Health Telematics Applications and User Acceptance from a Medical Student's point of view

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The goal of the workshop is dual. The first is to convince health care professionals of health telematics applications' usefulness by demonstrating convincing cases and the second is to examine the practical side of the story which is education and training in health telematics. The purpose of this paper is to present the way health telematics appeal to a medical student. After all it's the medical student and the young practitioner whose lifetime practice will depend on the health telematics applications that are today under development.

1. Introduction

The need for telematics applications in health care is obvious to some people who are involved in the health care profession but not to all of them. In order to make health telematics part of every day's medical practice ,it is necessary to convince the user that his work will be easier. Part of this task is up to the application's efficiency to prove. The majority of health care professionals are not familiar with personal computers and that's expected because when these people were being educated, computers did not exist or they were not widely spread. As a result there's a need for education and training of them in telematics. Things are easier when it comes to young people who are studying to become a medical doctor, nurse or any other job involved in health care because they tend to become more easily acquainted with a computer and any kind of application that it runs.

2. Undergraduate Educational Activities

When it comes to undergraduate education, it is necessary for the academic institutes to introduce students in the world of informatics. That's a necessity that cannot be overlooked because in the future everyone must be able to be part of the information society. Among health care professionals, doctors are the ones that are more difficult to convince about the usefulness of medical informatics. The best way to cope with this problem is to introduce medical informatics as a course during their medical education. The courses should focus first of all on basic computer and internet principles and later on electronic patient record and medical decision support systems. Telemedicine, image processing and other advanced telematics can be covered within an elective course. The basic effort should be concentrated

on the fundamentals of health telematics. The primary objective should be not only to learn how to use some application but also to get used to the idea of informatics during day to day practice and to become familiar with modern operating systems. If this objective is achieved, students would be able to cope with any application concerning medicine whether it involves electronic medical record or teleconference.

On a practical basis this means that every medical school in Europe must have a lab of medical informatics whose objective will be to train all medical students in the fields mentioned above. This task involves a lot of practice on a personal computer. The ideal will be for every student to have access to a PC whenever he is in need of one.

But it's not only the medical student who needs training on telematics. Nurses and other professions will have to use applications within the field of medicine. It's an obligation of their academic institute to provide for them the necessary knowledge and education in order for them to qualify as a professional in a hospital for example.

3. Postgraduate Educational Activities

Training health care professionals (HCP) is the most difficult part of the implementation of health telematics in every day's practice. Every professional who has some years of experience in his/her field has a certain way of doing various daily tasks: for example keeping patient records. The use of a computer in order to do these tasks is a radical change that is not accepted easily by everyone. The level of this acceptance depends on how familiar one is with computers and how determined he is to make the effort required to learn the new technology. Another critical factor is age. It is obvious that the older one gets the more his mind settles down to some knowledge and ideas. It is difficult from that point to expand his mind to a totally new field that's called informatics.

That's where this workshop comes to suggest many working schemes for training of health care professionals. There suggestions include ideas such as continuous training throughout the years, training by other colleagues etc. The experience that comes from these efforts is valuable because it can be used to build a universal educational system that trains HCP. Of course it has to be different in each case but the fundamentals are the same: introduction to computing and internet, the use of multimedia, electronic medical record, medical imaging, data cards, security and telemedicine.

The majority of today's middle age professionals are not familiar with computers in the first place and that's what is making their training so difficult. But hopefully next generations of practitioners will know the basics concerning the use of a PC in general and will be easier to train them on a specific telematics application in the future. The preparation of these people in order to be able to adapt to future expectations is an obligation of the academic institute that educated them. That's why undergraduate education in medical informatics is so important.

4. Software development

When it comes to software things get more complicated. Medical informatics applications are very exigent. There are some characteristics that these applications must have. First of all reliability. An unstable program is condemned to failure. Stability and reliability come after trial and debugging. Users don't need to be expert in order to work with such a program. As a result developers must have in mind that the easier is to learn and to use the interface the more acceptable it becomes to the target group. Complicated features are usually keeping users away from becoming familiar to the program.

But the most important characteristic is speed. Time is precious and not something to spend. No physician or nurse has time to waste on a computer running a slow application.

Reviews have shown that physicians are mostly paid by patient visit. In other words every wasted minute means loss of income. The standard reply of someone disappointed by the effort that he must make in order to get used to some new application is: "in the past things were easier and faster. Now I have to try harder and it takes twice the time to get the same job done" It's the developers' duty to make the application fast and efficient.

5. Hospital Information Systems

An ambitious project is to implement a hospital information system (HIS) in a hospital environment. The potentials are numerous. One of the many benefits of such a system is electronic medical record. It is needless to say that compared to the traditional way of keeping patient records, the use of computer has many advantages. But the implementation of these electronic systems in a complex hospital environment is not easy. There are many aspects that need to be carefully considered. Such are: the type of software to use, the training of the personnel, hardware and software support.

Perfecting a HIS is a continuous process. Customisation of the system is necessary so that it meets all the staff's needs. Users in collaboration with software vendors and developers have to add or remove features keeping in mind that the system must be fast, efficient, simple and easy to use. Any complicated feature that could possibly make the system hard to learn and use is unacceptable.

The Internet gives a very good example of how powerful becomes a personal computer when it becomes part of a wider network. It can share it's resources, give and take information and generally have many powerful potentials that previously were impossible. That example must be kept in mind when a HI System is designed. In the future all information that is kept in such a system will need to be shared with other HI Systems not only within a city or country but across the world.

One may think that this will be an easy thing to do when time comes. Unfortunately this is not true. The Internet was born in a geographically limited space. Then it began growing and expanding in a certain way. Every new network of computers that wanted to be part of the Internet, had to adopt a certain packet of protocols that were already established throughout the rest of the existing network. In this way there were no conflicts between systems.

When it comes to HIS, one can see that today there are a lot of isolated efforts to establish these systems in hospitals across Europe. In some of the most brilliant examples a HIS has country-wide coverage. But what will happen in the future when all these systems across Europe or even across the world will need to be interconnected? There will be a serious problem of incompatibility between isolated systems that needs to be anticipated. Some say that there will always be solutions like patches that will transform all existing data in any new form required, but this way of thinking is very short sighted. Why use patches afterwards when there is the possibility to prevent incompatibility problems. What needs to be done is the universal implementation of certain protocols regarding medical records. These protocols should be strictly followed by software developers in order for every HIS to be compatible with others world-wide.