

Algorithm of management actions for the formation and implementation of a resilient health care quality system

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ABSTRACT

Aim: Development of an algorithm of management actions for the formation of a resilient system of quality of medical care in health care institutions of obstetric and gynecological profile and formalization of its closed structural and logical scheme.

Materials and Methods: A set of theoretical approaches of social medicine and methods of business process reengineering is used, taking into account the dominant ones: systemic and integrated approach and alarm and process approaches; the concept of resilience; quality of medical care; reproductive health care using business ecosystem methods.

Results: The algorithm of management actions for the formation of a resilient system of quality of medical care in obstetric and gynecological health care institutions, which is formalized in nine stages: analysis of needs and identification of problems; substantiation of performance requirements; development of a health care quality strategy; involvement of stakeholders; formation of a system of relative indicators; development of an action plan; implementation of a set of measures; monitoring and evaluation; improving the quality of health care.

Conclusions: The results made it possible: construction of a closed structural and logical scheme of management actions, taking into account the combination of factors of influence, harmonized with the main functions of the resilient system, which determine the peculiarities of its functioning; justification of the boundaries of managerial and social responsibility of management entities according to the binary components of the medical and social justification of the process of improving the quality of medical care.

KEY WORDS: quality management, algorithm of management actions, resilient quality system of obstetric and gynecological care, health care facilities

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INTRODUCTION

In the context of solving the problem of improving the quality of medical care in obstetric and gynecological health care facilities and its modernization, the key basis for reconstruction processes is the development of its structural and functional resilient model, because this type of model solution allows to ensure 1) integration of resources and processes [1, 2] in obstetric and gynecological health care facilities through the integration of various resources and processes that ensure the quality of medical care, including human resources, technologies, procedures and management systems; 2) adaptability of the medical and management system to changes, as it will be built on the principles of resilience and flexibility[3, 4]; 3) improving quality management processes by integrating management actions to control and improve the system [5]; 4) improving interaction with patients and employees by tightening logistics and information and communication links, taking into account needs and expectations; 5) stability and sustainability of the

functioning of the *obstetric and gynecological health care institution* (OGHCI), taking into account the principles of resilience in the context of stabilizing the system in conditions of uncertainty and crisis situations [5-7]. Achieving clarity of tasks and objectivity of the format of the resilient health care quality system will necessarily require formalization of the structural and logical scheme of implementation of the algorithm of management actions in practice in the context of its phased development.

AIM

Development and substantiation of the algorithm of managerial actions for the formation and implementation of a resilient system of quality of medical care in health care institutions of obstetric and gynecological profile and formalization of a closed structural and logical scheme for the implementation of tasks with detailing and determining the managerial and social responsibility of management entities.

MATERIALS AND METHODS

A set of methodological and theoretical approaches of social medicine and a number of multidisciplinary provisions of business process reengineering were used to develop and substantiate an algorithm of management actions for the formation and implementation of a resilient system of quality of medical care in OGHCI: a) systemic and integrated approach [1], which allowed to consider and describe a resilient health care quality system as a holistic unity with structural multidimensional relationships, in which each element interacts with others to achieve common goals; b) alarm and process approach [2, 3] in substantiating the algorithm of management actions for the formation of a resilient system of quality of medical care in obstetric and gynecological *health care facilities* (HCF) with the identification of key risks, challenges and dangers that arise in the provision of medical care and management of HCF. At the same time, taking into account the provisions of the alarm and process approach allows to establish the composition of procedures for: identifying risks and hazards (to analyse the state of affairs and identify potential threats to the quality of medical care in obstetric and gynecological health care facilities); assessment of possible consequences on a scope of probability (determination of the importance and probability of risk/hazard occurrence, assessment of potential consequences); development of risk management strategies (specific measures to prevent, identify and minimize risks and hazards); implementation of action plans and monitoring of their effectiveness; analysis and improvement of the resilient system (evaluation of results, analysis of the causes of risks and hazards, and making necessary changes to improve the system). The following dominants are taken into account: a) the concept of resilience [4, 5], which is the basis of a closed algorithm, providing the quality system with signs of stability and recovery; b) quality of medical care [6] (accessibility, effectiveness, safety, patient orientation etc.); c) empirical data and results of studies in the field of reproductive health care and quality management [7-10] on the use of management methods and tools [11, 12], which allowed to optimize management actions for the formation and implementation of a resilient system of quality of medical care in OGHCI; d) continuity of process improvement [13] to focus management actions on improvement and adaptation to change by incorporating organizational, medical and social feedback mechanisms into the algorithm with monitoring the effectiveness of the implementation of the *resilient health care quality system* (RHCQS) to ensure its effectiveness and adaptability to the specific needs and conditions of the functioning of OGHCI.

The design of the study did not provide for the observance and consideration of the principles of bioethics, since in the scientific and applied development an exploratory analysis of the sequence of implementation of management actions was carried out to form and introduce into practice an effective system of quality of medical care, the development of which was carried out taking into account theoretical and methodological developments in ensuring the quality of medical care in health care institutions of the obstetric and gynecological profile.

RESULTS

Defining the current task as the formation of a resilient system of quality of medical care in the OGHCI, we confirm that the algorithm of managerial actions for the formation and implementation of RHCQS should take into account the dominant WHO guidelines [6] and the methodological experience of structural and informational redesign of obstetric and gynecological service [14, 16, 17]. Therefore, we formalized the management algorithm (Table 1) with a clear nine-step process. We emphasize that [15, 18]: a) the above algorithm of management actions has a closed nature, so its structural and logical scheme (Fig.1) is built on a closed cycle of implementation of management and organizational actions, which will allow RHCQS to remain relevant and effective in the face of constant changes and growing demands of the reproductive health care market); b) since RHCQS was developed taking into account the dominant systemic and integrated approach and alarm and process concepts, management and organizational actions are divided into two areas, respectively (see Table 1). The proposed closed algorithm (see Fig.1) provides a general action plan for the development (formation) of RHCQS in HCFs [19], and organizational, medical and social processes will require cooperation of all stakeholders and systematic monitoring and improvement to achieve the best results.

The presented managerial, organizational and economic actions (see Table 1 – steps II, V and IX) will help to substantiate clear requirements for the effectiveness of RHCQS and ensure its effective implementation and operation. Step “V” “Formation of a multi-level system of relative indicators for assessing and forecasting the quality of medical care” is of particular importance – it can be used both for assessing and monitoring and managing the quality of obstetric and gynecological care).

The substantiation of a multilevel system of indicators should be performed using scientific and applied econometric approaches [19-21] to the formation of

Table 1. Closed algorithm of management actions for the formation of a resilient system of quality of medical services in obstetric and gynecological health care institutions *

No.	Step by algorithm	Content of management and organizational actions	
		By systemic and integrated concept	By alarm and process concept
I	Analysis of needs and identification of problems, threats and risks	Analyse the current state of the health care delivery system in obstetric and gynecological facilities. Identify the main problems and shortcomings that need to be addressed, as well as threats and risks to the sustainable functioning of the health care facility.	Analysis of the current situation and identification of potential threats to the quality of medical care. Identification of risks and vulnerabilities in the health care facility. Assessment of possible consequences on the scope of probability of risk or danger, assessment of consequences.
II	Justification of the requirements for the effectiveness of RHCQS in OGHCI	<ul style="list-style-type: none"> - Analysis of the state of the healthcare quality system, identification of strengths and weaknesses and opportunities for improvement. - Determination of key indicators that reflect the effectiveness of the quality system (share of complications, patient satisfaction, level of professional competence of medical staff, etc.) - Establishing the goal and objectives to be achieved through the implementation of the quality system (e.g., reducing complications/increasing patient satisfaction). - Take into account the requirements of quality standards and regulatory requirements related to medical care in the field of obstetrics and gynecology, and include them in the performance requirements. - Involvement of stakeholders in the process of justifying performance requirements, including representatives of medical staff, administration, patients, and regulatory authorities. - Formulation of requirements for the quality system performance to be achieved within a set period of time (should be specific, measurable, achievable, realistic and within a set timeframe). - Evaluation and monitoring of the results of fulfilment of the existing performance requirements, making necessary adjustments and improvements if required. 	
III	Determination and development/improvement of the medical care quality strategy	Develop a strategy for building RHCQS based on the problems, threats and risks (of different nature) identified in the previous steps and achieving the goals. To determine the main priorities and areas of activity based on the results of the implementation of RHCQS.	Development of risk management strategies in HCFs, identification of measures to prevent, identify and minimize risks and hazards. Planning and development of measures to counteract critical situations and respond to them.
IV	Involvement of stakeholders	Involve all stakeholders, including medical staff, facility administrators, patient representatives and other interested groups, in the process of building a resilient quality system and in decision-making in this area.	
V	Formation of a multi-level system of relative indicators for assessing and forecasting the quality of medical care	<ul style="list-style-type: none"> - Analysis of needs and targeting of indicators: based on the results of the analysis of the current state of the health care quality system and identification of key aspects that need to be measured and evaluated (based on the ten components of RHCQS). Setting goals and strategies to improve the quality of healthcare services. - Selection of indicators: based on the analysis, determine a set of key indicators that will reflect the level of quality of medical care. They can be either structural (availability of equipment and resources), procedural (waiting time for an appointment) or performance (level of complications after procedures). - Formation of a multi-level assessment system, including the main levels (structural, process, performance) and sub-levels (quality indicators for different procedures or services). Each level should have an appropriate set of indicators and methods of their measurement with the possibility of their formalization according to a single criterion in the form of a relative indicator. - Development of a measurement and data collection system: justification of a system for collecting, processing and analysing data on quality of care indicators: this will include the creation of databases, implementation of data collection procedures and training of medical staff on their use. - Determination of criteria for evaluation and comparison: determination of a single criterion for evaluating and comparing health care quality indicators at different levels. This will help to identify trends, problem areas, and make management decisions to improve the quality of care. - Continuous updating and improvement: It is urgent to ensure continuous updating and improvement of the system of relative indicators based on new requirements, scientific research and best practices in the field of reproductive medicine. We need to clarify and change the indicators as needed, and modernize the models for their calculation so that they reflect the most up-to-date standards of quality of care in OGHCI. 	

Continuation of Table 1

No.	Step by algorithm	Content of management and organizational actions	
		By systemic and integrated concept	By alarm and process concept
VI	Development of an action plan	To develop a specific action plan identifying the main and specific tasks, responsible persons, deadlines and resources needed to complete each step to build a resilient healthcare quality system in OGHCI in a short time frame, even with resource constraints and a constant increase in threats and risks.	Improvement of procedures for informing and communicating with patients, ensuring access to information about treatment procedures and processes. Development/improvement of feedback mechanisms. Implementation of risk management strategies and monitoring of their effectiveness.
VII	Implementation of a set of measures	Implement the recommended measures, including updating procedures and protocols, training and professional development of medical staff, and implementing quality monitoring and control systems based on a multi-level system of relative indicators.	Tests and simulations: conducting training and simulation exercises with medical staff to test the effectiveness of action plans and respond to unforeseen circumstances.
VIII	Monitoring and evaluation	To conduct ongoing monitoring and evaluation of the effectiveness of the implemented measures. Determine the level of achievement of the set goals and make adjustments to the strategy for implementing a resilient healthcare quality system, if necessary.	Development and implementation of a system for monitoring and tracking quality indicators, controlling the effectiveness of measures and timely response to negative trends and risks.
IX	Provision and continuous improvement of the resilient quality system and the quality strategy of medical care	<p>Ensure a closed-loop system of continuous improvement, including responding to new requirements and standards, implementing innovations and best practices. The latter includes not only finding and eliminating deficiencies, but also actively improving the structure, functions, tasks and processes of the system itself. It is important to continue developing and adapting RHCQS based on the data, feedback and identified needs.</p> <ul style="list-style-type: none"> - Improvement of the structure: analyse the effectiveness of the current structure of the quality system and make the necessary changes to improve the organization and management. - Clarify the functions and tasks of RHCQS, clarify the tasks it should perform in light of changing requirements and needs. - Process updates: review and optimize quality management-related processes in the healthcare facility to ensure greater efficiency and effectiveness. - Training and development of quality staff. - Responding to changes: be prepared to respond to changes and transformations in the external environment, take into account regulatory requirements and new quality standards by adapting and improving OGHCI. 	<p>Professional development of staff in crisis response: organization of educational programs and trainings for medical staff of OGHCI on the effectiveness and adequacy of emergency response.</p> <p>Development and implementation of an automated notification and crisis response system for prompt notification and coordination of employees and patients during emergencies.</p> <p>Fulfilment of tasks to ensure the stability and efficiency of the work of OGHCI in conditions of uncertainty, which will help maintain a high level of quality of medical care. Improvement of the quality system (based on the results of the analysis): evaluation of the results, analysis of the causes of risks and hazards, introduction of necessary changes to improve RHCQS.</p>

Source* Determined and substantiated by the author, as detailed in [18].

absolute, integral, generalized integral, aggregate and composite performance indicators. Given the certainty of the nine steps in the formation of RHCQS, we need to determine for each step the responsible OGHCI and the timing of the implementation of the relevant functions for the introduction into medical practice (Table 2).

It should be noted that the responsibility for each of the nine steps of the closed-loop algorithm for the

formation of RHCQS may be distributed between different levels of management in the healthcare facility and between different stakeholders. Moreover, the above division of responsibilities (see Table 2) will help ensure that each step in the process of forming and putting this system into operation is effectively implemented. We should pay attention to the expediency of addressing the issue of medical and social justification of the

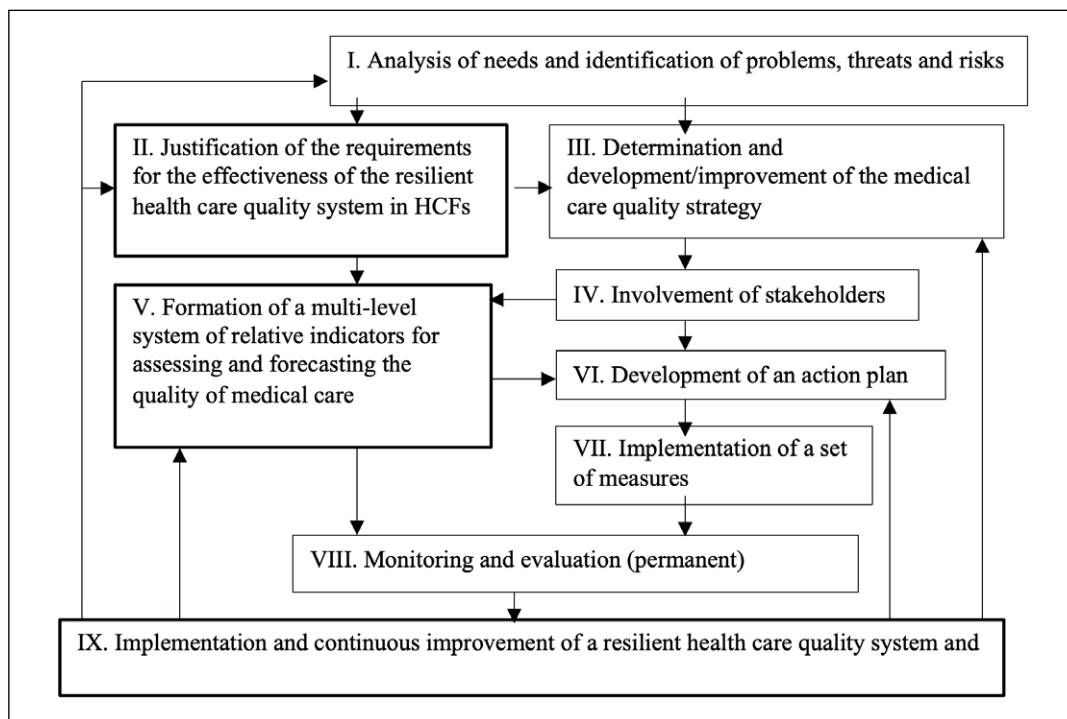


Fig. 1. Closed structural and logical scheme for the implementation of management actions for the formation and implementation of a resilient health care system in the obstetric and gynecological health care institutions (author's development – detailed in [18]).

process of improving the modern (resilient) quality system of medical care in HCFs in the context of the implementation of social responsibility functions by management entities, which aim to prove the need and benefits of such changes for the medical institution, society, patients and other stakeholders. Therefore, using our experience [18], we propose to utilize a binary set of measures and medical and statistical procedures to intensify the processes of modernization of the quality system. It is mandatory to maintain, define and calculate the main medical and statistical components according to the formalization – Table 3. The main components of the medical and social substantiation of the processes of improvement (modernization) of RHCQS in OGHCI also include the medical and social responsibility of management entities to employees and staff of the medical institution [22, 23], therefore, such responsibility is considered by the author from two perspectives.

The binary components of the medical and social substantiation of the process of improving RHCQS in OGHCI should help to create and generate systemic conditions for its implementation in obstetric and gynecological practice while ensuring the fulfilment of social responsibility functions by management entities. Recognition of the need to develop an algorithm of management actions for the formation and implementation of RHCQS in OGHCI in conditions of uncertainty can be formulated as follows: in the current conditions, when the health care system is facing significant challenges,

the development and implementation of RHCQS is an extremely important and urgent task. The uncertainty that accompanies modern medical practice requires flexibility, adaptability, and the ability to respond quickly. Therefore, the development of a management action algorithm is becoming a key element of the strategy for improving the health care quality system, as the implementation of RHCQS will help health care facilities adapt to changing conditions and the impact of uncertainty, which will determine the creation of a flexible structure that will allow for a quick response to emergencies and ensure the stability of medical care. The development of a management action algorithm will provide a clear methodology for the formation and implementation of new approaches to quality management that: a) is the basis for organizing systematic work in the area of finding and solving problems in the field of reproductive medicine; b) ensure effective control over the processes and results of health care quality management; c) will help to achieve a high level of safety and quality of medical care for patients and staff; d) increase the level of efficiency of healthcare facilities; e) ensure public trust in the healthcare system.

DISCUSSION

The conducted scientific and applied research has shown the relevance of the problem of developing a closed algorithm of management actions for the for-

Table 2. Managerial responsibility of the management entities of obstetric and gynecological health care institutions for the implementation of the resilient health care system *

Step	Name	Responsible	Terms
I	Analysis of needs and identification of problems, threats and risks	Medical Care Quality Department and/or Analytics/Economic Department.	1-2 months
II	Justification of the requirements for the effectiveness of the functioning of the resilient system of quality of medical care in obstetric and gynecological HCFs	Medical Director and/or Head of the Medical Care Quality Department.	1 month
III	Determination and development/improvement of the medical care quality strategy	The management of the institution with the support of the Medical Care Quality Department.	2 months
IV	Involvement of stakeholders	The management of the institution with the support of the departments of medical care quality and external relations.	1-2 months
V	Formation of a multi-level system of relative indicators for assessing and forecasting the quality of medical care	Medical care quality department with the involvement of heads of departments of HCFs and the monitoring/information and methodological support department.	2-3 months
VI	Development of an action plan	Temporary team and/or project office, under the leadership of the medical director.	1 month
VII	Implementation of a set of measures	The Medical Care Quality Department together with the HR and Infrastructure departments.	3-6 months
VIII	Monitoring and evaluation (permanent)	Medical care quality department, internal audit department and monitoring department (information and methodological support).	Ongoing, with regular periodic evaluations
IX	Implementation and continuous improvement of RHCQS and the relevant type of strategy in OGHCI	Management of the facility and the medical care quality department.	Ongoing, as a permanent process of improvement

Source* Compiled and systematized by the author.

mation of a resilient system of quality of medical care, based on the principles of flexibility, adaptability and continuous improvement using systemic and complex and alarm-process approaches to the modernization of the activities of OGHCI. Therefore, the author supports the statements presented in [10, 14, 16, 17, 23] that it is necessary to analyse the current state of the health care system (including obstetrics and gynecology) in advance, taking into account the characteristics and requirements of a particular industry in order to identify specific and complex measures to implement an improved quality system. Therefore, this will require: a) development of new standards and protocols, improvement of quality control procedures, training of medical personnel on the implementation of the concept of resistance, etc.; b) development and use of mechanisms for monitoring and evaluating the effectiveness of the set of measures to ensure continuous improvement of the resilient quality system; c) involvement of all stakeholders in the process of developing and implementing the management action algorithm, including medical staff, patients, administration, and public organizations and stakeholders. It is extremely important to ensure the resilience and readiness of the reproductive health

facility to changing conditions and uncertainty, ensuring a high level of quality of care and meeting the needs of patients at all times.

In addition to the above, we believe that the urgent task should be the priority formation of applied marketing tools in the context of the activation of the reconstructive transformation of the resilient system of managing the quality of medical care in obstetric and gynecological health care institutions. Its formalization can be carried out in the case of using digital and cognitive information technologies to modernize monitoring systems and communication links with patients of obstetric and gynecological health care institutions.

CONCLUSIONS

Based on the results of the study, an algorithm of managerial actions for the formation and implementation of RHCQS in OGHCI was built, which was formalized by nine structurally and logically inter-related steps of implementing measures: I) analysis of needs and identification of problems, threats and risks; II) substantiation of the requirements for the effectiveness of the resilient health care quality

Table 3. Binary components of the medical and social substantiation of the process of improving the quality of medical care in OGHCI*

Components of medical and social justification	Content of medical and statistical, organizational and managerial measures to modernize the quality of medical care in HCFs
<i>In relation to patients of the obstetrics and gynaecological healthcare facilities</i>	
Definitive epidemiological and health and social data	Presentation of statistical data on the prevention and treatment of diseases in the field of obstetrics and gynecology, in particular, maternal and newborn mortality, the importance of regular visits to a gynecologist to prevent various diseases, such as cervical cancer or acute and chronic gynecological diseases. Determination of the effectiveness of the existing health care quality system and its comparison with the projected values of its level in case of introduction of a resilient system in the health care facility (by a composite indicator to be calculated on the basis of the developed and substantiated original multi-level system of relative indicators for evaluation and forecasting).
Economic costs and benefits	Estimation of costs and socioeconomic consequences in case of insufficient quality of medical care in obstetrics and gynecology. Comparison of the costs of implementing a new resilient health care quality system with the expected benefits of this restructuring and the benefits of reducing complications and improving reproductive health.
Determination of the scope of social impacts	Analysis of the social consequences associated with the shortcomings and accumulation of risks in obstetrics and gynecology care for women, their families and society as a whole, including disability, psychological discomfort, reproductive health risks, etc.
Improving the availability and quality of medical services	Definitions, justifications and calculations related to the results of improving the health care quality system, as well as how the introduction of a resilient health care quality system in health care facilities will increase accessibility and improve the quality of services for all segments of the population, including vulnerable groups.
Consideration of ethical and moral aspects	Addressing the ethical principles and moral responsibilities of healthcare professionals and reproductive healthcare institutions to provide quality medical care, especially in the field of obstetrics and gynecology, where the health and lives of women and, accordingly, newborns are at risk.
<i>Regarding employees and staff of OGHCI</i>	
Enhancement of employee safety and health	Management entities must ensure proper working conditions for medical staff, including the provision of the necessary equipment, protective equipment, training on safety and health in the workplace, and its digitalization. This should be in line with their high social responsibility to the HCF employees.
Creating a favourable working environment	The directorate and management of the health care facility should take into account the needs and interests of employees in the process of developing and implementing a new quality system. The transformation and modernization of the existing quality system may indirectly cause certain prejudices among the HCF employees and reluctance to change. It is necessary to take into account their opinions and suggestions, providing opportunities for professional and personal development, as well as maintaining work balance in the healthcare facility by intensifying the process of converting various information in all its forms (text, audio, graphic) into a digital format that should be understandable to employees using modern gadgets and software.
Improvement of the quality of medical care	Improvement of the healthcare quality system, including in the field of obstetrics and gynecology, will lead to better working conditions and performance of medical staff, which in turn will have a positive impact on their health and job satisfaction.
Increasing ethical requirements and strengthening relationships	Management entities of HCFs must adhere to ethical principles in their interaction with employees, avoid discrimination and ensure fair remuneration. They are obliged to create conditions for the development of positive interpersonal relations in the HCF employees.

Source* Compiled and substantiated by the author, taking into account [15, 19-22].

system in health care facilities; III) determination and development/improvement of the medical care quality strategy; IV) involvement of stakeholders; V) formation of a multi-level system of relative indicators for assessing and forecasting the quality of medical care; VI) development of an action plan; VII) implementation of a set of measures; VIII) monitoring and evaluation; IX) ensuring and continuous improvement of the resilient healthcare quality system and the corresponding type of strategy in healthcare facilities. This made it possible to build a closed structural and logical scheme of the



algorithm of management actions, taking into account the combination of influence factors, harmonized with the main functions of the resilient system, which determine the direction and features of its functioning, taking into account the resource constraints in the OGHCI and the possible increase in the scale of various threats and risks to the sustainable development of a medical institution. The methodological substantiation of the boundaries of managerial and social responsibility of management entities according to the binary components of the medical and social substantiation of the

process of improving the modern system of quality of medical care in OGHCI is provided. The obtained and substantiated experience is the basis for the development of a structural and functional model of a resilient

system of quality of medical care in obstetric and gynecological health care facilities, the formalization of which will improve the quality of care and safety, increase patient satisfaction and management efficiency.

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CONFLICT OF INTEREST







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