IMPORTANCE OF INTEGRATED MANAGEMENT SYSTEM APPLIED IN HEALTH ESTABLISHMENTS IN ORDER TO RAISE TREATMENT QUALITY

ZNAČAJ INTEGRISANOG SISTEMA MENADŽMENTA U ZDRAVSTVENIM USTANOVAMA SA CILJEM PODIZANJA KVALITETA LEČENJA

Biljana DODIĆ1, Tatjana MILJKOVIĆ2, Marija BJEOLOBRKA2, Nada ČEMERLIĆ ADIĆ2,3, Filip ADIĆ2 and Slobodan DODIĆ2,3

Summary

Introduction. The term “management” is best characterized as “managing” economic or social processes to achieve objectives through a rational use of material and immaterial resources by applying the principles, functions, and management methods. This study has been aimed at evaluating the value of an integrated quality management system implemented at the Institute of Cardiovascular Diseases of Vojvodina to improve the quality of treatment. Material and Methods. In the period from 2008 to 2010 about 40 employees from the Institute of Cardiovascular Diseases of Vojvodina attended various courses given by the lecturers of the Faculty of Technical Sciences, where the function and significance of the “International Standards Organization” were explained, after which standards of interest were implemented at the Institute of Cardiovascular Diseases of Vojvodina. Results. The Department of Cardiology has introduced 11 cardiac procedures with 5 special instructions, 14 general procedures, and 7 specific procedures with 2 instructions. The Department of Cardiac Surgery has introduced 7 procedures to be implemented. The “Vojvodina score” model was put into practice for the perioperative evaluation of cardiac surgery risk. During 2014, the Institute of Cardiovascular Diseases of Vojvodina obtained accreditation for the period of 7 years. Conclusion. The integrated quality management system must be applied in order to achieve a high level of health care in the shortest possible time and with the least possible consumption of material and human resources. The application of this system in practice gives a realistic insight into the working processes and facilitates their functioning. It demands and requires constant monitoring of the system efficiency along with continuous changes and improvements of all elements of the working processes and functional units.

Key words: Quality of Health Care; Integrated Advances Information Management System; Quality Indicators, Health Care; Organization and Administration; Health Services

Introduction

The term “management” is of English origin. It is difficult to define it fully, but perhaps it can be best formulated as a “control” of certain economic or social processes in order to achieve certain objectives through rational use of material and immaterial resources by applying the principles, functions, and management methods.
and management methods. Although there is no universally accepted definition of management, the well-known expert on this issue P.F. Drucker provides the following definition in his article “Management Tasks, Responsibilities, and Practices” [1]:

1. Scientific management
2. Administrative management
3. Management in the aspect of psychology and human relations
4. Management with the aspect of the science of behavior

The principles of “scientific management” are based on the introduction of science in the process of planning the production process, election of workers, their further education, and equal influence and responsibility of management (organ management) and workers in creation of efficient production processes [2]. “Administrative Management” is based on the improvement and reorganization of the system of mutual connections and processes in a company with exclusion of influence of the environment. An important contribution of this school and of one of its eminent representatives H. Fayol [3] is in his seeing the management as a universal process. “Management through the prism of psychology and human relations” was a very popular concept in the mid-twentieth century. This approach says that the productivity could be increased significantly not in the form of wage increases, but through closer relationship of management (management body) and workers as through increased satisfaction of workers with their job and in their active participation in the processes of production and modifications of this process [4]. “Management in terms of the science of behavior” is a more modern concept that was developed in the second half of the XX century and it refers to increasing the efficiency of production process based on increasing the efficiency of human resources. To eliminate barriers to international trade in goods, services and information, it was necessary to harmonize national laws and standards in the field of quality management system. Therefore, in its “white paper” [5] the European Union (EU) pointed out the need to conform them by the year 1992. Even before that (in 1979), the Technical Committee of the International Organization for Standardization (International Standardization Organization – ISO) started to work on the harmonization of standards in the field of management on the basis of British Standard BS 5750, and in 1987 they issued a series of standards ISO 9000, and a revision of them in 2000 as series of standards ISO 9001. In our country it is officially designated as a series of standards ISO 9001, while in the European Union they are adopted as EN 29000. The fundamental role of these series of standards is to help organizations to improve the quality of work, communication, and competitiveness in domestic and international exchange.

Health care is one of the most important social institutions. Only a healthy individual can be happy and satisfied and can perform other socio-economic functions. Being the most important product of health care system, health must be achieved quickly and efficiently in order to enable a sick person to return to his/her daily and regular socio-economic activities as soon as possible and thus to contribute to themselves, their family, and the society as a whole.

The process of implementation of the Integrated Quality Management System (IQMS) and the results in one of the most important health care institutions of tertiary type – the Institute of Cardiovascular Diseases of Vojvodina (ICVDV) will be explained further in the text. The ICVDV is a tertiary health institution of high quality of work in the previous period and it consists of the Department of Cardiology, Department of Cardiac Surgery and Technical Services. The main activities of the ICVDV are to:
1. Monitor and study the situation in the field of cardiovascular diseases,
2. Investigate, introduce and implement new methods of detection of diseases, treatment and rehabilitation, and to implement measures for improving health care in the area,
3. Perform complex diagnostics, treatment (including surgery) and rehabilitation of patients,
4. Perform education and training of health workers in their field of work,
5. Perform scientific research in the areas of prevention, treatment and rehabilitation in the field of cardiovascular diseases,
6. Provide technical and methodological assistance to health institutions in this field.

This study has been aimed at estimating the value of integrated management system applied at our Institute in order to raise the quality of treatment.

**Material and Methods**

Preparations for the introduction of ISO standards and the IQMS began in 2008. The initiative is mainly the result of many years of “Twining” cooperation between the ICVDV and the hospital “Alessandro Manzoni” from Lecco (Lombardy, Italy). That particular hospital had implemented the ISO 9000 standard even before 2000, with the accompanying standards of environmental protection and safety. During regular meetings with the representatives of that hospital, the modalities of cooperation in several areas were discussed, and since the beginning of the implementation of ISO standards it has been ranked as one of the most important roles in the areas of cooperation of these two institutions. The representatives of Lecco hospital suggested strongly that the implementation of ISO standards was necessary in order to carry out the reorganization of structures and personnel of in-hospital and out-hospital health services in the field of liability, which was one of the essential...
items in terms of increased demands of patients for better and faster treatment and announced net spending on hospital and outpatient costs treatment to make a compromise, but not at the expense of the quality of treatment and the patient’s satisfaction. The program of introduction and implementation of the IQMS at the ICVDV was introduced as an official document of the two-year period cooperation approved by the Government of Lombardy and the Government of Vojvodina. During the year of 2008 and the following year, about 40 employees of the ICVDV (having academic and secondary school education of different profiles) attended the courses for the implementation of ISO standards given by the lecturers from the Faculty of Technical Sciences (the Department of Industrial Engineering and Management - FTS IEM) [6] of the University of Novi Sad. During that period, the personnel from the ICVDV management that would be responsible for the introduction and implementation of the IQMS were slowly profiled. Motivations of management representatives of the IQMS and their associates were different but the overall goal for all of them was a better organization of work processes and the improvement of quality of treatment for patients. One example of motivation of management representatives of IMS was: “A patient from the Department of Cardiology was found to have significant left main stenosis during coronary angiography at the end of the morning shift. In this case, would it be the obligation of the interventional cardiologist to inform the doctor from the Department about the finding, or is it the opposite—should the doctor from the Department ask the interventional cardiologist about the finding in his/her patient?” Both aspects are logical. The doctor who found a significant and life threatening finding is expected to report it, but the doctor who is responsible for the patient should also be interested in his findings after the intervention. This is just one example illustrating that if problems are not systematically solved, they can result in detrimental effects on the patient. These situations and many others in the field of profession, organization, education, or scientific research, etc., require precisely defined practices and procedures in order to minimize inconsistencies either resulting from badly defined procedures or being the consequences of non-compliance with the above mentioned procedures.

That complex institution (the ICVDV) with a very broad spectrum of highly specialized professional, educational and scientific activities with about 560 employees of different profiles required a lot of work in the preparation and implementation of the IQMS.

First of all, general concepts, which were supposed to determine the direction in which the further development of ICVDV would go, had to be defined. To that end, the following conclusions were made:

**ICVDV mission**

In prevention and treatment of cardiovascular disease the tendency is to excel and improve the quality of life and dignity of patients according to the highest standards.

**ICVDV vision**

To make the ICVDV one of Europe’s most reputable hospitals of this type, as well as a leader in the Balkans and South East Europe in cardiology and cardiac surgery.

- The system of values
- Quality above all (Only the service of high quality guarantees successful performance)
- Professionalism (only a strict professional relationship guarantees fulfillment of patient’s requests and demands of other interested parties)
- Trust (mutual trust between the ICVDV and patients is a necessary condition for success)
- Motivation (only motivated employees will participate consciously in the realization of the mission and vision of the ICVDV)
- Perfectionism (only fully developed solutions to the problems can be the basis for success)
- Optimism (only optimistic people have a chance for success)
- Perseverance (only those who do their best on their way to improvement can expect to succeed)
- Devotion (only employees devoted to their institution can help it to achieve its mission and vision)
- Ability to learn and to predict events (only those capable of continuous learning and prediction of events may provide survival and development of the ICVDV).

The IQMS [7] itself complies with the requirements of ISO 9001: 2008, which is general and has served as the basis. In addition, the extent and type of activities necessitated the introduction of environmental management system in compliance with the requirements of ISO 14001: 2005; health care system and safety at work in compliance with standard BS OHSAS 18001: 2007; and biochemistry laboratory management system in compliance with the requirements of ISO/IEC 17025: 2006.

Once the mission, vision, and values had been defined as permanent parameters of the role and functions of ICVDV, procedures had to be written for each functional unit or functionally different processes in the context of the ICVDV functioning. Because of the presence of two major functional units of the ICVDV each special in some way within its competence, but constituting an inseparable whole, all anticipated procedures were divided into two groups: the Procedures for the Department of Cardiology (CP), and Procedures for the Department of Cardiac Surgery (CSP) besides the general procedures (GP), which had 14 procedures and one instruction and the specific procedures (SP), which had 9 procedures and 2 instructions. The team assigned to write the procedures had first to become familiar with the organization of work of each department in order to gain insight into very complicated work process, and to make not more than 10-12 different procedures. The procedures had to include all segments of the organization and work, and be connected effectively with each other in some way.

**Results**

At the Department of Cardiology, 11 procedures and 5 special instructions for the operation in special situ-
Each procedure was a functional integration of a specific work process while its writing had to be considered in a wider consensus and with team members, holders of management and in discussion with educators when introducing the IQMS. In this way, a valid document was obtained, which, nevertheless, had to be aligned with other procedures at the end of the process if they had some things in common in order to avoid repetition or redundancy. Upon completion, the procedures were thoroughly discussed by the team members, and had to be analyzed in the presence of representatives of management for the IQMS and their assistants. Only after such multiple analyses could it be clearly seen what the dimensions of functioning were in complex health institutions such as the ICVDV, in this case. The activity of writing the procedures or rules for work process and functioning, which are incorporated into documents, represents a very strong motivation to look at the process constantly and to make efforts to improve the health care of patients constantly and continuously (as well as other activities: scientific research; work in educational activities, and many other segments). The functioning of such a complex system as the ICVDV is never static. It is a “living organism” that requires constant adaptability and very important changes of different characters in short time intervals, with the aim of improving the quality of performance and efficiency and eventually increasing patients’ satisfaction with treatment. For these reasons, many of the procedures and guidelines have been revised several times, which means that it was important to change the above mentioned documents as a result of permanent improvement of workflow and organization charts. Some changes were made to improve the quality of treatment, which was followed by regular analysis of patient’s satisfaction with treatment measures (Tables 1 and 2). As a result of evaluating the quality of cardiac surgery treatment, and within the set quality goals, the “Vojvodina Score” model for calculating operative risk in surgical patients from this area was created [8, 9]. It has introduced some new input elements that characterize the operative cardiac surgery risk factors in these areas, which partly differ from the factors of operative cardiac surgery risk in other parts of the world. All written and mandatory procedures and guidelines approved by the manage-

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**Table 1.** Patient’s satisfaction with the admission and discharge services at index hospitalization (maximal mark 5)

<table>
<thead>
<tr>
<th>Usluge prijema i otpusta tokom indeksne hospitalizacije</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 General impression of the admission procedure/Opštii utisak o proceduri prijema</td>
<td>4.4</td>
</tr>
<tr>
<td>2 Staff courtesy/Ljubaznost osoblja</td>
<td>4.5</td>
</tr>
<tr>
<td>3 Waiting time at the counter/Vreme čekanja na šalteru</td>
<td>4.2</td>
</tr>
<tr>
<td>4 Explanation of procedures during admission/Objašnjenje procedure tokom prijema</td>
<td>4.3</td>
</tr>
<tr>
<td>5 Time to being accommodated in the room/Vreme do smeštaja u sobu</td>
<td>4.3</td>
</tr>
<tr>
<td>6 General impression at discharge/Opštii utisak prilikom otpusta</td>
<td>4.4</td>
</tr>
</tbody>
</table>

**Table 2.** Patient’s satisfaction with physician's services during index hospitalization (maximal mark 5)

<table>
<thead>
<tr>
<th>Usluge lekara tokom indeksne hospitalizacije</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Readiness to respond/Spremnost da daje odgovore</td>
<td>4.4</td>
</tr>
<tr>
<td>2 Explanations/Objašnjenja</td>
<td>4.3</td>
</tr>
<tr>
<td>3 Respect and kindness/Poslijanje i ljubaznost</td>
<td>4.4</td>
</tr>
<tr>
<td>4 The ability to diagnose/Sposobnost dijagnostikovanja</td>
<td>4.5</td>
</tr>
<tr>
<td>5 Thoroughness in testing/examining/Temeljnost u ispitivanju</td>
<td>4.5</td>
</tr>
<tr>
<td>6 Treatment successfulness/Uspešnost lečenja</td>
<td>4.4</td>
</tr>
<tr>
<td>7 Instructions at discharge/Upute pri otpustu</td>
<td>4.5</td>
</tr>
<tr>
<td>8 General satisfaction with services/Opštii zadovoljstvo uslugama</td>
<td>4.5</td>
</tr>
</tbody>
</table>
ment were posted on the internal internet site of ICVDV, and thus became available to those engaged in the processes described in these documents, who could gain an insight into their respective part of the organization or business activities. The documents placed on the site cannot be changed, but there are clearly defined procedures how they can be changed (proposal and request for modification of documents - procedures and/or instructions).

The Rules of IQMS, placed on the internal ICVDV site, is the final and main document which has replaced the previously described documents. This document describes the systematization, mission, vision, policy, organizational form, and structure of the ICVDV as a complex medical work organization. The document, which contains 66 pages with diagrams and tables, gives a valid insight into the functioning of the ICVDV in the present time and objectives of quality of work in future.

The Institute of Cardiovascular Diseases of Vojvodina has received the required accreditation very easily and for a long period of time (7 years).

Discussion

When speaking of the Integrated Management System (IMS), it represents the incorporation of different standards as well as a comprehensive management tool (management body) that connects all the elements of business system in a unique and comprehensive system of management processes in one organization in order to meet demands of shareholders and to achieve business goals in line with the vision and mission of specific organization. By the integration of management systems, besides other things, cost reductions can be achieved thanks to a better organization within the work organization, and to the general satisfaction of both employees and end-users of healthcare, which all together reflect a better business organization as a whole.

The health care system is one of the pillars of the social system and also a measure of its quality. In order to achieve high quality in the area of health and to do that in a shorter period of time with the least possible expenditure of human and material resources (efficiency and effectiveness), it is necessary to apply the IQMS in Health Care [10, 11].

The necessity of the application of IMS in health institutions of the Republic of Serbia

What characterizes the health care system of the Republic of Serbia [12] is that the financial budgetary resources for Health Care are fairly limited and are considered to be among the lowest appropriations in Europe (less than 300 Euros per capita per year). A large part of health care is provided in the form of primary, secondary and tertiary health care as a form of legal regulation of the health organization structure of our country that sees the health industry as non-profit. From all mentioned above it is clear that the range of IMS quality in such circumstances is limited and cannot count on additional or higher sources of funding.

So this is why questions are occasionally asked, such as if it is appropriate to implement the IQMS in health care organizations, and in the given circumstances, what the possibilities for management of health care organizations are to improve the quality of health services as the basic criteria of satisfaction and purpose for end-users (patients) [13–15]. In doing so, the quality of the social health services must be viewed through three major segments: 1. Degree of excellence, 2. Achieved level, 3. Satisfaction of specific needs of the system and users of health care services.

The authors believe that the medical activities should have a constant tendency towards improving the quality of health services irrespective of current possibilities of budget financing. It also reflects the role of modern management to improve and modernize the organization structure of health institutions which they run. The introduction of standards and the IQMS is essential for reorganization of business in health organizations at all levels of care. Only in this way can the quality of treatment and patients’ satisfaction be improved, which must be the main motive for implementation of ISO standard in health care system.

Even those institutions which used to be the flagship of health must strive for further improvement in quality of treatment for patients a permanent premise.

Conclusion

In order to achieve high quality in the health area and to do that in the shortest time and with the least possible expenditure of human and material resources, it is necessary to apply integrated quality management system. The application of this system allows a realistic assessment of functioning quality of work processes but also asks for constant monitoring of system efficiency and allows the changes which can lead to its better functioning. In this way the quality of treatment is increased and the quality objectives in the future are improved; in addition, inconsistencies that must be corrected are better seen. This gives a constant pace necessary for better organization of all agents with lower costs which should eventually result in a higher quality of treatment. The integrated quality management system prevents “embracing” in the own values and requires action. The employees play a big role in all this, as well as the management which regularly monitors and analyzes the results achieved in relation to its objectives.

References