patients to use service providers selected as "centers of excellence" for certain types of services, or even making this necessary.

Value-Based Payment Modifier: This term refers to a program established by the US Congress to regulate the payment to a physician for his service to a Medicare registrant based on measurements and maintenance costs related to the quality of care provided during a performance period.

Focusing on output and value triggers innovation opportunities within the system. Thus, interventions that make a "difference", that is, interventions that do not do what everyone does, can be deducted. Even with incentive packages supported by funding policies, the system rewards those who take protective measures against the patient's health and make lifestyle changes during the reimbursement phase. What is important here is the development of accountable criteria such as co-existence with another disease, the incidence of illness or death, and recourse to the system from the same disease, and the establishment of mechanisms forcomparison, reporting, and sharing with the relevant public through transparent and objective methods. It is natural for this process to be based on the reward mechanism since any intervention to punish in the field of health can be perceived as a barrier to prevent a person from applying to the system and increases the risk of encountering a more severe disease in the late period (Özsarı, H. 2018:6-9).

Careful and disciplined calculation and development of value is the best method for system progress. Despite this, the value in healthcare services is still largely not measured or incorrectly measured. In fact, the only way to reduce costs in health care is to take precautions without the patient, i.e. to provide preventive health care. The allowance allocated to preventive health services is much less than the allowance allocated after being sick. However, there is an increase in healthcare expenditures all over the world. This is not only because of population growth and environmental and living conditions threatening human health because the increase in expenditure is not only seen in underdeveloped or developing countries, but also developed countries. Within the scope of value-based health care, it is stated that the effect will be higher when evaluated together with preventive health services for the solution of the health problems that exist today and may occur in the future (Vilhelmsson, A. 2017).

Figure 1. OECD Countries GNP ratios



Note: Data for 2017 was estimated by the Secretariat for those countries that were not able to provide this information. PPP stands for Purchasing Power Parities and adjusts health expenditure for differences in price levels between countries.

Source: OECD Health Statistics 2018.

The United States, which allocates the most share to health expenditures among OECD countries, allocates 17.8% of its GNP to health expenditures. This expenditure corresponds to approximately 4 times the GNP of Turkey. The ratio of Turkey's health expenditures to GNP is well below the OECD average of 9% and is at 4.4%. An important reason for the increase in healthcare expenditures all over the world and in Turkey is the billing model that is still being implemented. It is due to the fact that there is a volume and transaction-based payment system and that there is still no value-based health system. The value-based health care model in the world draws attention, and it is necessary to take this into account in Turkey and to carry out studies on this subject and to develop projects related to its applicability. In order to reduce health expenditures, increase the quality of service and increase the level of patient satisfaction, the establishment of the transition to the "Value-based Payment Model", the traditional volumeand transaction-based wage model, which is increasingly mentioned in the world, is an issue that should be put on the agenda in terms of health policies (Seyfioğlu, E.F. 2019: 799-822).

With both budget pressure and a patient-centered approach, the transition from payment per service to value-based payment is on the agenda in many countries. Research shows that only 10 percent of preventable deaths are prevented by healthcare. The remaining 40 percent are prevention situations due to healthy life (diet and sport), 30 percent due to genetic factors, and 20 percent due to environmental impacts. From this point of view, a holistic healthcare approach from the hospital to the society is becoming increasingly widespread. The personalized, patient-centered holistic health care approach covers all stages of the value chain, from nutrition to physical activity, from protection to long-term care, based on data. With this change of approach, the roles and responsibilities of the actors who play a role in health services also change with the influence of new trends (Memiş, SA. 2018).

Value-based Health Services in terms of Refund Institutions

"Is there a qualitatively and qualitatively positive gap between the health care purchased and the ideal health care that needs to be purchased" is one of the most important questions that reimbursement system managers need to answer. Another question that helps this question is: Has the price we paid for the service we purchased been met? In other words, has there been an assessment of the resources allocated for health services in terms of allocation and production efficiency? (Kurutkan, MN., Bayat, M. 2015). To achieve value, the payment method of health services needs to be restructured (Sorrel, AR. 2015).

Businesses providing health services in VBP (Value-based Purchasing) system are held responsible for the quality and cost of the service they provide. Thus, businesses are rewarded for the success achieved within the framework of determining performance criteria. Within the framework of the developed criteria, health services are tried to be standardized and the savings in direct and indirect costs related to the services provided are rewarded within the framework of the parameters determined by the system by considering the patient satisfaction. The VBP system differs from other value-based purchasing methods. Each system acts within the framework of the program they have developed, some of which punish and reject payment requests related to HIC (hospital-induced conditions), infection, and preventable conditions. Some payment plans regulate their payments according to different parameters by including multiple elements in the program. Some payment systems rate parameters with an asterisk, while others expect healthcare providers to be responsible for coordinating care, clinical services, and cost considerations in full integrity. Also, some payment programs, the difference resulting from the savings provided, are shared between the healthcare provider and the receiving customer according to certain principles, so that patients can provide financial benefit by being more consciously involved in the treatment process (Kurutkan, MN., Bayat, M. 2015).

The implementation of pioneering initiatives related to the Value-Based Repayment approach started in 2003. As can be seen in Figure 2, they are grouped under three groups. (Şimşir, İ. 2018).

Source : Şimşir and Altındiş, 2019.

Figure 1. Value-based Payment Stages

1. Repayment Schedules According to Reporting: Service providers are encouraged to report the necessary information for public use.
2. Payment by Performance: Service providers are encouraged to reach a targeted clinical performance threshold. This typically involves process or outcome measures related to a particular patient population.
3. Value-based Payment Programs: They are typically programs designed specifically for service providers (hospitalized or outpatient, physician, home health, nursing home, dialysis, etc.) and are directly related to quality and productivity improvement (Şimşir, İ. 2018).

In terms of repayment institutions, the value in

health is the ratio of the cost of any technology to the health outcomes it produces and is an important determinant of repayment decisions. However, in order to measure the value created by any technology and use it in repayment decisions, an alternative to be compared is absolutely necessary. In terms of the repayment institution, value arises by comparing the benefits and costs of new technology. Whether cost-effectiveness or cost-benefit analysis is used, the final decision is determined by the ratio of additional cost efficiency (IMEO), namely the ratio of additional costs to additional benefits/impacts. The resulting figure at the end of this evaluation indicates an additional unit cost to be borne per additional unit result. Comparison can be made with another product, which is an alternative to the product under assessment, or with placebo or standard maintenance. However, the results of the economic evaluation are not sufficient to explain and define the concept of value in health in terms of the repayment institution. The results of the analyses come to a point on the following cost-effectiveness plane (Tatar, M. 2017).

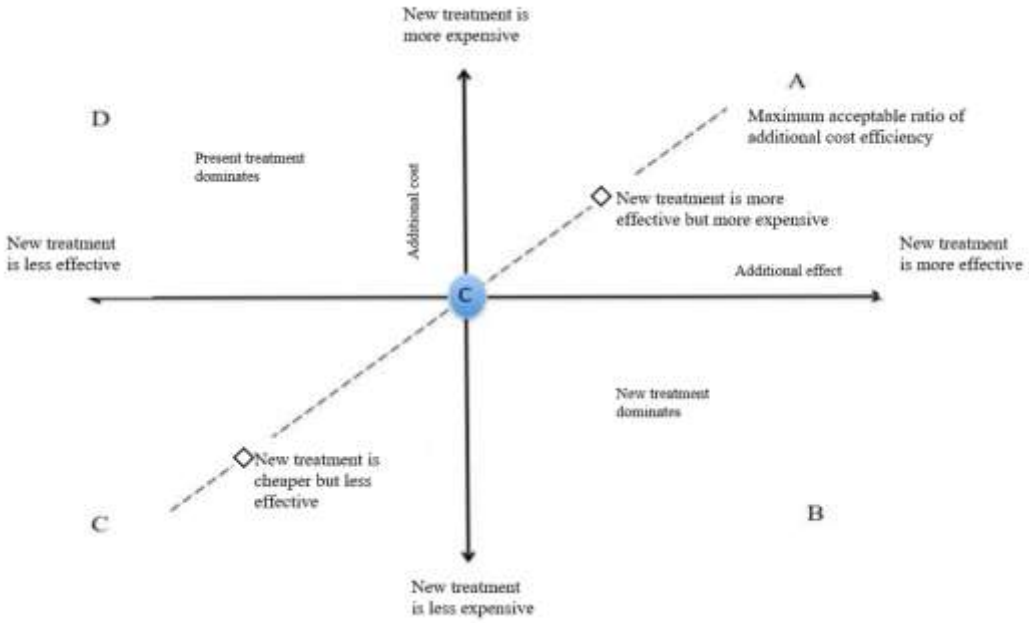


Figure 2. Cost Efficiency Plane (Source: Gray et al, 2011)

If the results of the economic evaluation take a value within the B quadrant, the new treatment will dominate the existing treatment because it is more effective and less costly, and the decision-making process of the reimbursement institution is not complicated. In this case, it would be beneficial for the institution, the patients, and the community to include the new treatment on the positive list. If the results are located at a point in quadrant D, the decision process is not complicated because the new treatment is both more costly and less effective. In this case, the decision of the reimbursement agency not to include the new treatment on the positive list will be beneficial for all parties. Quadrants C and A are the quadrants where the repayment institution has difficulty in deciding and the concept of 'value' comes to the forefront. In quadrant C, where the new treatment is less costly and less effective, the decision to be made by the reimbursement agency relates to the value of the effectiveness abandoned. At first glance, it appears to be an easier decision than the decision made in quadrant A, but the impact of the abandoned additional effectiveness on the patient and society may differ from the perspective of the reimbursement institution. Quadrant A shows the area where reimbursement institutions often have to decide today. In quadrant A, where the new treatment is more effective but more costly, the inclusion of any treatment in the scope of reimbursement in this area will require a restriction in other treatment areas or an increase in the resources allocated to health services. As the second option is one of the difficult decisions for almost every country, there is usually the first option. In order for the repayment (reimbursement) institution to make a positive decision in the treatment areas falling within this quadrant and for this decision to be fair, transparent and predictable, it may be necessary to determine a payment desire threshold for the value it attaches to the treatment result (Tatar, M. 2017).

Value-based Health Services in terms of Purchasing Processes

Reducing increased costs and waste in health, increasing quality, maximizing patient and employee satisfaction are the main goals that healthcare providers want to achieve. One of the most important ways to ensure this situation is a value-based lean thinking perspective and principles. Lean thoughts and

principles aim to reduce the time spent on value-added transactions while eliminating activities that do not add value to the processes. There is always a problem that needs to be solved and a management philosophy that focuses on processes with the vision of waste that needs to be solved is the basic element that provides development. Health managers who aim to achieve excellence in their services and each of the stakeholders involved in the provision of health services must see the waste and inefficiencies related to the field in which they work. Determining waste resources in the Supply Chain Processes, one of the most critical processes of hospitals, and revealing the practices that will create value in these processes by increasing the quality in these processes constitute the basis of the value-based perspective. In this context, it is necessary to demonstrate the applicability of the lean model in the Supply Processes by questioning the activities that create added value and do not create added value in all stages from the formation of the demand and need planning of the products to the main warehouse, transfer of the products from the main warehouse to the secondary warehouses to the patient, inventory counts to the invoicing of the products (Işık, M., Işık, F. (2016).

One of the most commonly used value-based reimbursement methods in healthcare is drug reimbursements. Especially if the drug used in this method applied in the USA and Western Europe does not meet the expected outcome criterion, the cost is covered by the company selling the drug. For example, according to an agreement made in the USA in 2015, the company has committed to reimburse the institution that purchased if the results of a cholesterol-lowering drug in clinical trials are not obtained in real use. Since 2017, the agreement for the same drug has been further extended and an agreement has been made for the company to reimburse each patient who has had a heart attack or stroke while using the drug (Durur, F. 2018).

While value-based agreements between governments and payers in different countries for new treatments have been on the agenda in Europe for some time, health insurance companies in the United States signed value-based agreements with different pharmaceutical companies in 2016 and 2017, especially new treatments in diabetes and cholesterol. In the US, a total of 24 value- based agreements were announced in 2013-2017. The number of these is expected to reach 65 in 2018-2022 period. While the two areas with the most agreements in 2013-2017 period are metabolic diseases and cardiovascular diseases, it is predicted that value-based agreements will intensify in neuromuscular diseases in the coming period (Memiş, SA. 2018). Although the value chain in the medical device sector is similar to the basic stages in the value chain of the pharmaceutical sector, medical devices are very diverse within themselves. The fact that medical devices differ greatly from each other in many respects such as model, complexity, application, use, the user also makes the stages of the value chain quite different from each other. This differentiation has recently become more complex with the influence of new technologies. Changes such as the transformation of certain categories of a medical device into a treatment method with the drug or becoming a diagnostic tool that completely differentiates its use with new technologies integrated into some categories of medical device increasingly increase the differentiation between the stages of the value chain in medical devices. This leads to the inclusion of new actors in both the R&D and production stages. Many new actors from different sectors and focused on different technologies are involved in the value chain in the medical device sector. In R&D processes, especially startups and research centers with different focus areas, and production processes, technology companies are the actors whose roles have increased due to the change in the value chain of medical devices. Cooperation in the medical device sector is expected to increase faster in the coming period (Memiş, SA. 2018).

Value-based management approach practices not only in health insurance but also in procurement processes are becoming widespread starting with pilot applications. Regardless of the impact on the patient's health, purchasing mechanisms focusing only on the budget from the point of view of short-term expense management; unfortunately, they can lead to unsustainable and inefficient results that cause very heavy tables in the medium and long term. This is because traditional purchasing processes, which focus on the price and are always locked to the lowest price offer, can lead to an increase in total health expenditures by using resources for the same purpose even in the short term (Özsarı, H. 2018:6-9).

Value-based structuring of purchasing processes is an important step towards rational and sustainable procurement on the one hand, and it is based on the effect of medical intervention on the patient's quality of life with the "Beyond Price" perspective on the other. The benefits expected at a national level through good practice examples of value-based purchasing approach in countries such as Norway, Germany, Sweden, UK, USA, France in the areas such as catheters, surgical sutures and wound care, are summarized under the following main headings: (Özsarı, H. 2018:6-9).

1. Opportunities for all stakeholders to reduce costs in general and the most economical results,
2. Focus on the values and outcomes that are important for patients, system, and society,
3. Optimization and professionalization,
4. Harmonization and standardization in purchasing methodologies,
5. Flexibility at the local level,
6. Dissemination of good practices with comparative advantage and collaborative opportunities.

In the "Health Towards 2030" report prepared by the Technology Development Foundation of Turkey (TTGV); prominent trends are included in the value chain of three different sectors (pharmaceutical, medical devices, and health services sectors) constituting the health ecosystem as they move towards 2030. The main trends that have become common in all three sectors and have affected the entire value chain in recent years are financial sustainability, increasing-price pressure, transition to a value-based approach, strengthening the focus of the patient rather than treatment, moving away from the hospital-centered approach, and technological transformation. The budget and price issue, which has been on the agenda for many years, continues to remain on the agenda with increasing strength. At the same time, recent trends and the change with new technologies lead companies to search for ways to innovate more efficiently in order to strengthen their new competitive areas (Memiş, SA. 2018).

In order to establish an efficient structure in terms of materials and budget management in hospitals, it is necessary to control the waste in drug and material expenditures, which is one of the most important expense items. It will be seen that the cost of an unnecessarily inadvertently opened and sterilized material, the cost of an expired drug or material, the cost of dozens of materials thrown into wastes when not used in the operating room, and the costs of materials used improperly per their purpose are very serious in hospitals. In order to measure these situations correctly, the income of each branch should be measured as a center of income and its expenses should be measured. Performance of a case of the same nature by 2 different physicians at very different costs should be analyzed and correction should be made if there is an incorrect approach. The inefficiencies caused by the failure of the professionals to apply the standards and clinical pathways they set themselves should be revealed and waste resources should be prevented (Işık, M., Işık, F. 2016).

In the value-based purchasing approach, decisions should be made based on the evaluation method shown in the table below. In this application, 2 different brands were evaluated in the decision to purchase and spend hemofiltration solution mainly used in general intensive care units. In this evaluation, although brand A is more expensive in terms of unit cost than brand B, it was decided to purchase brand A in the purchase decision. Because 10.6 solutions are used in the 24-hour use of the solution used as brand A in the hospital application trial and 17.9 solutions are used in brand B due to the differences in content and application. If only purchasing bare unit prices were looking at here, the preference would be used in favor of brand B. However, it was decided to buy the product that is more suitable in total cost because it was decided from a value-based perspective in terms of total cost and output. With this decision, it was decided to choose the product that constitutes 41% more advantageous results than the usage results, while 26% more conformance is in question than the unit price.

Table 1. Product Purchasing Decision Implementation Sample Table

Hemofiltration Solution Value-based Purchasing Perspective				
Brand	**Quantity used**	**Purchase Price**	**Total Amount**	**Purchase Price Advantage Rate**
Brand A	5.000	35	175.000	**26%**
Brand B	5.000	26	130.000	
Brand	**Quantity used**	**Purchase Price**	**24-hour Usage**	**Usage Quantity Advantage Rate**
Brand A	5.000	35	10,6	**41%**
Brand B	5.000	28	17,9	

Source : Işık, M. 2020

Considering the fact that the risk of the second operation in hip surgery is 18 times higher in Germany, the risk of complications in radical prostate surgery is 9 times higher in the Netherlands and the risk of complications in cataract surgery in Sweden is 36 times higher and that this reflects the reality of diversities of the patient outcomes and efficiency, the importance of value-based purchasing logic emerges again (Gökalp, U. 2018). In this context, it is important to reveal the risk of complications by conducting detailed analyses, especially in the branches constituting significant amounts in health expenditures. In particular, it is necessary to introduce questioning criteria based on the evidence against the most common complications encountered in the knee and hip operations and to create indicators with these criteria and to ensure that they affect the payment conditions. For example; in the knee and hip operations, critical clinical outcomes such as the rate of re-admission due to dislocation, the rate of patients requiring re-operation in the first 2 months and the first 12 months, the rate of patients requiring revision in the first 12 months, the average number of days of admission, the rate of prophylactic antibiotic administration on the day of operation, the rate of re-admission due to surgical field infection in the first 2 months or the first 12 months, the rate of patients prescribed antithrombotic drugs at the patient exit, the rate of re-admission due to deep vein thrombosis, the rate of re-admission due to pulmonary embolism, the rate of nerve damage, the rate of vascular damage (Ministry of Health, 2015) will also lead to an increase in the quality of companies producing these products in the health industry and a fair pricing policy will be established. Likewise, drug-eluting stents, which constitute an important cost item in health

expenditures, can perform the same applications. Pricing conditions can be shaped by evidence-based detection of product- induced conditions for complications such as stenosis, restenosis, thrombosis activity, uncontrolled endothelial cell shooting.

FINDINGS AND DISCUSSION

Seyfioğlu E.F. (2019) aimed to propose a model by making strategic approaches to the value-based health care system. In this context, the research model developed was collected from health care enterprises, including the public and private sectors. The data obtained by the questionnaire method were analyzed and the significant and possible positive effects of the components forming the model in value-based health services on patient satisfaction were the subject of the qualitative study based on the finding of satisfaction with medical treatment services in terms of the level of effect on overall patient satisfaction and the finding of being behind the satisfaction with other services in the current system. When the other components (6 components) forming the model are applied, the patient value change, effect on quality, satisfaction level of the patients, cost change, change in the profit rate, impact on resource and time waste, determination and solution of the results related to brand value were made by face-to-face interview technique and by asking open-ended questions to senior managers. As a result of qualitative research content analysis, it has been determined that there is a familiarity with the model in our country, some components of the model are partially applied (e.g. e-pulse) and besides, local suggestions that can be considered as contributions to the model have been identified. In light of the basic data obtained, it has been determined that the necessity to measure the cost and improvement results for each patient separately instead of a standard price policy for each patient and the need for healthcare, outcomes, and goal-based payment rather than transaction-based payment will create value (Seyfioğlu, E.F. 2019: 799-822).

Deniz, MH et al (2011). concluded that the perception of patient satisfaction was positively affected within the scope of the concept of "Value-based Health" for healthcare provided by the private sector in order to determine the relationships between perceived quality, perceived value, patient satisfaction and behavioral intention in health services. It was revealed that perceived service quality positively affects patient satisfaction and behavioral intention and patient satisfaction positively affects behavioral intention. As the perceptions of the quality of the service received by the patient increase more positively, the level of satisfaction of the patient is positively affected by this increase, that is, the satisfaction with the service received increases in parallel (Deniz, MH. Hobikoğlu, EH. 2011).

According to the findings obtained from the cost-effectiveness analysis study of dialysis and kidney transplantation treatment in Turkey in the research conducted by Yiğit, V.(2015) et al., they reached the following result. According to the results of the research, since kidney transplantation is cost-effective compared to dialysis in terms of quality of life, patient survival and treatment cost, it should be preferred and encouraged when developing health policies and allocating resources to health services (Yiğit, V., Erdem, R. 2015).

In a study conducted by Tansel, Y et al. (2017), it was aimed to develop a two-stage decision support system to assist physicians in the selection of stents, and firstly, a data collection tool was developed to improve the decision support system. For the results to be statistically valid, the questions were applied randomly to the cardiology department doctors of the hospitals in the province of Ankara, which was selected as the pilot region. With this application, it is possible to monitor the causes of the complications that occur in stent applications and it is aimed to prevent the complications that will occur (Tansel, Y. 2017).

An ideal method of reimbursement is the structures that have low administrative costs, prevent abuse, take into account efficiency and efficiency, and also ensure the balance between them (Kaya, N. 2008) Many methods such as global budget, per capita payment, per day payment, per service payment, case-by-case payment are used as reimbursement method to health institutions. All the methods used have various advantages and disadvantages. When the situation of reimbursement methods used in health services in Turkey is examined, it is seen that a mixed reimbursement system consisting of different methods is implemented as in many countries. Per capita payment method is used in family medicine, a global budget method is used in hospitals and university hospitals affiliated to the Ministry of Health, per service payment method is used in private hospitals, and per day payment method is used for intensive care and palliative care services (Özkan, Ö., Ağırbaş, İ. 2019).

Value-based payment is a commonly preferred strategy for improving the health system in countries such as the United States, Sweden, and the Netherlands. In the first step of international value-based payment programs, performance criteria are generally targeted by priority services such as vaccination, cancer screening, and productivity within clinical quality. In this model, distinguishing high quality from low-quality services and rewarding the quality ones or using a payment mechanism that will reward the low-cost ones. For example, the California Integrated Healthcare Association (IHA) program, one of the first and largest private, non-governmental multi-user value-based payment programs, uses the value-based procurement model. According to this program, reimbursements are made considering clinical quality,

patient experience, meaningful use, and appropriate resource use (Chee, TT et al., 2016). One of the examples of new payment models and incentives for this added value is being implemented in Spain. In the case of Spain, 25 percent of the payment for spinal surgeries is made based on the patient's condition after 1 year (outcome). The outcome/output here is that the patient becomes able to perform the functions that he/she cannot do due to the disease and does not feel pain (Durur, F. 2018).

CONCLUSION

We are living in times healthcare enterprises can survive by providing effective, efficient, value-based services, and adapting to change. Health expenditures are one of the biggest items of the budget for the public, thus it is very important to examine, analyze, and find new searches in terms of business management. Evaluation of purchases made through purchasing, which is one of the biggest items in health expenditures, from a value-based perspective and performing each purchase or expense analysis from a value-based purchasing and expense perspective will help to make effective, efficient, and equitable decisions.

The value-based purchasing approach is much easier to apply and achieve results in purchasing processes and it must be shaped by both institutions and public authorities. The Health Practice Communiqué system encourages price-oriented purchasing by creating a ceiling price in purchases. Especially when the Social Security Institution creates the payment lists, it will be decided that it not only determines the "Non-priced Element" support but also determines some rules and principles from a value-based cost perspective and regulates the payment terms for the products that comply with these rules. In this case, health technology manufacturers will shape their products accordingly and face the risk of not being in the product market when they do not fulfill the requirements of the reimbursement condition and will shape the production conditions accordingly.

Value-based reimbursement is a fact of today's health systems. Although it is not officially on the agenda in Turkey, it is being discussed by political decision-makers and academics. The financial sustainability and quality pressure in the health system will likely make the value-based payment method a policy issue in Turkey. For this reason, it is important for health managers to know about the value-based payment, to know requirements, limitations, possible benefits, and losses. There are some problems with the quality and cost of health services. One of the biggest reasons for these problems is that existing payment systems encourage volume-based service rather than value-based service. The transition to a value-based payment method requires a major cultural change, but also a strong technology infrastructure and detailed planning.

Outside the hospital, there is a clear need for a new system approach where the doctor can follow the patient based on data and act in cooperation with the patient from lifestyle to early diagnosis. New technologies allow doctors to identify and act on a person's needs through personalized tools. These continue to spread rapidly both as an approach and in practice. The MEDULA system will be the biggest power source in shaping this new data management perspective. Opening the MEDULA system, where all health use and cost data are recorded, to researchers for obtaining disease costs and detailed modeling studies will be of great benefit.

REFERENCES

Caron, MA. (2017). Value-based care is here to stay. Health Management Technology, 38(4): 19.

Chee, T.T., Ryan, A. M., Wasfy, J. H., Borden, W. B. (2016). Current State of ValueBased Purchasing Programs. Health Policy and Cardiovascular Medicine, 133(22), 2197–2205.

Deniz, MH. Hobikoğlu, EH. (2011). Quality of Service Perceived in terms of Public and Private Sectors Based on "Value-Based Health System" in Turkey, International Conference On Eurasian Economies, Session 2C: Study Economy 2011.

Durur, F. (2018). Value-based Payment in Health Institutions, Lean Management in Health Workers, İKSAD Publishing House 2018.

Gökalp, U. (2018). Value-based Purchasing for Health Sustainability, ARTED, Researcher Medical Technology Manufacturers Association, 2018.

Isik, M, Isik, F . (2016). Lean Procedures In Hospital and Medical Supply Chain Processes, PressAcademia Procedia, 2 (1), 27-36. DOI: 10.17261/Pressacademia.2016118625.

Karaçor, S., Arıkan, A. (2014). Marketing in Health Organizations: A Study on the Importance of Health Marketing Mixtures for Patients/Customers. Selçuk University Faculty of Communication Academic Journal 8(2): 90-118.

Kaya, N. (2008). Evaluation of Health Managers' Opinions on Health Services Financing and Presentation (Master's Thesis). Başkent University Institute of Social Sciences, Ankara.

Kurutkan, MN., Bayat, M. (2015). Hospital-induced conditions in terms of value-based purchasing and reimbursement system, Journal of Health Academics, Year 2015, Vol 2, Issue 3, 155-164.

Lowe, G. (2018). Value-based healthcare. The Journal For Nurse Practitioners. 14(3): 210. MacLean, C. (2017).Value-based purchasing for osteoarthritis and total knee arthroplasty:

What role for patient-reported outcomes? Journal of the American Academy of Orthopaedic Surgeons, 25(1): 55-59.

Memiş, SA. (2018). A Health Overview Towards 2030, TTGV, Turkish Technology Development Foundation Publication No: TTGV-T/2018/02

Özkan, O., Ağırbaş, İ. (2016). Repayment Models in Health Services: Diagnostic Associated Groups and Case Mix. Ankara University Faculty of Medicine Journal, 69(1), 21-2

Özkan, O., Ağırbaş, İ. (2019). Basic Issues in the Management of Health Economics and Health Institutions within the Repayment Methods in Health Services (Ed. AĞIRBAŞ, İ). Ankara: Siyasal Kitabevi.

Özsarı, H. (2018). The Place of Value Based Management Understanding in Health Management, TÜSEP Journal of Quality and Accreditation in Health, 6-9 (2018).

Porter, ME. (2008). Value-based health care delivery. Annals of Surgery. 248(4): 503-509

Porter, M.E., (2010), 'What is value in health care', New England Journal of Medicine, 363(26), 2477-2481

Seyfioğlu, S.F. (2019). Value-based Health Services Model. Hacettepe Health Administration Journal, 22(4): 799-822.

Sorrel, AL. (2015). Your Guide to Medicare Value-Based Care. Texas Medicine, *111*(4), 26- 34.

Ministry of Health, (2015). Clinical Quality Guide, Knee and Hip Clinical Quality Guide, General Directorate of Health Services Clinical Quality Department, 2015.

Şimşir, İ. (2018). Evaluation of Repayment Mechanisms in terms of Patient Safety: A System Proposal (Doctoral Thesis). Sakarya University Business Institute, Sakarya.

Şimşir, İ., Altındiş, S. (2019). Could Value-Based Purchasing Approach Be Used in Assessment of Healthcare Delivery Outputs?. Konuralp Medical Journal, 11(3), 475-481.

Tanenbaum, SJ. (2016). What Is the Value of Value-Based Purchasing? Journal of Health Politics, Policy and Law, 41(5), 1033–1045. doi:10.1215/03616878-3632254

Tansel, Y., Serdaroğlu, DÇ., Niranc, B., Akyol, KE. (2017). Development of a Decision Support System to be Used in Stent Selection, Journal of Turkish Operations Management, Year, Issue, 2017/1.

Tatar, M. (2017). Value Concept in Pharmaceutical Pricing and Repayment Policies, Health Economy and Policy Studies-1, Ankara, 2017.

Vilhelmsson, A. (2017). Value-Based Health Care Delivery, Preventive Medicine and the Medicalization of Public Health. *Cureus*, *9*(3), 10–13. doi:10.7759/cureus.1063

Yiğit, V., Erdem, R. (2015). Cost Effectiveness Analysis of Dialysis and Kidney Transplantation Treatment in Turkey, Mehmet Akif Ersoy University Institute of Social Sciences Journal Year: 7 No: 13 December 2015 (p. 182-205).