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THE PROJECT MANAGEMENT METHODOLOGICAL MODELS FOR ACTIVITY IN MEDICAL BRANCH

Models of medical activity as interaction of two acting subjects and as activity at levels of methodology, method, methods are developed. On this base essence of medical activity is described in terms of the project life circle phases and stages. Model of the treatment project network is applied to consider dental project. Fig. 3, ref. 23.

Key words: project, life circle, medical activity, medical project, dental project, network, variants of treatment, quality, time, costs.

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МЕТОДОЛОГІЧНІ МОДЕЛІ УПРАВЛІННЯ ПРОЕКТАМИ ДЛЯ ГАЛУЗІ МЕДИЧНОЇ ДІЯЛЬНОСТІ

Розроблені моделі медичної діяльності як взаємодії двох діючих суб'єктів та як діяльності на рівні методології, методу, методики. На цій основі сутність медичної діяльності розкрита в термінах фаз й етапів життєвого циклу проекту. Модель мережі лікувального проекту розглядана на прикладі стоматологічного проекту. Рис. 3, дж. 23.

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МЕТОДОЛОГИЧЕСКИЕ МОДЕЛИ УПРАВЛЕНИЯ ПРОЕКТАМИ ДЛЯ СФЕРЫ МЕДИЦИНСКОЙ ДЕЯТЕЛЬНОСТИ

Разработаны модели медицинской деятельности как взаимодействия двух действующих субъектов и как деятельности на уровне методологии, метода, методики. На этой основе сущность медицинской деятельности раскрыта в терминах фаз и этапов жизненного цикла проекта. Модель сети лечебного проекта рассмотрена на примере стоматологического проекта. Рис. 3, ист. 23.

Problem statement in a general view. Main ideas regarding the use of project management in different branches of activity have been in debate for about a century now. But the fact still remains that the medical professionals hardly accept the fact of using another discipline in their practice. Writers, including health management professionals, have illustrated the effectiveness of project management technique to reduce the cost of medical treatments and quick recovery of patients [1, 2 and others]. At the same time actual problem facing medical field today, is the unavailability of basic healthcare to the world population; the third world countries are more prone to the effect. Experts in the health management and healthcare policy makers always procrastinate the availability of medical facilities in every country. But the situation still

remains the same, therefore the problem still remains: increase mortality rate, even to curable diseases and illness; high level and unaffordable medical services; malpractices and medical insurance fraud [3].

Analysis of the last researches including attempts to solve the problem, highlighting of its unsolved part. The research was made focusing on two aspects: clinical part and theoretical (internet literatures). As a result three big clinics which declare using of project management are defined and their particular topics: Mayo clinic - Breast Cancer Treatment: It's a Project and you are the Project Manager [4], Emerging Enterprise Center at Foley Hoag – The Art of Medical Device Project Management. Don't Let Success "Slip through the Cracks" [5], Sterling medicals – Medical Device Project Management [6].

Theoretical aspect is presented by such directions: project management for health information technology [7], project management in hospitals and healthcare facilities [8], project management for healthcare [9], "preventive medicine" against bad clients [10], body of knowledge for medical practice management [11], doctors, project management, ankle bracelets, dropbox [12], project management for doctors [13], project management methodology to plan and track inpatient care [14], medical device preclinical and clinical trial project management [15], healthcare project management [16]. As one can see in these directions researchers published articles on the use of project management methodology in medicine. But some key facts are still missing which deals with actuality of standard method used. These facts are due to reasons affecting all the stakeholders and the entire medical ethics rules. Recent works focus practically on the medical technological aspect and transplantation in medical sciences, but some writers pointed to the general review health management, from the point of admission of patient in the healthcare center to the part of discharge.

Aim of the article. To describe activity of doctors from the project management methodology point of view and in its terms. This suggests using basic models and concepts of the project management. As a result it can provide a platform for further effective interactions between health personnel and project managers in different branches of medicine.

Basic part of the research. Theoretical base of the research is presented by activity model [17, p.30] from activity approach, model of integrity vision of activity "3M pyramid" [18] from system-integrity approach and model of the "standard" project life circle common to majority of projects [19]. Applying of these methodological models for a medical activity allowed suggesting relevant models.

At fig. 1 bellow medical activity as interaction of two acting subjects is described.

As one can see, one of acting subjects is a patient (or sick person). Another acting subject is medical personnel – medical doctors, health practitioners including nurses and health project manager. Uncomfortable situation of the patient is caused by illness and/or pain. Comfortable situation – on the contrary is connected with ultimate improved state of health and/or comfort (without pain). Activity of subject 1 embraces following main actions: to go to the hospital, to undergo medical treatment, to take drugs after medical discharge. Therefore activity of subject 2 is directed to implement following main actions: to diagnose patient, to search appropriate treatment options, to consult patient after discharge. Interaction of mentioned acting subjects is limited in time and implemented in particular environment – hospital or home.

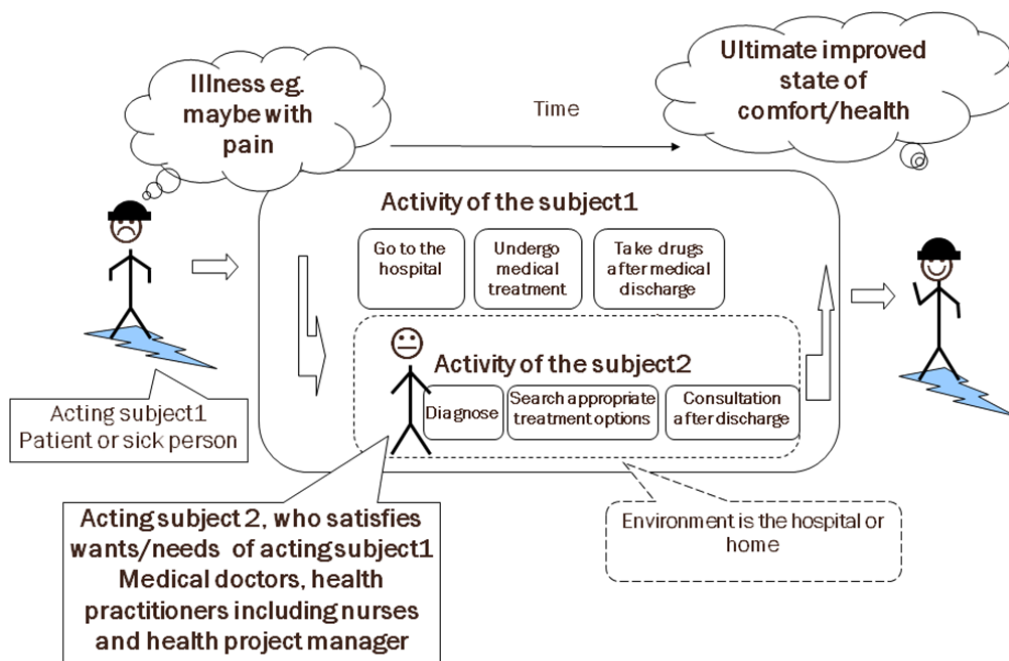


Fig. 1. Model of medical activity as interaction of two acting subjects

According to model "3M pyramid" (fig. 2) at the level of methodology medical activity suggests collecting information about patient complaints, case history, patient examination, doctor's preliminary diagnostics, laboratory diagnostics. At the level of method – comparison of information to risk systematic presentation of information about the advantages, disadvantages and risks of type of project (medical treatment methods). Use the 7 key elements to evaluate, if to invest, further elaboration on the treatment method. Finally, at the level of methodics - expert or competent decision the preparation of an expert opinion about The Treatment methodic. This part is a consultation with other health professionals or senior doctors of the department (hospitals) taking into account the recommendation focus on the feasibility study and business plan aspect of the hospital.

Basing on described methodological models of medical activity and essence of the project life circle [19], it's obviously that medical doctors use to same replicas of project life cycle in their daily practice. These processes might not have the full life cycle or follow the same process as in business or other activities in life but it sure does have some things in common. More so for project effectiveness, it is considered to include all the process of life cycle, in estimation of time against the cost and staff availability.

Starting the project (Initialization phase) – includes doctors personal opinion and availability of diagnostic and paper word (case report). The end product or type of document obtain is the patient history form (data). This part will involve only 2 stakeholders, the doctor (project manager) and the institution (hospital, consumer), and following activities:

1. Development of the concept. This is the part where medical doctors collects vitae on the purpose of admission, information about patient history (Anamnesis vitae and anamnesis morbi), general and local examination of patients, instrumental and clinical laboratory findings.

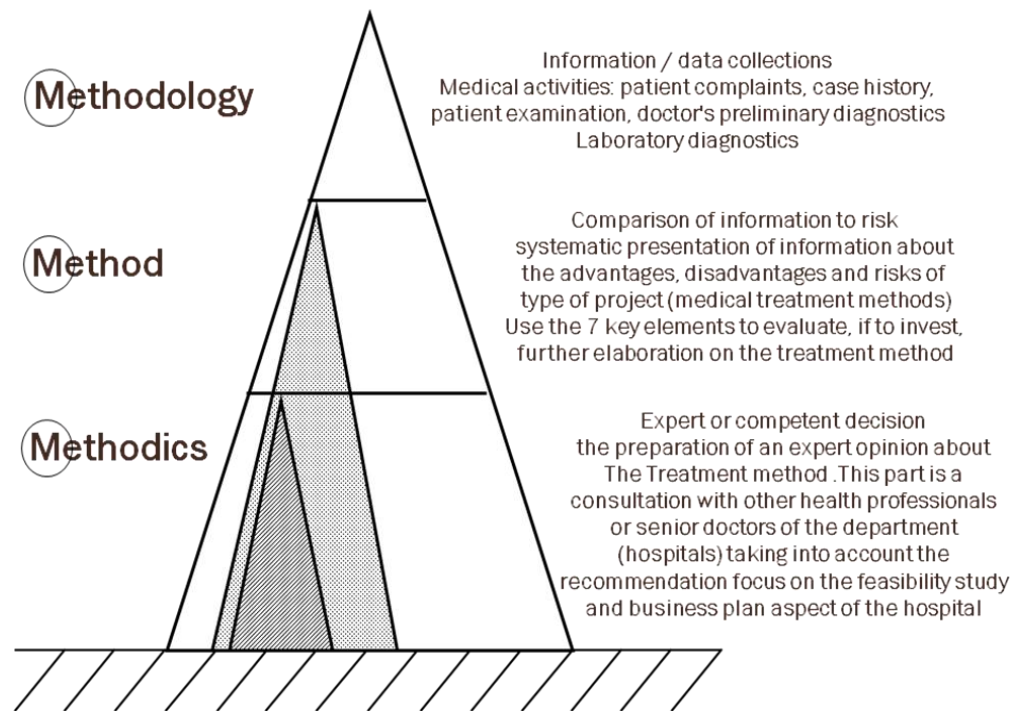


Fig. 2. "3M pyramid" model of medical activity

2. Business planning. This part deals with specifically the doctors preliminary diagnostic, in which it test the level of the medical doctor competency.

3. Preparation of the appraisal report. With the estimation of the doctor's initial diagnostic and the case report from other findings, will lead to the final conclusion about, the actual problem that leads to patient admission to the hospital. If this part is not concluded or finalized, the doctor has the right to begin treatment on the signs and symptoms before finding out the actual problem.

Organizing and preparation (The development phase). The development phase is where most of the actual work is done, this part includes other professionals and their own opinions, it also includes the start-up point for the treatments. The end of this process will bring about more information on how to treat the patient and writing document on the procedures to follow (legal form between patients and doctors). The stakeholders involved are the doctors (project manager, patients (project initiator), hospitals (consumer), insurance company (investor). Following activities have to be done:

1. Planning. In the planning of the treatments, it depends on the doctors findings, expert evaluations and the next stages of progression, which is where to begin next. Planning in question involves the best method of treatment available, which off course done after comparison of the project alternative and logical matrix. Majority of the staffs are involved in this process, example - a surgical ward or oncology department, involving a breast cancer patient. The oncologists and the surgeons should be able to negotiate the best help for the patient, if the patient should first undergo a radiation therapy, chemotherapy or surgical removal or best combine. The medical service the patient will need, the financial implications, the duration for the treatments and the post surgical and therapeutic effect that can arise including the risk (complication during and after treatments and recurrence). This part takes more time than any other

section of the process, due to the sensitive nature, in proper findings and avoidance of complications and blames.

2. Tenders. The official document draft in favor of the patient and doctors involved is considered as the tender in this case. The director or department heads, the doctor and the patient will sign this form, just to be sure the patient is aware of his/her right and the doctors are also save in-case of lawsuits (the patient will also be brief about the kind, his options and type of process to be taken and the risk involved).

3. Contracts. The contract is between the patient, insurance company that pays for the treatment and the hospital staff. Therefore, with this process any of the stakeholders might back down or take the contract to another doctor or hospital.

Carrying out the project work (Implementation phase) includes such activities:

1. Formation of the organizational structure. The organization structures are the medical staffs e.g. during a surgery so many medical department and staffs are involved. The anesthesiology department, surgical and stationary nurses, head surgeons, other sub-surgical doctors and assistants, medical technicians who operate the equipments (perfusionists), internists and other specialists depending on the cause of sickness.

2. Monitoring. This part deals with the intense observation in the medical establishment, it is the final phase before the treatment begins; it can also be referred to as the treatment beginning phase. It involves patient's diet regime and personal life routines.

Finishing the project (Phase of the exploitation) - The actual part of the project. It involves just two stakeholders: the doctor and the patient. Document given is called the discharge form, or in most cases the payments and follow up forms depending on method of previous agreement between stakeholders. Therefore following activities should be implemented:

1. Commissioning. At the beginning of the project or treatments, most surgical patients are prep before the actual surgery, maybe for minor surgical manipulations before the main operation. Sometimes it can be a method of investigation also, like in the case of endoscopy, litho-chipsy, MRI and CT scans before the main surgery.

2. Exploitation. The main treatment, which have all the manipulations; after this stage the patient can retire either in the outpatient (another department), the same department where the treatment was done or go home and return on separate dates for check up.

3. Repair, reconstruction or recycling. For the effectiveness of the treatment, this part is very important for patient, because doctors and other healthcare providers can tackle risk or recurrent problems, research more on patient illness and conditions and finally provide the final solution to patients. It can also involve the treatment of new symptom that develops because of drugs, surgical manipulations, chemotherapy or doctor and patient mistake. Eg. complete or partial surgical removal of organs in the body, to be replaced by other transplanted material or synthetic materials like silicon replacement (implants) in breast cancer removal.

The analyses above gives possibility to conclude that despite the project management methodology in medical practice is not yet recognized or proven, it does exist. Maybe not to all medical professions but it applies to only plan treatments or long time medical case, but in emergency treatments or surgeries, some phase in the life circle can be omitted. Applying project management techniques can reduce the costs of providing healthcare and also manage the myriad aspects that concern the above-mentioned stakeholders. A project is designed to deliver the right output (patient care) at the right time (now) with appropriate expenditures (optimal use of insurance funds). A project management team must be able to grasp all the problems faced in a hospital or other healthcare facility.

Earlier in works [20-23] on the base of modeling medical project and on example of dental project peculiarities of designing project network were considered. They exactly match project management approach to medical activity presented above. According to its main points, dental project starts with activity "start of the project". Usually this means additional diagnostic of a patient, his arrangement on condition of stationary treatment. The first stage of treatment envisages two blocks of parallel activities. These are not variants of treatment, but parallel treatment. The possible results of the first stage are fixed in additional blocks "data about quality" and "data about a project".

Depending on the results of the first stage of treatment and/or temporal limitations and/or financial possibilities of a patient on the second stage of treatment three alternative variants are examined. The first variant envisages that after passing certain part of treatment the choice of its continuation should be done: one among two (or more) possible variants of treatment. The second variant consists of successive implementation of activities on treatment. And the third variant consists of two parallel activities and a single one at completion.

All variants begin with requirements about the initial state of a patient health for possibility of their application, and finish with information about quality of treatment and financially-temporal indexes of the treatment stage. Regardless of the chosen variant all of them (variants) flow down in one point of project network and activity on closing of the project begins.

Fig.3 bellow illustrates applying of developed approach to developing the network of a dental project.

According to a network developed in [20], planning of dental project is based on the results of examination of patient. The information got during this activity allows to define the most rational "way" of treatment caries, pulpitis or parodontitis taking into account the known expenses on implementation of works and necessary resources.

From fig.3 one can see an example of the dental project network which contains all possible variants of treatment three types of diseases: caries, pulpitis, parodontitis. Each step (activity) is detailed with indexes of quality (is provided by describing material to be used in treatment), duration (is provided by defining times needed for treatment), cost (is provided by definite amount of money needed for treatment). Certainly, these three indexes are related. Choice of appropriate variant depends on the patient's values in the project.

The example of the dental project network makes evidently, that presence in the project network of three groups of indexes, considering quality of product of treatment, time of treatment and expenses on treatment, allows setting the problem of choice of rational way of treatment at the known limitations for a time, expenses and desired quality of treatment. Using of project network in purpose of treatment planning allows accumulating the best practices of treatment, creating the bases of knowledge of treatment and computer tool of planning of dental treatment projects.

Conclusions and prospects of further researches. The research implemented in the paper gives a ground to make following main conclusions.

1. Created methodological models of a medical activity prove that this activity can and should be realized on the base of the project management methodology. Doctor's activity by essence reflects the scope of the project life circle phases and stages. Thus a doctor should be considered as a project manager who uses this methodology to reduce the costs of providing healthcare and also to manage the myriad aspects that concern a patient as the main project stakeholder (P. Cubiat Umoren).

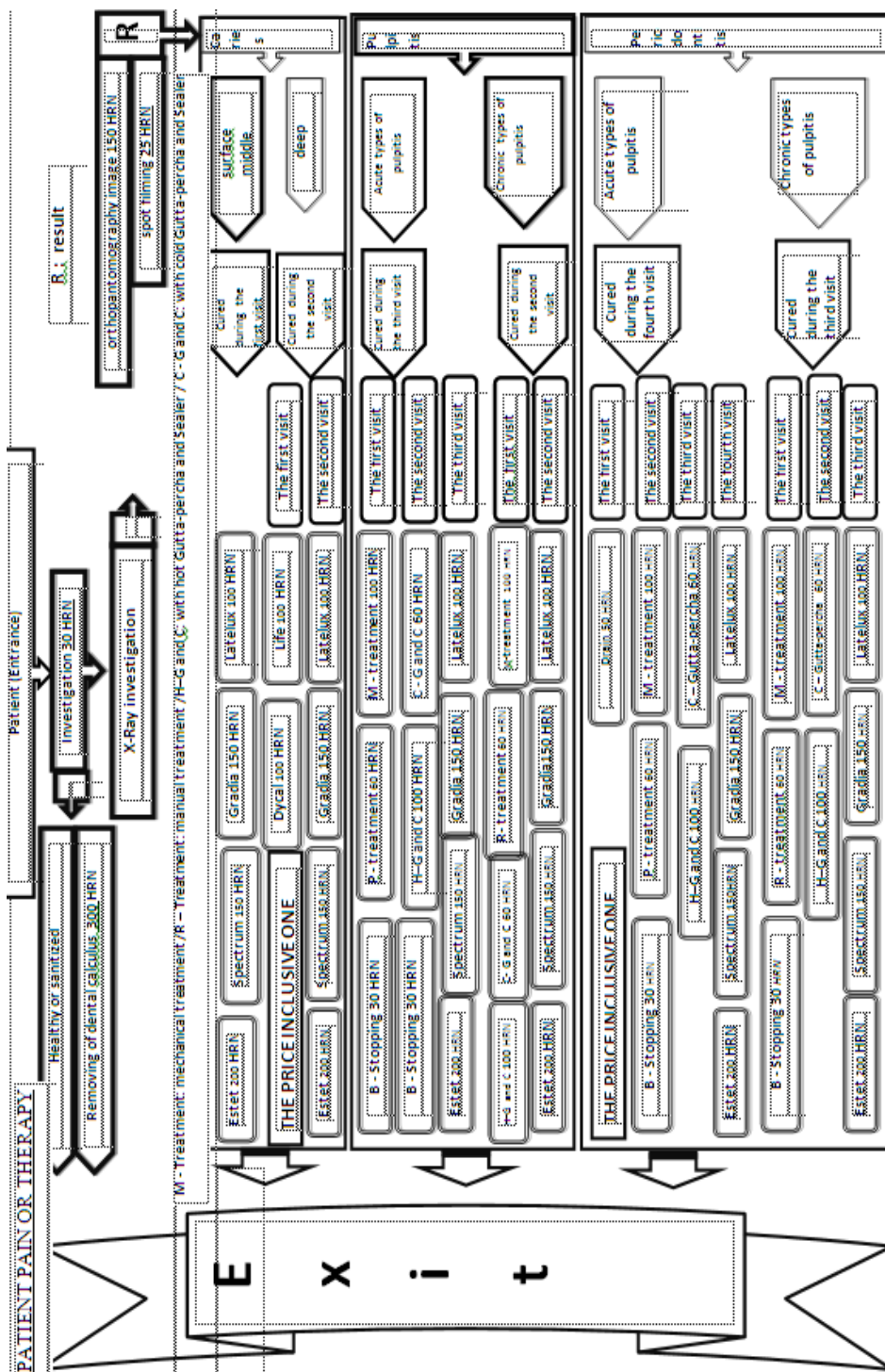


Fig. 3. Visualization of the dental project network for a patient

2. As a project manager a doctor needs managerial tools which are based on the project management methodology and take into account features of different practices in branch of medicine. On example of dental project it is shown that medical project network should contain two additional blocks – "data about quality" and "data about a project". This allows considering different (alternative) variants of treatment and, due to this, to provide effective interaction between doctor and patient on the base of their harmonized values (M. Sultan).

Further studies in this direction will be devoted to developing particular methods and tools for applying project management approach in different branches of medicine.

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