Materials of Conferences

MODERN FEATURES OF DEVELOPMENT MEDICAL INFORMATION SYSTEMS

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In the next two years on the implementation of modern information systems in health care is assumed by the Russian government to send about 24 billion rubles. Topical is the study of tendencies of development of modern medical information systems (MIS). We have attempted to analyze and to point out some features of the development of modern MIS. They have been studied and analyzed 190 MIS. The main sources of information were: Internet, medical and specialized periodicals, monographs and scientific conferences, forums and exhibitions. IIA classification by purpose has been spent. All systems were divided into two classes: diagnosis and treatment, and the rest.

During the study period, since 1998, it has been an increase in the share of medical-diagnostic ISI in relation to other systems. Therapeutic and diagnostic systems account for 32 % in 2016 in relation to the total number of MIS. In 1998, the share of these systems was about 10 %, in 2005 – 18 %. The main share studied MIS (190 software products, 54 firms of developers) take diagnostic and treatment (32 %), organizational and economic (14 %) and complex (12 %). As for the amount of introduction of information systems for medicine, then we can speak of a greater use of organizational-economic general purpose and specialized MIS solutions for the management and administrative tasks. The reasons for the imbalance in the provision of information needs physicians and administrative staff are considered to be high cost-priobre plants are, the reluctance of doctors to learn to work with your computer, use the inconvenience (suitability) IIA medical staff and its functionality. There is a significant gap between the information systems of health care institutions (MPI) for the doctor and for the administration.

Most urgent and challenging development MIS is to develop support systems decision making (CDSS) doctor. CDSS in medicine (health care) – this is problem-oriented system (or hardware and software systems), implementing information technology to support decision-making processes of therapeutic and diagnostic and / or administrative decisions by medical personnel. The need for application of CDSS arises in the case of limited resources, lack of time, experts deficit, uncertainty of information about the world and the object under study. This situation is typical for the majority of decision-making problems in medical diagnosis and treatment, in particular in the fields of high-tech medical care.

THE PHENOMENON OF REDUCTION IN STRENGTH OF HARD-COATED CUTTING TOOLS AND THE CONDITIONS FOR ITS OCCURRENCE

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The article presents a summary of well-known facts on reduction in strength of metal cutting tools with diamond like carbon (DLC) coatings.

The last decade saw an increase in the usage of hard coatings of the diamond-like carbon (DLC) type and ones similar to them. As a rule, they are applied by dispersing coating materials (for example, graphite) in a vacuum with a cathode and depositing them over the working surface of a tool [1–2]. They are fastened on the surface by means of adhesion, without infiltration into it.

Today, significant experience has already been gained from the usage of cutting tools with hard coatings, DLC coatings, in particular. As a whole, the experience is positive, but the accumulated data is uncoordinated and, as a rule, presents results for a specific case only. If there are negative results among them, they are usually deemed to be accidental, caused by errors during either the experiment itself or mathematical treatment of its data.

In view of the above, the authors conducted at the Department of Metal Cutting Machines and Tools of the Ural Federal University an analytic research the goal of which was to generalize currently known facts and figures on the efficiency of tools with DLC coatings, to study deeper negative examples of their usage, and to find out reasons behind those negative outcomes.

The research studied data on the wear and wear resistance of end milling and disk milling cutters, lathe tools, drills of 0,5–2,5 mm in diameter and knives of guillotine shears [3–9]. The methodology of the research was based on the analysis of reliability of the mathematical models which describe the dependence of tools wear on duration of their usage in various combinations of cutting modes and for various machined materials. Also, other sources of data were used, like the one from metallographic