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AUTOMATION OF THE FORMATION OF MEDICAL EXAMINATIONS FOR ELECTRONIC MEDICAL HISTORY IN MEDICAL INFORMATION SYSTEMS

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Summary. *This article examines the documentation of medical records on electronic media and suggests the formalization and documentation of medical data in the medical information system for maintaining an electronic medical history. The basic technologies and interface for documenting medical records, the formation of electronic templates for standardization, the design of electronic doctors' examinations and the terminology used are provided. A software solution for the formation of medical records, the structure of the descriptive part of the prepared templates for medical examinations, and the use of special software allowing the procurement of terms in a six level structure are provided. The use of this medical records technology can improve efficiency, standardize the examinations and terminology used, and structure the medical information generated during the doctor's examination to produce a detailed scientific analysis of the many signs of various pathologies for creating a system to support diagnostic decision making.*

The transformations carried out in the public health system of the Republic of Uzbekistan, which have resulted in issues related to information support issues at all levels of the system, constitute the main problem in practical medicine in the country. The significance of this problem is especially relevant in the emergency medicine system. In this regard, the phased transition from paper information technology to electronic information and communication technology in the organization of the treatment and diagnostic process (TDP) is necessary and forms the basis for creating the information infrastructure of a medical institution on which TDP automation, organization and management are based as a whole. At the same time, the status of information becomes a resource, and in emergency medical institutions, it becomes strategic. This in turn requires the ability to quickly obtain necessary information from the patients.

In this vein, it is first necessary to translate the organization of TDPs from intuitive to evidence-based and their management from bureaucratic- to information-based, which requires modern medical information technology, specialised software and technical means of collecting, storing, processing and presenting information to optimize their organization as well as an electronic communication system for importing and exporting this information at the levels of health facilities, regions and, if necessary, industry. TDP is a well-known technology of information interaction both between the attending physician and the patient and among all medical personnel who interact with the patient. Automation of the TDP should not change this basis but should instead develop and improve it to a unique way of handling information. First, it is necessary to automate the interaction between the participants of the TDP and the process of documenting all the steps of this interaction.

The main and obligatory carrier of this complex organized exchange is traditionally a paper case history with an officially approved form and structure. This serves to accumulate information, make medical decisions, and act not only as a medical but also as a legal document. However, the inability for multiple participants in the TDP to use it simultaneously, the difficulty in reading it, its arbitrary record content of records, and the lack of formalization of medical information makes it difficult to use it quickly and fully in the practice of emergency medicine.

It has been established that the amount of readable information in paper information security does not exceed 75 % and that the usefulness factor of stored information is 82 %. As a result, in terms of a hard time limit, which is typical for emergency medicine, paper information security, whose registration requires much working time from the doctor (at least 30 %), remains a passive storage of information, with quality content far from what is required. It is obvious that because of the paper-based workflow, the organization of the TDP in cases of emergency becomes a serious stop-gap on the improvement of this process. The solution is obvious: it is necessary to introduce electronic information-analytical and communication technologies.

In this case, there is the possibility of, first, the automated formation of a medical document, and second, its long-term and secure storage and, if necessary, operational processing, transmission and submission by the user, that is, the provision of information and intellectual support to the TDP.

An important stage in the creation and application of the complex medical information system (MIS) in the Fergana branch of the Republican Scientific Center for Emergency Medical Care was the creation of “Electronic templates for the registration of medical records”, in which all information entered is maximally formalized and structured according to sections.

In the software we developed, this is provided as follows: at the sixth level, the template creator can specify the types of inspections for which the program should automatically provide parts and sections automatically. In this case, for example, if the physician chooses “to be hospitalized with complaints” when preparing his examination from the initial data, the program will automatically provide the patient's complaints recorded during hospitalization. The doctor then chooses from the essential information provided, and the program will automatically compose the text. It should be noted that the program will provide complaints, not anamnesis, statuses or other. In the same way, if the doctor chooses examinations on admission or status, the treatment program will automatically provide only relevant information. Such automated actions depend on how correctly the template is created and what tasks are given by the template compiler when creating sections with automatic transfer because the program can differentially transfer text, dates, time, numerical values, conclusions, etc. The described technology relieves the doctor of having to perform new examination by routinely re-examining the medical history, with the purpose of selecting the necessary information about the treatment carried out and the measures of the results received to the present day.

In an analysis, the maintenance of medical records in electronic form demonstrated the informativeness of the medical history (MH) involving a certain amount of information, measured in letters or words, as well as the various relationships of certain types of information to the total information. To analyse the content of the information security, a study of electronic and paper information security was carried out; 50 examples each of paper and electronic information security were randomly selected from the archive. The results of the study indicated that the number of documents in the Paper MH was 23.4, and the number of documents in the Electronic MH was also 23.4; the number of documents in the electronic history is equal to that of the paper version.

Approximately 14,7 % more time is required to work with a paper inspection checklist than with the EMH. At the same time, while maintaining the electronic form in the database, the system begins processing the information, which is identical to the content of the paper version of the inspection. Open sentences are immediately formed, convenient for a cursory

study and thus more informative from a subjective point of view. In addition, 74,7 % of the information in the paper record could be read, indicating that the electronic version contained 21 % more useful information than the paper version.

In our work, we studied various achievements and shortcomings of maintaining an electronic record of medical data obtained during patient examinations and the formalization of medical data for further research analysis. An MIS based on a single information space that stores all patient information and medical data in the OBD system must be clearly formalized. Maintaining medical data obtained during the verbal examination of patients determines the course of treatment, or in this process, the doctor forms his diagnoses. Therefore, the analysis of these data is important from a scientific point of view when creating a support system for medical decision-making.

We described technology for registering medical records, which can improve efficiency, standardise the patient inspections and terminology used, guides the doctor when documenting the standard design path and recalling all the details to ensure he or she does not lose track of important information, and structure the medical information generated during the doctor's examination to produce a detailed scientific analysis of the many signs of various pathologies for creating a system to support diagnostic decision making.

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ПЕРСПЕКТИВЫ ПРИМЕНЕНИЯ ЭРХПГ И ЭПСТ ПРИ СИНДРОМЕ МЕХАНИЧЕСКОЙ ЖЕЛТУХИ

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***Summary**. ERCP includes many complex manipulations that require nervous and physical stress, both from the patient and from the examiners, therefore, the use of such a study is indicated only in cases where non-invasive diagnostic methods d not provide the necessary information about the state of the biliary tract and pancreas.*

Актуальность. Желтуха является одним из главных симптомов различных заболеваний печени и желчевыводящих протоков. Своевременное определение генеза желтухи способствует правильному решению ряда вопросов, связанных прежде всего с лечебной тактикой, выбором метода оперативного вмешательства. Улучшение результатов хирургического лечения возможно при своевременной диагностике и выборе оптимального способа оперативного вмешательства в каждой конкретной ситуации.

Цель исследования. Ретроспективный анализ применения малоинвазивных методов больным с механической желтухой различного генеза.

Материалы и методы исследования. Изучены результаты применения у 197 больных комбинированную эндоскопию с рентгенконтрастным исследованием желчных путей в период с 2017 г. по 2020 г. с целью установления генеза желтухи. Возраст больных был от 21 до 70 лет. Из них мужчины составляли 61 (31 %), женщины – 136 (69 %) пациентов.

В результате ЭРПХГ у больных выявлены следующие причины механической желтухи: конкременты общего желчного протока у 87 (44,2 %) больных, стриктура терминального отдела общего желчного протока у 4 (2 %) больных, рак вороты печени у 9 (4,6 %), рак желчного пузыря у 3 (1,52 %), рак фатерова соска у 4 (4,6 %), состояние после холецистэктомии, холедохолитиаз у 19 (9,6 %), синдром Мирризи у 2 (1,1 %), папилит у 8 (4,06 %), облетерирующий холангит у 1 (0,5 %) пациента.

Результаты исследования. Всего произведена ЭПСТ (эндоскопическая папиллосфинктротомия) у 164 больных. Наш небольшой опыт показывает, что ЭПСС является высокоэффективным методом лечения холедохолитиаза. Абсолютных противопоказа-