

Software for transfusion laboratory practice

Polina Mihova, Iliya Pendzhurov, Jivka Vinarova, Antoaneta Timcheva
Biomedical Science Department, New Bulgarian University, Sofia,
Bulgaria,

pmihova@nbu.bg, penjurov@nbu.bg, jvinarova@nbu.bg,
tonitimcheva@abv.bg

Abstract: **Electronic communication network is an umbrella term, which is generally related to communication by computer and modern information and communication technologies. Those structures allow the workflow of information at different times and from different locations using e-mail lists, electronic forums, online conferences, etc. The exchange of information over the Internet is the main component of network communications, but also technological achievement that changed the lives of medical and health experts every day! A lab information system ("LIS") is a class of software that receives, processes, and stores information generated by medical laboratory processes. These systems often *should* interface with instruments and other information systems such as hospital information systems (HIS). A LIS is a highly configurable application which is customized to facilitate a wide variety of laboratory workflow models. *In practice*, there are as many variations of LISs as there are types of lab work. Disciplines of laboratory science supported by LISs include hematology, chemistry, immunology, blood bank (Donor and Transfusion Management), surgical pathology, anatomical pathology, flow cytometry and microbiology.**

This article covers developed clinical lab information system, which is *specialized for hematology and blood transfusion*.

Introduction

According to medical standards in Hematology, the database included in a specialized software for the activity of LTH must ensure that electronic processing and information for recipients in terms of diagnosis and immune-hematological transfusion therapy with blood and blood components - distribution, storage, use and scrapping, obsolescence of use - is completely secured. Its parameters are determined by the Law for Blood, Blood Donation and Blood Transfusion (LBBDBT), Chapter V.

"Article 36. (1) National Center for Hematology and Transfusion makes a data base, which includes information on:

1. donors and recipients;
 2. results of laboratory tests;
 3. each unit of donated blood and blood components;
 4. activities for collection, testing, processing, labeling, documentation, distribution, storage and use of blood and blood components;
 5. destruction of each unit of blood and the reasons there for."
- The specific activity of National's Heart Hospital LTH in numbers is: 10000 immune-hematological studies of 4,500 patients and 7,000 transfusions of blood and blood components to more than 1600 patients, requiring transfusion therapy.

There are several different national and international software solutions for LTH, but they are not fully applicable to the scope and activities of the blood donation and blood components production of the current Laboratory. National Heart Hospital works successfully with specially designed HIS, with certain characteristics and integrating it into an external would create difficulties in the process of installing, interconnections, and support itself. Creating new model, based on the functioning HIS and in recital with its requirements is the best option.

The software includes a structured database, containing patient's information on immune-hematological research and transfusion therapy with blood and blood components, as well as a database for storage of blood components, and interfaces for accessing data through Internet portal to provide differentiated access for users of the data.

The software also includes:

1. Three functional modules, corresponding to the order of carrying out activities in Laboratory of Hematology. The pathway of documenting and sharing responsibilities, authority and organizational communication in LTH
2. Functional dynamic data-base of recipients of blood and blood components in accordance to the requirements of LBBDBT

It consists of three main modules:

Module "Laboratory and Research" - different sections correspond to the already established working model, documented in the specialized medical journals. Each form is developed according to Ordinance № 29 and is introduced as screens in our model, with print option:

1. Registration of patients
2. Blood-group corresponds to menu "Blood groups"
3. Research antibodies - corresponds to "Antibodies menu"
4. Investigation of antigens - meets the journal "Antibodies"
5. Testing for compatibility-"Compatibility Matches" journal

Module Expedition

1. Introducing blood and blood components in the warehouse receipt
2. Expedition of blood and blood components in clinics and wards across
3. Wasted blood and blood components

The third module - Module Patients - is localized both in LTH and clinics. It contains patient's information, clinical indications, respectively course of treatment for transfusion, consent for transfusion, blood transfusion with priority.

Among the three modules there are dynamic links that are internal-only for LTH, internal- only for the hospital's HIS and external with appropriate levels of authorized access

Форм за имунохематологично изследване

Министерство на здравеопазването Приложение № 1 към чл. 6, ал. 1

ФИШ До имунохематологична лаборатория

Израждане за имунохематологично изследване

Лекар

Израждате Ви за контролни изследване кръвна проба, етиктиране на името на:

л. л. № на год. ЕРН ИЗ № от год.

Диагноза:

Данни от анамнеза (кръвопреливания в миналото):

Ревации и усложнения при предишни кръвопреливания:

Инциденти на бременността(при жените):

Взел кръта:

Кръвната група е определена в отделението(клиниката) в присъствието на болния като кръвна група. Лекар

Кръвната група е получена в имунохематологичната лаборатория на год. в часа. Получил проброте:

РЕЗУЛТАТ № дата

от контролно изследване на кръвната група и Rh-фактора в имунохематологична лаборатория

Кръвна група Rh-фактор Антигенна формула

АНТИЕРИТРОЦИТНИ АНТИТЕЛА:

Исследвания

Авторероцитите: Алергитроцитите

Фиксирани Титър

Свободни Специфичност

Антилеукоцитни антитела Антитромбоцитни антитела

Други изследвания

Заклучение

Извършил изследването: Лекар

Закрив

Fig.1. Model of immune-hematological study

Fig.2.

At Fig.1. we present one of the basic documents that works in the Laboratory. Colored in yellow boxes indicate data that will be taken by the HIS in the hospital.

Conclusion

Data protection is guaranteed by three separate parameters - username, password and a personal digital signature.

The system is designed to be easily integrated into existing control Hospital Information

System at the National Heart Hospital. It is provided maximum

accessibility: both work in a local environment, and access through an Internet connection.

Organization and requirements of innovatory unit have to be secured and nucleus, namely "Patient Management", which provides complete patient record, ability to search records and data.

The proposed solution provides genirira collected and processed information in a knowledge base that guarantees its customers the necessary statistical information.

The proposed solution provides copyright forms and methods of searching, and numerous data references.

According to the task, the represent authors' model is identical to the paper copy, which operates daily in the laboratory.

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