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Key Indicators of Performance-Based Payment to Physicians by Insurance Organizations in Iran

Zeinolabedin Abbasi Nowdeh[1, 2], Khadije Safizade[1], Seyede Fateme Mousavi Jam[1], Ebrahim Jaafaripooyan[1]*

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Abstract

Background: A fair and transparent payment system has been shown to influence workforce motivation and quality of work. Performance-based payment initiatives are designed to strengthen this relationship by linking compensation to measurable outcomes. This study aimed to identify the key indicators of performance-based payment for physicians in Iran.

Methods: This mixed-method study employed a scoping review and semi-structured interviews with key professionals and practitioners in health insurance, health economics, and management. The scoping review followed the Arksey and O'Malley framework and covered publications from 2000 to 2024 in both Persian and English databases. Interview data were analyzed using a thematic analysis approach with the assistance of MAXQDA software. A prioritization matrix was applied to determine the final set of key indicators.

Results: Eighteen key indicators were identified through review, qualitative analysis, and screening stages. The main indicators included the per capita number of expensive diagnoses or procedures prescribed within a given period, adherence to clinical guidelines, per capita number of services provided by a physician, and compliance with electronic service delivery (e.g., use of PMR and electronic prescriptions).

Conclusion: Key performance indicators and managerial dashboards are critical tools for enhancing efficiency, equity, and quality in the health sector. The use of such indicators by purchasing and insurance organizations can motivate providers to prioritize quality and responsiveness while effectively managing healthcare costs.

Keywords: Payment mechanisms, Pay-for-Performance, Performance-based payment, Physicians, Health insurance organization, Key performance indicator, Iran

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Introduction

Recently, various interventions and frameworks have been implemented to improve quality in the health sector (1), as the ultimate goal of health systems is to create, maintain, and enhance population health. However, significant improvements in health outcomes across low- and middle-income countries have been limited (2, 3). Man-

Corresponding author: *Dr Ebrahim Jaafaripooyan, jaafaripooyan@tums.ac.ir*

[1.] Department of Health Management and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran
[2.] National Center for Health Insurance Research, Tehran, Iran

↑What is "already known" in this topic:
Payment mechanisms are believed to influence physicians' motivation and performance. Pay-for-performance (P4P) schemes have been implemented in many countries to improve healthcare quality and efficiency. In Iran, although P4P has been introduced, standardized indicators for physician reimbursement remain underdeveloped.

→What this article adds:
Using a mixed-method approach, this study identified and prioritized 18 key indicators for assessing and compensating physicians' performance within the Iranian Health Insurance Organization. These key performance indicators (KPIs) reflect dimensions of quality, responsiveness, and efficiency in service delivery—for example, patient satisfaction, adherence to clinical guidelines, and the use of electronic service delivery.

Managerial dashboards developed based on these comprehensive, evidence-informed KPIs are expected to strengthen transparency, fairness, and productivity by effectively linking payment to performance.

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agement and leadership, resources, education, technology, finance, and organizational culture are among the key determinants influencing the success or failure of quality improvement initiatives in health care organizations (4–6).

Among these factors, a poorly performing financing system, including payment mechanisms—has been shown to cause employee dissatisfaction and absenteeism, indirectly undermining the quality of health care delivery (7–10). Therefore, addressing financial mechanisms is essential to strengthen service delivery and ultimately improve healthcare quality (11). In other words, the strong influence of financial systems on individual and organizational behavior should be carefully considered when designing any payment model (12). Nevertheless, financial systems alone are not sufficient drivers of quality improvement initiatives.

The payment system, referring to the compensation structure including salaries and benefits, is a fundamental component of human resource management (13). Its primary goal is to ensure fair compensation in a competitive labor market while maintaining a highly motivated and adequately remunerated workforce (14). The performance-based payment (PbP) system, also known as pay - for -performance (P4P), is a relatively new compensation model in which payment is based on pre-determined performance-related indicators (15). This approach aims to enhance quality and efficiency by aligning financial incentives for providers with the quality of services delivered (16).

In the United States, more than 50% of Health Maintenance Organizations (HMOs) employ such systems in contracts with physicians, hospitals, and home care nurses. In the United Kingdom, approximately 25% of family physicians are compensated through PbP, leading to improvements in safety and quality compared with the pre-implementation period (17). The UK's Quality and Outcomes Framework (QOF) operates as a centralized, capped points-based system that allocates over half of its funding to clinical indicators such as chronic disease management, with the remainder dedicated to organizational and patient experience domains. Points earned are directly linked to reimbursement amounts (18). In contrast, the U.S. system is more fragmented, relying primarily on the Centers for Medicare and Medicaid Services (CMS) to assess performance and adjust payments or provide value-based incentives based on safety metrics, reduced readmission rates, clinical outcomes, and patient experience data (19, 20). In Canada, however, despite positive reports, the system has not achieved sustained success due to inadequate performance monitoring and evaluation mechanisms (21).

Similar programs with comparable functions include the Merit-Based Incentive Payment System (MIPS) and Value-Based Payment (VbP) models. The MIPS, also referred to as merit pay, is defined as a pay increase based on a set of criteria established by an organization. It aims to link compensation to the quality and cost-efficiency of care, promote improvements in healthcare processes and outcomes, enhance the use of health information systems, and reduce the overall cost of care. Promotions, salary increases, and performance bonuses are among the common forms of merit-based pay that employers may offer (22). Value-Based Payment (VbP) programs, similarly, tie the compensation that health care providers receive for their services to the outcomes achieved for their patients, including the quality, equity, and cost-effectiveness of care (23). These payment methods, which rely on key performance indicators (KPIs) (24, 25), form the foundation of strategic purchasing practices used by insurance organizations in their engagement with providers. Within this framework, both cost considerations and quality criteria are incorporated into purchasing decisions to ensure optimal service provision (26). Accordingly, insurance organizations must develop practical mechanisms to shape, monitor, and evaluate provider behavior.

Among various healthcare providers, physicians occupy a central role as leaders of clinical service delivery teams and as professionals in direct contact with patients at the point of care (27, 28).

In Iran, this payment method was first introduced in 2013. Earlier, in 1995, according to the Universal Insurance Law, healthcare organizations were permitted to allocate part of their revenues to cover current expenses, which ultimately led to the formulation of the New Hospital Management (NHM) scheme. However, the NHM system faced several challenges, including the neglect of individual and organizational efficiency and effectiveness in determining payment amounts, as well as an excessive emphasis on attendance hours, years of service, and favoritism (29).

Consequently, with the implementation of the Health Transformation Plan (HTP), the Pay-for-Performance (P4P) program was launched in February 2019 as a replacement for the NHM. The initiative aimed to establish a more effective relationship between payment and employee performance, promote organizational justice, enhance job satisfaction, and improve service quality and productivity (30).

The exclusive reliance of payment systems on irrelevant indicators such as years of service has often been regarded as unfair and counterproductive, potentially diminishing employee motivation. The PbP approach, which emphasizes the principle of "the more production, the higher the income," was designed to address this weakness. Nevertheless, such a payment system cannot be fully transparent, fair, or consistent unless the evaluation methods, performance criteria, and the relationship between performance outcomes and rewards are clearly defined and communicated (11).

Therefore, this study aims to identify and establish key performance indicators (KPIs) based on which physicians contracted with the Iranian Health Insurance Organization (IHIO) can be directly reimbursed. The IHIO currently provides health coverage for approximately 50% of the Iranian population and maintains contractual agreements with nearly 95,000 physicians nationwide.

Methods

This multi-method study employed semi-structured interviews and a scoping review to identify and prioritize

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Box 1. **Sample Search Strategy**

("indicator" OR "index" OR "parameter" OR "metric" OR "measure" OR "criteria") AND ("physician" OR "doctor" OR "specialist" OR "Consultant" OR "surgeon" OR "GP" OR "medical practitioner" OR "general practitioner" OR "family doctor") AND ("p4p" OR "pay for performance" OR "Quality and Outcomes Framework" OR "GOF" OR "Strategic purchasing" OR "Pay-for-Performance" OR "Performance-related pay" OR "Merit pay" OR performance-based payment)

performance-based payment (PbP) indicators for physicians. Following the six-step framework proposed by Arksey and O'Malley (31), the scoping review was conducted to identify and extract all relevant indicators published between 2000 and 2024.

Keywords such as indicator, criteria, doctor/physician, performance-based payment/PbP, P4P/pay for performance, performance, payment system, merit-based, and value-based payment were used to search both international and local databases. The international databases included PubMed, Scopus, ScienceDirect, and Embase, while the local databases comprised Magiran, Medlib, Irandoc, IranMedex, and SID (Box 1).

In the initial search, a total of 1,439 articles were retrieved. After removing duplicates and adding 22 additional records identified through other sources, all articles were screened based on their titles, abstracts, and full texts. Ultimately, 45 articles were selected for inclusion (Diagram 1). Indicators were then extracted from these final articles. No quality appraisal was performed, as the emphasis of this study was on the breadth of available evidence rather than methodological quality. However, commentaries, letters to the editor, and similar non-research papers were excluded.

Subsequently, semi-structured interviews were conducted with experts in health management, economics, insurance, and tariff setting to identify additional indicators compatible with Iran's health system. Using purposive and snowball sampling methods, 21 interviews (5 with women and 16 with men) were conducted either face-to-face or online via Skype and WhatsApp (Table 1).

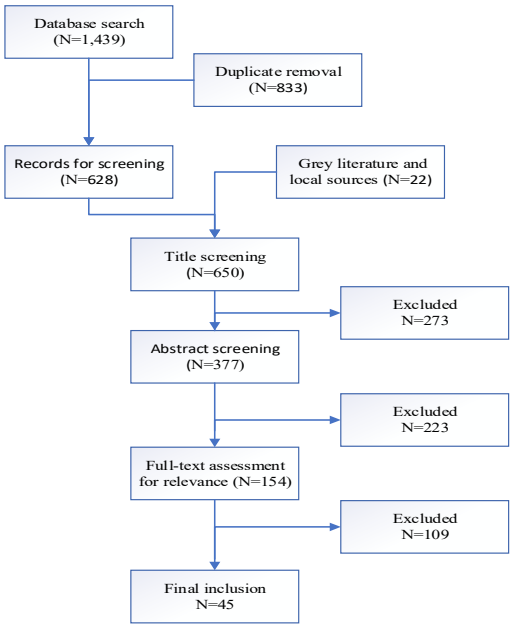

Diagram 1. PRISMA flow diagram

Key inclusion criteria were: a minimum of three years of managerial experience in health insurance or service delivery, relevant research experience, and at least five years of professional practice as a general practitioner. The average duration of each interview was approximately 45 minutes. All interviews were transcribed immediately after completion.

To enhance trustworthiness, respondent validation and peer examination were employed. Throughout the entire process, both summative and conventional content analysis approaches were applied, assisted by MAXQDA software (32).

The pooled indicators were reviewed and refined by a panel of 10 experts in health insurance, policy, management, economics, and medicine. The panel assessed the indicators for duplication, clarity of wording, and conceptual overlap. Subsequently, the remaining indicators were prioritized by a purposive sample (33) of 49 stakeholders, including 29 PhD holders, 10 general practitioners (GPs), 7 specialists, and 3 individuals with MSc degrees. Participants completed a prioritization matrix (indicator–criterion) based on a set of predefined criteria, including cruciality, importance and necessity, relevancy, measurability, clarity, and specificity (34, 35). Each indicator was scored on a scale from 1 to 5, with 5 representing the highest level of agreement. The panel assigned a weighting factor of 1.5 to "relevancy," while all other criteria were weighted as 1. Indicators achieving at least 75% of the total possible score were ultimately selected as the key performance indicators (Diagram 2).

Table 1. Demographic characteristics of key informants

Variables		No.
Gender	Men	16
	Women	5
Education	MSc	3
	MD	6
	PhD	12
Work experience (year)	5-10	10
	11-15	4
	More than 16	7
Position	Physician	6
	Faculty member	7
	Hospital Manager	3
	Researcher in health insurance	1
	Health Manager/Policy maker	4
Organization	University	7
	Hospital	9
	Research Center	2
	Health Insurance Organization	3

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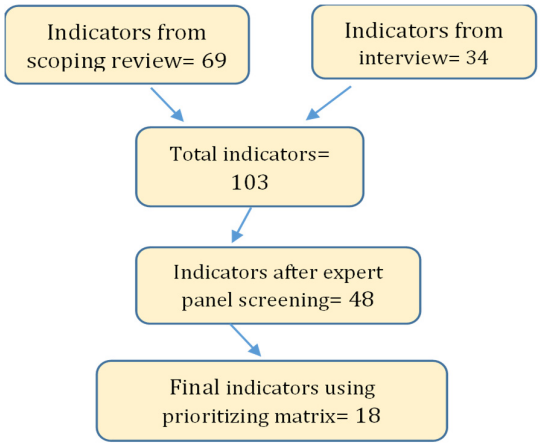

Diagram 2. Indicator selection process

Results

A total of 18 indicators were finalized as the key performance indicators (KPIs) to be used by insurance organizations for compensating physicians (Table 2).

The finalized indicators were thematically categorized into three main domains: quality, efficiency, and responsiveness. Quality indicators included aspects such as service quality, follow-up practices, and average time per patient visit. Efficiency indicators encompassed measures such as the per capita number of expensive diagnoses or procedures prescribed within a given period, the average number of tests or medications prescribed, and the average cost of each physician's prescription. Responsiveness indicators covered elements such as patient satisfaction, number of complaints, patient education, and physicians' engagement in online service delivery. Additionally, indicators related to physicians' personal and professional development also received notable attention.

Discussion

Given the pivotal role of physicians in health systems as leaders of care teams (27, 28), it is essential to establish a reliable and transparent compensation and payment mechanism for their services. Linking payment to provider performance has been recognized as a practical and equitable approach and is widely adopted and promoted in many health systems (36). Central to this approach—commonly known as Performance-based Payment (PbP) or Pay-for-Performance (P4P)—are key performance indicators (KPIs), the use of which has become increasingly prevalent across various health care contexts (37–40). Accordingly, this study sought to identify the key indicators through which the Iranian Health Insurance Organization (IHIO) could structure payments for services delivered by its contracted physicians.

In total, 69 indicators were identified from the scoping review and 34 additional indicators emerged from the interview phase. After expert panel screening, 18 key indicators were finalized. These indicators encompassed both hard (objective) and soft (perceptual) dimensions—for instance, the average cost of a physician's prescription (a factual measure) and service quality (a perception-based measure). Some indicators were composite in nature, such as patient satisfaction and service quality, which comprise multiple dimensions (41).

Given the increasing health expenditures and cost pressures faced by both purchasing organizations and patients (42, 43), particular emphasis should be placed on costly prescriptions and diagnostic tests. Furthermore, considering responsiveness as a fundamental objective of health systems, due to inevitable fluctuations in patient preferences (44), it is crucial to adopt a balanced set of indicators for physician reimbursement (45) that simultaneously reflect efficiency, quality, and responsiveness.

Patient complaints against physicians represent another critical KPI within PbP frameworks (46–48), particularly given the potential impact and sensitivity of medical errors in clinical care (49). Common causes of such complaints include provider misconduct, informal payments, delays in treatment processes, and failure to uphold patient rights and respect during care delivery (50, 51). Addressing these factors through transparent performance monitoring and compensation mechanisms is therefore essential to improving accountability and patient trust in the healthcare system.

Table 2. KPIs of performance-based payment to IHIO-contracted physicians

Key Indicators
Adherence to clinical guidelines
Electronic/online/virtual service delivery (PMR, electronic prescription, booking, website, etc.)
Timely and sufficient presence at the office
Service quality score (cleanliness, amenities, office staff, etc.)
Time period per visit
Complex cases managed
Per capita number of expensive diagnoses/procedures prescribed in a certain period
Per capita number of services provided by a physician
Number of tests/medications prescribed in a specified period
Cost of physician's prescription
Generic compared to brand medications prescribed
Physician's work experience/record
Patient satisfaction score
Patients' valid complaints towards physicians
Patient education and involvement by physicians
Physicians' preventive and public health activities
Participation in health insurance courses
Physicians follow-up and referring practices

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Considering the substantial information asymmetry that exists in the health sector, physicians may have the opportunity to induce demand, thereby increasing the likelihood of providing unnecessary services (52). Consequently, monitoring physicians' adherence to clinical guidelines—upon which their payments are based—can serve as an effective strategy to prevent such moral hazards (53).

In the contemporary era, all sectors are progressively moving toward digitalization and the integration of artificial intelligence (AI) to enhance service delivery, and healthcare is no exception. The growing adoption and proven effectiveness of tele -visits and tele –consultations reflect this trend (54, 55). Within this context, Electronic Health Records (EHRs) represent a foundational component of digital health infrastructure, enabling healthcare providers to improve the speed, accuracy, and overall quality of care. Moreover, EHRs can streamline the diagnostic and treatment processes, as evidenced by their successful implementation in countries such as the United States, the United Kingdom, and Australia (56). Therefore, physicians' competence and willingness to adopt digital tools, such as electronic prescription systems, are crucial elements of performance-based payment (PbP) programs and are highly valued by purchasing organizations (47, 57).

Patients are, ultimately, the raison d'être of health systems. Patient satisfaction, as a key proxy for quality of care, can also serve as an important competitive advantage for health care organizations from a strategic and marketing perspective. Dissatisfied patients are less likely to adhere to physicians' recommendations (58). Accordingly, patient satisfaction, engagement, and education should be regarded as essential components in the design of purchasers' payment mechanisms (59–63).

The overuse and inappropriate prescription of medicines have become a growing concern worldwide (64), particularly in developing countries (65–67). The number of medications prescribed within a given period represents one of the major challenges in Iran (68). Drug prescription and consumption rates in Iran are reported to be nearly three times higher than the level recommended by the World Health Organization (WHO). Currently, the average number of medications per prescription in the country ranges from 3.5 to 4, and in some areas, it reaches as high as 7 to 8, whereas the WHO recommends an average of 1.5 medications per prescription (69). Such excessive prescribing not only imposes unnecessary financial burdens on individuals and insurance organizations but also poses serious public health risks by increasing the likelihood of adverse drug reactions, bacterial resistance, and psychological dependence.

Purchasing organizations, particularly in the insurance sector, are increasingly under pressure to contain healthcare expenditures (70, 71). Consequently, they have adopted various mechanisms—such as deductions, utilization reviews, and strict monitoring—to manage costs. Cost consciousness and financial accountability lie at the core of these organizations' strategies when contracting with physicians (72). To strengthen this approach, it has been suggested that cost-management and health economics courses be incorporated into undergraduate medical education. In addition, insurance organizations are encouraged to provide continuous training programs aimed at improving physicians' knowledge of cost management, leadership, and health system efficiency. Based on the principle that "familiarity breeds utilization and adherence," these organizations seek to increase physician participation in such programs to enhance cost-control practices.

Despite the importance of performance-based payment (PbP) schemes, existing evidence regarding the effectiveness of Pay-for-Performance (P4P) models remains inconclusive, warranting cautious interpretation (73). This study also faced certain limitations. Although a multi-phase approach and multiple validation strategies were employed to enhance rigor, more extensive investigation may yield a broader set of potential indicators. Furthermore, given the predominantly qualitative nature of this study, the generalizability of the findings should be approached with caution.

Conclusion

The present study identified a set of key performance indicators (KPIs) deemed appropriate for conceptualizing and evaluating physicians' performance by insurance organizations for payment purposes. If such indicators and corresponding managerial dashboards, such as performance-based payment (PbP) schemes, are developed through a comprehensive and evidence-informed process, they can significantly promote efficiency and quality improvement in clinical service delivery.

The implementation of these indicators within the framework of strategic purchasing is expected to encourage physicians to prioritize quality and responsiveness in their practice while maintaining cost awareness. However, the effectiveness of PbP schemes depends on the exhaustiveness and transparency of indicator development, as well as on robust monitoring and control mechanisms. Ensuring these elements will help create an enabling environment for physicians to enhance service quality, and, ultimately, enable patients to receive care that is both standardized and equitable.

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Conflict of Interests

The authors declare that they have no competing interests.

Authors' Contributions

E.J.P. contributed to the conception and design of the research. K.S. drafted the manuscript. Z.A. and F.M. were involved in the acquisition, analysis, and interpretation of data. E.J. and Z.A. jointly supervised the process of data analysis and interpretation.

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Ethical Considerations

This study received ethical approval from the National Health Insurance Research Center (Ethical Clearance Code: IR.1399.178).

All procedures were carried out in accordance with relevant guidelines and regulations. Informed consent was obtained from all interview participants prior to data collection.

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Data Availability

N/A.

AI Use Statement

N/A.

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