

REVIEW

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Could Value-Based Purchasing Approach Be Used in Assessment of Healthcare Delivery Outputs*?

ABSTRACT

In spite of increasing expenditures for health services, the lack of improvement in the quality and patient safety at the desired level brought about the search for reform of the reimbursement mechanisms. The main purpose of the present review is a search for a comprehensive answer for the question of “Can Value-based Purchasing (VPB) approach emerged as such kind of quest and applications developed in this context be used to evaluate the outputs of health service delivery?”. According to the studies, the VBP approach and especially Hospital Value-based Purchasing Program and Hospital-Acquired Conditions Program which are the two applications developed under this approach can provide effective results in evaluating the outputs in health services and improving quality and patient safety. The data show that the VBP approach in health care has the potential to contribute significantly to improving the quality and patient safety level of the health care service and to keep costs under control. In this context, Hospital Value-based Purchasing and Hospital-Acquired Conditions Programs draw attention in terms of its potential to be implemented especially in the public sphere in our country. The realization of the research and applications in our country aimed at revealing the potential benefits of the mentioned programs will facilitate the evaluation.

Keywords: Value, Cost, Value-based Purchasing, Hospital Acquired Conditions

Sağlık Hizmet Sunumunun Çıktılarını Değerlendirmede Değer Bazlı Satın Alma Yaklaşımı Kullanılabilir mi?

ÖZET

Sağlık hizmetleri için yapılan harcamaların giderek artmasına rağmen, buna paralel olarak kalite ve hasta güvenliğinin istenen düzeyde gelişmemesi, geri ödeme mekanizmalarında reform arayışlarını beraberinde getirmiştir. Bu derlemenin temel amacı, “Bu tür arayışların sonucu olarak ortaya çıkan Değer Bazlı Satın Alma Yaklaşımı (DBSA) ve bu bağlamda geliştirilen uygulamalar, sağlık hizmet sunumunun çıktıları (output) değerlendirmede kullanılabilir mi?” sorusuna kapsamlı bir cevap arayışıdır. Çalışmalara göre DBSA yaklaşımı ve bu yaklaşım kapsamında gelişen iki uygulama olan Hastane Değer Bazlı Satın Alma Programı ile Hastane Kaynaklı Durumlar Programı, sağlık hizmetlerinde sonuçların değerlendirilmesi ve kalite ve hasta güvenliğinin geliştirilmesinde etkili sonuçlar ortaya koyabilmektedir. Veriler, sağlık hizmetlerinde DBSA yaklaşımının, alınan sağlık hizmetinin kalite ve hasta güvenliği seviyesinin geliştirilerek maliyetlerin kontrol altında tutulmasına önemli düzeyde katkı sağlama potansiyeli barındırdığını göstermektedir. Bu kapsamdaki Hastane Değer Bazlı Satın Alma ve Hastane Kaynaklı Durumlar Programları ülkemizde, özellikle kamusal alanda uygulanabilme potansiyeli açısından dikkat çekmektedir. Söz konusu programların potansiyel faydalarını ortaya koymaya yönelik ülkemizde de araştırma ve uygulamaların gerçekleşmesi, değerlendirme açısından kolaylık sağlayacaktır.

Anahtar Kelimeler: Değer, Maliyet, Değer Bazlı Satın Alma, Hastane Kaynaklı Durumlar

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INTRODUCTION

The quality and patient safety level in health services did not increase at the same rate as the expenditures, in other words, despite the increase in expenditures, the quality and patient safety did not develop at the desired level. This condition brought about the search for reimbursement reform. At this point, especially for payer institutions (e.g. Social Security Institution; SSI), the main concern is the insufficient response to the question "Is there a difference between the quality of health care provided and the one purchased?". A number of approaches and methods developed to address this concern have been applied. The US has been a pioneer in using these approaches, and developed countries such as the UK and Australia have been following procurement initiatives that combine quality and cost of health care (1,2).

The American Institute of Medicine's (IoM) groundbreaking report, "To Err is Human," estimates that the cost incurred "only for preventable adverse events" amounts to \$37.6 to \$50 billion, including indirect costs (3). Even in other reports by IoM, it is stated that \$750 billion per year is wasted due to waste, inefficiencies and other issues in health care services (4).

Apart from the extra costs incurred, quality problems experienced in health care services can cause significant patient safety violations. It is stated that as of 2010, Hospital Acquired Conditions (HACs), which developed during hospitalization and which is considered as medical error, resulted in around 100.000 deaths as well as temporary and permanent disabilities (5). Again, John Hopkins University researchers Makary and Daniel (6) reported that as of 2013, the third most common cause of death in the United States was deaths caused by an average of more than 250,000 medical errors per year; it is even stated that this figure could go up to 440,000, which is about one-sixth of all deaths in the United States (7).

A number of strategies are used to improve the level of quality and patient safety in health care services provided (8), but the legal and financial

strategies which are among them are not given enough attention in the context of Turkey. For example, in a hospital-based on evidence-based medicine, pressure sores should not develop during hospitalization. But unfortunately, such incidents are experienced and payer institutions pay the hospitals at a normal rate for the treatment of these cases (9,10).

On the other hand, inability to obtain expected outcomes in return for money spent for health care services also worries Turkey (11) as well as many developed countries (12). Therefore, the purchasing power of SSI, which is the biggest buyer of health care services in Turkey, has an important potential for reducing the costs while improving the safety and quality level of the healthcare services provided.

In this study, where the understanding of Value-based Purchasing (VBP), which is an important tool in promoting the improvement of patient safety and quality level of the health care service provided, is examined and the transformation realized in the incentive structures is dealt with in the historical process. Afterward, Hospital Value-based Purchasing Program and Hospital-Acquired Conditions Program which are the two applications having the highest potential as part of VBP understanding within the context of Turkey are addressed and possible effects of VBP on Health Services Providers (HSP) are discussed in the context of Turkey.

1. Historical Process of VBP

Historically, VBP has evolved in three stages: Pay-for-reporting (P4R) Programs, Pay-for performance (P4P) Programs and Pay-for-value (P4V)/Value-based Purchasing (VBP) Programs represent these three stages. Initiatives for VBP were launched by the Centers for Medicare and Medicaid Services (CMS) in the US in 2003 and commercial health insurers followed the CMS by developing their own programs. The three stages indicated are shown in Figure 1 (13,14):

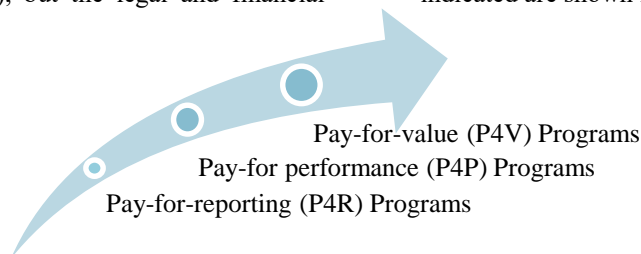


Figure 1. Stages of Value-based Payment Programs

Payments are shaped whether service providers report certain types of information (e.g. quality measurements) to the paying organization under P4R Programs (15). These reports formed the basis for the measurements to be developed in the next stage and P4P programs started to be

implemented on information infrastructure established in this way (16). P4P programs are generally based on the principle that hospitals are sensitive to income and reputation issues. P4P, which increased both of these variables through the improvement of quality, became widespread in the

USA due to the successful results and started to be applied in many countries. However, over time, many elements of the method began to be criticized, and it is stated that further research is needed for payment reform (17–20). In the VBP programs that arise in this context, the incentives implemented under P4P are directly related to quality and efficiency improvements. In this context, it is stated that service providers should receive payment in terms of their benefits to patients and society, rather than their efforts and resources that they used in their service production (21).

2. The Concept of Value-based Purchasing

The National Quality Strategy of the US Department of Health and Human Services has conceptualized the ultimate goals that the CMS wants to achieve in relation to health care purchased for the insured under the title of “The Triple Aim” as “better health, better care, and less cost”. In short, these three characteristics of care, which are defined as improving health, improving care and reducing costs, form the basis of the concept of value. The “value” concept of the CMS has improved outcomes with low-cost for individuals and society. VBP is one of the tools with the highest transformational potential to achieve these three goals (22, 23).

VBP activities are defined as the organized initiatives of the healthcare payer organizations that they imply their crucial purchasing power towards on the one hand negotiating costs with the service providers, but on the other hand maintaining quality assurance and continuous improvement of quality in healthcare services (10). Paying agencies hold service providers responsible for the quality and cost of care, and incentives are structured to eliminate inappropriate, unnecessary and costly maintenance (13, 24). In this respect, payer organizations have increasingly tended to reward the “value”, which means “health outcomes achieved per dollar spent” (17).

In this context, value is based on results, not inputs. In other words, value is measured by the results achieved, not by the volume of service provided (17). A volume-based incentive model provides financial incentives to deliver more (and more costly) services; however, it typically does not provide incentives to improve the quality or efficiency of the service provided or to provide services with low-profit margins, such as preventive services and patient education (25).

Conversely, in value-based reimbursement, there is a reward in return for quality health care services, which has been proven to contribute to the preservation of health status, reduce errors and prevent unnecessary service (26). Therefore, incentives are directed towards volume-to-value (27), and a significant number of leaders in the field of health care services state that the health industry is in a transformation from volume to value (9).

The most critical aspect of VBP understanding is standardized, comparative and publicly available information on patient outcomes related to the health care service provided, the state of the health care service, patient experience (satisfaction), and direct or indirect costs (13,24). On the other hand, in order for VBP initiatives to be effective, meaningful criteria and financial rewards and penalties that may affect the behaviors of service providers should be used (28).

The transition from pay-per-service to VBP in the US is expected to have significant implications. For example, only in terms of financial savings, it is predicted that the VBP payment reform will reduce Medicare expenditures by around 214 billion dollars by 2023 (14).

3. Value Based Purchasing Applications

There are many programs that can be associated with the concept of VBP. Two of them having quite a high potential in the context of Turkey will be covered in this study. These are Hospital Value-based Purchasing (HVBP) Program and the Hospital-Acquired Conditions (HAC) Program:

3.1. Hospital Value-based Purchasing Program

It was mentioned earlier that VBP is a developing concept within the scope of P4P applications. P4P, on the other hand, is a program of voluntary participation of hospitals by origin. However, the HVBP Program introduced by the 2010 Affordable Care Act is a requirement for all hospitals in the US. As part of the program, Medicare began to pay hospitals based on clinical processes and patient experience measurements. (18).

The main objectives of the CMS HVBP program are as follows: (29):

- Improving the quality of clinical service,
- Reducing preventable adverse events and improving patient safety,
- Promoting patient-centered treatment,
- Avoiding unnecessary costs in service delivery.

HVBP program is a quite complex system (30). The program is funded with a deduction to be applied to reimbursements made on the basis of Diagnosis Related Groups (DRG) in return for the services they provide to hospitals. The deduction rate was initially defined as 1% and then increased by 0.25% each year to 2% for 2017 and beyond. This fund, which was established as a neutral budget system, is redistributed to hospitals in line with the total performance scores of the hospitals. Depending on the performance scores obtained, it is likely that hospitals will receive less, all or more of the outages (18,30,31).

Domains and the weight of domains that constitute the basis of the total performance score to be used in the payments to be made to hospitals by the beginning of 2013 are given in Table 1 (30,31).

Table 1. Domains and Their Weighting in Total Performance Score

Domain	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Patient Experience of Care	30%	30%	30%	25%	25%
Clinical Processes of Care	70%	45%	20%	10%	
Outcomes		25%	30%	40%	
Efficiency			20%	25%	25%
Safety					20%
Clinical Care					
				Processes	25%
				Outcomes	5%

3.2. Hospital Acquired Conditions Program

Adverse events that are considered to be preventable within the framework of evidence-based practices within the scope of VBP implementations are characterized by the concept of non-payment for preventable adverse events.

As a concept, the first integration study of the nonpayment for preventable events approach with the reimbursement system was initiated as of October 1, 2007, with the requirement to register if 10 designated HACs were present during the patient's hospitalization.

It was declared to related parties that the payment wouldn't be made for discharges as of November 1, 2008, in which aforementioned 10 HACs developed after hospitalization. Because Medicare considers HACs to be "preventable medical errors and refuses to pay hospitals for these conditions, which are also closely related to the increase in hospital stay, hospital costs, and patient

mortality as part of an effort to become a more active buyer of health care (32–35).

In order to include an adverse event in HAC as nonpayment for a preventable adverse event, it must meet the following three conditions (35):

- Considered to be high cost or high volume or both,
- To be included in the MS-DRG (Medicare Severity-Diagnosis Related Group), which requires higher payment when presented as a secondary diagnosis.
- To be reasonably preventable using evidence-based guidelines.

The mentioned 10 HACs were increased to 14 as of 2013 and no changes were made after this date. These 14 HACs are listed in Table 2 (36).

The estimated costs of these HACs according to CMS 2007 data are given in Table 3 (37,38).

Table 1. Hospital Acquired Conditions Accepted by CMS

CMS Hospital Acquired Conditions Accepted
1. Foreign Object Retained After Surgery
2. Air Embolism
3. Blood Incompatibility
4. Stage III and IV Pressure Ulcers
5. Falls and Trauma (Fractures, Dislocations, Intracranial Injuries, Crushing Injuries, Burn, Other Injuries)
6. Manifestations of Poor Glycemic Control (Diabetic Ketoacidosis, Nonketotic Hyperosmolar Coma, Hypoglycemic Coma, Secondary Diabetes with Ketoacidosis, Secondary Diabetes with Hyperosmolarity)
7. Catheter-Associated Urinary Tract Infection (UTI)
8. Vascular Catheter Associated Infection
9. Surgical Site Infection, Mediastinitis, Following Coronary Artery Bypass Graft (CABG)
10. Surgical Site Infection Following Bariatric Surgery for Obesity (Laparoscopic Gastric Bypass, Gastroenterostomy, Laparoscopic Gastric Restrictive Surgery)
11. Surgical Site Infection Following Certain Orthopedic Procedures (Spine, Neck, Shoulder, Elbow)
12. Surgical Site Infection Following Cardiac Implantable Electronic Device (CIED)
13. Deep Vein Thrombosis (DVT)/Pulmonary Embolism (PE) Following Total Knee/Hip Replacement
14. Iatrogenic Pneumothorax with Venous Catheterization

Table 2. Estimated Costs of Hospital Acquired Conditions

HAC	Number of Cases	Cost (Average) (\$)	Cost (Total) (\$)
Foreign Object Retained After Surgery	750	63.631	47.723.250
Air Embolism	57	71.636	4.083.252
Blood Incompatibility	24	50.455	1.210.920
Stage III and IV Pressure Ulcers	257.412	43.180	11.115.050.160
Falls and Trauma	193.566	33.894	6.560.726.004
Manifestations of Poor Glycemic Control			
• Diabetic Ketoacidosis	11.469	42.974	492.868.806
• Nonketotic Hyperosmolar Coma	32.248	35.215	1.135.613.320
• Diabetic Coma	1.131	45.989	52.013.559
• Hypoglycemic Coma	212	36.581	7.755.172
Catheter-Associated Urinary Tract Infection (UTI)	12.185	44.043	536.663.955
Vascular Catheter Associated Infection	29.536	103.027	3.043.005.472
Surgical Site Infections			
• Surgical Site Infection, Mediastinitis, Following Coronary Artery Bypass Graft (CABG)	69	299.237	20.647.353
• Laparoscopic Gastric Bypass a Gastroenterostomy	208	180.142	37.469.536
Deep Vein Thrombosis	140.010	50.937	7.131.689.370

There are very few studies on the subject in Turkish literature. This study was among them dealing with the effects of these HACs. In that research carried out in a public educational research hospital, HACs, which were found to develop in inpatients, could be associated with £41.5 million additional costs, 46,119 additional hospitalization days and 777 additional mortality, annually (39).

4. Considerations in Value-based Purchasing Initiatives

Key aspects of the successful and widespread implementation of VBP can be expressed as; the adoption of useful and practical quality measures, meaningful performance metrics that encourages service providers rather than to be a burden to them, risk adjustment, preventing the occurrence of additional health inequalities to the extent possible while reducing the existing ones, and providing high-value incentives that encourage participation and drive development (13).

In order to determine the measures to be adopted in the context of VBP, the methods used in disease cost studies can be utilized, especially in relation to the economic consequences of HACs developed. For example, the emphasis of “determination of perspective” made in such studies (40) is important for determining the value of health care services for various stakeholders and constructing the hierarchy of priorities.

It is crucial to share data from VBP programs with the public and to educate consumers to encourage transparency and informed decision-making. In addition, as deductions are allocated to high-performing hospitals, poorly performing service providers should focus on preparing action plans to

correct their shortcomings in order to protect and improve their income (13).

On the other hand, patients' trust in health care personnel and the system will be impaired if service providers make an effort to obtain specific metrics for which outcome measures are valid, rather than providing comprehensive care for their patients (4). Therefore, first of all, utmost importance should be given physicians and all the staff operating in the system to adopt a value-based system (16). In addition, as incentive structures can change over time in line with the progress made under such programs, hospitals should develop their ability to be flexible and adapt to these changes. In this case, the risk of regression is always present in the performance areas which are no longer subject to reimbursement and necessary precautions should be taken against this risk.

CONCLUSION

The Hospital Value-based Purchasing Program and the Hospital-Acquired Conditions Program are particularly noteworthy in terms of its potential to be implemented in the public sphere in our country. The VBP program has a significant potential for the formulation of policies that can be implemented by the SSI. In order to be covered the funding source of VBP programs from deductions made from payments based on Diagnosis Related Groups (DRGs), firstly payment based on DRG should be constructed in Turkey. And for this, IT infrastructure should be established as soon as possible. In conclusion, the VBP approach is a tool that has significant potential in improving quality and patient safety in health care services and keeping costs under control.

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