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## OVERVIEW OF RISKS AFFECTING OF QUALITY OF MEDICAL SERVICES IN THE EXISTING QUALITY MANAGEMENT SYSTEM IN MEDICAL ORGANIZATIONS AT THE PRESENT STAGE

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### Abstract

**Background.** Health care organizations aimed on achieving the best outcomes by sustaining quality of medical services. The services for quality risk management in health care institutions are to develop and support the system ensured on safe and effective stay of patients and the work of staff. However, practice experiences lack of risk consideration that leads to insufficient quality of medical services, with consequent customers' unsatisfaction.

**Aim:** To conduct the analysis of studies reported the ways of quality risk assessment in health care organizations and of the effectiveness of risk management system.

**Search strategy:** The sources included international and national search in PubMed, Google Academy, e-Library, Cyberleninka databases. The depth of the search set as 20 years. The key words used were the quality of medical services, patient satisfaction, staff satisfaction, quality management, and cost of medical services. *Inclusion criteria:* analytical publications, quality assurance guidelines, systematic reviews, meta-analyses, original studies, with qualitative and quantitative data analysis, articles in Russian and English. *The exclusion criteria* were conference materials, collections of abstracts containing a limited amount of information, articles with paid access; articles prior to 2000. 111 publications were found, 60 were accepted for final analysis.

**Results.** Analysis of sources revealed the presence of three main groups of risks and their impact on the quality of services provided. Review revealed the implementation of quality management for strategic and operational risks, along with insufficient resources to control economic risks. A sufficient level of success has been achieved for quality attributes such as optimality, effectiveness, legitimacy. Other characteristics, such as accessibility and acceptability, need further improvement in the operation of the service.

**Conclusions.** Sustaining and supporting the required level of quality comes as ongoing process, and measures are to improve constantly such as staff training, conducting clinical reviews. To manage economic risks, it is highly recommended to conduct training and involve specialists in health technology assessment, taking into account the characteristics of each health care organization.

**Keywords:** *quality of medical services, patient satisfaction, staff satisfaction, quality management, cost of medical services.*

### Резюме

## ОБЗОР РИСКОВ, ВЛИЯЮЩИХ НА КАЧЕСТВО МЕДИЦИНСКИХ УСЛУГ В СУЩЕСТВУЮЩЕЙ СИСТЕМЕ УПРАВЛЕНИЯ КАЧЕСТВОМ В МЕДИЦИНСКИХ ОРГАНИЗАЦИЯХ НА СОВРЕМЕННОМ ЭТАПЕ

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**Актуальность.** Организации здравоохранения ставят перед собой цель - достижение наилучших результатов в оказании качественных медицинских услуг. Служба по управлению рисками качества в медицинских организациях направлена на создание и поддержание системы, способной обеспечить безопасное и эффективное пребывание пациентов и работе персонала. Однако, на практике, поставщики медицинских услуг не всегда могут учитывать риски, влияющие на оказание качественных услуг, что в конечном итоге влияет на безопасность пациентов и снижает качество обслуживания.

**Цель:** анализ публикаций по вопросу оценки основных рисков качества медицинских услуг в медицинских организациях и системы противодействия им.

**Стратегия поиска:** Проведен поиск зарубежных и отечественных источников в базах данных PubMed, Google Academy, e-Library, Cyberleninka. Глубина поиска составила 20 лет. Ключевыми запросами были выбраны – качество медицинских услуг, удовлетворенность пациентов, удовлетворенность персонала, управление качеством, стоимость медицинских услуг. *Критерии включения:* аналитические статьи, руководства по обеспечению качества, систематические обзоры, метаанализы, оригинальные исследования, с качественным и количественным анализом данных, статьи на русском и английском языках. *Критериями исключения* стали материалы конференций, сборники тезисов, содержащие ограниченное количество информации, статьи с платным доступом; статьи ранее 2000 года. Найдено 111 публикаций, к окончательному анализу было принято 60.

**Результаты.** Анализ источников выявил наличие трех основных групп рисков и их влияние на качество оказываемых услуг. Установлено, что служба управления качеством регулирует противодействие по стратегическим и операционным рискам, и имеет недостаточно ресурсов для контроля экономических рисков. Достигнут достаточный уровень успеха для таких атрибутов качества, как оптимальность, результативность, легитимность. Другие характеристики, как доступность и открытость нуждаются в дальнейшем совершенствовании работы службы.

**Выводы.** Сохранение и поддержание требуемого уровня качества является постоянным процессом, и следует продолжать разрабатывать мероприятия по его совершенствованию, например, такие как обучение персонала, проведение клинических разборов. Для управления экономическими рисками целесообразно проводить обучение и привлекать специалистов по оценке технологий здравоохранения с учетом особенностей каждой медицинской организации.

**Ключевые слова:** качество медицинских услуг, удовлетворенность пациентов, удовлетворенность персонала, управление качеством, стоимость медицинских услуг.

Түйіндеме

## ҚАЗІРГІ КЕЗЕҢДЕ МЕДИЦИНАЛЫҚ ҰЙЫМДАРДАҒЫ ҚОЛДАНЫСТАҒЫ САПА МЕНЕДЖМЕНТІ ЖҮЙЕСІНДЕ МЕДИЦИНАЛЫҚ ҚЫЗМЕТ САПАСЫНА ӘСЕР ЕТЕТІН ТӘУЕКЕЛДЕРДІ ҚАРАСТЫРУ

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**Сәйкестік.** Денсаулық сақтау ұйымдары өз алдына сапалы медициналық қызмет көрсетуде ең жақсы нәтижелерге жетуді мақсат етіп қойды. Медициналық ұйымдардағы сапа тәуекелдерін басқару қызметі пациенттердің қауіпсіз және тиімді болуын және қызметкерлердің жұмысын қамтамасыз ете алатын жүйені құруға және қолдауға бағытталған. Дегенмен, іс жүзінде медициналық қызмет көрсетушілер сапалы қызмет көрсетуге әсер ететін тәуекелдерді әрқашан ескере алмайды, бұл ақыр соңында пациенттердің қауіпсіздігіне әсер етеді және медициналық көмектің сапасын төмендетеді.

**Мақсаты:** медициналық ұйымдардағы медициналық қызметтер сапасының негізгі тәуекелдерін және оларға қарсы тұру жүйесін бағалау мәселесі бойынша жарияланымдарды талдау.

**Іздеу стратегиясы:** PubMed, Google Academy, e-Library, Cyberleninka мәліметтер базасында шетелдік және отандық дереккөздер іздестірілді. Іздеу тереңдігі 20 жыл болды. Негізгі сұрақтар таңдалды - медициналық қызметтердің сапасы, пациенттердің қанағаттануы, қызметкерлердің қанағаттануы, сапаны басқару, медициналық қызметтердің құны. *Қосылу критерийлері:* аналитикалық мақалалар, сапаны қамтамасыз ету бойынша нұсқаулар, жүйелі шолулар, мета-талдаулар, деректердің сапалық және сандық талдауы бар түпнұсқалық зерттеулер, орыс және ағылшын тілдеріндегі мақалалар. *Алып тастау критерийлері* конференция материалдары, ақпараттың шектеулі көлемін қамтитын тезистер жинағы, ақылы қолжетімді мақалалар болды; 2000 жылға дейінгі мақалалар. 111 жарияланым табылды, 60-ы қорытынды талдауға қабылданды.

**Нәтижелер.** Дереккөздерді талдау тәуекелдердің үш негізгі тобының болуын және олардың көрсетілетін қызметтердің сапасына әсерін анықтады. Сапа менеджменті қызметі стратегиялық және операциялық тәуекелдерге қарсы іс-қимылды реттейтін және экономикалық тәуекелдерді бақылау үшін ресурстардың жеткіліксіздігі анықталды. Оңтайлылық, тиімділік, заңдылық сияқты сапа атрибуттары бойынша табыстың жеткілікті деңгейіне қол жеткізілді. Қолжетімділік пен ашықтық сияқты басқа сипаттамалар қызметтің жұмысын одан әрі жетілдіруді қажет етеді.

**Қорытындылар.** Сапаның талап етілетін деңгейін сақтау және қолдау үздіксіз процесс және оны жақсарту бойынша шараларды әзірлеуді жалғастыру керек, мысалы, қызметкерлерді оқыту, клиникалық шолуларды жүргізу. Экономикалық тәуекелдерді басқару үшін оқытуды өткізіп, әрбір медициналық ұйымның ерекшеліктерін ескере отырып, денсаулық сақтау технологиясын бағалауға мамандарды тартқан жөн.

**Түйін сөздер:** медициналық қызметтердің сапасы, пациенттердің қанағаттануы, қызметкерлердің қанағаттануы, сапаны басқару, медициналық қызметтердің құны.

**Библиографиялық сілтеме:**

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**Background**

Considerable alternatives in the scientific and technical approaches to healthcare processes together with rising patient expectations encourage constant improvement activities in health system. Like any transformation, these changes in any scale come with increased risk. Risk assumed to appear in all areas, including finance and productivity, and the most important thing in healthcare is the quality of medical care [1], [4], [17].

The possibility of unpredicted sequences in a complex system as health care is always high, and vigilance at all levels is required. The pandemic experience has revealed the need for robust risk management systems that meet the needs of all health sectors [39], [40], [42]. Though the uneven distribution of the impact of risks on different processes, equal attention should be paid to how changes or circumstances affect different sectors and contexts. Critical involvement of all sectors in development of robust frameworks looks essential with counting different circumstances and needs, while at the same time providing important opportunities for participation and adaptation at the local level [33].

Risk managers use the links between risk management, patient safety and quality improvement. Patient safety threats are a key element of the wide range of risks that healthcare organizations must address. Quality improvement aims to achieve the best possible results by examination of the risks' surroundings in healthcare organization and management [20], [27]. By creating a culture where healthcare providers have a right to say, risk managers can use incident reports and other sources of information to manage risk, influence key decision makers, and ultimately patient safety and quality of care.

**Aim:** To conduct the analysis of studies reported the ways of quality risk assessment in health care organizations and of the effectiveness of risk management system.

**Search strategy.**

A review conducted covered foreign and domestic sources to determine the risks, their modifications and the ways of management on the quality of medical services in healthcare organizations (HO). The search was carried out in the PubMed, Google Academy, e-Library, Cyberleninka databases, the search depth borne 20 years. To study the assessment of quality by both medical professionals and patients, the key queries were chosen - the quality of medical services, patient satisfaction, staff satisfaction, quality management, and cost of medical services. To highlight the existing risks, the review includes analytical articles, quality assurance manuals. To determine the effectiveness of ongoing activities, the inclusion criteria were type of research as systematic reviews, meta-analyses, original studies, with qualitative and quantitative data analysis, articles in Russian and English. The exclusion criteria were conference materials, collections of abstracts containing a limited amount of information, articles with paid access; articles prior to 2000.

Key words revealed 111 publications, where 51 articles were removed according to the exclusion criteria. Exception took the article by A. Donabedian "The seven pillars of quality", published in 1990 [25], included in the review due to fundamental materials on the quality of medical services in HO in content. The 60 publications reviewed written in English and Russian. Articles selected were divided into three groups by analytical (n=10) - describing the nature, causes and relationships of risks [1], [10], [21], [23]; guidelines (n=21) – on existing quality risk management methods [19], [28], [35], [42]; and systematic reviews, meta-analyses and observational studies (n=29), including 6 cross-sectional studies conducted in the Republic of Kazakhstan to review the empirical effectiveness of risk management (Figure 1).

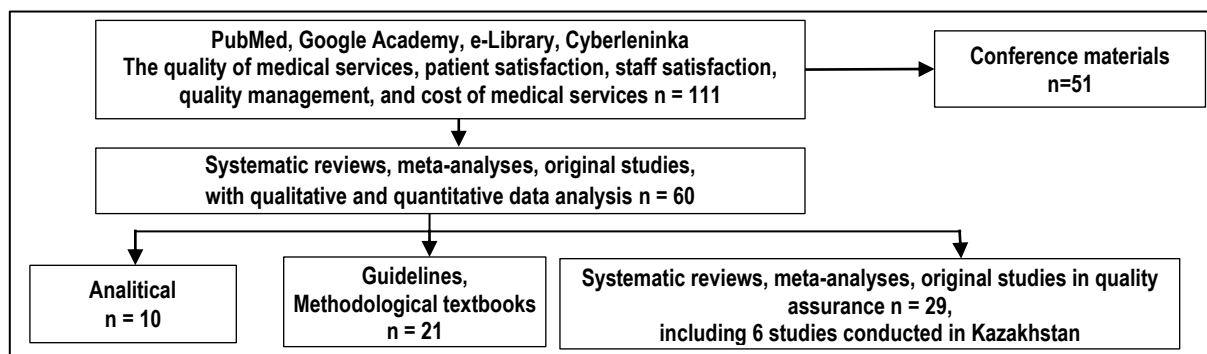


Рисунок 1. Study selection for review.

The results of the analysis are summarized according to the attention sufficiency to risks, the description of systematic and organizational quality control as changes and/or embedding of new processes. The main task of the HO is to provide medical services. A review of analytical publications showed that other areas as profit, building a successful brand, scientific activities and educational services, should not and cannot overlap the main task. That implies the risk management system set in HO should pursue the creation of conditions for maintaining and constantly improving the quality of medical services. That is, quality indicators used everywhere also tend to reflect the effectiveness of risk management both directly and indirectly [30] [44]. However, indicators alone cannot be a complete substitute for well-designed and comprehensive risk management measures. Comprehensive risk management could include quality metrics, risk metrics and other less classifiable metrics.

There are various classifications of risks, depending on the origin and structure. R.K. Buccheri (2017), in a guide to quality assessment tools, considers risks in terms of their

impact on the MO, such as professional burnout, loss of patient confidentiality, errors in dispensing medicines. In this case, for each of the consequences, the cause of the risk is given. M.L. Chiozza (2006), describes the risks of compliance with routine processes in the MO, associated with insufficient equipment and insufficient qualifications and training of personnel. S.W. Choi 2020, talks about the polygenicity of risks, and names the economic reasons for the development of risks. In general, authors defined three main groups of risks by origin that affect the quality of services provided in medical organizations:

- Economic: macroeconomic and microeconomic risks affecting the growth opportunities of the HO [3], [28];
- Strategic: risks making slow down or completely stop the development of the organization [29], [31];
- Operational: risks affecting the key operations of the MO in the implementation of its strategy [18], [24], [30].

Considering quality assurance risks through the A. Donabedian triad prisma [25] - structure, process, result, then the impact of all types of risks on the quality is visible despite their differences in origin. (Table 1):

Table 1.

**Classification of risk groups by origin.**

Risk type	Structure	Process	Outcome
Macroeconomic risks caused by <ul style="list-style-type: none"> <li>• Changes in the budget of the health care system;</li> <li>• Changes in the exchange rate of the national currency;</li> <li>• Changes in procurement and tax legislation.</li> </ul>	The risk of losing support for qualified personnel and supply of sufficient equipment as a result of changes in core funding	Risk for achievement clinical indicators due to lack/loss of one/several components of medical technology	Limitation/delay of access to medical services
Strategic risks caused by <ul style="list-style-type: none"> <li>• Reforms in the health care, as ways of financing, management, methods of control;</li> <li>• Competition;</li> <li>• Insufficient/excessive capacity of HO</li> </ul>	The risk of in compliance the structure the expectations of patients and medical staff, staff turnover	Risks for achievement non-clinical indicators - the predominance of a certain type of service in the HO	Limitation/delay of access to medical services, increasing costs
Operational risks caused by <ul style="list-style-type: none"> <li>• Errors in current processes;</li> <li>• Failure of hospital information systems;</li> <li>• Staff replacement.</li> </ul>	Risks of unreasonable complicated / simplified structure, staff turnover	The risk of delaying the process, increasing demand in additional resources to correct errors	The risk of a decline in the quality of medical services, the growing cost of medical services

The interaction of risks with quality is obvious (Figure 1). Economic risks presented at all levels of HO function. The government remains the main source of funding, which makes HOs dependent on the level of gross domestic product (GDP), strategic decisions of local authorities allocating material resources [3]. At the same time, public health spending remains low (from 1.8% in 2017 to 2.9% in 2020) [8], [29]. Rational economic approaches in the HO can provide financial stability, the possibility of short-term and long-term planning, and the development of new directions. On the other hand, the quality of services largely depends on the conditions of the economic status of the MO - the level of training of employees, which often requires extrabudget investments; equipping medical units, maintaining external and internal design, for the convenience and safety of staff and patients [24].

The HO's current order to manage economic risks, is given the opportunity to increase non-state sources of financing through paid medical services, attract investors and insurance funds, and create their own extrabudgetary funds [34]. In a competitive environment, the declared quality of medical services is considered as the main marketing tool, which means that a drop in quality is a risk for the economic tasks of the medical organization [45]. In Kazakhstan, the assessment tool for determining compliance with the required quality is the accreditation system of the HOs, and the right to receive state funding (National accreditation) [1], [16]. Thus, decent quality provides the largest part of the income for both public and private HOs, and reduces economic risks (figure 1).

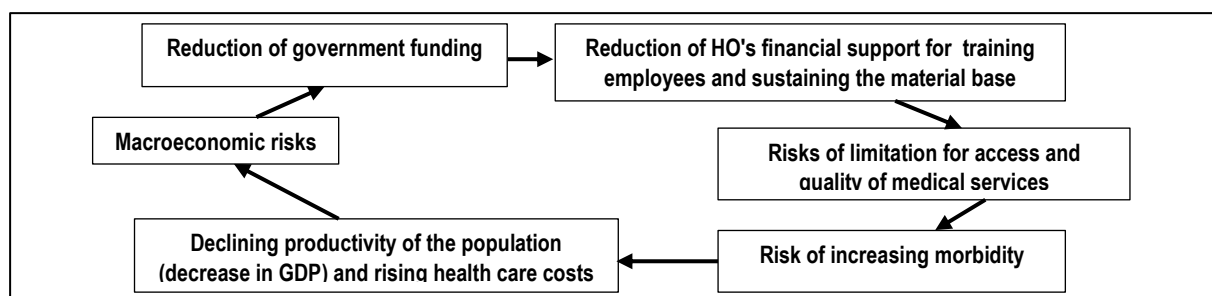


Figure 1. Interaction of economic risks with medical care quality.

The current quality assurance service in HO is aimed at preventing and counteracting strategic and operational risks [18], [21]. A. Donabedian (1990), proposed to consider the quality of medical services through the prism of seven attributes that characterize the safety of patients and staff, efficiency, timeliness of medical services [25], K. O'Donnell (2012) [42] and D. Berwick (2016) [17], consider that these characteristics remain relevant in modern conditions. Safety includes a set of measures for infection control requirements, compliance with standard procedure algorithms, comfortable conditions for staying in HO. This also includes non-monetary assets, such as the responsiveness and communicative availability of medical personnel, which allow timely response to possible

complications in the process of providing medical services [23], [46].

G.E. Ulumbekova (2017), O.S. Kobyakova (2016), A. Donabedian (1990), suggest considering seven quality attributes in HO as effectiveness, efficiency, optimality, acceptability, legitimacy, fairness and cost [7], [14], [25]. The authors believe the attributes to characterize satisfaction and preferences of patients, society and health professionals themselves in terms of quality. Risks of degradation or loss of quality may arise when these preferences diverge or fail to be met. Thus, quality management is to maintain these characteristics constantly [10], [32]. Table 2 gives the interpretation of these attributes and the existing measures in HOs to achieve them.

Table 2.

Services for quality attributes assurance.

Quality attributes	Attribute features	Action to achieve attribute	Measurements required
1	2	3	4
Effectiveness	Ability to achieve quality indicators, coincided to evidence-based expectations	Regular monitoring of evidence based medical acquirments with the determination of the likelihood of success in the application of medical technologies.	Participation of leading HO's experts in the development/discussion / updating of clinical protocols for diagnosis and treatment
Efficiency	The ability to choose a rational process for the provision of services, with each component effective in terms of the use of resources (time, material resources)	Analysis of resources exploitation (specialized specialists, equipment) in the provision of medical services with the determination of the time spent	Development of standard operating procedures for ongoing processes in HO
Optimality	Health care and services provision balanced with health care costs and health outcomes	Analysis of quality indicators (readmission, disability, mortality, etc.) and the costs incurred for the provision of medical services	Engaging health technology assessment specialists to analyze cost-benefit ratios
Acceptability	Meeting patient preferences for accessibility, communication with the practitioner, reasonable expectations for amenities, outcomes, and cost of care	Transparency of care process with informing the patient about the existing processes in the medical organization, their results and cost	Development of informed consent, conducting trainings on communication skills for staff, building a HO's brand
Legitimacy	Recognition by patients and their representatives of the current rules of the HO, expressed in ethical principles, laws, norms and rules	Presenting the Code of Ethics of HO to society. Informing about the ethical rules in HO, the conditions for their compliance in accordance with the code	Monitoring of standard operating procedures compliance, taking into account compliance with accepted ethical rules
Fairness	Validity and fair approach in the distribution of medical care and its health outcomes.	Distribution of patients flows according to their needs and available resources of the HO	Implementation of models for "bottleneck" management
Cost	Economic approach, which measures the most rational use of resources, i.e. the lowest cost of medical care without reducing its effectiveness.	Monitoring of the cost of each component of the medical service and treatment outcomes	Health-economic analysis conduction

**Discussion.** The HO quality management operates various methods, tools and practices and traditional methodologies that conduct self-analysis by feedback from patients and medical professionals, through clinical reviews, and participation in external expertise (HO rating and accreditation). This approach reduces the number of errors and ensures high quality and patient safety. In addition to clinical reviews, there is a system for appointing clinical mentors for young and newly hired medical workers [40]. P. Martin 2021, found that together with quality improvement, this practice reduces the level of professional burnout by 2.06 times. However, the review showed that there are continuing operational risks to process compliance. Therefore, V. Lapp 2021, in a study on patient satisfaction with long-term inpatient treatment, notes the main gaps in hospital management as an absence or lack of access to information, that means the decrease in the quality attribute as fairness [38]. B. King 2021, in a study assessing the quality of hospital stay for elderly patients, also indicates that patient dissatisfaction lies in the lack of effective communication with relatives, given the category of patients [37]. A. Bugaev 2016, being evaluated the effectiveness of ongoing quality assurance activities, confirms that the main risks lie precisely within compliance with standard operating procedures, and the volume of internal examinations should be increased [4].

Authors, G.K. Beisenbekova 2012, A.R. Eskaliev 2021, reported the quality management in Kazakhstan HOs are based on accreditation standards, which meets the requirements of National and international healthcare [16], [29]. The HO regularly implements performance measures by conducting clinical investigations practice on compliance with diagnostic and treatment protocols. This practice consolidates the professional skills of medical specialists, and allows you to pay attention to organizational factors. The analysis is aimed at identifying stages of service delivery where there are problems with communication and control, excessive workload, and additional staff training is required. Efficiency is supported by the existence of standard operating procedures, their constant monitoring, and updating as necessary. Acceptability and legitimacy is achieved by a well-established system of informing patients and their representatives. At the same time, the authors point out a number of points that require further improvement. This concerns such a quality attribute as fairness as unequal access to medical services. In international sources, this phenomenon is called the "narrowed corridor or bottleneck", which is manifested by a long waiting list for medical services. K.N. Tazhibayeva, 2017, pointed the dissatisfaction of oncological patients with long-term increases by 24.5 times due to a long wait for an appointment with a doctor, and 1.6 times due to exceeding the appointment time by more than 30 minutes [9]. Y. Egen 2019, studied patient's satisfaction with the medical services of urban polyclinics, confirms the waiting time for a doctor's appointment up to 45 minutes in 27.2% of respondents, despite prior appointment [5]. Another attribute, like acceptability, also needs to be improved (A.A. Akanov 2017), since, according to the authors, insufficient communication between a doctor and a patient increases the disappointment of patients by 2.4 times, and the inability or inaccessibility of relatives to receive information by 4.8 times [2], such a situation leads to distrust of HO [11], [13].

Outcomes of surveys of medical workers (M. Uteulin 2018; B. Tyulegenbayeva 2017), demonstrated insufficient level of interaction between doctors and nursing staff, which indicates the need to train personnel in actions in accordance with standard operating procedures [12], [15]. D. Dreier 2020, reviewed national quality assurance programs in the HO, calls the accreditation system key in creating an improvement-oriented climate, and contributing to the psychological preparation of personnel for constant structural changes. D. Dreier also notes that financial initiatives can improve the quality of services provided, namely, the introduction of a pay-for-performance system in 2014 allowed to reduce the level of nosocomial infectious complications to 76% in Israel HOs, and acted as an incentive for medical personnel to undergo training [26].

**Conclusion.** Risks affected the quality of services provided in healthcare organizations tentatively classified as economic, strategic and operational. The review showed a lack of research on quality attributes such as optimality and cost-benefit. In order to improve the work of the economic risks service, it is worth to conduct a health technology assessment on HO level, considering the features of the region, the category of patients, and the capabilities of the HO. Given the regular introduction of innovations and new technologies, it is necessary to integrate the evaluation of new technologies effectiveness with the activities already underway. The existing system of counteraction is aimed at strategic risks by creating conditions for the achievement of indicators and compliance with accreditation standards. The review showed that the main gaps in quality assurance in the provision of medical services are counteracting operational risks, which are managed by developing and maintaining compliance with internal processes. To achieve the required level of quality, it is necessary to continue to develop and carry out activities to improve it, one of which is continuous staff training.

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