

Development Of an Automated Workstation for A Specialist in Dermatovenerology

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Abstract. The article discusses the issues of creating an automated workstation (AWS) for a medical specialist. Using the example of the development of an automated workstation for a dermatovenerologist, its functionality and methods of interaction with other structural elements in the system of providing dermatovenerological care to the population are shown. Based on the developed automated workplace, an algorithm for the work of a dermatovenerologist is proposed.

Keywords: automated workstation for a dermatovenerologist, medical decision support systems, distance learning systems, medicine, dermatovenerology.

Introduction

The state policy in the field of healthcare is currently aimed at improving the system of providing medical care to the population of Uzbekistan, increasing its accessibility and quality [1]. The state policy in the field of healthcare is currently aimed at improving the system of providing medical care to the population of Uzbekistan, increasing its accessibility and quality [2]. In fact, here we are talking about the development and implementation of an automated workstation (AWS) for a doctor, which makes it possible to improve the quality and speed of medical decision-making. There is still no generally accepted definition of a doctor's automated workstation. According to some authors, a doctor's workstation can be understood as a set of technical and software tools that provide his information support (collection, storage, transmission, processing and issuance of medical information) when he makes decisions on the tactics of patient management in the process of providing medical care. medical care for patients, in the opinion of others, is a doctor's workplace in which his work activities are carried out related to the implementation of the treatment and diagnostic process in accordance with standards and job descriptions, equipped with a set of medical-technical and computing means technology in the presence of software, information and organizational-legal (legislative) support [3].

Materials And Methods

In both of the above formulations, in our opinion, the key point in the definition of automated workplace is the phrase "information support for the doctor" in his daily diagnostic and treatment work. Doctors need not just to install a computer at their workplace that can provide some useful information, but to create simple and at the same time highly effective means of information support or support for medical decision-making that would harmoniously fit into the usual doctor's rhythm and style of work. For dermatovenerologists, the most important stage in providing medical care is making the correct diagnosis, based on which the practitioner subsequently prescribes appropriate treatment. Accordingly, all developed hardware and software tools for automated workplaces should be aimed at automation and information support of the process of making a diagnosis and prescribing treatment (examination).

Results And Discussion

Based on the developed Logoderm system, we have proposed a workstation for a dermatovenerologist, which allows automating the process of making a diagnosis, providing information support to the doctor both in putting forward an initial diagnostic hypothesis and in making a final diagnosis (through telemedicine consultation with an expert doctor), and also provides the opportunity to undergo distance learning (retraining) in the specialty. The workstation of a dermatovenerologist also provides the opportunity for the practitioner, in the process of prescribing examination and treatment, to select examination and treatment that meets national standards (in accordance with the established diagnosis), as well as to carry out high-quality rehabilitation of patients by sending them to a specialized sanatorium in Uzbekistan or abroad.

To organize the workstation of a dermatovenerologist, we have developed diagnostic, telemedicine, training and a number of information and reference modules: medical institutions and rehabilitation, pharmaceutical directory, atlas, directory of symptoms, recommendations for examination (treatment). For discussion of patients by doctors, a “Consiliums” module is provided. An “Events” module has been developed to inform doctors about ongoing conferences and seminars.

The diagnostic module is designed to automatically analyze the symptoms of a disease and obtain a list of possible diagnoses by filling out a patient questionnaire by the user. The operating principle of the module is based on the selection of symptoms from photographs and their brief descriptions in the system. The module consists of sections that make up the patient’s questionnaire:

- 1) new diagnosis;
- 2) rash and changes;
- 3) localization;
- 4) features of the course;
- 5) additional factors.

The “additional factors” section is not mandatory, but allows you to increase the accuracy of diagnosis.

After filling out the required sections of the “online diagnostics” module, the “diagnosis” button becomes active. When you press it, the Logoderm system produces a conclusion from 10 possible diagnoses, indicating their probabilities. During our work, we limited the maximum probability of diagnosing any disease to 80%. The user, by selecting a diagnosis from the list provided with the cursor, can receive a detailed description of the disease and view photographs of its symptoms (this switches to the Atlas module).

Based on the diagnostic results, a formalized description of the patient is also formed in the form of a list of selected symptoms, which, if it is necessary to clarify the diagnosis, can be accompanied by photographs and sent by e-mail to the expert doctor selected below [3].

The telemedicine module is designed to provide information and consulting assistance to practicing doctors in diagnostically difficult cases. Its work is based on the principle of transmitting static images of rashes (in “store-and-forward” mode), accompanied by their clinical description. The module contains a list of experts with brief information about each of them, giving the user the opportunity to independently select a consultant physician.

The training module (Doctor's School) consists of four levels, each of which represents an independent section of dermatovenerology, forming a separate training course. The introductory course contains information on the history of Russian dermatovenerology. The educational materials for the subsequent stages of the school of dermatovenerologist are compiled according to the principle “from simple to complex” and allow you to learn the basics of examining a dermatovenerological patient at the first level, and at the second level to become familiar with clinical symptoms, recommendations for examination and treatment of the most common dermatovenerological diseases, and at the third level - to solve the presented clinical problems.

The medical institutions and rehabilitation module contains information about medical institutions and dermatovenerological laboratories in Andijan with the ability to search for them by district of the city. Here you can also find information about sanatoriums and rehabilitation centers for patients with chronic dermatoses in Uzbekistan and abroad. If necessary, you can not only choose a sanatorium, but also order a trip to it.

Conclusion

We were the first to develop an intelligent system for supporting medical decision making, Logoderm, and on its basis created a workstation for a dermatovenerologist, which provides the following algorithm for providing assistance to dermatovenerological patients: 1) a practicing physician; 2) information and reference modules; 3) telemedicine consultation with an expert doctor. The automated workplace also allows for the rehabilitation of dermatovenerological patients and continuous medical education of dermatovenerologists without taking them away from their jobs.

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