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Research Article

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Development of a Model of the System of Organizational Development of Treatment and Diagnostic Processes of a Multidisciplinary Hospital

A.Yu. Perminov, N.S. Fomenko ✉, S.S. Petrikov, A.R. Samarin, N.P. Dragunova, A.I. Maksimov, I.K. Melnikova, V.A. Molodov

Laboratory of Scientific and Organizational Technologies
N.V. Sklifosovsky Research Institute for Emergency Medicine
Bolshaya Sukharevskaya Sq. 3, Moscow, Russian Federation 129090

✉ **Contacts:** Natalia S. Fomenko, Candidate of Economic Sciences, Leading Researcher of the Laboratory of Scientific and Organizational Technologies, N.V. Sklifosovsky Research Institute for Emergency Medicine. Email : fomenkons@sklif.mos.ru

ABSTRACT The most important factor in improving the quality of medical services at present is the continuous improvement of all aspects of the activities of a medical organization, which determines the appropriateness of using modern approaches to organizational development in medical institutions with their appropriate adaptation.

The paper presents the results of the analysis of 16 known models of organizational development, as well as the performance indicators of the Kaidzen offer system at 19 Russian and foreign enterprises in various industries. An analysis of the authors' long-term experience of working with small groups on standardization of treatment and diagnostic processes at the N.V. Sklifosovsky Research Institute for Emergency Medicine of the Moscow Health Department was conducted, which confirmed the assumption that medical personnel of all categories have a large number of ideas for improving the organization's work and are willing to participate in their implementation.

The article presents the author's model of the system of organizational development of treatment and diagnostic processes of a multidisciplinary hospital, which is based on the concept of personnel orientation and the basic principles developed by the authors.

In the part of the model detailing, a developed system of classification features is presented, which allows determining the belonging of a offer for improvement to a certain group or class, as well as the approach proposed by the authors to sorting offers at various stages of working with them.

The paper presents the results of testing the described approach using the example of offers for improvement formulated by a pilot group of nurses of the operating unit of the N.V. Sklifosovsky Research Institute for Emergency Medicine of the Moscow Health Department. Conclusions are made on the possibilities of applying the presented research results for medical organizations, as well as promising areas for the development of the presented approach.

Keywords: treatment and diagnostic process, organizational development, small group, personnel orientation, classification features, sorting of offers for improvement, artificial intelligence, blitz project, development project

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Affiliations

Aleksandr Yu. Perminov	Candidate of Economic Sciences, Head of the Information and Analytical Center, N.V. Sklifosovsky Research Institute for Emergency Medicine; https://orcid.org/0000-0002-9758-8458, perminovay@sklif.mos.ru; 25%, development of a methodological approach, writing part of the text of the article
Natalia S. Fomenko	Candidate of Economic Sciences, Leading Researcher, Laboratory of Scientific and Organizational Technologies, N.V. Sklifosovsky Research Institute for Emergency Medicine; https://orcid.org/ 0000-0003-3539-6984, fomenkons@sklif.mos.ru; 25%, development of a methodological approach, writing part of the text of the article
Sergey S. Petrikov	Corresponding Member of the RAS, Doctor of Medical Sciences, Director of the N.V. Sklifosovsky Research Institute for Emergency Medicine; https://orcid.org/0000-0003-3292-8789, petrikovss@sklif.mos.ru; 15%, organization of the preparation process, correction and approval of the article text
Aleksandr R. Samarin	Research Fellow, Laboratory of Scientific and Organizational Technologies, N.V. Sklifosovsky Research Institute for Emergency Medicine; https://orcid.org/0000-0003-3581-0647, samarinar@sklif.mos.ru; 15%, participation in testing the methodological approach, writing part of the text of the article
Nadezhda P. Dragunova	Junior Researcher, Laboratory of Scientific and Organizational Technologies, N.V. Sklifosovsky Research Institute for Emergency Medicine; https://orcid.org/0000-0002-8483-8411, dragunovanp@sklif.mos.ru; 5%, participation in testing the methodological approach, writing part of the text of the article
Andrey I. Maksimov	Candidate of Technical Sciences, Researcher, Laboratory of Automated Control System for the Treatment and Diagnostic Process, N.V. Sklifosovsky Research Institute for Emergency Medicine; https://orcid.org/ 0000-0002-1067-4186, maksimovai@sklif.mos.ru; 5%, participation in testing the methodological approach, writing part of the text of the article

Irina K. Melnikova — Research Fellow, Laboratory of Scientific and Organizational Technologies, N.V. Sklifosovsky Research Institute for Emergency Medicine;
https://orcid.org/0000-0002-4993-8775, irina_melnikovaa@bk.ru;
5%, participation in testing the methodological approach, writing part of the text of the article

Valentin A. Molodov — Head of the Laboratory of the Automated Management System for the Treatment and Diagnostic Process, N.V. Sklifosovsky Research Institute for Emergency Medicine;
https://orcid.org/ 0000-0002-1212-8074, molodovva@sklif.mos.ru;
5%, participation in testing the methodological approach, writing part of the text of the article

CT – computed tomography
CSD – central sterilization department
CF – classification features
DM – decision maker
UMIAS – Unified Medical Information and Analytical System
IT service – information technology service
TDP – treatment and diagnostic process

RELEVANCE

Currently, the target of the activities of a medical organization is to improve the quality of medical care [1], often in the context of resource constraints, including financial ones.

At the same time, the most important factor in improving the quality of medical services is the continuous improvement (development) of all aspects of the activities of a medical organization, which, in turn, cannot be achieved without the participation of medical personnel.

Many works by Russian and foreign scientists are devoted to issues of organizational development, including organizational development [2–25].

The basic idea of organizational development is to consider the organization as an open socio-economic system in which all changes are made by people. That is why the main emphasis in the development of the organization is on creating conditions for revealing the potential of employees, motivating them to participate in development processes, forming ideas for improvement and participating in their implementation.

In other words, the development of an organization is largely based on the conceptual idea of personnel orientation (focus on employees).

Since the key factor in the success of an organizational development system is the human factor, it is very important to take into account the specifics of both the industry and the specialists working in the organization when building it.

It should be noted that the main characteristics of healthcare professionals are a high degree of dedication and involvement in their work, the manifestation of humanity and concern for the treatment of patients, and the willingness to devote more resources to work than required by the formal job description. This creates great potential for creating an effective system of organizational development of treatment and diagnostic processes (TDP) with maximum involvement of personnel.

The aim of this study is to develop a model of the organizational development system of the TDP of a multidisciplinary hospital based on the conceptual idea of increasing personnel orientation in the management of a medical institution.

The most famous founder of ideas on organizing development work with systematic involvement of personnel was the founder of the Japanese concept of continuous improvement (the Kaizen concept) Masaaki Imai [24, 25]. However, his approach is based on the Japanese philosophy of the system of making and implementing decisions in organizations “from the bottom up”, and the corporate culture of Japanese companies considers an employee as a member of a large family, a person “of their own circle”.

For most Russian companies, this approach is alien due to many factors, but it is in the healthcare industry, due to the above-mentioned characteristics of industry specialists, that it is possible to apply the principles of the Kaizen concept with certain organizational changes.

The objectives of this study are:

— analysis of modern approaches to the development of business processes in organizations;

— analysis of the practice of small groups on standardization of treatment and diagnostic processes of the multidisciplinary hospital of the N.V. Sklifosovsky Research Institute of the Department of Health of the City of Moscow, work with a pilot small group in terms of preparing offers for improvement;

— development of basic principles of operation of the system of organizational development of the TDP of a multidisciplinary hospital;

— development of a model of the organizational development system of the TDP of a multidisciplinary hospital, description of the key stages of the system’s operation;

— testing of key elements of the model using the example of a pilot small group of the N.V. Sklifosovsky Research Institute for Emergency Medicine of the Moscow Health Department.

The key results of solving the above problems are presented in this article.

MATERIAL AND METHODS

Methods: systems approach, business modeling, classification.

Material: experience of organizations in implementing Kaizen technologies, processes and results of work of small groups on standardization of the TDP of the N.V. Sklifosovsky Research Institute for Emergency Medicine of the Moscow Health Department.

RESEARCH RESULTS

Today, medical organizations have to work in conditions of continuous change, the formation of new technological trends, take into account the interests of stakeholders, changes in consumer requirements, look for ways to stimulate employees to show initiative, and involve them in the management of the organization.

The principle of its preservation through continuous development can become a tool for ensuring the sustainability of any organization's activities in the modern world [2].

As part of the scientific study, an analysis of modern approaches to the development of organizations was conducted, during which 16 models were considered, such as the 7*C Model* (Tom Peters, Robert Waterman) [8], the Kaleidoscope Model (W. Hope-Haley, J. Baloghan) [9], M. Porter's Model of Organizational Change [10], the Change Planning Model (R. Lippitt, J. Watson, B. Westley) [11], the Change Cube Model (G. Mintzberg) [12], the Model of Coordinated Organizational Work (David Hanna) [13], the Transition Period Model (R. Beckhard) [14], the Change Management Model (K. Lewin) [15], the Theory of "*E*" and "*O*" of Organizational Change (M. Beer and N. Nohria) [16], the "6*W* " Model (M. Sherrington) [17], the Change Curve of E. Kübler-Ross (E. Kübler-Ross) [18], Bridges Transition Model (W. Bridges) [19], Satir Change Management Model (V. Satir) [20], Maurer Model (R. Maurer) [21], *ADKAR Model* (D. Hyatt) [22], Kotter Theory (D. Kotter) [23].

An analysis of all the above models of organizational development shows that most of them pay special attention to the importance of personnel as a key element of development, many models place special emphasis on involving employees in the process of organizational changes, their training and support. Thus, in the 7*C model* [8], the importance of personnel is manifested through the creation of a team culture and the development of leadership qualities, the model of W. Bridges [19] emphasizes the importance of supporting personnel during changes and their adaptability to new conditions, the change management model of V. Satir [20] focuses on the psychological preparation of employees for changes and the creation of a favorable atmosphere in the team, etc.

The presented models are fully applicable to the healthcare system and predetermine the high relevance of new research in the field of improving the organizational approach to management for medical organizations, when human, social factors and the need for horizontal and vertical strategic coordination of their activities, broad involvement of employees in the management of the organization's development are taken as the basis.

One of the most well-known modern approaches to the broad involvement of employees in the activities of improving the organization is the concept of continuous improvement and the Kaizen methodology of Masaaki Imai [23, 24], within the framework of which each employee, regardless of their level and position, can have valuable ideas or comments regarding the improvement of production processes. The implementation of a system that allows employees to freely express their ideas and suggestions ensures a constant flow of innovations and improvements in the organization. Currently, the suggestion system is used in a large number of large manufacturing companies not only in Japan, but also in the USA, Sweden, Germany, Russia and many other countries around the world.

In order to assess the possible scale of such a offer submission system and the potential size of the offer flow, the study analyzed the performance indicators of the involvement system at 19 Russian and foreign enterprises in various industries, such as the metallurgical industry, agriculture, food industry, automotive industry, mechanical engineering, aviation industry, etc. Among the enterprises under consideration were such companies as *Toyota*, *Aisin-Warner*, *Hitachi Denshi*, *Lohr & Bromkamp GmbH* (*Lobro*), Baltika Brewing Company, Kuban Agroholding, Ural Spring Plant, KAMAZ JSC, MOSKABEL PLANT LLC, etc.

The results of the analysis of the data presented in the public domain on the Internet show a significant variation in the number of offers per year per employee at Russian and foreign enterprises.

Thus, for the analyzed Japanese companies this indicator varies from 10.7 to 127 (the average weighted value is 32.3 offers per year per 1 employee). For the analyzed Russian enterprises, the similar indicator varies from 0.041 to 2.9 (the average weighted value is 0.41 offers per year per 1 employee).

Such a significant difference in the average values of the indicator reflects the presence of great potential for the implementation of the involvement system at Russian enterprises, but also indicates the presence of problems in the application of Japanese management technology.

As already noted, this is primarily due to conceptual differences in the philosophy of company management in Japan and Russia in terms of key decision-making schemes (in Russia – up-bottom, and in Japan - bottom-up) and attitudes towards employees (in Japanese companies, an employee is a member of a large family).

All this confirms the relevance of scientific research, as well as the need to adapt Kaizen ideas to the specifics of Russian organizations, in particular in the healthcare sector.

The basic idea of involving medical personnel in improving the activities of a medical organization was initially tested by the authors in 2018–2023 as part of the project on standardization of the TDP of the N.V. Sklifosovsky Research Institute for Emergency Medicine of the Moscow Health Department. The results of this project are presented in the relevant publications [26–28].

During the above-mentioned project, the N.V. Sklifosovsky Research Institute for Emergency Medicine of the Moscow Health Department introduced an original organizational and methodological approach to the description and standardization of the TDP of a multidisciplinary hospital [26], the organizational basis of which was a system of small groups for key treatment profiles of the hospital, which included medical personnel from treatment and intensive care units directly involved in the described processes.

The main tasks of the small groups [26] were the analysis of the TDP, which the authors understand as a set of actions for diagnosing the condition and treating a patient from the moment of admission to the hospital until the moment of discharge; the formation of target models of the TDP in the format of modified operograms [26]; the development of standards for key organizational and economic characteristics of the TDP (frequencies and multiplicities of manipulations/actions within the framework of processes, costs of medications, consumables, labor costs of process participants, etc.) based on statistical data from the current Unified Medical Information and Analytical System (UMIAS); the organization of an internal examination of the developed models by related specialists, the management of specialized departments, and representatives of the chief physician's service; the development of technological maps of the TDP based on the approved operograms.

The most important principles of the formation and operation of small groups were the understanding of the TDP “from the inside” by the participants, voluntary participation, interest in improving the TDP (the desire to improve processes, working conditions and the level of patient satisfaction), the absence of immediate supervisors in the small group to avoid pressure from their authority on other participants in the small group, holding one-hour face-to-face meetings no more than once a week as a manifestation of respect for the limited time resource of medical workers [26].

In total, as of 2023, the N.V. Sklifosovsky Research Institute for Emergency Medicine of the Moscow Health Department has 14 small groups operating in various treatment, resuscitation and diagnostic profiles; more than 150 medical experts and representatives of the nursing staff are involved in the work on describing and standardizing the TDP.

During the work of small groups on developing target models of TDP, participants often had ideas and suggestions for improving the organization of TDP (in particular, changing the sequence of actions, "parallelizing" the actions of processes, eliminating unnecessary manipulations, duplication, etc.), as well as their material equipment, which made it possible to improve the quality of TDP or the speed of performing various manipulations and TDP as a whole. In addition, during the discussion at meetings of small groups, problems and "bottlenecks" of processes were identified that were known to the participants of the processes, but the solution to which was not within their competence.

For example, when developing a target model for examining a patient with suspected acute cerebrovascular accident in the admissions department of a hospital, the participants of the small group on neurology proposed a number of

organizational changes in the TDP, allowing for the implementation of fairly strict requirements of regulatory documents [29] regarding the timeframes for examining a patient in the admissions department, hospitalization in a specialized department, and establishing treatment tactics (60 minutes from the moment the patient is admitted to the admissions department). In particular, it was proposed to organize [27]:

— advance notification by the physician of the distribution post of the neurologist and the physician of the computed tomography (CT) room about the transportation of the patient to the hospital by an ambulance team according to the data of the AS "Hospital" application in order to free up the CT room by the time the patient is admitted;

— advance (before the patient's admission) registration of the incoming patient by the medical registrar using the data from the AS "Hospital" application, preparation of documents, consent package, etc.;

— immediate blood sampling immediately after the patient is admitted, without waiting for instructions from a neurologist;

— installation of an express analyzer in the procedure room of the admissions department, which allows for a significant reduction in the time required to transport biomaterial and perform the study.

Thus, it was during the discussion of the progress of the treatment and diagnostic process at small group meetings that it became possible to identify regularly recurring "bottlenecks" in the process and systematically formulate offers for its improvement.

Similar examples were regularly encountered in the work of doctors in all small groups over the course of 5 years of their activity. This confirmed the authors' initial opinion that medical personnel care not only about the result of the TDP, but also about the course of its implementation, as well as the opportunity to put forward offers for improving the TDP and to be "heard".

The authors conducted additional testing of this idea at a meeting of a small group of mid-level medical personnel, consisting of nurses from the operating room.

The moderators of the meeting invited everyone to freely express any constructive comments on the organization of the work of the operating unit, along with ideas and suggestions for its improvement.

During the hour-long meeting, four nurses formulated 11 constructive offers for improving the organization of work in the operating unit of various scales and focuses (Table 1).

Table 1

Suggestions for improving the organization of the operating unit

Item No.	Name	Brief summary of the offer
1	Improving the patient transportation system on treated operating room trolleys	Improve the circulation system of the operating unit trolleys, introduce into circulation floor trolleys for transporting and transferring patients to/from the operating unit
2	Development of a visual concept for displaying the schedule of operations and updating it	Develop a system for visualizing the plan and schedule of operations for the prompt display of up-to-date information on the distribution of patients among operating rooms (patient's full name, operating room number, etc.)
3	Timely provision of operating rooms with consumables and medications	Establish a process for planning and supplying consumables and medications
4	Separation of patient flows	Separate patient flows into sterile and non-sterile by moving the door to the intensive care unit. Installing an intercom
5	Development and implementation of an electronic system for writing off material assets from a warehouse	Implement an electronic warehouse product write-off system. Link the warehouse product write-off system to the UMIAS
6	Improving the system for monitoring sterility periods	Introduce color indication to simplify the process of tracking sterilized materials. Project for the implementation of "5S" in the operating unit. Cooperation with the CSD. Storage of sterilized instruments and consumables should be in the warehouse of the operating unit, and not in the CSD
7	"Red Line"	Mark a red line before entering the operating room
8	Organization of patient support for re-diagnosis and to the department	Introduce an orderly into the operating room staff who is responsible for accompanying, moving, and transporting the patient undergoing surgery to diagnostic rooms and departments, and also adjust job descriptions accordingly
9	Internal telephone communication	Restore internal communication between operating rooms using existing telephones
10	Monitoring the admission of seriously ill patients without going through the emergency department	Reducing the time required to prepare operating rooms for seriously ill emergency patients admitted to the operating room bypassing the admissions department for vital indications
11	Implementation and support of monitors with a schedule of operations	Provide technical support for the operation of the system for displaying and updating information on monitors

Notes: UMIAS - Unified Medical Information and Analytical System; CSD - Central Sterilization Department

Based on the results of the meeting, the authors made the following conclusions:

— the basic idea about the interest of all groups of medical workers in solving the existing problems of the TDP organization has been confirmed; it is the employees directly involved in the TDP who know these problems, their specificity, frequency of occurrence better than anyone else in the organization, and, most often, have the desire and motivation to eliminate them as quickly as possible;

— it was found that when an employee puts forward a specific offer for improvement, in most cases this employee is ready to take an active part in its implementation;

— the above-mentioned idea about the possibility of receiving a significant number of offers for improvement from the organization's personnel was confirmed; in the experiment conducted, an average of 2.75 offers were submitted per employee during an hour-long meeting.

In addition, it became obvious that offers for improvement may have different scales, specifics, and funding requirements if they are implemented.

Subsequent discussions of issues related to the organization of the system for receiving and implementing offers in other small groups showed a high level of interest among employees in such organizational tools.

All of the above indicates the necessity and advisability of creating **a unified system of organizational development of the TDP based on the conceptual idea of personnel orientation** in a medical institution, including transparent mechanisms for submitting and sorting offers, evaluating offers and making decisions on the advisability of implementation, motivating employees submitting offers for improvement, etc.

In other words, it is necessary to create a system that would contribute to increasing employee satisfaction, create conditions for their self-fulfillment and development, and motivate them to participate in the institution's development processes.

The authors formulated the basic principles for constructing such a system, taking into account the specifics of the activities of a medical institution (Table 2).

Building a system of organizational development of the TDP based on the above principles will encourage employees of the multidisciplinary hospital to participate in such a system and submit offers for improvement.

Table 2

Basic principles of the system of organizational development of treatment and diagnostic processes of a multidisciplinary hospital

Principle	Brief description
Principle maximum involvement medical staff	The main driving force in the development of a medical organization is its employees. In this regard, the system of organizational development of the TDP should be built on the principle of maximum involvement of medical personnel in this work
Principle voluntariness	Participation in the activities to improve the TDP of a multidisciplinary hospital is entirely voluntary, the decision is made by the employee based on full information about the content and structure of such work. The employee's lack of desire to participate in the improvement activities does not have any negative consequences for him and does not affect his main activities, the attitude of the management, etc.
Principle awareness	Information on the principles and results of the work of the organizational development system of the multidisciplinary hospital is open. All participants in the TDP organizational development system are fully familiar with it. Employees of a multidisciplinary hospital who do not participate in the organizational development system also have the opportunity to obtain this information if they wish.
Principle transparency	All mechanisms of operation of all elements of the organizational development system of the TDP are fully formalized and maximally objective: submission of offers for improvement, their sorting, assessment of the feasibility of implementation, decision-making on implementation, assessment of the results of implementation, incentives for employees submitting offers for improvement and participants in implementation projects, etc.
The principle of motivation	The system of organizational development of the TDP uses tools of material and non-material motivation of the system participants.
The principle of participation in implementation	Each employee who submits a offer for improvement has priority rights to participate in its implementation.

Note: TDP — treatment and diagnostic processes

Based on the analysis conducted and the formulated basic principles, the authors developed a model of the organizational development system of the TDP of a multidisciplinary hospital, schematically presented in the figure.

The first stage of the model is the submission of initiatives. An initiative in the context of this study is understood as a formulated problem related to the activities of the institution and submitted for consideration in the established manner.

Based on the above-described basic principles, the process of submitting an initiative should be as simple and clear as possible, so as not to alienate employees at the very beginning, who, as already noted, are the main source of the organization's development.

For this purpose, various options for submitting initiatives are proposed:

— in paper form through the Sklif-box (hereinafter referred to as the Sklif-box), located in each division of the Institute;

— in electronic form through your personal account on the Institute's portal;

— in electronic form to a special email box created in each division of the Institute;

— in electronic form by filling out an application in a specially created software shell installed on each computer of the Institute.

The structure of the initiative is also extremely simple and contains several elements that are important for further work with the initiative:

— contact information of the initiator: full name, position and department, *E-mail* (necessary to be able to contact the initiator, clarify the details of the initiative, thank, invite to the project team to implement the initiative, etc.), if desired – telephone number;

— a brief description of the problem (it is necessary to briefly describe the identified problem);

— the current state of the problem (briefly, schematically describe the current state of the problem, if possible, give examples);

— reasons (briefly describe the possible causes of the problem);

— solution options (briefly describe the proposed solution options, the essence of the initiative);

— expected results (briefly and schematically describe the expected results from the implementation of the offer).

This format of the initiative is created for convenience and to help the initiator in structuring his own ideas. However, if an initiative in any format is received in any of the specified ways, it will also be considered without fail.

In addition, at this stage, the registration of received initiatives is carried out in the electronic journal of registration of initiatives/offers for improvement, in which the data necessary for systematization of information about the initiative and aggregation of data on received initiatives for further analysis of the system's operation are entered. Some data is also added to the journal at subsequent stages of work with the initiative.

The second stage of working with initiatives is their primary sorting. It is advisable to assign the solution of this task in each structural division to the person responsible for quality or any employee who has undergone appropriate training and developed the skills of effective work with initiators within the division.

Primary sorting involves familiarizing oneself with the essence of the initiatives and dividing them into three groups: offers for current activities, offers for development, etc.

A offer for current activities is an initiative that concerns current problems in a structural unit, which involves simple actions to solve them (for example, a offer to paint a wall, replace cracked glass, change the placement of information materials, etc.), and which can be implemented by order of the head of the unit (no additional administrative resources are required).

A development offer is an initiative that aims to significantly improve the organization's performance or a specific aspect of it. These offers may involve developing new strategies, optimizing

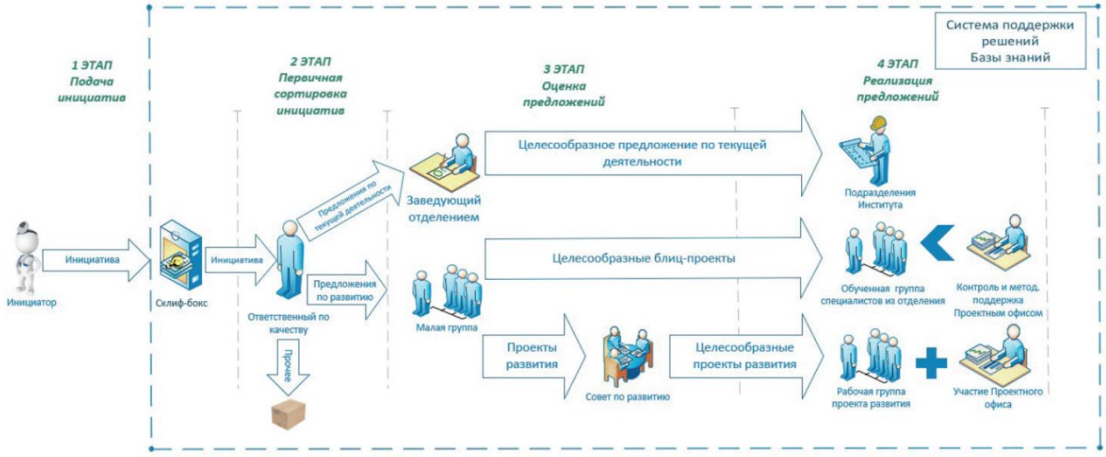

Figure. Model of the organizational development system of the treatment and diagnostic process of a multidisciplinary hospital

processes to improve the quality of services provided, implementing innovative technologies, etc.

The implementation of such offers will improve the overall efficiency of the organization. Such offers usually pursue long-term goals and require analysis and assessment of their impact on the organization.

The category "other" refers to initiatives that do not comply with the above definitions and do not contain the established information necessary for further work with the initiative. If the initiative contains the initiator's contact information, the quality manager contacts the initiator to jointly finalize the initiative in accordance with the established requirements.

The third stage of working with an initiative/offer for improvement is its consideration and evaluation according to the procedure appropriate to its type.

Offers for current activities are reviewed by the person responsible for quality in the department. If the offer does not require additional revision, it is forwarded to the head of the department, who decides on the feasibility and possibility of its implementation and issues a corresponding order for its implementation. This helps to promptly solve current everyday problems and improve the work of structural departments.

An important factor in the success of the system at this stage is working with the Initiator in terms of explaining the reasons for rejecting the offer by the head of the department in order not to reduce the motivation of the initiators to submit initiatives in the future.

After the initial sorting, development offers are forwarded by the quality managers to the small group responsible for describing the processes in the profile of the department/division. The small group conducts the initial review of the offer and assesses its feasibility.

If a offer requires significant resources or large-scale cross-functional changes, it is submitted for approval to the Development Council, which includes the organization's management.

If the offer is assessed by a small group as feasible and can be implemented in a short time with minimal costs, then the offer is planned for implementation as a blitz project.

If a development offer submitted by a small group to the Development Council for approval is accepted for implementation, then a development project is initiated.

The fourth stage of the presented model is the implementation of the improvement offer.

The implementation of offers for current activities is carried out by the relevant departments of the medical institution. For example, the insulation of windows in the department wards in the autumn-winter period is carried out at the request of the head of the department by the staff of the administrative and economic block.

To implement a blitz project, a project team is formed, to which the Initiator is necessarily invited. The Project Office of the institution may participate in blitz projects in terms of providing methodological support, monitoring the organization of work and the structure of documentation, if required.

The development project has longer implementation periods and often requires a significant investment of resources, which is why its structure is more rigid. All project management tools are applied to development projects, they are administered by the Institute's Project Office.

To implement the development project, a project team is also formed, the Initiator is invited to participate in the project, if necessary, representatives of the Project Office can actively participate in the meetings of the project team, sharing experience and knowledge.

The key differences between blitz projects and development projects using the example of the N.V. Sklifosovsky Research Institute for Emergency Medicine of the Moscow Health Department are presented in Table 3.

After the implementation of blitz projects and development projects, the results obtained are assessed. Project teams analyze the data obtained, compare the results with the set goals and put forward offers for further improvement. The results of development projects and significant blitz projects are also presented by project managers to the management of the medical institution at meetings of the Development Council.

In general, the functionality of the Development Council within the framework of the TDP organizational development system is presented in Table 4.

It should be noted that most of the stages and key elements of the presented model of the TDP organizational development system can be quite effectively automated, including using artificial intelligence technologies, which becomes especially useful when a significant flow of offers for improvement appears and is one of the priorities for further research.

Table 3

Key differences between blitz projects and development projects at the N.V. Sklifosovsky Research Institute for Emergency Medicine

Characteristic	Blitz project	Development project
Planned duration*	Less than 1 month	1 month or more
Estimated project implementation costs*	Less than 10,000 rubles	Not less than 10,000 rubles (or impossible to estimate at this stage)
Decision on the feasibility of implementing the project	Small group	Development Council
Features of implementation	It is possible to implement it by units/departments	It is necessary to involve third-party resources or contractors
Appropriate frequency of monitoring	Weekly	In accordance with the approved project schedule
Project Management Requirements	Minimum requirements for project planning	Full compliance with the Project Management Regulations
Participation of the project office	Methodological support if necessary	Project administration, possible participation in the project team

Note: * — cost and time criteria are determined individually, by decision of each medical institution

Table 4

Functionality of the Development Council within the framework of the organizational development system of the treatment and diagnostic process

Type of activity within the framework of the system of organizational development of the treatment and diagnostic process	Functionality of the Development Council
Blitz projects	— analysis of the efficiency and effectiveness of the implementation of blitz projects during the reporting period; — consideration of offers for changes to the organization's workflow with blitz projects in the organization
Development projects	— coordination of the decision to initiate a development project; — coordination of planned design documentation for the development project; — coordination of the development project team; — discussion of project issues that fall within the competence of the Development Council; — coordination of intermediate results of the development project (if such are provided for by the planning documentation); — coordination of the final results of the development project; — analysis of the effectiveness of the implementation of development projects; — consideration of offers for changes to the scheme for organizing work with development projects in the organization

From the given description of the proposed model of organizational development of the TDP of a multidisciplinary hospital, it is obvious that the key factor in the effectiveness of its work is systematic work with offers for improvement, which, first of all, presupposes their systematic sorting at various stages.

For this purpose, within the framework of scientific research, classification features were developed that make it possible to assign a offer for improvement to a particular group/class for further decision-making during its implementation.

In accordance with the objectives of this study, the principles of artificial special classification created by the facet method were applied in the development of classification features.

Thus, artificial classification is, first of all, a descriptive-recognition system, representing the classified area in a form convenient for viewing, memorization and recognition. In other words, it is created for the purpose of registration and convenient recognition of classified objects [30].

Special classification is based on objective and often important properties of the classified objects, while the entire grouping as a whole is carried out in order to satisfy certain pragmatic needs of people [31].

The faceted classification method assumes that the initial set of objects is divided into subsets of groups based on independent classification features - facets. In this case, each object simultaneously has classification features (CF) from different facets [32].

As already noted, the development of the CF system for classifying offers for improvement was carried out based on the goal of ensuring the possibility of sorting these offers and standardizing the method of their implementation in a medical institution.

A limited list of CFs was selected that possess the property of being material for solving the above-mentioned problems:

— the main direction of improvement of activities (CF1);

— expected level of performance improvement (CF2);

— urgency of implementation (CF3);

- connection with other sentences (CF4);

— novelty of the offer (CF5);

— target organizational level of implementation (CF6);

— the required level of financing for the implementation of the offer (CF7);

— the main expected impact on economic activity (CF8);

— deadlines for the implementation of the offer (CF9).

Next, for each classification feature, decomposition was carried out to the 2nd level, and for a number of features (if appropriate) to the 3rd and 4th levels. The results are presented in Table 5.

Using this system of classification features, it is possible to clearly identify the type of improvement offer in order to determine the further method of working with it.

It is important to note that the sorting of offers for improvement within the framework of the described model of the TDP organizational development system is carried out repeatedly.

Primary sorting, as already noted, occurs immediately after the initiative is received by the Sklif-box.

To carry it out, the following are used: CF5 "Novelty of the offer", CF6 "Target organizational level of implementation", CF7 "Required level of financing for the implementation of the offer", CF9 "Timeframe for the implementation of the offer".

As part of the initial sorting, all received initiatives are distributed according to the presence of classification features into the following groups:

— offers for current activities: new (CF5.1), implementation at the level of a structural unit (CF6.3), no funding (CF7.2), short-term (CF9.3);

— offers for development: new (CF5.1), implementation at the level of several structural divisions (CF6.2) or several organizations (CF6.1), financing is necessary (CF7.1), long-term (CF9.1) or medium-term (CF9.2);

— other: known (CF5.2).

The next stage of sorting offers for improvement is carried out at the stage of analysis of offers for development by the relevant small group in order to make a decision on the feasibility and tools for its implementation.

At this stage of sorting, all development offers using CF7 "Required level of financing for the implementation of the offer" and CF9 "Offer implementation timeframe" are divided into:

— flash offers for development that are advisable to implement through a flash project: low-cost financing is required (CF7.1.3), medium-term (CF9.2);

— long-term development offers that are advisable to implement through development projects: high (CF7.1.1) or medium (CF7.1.2) or long-term (CF9.1) financing is required.

The next need to sort offers for improvement arises at the stage of making decisions on the priority of implementing offers, for which it is proposed to use CF2, CF3 and CF4.

As a result of such sorting, offers for improvement are divided into:

— 1st priority offers: urgent (CF3.1), related (CF4.1) or unrelated (CF4.2), the expected level of improvement is significant (CF2.1) or above average (CF2.2), or below average (CF2.3), or insignificant (CF2.4);

— 2nd priority offers: deferred (CF3.2), related (CF4.1), expected level of improvement is significant (CF2.1) or above average (CF2.2);

— 3rd priority offers: deferred (CF3.2), related (CF4.1), expected level of improvement below average (CF2.3) or insignificant (CF2.4);

— 4th priority offers: deferred (CF3.2), unrelated (CF4.2), expected level of improvement is significant (CF2.1) or above average (CF2.2);

— 5th priority offers: deferred (CF3.2), unrelated (CF4.2), expected level of improvement below average (CF2.3) or insignificant (CF2.4).

The next need for sorting arises at the stage of planning projects for the implementation of development offers (blitz projects and development projects) using the classification feature CF1 "Main direction of improvement" to justify the composition of the project team:

— a project with the mandatory participation of representatives of the Chief Physician Service, those responsible for monitoring the quality of medical care and heads of departments: aimed at improving the quality of treatment (CF1.1.1), increasing the volume of services provided (CF1.1.3), ensuring the timeliness of services (CF1.1.4); with the additional involvement of a person responsible for the safety of medical activities: aimed at improving safety (CF1.1.2);

— a project with the mandatory participation of department heads participating in the TDP: aimed at improving the organization of processes (CF1.2);

— a project with mandatory participation of representatives of the HR department: aimed at improving the personnel provision system (CF1.3.1.);

— a project with the mandatory participation of the equipment operation service, representatives of the IT service (information technology service) and the person responsible for the safety of medical activities: aimed at the development of equipment and technologies (CF1.3.2);

Table 5

Classification features of suggestions for improvement

1st level checkpoint	2nd level checkpoint	3rd level checkpoint	4th level checkpoint
CF1. Main direction of improvement of activities	CF1.1. Improving performance results	CF1.1.1. Improving the quality of treatment (ensuring compliance with standards) CF1.1.2. Improving Security CF1.1.3. Increasing the volume of medical services provided CF1.1.4. Ensuring the timeliness of medical services CF1.1.5. Other	 CF1.1.2.1. Personnel CF1.1.2.2. Patients and visitors CF1.1.3.1. Reduction of the duration of TDP (bed-day) CF1.1.3.2. Optimization of activities
	CF1.2. Improving the organization of treatment and diagnostic processes	CF1.2.1. Improving the structure of treatment and diagnostic processes CF1.2.2. Improving the quality of intermediate results CF1.2.3. Improving interaction between participants CF1.2.4. Other	
	CF1.3. Improving mechanisms	CF1.3.1. Improving the personnel provision system CF1.3.2. Development of technology and techniques	CF1.3.1.1. Optimization of staff numbers CF1.3.1.2. Improving the conditions of remuneration CF1.3.1.3. Improving working conditions CF1.3.1.4. Other CF1.3.2.1. Modernization of the medical equipment fleet CF1.3.2.2. Improving information technologies CF1.3.2.3. Other
	CF1.4. Improving the provision of resources and their logistics CF1.5. Development of standardization	CF1.4.1. Material CF1.4.2. Financial CF1.4.3. Others CF1.5.1. Development of process organization standards CF1.5.2. Development of organizational structure standards	CF1.4.1.1. Consumables CF1.4.1.2. Medicinal products CF1.4.1.3. Others
CF2. Expected level of improvement of [1] activity	CF2.1. Essential CF2.2. Above average CF2.3. Below average CF2.4. Non-essential		
CF3. Urgency of implementation	CF3.1. Urgent CF3.2. Postponed		
CF4. Relationship to other sentences	CF4.1. Related CF4.2. Unrelated		
CF5. Novelty of the offer	CF5.1. New CF5.2. Known		
CF6. Target organizational level of implementation	CF6.1. Industry (several organizations) CF6.2. Organization (several structural divisions) CF6.3. Structural subdivision		
CF7. Required level of financing for the implementation of the offer	CF7.1. Required [2] CF7.2. None	CF7.1.1. High CF7.1.2. Average CF7.1.3. Low	
CF8. Main expected impact on economic activity	CF8.1. Increasing Income CF8.2. Cost reduction	 CF8.2.1. Labor CF8.2.2. Consumables CF8.2.3. Medicinal products CF8.2.4. Energy CF8.2.5. Other	
CF9. Deadlines for implementation of offer [3]	CF9.1. Long-term CF9.2. Medium-term CF9.3. Short term		

Notes: [1] — the criterion of the significance of expected improvements is approved by decision of each medical institution; [2] — the quantitative value of the criteria is approved by decision of each medical institution; [3] — the quantitative value of the criteria is approved by decision of each medical institution; CF - features classification

— a project with the mandatory participation of representatives of the purchasing service and department heads: aimed at improving the provision of material resources (CF1.4.1);

— a project with mandatory participation of representatives of the financial service: aimed at improving the provision of financial resources (CF1.4.2);

— a project with the mandatory participation of heads of structural divisions, medical analysts and representatives of small groups: aimed at developing process and structural standardization (CF1.5).

These requirements for participation in project teams of the above-mentioned specialists are determined by the specifics and main focus of the offer for improvement and the corresponding project.

The next need for sorting arises at the stage of justifying projects for the implementation of development offers (blitz projects and development projects) using the classification feature CF8 "Main expected impact on economic activity" to justify the structure of indicators of the effectiveness and efficiency of projects:

— projects with indicators reflecting the growth of income of a medical institution in the direction/TDP (CF8.1);

— projects with indicators reflecting the reduction of labor costs (CF8.2.1);

— projects with indicators reflecting a reduction in costs for consumables (CF8.2.2);

— projects with indicators reflecting the reduction of costs for medicines (CF8.2.3);

— projects with indicators reflecting the reduction of costs for energy resources and utilities (CF8.2.4).

Thus, at various stages of working with offers for improvement, there is a need to sort them according to different CFs.

The presented system does not reflect all possible combinations of CF and groups (classes) of offers for improvement (i.e. it is not a complete classification system), however, in the opinion of the authors, it is sufficient for solving the problem of choosing the most effective methods and tools for implementing offers.

It should be noted that the developed CF system and the approach to its use in sorting offers presented above can be supplemented and adjusted taking into account the specifics of the work of a particular medical institution and its strategic and tactical priorities.

Despite the previously noted possibilities of efficient automation of procedures for sorting improvement offers, at the testing stage and the first stages of implementation in a medical institution of the developed model of the organizational development system of the TDP, it is advisable to perform sorting with the mandatory participation of the decision maker (DM). At various stages of work with a offer for improvement, the DM may be the person responsible for quality in the department, the head of the department, the head of a small group, the project manager, etc.

The authors tested the presented approach to sorting initiatives based on the offers for improvement presented in Table 1, formulated by a pilot group of nurses in the operating unit. The results of the testing are presented in Table 6.

DISCUSSION

The implementation of the model of the organizational development system of the TDP presented in this scientific article in the activities of a medical organization allows for the formation of a transparent and understandable system for employees to submit offers for improvement, as well as further work on their selection, evaluation and implementation, and to obtain a number of managerial and economic effects, such as:

— an increase in the number of offers for improvement and corresponding projects for their implementation, which leads to an increase in the efficiency of the medical organization;

— increasing the involvement (loyalty) of personnel in the process of continuous improvement, increasing the number of employees who initiate changes and forming a reserve of key employees;

— improving the quality of management decisions by taking into account "bottom-up initiatives";

— development of innovative projects, creation of a unique database of "best practices";

— obtaining a mechanism for organizing feedback with employees;

— increasing the competence of personnel in terms of technologies, methods and "best practices" for working with offers for improvement, development projects and blitz projects;

— increasing the economic efficiency of a medical organization through the implementation of development projects aimed at increasing revenues and minimizing costs for key items.

Table 6

Testing the approach to sorting initiatives based on the system of classification features using the example of suggestions for improving the pilot group of nurses in the operating unit

Offer according to improvement from table 1	Sorting stages				
	1st	2nd	3rd	4th	5th
P1. Improving the system of patient transportation on treated trolleys of the operating unit	CF 5.1 CF6.2 CF7.1 CF9.1	CF7.1.2 CF9.1	CF2.2 CF3.2 CF4.2	CF1.1.2.2	CF8.2.3
	Offer for development	Long-term development offer (development project)	4th priority offer	A project with mandatory participation of representatives of the Chief Physician's Office, those responsible for quality in a medical institution, heads of departments responsible for safety	Main focus: reducing costs of medicines
P2. Development of a visual concept for displaying the schedule of operations and its updating	CF5.1 CF6.2 CF7.1 CF9.2	CF7.1.3 CF9.2	CF2.3 CF3.2 CF4.2	CF1.2.1	CF8.1
	Offer for development	Blitz offer for development (blitz project)	5th priority offer	A project with mandatory participation of heads of departments participating in the TDP	Main focus: increasing income
P3. Timely provision of operating rooms with consumables and medications	CF5.1 CF6.2 CF7.1 CF9.1 or 9.2	CF7.1.1 CF9.1	CF2.2 CF3.1 CF4.2	CF1.4.1.2	CF8.1
	Offer for development	Long-term development offer (development project)	1st priority offer	A project with mandatory participation of representatives of the purchasing service and heads of departments	Main focus: increasing income
P4. Separation of patient flows	CF5.1 CF6.2 CF7.1 CF9.2	CF7.1.3 CF9.2	CF2.2 CF3.1 CF4.2	CF1.1.2.2	CF8.2.3
	Offer for development	Blitz offer for development (blitz project)	1st priority offer	A project with mandatory participation of representatives of the Chief Physician's Office, those responsible for quality in a medical institution, heads of departments responsible for safety	Main focus: reducing costs of medicines
P5. Development and implementation of an electronic system for writing off material assets from a warehouse	CF5.1 CF6.2 CF7.1 CF9.1	CF7.1.1 CF9.1	CF2.3 CF3.2 CF4.2	CF1.3.2.2	CF8.2.1
	Offer for development	Long-term development offer (development project)	5th priority offer	A project with mandatory participation of the equipment operation service, representatives of the IT service and the person responsible for the safety of medical activities	Main focus: reducing labor costs
P6. Improving the system for monitoring sterility periods	CF5.1 CF6.2 CF7.1 CF9.2	CF7.1.3 CF9.2	CF2.3 CF3.1 CF4.2	CF1.1.2.2	CF8.2.3
	Offer for development	Blitz offer for development (blitz project)	1st priority offer	A project with mandatory participation of representatives of the Chief Physician's Office, those responsible for quality in a medical institution, heads of departments responsible for safety	Main focus: reducing costs of medicines
P7. "Red Line"	CF5.1 CF6.3 CF7.2 CF9.3	–	–	–	CF8.2.3
	Offer for current activities				Main focus: reducing costs of medicines

P8. Organization of patient escort for repeated diagnostics and to the department	CF5.1 CF6.3 CF7.1 CF9.2	CF7.1.3 CF9.2	CF2.3 CF3.2 CF4.2	CF1.3.1.1	CF8.1
	Offer for development	Blitz offer for development (blitz project)	5th priority offer	A project with mandatory participation of HR representatives	Main focus: increasing income
P9. Internal telephone communication	CF5.1 CF6.3 CF7.2 CF9.3	–	–	–	CF8.1
	Offer for current activities				Main focus: increasing income
P10. Monitoring the admission of seriously ill patients, bypassing the emergency department	CF5.1 CF6.2 CF7.1 CF9.2	CF7.1.3 CF9.2	CF2.2 CF3.2 CF4.2	CF1.1.1	CF8.1
	Offer for development	Blitz offer for development (blitz project)	4th priority offer	A project with mandatory participation of representatives of the Chief Physician's Office, those responsible for quality in a medical institution and heads of departments	Main focus: increasing income
P11. Implementation and support of monitors with a plan-schedule of operations	CF5.1 CF6.2 CF7.1 CF9.2	CF7.1.2 CF9.2	CF2.3 CF3.2 CF4.1 (linked to P2)	CF1.3.2.2	CF8.1
	Offer for development	Long-term development offer (development project)	3rd priority offer	A project with mandatory participation of the equipment operation service, representatives of the IT service and the person responsible for the safety of medical activities	Main focus: increasing income

Note s : IT service - information technology service; CF - features classification

The presented model of the system of organizational development of treatment and diagnostic processes of a multidisciplinary hospital is universal and can be implemented with minimal adaptive adjustments in medical organizations of any level.

The most important areas for further research are:

— development of methods for assessing the feasibility of development projects and blitz projects for making decisions on their implementation;

— development of an approach to automating key elements of the work of the system of organizational development of the treatment and diagnostic process, including the use of artificial intelligence technologies.

The research results will be reflected in subsequent scientific publications.

CONCLUSIONS

1. This study included an analysis of modern approaches to the development of organizations, which confirmed the relevance and feasibility of using them as a basis for the development of medical institutions. The results of the analysis of the experience of working with small groups to standardize treatment and diagnostic procedures at the N.V. Sklifosovsky Research Institute for Emergency Medicine of the Moscow Health Department demonstrate the readiness of medical personnel to participate in improving the work of the organization and introducing new ideas.

2. The developed basic principles and model of the system of organizational development of the treatment and diagnostic process of a multidisciplinary hospital, based on personnel orientation and the use of process and project management tools, are an important element of the system for improving the activities of medical institutions. The conducted analysis of classification features and the proposed approach to sorting offers for improving activities confirm the possible (potential) effectiveness of automating this approach using artificial intelligence technologies.

3. The results of testing the new approach using the example of offers for improving activities developed in a pilot small group of nurses in the operating room emphasize the importance and potential of the proposed methods.

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