

Research Article

Expert Method as a Quality Assessment Tool of a Multifunctional Hospital

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ABSTRACT

The systematic structural transformation of the system and the introduction of new technologies are not enough to create an effective system for the medical quality control. It is supposed, that the health care quality management system will be phased, so, it is necessary to emphasize the change in management decisions of medical care quality. The purpose of the research is to alter the traditional scheme of medical expertise conceptualization into innovation, which is based on effective motivation of staff. The object of the study was Astghik Medical Center, which is a multi-functional medical center. Combining medical errors with different components of medical care quality, determines the degree of their significance, which allows dividing medical error into 4 classes. Taking into account the severity of the medical error, the degree of discrepancy is divided into 6 classes. We have developed a Medical Record Examination Questionnaire: 340 medical records have been examined. The research results show, that, the second class of health care quality discrepancy is most common. As a result

of analyzing, the following errors were discovered: Gather information about the patient (25.5%), drug therapy -the absence of the prescribed medication, the improper use of the medication (0.8%), error in treatment continuity (10.8%). The received data indicate that it is necessary to develop and introduce managerial decisions that will result in a reduction of medical care discrepancy error. In order to achieve this goal it is necessary to set up a working group, whose staff is desirable to involve the chiefs of departments and the assistant of chief doctor.

Thus, managing of medical care quality within the limits of a separate medical institution confirms, that medical care quality can be improved by correctly using information about quality, by purposeful activity of the head, which will be aimed at solving main problem of medical care quality.

Keywords: Expert Method, Multifunctional Hospital, Quality Assessment Tool.

Introduction

The systematic structural transformation of the system and the introduction of new technologies are not enough to create an effective system for the medical quality control. It is supposed, that the health care quality management system will be phased, so, it is necessary to emphasize the change in management decisions of medical care quality, psychological relationship between the head and employees, deep change in corporate culture, personnel policy and tactics, as well as the relationship with the customers in order to achieve mutual satisfaction [1, 2]. The key to success in this activity is the creation of a specialized quality management system and its role should be enhanced [3,4,5]. The introduction of compulsory health insurance system requires the development and introduction of new health care quality assurance systems, particularly, the introduction of new licensing and accreditation approaches are required. Standardization is an important part of ensuring the quality of health care, which includes the development and introduction of health care standards and equipments of hospitals. For the control of health care quality, besides of indicators of hospital's activity, the expert assessment method is widely used [6-8].

The results of a large number of studies have substantiated, there were no increase in the quality and effectiveness of care in healthcare facilities, and one of the reasons is the existence of number of contradictions between internal and external control of the quality of care. There is no effective cooperation among all the components of the quality of care. The urgency of the listed issues is especially important for hospital care, whose quality of care has an effect not only on the outcome of the disease, but also on the quality of patient's life [9,10,1, 2]. The relevance of developing and evaluating quality health care issues is directly related to the effective use of health care resources, because quality is a powerful medical service market regulator [11,12,13, 4,14]. In European countries, the United States and Japan the main issues of the quality of care have become essential health care issues. WHO European Regional Bureau considers it an important part, that all WHO member countries should have structures and mechanisms that ensure the continuity of health care quality [15, 16, 17, 5, 8]. As the introduction of the compulsory health insurance system in Armenia is in process, the main goal should be to organize a

health care system as a system that will ensure and control, that the patient will get guaranteed medical care. The goal is to find advanced approaches for improving the quality of care.

The purpose of the research is to alter the traditional scheme of medical expertise conceptualization into innovation, which is based on effective motivation of staff.

Material and Methods

To achieve the research goal a retrospective clinical record review study was carried out in multi-functional Medical Center "Astghik". The expert method was selected for the assessment of the quality of provided medical care. Medical records were randomly selected from the admissions of patients who were discharged alive or died in Medical Center in 2018. Admissions without medical records were excluded. The final research sample involved 340 admissions. As an instrument for the collection of data the Medical Record Examination Questionnaire was developed by the research team based on the WHO European Regional Bureau expert group's recommendations.

According to the WHO European Regional Bureau expert group's recommendations a program of quality should evaluate 4 components: medical technology maintenance, optimal use of resources, reducing risk of trauma and disease during medical interventions, patient satisfaction with patient care. In this system, we vary some categories of medical errors, depending on various consequences of the mistake, such as the risk of deterioration of the patient's condition with social impact, the risk of deteriorating the patient's condition without the social impact, the risk of non-optimal resource use, the risk of medical errors, which may complicate medical

care process.

Combining medical errors with different components of medical care quality, determines the degree of their significance, which allows dividing medical error into 4 classes (Table 1). Taking into account the severity of the medical error, the degree of discrepancy is divided into 6 classes (Table 2) [2].

The medical records were reviewed by the team of recruited physicians- experts in corresponding areas. The selection criteria for the experts were: at least ten years of clinical practice, good reputation among colleagues, experience or affinity with analysis of incidents, complaints and errors.

1. The first class of medical care discrepancy includes cases, when only medical error of 4th grade of severity is present (errors in collecting anamnesis, physical development data, medical records). This type of mismatch makes it difficult to evaluate the process of healthcare or demand of resources.
2. The second class of medical discrepancy includes cases, when medical errors of 3rd grade of severity are most significant. This leads to non-optimal use of resources. For example, unnecessary laboratory-instrumental examinations, this, however, didn't cause a diagnosis or treatment error.
3. The third class of medical discrepancy includes cases, when medical errors of 2nd grade of severity are most significant, meanwhile health resources are used optimally. For example, choosing the wrong way to prescribe medication.
4. The fourth class of medical discrepancy includes cases, when medical errors of 2nd grade of severity are most significant and the use of health resources is non-optimal.

Table 1: Classification of the severity of the medical error in medical care quality system.

The severity of the medical error	Standards of inclusion of medical errors in this category
I class	A medical error, the most significant effect of which is the real deterioration of patient's social status (prolonged treatment, risk of disability or premature death)
II class	A medical error, the most significant effect of which is the negative impact on the state of patient, without the risk of social adverse consequences.
III class	A medical error, the most significant consequence of which is non-optimal use of resources, without impact on patient's condition. For example, unreasonable or non-informative laboratory or instrumental examinations.
IV class	A medical error, that complicates providing a health care delivery process or evaluating the health care delivery process. This is mainly a mistake of maintaining medical records. For example, the absence of dose for the drug, the absence of a disease accompanying the final diagnosis, which has not been cured at that time.

Table 2: Classification of an inappropriate level of medical care.

Class of	Groups of Negative Impacts of Medical Error:						Class of medical error
	Social resources	Condition of patient	Health resources	Evaluation of medical care	Evaluation of process of medical care	Demand assessment of health resources	
I							IV
II							III
III							II
IV							I
V							
VI							

■ a blinding group of negative consequences:
 □ a non-blinding group of negative consequences

For example, a wrong choice of treatment tactics that has led to ineffective treatment.

5. The fifth class of medical discrepancy includes cases, when medical errors of 1st grade of severity are most significant, meanwhile health resources are used optimally. For example, delayed surgical intervention.
6. The sixth class of medical discrepancy includes cases, when medical errors of 1st grade of severity are most significant meanwhile, the use of health resources is non-optimal

Statistical Analysis

Data were entered into a computer database and analyzed using SPSS 20 software. Double entry and subsequent cleaning were used in order to ensure the accuracy of the data entry. Descriptive statistics indices were calculated to characterize the sample. The strength of the associations between morbidity and mortality, length of stay were assessed using the appropriate χ^2 or analysis of variance (ANOVA) test. Logistic regressions for morbidity and mortality and linear regressions length of stay were performed. In the logistic regression models, the χ^2 likelihood ratio test was used to assess model significance to assess model explanatory power. P values for the increase in c-indices were calculated using the Hanley and McNeil method. In the linear regression models, ANOVA was used to assess model significance and adjusted R² to assess model explanatory power. Kendall's Tau-b nonparametric correlations were calculated between risk factors.

Results

The examined medical records have been coded, according to departments (Figure 1) presents the distribution of reviewed medical records by departments. The research results show, that the second class of health care quality discrepancy is most common (Table 3).

The diagram emphasizes illnesses, when medical errors are very common, which means, it is necessary to thoroughly analyze the cause and consequences of the medical error (Figure 2).

As a result of analyzing, the following errors were discovered:

1. Gather information about the patient (complaints, anamnesis, choosing and realization of instrumental and laboratory examinations) (25.5%).
2. Drug therapy -the absence of the prescribed medication, the improper use of the medication (0.8%).
3. Error in treatment continuity (10.8%).

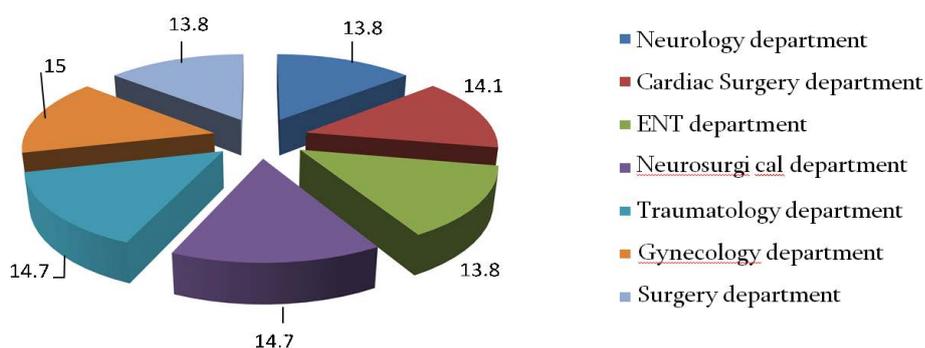


Figure 1: Examined medical records, sorted by departments.

The received data indicate that it is necessary to develop and introduce managerial decisions that will result in reduction of medical care discrepancy error. In order to achieve this goal it is necessary to set up a working group, whose staff is desirable to involve the chiefs of departments and the assistant of chief doctor. During the development of standards, it is necessary to take into account the available resources. Such activity is a new approach to the work of medical care quality control. Naturally, there are a number of difficulties, lack of work experience, lack of expertise, lack of physicians' interest in detecting medical errors. It is important to invest in new technologies, which can be used to justify management decisions aimed at improving the medical care quality.

The access to this process is the patient's outcome condition that requires a change (Figure 3). The "Outcome" of the medical process is the patient's treatment results, such as improvement, stabilization, complication, and death. Many internal and external factors, which affect medical care quality, are interconnected (Figure 4).

The principal controlled factor, that affects the medical care quality process, is the presence or absence of a medical error (Figure 5).

1. The first class of medical care discrepancy occurs, when a medical error with 4th grade of severity happened, then the only suffered component of medical care quality is the implementation of medical technologies.
2. The second class of medical care discrepancy occurs, when most significant is the presence of a medical error, with the severity of 3rd grade, then 2 components of medical care quality have suffered- medical technology performance and optimal use of resources.
3. If the third class of medical care discrepancy occurs, most suffered part is the change of 2 components, changes in the health of the patient as a result of non-specialized medical care and the risk of medical technology performance.
4. If the fourth class of medical discrepancy occurred, most suffered are 2 components of medical care quality low level of medical care and medical technology failures due to the inappropriate use of resources.
5. If the fourth and fifth class of medical discrepancy occurs, the social part has a negative impact on the condition of the patient, which means that as a result of medical error, the risk of prolongation of the duration of treatment increases, as well as likelihood of disability and death of patient.

Table 3: The structure of medical care quality discrepancy, shown to patients.

Department	The Frequency of Medical Care Quality, Sorted by Classes					
	I	II	III	IV	V	VI
A	1,5±0,7*	3,5±1,5*	0	0	1,2±0,5*	0
B	2,7±1,3*	30,4±7,0*	0	5,1±2,3*	1,3±0,5*	7,7±2,3*
C	0	37,4±7,1*	0,8±0,05*	0	0,9±0,05*	1,4±0,3*
D	0	30,4±7,0*	0	0	0,8±0,04*	2,4±3,0**
G	0	46,2±7,6*	0	7,1±3,0*	1,1±0,6**	5,7±2,6*
F	0	35,5±7,4*	0,8±0,05*	0	1,2±0,7**	6,4±3,0*
J	0	27,5±6,5*	0,8±0,05*	0	1,05±0,5*	5,2±4,0**
P ± m	2,0±0,2**	31,5±7,7*	0,8±0,05*	6,5±2,3*	1,2±0,6**	4,2±2,0*

* $p \leq 0.05$ ** $p > 0.05$

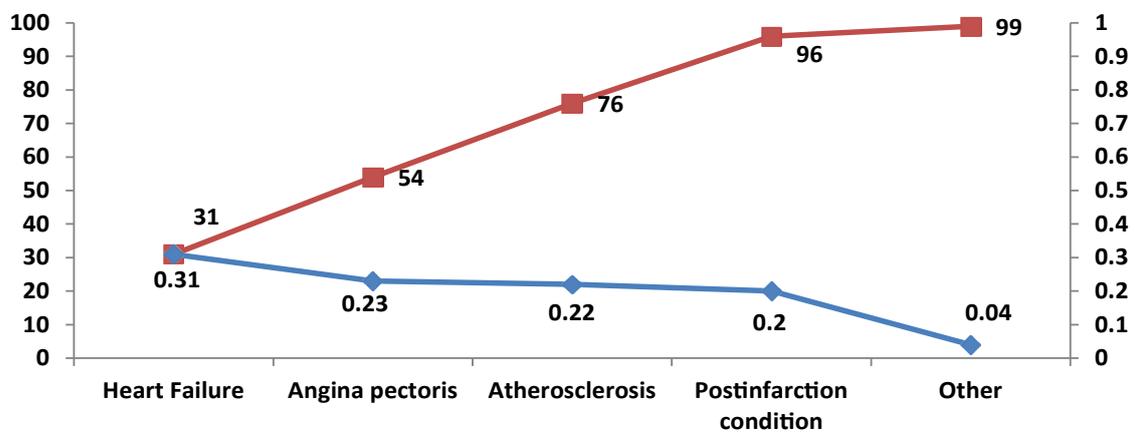


Figure 2: The role of main nosologies in medical care discrepancy.

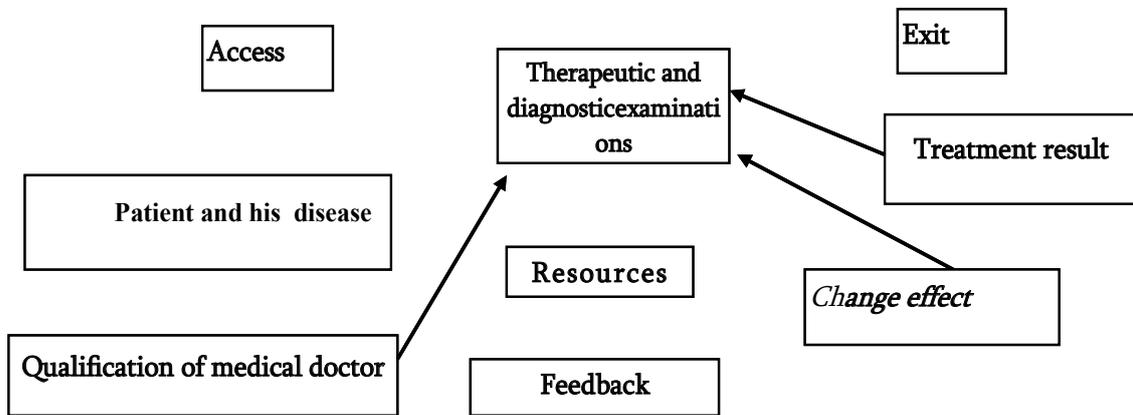


Figure 3: Medical process model.

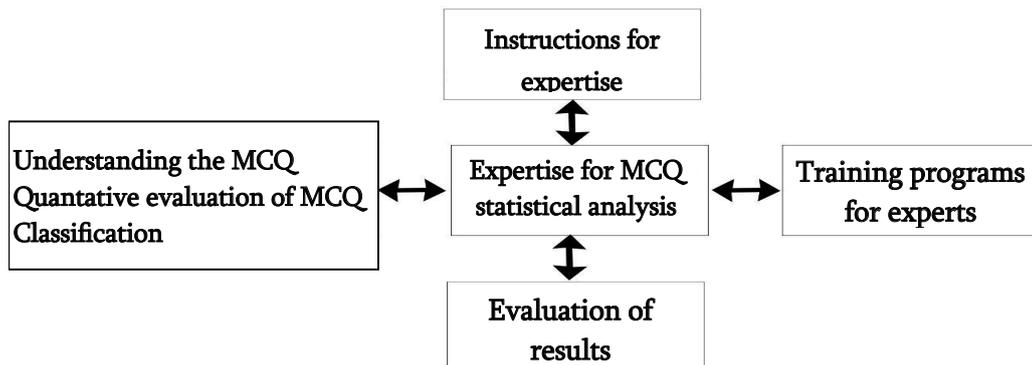


Figure 4: A model of automated technology management factors influencing the quality of medical care.



Figure 5: The ingredients of medical care quality.

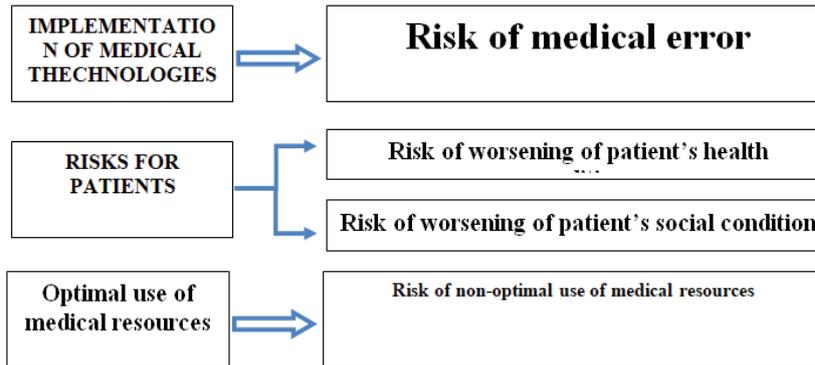


Figure 6: Quantitative indicators of components of medical care quality.

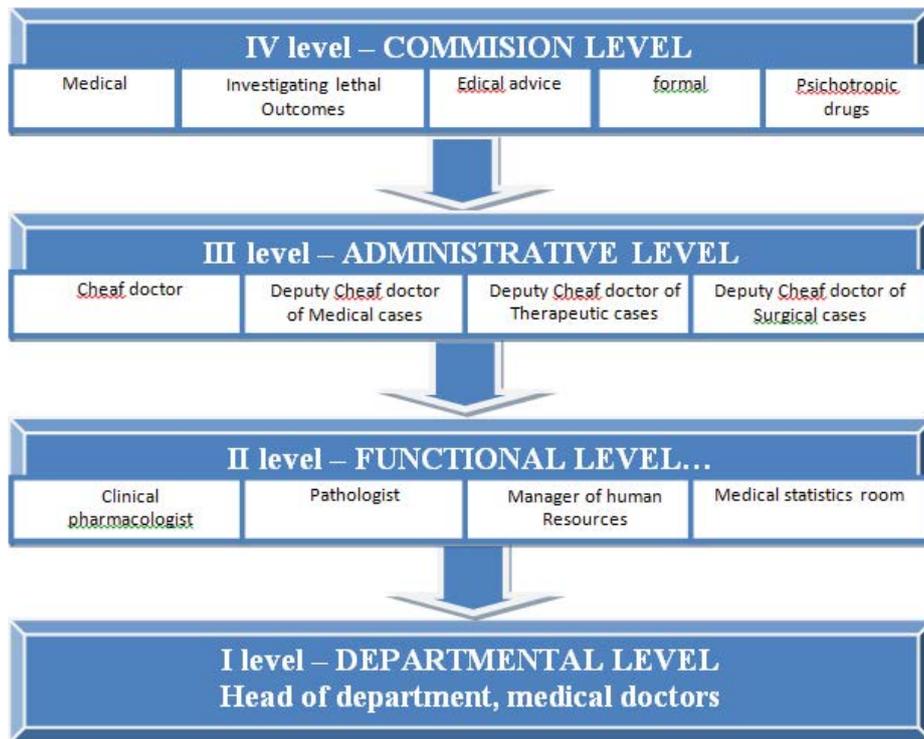


Figure 7: The model of health care quality control levels of multi-functional medical center.

Based on this classification, the characteristics of medical care quality for each case are calculated (Figure 6).

Thus, the implementation of medical technology has resulted in a 57.8% reduction in the risk of medical errors. For patients, there is still a risk for worsening of health condition (69, 7%) and the risk for worsening of social status. No positive dynamics was observed in the dynamics of the risk of optimal use of resources (25.9%), which has resulted in increase of 2nd class medical care quality discrepancy level. Thus, medical care

quality management in separate medical facilities confirms, MCQ can be improved in case of correct use of information about quality and if the activity of the chief is purposeful. In this way, it will be possible to solve the main problem of MCQ. The MCQ expertise data are necessary for targeted, reasoned and motivated managerial decisions. Nowadays, it is necessary to ensure continuity and a high level of control. For that purpose, from the point of view of computer analysis and situational approach, a multi-level control model of MCQ has

been developed, for a multi-functional medical center. There are 4 different levels for MCQ control.

Discussion

We have successfully identified a variety of methodological assessment tools for different types of study design. However, further efforts in the development of critical appraisal tools are warranted since there is currently a lack of such tools for other fields, e.g. genetic studies, and some existing tools (nested case-control studies and case reports, for example) are in need of updating to be in line with current research practice and rigor. In addition, it is very important that all critical appraisal tools remain subjective and performance bias is effectively avoided [18].

There is evidence that collaborations between hospitals and physicians in particular regions of the country have led to improvements in the quality of care. Even so, there have not been many of these collaborations. In general, and vascular surgery alone, complications from surgery dropped almost 2.6 percent among participating Michigan hospitals—a change that translates into 2,500 fewer Michigan patients with surgical complications each year. Regional collaborative improvement programs should become increasingly attractive to hospitals and physicians, as well as to national policy makers, as they seek to improve health care quality and reduce costs [19].

In hospitals with high patient-to-nurse ratios, surgical patients experience higher risk-adjusted 30-day mortality and failure-to-rescue rates, and nurses are more likely to experience burnout and job dissatisfaction [15].

Neither the dynamics of selection nor the dynamics of improvement work reliably today. The barriers are not just in the lack of uniform, simple, and reliable measurements, they also include a lack of capacity among the organizations and individuals acting on both pathways [1]. Hospital-based managed care can reduce resource use, length of stay, and cost associated with hospital care while maintaining or improving the quality of care. Whether these effects are reproducible and generalizable to other conditions should be addressed in future studies; the duration of these effects should also be examined [3].

Despite the popularity and conceptual appeal of P4P programs using revenue redistribution based on POC measures, we found no conclusive evidence that Maryland's QBR program affected quality of care. Nor were we able to confirm the hypothesis suggested by observation of the data for some measures that QBR motivated low performers to improve. Thus, it appears that the QBR approach provided an insufficient incentive to improve quality. Given the rising stakes presented by the rapid expansion of P4P reimbursement, it has become increasingly important to understand the effectiveness of such programs in improving quality of care. If P4P programs are not effective, they might actually reduce social welfare, because the cost incurred by providers to participate in these programs, including both cash and opportunity costs, may not be offset by adequate benefits. Future research should compare alternative types of P4P programs; examine their impact on other aspects of care,

such as patient outcome and patient experience measures; and go beyond average treatment effects to study their effects on the lowest performers [20-25].

Conclusions

On one level, the controller of MCQ is the head of department, and the subject of self-control and mutual control is the doctor.

The I level of management will allow:

1. Health providers should be directly included in MCQ control (doctors, heads of departments)
2. Ensure professional inner control, which means, beside other departments, there is that one, specified department, where work doctors, with appropriate profession.

The physician of the department should ensure not only the self-control of the MCQ, but also the mutual control, during transfers of patients to other departments. This stage of control should pursue one main goal—provide collective and individual responsibilities for results of treatment and medical technologies performance.

An important element of the medical care quality control is the head of the department, which:

1. Controls medical care quality at department level
2. Examines patients during their first visit to hospital, evaluates condition of patient's medical records, controls the quality and formulation time of diagnosis.
3. Controls all medical and diagnostic processes and medical data records
4. Before leaving hospital, does the final control
5. Medical care quality control of long-term, short-term, complicated, with deadly exit treatments

II level is called functional, which combines all professionals and service chiefs, which controls different components of medical care quality (medical doctors, pharmacist, pathologist, senior nurse, medical statistics, manager of human resources and others).

It should be mentioned, that subjects of this level, according to medical care quality separate components, cannot independently take management decisions.

The clinical pharmacist plays an important role in control of medical care quality. Mostly, his job includes:

1. Provide the medical facility with the necessary medicines, participate in the development of protocols and standards of treatment for patients, carry out a clinical and economic analysis of drug use
2. optimal use of drugs, organize an information system in the medical facility, conferences on drug use issues, consultation of patients about rational pharmacotherapy, organization of discussions of complex cases.
3. Control of pharmacotherapy in medical facility: the analysis of medical records should be carried out.

Based on this work, it is important to create a department of clinical pharmacologists. In the system of medical care quality medical statistics has an important role. All statistics check the integrity of information, content and credibility.

The department of medical care quality control must organize expert assessment of case. One of the important functions of this subdivision is the creation of mutual cooperation between inner and outer controllers. Sociological survey among patients must be periodically held, to ensure the quality of provided health care.

III level is called administrative level, which combines the chiefs of all levels, who take part in control and evaluation of medical care quality.

IV level is called commission level, which combines all commissions of the medical facility. The subject of this level is the commission, which includes all previous commissions.

The subjects of IV level are meant to control the technological component and the quality of the result of MCQ, and ensuring the structural component is on responsibility of administrative level.

Until now, there is no single document for expert assessment of the hospital treatment case, it will be developed during the survey. In our opinion, it is expedient to create analytical reporting forms for each of the hospital's subdivisions or services. In this way, the head of the facility may have information about each department. On the other hand, doctors involved in the reporting process will carry out self-control and mutual control will develop proposals to improve the department's work. So, all hospital personnel will participate in process of making managerial decisions (Figure 7).

Thus, managing of medical care quality within the limits of a separate medical institution confirms, that medical care quality can be improved by correctly using information about quality, by purposeful activity of the head, which will be aimed at solving main problem of medical care quality. Standardized expert assessments should be applied at all levels of the MCQ (compare the duration of the treatment to the standards), to detect errors, as well as to justify the reasons for it.

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