New Technologies in Hospital Information Systems

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INTRODUCTION

A hospital information system (HIS), variously also called clinical information system (CIS), is a comprehensive, integrated information system designed to manage the administrative, financial, and clinical aspects of a hospital. This encompasses paper-based information processing as well as data processing machines.

As an area of medical informatics, the aim of an HIS is to achieve the best possible support of patient care and administration by electronic data processing.

It can be composed of one or few software components with specialty specific extensions, as well as of a large variety of subsystems in medical specialties (e.g., laboratory information system, radiology information system).

CISs are sometimes separated from HISs in that the former concentrate on patient and clinical state-related data (electronic patient record), whereas the latter keeps track of administrative issues. The distinction is not always clear, and there is contradictory evidence against a consistent use of both terms.

Types of HIS

1. Central or exocentric: The difference is supported in whether the information is kept in central computer or is distributed in other computers in all the hospital.
2. Oriented or not to the patient: Even if both of this two types deal with the data of patient, the orientation of HIS can influence the processes and the general "character of" HIS.
3. With terminals or workstations: They are two appliances that resemble and usually are not separated. Terminals are electronic appliances that allow the users to communicate with the computer. Generally, they are connected with mini-computers or mainframes that can find themselves far or near. If they are alone, they have few possibilities, and generally they are not capable to make anything if they are not connected with a functional computer. Workstations are computers drawn for professional use from an individual each time. They are completely functional computers, and they can be connected with other workstations, mainframes, or mini-computers.

An HIS can be placed:

1. Next to the bed of patient: Its placement next to the patient's bed is essential for the monitor and control appliances. For the recording of situation of patient, nevertheless, there is no advantage. In a study, the results were the recording of data was not improved when the system was found next to the patient, since the bigger part of recording was done outside the room, or in the rooms of other patients. Nevertheless, its placement in this point improved the use of automated drawings of care, the calculation of situation of patient, and the pricing for the care of services.
2. In the corridor near the patient's bed: Its placement in the corridor is continuously increasing. It allows the nurses to record, very shortly afterwards, their removal from the patient, without the detachment of attention from the presence of patient and the potential requirement of attention. However, there is danger for the safety, since someone can receive information about the situation of a patient simply looking at, indiscreetly, the hour of recording.
3. In a staff's room: Its placement in regions, where the staff is only allowed, has the advantage of bigger safety. However, it is uncomfortable and time consuming, since the staff should walk enough each time it needs information.
4. Other possibilities: Electronic clipboards. The unique disadvantage is found in that the users perhaps forget where they left it.

Expected profits from the hospital information systems

1. Reduction or repression of registrations
2. Reduction of office duties for the medical and nursing staff

3. Easier access to the medical data
4. Reduction of duration of staying in the hospital
5. Minimisation the insufficient medical recipes
6. Minimisation of errors in the recording of results
7. Redeployment, reorientation or reduction of staff
8. Improvement of quality of registrations
9. Improvement of quality of care
10. Better communication
11. Reduction of hospital cost
12. Increase of satisfaction of nurses
13. Growth of common hospital database
14. Improvement of perception of patients on their care
15. Improvement of general appearance of hospital

HARDWARE TECHNOLOGIES

The patients entrust the organisms of healthcare in order to offer them the higher level of care with the smaller probability of error. The existing technologies help standards of health to be strengthened, but the hardware solutions will save an important cost, also measured in money and in time. Solutions, such as electronic forms, can exclude the problems that come up in a handwritten system. These technologies give the doctors/nurses, and the other clinical, a lot of time in order to focus in what they know better.

Bar Coding

The bar coding is a low risk technology (cost, application) that makes it a practical choice for a organisation. Also, in order to be used effectively, it does not need intensive education. The positive results of bar code in the safety of patient are widely acceptable in the healthcare system.

The initiative of FDA (Food and Drug Administration) for the safety of the patient was completed in February 2004, and it will ask for the hospitals to use bar codes in the hospitals the next 3 years. The technology uses bar code for the patients, the medicines, the blood, and the vaccines. A tool collects all the codes, and is immediately connected with the medical file of patient. Following the system with the bar codes, the FDA calculated that this will involve economy of 3-9 billion dollars.

The solution offers:

- Effectiveness
- Safety
- Reduction of cost
- Reciprocity
- Correctness
- Precision

Touch Screen Technology

This technology allows a nurse to easily export conclusions for the patients using a friendly environment (touch screen). The nurse simply touches upon the screen that she/he wishes. The button in the screen shows the room number at the same time as the name of patient. In this easy two-step access, the nurse shows the category from which she/he asks information.

This solution offers:

- Easy to use
- Precision in the import of data
- Efficient administration
- Easy completion of data.

Browser-Based Technology

Three factors should appear for using the browser-based technologies. Firstly, the technology should contribute to the cost decrease. Secondly, the technology should have competitive advantage. Finally, the technology should have an impact in the improvement of patient. An installation with this technology needs only a Web browser, such as Internet Explorer, Netscape, Mozilla, for running the software.

The solution offers:

- Portability - the browser-based software offers an easy access to the information with point and click
- Easy access each hour (day-night), from everywhere (office, home, everywhere Internet exists)
- Less hour of employment - It is decreased because the system functions permanently all day
- Friendly to the user - does not need learning new applications only point and click.

Document Imaging

The solution offers:

- Focus to the customer service - the important data can be easily filed. The solution allows the hospital to vindicate the medical data
- Decreased of printing - All the information is stored in a filed system that is fast approachable
- Easy Web access - the doctors, as long as the other users can have always access and from everywhere via Web
- Not other lost files - the e-files give the possibility to the hospital to compose an electronic recording of all given data and afterwards, place the disk in a database