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Issues of Medical Insurance Knowledge and Causes of Patient Dissatisfaction with Medical Care

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Abstract

One of the criteria for risk management in the voluntary medical insurance – the risk of not providing quality medical care – has been highlighted. Relative share of cases of improper medical care as a result of noncompliance with its scope or quality has been examined. For this purpose, quality of medical care provision in 5,000 patients, selected from 135 medical enterprises, has been studied. The key reasons of dissatisfaction with the medical care quality (MCQ) in hospitals and in ambulatory treatment are shown to be untimeliness and incompleteness. Informative value of the above indicators is more than twice the higher than the rest of dissatisfaction parameters. It is stressed that one of the main reasons of poor medical care quality in insurance medicine is irregularity of accumulated medical knowledge. In this regard, a possibility of creation and implementation of ontological presentations in insurance medicine has been studied. It is emphasized that insurance medicine is based on profound procedural knowledge that is difficult to summarize and range. Means of development of an insurance medicine ontology has been outlined.

Keywords

Medical insurance; Medical care quality; Patient satisfaction with medical care; Ontology; Declarative and procedural knowledge; Insurance activity risks; Information interrelations

Introduction

Implementation and development of voluntary medical insurance in the Republic of Kazakhstan only partially contributed to the reduction of morbidity and health promotion. Certainly, the accumulation of financial resources and creation of competitive environment has led to specific improvement in the medical care quality (MCQ).

Motivation for a thorough constant control of own health condition by the insured contingent has significantly increased, but satisfaction with the MCQ is rising at a slow pace. Moreover, severe competition in the insurance services market not always correlates with the same medical service quality.

The indisputable is the fact of increase in the cost of medical care for population [1-5]. Numerous discussions carried out around the world are related to the future of practical medicine due to the continuous growth of its value. They led to the efficiency criterion "quality-adjusted life year", or QALY [6-8]. It conceptually defines "price" of health by using a new method of treatment compared with a standard therapy.

Economic efficiency quantitative assessment approaches are associated with the WHO proposal on the use of index of the gross domestic product threefold value per capita as the threshold value of the treatment [5-6]. However, received values of the cost of treatment seem to us too high for most countries. Moreover, according to the report of the U.S. department of Health and Human services (HHS) in the USA, malpractice due to inaccurate medical actions affects annually health of millions of American patients. The cost of treating patients, who suffer from adverse reactions to pharmaceuticals, according to the Department's estimates, reaches \$5 billion per year [2]. That is why HHS emphasizes the urgent need for work perfection to improve communication between medical services providers and patients. In addition, working risks of insurance companies due to the lack of formalized criteria for their activities are constantly growing. Another challenge is an absence of preservation technologies of findings of their activities.

Purpose of the Study

Studying the causes of patient dissatisfaction with medical care and analysis of strategic approaches of knowledge generalization accumulated in insurance medicine by means of ontological structures application.

Methods

Insuring outcomes of 5,000 patients, who had been provided with inpatient and outpatient care in 135 medical enterprises in the private and public sector in the Republic of Kazakhstan (RK), have been studied. Medical care was provided by medical institutions of the republic in 2013. Sociological approaches have been used: patients' opinions concerning various aspects of the MCQ via questionnaire survey by a specially designed form have been studied. The main indicator – in-patient medical care satisfaction has been assessed by a large group of indicators, including: waiting periods of hospitalizing; patients admission organization in the medical admission unit; quality and comprehensiveness of primary examination by a doctor of medical admission unit; living conditions of stay in the hospital; timeliness of examination prescription and undergoing; diagnostic examination and treatment completeness; politeness, care, and individual approach of a doctor in charge and registered nurses; availability of doctor explanations at hospital discharge; and accessibility of information and educational materials for patients. Patient satisfaction with inpatient and outpatient medical assistance quality on the whole, i.e., total satisfaction, has been studied as well.

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Results and Discussion

It is well known that a key element in the insurance medicine is the value of risk determined by an insurer at a level securing its competitiveness in the market and which is consistent with the requirements of a financial supervision authority. The cost of a policy is influenced both by factors that the insurer may regulate while forming different medical insurance programs, as well as those beyond the insurer's control. Though the latter constitute a major part and largely depend on the insurance external environment, that is, on the characteristics of all insurers, medical institutions and insurance market as a whole.

The biggest risk in medical insurance is carries by a segment defined as skilled medical care provision to insurer, primarily because insurance contracts conclusion does not imply a quantitative assessment of patients' health condition. It is also obvious that the insurance success depends on the quality of medical services provision by medical institutions, which in turn are determined by the level of medical knowledge formalization, introduction of medical action standards. However, action standards do not always completely provide the full range of possible practical situations and are not properly implemented in practical healthcare.

As a result, the key unresolved issues while identifying the risks of medical insurance can be summarized to be the absence of formalized characteristics of MCQ, and, what is by far much more significant, medical knowledge irregularity.

It should be emphasized that the establishment of MCQ assessment system is focused primarily on patient satisfaction and insurance payout growth indicators.

Patient satisfaction growth with MCQ is one of the important challenges faced by any medical institution, both in terms of its management, and in problems of insurance medicine. It is important to notice that, despite the ongoing debate concerning the impossibility

of an objective assessment by a patient of a true MCQ, it should be admitted that there are many sound reasons of public discontent.

The main segments identifying risks in VMI are quality indicators in inpatient and outpatient care. The analysis held of 5,000 insurance cases proved that the leading causes of dissatisfaction with the MCQ in hospitals are its untimeliness and incompleteness (Table 1). They make up a total of $59.2 \pm 0.7\%$. They are even more significant in the outpatient setting, where they equal $71.5 \pm 0.6\%$. Almost half of the cases of medical ethics violation refer to the MCQ – $45.9 \pm 0.7\%$. All findings are statistically reliable – $p < 0.05$.

Information estimates of data received are quite interesting. Informative value of the above indicators is more than twice higher than the rest of dissatisfaction parameters.

Since the level of dissatisfaction with the MCQ proved to be very high, it has been suggested that there might be a regional factor (distance) and poor equipment of healthcare facilities, as well as high expectedness from clients of the insurance company. The dynamics of private medical institution performance of Assistance group located in Atyrau, Atyrau region, Republic of Kazakhstan, for the period from 2014 to 2012 has been studied as well. Furthermore, it was implied that performance indicators dynamics in insurance medicine cannot promptly reflect the global nature of changes. Accordingly, the determining factor in taking decisions on insurance medicine effectiveness involves only trends, and the principal is their reflection in a multidimensional indicators context.

Statistical results were analyzed by the expert group of insurance company only after the preliminary expertise of all medical units and implementation of worked out MCQ ensuring policies.

Indeed, the analysis proved that diagnostic measures taken not in full for reasons within the doctor's control and which led to misdiagnostics, for some years significantly reduced from 4% to 1.2% ($p < 0.05$). Progress in the significance of indicator, "Therapeutic

Identified reasons of quality MC nonprovision	Total of violations detected		Due to noncompliance with									
			Safety standards of MC provision		Quality and efficiency of MC provision		Timeliness of necessary MC volume provision		Timeliness of necessary MC provision		Adequacy and completeness of MC receiving	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Number of justified complaints regarding MC provision in hospital	135	2.7	18	13.3	37	27.4	42	31.1	38	28.1		
Number of justified complaints regarding MC provision in terms of outpatient care	112	2.2	9	8.0	54	48.2	23	20.5	26	23.3		
Proven, in the manner prescribed, violations of medical ethics and deontology by medical institution staff	111	2.2	3	2.7	51	45.9	28	25.2	29	26.1		

Table 1: Patient satisfaction with MCQ, 2013, 135 enterprises, 5,000 insured events

measures taken not in full due to reasons within the doctor's control and which led to deterioration in patient's condition and treatment duration extension" is observed as well. They also statistically reliably reflect an indicator reduction from 0.8% to 0.1%. However, indicator "Cases of complications during manipulation by a doctor entailing deterioration in the patient's condition" virtually remained unchanged, as well as other indicators: "Availability of justified complaints from patient and its relatives regarding the quality of medical care provided"; "Number of differences in diagnoses when prescribing a hospital stay and hospital clinical diagnosis.

Thus, given the multifaceted MCQ problem, we can assume that statistically significant differences in the relative short-term observations are unrealistic to be detected. Apparently, the true state of affairs in the MCQ is likely related to problems of: an objective assessment of patients condition, lack of doctors actions standards in the delivery of medical care to patients, the lack of registration of patients examination and treatment data, and, in particular, the interpretation of the diagnostic and medical information received. That is why the study of the new strategy to systemize medical information circulating in insurance medicine is considered a very urgent task. The strategy is based on possibility of using ontology in different sections of insurance activities.

In modern information technologies, definition of ontology after T. Gruber is widely used: "Ontology is a specification of conceptualization" [9]. In a number of studies, it is also suggested to define the ontology as "a logical theory, which restricts the use of the language model". In current presentations, the ontology refers to a substantially greater generalization than a detailed set of concepts and relationships. Restrictions imposed on the adopted relations within the framework of this field are included as well. Thus, the ontology is understood as a set of axioms, concepts, and relationships between them [10]. Within the framework of artificial intelligence, the ontology can be described having denoted a variety of objects with their relevant descriptions, formal axioms restricting the interpretation of concepts and sharing of terms used.

The ontology brings to the foreground an awareness of the new status of knowledge. In medicine, this status declares that the data being used in systems of medical diagnostics, prognostication and treatment of diseases (which are inherently relatively simple) may reflect widely used by doctors' knowledge about the causes of diseases; different types of causal relationships between symptoms and diseases; and different options for changing attribute values.

We emphasize that the ontological understandings of the subject area allow not only to regulate the subject knowledge but also to provide a comparison of scientific researches, selection among subject knowledge, and information mostly used in practice [11,12]. In fact, they represent the formation of a fundamentally new approach to knowledge regularity.

The complexity of the knowledge ontological construction in insurance medicine involves integrating multiple subject areas – medicine, social management, business processes, and risks theory. In addition, the medical insurance reflects the functioning of legal, social, economic, and organizational measures aimed at securing, in case of an insured event, free medical care provision to an insured person.

Within the framework of this study, a multilevel structure of the ontological model has been suggested. At the first level, it consists of six sections: 1. Normative – legal support; 2. Economic support;

3. Compulsory medical insurance programs (its territorial and basic components); 4. Insurance risks; 5. The logic of obligations fulfillment on necessary medical care provision to the insured person in the insured event and its payment to a medical institution; 6. Rationale for quality medical care.

The greatest ontological difficulties refer to concepts of "medical care", "medical assistance", "medical service". These difficulties are related to both the lack of quantitative standards for medical care provision quality, as well as the specifics of sociological approach to medical assistance quality study. Finally, it is important to display the quality of medical assistance in the social management coordinates system, and therefore to take into account the specifics of sociological analysis of medical assistance quality management.

Social determinants of medical assistance quality management, namely, social conditions and characteristics of medical services provision process, are very complex. Specific features of knowledge regularity include the principles of process approach to quality management, such as establishment of doctors' perpetual training system, increase of motivation to continuous improvement of professional skills, development of current and total control system over the medical assistance quality, ensuring the principle of consistency and continuity of medical services provision.

Analyzing the ontological structure of knowledge in medical insurance, attention should be focused on risk management issues in insurance activities. Risk in medical insurance is determined by two components: system-population factors and blurred health condition assessments of the insured, which affect underwriting calculations of an insurance premium. Obviously, both components are extremely complex. It implies talking about the medical insurance as an operation carried out under conditions of uncertainty, when probabilities of possible contingencies are unknown. Therefore, the use of criteria is important. The selection of each thereof along with the nature of the problem being solved, targets and constraints set, depends on the risk inclination of persons taking decisions. In other words, personality psychology is another component of insurance ontology.

Economic efficiency of resources use in insurance medicine is expressed in the ratio of a socially significant result reached and finances spent in this concern. It is obvious that the effective expenditure involves achieving customer satisfaction with the desired results while the maximum funds saving. However, it is crucial to achieve compliance both with standards of medical care provision and MCQ standards. This obvious challenge encounters four unsolved problems – the lack of MCQ standards, reasonable choice of indicators in processes (indicators, criteria, benchmarks), systems of accumulated knowledge regularity, and finally, a comprehensive analysis system of insurance medicine functioning, which allows informatively and economically to ensure the choice of managing actions.

As to the indicators of satisfaction with services provided quality reflected in this study, it seems to us that they rather accurately reflect positive and negative trends in healthcare institutions. Certainly, these data are insufficient to justify the factors that reduce patient satisfaction with medical assistance, to serve as a basis to justify the preventive measures and moreover to ensure the prognostication logic of availability and satisfaction with public medical care.

Nevertheless, findings in the context of global task – improving the quality of inpatient and outpatient services may arouse the

interest of specialists in the field of insurance medicine establishment. They can also serve as a basis when selecting an assistance partner of insurance company, as it is important not as much the quality service provision component of a medical service, but the quality of service itself.

The study did not involve internal indicators of performance evaluation of narrow experts, however, as it seems to us, they do not affect the integral quality of medical care, and are characteristics of influencing factors and managing measures impact scope.

Conclusions

1. Development and adoption of quantitative standards for public medical care provision quality are of crucial importance. Only then it is possible to provide exquisite and relevant indicators in medical insurance institution activities.
2. Medical insurance, as a system of legal, economic, and organizational measures aimed at ensuring the quality of medical care provision, is mainly in need of regularity and systematization of knowledge accumulated and constructing the corresponding ontology. Medical insurance knowledge regularity is one of the means to reduce the risks of insurance companies' successful activities.
3. Complexity of the ontological structures implementation in insurance activities primarily involves substantial scope of procedural knowledge, formalization of which currently represents certain difficulties.

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