Conceptual model for a National Register-type research database for clubfoot

SMARANDA COSMA*, ADINA NEGRUSA*, COSMA DAN**, VALEANU MADALINA***

*Business Department, Faculty of Business  
**Department of Pediatric Surgery and Orthopedics  
***Department of Medical Informatics and Biostatistics  
*“Babes-Bolyai” University  
**,** University of Medicine and Pharmacy “Iuliu Hațieganu” Cluj-Napoca  
*** University of Medicine and Pharmacy “Iuliu Hațieganu” Cluj-Napoca  

Abstract: - The implementation of an integrated, medically authorized, information system represents a need for the medicine in Romania today. The achievement of this system for an orthopedic malformation (clubfoot) has shown to be a unique effort in Romania, that supplies a base for research and a high quality information base, medically approved and also available to large groups of patients and families. The medical component of the system implemented in our service represented by the Microsoft Access application of data collection and analysis showed to be extremely useful. The uniform manner of collecting data permits a rigorous analysis of this congenital disease and removes many of the errors usually met in data collection. We think that this application can be implemented in any centre of paediatric orthopaedics in our country, as the resources needed are minimal and practically they are available anywhere. The integration of such informative resources in a national unique system in Romania, of the National Register-type, will improve the quality of the data available for the researchers in Romania and the results of the research will generate unique treatment protocols so that, finally, the quality of the medical act and its standardization will develop. The model also, will generate positive economical implications.

Key-Words: - National Register, clubfoot, medical communication, database, research

1 Introduction

The analysis of the data in the Romanian specialised literature available for congenital clubfoot until now shows differences among hospitals and clinics [2,3,4,7]. This is the main reason for which we think it is necessary to develop a rigorous analysis of the strategy related to the treatment of clubfoot and to implement a nation wide unique strategy complying with the data in the international specialised literature to get realistic information on this disease and to compare the national and international results in the field.

Having in view this need and requirement, we have designed, developed and implemented an integrated information system for the congenital clubfoot. This information system is made up of two components. The first component of the integrated system proposes the organisation of an online database, in the form of the National Register for clubfoot that enables the recording of all the children suffering of this deformity so that the actual size of the disease can be established. The second component was designed in the form of Internet-based resources for clubfoot and is available online at http://piciorstramb.bravehost.com.

2 Material and method

The integrated information system for the congenital idiopathic clubfoot has two parts: the medical component – dedicated to the medical staff – and the informative component – dedicated to the parents and children suffering of clubfoot.

The medical component derives from the need to make a rigorous investigation of this pathology, to know the actual incidence of this disease in Romania and the exact type of treatment practised in Romania.

The setting up of a system to allow for the right selection of the data is a must for all the researchers. In the medical field, statistical methods can and
should be found in any research carried out. [1] The correct selection of the data is the main purpose of this component.

Today, the data needed for research are registered in medical documents, in a written form, but not in a unique form and the work necessary to retrieve and process such data is enormous.

The medical component of the information system for clubfoot, the gathered data take a unitary shape. Any variable introduced in the system can be analysed through a friendly interface, according to the need of the research. As each user has to fill in all the fields, the data stored become unitary and complete.

In view of this feature, we have designed an application in Microsoft Access 2003, to include the database itself, the form for the insertion of data and the report form. [6]

The form for data insertion opens with a welcoming unique screen containing information on the purpose of this application. (Figure 2)

After pressing the key „Enter”, the user reaches the form for data insertion. Here the data on the patient required by the application are introduced. (Figure 3)

The user can modify or add to the fields concerning the medical service, the medical staff and diagnosis by pressing the key „Add”, related to each of these fields. The rest of the form contains various kinds of fields, text types, radio buttons or lists for the correct insertion of data. (Figure 4)
Finally, pressing the key "...and print", a report is automatically generated for each patient; the report contains personal data, diagnosis, type of treatment subjected to and recommendations for the future. This form is signed and stamped by the doctor and becomes the medical document to be added to the patient’s file. A copy is handed to the patient and so the anamnesis for a would-be visit or change of doctor is much facilitated. (Figure 5)

The new cases of congenital idiopathic clubfoot have been already registered in our database and become available both for our department or similar departments of paediatric orthopaedics.

4 Discussions

The Internet has developed extremely fast in the last two decades as the number of personal computers and network components has also increased. In Great Britain, approximately 40% of the population has access to the Internet. [5] The development of high speed communication networks (ADSL) makes high speed Internet available 24 hours per day. This phenomenon also leads to a friendlier environment in the Internet and a quicker file transfer. The accessing of the Internet requires the use of the browsers (Internet Explorer, Netscape Navigator). All the browsers make appeal of search engines to find the information on the Internet.

The universe of the Internet is without boundaries. The information hosted by servers in the United States, Japan or Europe can be accessed from any corner on the globe. In the United States, there are 20,000 sites dedicated to medical issues and 1500 new sites appear every month. [5] A recent research shows that about 50% of the patients access the Internet in search of new medical data. [8] The United States of America represent the richest source of information found on the Internet, and host over 80% indexed pages.

Having in view the above, we consider that the introduction of an integrated information system in Romanian has become a need for patients and doctors alike. Good quality data are extremely useful for the medical staff and family and invalid data are very detrimental for both parties.

The medical component of the system implemented in our department as Microsoft Access application of gathering and analysing the data has proven extremely useful.

The uniform data collection enables a rigorous analysis of this congenital disease, and eliminates data collection type errors. We consider that this application can be implemented in any medical centre of paediatric orthopaedics in the country, as materials investment is minimal and practically available everywhere in the country.

The model presented above offers the opportunity for improving the health care system from the economical point of view:

- it is effective for the doctors - specialists and for health related staff and also for the
family doctors; they can access all the needed information about their patients;
- it is efficient for the patient; they will be better informed for preserving and promoting a health environment;
- it improves the quality of the health care services through the possibility of illness risk prediction on geographic area or medical centres;
- an important contribution from the marketing point of view is the identification of the different types of demand (target markets); knowing the needs of the potential market segments it is possible to specialize the medical centres on specific fields/categories.

The limits of the application are represented by the relatively small number of variables in use and the analysis of only the conservative treatment for the clubfoot as the surgical treatment is not included here, and the local implementation of the databases as the distribution of the collected data through the Internet is not yet available. This is the reason for which we think that the insertion of more variables for the future, including the surgical treatment and the Internet-based data distribution must be added.

5 Conclusions
The would-be integration of such informative sources in a single national system, of the National Register-type, will improve the quality of the data available for the researchers in Romania and the outcomes of the studies carried out will generate the basis of uniform treatment protocols, to be made available for all the medical centres in Romania so that the quality level of the medical act will be standardised and improved.

References: