Patient information software designed for medical specialists

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Abstract

The paper presents software designed for medical specialists for managing their patients information. This type of software products are needed for facilitating the work of doctors. By using this type of software products, the medical specialists are able to easily record, edit and maintain their patients information, which supports diagnosis and treatment of the patients.

Keywords: software, medical specialists software, information system

1 Introduction

The rapid progress of information technology and the development of tools for acquiring, processing and storing information, leads to the need for the development and operation of specialized software products [5, 6] in various fields of work. One of the most important sectors of public life is healthcare, where the proper use of technology can improve the process of managing large information flows reducing the risk of errors [1].

During the last decades medical institutions implement various type of information systems in order to improve the medical doctors' productivity. The medical information system is a complex of technologies and methods for the planned collection, processing, analysis, archiving and transferring medical data and information. The goals and objectives of information systems in medicine and health care are to automate the information process to minimize the risk of errors, accelerate the decision making process, facilitate staff in routine activities, standardized methods of information retrieval, personnel and financial management, control over information, etc [1, 2]. Medical specialist are not always located in general medical facilities and often chose to use specific software best suited to their medical practice such as BetaGP [9], Niset-SIMP [10], Hipokrat GP [11] and Global Medics [12]. All these software products are developed according to Bulgarian standard with option for regular archiving and exporting patient information to National Health Insurance Fund.

Considering the small number software available for medical specialists we developed a new information system for patients data managing, consulting with medical specialist about the specific requirements for medical software.

2 Modelling and database organization of a new information system

The model of a new software for managing medical information from medical specialists is required to contain the following functionalities:

- **Module for patients data** - gives the medical specialists opportunity to service all primary documents at a new ambulatory examination

- **Module for reports** - provides an opportunity for a combined report for all the examinations performed and hospitalizations

- **Module nomenclatures** - provides list of nomenclatures for avoiding errors

- **Service module** - allows import and export of all medical information for backup and restoring the patients data

The information is organized in database with the following tables:

- **Patients** - contains patients data such as Identification number, Regional Health Insurance fund number, Region number, Code of the country, Patient name, Date of birth, Patient address, gender etc.

- **Medical doctors** - contains information about the medical staff such as Unique identification number, Registration number, Medical specialty code, Doctor's name, Contact information

- **Medical institutions** - contains information about hospitals and medical healthcare institutions available

- **Regional Health Insurance funds** - contains all available Regional Health Insurance funds

- **Medical specialties** - codes and types of every medical specialties

- **Referrals** - information about referrals for patients consultations and other medical specialists, medical diagnostic centers and patients hospitalizations

- **Clinical treatments** - contains codes and types of available clinical treatments

- **Ambulatory examinations** - contains information about performed examinations from medical specialists such as Time and date of examination, Identification number of the patient, Personal identification number of the medical specialist, Patient condition, Patient immunizations, Performed medical procedures etc.

3 Medical software - AMedical

In this section we present some of the menus of the software for medical specialists. The software has working name - **AMedical** and is realized using Microsoft Visual Studio 2013 and ODBC (Open Data Base Connector) technology. Figure 1 shows the Home screen of AMedical software. All the modules are available by the menu of the Home-screen.

Figure 2 shows the dialog window for inserting a new patient. Every time the medical specialist extend their practice, they need to create new files for the new patients. The software provides notifications if mandatory information is now inserted.

Similar dialog windows are being use for the rest of the modules allowing the medical specialists to easily manage their patients' information.

Figure 3 shows the dialog window for creating new ambulatory list for a patient. There are various elements easing the process for medical specialists minimizing the possible errors. Some of the elements are realized with drop-down menus making available only one option (like Primary or Secondary examination of the patient). Other option groups can be marked several at a time such as Reason for doctor visitation (Consultation, Medical check, Hospitalization, etc.) Immunizations are fixed and can be selected from a list one by one.

All the modules described in the previous section are realized with similar dialog windows, but they are too many to be presented in a single paper.
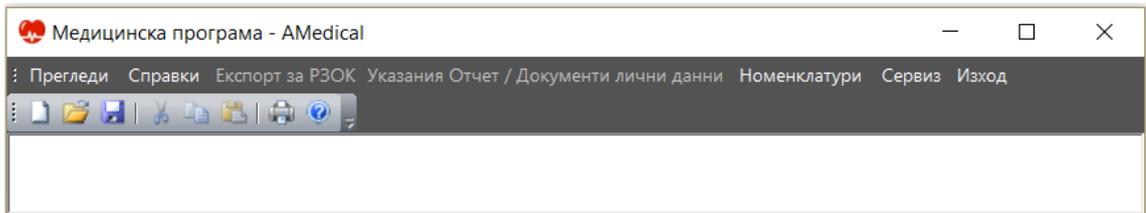
Figure 1: Home screen of AMedical software

Figure 2: AMedical - insert new patient window

Figure 3: Ambulatory examinations

4 Future work

Concerning the global problems with information security the proposed system can be updated with cryptographic data transfer [3, 4, 7] of the sensitive information and steganographic data transfer [8] of system information.

5 Conclusion

The healthcare is one of the fastest growing and important sectors of public life and the lack of enough software products is noticeable. More software products are needed to meet the requirements of medical specialists, improving and easing their work.

In this paper we presented such software, containing the mandatory modules for medical specialists' practices. AMedical is realized with suitable interface and simple navigation to facilitate the work and to minimize the errors.

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