

DESIGN OF MEDICAL INTEGRATED SYSTEMS OF ELECTRONIC MEDICAL HISTORY

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The article presents the decisions in the field of integration and distributed data processing of health care institutions with the use of electronic medical history. Electronic medical history is a set of medical records containing information on the status of the patient and his treatment, which processed and stored electronically. The growth of various types of research has led to the fact that electronic medical history is the result of plurality expert activities that aimed at the restoration of health. In the framework of disease is a complex of a plurality of hospitalizations and outpatient care, which leads to the formation of a plurality of medical records of outpatients, difficult for the physician, even within the same health facility. Electronic medical history is a natural result of integrated health systems development.

Keywords: medical information systems, ontologies, declarative modeling, ontology integration instrument, electronic medical history.

Introduction

In fact, trends of development instrument of processing, distribution information and information systems can be described with two sides:

- Development of telecommunications networks requires the use of digital channels and data transmission systems, computer equipment for the processing of information in the course of its transmission
- Development of information processing and computing demands increasing use of communication facilities for the organization of exchange of information in order to address applications.

Processes of integration of telecommunications networks and convergence of information resources help transform telecommunications networks in information and communication.

The basis of integrated medical information systems (IMIS) is a set of databases, data warehouses and banks, containing industry information resources, which formation is carried out independently in the part of health subjects and compulsory medical insurance system of local information systems that interact on the basis of a telecommunications network.

The purpose and objectives of research

With the help of IMIS simulation tools we can solve problems of development of integrated medical information systems, including the formation of development strategies in a changing external environment; IMIS selection of targets taking into account the constraints on resources consumed; identify possible scenarios to achieve objectives in the chosen strategy, determine the optimal scenario, etc.

The results and discussion of research

The basis for the introduction of modern information technologies for the integration of heterogeneous information generated in the individual health care systems is a standard "Electronic medical history. General Provisions" of state standard 52636-2006. The standard form of clinical disease history is a formalized description of a balanced state of the patient by medical personnel. The growth of various types of research has led to the fact that information security has become today the result of the activities of a plurality of experts and activities aimed at the restoration of health in the framework of disease is a complex of a plurality of hospitalizations and outpatient care, which leads to the formation of a plurality of medical records of outpatients, difficult for the physician, even within the same health facility. The paper version of the disease history does not allow to quickly navigate the large number of reports and studies, which reduces the efficiency of the prescribing physician. According to the standard electronic medical systems are divided into individual and collective, due different status of medical records in these systems (see Figure 1).

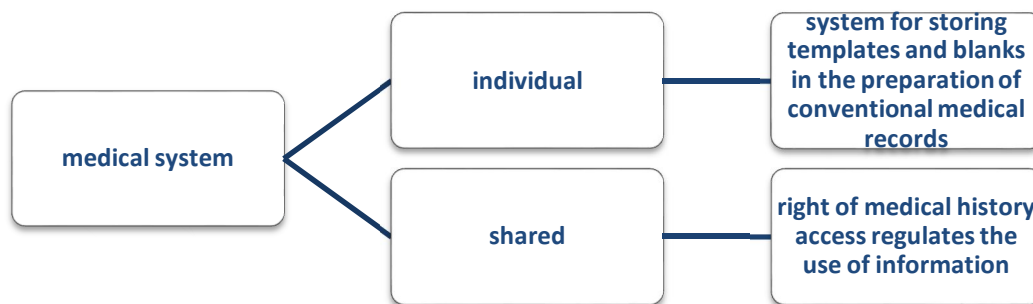


Figure 1. Different status of medical records in electronic medical systems

Individual system: The electronic document tools in these systems are usual way to prepare medical records for printing, signing and working with regulatory documents. The purpose of these files and system is to storage patterns, pieces, fragments, and electronic copies of various documents. Only copy on paper certified by the responsible person has the status of a medical document.

Shared systems: In such systems, each employee with the appropriate access rights, an electronic archive of records, as well as a medical record on paper with stamps and signatures. The main requirements of the standard define the organization of medical electronic document, while

nsuring the proper level of security, liability, privacy and legal protection of all participants in the process.

Information systems of shared access contain legally relevant medical documentation that is required to ensure adequate protection of such data.

The standard requires inform health care workers who work with the system, the instrument of ensuring the immutability and authenticity of records in the medical information system, and important information about the consequences of transfer to third parties to access funds. The standard strictly designated categories of hospital staff access rights (electronic records and archives).

The standard are also specifies general rules during creating paper copies and electronic versions of records in the disease, while sending to other systems via communication channels, indicating the need to ensure confidence and the legal value of electronic copies.

As medical information system is defined as an integral part of the organization of diagnostic and treatment process, the standard proposes strict requirements for the organization of continuous operation.

Arrangements for the smooth operation:

1. Availability of service maintenance and support of the system and its users.
2. Regular testing and user training, ensuring continuous and error-free operation with the information system.

Standard creates a three-tier structure of the system users:

- Users - medical staff;
- A qualified user with medical education and a high knowledge of information technology to further training and regular assistance to their colleagues in the work with the system
- Technical staff to maintain the functioning of the information system.

Conclusion

To date, the main sources of structured data are the relational database, although it can be file systems, XML database, expand the scale of its application, and other types of information sources. Regardless of the storage method, the first problem is the integration of heterogeneous data which face the formation of storage (repository) information resources of information medical system, this variety of models and data circuits, low level of abstraction, a small reflection of the adequacy of the semantic domain. For example, a good solution would be to move to a certain object-oriented data model, based on ontologies that are in many ways similar to the semantic model, where the key unit is a complex structured data object (concept), which supports a variety of attributes involved in various associations with other objects [2-8].

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