

IT IN SOCIETY

AUTUMN 2004

REPORT

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1 Introduction

IT in Society is a course mainly taken by students on the fourth year at the Master of Science in Information Technology Engineering program at Uppsala University. The course gives 10 credit points and reaches over one semester. The overall goal of this course is to provide an understanding of the interactions between technology, users and designers. This involves examining each type of interaction between users, between designer and user, between user and system, between designer and system and looking at how other factors influence each interaction. It requires particular attention to interactions between people and to the ways in which technology influences them, for example, looking at interactions between users and how those interactions are affected by the computer systems employed. An important goal of this course is to provide a framework for, and experience in, evaluating social and ethical issues in the use, or construction, of technical products.

The head of the course is Mats Daniels (DoCS, Department of Computer Systems) with the aid of Jenny Persson and Åsa Cajander (HCI, Department for Human Computer Interaction). Jenny and Åsa will be responsible for “psychology and sociology” aspects of the course.

A brief theoretical exposé over areas like organizational psychology and group dynamics, in the context of interactions between users and the role of technology in those interactions, is given. The issues are practiced in corporate projects with real work environments. This course views system design in its social context, showing how technical, psychological and sustainability issues are important considerations in system design, as are health and ethical issues. There will be a focus on how to make individual groups of 4-7 students function as well as how to structure collaborate between these groups in a wider context.

2 Project specification

2.1 Background

Because of an increasing number of reports regarding patients with bad experiences from interaction with staff members at UUH – Uppsala University Hospital – the hospital invested in a new computer based education tool. The tool is a web based user interface that contains a number of movie sequences of different meeting situations. These scenes are later discussed in groups.

2.2 Vision

Participate in the development of an Interactive Tool to be used as an educational tool for doctors, nurses, and to be used by health care students. The tool will improve the patient care interaction, this will be reached by introducing this to all divisions of the hospital, thus decreasing the number of reports submitted to the patient ombudsman.

The work of minimizing the problems with patient care interaction the tool will also be introduced as one part in the education for doctors and nurses.

As this problem must be a problem experienced at hospitals around the world the tool will be further implemented so it can be used internationally.

Doctors, nurses, and students around the world – and within Sweden - all have different experiences, these experiences needs to be shared. Therefore functionality that supports users of the tool to share their experiences with others will be implemented. This could be done by; adding a way to store information gained by a user interacting with the tool.

2.3 Goals

Investigate the already implemented tool currently in use at UUH. The investigation will give the students some general knowledge about how a computer based educational tool is implemented and used in a hospital environment. Based on this investigation give a proposal of how a computer based education tool can look like. If our conclusions differ – or additional functionalities are found – produce a simple prototype to give an idea how these functionalities could look similar. The results the investigation and conclusions will be presented in a final report and also be presented during a seminar.

During the project all students will learn how to work and operate as an individual part of a larger group, both within his or her own group as well as also being a part of a larger project consisting of several groups working on a specific task – but all groups working together towards a common goal.

In order to reach these goals certain work is needed to be done – study of the interactivity, how can information be stored and reused, can it work in a distributed environment. The usability of the system will have to be analyzed from a MDI perspective. The organization of the hospital – both at UUH but also international hospitals – needs to be clarified, find the different target groups and their different needs. The patient interaction problems need to be studied, identify if the problems are local or if these problems can be found in all divisions or countries.

2.4 Project structure

The project is structured in a way to resemble how a project in business life is structured. It is around 30 students that are involved in the project and the majority of the students are in their last year at the Master of Science in Information Technology. The students are acting as consultants at the imaginary consulting company DoIT-society. The company has landed a

contract at the Medical Information and Technology unit at Uppsala University Hospital. The students are divided up into five groups of 3-7 individuals. Each group worked on different areas of the project, which they wanted to work on. As a resource, the project had a group of student in USA and two students doing their M.Sc thesis work based on the same project as ours at the hospital. One of the groups got the responsibility to co-ordinate the groups. Together with the group leaders from each group they formed the management group and had weekly meetings to organize the project. To keep the course team updated on how the project proceeded, they held meetings both with the different project groups and the management group. Along the project, a couple of new groups were formed, one group responsible for the report and another group for the presentation. These groups consisted of one member from each project group.

To collect information and make it available for all project members, a web page was created. On this web page there were file galleries where files could be uploaded and different forums where news such as meeting times and upcoming events could be posted.

2.4.1 Team 1

Feedback of discussion data

The idea of this project is to develop a prototype of a feedback and documenting system to the already existing “patient interaction game”. At the game discussions, several opinions, views and values from the participants are shared. In order to easily save this information an appropriate combination of text/audio/video as input to the system is needed. This information could then be used in other discussions and by staff in charge of treatment issues. If the shared opinions are sensible and thoughtful, they could inspire and influence others. If they, on the other hand, are a poor solution, they could stimulate and form basis of further discussions. The system could also be used to find out what attitudes and knowledge people have at different places, perhaps even from an international view.

A system providing feedback could also motivate doctors and nursing staff to give their opinions and their own experiences, knowing that their thoughts reach others. Primarily, this concerned experienced staff at the hospital that feels they already have a good and unprejudiced treatment of patients. In this matter, the system would be more like an opportunity to share opinions, and not a tool trying to reform or improve the participants work. In this sense, it would be possible to share “silent” knowledge.

A system that could be used to document the information from the discussions could also be used in other situations. One of these situations could be when staff at hospitals should learn to use new machine or other equipment. If one person in an organization possesses a lot of knowledge about a machine, it could be useful to have a system that could forward this knowledge. This is more effective compared to let the person with the knowledge distribute it over and over again. If there would be such a system the person would only have to share this knowledge one time, and then it would be documented in the system. The system could be used to pass over knowledge in an organization. In this project the team are only focusing on the interaction between patient and medical staff.

In the continuing part of the project, focus is given on the how the system will be useful in reality. It is important to find methods that people find interesting. The advantages would be economical and social, but also it could save time. These days this is important because it seems like medical staff in hospitals work in a stressful environment.

The assignment for the group is to examine possibilities to store the information that is the result from the discussions. Important aspects that are considered in the assignment are:

- Interactivity
How is the interactivity working in the current system?
Which role does the leader of the game have?
Is the leader the only person who interacts with the game?
- Store and reuse knowledge
How can opinions and ideas be stored after a game session?
How can saved information from previous sessions be used in new sessions?
- Distributed environment
Is it possible to have discussions/game sessions in a virtual environment?
- Adjustment to different target groups
How is the organization in the hospital?
Which professional groups?
- Adjustments to the current environment
What depends on the different target groups and if there is a distributed environment?

2.4.2 Team 2

Supervising coordination of all project groups and mutual cooperation with PhD students. Keep track of group progress in different areas and further intentions to avoid duplication of work within the project.

Constitute a communication link between the different groups and the board of directors.

Estimate time and money needed to introduce a new system. The calculations will be based on time and money spent to introduce the existing system and with the aid of IT and economics personnel within the UUH.

Make a survey of the organization structure of UUH. From that make assumptions about potential possibilities/problems that come with introducing a new system. Deeply penetrating the organization structure will benefit the entire project, a necessary part to be able to single out separate subsections and professions of UUH. Collecting different views of and attitudes to a new system will then be easier.

2.4.3 Team 3

In order to understand how Swedish hospitals deal with communication problems with patients the organization at UUH (Uppsala University Hospital) had to be investigated and interviews with both Swedish and foreign staff at the hospital had to be conducted. Staff and patients with experience from both the Swedish and a foreign health care system were contacted. This had to be done in order to find differences in how different countries and cultures treat patients.

Contact with personnel and students at the Deakin University in Australia and Rose-Hulman Institute of Technology in USA had to be established in order to see if they could be a source for finding information of use in the project. The work was conducted in smaller groups, where every group was in charge of a specific area.

The goal was to present a proposition on how to further develop the patient relations game but also how to spread it to as many users as possible, this included the possibility to spread - or introduce - the game globally. But after some initial interviews and discussions within the project that task was found to be too great for this type of project.

Focus was then changed to information gathering of international experiences within the context of the patient relations game in use. After interviews with key personnel of the

development group of the game, several problem areas were identified and these areas became the main focus for the study.

The project enabled the team to test their knowledge and abilities on an actual place of work. In addition, it helped in developing abilities to function as a group and practice communication skills with students and employees from other countries.

2.4.4 Team 4

We have chosen to create a web-based solution for medical students concerning the reception of patients. The basis for our solution will be established through interviews and tests on a test group. Our solution will not, in this stage, be a finished product but a prototype and a report discussing the problems and necessities with this sort of tool.

Target group:

The main target group is medical students at Uppsala University. A subgroup is the teaching staff to be able to reach the students correctly.

By creating a test group consisting of students and teachers from these groups, in a way that all are equally represented, the best result will be reached. Therefore a test group consisting of both men and women will be used as well as students with varied cultural backgrounds and age. A minimum goal of seven students and one teacher is set.

Goals:

Prototype:

A web based tool with the goal to ease the understanding and prepare medical students before the problems of patient reception with the starting point in the already existing interactive game. The tool will be designed in a way that the information and contents can easily be modified and updated; so it is possible to create a flexible system where a lively intellect can receive new challenges. A teacher should not be locked by the existing material, but instead be able to design the contents according to wishes and demands – this, of course, within certain frames.

The prototype should be developed in a way that it is easy to work with; there must be a main thread to follow from start to finish. The simplicity is built on a straight line where clear descriptions and an understandable interface give a feeling of where the user is and how it is possible to navigate through the different steps.

We strive for developing the tool in a way that makes the need of a group leader in the existing system unnecessary. This is to make the web based solution independent of other resources.

The prototype is developed with the aid of the results given from the tests and interviews. The tests and interviews will be based on the existing game.

Report:

The result will be reported with the course of action, the problems that have come up and how these have been solved. It will also include which problems remain and their possible solutions. It is also possible to discuss further development of the prototype, i.e. by adding extra functions like statistics etc.

The course of action will also include the testing method of the group and which questions were asked to be able to easily recall and see if possible problems or points of view come from this material.

We will also try to make a study of how an introduction of the tool can be made in the education of the medical students and what actions are necessary to make it frequently used. Have earlier similar attempts been made and, if so, what can be learnt from these?

Method description:

- Contact project managers to get username and password. Receive the films.
- Create a test group where the teacher is the key part of the group.
- Test the game for better understanding. Consider the design, human computer interaction and which parts should be tested on the test group.
- Write interview questions and develop a suitable testing method.
- Make tests and interviews for a test group.
- Put results together and design the prototype.
- Receive feedback from the test group if the prototype follows their wishes and demands.
- Make changes.
- Feedback.
- Finish the prototype.

2.4.5 Team 5

Studies of usability with an IT-based education system

We will study the system used by UUH and one other system that use information technology together with education. The other system is used in a complete different context and is going to provide a reference to the hospitals system. A IT-based system with a corresponding method that does not use IT and the pros and cons between these will be compared. The type of educational system to evaluate will have to be decided. Is it an e-learning system or education of how to use an IT system? The seller of the system will be contacted, likewise the buyer and the user of the system to get an overall picture of how the system works regarding usability, if the investment was necessary, what was not so good with the system and what the user gained from the system.

Get general knowledge about IT-supported in-service training when chosen to study other systems as well, it is believed that the team will be able to distinguish what's specific for the hospitals in-service training system. One of the proposed systems works with web-aided training on a daily basis; therefore the team assumes that their experiences are relative general.

Analyze the usability in the system from a user independent perspective with aid from the essay written, amongst others by Thomas Holm in the course medical informatics. The team is going to evaluate how user friendly the system is. The focus will be on how generalized users think the system, without regard to the user's occupation. This means that the team is going to do classical HCI analysis with focus on ergonomics, well arrangement and so on. From this general knowledge other groups will be able to continue to analyze with specific target groups such as doctors, nurses and medical students in mind.

The team intends to complete these tasks by firstly making summaries of relevant literature. After that questions were completed based on the theories to the developers of the other system. Finally the team will summarize all this and connect the work with what the other groups in the project has been working on.

2.4.6 Rose Hulman

The Rose-Hulman Report Group conducted interviews with medical professionals throughout the Midwestern United States. This was done to gain insight into the US medical system, Hospital structure and healthcare providers. During the course of these interviews questions concerning, patient care, minority care, continuing education for doctors and hospital structure were asked. These questions were posed to doctors, the dean of students at a US university, patient advocates as well as other medical professionals. The findings of these interviews were then communicated to the correct Swedish groups. These findings were to be integrated into the report as help discover the interest of a program like this being used in the United States as well as in the UUH.

2.4.7 Master thesis workers

The project has collaborated with two students writing their master thesis; Sandra Brolin and Kristin Johansson. The subject of their master thesis is relevant to the project and they have given a presentation about their results thus far. They have also been helpful in supplying useful information and exchanging ideas with the project members.

3 Uppsala University Hospital

Uppsala University Hospital (UUH) is one of the largest hospitals in Sweden. Uppsala is located 70 kilometers north of Stockholm. The hospital history goes back to the fourteenth century but became a university hospital in 1708 when the first department was established. Today the hospital's main fields are medical care, and in collaboration with the Medical Faculty of Uppsala University, teaching and research. The hospital serves two million people in central Sweden and graduate 350 medical students and many nursing students annually. It is Sweden's most complete regional hospital with more than 8200 employees spread out on around 40 departments. The hospital is well known for its medical specialties, many of them are unique in Sweden. That is why people from all over the country are treated at UUH.

3.1 Organization

UUH has during the past year gone through a complete restructuring of the organization. Seven new 'divisions' have replaced the twelve former 'centers'. Before there was not clear who decides what and decisions took time. With this new organization UUH is hoping to render a more effective management of the organization and regain control of overall costs, which is a demand coming from the owners, County of Uppsala, and from the other counties that are buying treatment at total value of 1.5 billion SEK a year. The restructuring was carried through September 1st this year. The new organization will make that the information will be easier to distribute, it will be easier to identify who decides and there will be a reduced complexity.

These are the 7 new divisions:

- Emergency and Rehabilitation Division
- Diagnostics, Anesthesia and Technology Division
- Surgery Division
- Women's health and Pediatrics Division
- Neurology Division
- Oncology, Thorax and Medical Division
- Psychiatry Division

Emergency and Rehabilitation Division

About 1100 employees and for example the following departments:

Emergency department, Ambulance, Geriatrics, Helicopter, Hospice, Infection and Counseling.

Diagnostics, Anesthesia and Technology Division

About 1050 employees and for example the following departments:

Anesthesia and intensive care, Immunology and transfusion medicine, Chemistry and pharmacology, Clinical physiology, Microbiology, Medical informatics and technology, Nuclear medicine, Pathology & cytology and X-ray.

Surgery Division

About 900 employees and for example the following departments:

Central surgery, Hand surgery, Surgery, Orthopedics and Urology.

Women's health and Pediatrics Division

About 950 employees and for example the following departments:

Child surgery, Child medicine, Child neurology, Child oncology, “Folke Bernadottehemmet”, Gynecology, Clinical genetics, Neonatology, Obstetrics and Reproduction center.

Neurology Division

About 1000 employees and for example the following departments:

Work therapy, Audiology, Daytime surgery, Neurophysiology, Neurosurgery, Neurology, Plastic surgery, Rehabilitation and Physiotherapy.

Oncology, Thorax & Medical Division

About 1380 employees and for example the following departments:

Dietists, Endocrinology and diabetes, Hematology, Skin, Cardiology, Oncology, Oncologic endocrinology, Hospital physics and Thorax anesthesia/surgery.

Psychiatry division

About 1000 employees and for example the following departments:

Psychiatric care, Environmental medicine, Child and Youth psychiatry and Psychosis and rehabilitation.

The representatives of the hospital management are Erik Hemmingsson, Hospital Director and one Head of Division for each of the above named divisions:

- Kerstin Franck, Nurse Director
- Ulf Haglund, Research & Development Director
- Henrik Pederby, Head of Public Relations
- Björn Ragnarsson, Medical Director
- Eva Telne, vice Hospital Director
- Brita Winsa, Medical Director.

3.1.1 Medical engineering department

UUH is a large hospital with many different departments and fields of work. There is a department who ensure that the hospital has working and modern technology. This department is called Medical engineering (MINT-“Medicinsk INformatik och Teknik”). Its main task is to serve the patient with the best informatics and technologies available. The department task is also to initiate, take part of and carry through research and development work by them self or in collaboration with the hospital, the university or the industry. If a new system of technical kind is introduced at the hospital it must be approved by the department of medical engineering. The department is going to serve the whole county with their services to get a more overall and common progress next year. It is not only their part that is going to be changed; all the different underlying systems such as economics or personal administration are going to be change into one for the whole county and UUH. MINT is still going to be located at UUH.

When new systems are introduced at the hospital it is very important to know who the customer at the hospital is, it should have a clear purpose and people who will do it. Without a clear idea about who the customer is, it is hard to introduce a new system. This is one of the reasons why it is going to be hard to introduce the “Patient relations game” because the customer did not from the beginning ordered this system. The system start growing in pace with the project witch goal was to inform more than to educate. It is up to the head of the

different departments if the game is going to be used at the hospital. There is no overall central at the hospital to provide professional training such as patient relations training. There is a center that is called Personal education. They arrange training for managers so their relations to co-workers will be better. The hospitals board is not having any directions of how much time each department will use for education. It is up to the head of the departments to spend time and money on their staff education. One instrument of control the board has is money. Usually the board in collaboration with the union disposes money so education will occur.

3.2 Patient relations project

In the fall of 2002 the patient relations project started at the University hospital in Uppsala, aiming for equal care and treatment. The project ended in March 2004. The result of this project was an educational system in the form of a game. The idea of a game is to make it more informal and to activate the participants¹.

The main goal with the project is to make the patient and the relatives feel respected regardless to age, sex, disabilities, ethnical background and sexuality. It is also important that the medical staff feel confident in their profession. The final goal is to reduce the number of registered complaints at the board of patient representatives and improve the perception of the University hospital¹.

The purpose of the game is to give the employees a chance to discuss attitudes and values that have impact in interactions with patients and their relatives. Another purpose is to share experiences or “silent knowledge” and educate methods that can reduce the risk for misunderstandings in interactions with the patients¹.

Today the game has been used in some departments at the University Hospital in Uppsala, but far from everyone. Usually in departments there is regularly time for education deposited. During this time the game could be used.

3.2.1 Background

Even though problems concerning patient relations are not a recently discovered problem, the issue is more discussed nowadays. There are several reasons for this. One of these could be the law for the activities of patient representatives, which was first established in 1980. In 1998 the law was reformed (§2, 1998:1656) and today it partly includes:

- Help patients to get the information that they need for their interests in health and medical care.
- Encourage the relations between patients and the medical staff.
- Help patients to find the correct medical ward.
- Report information of interests to the medical staff.

Every county in Sweden has a patient ombudsman that has the responsibility and works to fulfill the law stated above. In Uppsala county Eva Åkerlind is the patient representative and she has been working with these issues for three years.

Another reason could be the changes of attitudes in the society. Equality has become a more important factor in many aspects, including health and medical care. It is no longer acceptable that medical staff interacts with the patients and their relatives in an inappropriate way. Thirty years ago it was more acceptable, because of the tremendous respect for doctors and other medical staff. People expect a good treatment in every interaction with the hospital

¹ Slutrapport - Patientbemötande med inriktning mot jämlik och jämställd vård, DNR 301/2002. Margareta Jakobson, 2004.

environment. The individual in today's information society is more informed about its civil rights. Today it is not just important to medically treat the patients, it is also important to make it in a respectable and satisfying way.

Swedish health care has gained a greater understanding about the consequences from bad treatment. Satisfied patients are not the only advantage of a good treatment, it is also a matter of costs. Hospitals have a lot of expenses due to bad treatment; increased number of visits and time spent on handling dissatisfaction etcetera.

The board of patient representatives in Uppsala county registers about 1100 cases annually whereof approximately 130 are directly caused by bad interaction and communication in meetings with a patient or relatives relations. The majority of all cases are registered as medical care and treatment issues, but many of these also include dissatisfaction in patient relation and communication. In reality there are therefore more than 130 cases about this problem. The number of received cases increases, but this is not necessary due to an actual increase of bad treatment. It is probably about people are more aware of the patient ombudsman and their rights.

The problem concerning patient relations is found in all fields of the medical care. All medical professions can be found in the registered complaints at the board of patient representatives. Doctors are more often involved than the other medical professions, but it is not necessary the case that they cannot handle the patient relation as well as the other professions. This is probably because patients expect more from a doctor than for example from a nurse. The doctors also have the medical responsibility, which often involves informing the patient and its relatives about the health condition of the patient. The interaction with a doctor is often more important than other interactions at the hospital, from the patient's point of view.

Even though the problem of patient relations is an issue for all clinical departments, some has more registered complaints than others. The emergency ward for example is more exposed to the problem, partly because of the high number of patients and unscheduled visits.

To attack the problem with bad patient relations in a centralized manner as the patient relation game, it is of big interest to study different target groups and their different needs.

3.2.2 The patient relations game

There are two versions of the patient relation game, a paper-based and a web-based. Both versions consist of authentic complaint cases or situations that the staff or patients have contributed with. The cases cannot be identified to an individual. The material for the discussions contains cases where a medical caregiver interacts with a patient or a relative. The meeting degenerates and the case represent a situation where the patient or the relative has felt discriminated².

Today the game is intended for the entire hospital. If the different departments of the hospital choose to use the game in order to attack the possible interaction problem, they put together the discussion groups within the department. There are some guiding principles that they could follow:

- the discussion groups should consist of 6-8 persons
- the participants of a group preferably practice different professions
- the session should be held by a leader

² Slutrapport - Patientbemötande med inriktning mot jämlik och jämställd vård, DNR 301/2002. Margareta Jakobson, 2004.

- the leader of the game should be neutral in the discussion

Every profession in the hospital has the possibility to be educated in how to play the game and lead discussions.

Paper-based version

For the paper-based version there are 20 given cases that represent the discussion material. The leader of the game should choose 2-3 of the given cases for the discussion. This is an adjustment that is only possible in the paper-based version. The group discusses these cases, one at a time, in order to find the underlying problems and causes. A dice is used to decide who of the participants should begin to speak their mind (The one that gets the highest number of 1-6, begins). Everybody in the group should pick one or several opinion cards to answer what they think that caused the situation in every case. The different opinion cards are:

- Communication problem
- Issue of sex differences
- Age
- Work organization
- Cultural differences
- Information problem
- Disability
- Other opinions

Everyone's choice should be motivated. There is no right or wrong answer. The leader should discuss the situation in different perspectives, with the participants. The project management encourages the discussion groups to make up their own cases³.

Web-based version

For the web-based version there are 8 given cases that represents the discussion material. These cases are video-recorded so that the discussion group can visualize the situation. This video material is included in the web-application and is approximately two minutes long each. The video material makes it possible to consider body language in the discussions. It is not possible for the discussion group to choose what cases they want to discuss; they are forced to discuss the cases in the order that the web application presents. The cases should basically be discussed in the same way as the paper-based version⁴. The web-based version is discussed in more detail in chapter 6.2.

3.2.3 Target groups

Today the patient relation game appeals to one single target group, the entire hospital. In order to make further adjustments according to different needs, it is important to divide this target group into several. An adjustment of the game could result in finding better use in it and have greater impact on the user.

There are many ways to define different target groups in an organization and there is not a single correct way of doing this. The most obvious way is to divide the staff in a hospital according to their professions, as a hospital organization often is a hierarchy. The educational

³ Slutrapport - *Patientbemötande med inriktning mot jämlik och jämställd vård*, DNR 301/2002. Margareta Jakobson, 2004.

⁴ Slutrapport - *Patientbemötande med inriktning mot jämlik och jämställd vård*, DNR 301/2002. Margareta Jakobson, 2004.

background is the determining factor for which role you practice in the hospital organization. Therefore, one way to divide a hospital into target groups is to form them into

- doctors
- nurses
- assistant nurses
- physiotherapists
- caretakers
- children's nurses
- etcetera

A second way to define target groups is according to different clinical departments. This could for example be the emergency ward, the intensive care unit, the oncology unit, geriatrics and the children's emergency ward.

These two ways to divide the hospital into target groups are direct and easy. But there is another way to divide the staff in a hospital. This grouping method is rather abstract but represents a way to divide the hospital staff according to the individual's daily work. It is about defining the target groups according to their different environments and according to the different patient situations. For example this could be staff in different departments of the hospital that treats similar patients: such as, patients in a life threatening situation, chronic patients, children and their parents, disabled or patients with a mental disorder.

One specific situation could be severely injured or dying patients, where the staffs sometimes have to give tragic information. At the emergency ward and the oncologists, staff sometimes has to handle patients and relatives that are in crisis and traumatic shock. Situations like this need certain expertise. Staff from both of these departments has similar working environments and therefore share the same need for interaction issues.

Similarly, you could put together staff that often meet and communicate with family and relatives to the patients. This could be the case at the children's hospital and the emergency ward when the patients cannot speak for themselves. They could have speech disorders or not being able to express themselves in Swedish or English. The patients could also be unconscious. These are situations where the communication about the patient's condition is carried out with the relatives.

4. Medical doctor program

It is important to tackle the patient-doctor relation problem at an early stage; that is why the following chapter will look at the opportunities on how this existing system can be adjusted to fit in the medical doctor program in Uppsala. To fully understand how this can be possible, global data about the medical doctor program will be presented.

4.1 An overview of medical doctor programs in Sweden

In Sweden there are six different Medical schools, one in Gothenburg, Linköping, Lund, Stockholm, Umeå and in Uppsala. The study programs differ from each other in several ways especially concerning the patient-doctor relation courses.

4.1.1 Gothenburg

The medical-doctor program in Gothenburg is based on a student activating pedagogic with problem-oriented features. Already in the first four semesters the students get in contact with their future profession as doctors' through a one-point course called "Tidig yrkeskontakt". During their fifth semester the students attend a course concerning consultation techniques, 5 credits. The remaining years focuses on clinical studies in psychiatry, science of diseases etc.⁵

When you attend the medical doctor program in Gothenburg you have to participate in various exercises in patients relations where you get to video-shoot each other.⁶ During your time as a student you also get the opportunity to examine real patients together with experienced doctors. There are also a couple of voluntary courses the students can take concerning how to handle difficult answers towards patients etc.⁷

4.1.2 Linköping

One of the fundamentals in the medical-doctor program in Linköping is their focus on problem-based learning, a methodology that the students get in touch with from the very start. The students get to meet patients at an early stage in the program by visiting hospitals and care centers. The objective is to get used to the importance of communication between a doctor and a patient. The program sees a great importance in teaching the future doctors to respectfully meet and treat people despite their ethnical background, sex or functional disorder. Emphasis has therefore been put towards issues concerning attitude and public health, issues that are in focus during the entire program.⁸

4.1.3 Lund

The medical-doctor program in Lund can be associated with a spiral since the objective is to let the students systematically in turns broaden and deepen their knowledge. Early contacts with the patients together with an introduction to the health and care aspects are clearly emphasized in the program. Every second week during the first and the fifth semester, the students use half a day to meet the patients. The purpose is to give the students a practical training in communicating with the patients together with a basic training in examination methodology. The students will then be well prepared for their clinical internship, which starts as early as in the beginning of the sixth semester. The specific clinical courses are held during semester 9-11, just as in the old traditional program.⁹

4.1.4 Stockholm

⁵ <http://www.sahlgrenska.gu.se/utbildning/program/lakarutbildning/index.jsp>, (2004-10-21)

⁶ http://www.lu.se/o.o.i.s?id=1337&lukas_id=21195, (2004-10-21)

⁷ Herman Nilsson-Ehle, Md, Phd Associate professor section of haematology and coagulation, email (2004-10-07)

⁸ <http://www.liu.se/utbildning/program/hu/lakarutb/>, (2004-10-21)

⁹ http://www.lu.se/o.o.i.s?id=1337&lukas_id=21195, (2004-10-21)

The medical-doctor program at “Karolinska institutet” includes a feature called “the medical doctor school” which is integrated in the first four semesters. The students take a one-credit course each semester. The purpose of the course is to give the student an early insight in how the medical profession works, to give them self-knowledge at an early stage and to train the students in doctor-patient relation.

The medical students are taught how to handle patients by supervised meetings with them at hospitals that are video recorded. They also have lessons in giving feedback at conversation techniques and reactions. They also discuss their different experiences in seminars. Also, supervisors give written comments to the student’s reflections on the exercises. Other subjects brought up, are consultation techniques, medical ethics, to face death, presentation technique, stress, health in general, media and medicine.

The program also contain a course called “professional development and leadership”, 1, 4 credits and is taken by the students in the first and the 10th semester. The goal of the course is to develop the future medical doctors’ ability to communicate, cooperate and lead.

4.1.5 Umeå¹⁰

In the medical-doctor program in Umeå it is a great focus on learning with the PBL-methodology (problem-based learning) throughout the whole period of education. This will be exemplified by early contact with patients (already at the second semester at the program) and early clinical-skill training. The course, “development of professional skills” (18 credits) that contains patient- treatment and contact, stretches throughout the all eleven semesters at program. The course is performed through “student-active learning” in different forms that is, for example, carried out with the case-methodology, PBL (problem-based learning) and accounting of scientific reports.

The framing of the program is:

- Phase 1 (1st - 4th semester) comprises: early clinical training, medical psychology, medical ethics, early contact with patients, consultation exercises and examination.
- Phase 2 (5th - 8th semester, 8 credits) comprises: group supervision, seminars, boarding school with consultation exercises, clinic examination methods, boarding school about group processes and leadership, law, medical service and examination.
- Phase 3 (9th - 11th semester) comprises: group supervision, seminars, consultation exercises inclusive clinical decisions and examination.

The contact with patients is focused mostly to the first semesters in the program. This is to establish a connection to the reality around the students at an early stage.

The teaching methods are group meetings, lectures, practical skill training, seminars and debates. During every semester the students gather in supervised groups, which sometimes are supervised by authorized medical doctors. The themes vary but usually the meetings are formed around the students’ own experiences.

4.2 The Medical doctor program in Uppsala¹¹

At the medical-doctor program in Uppsala it occurs optional periods of courses containing 14 credits. During these optional periods the students can choose to study courses of special interest and also be involved in project management. Optional courses and deepening projects gives the students bigger opportunities to form their own education.

¹⁰ <http://www.umu.se/phmed/tillmed/utbildning/index.html>, (2004-10-21)

¹¹ <http://www.medfarm.uu.se/grundutbildning/lakare.shtml>, (2004-10-24)

The medical-doctor program also contains partly compulsory and partly optional courses. The courses are in general divided in practical features, midcourse-tests and examinations. The order of which the courses appear is decided at a previous stage and must be followed strictly. The education comprises lectures, laboratory experiments and group-exercises. Compulsory presence is required at these types of lectures/educational parts:

Lectures - in classes or polyclinic – that in great degree contains parts of demonstrational character, for example, patient-examination methods or other skills. To this, it can be added lectures that contain parts that are not covered in the literature for the course from the beginning.

- Demonstrations and group-lectures
- Seminars and conferences (according to a)
- Laboratory experiments, dissections and postmortem.
- Clinical duty
- Study tours

A revised medical-doctors program is being planned to begin to the spring of 2005. It will stimulate the students to in a more active way, search for knowledge and encourage them to an independent way of thinking. The education will give the students good opportunities to connect medical science together with more practical medical care.

4.2.1 The future program¹²

Most of the investigations which was done in the last years, pointed to the needs for sweeping reforms of the doctor- training in Uppsala University. Also, the university- agencies' evaluation and the self-evaluation pointed out, that several of the objectives for the doctor-program are not achieved.

Because of the reasons above, the Faculty committee decided that the medical doctor training has to be changed in view of the following pedagogical vision: increasing student activation, integration, increasing freedom of choice and early patient contact. The program is also in deeds of new examination forms and an organization plan for the new doctor-training program.

It was mentioned in the university agencies' evaluation that the doctor training in Uppsala was very traditional and old-fashioned without having any particular pedagogical framework and a shared pedagogical basic view is missing. Afterward a commission was appointed with this critic in mind and their work resulted in a new pedagogical framework with following main items:

- Entirety for details
- Learning via entireties with reality description as starting point
- Student influence and responsibility
- All theory have to be connected to reality
- The learning should be survey and researching in its character
- The student should be encourage to reflections over the learning and it content
- Increased possibility to apply new acquired acknowledgements
- Increased feedback

¹² http://www.medfarm.uu.se/grundutbildning/framtidens_lakarutbildning/index.shtml, (2004-11-01)

The work of putting the reforms in effect has been carried out on the basis of these starting points, which have affected the design of the curriculum. Instead of the separate courses in the traditionally subjects, the new teaching methods are structured with help of cases.

Basic scientific features will dominate the first teaching periods. The idea is that the students should have early patient contact, already in the beginning of the education. Even medical examination techniques like patient- doctor communication are going to be toughed in the first periods. This program is introduced to increase the doctor skills like scientific posture, ethic, teamwork, leadership, medical clinic skills and good patient- doctor relation.

4.2.2. Teaching form

The case study features are going to be the biggest change in the way of teaching and every case is going to be provided with a description of the goal, which states the depth of the expected learning. The cases have to be reality based, but it does not necessarily have to be based on a real patient situation. It can for example be a scientific article, a diagram or something similar. The case based teaching is going to be complemented with seminars, self-studies, lectures, laboratory experiments, group discussions and teaching resources like IT and library.

To achieve a good patient- doctor relation it is important that the student have got a long experience of patient contact and that they get this possibility at the hospital in the medical service. Therefore many courses in the program include also practical training.

4.2.3 Educational stages

The medical doctor education has four different stages: introduction, disease mechanisms, diagnosis, therapy and a work preparing stage.

- The students are going to begin with as introduction period with base courses in the human body structure and function, scientific posture and early patient contact.
- Under period 2-4 the students are going to study courses in attack-defense mechanism, growth and degeneration. There will be a lot of theory during these periods and not so much practice.
- Under period 5-10 the students are supposed to focus on specialty integrated learning in diagnostics and therapy.
- The last stage will be a work-preparation stage with bigger integrated cases and a bigger stress on diagnostics and therapy.

4.3 How the system can be adjusted to fit the medical-doctor program

To be able to in the best possible way adjust the existing system to the medical doctor program, it was decided to design a prototype that would fit the needs of the program. Therefore a meeting was arranged with Dr. Gunnar Frostfeldt who is one of the coordinators for the medical doctors program at the Uppsala University Hospital. Two separate meetings were scheduled with students attending the medical school to get their opinions of the subject.

4.3.1 Interview report with Dr. Gunnar Frostfeldt

The current interactive system was demonstrated to Gunnar Frostfeldt. Dr. Frostfeldt is the director of the cardiology clinic at Uppsala University Hospital. He is also co-responsible for the restructure of the medical-doctor program at Uppsala University. He was asked him about his opinions about the existing system from a pedagogical point of view. How could such a system be helpful for teachers? What should such a system contain? Our questions were pointed towards the content and less towards the usability and interface.

In the first few semesters in the medical-doctor program there is no mandatory course in patient-doctor relations. During semesters three and four, the students take a course in this discipline.

In this course, called “Patient-doctor relationship”, the students play out scenarios where one student plays the doctor and another student plays the patient. These plays are recorded on video and reviewed in groups. This gives the students the chance to practice their patient-doctor skills and give feedback to their classmates. In the sixth semester, the students go to hospitals and meet real patients.

The reform of the medical program that is currently developed wants to change this approach. One of the objects of this reform is to have the student meet real patients at an earlier stage and be a part of the patient’s healing process. From the beginning, meeting patients will be a natural part of the education.

Dr. Frostfeldt thought that the film clips were very good and believed that they showed realistic scenarios that might occur when a doctor meets a patient. He saw the possibility of using the film clips in the medical education program as well as using them to educate the personnel at Uppsala University Hospital. He also thought that a system based on these film clips could be a good way to make the doctor-patient course more uniform and less dependent on the teacher. This is to avoid the teacher’s own views influencing the lectures too much.

Although Dr. Frostfeldt was very positive about the film clips, he was not as positive about the interactive system. He did not see how this system could be helpful in supporting a discussion about the scenarios in the movies. Each scenario, or case, should be added with specific questions, follow-up questions, leading questions and comments, e.g. what is shown, what specific problems the scenario addresses, etc. The system should make the users reflect on problems and solutions—first spontaneous and then more deeply rooted. Adding theory and giving the users guidance to other aspects or angles of the problems can accomplish the latter. Dr. Frostfeldt mentioned that it was hard to say that each case is connected to one specific problem. Therefore it would be better if the students were encouraged to find every problem aspects associated with a certain scenario.

Dr. Frostfeldt also mentioned that students are often interested and very excited about learning about doctor-patient relations. Therefore it is not likely that they will try to cheat or ignore the system. Because of this, it would be good for the teacher to have some kind of control mechanism built into the system, but this is not essential.

Furthermore, according to Dr. Frostfeldt, there is no real reason for the (current) system to be in a digital format. “If the answers entered by the users are not used for feedback, there is no need to answer.” In the current version, the system is more of an obstacle for the teacher to get students to reflect on issues associated with doctor-patient issues. The system even seemed to be “amateur-like”.

A good feature for a system to be used in teaching doctor-patient relations it to be able to add film clips made by students. For this, it would be useful to have a predefined template for easy updates to the system.

Dr. Frostfeldt was very interested in incorporating a well functioning system into the “Patient-doctor relationship” course as well as in other courses taught in the medical program.

4.3.2 First interview session medical school students

A group of medical students was gathered to discuss patient-doctor relations. The five students that were willing to participate all study their sixth semester at Uppsala University's medical doctor program. The meeting was scheduled for November 6 and the goal of the meeting was to show the existing interactive patient-doctor system and get their suggestions on how to modify and integrate the system for the program. The students were introduced to the system so they could get used to the interface and were later given a chance to use the system as a group. They were then shown the prototype that had been developed with the help of Dr. Frostfeldt.

The systems film clips

The students' opinions on the film clips were mixed. Some thought that they were good and informative; while others saw the film clips as quite exaggerated and that they did not reflect real life scenarios, as they would appear in a hospital environment. They pointed out that some of the scenarios were taken out of context and they had wanted to have more background information about each case, e.g. why did the patient feel offended? what was the patient diagnosed with?, etc.

The interactive system in general

The students thought that the system was too complex and hard to understand. The "Opinion cards" felt unnecessary and superfluous. They suggested that they could appear in the system as an extra help if the discussion stalls, but in their existing place in the system, the "Opinion cards" only disrupt the flow in the discussion. Furthermore, since the "Opinion cards" were superfluous, there is no need for the dice that chooses a random user to begin the discussion. Instead they thought that it should be up to the discussion leader to make sure that all participants are active in the discussion. This can be achieved by distributing the questions equally among the participants.

They saw the need of having a discussion leader, the importance of this role in the interactive system should not be neglected. Since it is the discussions leader's role to maneuver the system, they did not think that a nice looking interface was of any substantial importance.

The students thought that the film clips should have a central place in a system of this kind. In the main menu, the user should be able to select what film clip to watch and after that not be forced to go back to the main menu. Rather, the user should be given a choice to go directly to the questions or end the game.

The prototype

The medical students thought that the prototypes were too individually centered, and therefore did not create a discussion. They thought that the discussion between different people was the most important thing, and this was the biggest disadvantage with the prototype. They opposed quite strongly to the concept of "talking to a computer". They even thought that the prototype stupefied the students by telling them what is right and wrong. They pointed out that in the patient-doctor discipline there is no obvious right or wrong. They thought that a system of similar structure as our prototype would be better suited for use in other courses where there is a definite right or wrong answer. When they were informed that the system was design together with a teacher/doctor, they explained that the teachers and the students have different visions on how the students should achieve the knowledge in the best possible way.

The systems integration into the medical doctor program

All students in our discussion group thought that the interactive system should be integrated into a course called “Patient-doctor relations”, taught in the third semester of the program. There it would be a good complement to the existing parts of the course that do not deal with these particular problems. In the patient-doctor relations course, the students are split into subgroups of eight with an assistant leader for each group. These groups would be very well suited for the interactive system where the assistant leader plays the part of the discussion leader.

4.3.3 Second interview with medical school students

At the second interview session, two medical students were met to discuss patient-doctor relations and to hear their opinion on the developed prototypes.

Evaluation of the existing system

The students’ opinions of the existing system corresponded with the opinions from the other students. They thought that the “opinion cards” made the game too strict and that it would be more relaxed and also lead to a more in-depth discussion without the cards. If the “opinion cards” are of necessity for the game, then it would be a good idea if the game players were forced to choose a different card than the others had chosen before. In that way, you have to learn about other ways of thinking about the problem.

About the appearance of the system, the students thought that the symbols at the main menu were too indistinct, and they also thought that the font could be clearer.

Evaluation of the prototype

The medical students’ opinions about the first prototype were that it was too strict and they were quite negative about the system telling the player what was right or wrong. The idea with the game should be that the students should broaden their minds and try to understand other peoples’ thoughts and values. If the game tells you that some answer is more right or wrong it is a risk that the discussion becomes more reserved and that the students will be more careful of sharing their thought and values. If the system absolutely must tell right from wrong then it is presupposed that the video-clips are more distinct but then the game loses its purpose.

An idea that the students had about how the first prototype could be improved was that any given opinion card” should be right so that no one should be told that their opinion is wrong. A disadvantage with this framework could be that the students would tire of clicking on and reading every single opinion card; as one of our test-students said: “You have to consider that students are lazy people”. One way to avoid this problem is to formulate a series of questions that appears after choosing all the opinion cards so that they encourage the students to pick a different card the second time.

One way to incite the players of the game to be more motivated towards the game is to formulate the questions so that they not only include changeable parameters like gender, nationality, etc. but also change the patient’s symptoms. If the changes in symptoms are only distractions to make the students confused and misled, then the game really puts the player’s values and prejudices into focus and makes them aware of those. The optimum would be if one could make the students think in the same “wrong” way as the doctor-characters in the video-clips. This would bring the doctor-patient-issue to the head.

If you include the medical issues in patient-doctor-relation game, it would make it easier to categorize right and wrong “opinion-cards”. The test-students that were met also thought that this could make the patient-doctor-related courses more “serious”. Nowadays they have a

tendency to be so called “easy to pass-courses” which the students never pay enough attention to.

The students were very positive about the second prototype that was showed to them. They thought it was splendid and interesting that one could rank their own “opinion-cards”. In this way the core of the problem is illuminated, and this will start a given discussion about why one reason is more probable than the other.

Furthermore the students thought it was a great idea that the opinions were “saved” in the system and that they could not be changed. They also liked the feature where you could mark the opinion card that did not correspond to the teacher’s answer. Nevertheless they wanted to stress that it is important that the students are given enough information about how the system works before usage. It is also of big value to point out that the “game” is not a test but a way of laying a foundation to a future discussion.

To sum up one could say that the test-students were fonder of the second prototype than the first one. They thought it was more exciting and stimulating than the existing system as well. The second prototype was more adapted to the PBL (problem-based learning) way of thinking that permeates the medical doctor program.

The systems integration into the medical doctor program

The best way of handling the integration of the system in the medical doctor program is, according to the test students, to first let the student try the system on their own. A couple of days later, there will be a discussion in a larger group. In that way every student gets a chance to express their opinions and no one will feel left out.

4.3.4 Conclusions of the interviews

The medicine students all agreed on the fact that an interactive system for patient-doctor relations should be integrated into their education plan. The purpose of this interactive system would be to bring problems in patient-doctor relations to the surface and create a discussion about these problems. The film clips should play a central part in this interactive system. The system should have a well thought and intuitive interface. After each film clip is displayed, a number of questions, similar to those in the existing system, should be displayed. The purpose of these questions is to help the discussion leader in maintaining a good and active discussion. According to the views of the students, there should be no “rights and wrongs” and all opinions should be heard and contribute to a more lively discussion.

5 International experiences

There are many problems in the Swedish healthcare system that relate to problems with communication, both among the staff and with patients. Many of these problems, or rather as the reader will see, misunderstandings, are common in most modern western hospitals. The following chapter will explore the international environment and see if, and how, foreign knowledge in these matters is applicable for dealing with issues in Sweden.

An opportunity was given for a close collaboration with students from America, and thus the main source of the knowledge of hospital structure, culture, and problem solving is the American healthcare system. It is also an interesting system where a large proportion of hospitals are privately owned and thus the patient has to pay for its service. Perhaps this affects the interaction with the patient, had he or she come to a free clinic instead?

Thoughts will be given to how to best make use of foreign doctors coming to Sweden to practice medicine. Integrating doctors to a new system is not easy, and these doctors often have a hard time adjusting. How can these doctors be integrated efficiently so that they, with their possible knowledge of foreign culture and hospital systems, can contribute to making them better and more open-minded?

The objective of this chapter is to highlight issues that can be corrected, or introduced, to the Swedish healthcare system as well as giving a good base for further research.

5.1 Integration of foreign doctors to the Swedish healthcare

The demand for doctors in Sweden is high and many doctors are recruited from abroad, there are also many doctors migrating to Sweden for a better living. The bureaucracy differs greatly for these two groups but they share many common problems. The major areas of problems concerning foreign doctors in Sweden are linguistic, cultural and organizational. These doctors do not only have the doctorial competency but also extensive knowledge and experience from other forms of organization and culture.

The healthcare is cutting in and there is not money for long expensive courses for a proper introduction to the new work for foreign doctors. Because of this doctors are generally seen as problems in the Swedish healthcare, costing money and not performing as well as their Swedish colleagues in the beginning. This paper will try to investigate both how the introduction of these doctors can be done better and how these doctors can be used as assets, with experience from other organizational forms and cultures.

5.1.1 Linguistic problems

According to the doctors themselves the biggest difficulty adjusting to the Swedish healthcare is the language, both with the patients as well as with their colleagues. Doctors outside EU/ESS are given a 3 month course in medical Swedish but this is far from enough to understand the long and complex descriptions patients tell them or the small-talk in the coffee room with the colleagues.

The patients are very helpful with the communication according to the doctors themselves, they talk slowly and reword where needed. Overall the doctors express that the communication with the patients is going well. There are however problems when for the doctors to understand psychological problems or 'hidden messages' in the explanations. There are also problems with long explanations and elderly patients with poor hearing. It's also very possible that foreign doctors are reluctant to report interaction problems with the patients as this could be interpreted as they did a poor job or are not suitable for the job.

According to the doctors the greatest difficulties are socializing with the other staff, fast-talk and funny comments are hard to understand. Some feel they are seen as candidates instead of actual doctors. The demand for an extensive Swedish course is almost as great as the need. Foreign doctors want to perform well and quickly learn the language. Besides the need for such a course the colleagues has to be more willing to talk to the new doctors and not mix their language difficulties with their medical skills.

5.1.2 Cultural problems

Cultural differences can easily lead to misunderstandings and conflicts. According to traditional organizational theory there are more conflicts in heterogeneous groups. The communication in Swedish hospitals are unlike most other countries'; there is a much flatter, non-hierarchical communication both with the patient as well as with the staff. In Sweden the patients are generally well read on their illness and may well have searched for information prior to the meeting. The patient wants to discuss with the doctor rather than being told. Most other countries have a patriarchal communication and a strict hierarchical structure, and the patient expects and wants to be told and taken care of. In Sweden the patient takes great interest in why he or she became sick while patients in other countries might just want a cure. These differences can lead to many cultural misunderstandings where the doctor feels attacked or questioned by someone with less knowledge, and the patient feels that he has not been listened to. Female foreign doctors seem more willing to adjust to a more informal communication whilst male foreign doctors keep more of the formal style.

In hospitals the nurses are often those whom the patient has the most contact with, in Sweden the nurses sometimes question the doctor's choice of treatment, gives suggestions and wield a great amount of power in the hospitals. This is not common in other countries where nurses are often not as well educated and just do what the doctors tell them to. If the doctor is not custom to this it may easily lead to conflicts! There seems to be a gender aspect of this as female doctors seem to adjust to this more easily.

It is essential that foreign doctors quickly become aware of the differences of the patients' expectations and the nurses' role. Much can be learnt through written material that the hospitals could give the new doctors. Just as with linguistic problems the doctors have a great will to adapt and understand our culture and the Swedish patients' needs. However written knowledge is likely not enough, the ideas and differences need to be discussed and experienced. The Patient relations game is a great possibility to fill this gap without the doctor has to experience the situations with a "real" patient. Further development needs to be done to ensure the cultural differences are enlightened. Such questions such as "how would this situation be different if the patient was Islamic?" This is of interest both for the Swedish doctors who learn to take care of patients with non-Swedish background as well for foreign doctors who realize the cultural differences and has the opportunity to discuss them with the Swedish colleagues.

5.1.3 Organizational problems

The flat non-hierarchy structure is usually well appraised by foreign doctors but they do however express difficulties in understanding and defining the different roles of the staff as well as how to communicate with them. There are very few standardized ways of communicating:

"The healthcare is a difficult system. The roles for different personnel, especially in the paramedical area, are undefined and differ from department to department. Even the way doctors communicate with each other, internally in the clinic as well as between different hospitals differ. Sometimes phone is used, sometimes a note of admission. The way of

communication between hospitals, government and organizations are in constant change; there are no routines.” (translation by Erik Scholander of Dr. Nadjem al Falabe)

Understanding how to communicate in the Swedish healthcare system is not easy and the knowledge is gained from experience. The foreign doctors simply don't know how to 'work the system' and because of this foreign doctors may feel frustrated and helpless. It is also hard to know how, and if, to take contact with other doctors, asking for advice or help. Mentorship is the most efficient solution to this problem. It's important the mentor is well informed of this issue and takes it up to discussion even if the doctor doesn't ask. Mentorship is discussed below.

5.1.4 How to improve the integration of foreign doctors to the Swedish healthcare.

Ideally foreign doctors would have the opportunity to a thorough course in Swedish and the Swedish culture, unfortunately there are no funds for this. There is however a great interest for this information from the foreign doctors. The best way to gain this knowledge is through a network with doctors who already have been integrated to the Swedish healthcare. Many foreign doctors also feel alone and would like some help how to respond to some of the situations they may experience.

Another supplementary method is mentorship. A doctor from the department takes the responsibility of introducing the foreign doctor to the Swedish healthcare. Not only will this mentor aid with practical things such as defining roles and explaining how 'the system works' but also help the foreign doctor with introducing the doctor socially to the hospital.

There are many direct suggestions for foreign doctors given by doctors who have been integrated into the Swedish healthcare, this list could be extended but both "*Invandrade läkare – en resurs i svensk sjukvård*" by Läkarförbundet and "*Bruten svenska innebär inte bruten tanke*" by Jens Allwood et al. both has good practical advices to start the list. These suggestions could be implemented and discussed in the Patient relations game in situations especially developed for foreign doctors.

5.1.5 What can be learnt from foreign doctors?

The most obvious is the treatment for foreign patients. These patients have a different needs and preferences of how they should be treated. Many cultures have, like pointed out before, a patriarchal and formal way of communication where the patient 'looks up' to the doctor. Many patients want the patriarchal communication and, of course, a doctor of that culture teaches this knowledge best.

Many cultures have taboos that are hard for Swedish doctors to understand or know of, for example is a Turkish woman not supposed to express pain or discuss problems of sexual nature. Nudity and physical contact, especially between men and women are in many cultures regulated by cultural rules. These rules might even prevent the patient from coming to the hospital in fear of violating them. Doctors who can teach the staff of how to handle these patients would be a great asset for the hospital. Building a reputation of cultural understanding would make the patient more comfortable to visit the hospital.

Some patients have also pointed out that they feel the foreign doctors give each patient more time and appear less stressed. Perhaps some doctors have experiences of higher workload and more stressful environments (such as hospitals in war-time). These doctors could possibly be very useful for making the hospitals more effective, especially during crisis.

American doctors warn for all the paperwork they have to endure. Such warnings are situated at a higher level and should be brought forward to politicians. It is important feedback and

information derived from experiences these doctors can contribute with, especially in the area of changes concerning the healthcare system.

5.1.6 How to learn from foreign doctors

Despite the fact that foreign doctors could improve the hospital in many areas this knowledge is unfortunately rarely used. There is really a need for change on several levels, both locally in the department and hospital wise.

The departments need to start discussions concerning cultural differences. These discussions will both lead to a better understanding of cultural differences which leading to less conflicts and make the Swedish doctors more open for asking the foreign doctors about their culture and vice versa. This will spread the knowledge of other cultures and how these patients should be treated.

Hospital wise these doctors should be given the opportunity to suggest for organizational improvement as well as raising a warning finger for changes they have already experienced.

5.2 Potential problems

Patients feeling discriminated when getting hospital care is not a rare problem. Because of the situation where one part is depending on the other, it is important to observe that a patient does not feel violated. The patient relations game contains seven main topics addressing the problems that can arise in a doctor-patient relationship: organization, age, communication, cultural differences, disabilities, gender and information. Staff at the Uppsala University Hospital involved in the project selected these specific topics because they represent an overview of the most reported cases of patient discrimination in Swedish hospital care.

In spite of the hospitals work and ambitions to avoid patient discrimination, conflicts concerning patient treatment arise. When a patient experiences abusive treatment from hospital staff he/she is recommended to bring the complaints to the patient ombudsman who is associated with that hospital. The cases that are brought up in the patient relations game are based on authentic cases reported by patients experiencing an unfair treatment by their doctor/nurse. A careful study of the same topics (except for age and information) has been carried out by team 3 to see how they are represented in the US.

In the following sections material discovered in the study is presented, discussed and compared to the Swedish situation in order to find ways to learn from solutions developed in the US. Questions like “*Can the Swedish healthcare system learn anything from the US system?*”, “*Is it possible to compare the two healthcare systems?*” and “*What can be learnt from the US system and how can the knowledge be made available to doctors and nurses?*” are discussed and answered.

The study has been carried out by searching for and reading relevant literature concerning patient relations in the US. A number of interviews with people familiar with the topic in the US and in Sweden have also been conducted.

5.4 Communication

Healthcare provider-patient communication can have a significant impact on the outcome of a specific consultation (e.g. satisfaction, adherence, health improvement). There are a lot of problems in healthcare situations that are results of inadequate or defective communication. What kinds of communication problems are present in hospitals in the US and what can the Swedish healthcare system learn from these experiences? Because communication problems is a very broad area when dealing with the relationship between doctors/nurses and patients,

this part of the report will be focused on a few issues in communication problems; *language barriers, different kinds of doctor-patient relationships and internal communication.*

5.4.1 Language barriers

The US is a great melting pot of people from different cultures and with different nationalities. Because of this many patients do not speak the English language as well as could be expected from a patient born in America. This is of course a potential problem in patient relations because it could easily lead to misunderstandings between the doctor and patient.

At Wishard Memorial Hospital in Indiana, USA, they deal with about 10000 patients from minority groups every month. There is a Hispanic project and an interpreter is available at all times. There is a language line and the staff is educated in how to speak with respect and dignity to patients from minority groups.¹³

Another aspect of the language problem is when the caretaker speaks a different kind of English than the patient. Perhaps the doctor comes from a different background than the patient and has accumulated a lot of complicated expressions (formal English) that the patient does not understand. Doctors and nurses use many words and abbreviations only used at hospitals and if this language is used when treating the patient it could lead to misunderstandings.

5.4.2 Different kinds of doctor-patient relationships

There are many different kinds of doctor-patient relationships. At the two ends of the scale are the authoritarian relationships, where the doctor tells the patient exactly what to do and what the diagnosis is and the discussion-based relationship, where the doctor and patient discuss the diagnosis together. The doctor-patient relationship also depends on whether the patient has a regular doctor, to build a long-term relationship with, or not.

As an example of the doctor-patient relationship in the US, the patients that come to Union Hospital, Terre Haute, Indiana, expect advice and counseling, but most patients most of all expect a prescription. According to Kuykendall¹⁴, they expect to have a physician willing to talk with them and answer questions no matter the time of day. Some people ask more questions than others and there are big differences in the way families perceive a doctor.

The way in which the healthcare provider and the patient communicate with each other is affected by the healthcare organization, political and legal issues, use of and exposure to media, economic factors and culture. The most important aspects to consider, however, are the goals, skills, perceptions and emotions of the interacting parties. Most people have a particular style of communicating with others and this style originate from the person's personality, identity, socialization and linguistic skills. Healthcare providers often develop a special communication style used when interacting with patients, because they deal with similar situations over and over again.

People in general also adapt their communication styles according to specific situations and in response to a partner's communicative actions. For example, a healthcare provider is bound to be more serious when informing a patient of a life-threatening disease than when giving a child a check-up. Also a physician may feel more obligated to spend time talking about a topic raised by the patient and the patient is more likely to participate in the communication if the physician uses partnership-building (asks for the patient's opinion). Physicians in general

¹³ David Clinton, Patient Advocate at Wishard Memorial Hospital, Indiana, interview on October 27th 2004.

¹⁴ Connie Kuykendall, Union Hospital, Terre Haute, Indiana, interview on October 27th 2004.

will provide more information, support and reassurance when interacting with a patient who asks questions, offer opinions and express concerns.

The degree to which physicians engage in partnership building with the patient is related to the patient's education, but also differs between individual doctors (Street 2002, p. 203).

5.4.3 Internal communication

The way in which doctors and nurses communicate with each other differs from one hospital to another. The internal communication, or rather any miscommunication, between healthcare providers can easily affect the quality of care that patients receive. Because of this, the internal communication is interesting to observe when dealing with patient relations issues.

At the Methodist Hospital in Indiana, USA, the communication between staff members is considered generally good. If any miscommunication is found, it is dealt with by *determining the problem, looking at the system in place, finding out where the system broke and determining what improvements are necessary*.¹⁵

Some communication problems are present at Wishard Memorial Hospital in Indiana, USA, when transferring patients from one resident doctor to another, since many doctors are on residency rotations for three months at a time.¹⁶

At Wishard Memorial Hospital there is a Risk system, which indicates when patients have appointments with other doctors within the organization. This helps the communication between doctors and prevents patients abusing drugs by getting prescriptions from multiple doctors.¹⁷

The staff members at Union Hospital in Terre Haute, Indiana USA, use e-mail and committees to communicate with each other. Committees have been redefined recently to make the committee members feel more responsible and involved. It is encouraged for the professional staff members to belong to professional organizations and to participate in community activities. There are nationally set up professional organizations, within the state of Indiana.¹⁸

The Veterans Health Administration (VHA) in the US has worked for several years with reducing waiting times for appointments with primary care doctors. In order for the project to succeed, effective means of communicating the advanced clinic access method within the organization had to be created. Instructive information was provided through videos, posters, reports and an internal website. Also, the internal communication among those working on access was a critical factor in spreading knowledge. The VHA made sure that interactive communication would occur regularly through nearly every means available; conference calls, email, regional and national meetings. It turned out that the face-to-face contact and the building of personal relationships was very important for the success of the project. Continuous communication was the key, because people were at different stages of understanding and acceptance of the advanced clinic access.

5.5 Cultural differences in the US healthcare system

Since this is such an enormous area this section should be looked upon as a small introduction to the subject. It will simply try to draw attention to a number of areas, which can be interesting to investigate further in the struggle to understand these issues.

¹⁵ Katie Straight, Patient Representative at Methodist Hospital, Indiana, interview on October 27th 2004.

¹⁶ Stephanie Johnson, Patient Advocate at Wishard Memorial Hospital, Indiana, interview on October 27th 2004.

¹⁷ Stephanie Johnson, Patient Advocate at Wishard Memorial Hospital, Indiana, interview on October 27th 2004.

¹⁸ Connie Kuykendall, Union Hospital, Terre Haute, Indiana, interview on October 27th 2004.

Two main questions has been the starting point of this report section, firstly, how can cultural differences between caretaker and caregiver affect the standards of the treatment provided in the US. Secondly, what is/can be done to prevent and solve problems that arise due to these issues?

By reading a number of articles concerning this subject, it has become clear that the healthcare system in the United States does not provide the same quality of care for minority populations that it does for the majority white population.

The Institute of Medicine report “Unequal Treatment” confirmed that racial and ethnic disparities in healthcare are not entirely explained by differences in access, clinical appropriateness, or patient preferences.

(Smedley BD, Stith AY, 2003)

5.5.1 Situation in the US today

Different cultural backgrounds have a big impact on the quality of healthcare provided. The overall health of the American population has improved over the past few decades, but all Americans have not gained equally from these improvements. Among non-elderly adults, for example, 17 percent of Hispanic, and 16 percent of black Americans report they are in only fair or poor health, compared with 10 percent of white Americans.

(Addressing Racial and Ethnic Disparities in Health Care, Feb 2000)

Furthermore, race and ethnicity influence a patient's chance of receiving many specific procedures and treatments. Studies have shown the following:

- **Heart disease.** African Americans are one-third less likely to undergo bypass surgery than are whites.
- **Asthma.** Among preschool children hospitalized for asthma, only 7 percent of black and 2 percent of Hispanic children, compared with 21 percent of white children, are prescribed routine medications to prevent future asthma-related hospitalizations.
- **Breast cancer.** The length of time between an abnormal screening mammogram and the follow-up diagnostic test to determine whether a woman has breast cancer is more than twice as long in Asian American, black, and Hispanic women as in white women.
- **Nursing home care.** Asian American, Hispanic, and African American residents of nursing homes are all far less likely than white residents to have sensory and communication aids, such as glasses and hearing aids.

(Addressing Racial and Ethnic Disparities in Health Care, Feb 2000)

Reading the above it is clear that there is a need for an evaluation of the strategies proved to be effective in bettering the quality of healthcare for minorities.

5.5.2 Finding appropriate sources

Since there are a number of scientific articles concerning this subject it is difficult to just choose one to explain it all. However, in the report: Strategies for Improving Minority Healthcare Quality, they try to give an overview of the problems and solutions concerning the health care system in the US today.

Their main goal with this report was:

The purpose of this report is to systematically review the evidence to determine the effectiveness of interventions designed to improve the quality of healthcare and/or to reduce disparities for racial/ethnic minorities. Our report focuses on evaluations of interventions aimed at healthcare providers or organizations, as recent work suggests provider and organizational factors contribute substantially to the inequities.

(Strategies for Improving Minority Healthcare Quality, page 3)

The process started with 3,703 summaries reviewed. From that they narrowed it down to 91 articles to be used in the report study. The questions to be answered using these reports were:

1. What strategies targeted at healthcare providers or organizations have been shown to improve minority healthcare quality?
 - a. Which of these strategies have been shown to be effective in reducing disparities in health or in healthcare between minority and white populations?
 - b. What are the costs of these strategies?
2. What strategies have been shown to improve the cultural competence of healthcare providers or organizations?

The report includes the areas that were important from this sections starting point and the results of the report will be briefly summarized in the following sections.

5.5.3 What can be done?

The results presented in the report are divided between interventions/methods and clinical area, but only the intervention results are summarized here. The interventions are very briefly described and to get a complete picture follow up reading is required. This is simply a brief presentation of the results from the scientific report: Strategies for Improving Minority Healthcare Quality.

If the reader would like to look further into any specific area, look at the references included in the scientific report.

Question 1: What strategies targeted at healthcare providers or organizations have been shown to improve minority healthcare quality?

Tracking/reminder systems

Tracking system being a form of system where you can input a number of patient-data and receive some kind of output, for example likelihood of heart disorder etc. Reminder systems being, reminder notices and education. E.g. how diabetes patients should deal with their condition.

Tracker/reminder is an excellent way of improving health-care. Many articles found this way to be one an excellent method that is aimed for providers of racial/ethnic minority patients.

Multifaceted interventions

Multifaceted interventions are when you use more than one strategy to address the health-problem. In other words, you combine several methods (>1) to get a result, for example both surgery and homecare.

Outcomes of these studies are mixed, with most studies showing improvements in one or two (but not all) outcomes measured. Overall, there is fair evidence supporting the use of multifaceted interventions compared to tracker/reminder systems aimed at providers of racial/ethnic minority patients.

Bypass the physician.

When you do bypass the physician you skip the physician examination before going through physical tests. The cases described in the text concerned adult cancer screening.

They had a nurse offered screening directly, compared to standardized services were you have to wait for a doctor to determine whether you should have screening or not. Studies demonstrated improvements in the preventive services to patients. In general, there is

reasonable evidence supporting the use of bypassing the providers of racial/ethnic minority patients to offer standardized services directly to patients.

(Strategies for Improving Minority Healthcare Quality, page 21-23)

Question 1a: Which of these strategies have been shown to be effective in reducing disparities in health or in healthcare between minority and white populations?

In the report only one study addressed the question whether an intervention could reduce disparities in healthcare quality in healthcare quality between ethnic minority and white persons. The study evaluated the impact of two different culturally tailored interventions to improve the quality of depression care. These interventions were compared to a control group who didn't receive this treatment had mixed results.

The study didn't come to any conclusion, since there were no measurable effects of the treatments in question. To look further into this area it would be preferable to try to find another survey concerning this subject.

(Strategies for Improving Minority Healthcare Quality, page 23)

Conclusion question 1

There is excellent evidence that provider tracking/reminder systems are effective in improving the quality of care for racial/ethnic minority patients, and fair evidence that multifaceted interventions and interventions which bypass the physician to offer screening services to racial/ethnic minority patients can improve quality of care.

These are specific strategies, which have shown results in the US, it is interesting to see that specific treatments have a greater impact on the health status on the minorities than other ethnic groups. The reason for this is probably the fact that the minorities are more likely to have certain diseases, and these treatments have a great impact on improving those. Sweden is not yet at the point of having the same ethnical health differences as the US, nevertheless, should we ever end up there, the US experiences can help us deal with these kinds of problems.

Question 2: What strategies have been shown to improve the cultural competence of healthcare providers or organizations?

The results are presented by outcome type (knowledge, attitude, skills/behavior, and patient outcomes).

Cultural knowledge

A majority of the studies, which evaluated the effect of cultural competence training and education on the knowledge of healthcare providers, demonstrated a positive effect. Competence training included both general cultural concepts and cultural specific knowledge.

The report suggests that there is excellent evidence to suggest that cultural competence training increases the knowledge of healthcare providers in a way that is beneficial for the patients.

Attitudes

The report continues by evaluating the effect of cultural competence training on the attitudes of healthcare providers. The care givers were educated in the following areas: greater understanding of the impact of socio-cultural issues on the patient-physician relationship, more positive attitudes toward community health issues, and an increased interest in learning about patient and family backgrounds. The report suggests that there is good evidence to

suggest that cultural competence training affects the attitudes of healthcare providers in a very positive way.

Skills

Skill is very general word but in this case mainly meaning patient relations related skills. A number of articles look into the effects of cultural competence training on the skills of healthcare providers. A quick summary would be to say that all demonstrated a positive effect.

For example, in one study, participants were given 16 one-hour sessions in which they practiced communication skills with the community volunteers. They were subsequently shown to be significantly more competent in interviewing a non-English speaking person as rated by a psychologist who viewed videotapes of interviews.

Other types of skills/behaviors improvements gained from this type of education were an increase in nurses' involvement in community-based cancer education programs, an increase in self-reported social interactions with peers of different races/ethnicities, and an improved ability of participants to conduct a behavioral analysis and treatment plan. Overall, there is good evidence to suggest that cultural competence training favorably affects the skills/behaviors of healthcare providers.

Patient outcomes

A couple of articles looked into what kind of methods can increase the level of patient satisfaction, in terms of how the felt the patient relation worked.

One study trained four mental health counselors about the attitudes that low-income, African-American women bring to counseling. Another trained nine physicians to speak Spanish and a third implemented a state-mandated, 3-day training program focused on team training, clinical issues, and cultural competence for all staff that have contact with recipients of inpatient mental healthcare. All studies showed that cultural competence training improves patient satisfaction.

(Strategies for Improving Minority Healthcare Quality, page 23-28)

Conclusion question 2

There is excellent evidence to suggest that cultural competence training can increase the knowledge of healthcare providers and good evidence that cultural competence training can improve the attitudes and skills of healthcare providers. But looking closer into the studies evaluated you can get valuable inputs and examples on how a cultural competence training can be performed. More or less all strategies that involved cultural competence training had some kind of positive effect on the healthcare provided; this is a major area to look further into. As mentioned above, if there are any specific sections the reader wishes to look further into, get complete references from the report.

Perhaps a patient relations game which only focuses on cultural competence training can be a valuable contribution to the healthcare education in Sweden.

5.6 Disabilities

Dealing with patients who has some sort of disability, whether it be physical and or mental, has become a necessity in modern medicine. The very nature of these disabilities will often require the hospital staff to have special training and knowledge of the patient's condition in order to give him the best care possible. The United States (US), like almost every other western country, has realized the importance for these issues and research has been done in the field. The premier organization for dealing with disabilities in the US is the American

Association on Health and Disability (AAHD). The organization works on all levels in American society, both at national, state and local, to promote awareness about disabilities as well as trying to prevent additional health complications caused by a disability.

According to AAHD research, an estimated 54 million Americans have some type of disability or long lasting condition. According to the US Census Bureau (<http://www.census.gov>), that is nearly 1/6 of the entire population of nearly 300 million. That is in addition to the growing problem with obesity.

5.6.1 Training of staff

Obviously, with such a large number of people with some sort of disability, the healthcare professionals need knowledge in how to handle these patients. As knowledge is gained both from education and experience, it is vital that medical schools address this problem. Depending on the type of condition of the patient, the process of treating him may be very different from what the staff is used to. This could involve everything from practical problems such as the patient being in a wheelchair to having problems communicating with the patient. The next subchapter will highlight some of these practical problems and will give simple solutions to what the patient otherwise could perceive as an insulting treatment. Naturally the goal of research in this field is to give the patient the best possible medical care while making sure he does not feel humiliated, mocked or ridiculed in any way.

Formal education in this area is gained at medical schools. However, according to the Association of American Medical Colleges (AAMC, <http://www.aamc.org>), which has a database including half of the medical schools in North America; only 37% has some form of activity covering disabilities and only one in four have courses addressing these issues. While one in four does not sound too bad, AAHD research points out that in many cases these courses are elective and are often deselected. While medical programs are demanding as it is, it would be preferably is some mandatory course, or even part of a course, deals with disabilities.

5.6.2 Practical problems and solutions

While interacting with people with disabilities, it is necessary to remember that the patient's condition might make communication different compared to a patient without a disability. The way the medical staff acts, either by verbal- (language) and/or physical (gestures) communication, will have a big impact on the patient's experience at the hospital.

The New Mexico Office of Disability and Health has written a good brochure called *Common Courtesies When Interacting with People with Disabilities*¹⁹. As the brochure title reveals, common courtesy and a little understanding of the patient's situation will greatly improve the situation. People with disabilities do not want to be treated differently than anybody else nor do they want their disability to be dominant in their lives.

The way people express themselves can, often unknown to the speaker, be offensive to a person with a disability. To use the phrase "a person who is blind" is preferred over "a blind person" as you should refer to the person first and not the disability. Several words, which can be offensive or downright hurt a people, should be avoided and the brochure gives several good alternate words and phrases.

Physical interaction with a patient is as important as verbal. If using the previous mentioned example of a patient in a wheelchair, there are simple courtesy rules one should be aware.

¹⁹ <http://www.health.state.nm.us/dhp/Common%20Courtesies%20b.pdf>

- While having a longer conversation with someone in a wheelchair one should place oneself at the same eye level.
- One should not lean or hang on a person's wheelchair nor should one push it unless asked. A patient in a wheelchair will often see it as an extension of himself and these actions could therefore be interpreted as an invasion of his private space.
- When giving directions to a person in a wheelchair, one should be aware of physical obstacles as well as other conditions that could cause problems.
- As with all people with some form of disability, they should never be patronized, such as getting a pat on the head while sitting in a wheelchair.

Common sense and a fair amount of professional courtesy are to be expected from health care staff when dealing with people with disabilities. The United States has several organizations working to make the general public more aware of these problems and research is being done in the field. But as the chapter has shown, few medical schools have formal training in dealing with disabilities and thus most of the training is done "trial by error" in the hospital environment.

5.7 Gender

It's difficult to compare problems that can occur in patient treatment between two different countries who doesn't share the same system for health care in following factors such as: organization, insurances and social security net. Still the Swedish health care system can draw useful information on how to handle problems with gender discrimination from US experiences.

5.7.1 Gender bias in health care

Women as a patient group are being discriminated in patient relations and treatment when they go to a hospital is a structural problem in the health care system. Staff at the hospital is often unaware that they may treat their male patients different from the female patients. This kind of behavior can cause that women don't receive the proper treatment on basis of their gender. Today this is a well-documented problem in society and a lot of research has been made in this area to notice gender bias in health care and prevent discrimination of women in a patient-doctor relationship. This part of the report brings up the more overarching discrimination problems due to gender in American health care in a wider context because of the importance to provide knowledge about the gender issue so medical staff can reflect over their patient relations. Studies have shown that discrimination on basis of gender takes place on many parts of the hospital in different ways. This section will bring up some of the potential problems with focus on cardiac care and the intensive care unit as two examples where research has identified the results of gender discrimination.

The Society for Women's Health Research (<http://www.womenshealthresearch.org/> 2004) reports that women get fewer procedures than men to prevent recurrent heart attacks although they are more likely to die after a heart attack than men are. For patients who had suffered a heart attack, sex appeared to be a more important determinant of ICU admission than medical need. Specifically, male heart attack patients admitted to the ICU were in better health, significantly younger, and fewer had a medical history compared with female patients. In addition, male heart attack patients were less likely to die in the hospital compared with their female counterparts. These results suggest that physicians are using more stringent ICU admission standards for female patients and that women must be sicker and have more risk factors to receive care on par with their male counterparts. There is a difficulty in recognizing heart attack symptoms in women, since women do not always have the typical pain or

pressure in the middle of the chest. Female heart attack victims are more likely to have multiple, non-traditional symptoms. The result is that it takes longer for women with heart attacks to get to the emergency room. This delay in treatment may explain why women have a higher risk of death after a heart attack. Women must be sicker and have more risk factors to receive care on par with their male counterparts. The higher death rates for female patients imply that this sex-based inequity may leave women without the aggressive care they need even though heart disease actually kills 60,000 more women than men in the US (Cariati, Sophia 2002).

Another area where identification of sexual discrimination is made is in the field of treatment of inadequate treatment of chronic pain in the United States. Ehlers Danlos National Foundation reports that but more recent studies have begun to look at whether women pain patients face an additional barrier to proper treatment and diagnosis. A 2001 study in the *Journal of Law, Medicine, and Ethics* entitled found that women's pain reports are taken less seriously than men's, and women receive less aggressive treatment than men for their pain. A decision of the World Health Organization to develop guidelines regarding prescription of painkillers was based on reports showing female AIDS and Cancer patients were less likely to receive pain medication. One study showed that women patients with chest pain were less likely than men to be admitted to the hospital. Evidence indicates that men and women do experience pain differently, but this evidence does not seem to support the differences in diagnosis and treatment experienced by pain patients. Women are more likely to report their pain, but less likely to have their pain adequately treated, they often have pain discounted as psychological or emotional, and therefore seen as not real (Ortiz, Deborah V. 2004).

Numbers of reports on similar problems in other care units and medical research fields has been published in just in the past couple of years. It is hard to find simple solution to problem such as these and therefore it is critical that research in this area is made. Just identifying the problem is a step an the right direction even though it will take lots of time and effort before discrimination due to gender no longer is a problem at the hospitals. To give information at medical staff and student about these issues is critical so that they are able to address such problems when they arise.

5.7.2 Problems with sexual harassment and how to handle them

Gender-based discrimination and sexual harassment are common in medical practice and may be even more prevalent in academic medicine. Studies have shown that there is wide problem in the medical world with hospital staff sexually harassing their patients and this is a problem that goes the other way around as well. Education is the key to prevent such problems. It is important that medical staff receives knowledge and training in how to prevent sexual harassment and are able to address such problems when they arise.

The American Collage of Emergency Physicians (<http://www.acep.org/> 2004) has published a handbook titled *"Evaluation and Management of the Sexually Assaulted or Sexually Abused Patient"* in order to manage patients with the complaints of sexual assault. ACEP believes that all patients who report a sexual assault are entitled to prompt access to emergency medical care and competent collection of evidence that will assist in the investigation and prosecution of the incident. ACEP has therefore developed the following guidelines:

- With the cooperative efforts of local governments, law enforcement agencies, hospitals, courts, and other relevant organizations, each county, state or other geographic area should establish a community plan to deal with the sexually assaulted patient. The plan should ensure that capable, trained personnel and appropriate equipment are available for treating sexual assault patients.

- Each community plan should address the medical, psychological, safety, and legal needs of the sexually assaulted patient. The plan should provide for counseling, and should specifically address pregnancy and testing for and treatment of sexually transmissible diseases, including HIV.
- Each hospital should provide for access to appropriate medical, technical, and psychological support for the patient. A community may elect to establish, under the supervision of a physician, an alternative medical site, which specializes in the care of the sexually assaulted patient and provides medical and psychological support capabilities when no other injuries are evident.
- Physicians and trained medical staff who collect evidence, perform in good faith, and follow protocols should be immune from civil or criminal penalties related to evidence collection, documentation of findings, and recording of the patient's subjective complaints.
- For the special diagnostic and therapeutic needs of the pediatric patient, a community plan should provide for primary referral centers with expertise and ancillary social services that support a multidisciplinary approach.
- As part of its ongoing quality management activities, the hospital should establish patient care criteria for the management of the sexually assaulted patient and monitor staff performance.
- ED staff should have ongoing training and education in the management of the sexually assaulted patient.
- ACEP supports appropriate measures to prevent sexual assault in the community.

5.8 Organization – The organization of work in a US hospital

The potential problem for malpractice, which could affect the quality of patient relations, is greatly influenced by the organization of work in hospitals in general. This issue has been focused on in some extent in the US and this part of the report will deal with these problems.

5.8.1 Overview

At the moment there are a lot of problems in hospitals when it comes to failures – these failures could be in the form of financial difficulties but this report will focus on errors and problems in treatment. These errors and problems could lead to malpractice – which could greatly influence the quality of patient relations. According to reports 44,000 to 98,000 people die each year in the USA as a result of malpractice – i.e. medical errors (Tucker and Edmondson 2002, p. 1). But maybe an even greater problem is that less serious errors are persistent in hospitals. Generally hospitals have relied on great doctors and nurses to ensure care quality; it is only recently that focus has been put on organization and work routines. Identifying and resolving the cause of problems has become one method for organizational learning (Tucker and Edmondson 2002, p. 1).

5.8.2 Problems

In studies, two main process failure have been identified – problems and errors. The definition of an error is the execution of a task that is either unnecessary or incorrectly performed which could have been avoided with the correct information. For example a patient that is being prepared for a colonoscopy – at significant expense to the hospital and discomfort for the patient - before a specialist reviewed the case and concluded that the procedure wasn't needed. A problem is defined as an interruption in the execution of a task caused by; something missing needed for completing the task or something present that shouldn't be and

thereby interfering with the task at hand. Examples of this could be: missing supplies, information, or medication.

Personnel are well aware of the problems encountered; the problems are obvious and disruptive. But, in contrast people are usually unaware of their own errors while making them. Both kinds of failures require some sort of action in order to continue the work, as the problems are so obvious the personnel themselves can take action to solve the immediate problem. To prevent further errors from occurring management involvement would be required in order re-designing the work systems (Tucker and Edmondson 2002, p. 4).

In a report nurses were observed at nine hospitals and it was shown that problems made up the majority of the failures observed. Five main types of problems were found: missing or incorrect information, missing or broken equipment, waiting for a resource – human or equipment, missing or incorrect supplies, and simultaneous demands on their time. These problems usually occurred while the nurses was preparing for patient care and/or as a result from lack of information or material reaching the nurse (Tucker and Edmondson 2002, p. 6). The errors observed could be categorized in three categories; incorrect actions made by the nurse, errors made by other people, and unnecessary execution of a task (from faulty process flows) (Tucker and Edmondson 2002, p. 7).

Being able to distinguish between problems and errors shows the different ways front-line workers, persons that directly interact with a customer (in this instance a patient), can help improve the situation/work process. The visibility and the frequency of problems makes them more accessible to front-line workers, due to that it is the front-line workers that observes these problems and can therefore suggest important changes that managers wouldn't be able to identify. Problems also carry fewer stigmas than errors, making them more easily discussable. Understanding how front-line employees respond to problems is thus important in order to improve work systems and processes (Tucker and Edmondson 2002, p. 7).

Research on quality improvement has distinguished two types of response to problems – short-term solutions that 'patch' the problem and thorough responses that seek to change underlying organizational routines to prevent the problems to occur again. Similar distinction can be done using the terms first- and second-order problem solving.

First-order problem solving – occurs when the worker compensates for a problem by getting the supplies missing or the information needed to finish a task that was interrupted. The worker doesn't address the underlying causes, thereby not reducing the occurrence of a similar problem in the future. In studies it has been shown that nurses implement a short-term for the majority of the failures experienced, thus enabling them to care for the patient but ignoring to prevent the occurrence of future failures (Tucker and Edmondson 2002, p. 8). This seems successful; the workers provide care for the patient at a minimal cost. But this solution could be counterproductive; it keeps communication problems isolated so that nothing is learnt from them. The person responsible for the problem is rarely informed, and the short-term solution could result in problems in other areas. For instance missing medication in one ward that are solved by getting medication from an other ward could result in short supply of that medication at second ward. Also time is also spent on solving problems that could have been addressed and solved earlier. Thus first-order problem solving could prevent improvement by not fully addressing the problem and also prevent operational and structural changes that would help to avoid that the same failure from occurred again (Tucker and Edmondson 2002, p. 9).

Second-order problem solving – instead of just patching the problem this method takes action in trying to address the underlying causes of the problem. This involves; communicating the failure to the person/department responsible, making the management aware of the failure,

sharing experiences of the failure, sharing ideas on what could have been cause of the failure, and ideas on how to address the failure in order to prevent it from occurring. In studies it has been shown that only very few nurses actually apply this type of problem solving (Tucker and Edmondson 2002, p. 11). This type of problem solving can result in positive results for both the organization and the workers. If the action taken by the worker to address the problem is successful and that the action will hinder the occurrence of the problem then all will have gained from this. Thus second-order problem solving is one way to that real change can be done. The hospital in question will benefit from this by greater patient satisfaction – faster and uninterrupted care.

Studies have also shown that lack organizational learning from failures can be explained by three reasons; emphasis on individual vigilance in the health care, unit efficiency concerns, and empowerment. These factors, which could be seen as beneficial for both nurses and patient, could result in the workers being under-supported and overwhelmed.

Individual vigilance – a norm that encourages nurses and other health care professionals to take personal responsibility to solve problems as they arise. This norm is highly valued and encouraged by the management in healthcare organization; this could create barriers to organizational improvement because norms of individual vigilance encourage independence/individualism. Therefore caregivers tend to ignore altering the underlying processes.

Unit efficiency – nursing units are designed to maximize individual unit efficiency. This model could lead to an organization where workers do not have the time to reflect upon and resolve the underlying processes when problems arise. The nurses are instead forced to quickly respond and patch problems so they can continue with the task at hand.

Empowerment of workers – has been cited as a solution for quality and productivity problems. The drawback is the removal of managers from the daily work, which leaves the workers on their own, dealing with problems that arise from parts of the organization, in which they have little interaction/dealing with. Managers tend to have a broader perspective than front-line workers and possess a greater status necessary to resolve problems across organizational boundaries. They are also capable of implementing solutions on wider basis (Tucker and Edmondson 2002, p. 11-15).

5.8.3 Solutions

One way of improving the process to catch and solve failures is by implementing a feedback model. As first-order problem solving solves the failure temporarily no real change within the organization is accomplished, on the other hand second-order problem solving seeks to find and address the underlying causes of the failure. The problem is to get the workers to apply the second-order problem solving technique; one way of achieving this is through some kind of management intervention. Several ways for managers to stimulate workers to use second-order problem solving have been identified.

Management support – the presence of managers on all shifts will increase the workers effort to apply second-order problem solving. The managers will also more often be informed of occurring problems if they are available, which can lead to managers being able to examine and support system changes. As second-order problem solving put the workers under a great deal of stress, the method is both time consuming and draining, managers can be of great help in relieving the worker.

Open discussion – for people to learn from their mistakes an open discussion is needed. Workers should not feel afraid to be punished or ridiculed when making their opinions heard. Managers can help this by creating a safe working environment where open discussion is

promoted. This doesn't require the manager to be excessively friendly, but instead the managers could ask workers for their opinion or admit their own faults openly.

Follow through – if suggestions done by the workers are not addressed it will be less likely that the worker will put the effort into second-order problem solving in the future. Managers instead need to respond to suggested solutions to the problems and follow through on these suggestions, which could reduce the occurrence of the problem. If the workers feel that their suggestions will lead somewhere and that they actually see changes the worker will then be motivated to engage in second-order problem solving in the future.

But the effort to decrease the number of failures occurring does not all lie on the managers, the workers share the responsibility to facilitate change. The workers need to take active measures in order to enable change within the organization. Instead of quietly correcting other persons, or the workers own, errors the workers should seek of the person responsible and point out the error (Tucker and Edmondson 2002, p. 19-21).

5.9 Conclusions

Dealing with communicational problems and patient endeavor and to finding out the source of this is of course a huge task and can't be written in one report but there are some things that our research led to. It is also difficult to compare problems in patient treatment between two different countries who doesn't share the same system for healthcare; organization, insurance, social net, and culture. This chapter will try to point out some important things concerning the some of these issues.

Different cultural backgrounds have a big impact on the quality of healthcare provided. Great efforts have been done in order to improve issues relating to quality of patient care and patient relations. The American people have not gained equally from these improvements. Dealing with the problem to improve minority healthcare quality two inventions *Tracking/reminder system* and *Multifaceted interventions* has demonstrated a positive outcome. A great deal of studies of how to improve cultural competence of healthcare providers and organizations true cultural competence training and education have been conducted. They have shown, in general, good evidence that suggest that cultural competence training favorably affects the attitudes, skill/behavior, and increase the knowledge of healthcare providers.

Disabilities have become a huge problem in the US, enormously 54 million Americans has some type of disability according to *the American Association on Health and Disability (AAHD)*. The goal of research in this field is to give the patient the best possible medical care while making sure that the patient doesn't feel humiliated, mocked, or ridiculed in any way.

Sexual discrimination due to gender in the American healthcare has been documented in several studies and it has been shown that this is a wide problem in the medical world. With hospital staff sexual harassing their patients and vice versa. Women getting fewer procedures then men in some medical treatments, their reports are taken less seriously then men etc. Further work will be made to investigate how problem is noticed in the US and what is done to prevent it. By doing this we can learn from their system and use this knowledge in an education purpose for the medical programs in Sweden.

The organization of work in the US has some potential problems with malpractice and this of course affect the quality of patient relations. In studies, two main process failures have been identified: problems and errors. Studies have also shown lack of organizational learning from failures in the healthcare. The solution to this problem could be *Individual vigilance*- a norm that encourages nurses and other healthcare professionals to take personal responsibility to solve problems as they arise, *Unit efficiency* – nursing units are designed to maximize

individual unit efficiency. This helps the nurses to instead focus and quickly respond to patch problem and they can continue with the task at hand.

6 Analysis of the UUH project

This section will cover a description of the system used in UUH. Several theoretical models will be described in 6.1 and these models are later used when conclusions are drawn. After that the general setup of the system will be described in 6.2. In 6.3 investigations will be given to what amount of money and time were invested in the project. Finally some conclusions are drawn in section 6.4.

The project of introducing IT-supported in-service training in the UUH organization is breaking new ground. Earlier in-service training on the subject has been conducted using pen and paper, reading and imaging each user case. One major drawback was that people's understanding of the pictured event could differ quite notably. People within UUH started a project, which was to correct these issues by using an IT-based method where the participants were shown dramatized situations.

6.1 Theory (IT, HCI)

The methods discussed in this section are a way of getting around the large costs associated with usability testing. By predicting aspects of usage, not observing it directly, the methods do not involve expensive user testing and no specialist equipment is required.

Inspection methods involve the inspection of aspects of technology by specialists who have the knowledge of both the technology and the intended users. The focus is usually on the interaction dialogue between the user and the system. The main goal is to find usability problems and to improve the usability of user interface design. The inspection methods used are called usage simulation, heuristic evaluation, and a walkthrough (Preece 1994, p. 671-672).

6.1.1 Usage simulations

Experts handle usage simulation. The behavior of less experienced users is simulated to find usability problems that might arise. These experts do ideally have a broad knowledge of different kinds of systems, as well as an expertise in HCI. The main reason to have experts pretend to be less experienced users rather than employing typical users is has to do with efficiency and feedback. A small number of reviewers can usually identify a whole range of usability problems during a session; furthermore experts are more likely to have constructive feedback about the system.

In terms of efficiency and constructive feedback, reviews appear to be a very attractive method. There are some problems that one needs to be aware of, mainly expert bias, locating suitable reviewers, difficulty of role-playing and the behavior of real users (Preece 1994, p.673).

6.1.2 Heuristic evaluation

Heuristic evaluation is similar to usage simulations, both are cost effective methods usable by small companies that do not have the facilities, time or expertise necessary to do usability engineering. In heuristic evaluation the reviewers examine the system as in a general review or usage simulation, but their inspection is guided by a set of high level heuristics, which guide them to focus on the key usability issues of importance (Preece 1994, p. 676-677).

6.1.3 Walkthrough

The last method of expert review is called a *walkthrough*. The goal of a walkthrough in HCI design is to detect problems early on. A walkthrough involves constructing defined tasks from a system specifications or screen mock-ups. A typical example is to walk through the activities that are required to get from one screen to another. Before the walkthrough is done,

a group of experts determine the exact task that will be done, the context in which it will be done, and an assumption about the user population. During the walkthrough they review the actions that are necessary to complete the task and attempt to predict how the user population would behave. It is in many ways similar to a review except that it requires a more detailed prediction of user behavior (Preece 1994, p. 679).

6.2 The Game

After logging on to the system, the users are taken to a welcome screen. The screen contains user information, a bulletin board and a short text explaining how to get started. There are two menu items in the upper right corner. The first one, menu ("meny"), is partially explained in the accompanying text while the other one, messages ("meddelanden"), is not.

There are also hyperlinks on the start screen that are not visible until the user moves the mouse pointer over them.

This kind of start screen could easily be built up in a more intuitive way. For example, a clearly visible start button would help in this case. The current version of this interface requires the user to enter the menu.

6.2.1 Inside the application

This is the part of the application where the users go through the different exercises. There is no explanatory text here, which is a clear drawback.

When playing a movie, demonstrating one of the eight scenarios, pressing restart ("starta om") or proceed ("gå vidare") generates an error message.

Except for the tick marks displaying which exercises that have been completed, there is not enough consistency when it comes to choice of colors. Some of the colored icons resemble the black/white ones, which could make inexperienced users erroneously believe the exercise is complete.

The sequential running order of the exercises limits the flexibility for the users. Imagine, for example, that someone working with x-ray technology wants to look into the case with the x-ray patient specifically. This group would then have to work all their way through the previous exercises before reaching the x-ray case.

There is also uncertainty surrounding the second part of the exercises ("gruppövningar 2"). What is its function and why must all previous exercises be completed before gaining access to this part?

There is generally a lack of possibilities of returning to the previous screen, especially when going through the exercises and watching the movie clips. Even though it is possible by using the main menu, it would feel more intuitive to have a "back" or "return" button.

After watching the movie clip the users are taken to a screen where they are supposed to choose from numerous different cards corresponding to explanations or sources to the problem visualized. The application throws a dice indicating which user gets to choose one of the buttons. The user also gets to motivate his or hers choice verbally. When all of the participants have chosen one or several explanations to the problem, the exercise is completed and the users are shown a summary of which cards that were picked out. There is also a possibility for the participants to write down additional comments.

6.2.2 The help window

The help window is easily navigated, because of its shortcuts to different sections. This helps the users avoiding scrolling through irrelevant contents.

However, there are parts of the application that are not supported in the help pages. When trying to get assistance for these parts, help text for the closest related topic is displayed instead of the current one. This could confuse the users instead of helping them. If no help text is available, the application should state this.

Finally, perhaps there should be some kind of contact information available, either through the start screen or the help window.

6.3 Time/money invested

The first phase of the project, where the two versions of the patient relations game was developed, started during the fall of 2002 and ended in Mars 2004. The second phase, which is about implementing and marketing the patient relations game at UUH, started in April 2004 and will be finished in Mars 2005.

Financing for the whole project exclusive of staff expenses, which is paid by UUH is made by contribution from SISUS (National Agency for Special Educational Support) and the county council. So far the sum of expenses (exclusive of staff expenses which was 380 000 in the budget) is 381 140 SEK for the first phase, where the main expenses come from consulting of the company Compendium AB and the arranging of theatrical performances. In the budget for the second phase, direct costs are estimated to be 50 000 SEK. More detailed information on the numbers presented here can be found in Appendix 1 in the end of this report.

To summarize everything, the whole project has now been going on for approximately two and a half year and there is approximately three to four months left until it is finished. The total sum of expenses for the whole project will in the end be approximately one million SEK (depending on the staff expenses for phase two). One conclusion drawn from all this numbers is that approximately half of all expenses are staff expenses.

6.4 Conclusions

Although the program is visually pleasing, there are several drawbacks that need attention.

It is mainly the navigation between menus and screens that lacks flexibility and a possibility for the users to enter different portions of the program upon their own request. This problem is due to the sequential running order of the program.

As stated in the previous walkthrough, there is a problem with error messages appearing when trying to control the movie playback in certain ways. However, this problem is more of a pure technicality than a design issue.

Since there is some uncertainty surrounding the menus and choices, a good set of help pages is needed. Some parts of the program are thoroughly covered in the help pages, but some are not covered at all and they sometimes point to incorrect parts of the help pages.

7 IT-supported in-service training

With the new information technology new ways to educate the staff within the company arises. Computer-based learning or e-learning is a good tool to design a course to that makes the course exciting and educating. The benefits and drawbacks of e-learning are going to be presented here.

7.1 Theory (IT, HCI)

It's not easy or cheap to design a good e-learning system and there are many things that the developers have to think about. To get out the most of the system and really take care of all possibilities that the system can provide there are things that the developers have to really think about.

7.1.1 Advantages of computer-related education

In many reports of computer-assisted teaching they claim that computer program used when learning new things, increases the motivation for learning, gives feedback, is interactive, and give the opportunity to individualize the learning process. But there are also critics that say this isn't true. It has been hard to document if computer program can increase the learning process, making it faster and better. (Rognhaug 1996)

Many computer programs give feedback to the user. From research it is known that feedback is important when learning new things. A teacher can of course give a more suitable answer on a question but a computer program can give good feedback of the same question at the same time that it is relatively cheap and very effective. The computers ability to present assignments is outstanding. (Rognhaug 1996)

7.1.2 Individualization of assignments

As it has been said before it is very time consuming to adjust the learning to many people so here the computer programs used for learning new things can be a way to make the learning process easier. But why can the computer program do to make the learning process more effective. For the first it can go slower if the user (the person that trains) needs more time to learn and it can also adjust it's degree of difficulty making the learning process more fun and motivating for persons that has it easy to learn new things. There has to be a good level of how hard something is, it cannot be to hard and it can not either be to easy if it's still is going to feel motivating for the user. (Rognhaug 1996)

New techniques in the form of different types of IT systems create opportunities such as individualization. The ability to adjust the learning process in different types of speeds with various steps of support and degree of difficulty. Decentralized (meaning outspread) teaching is another possibility. This means that it is easier to have self-studies because of the support of a system. If this is going to work the pedagogical help material to understand all systems has to improve and be better. Today many systems are not easy enough to understand. (Cinadler 1995)

7.1.3 Interaction and interactive learning

The interaction between the user and the computer program is often pointed out as essential. They mean that data screen with its visualizations and the sounds that the computer sends out when the user do something in the program has been pointed out as important features to make the user to repeat the practice. (Rognhaug 1996)

7.1.4 Simulation and reality

Through simulation it is possible to give real scenarios to the user. But one has to be clear with that the programs capacity is limited and the scenarios can never be 100 % perfect. The simulation presumes that the user has enough knowledge to interpret the simulation correctly. (Rognhaug 1996)

7.1.5 Consequences of Innovations²⁰

Adopting or rejecting an innovation may lead to changes for a single individual or an entire social system. These changes are defined as consequences. They are unpredictable and bring uncertainty to the diffusion process. An important job for change agents is to take responsibility for the consequences of their innovations and try to identify them before introducing them to future users. (Rogers 1995)

Consequences are multidimensional and can be classified according to their different forms. Three important dimensions are whether consequences are desirable/undesirable, direct/indirect, and anticipated/unanticipated. (Rogers 1995)

Consequences that are *desirable* and *undesirable* are the functional and dysfunctional effects of an innovation for an individual or a system. To distinguish between the two, the effect on adopters and others in the system has to be analyzed. The socioeconomic gap between adopters and rejecters can be widened, as rejecters are affected by increased benefits for adopters of an innovation. For maintaining a system, respect has to be given to its certain qualities and socio-cultural elements, such as maintenance of individual respect and dignity. An innovation that is functional for a system may not be functional for certain members of the system. Depending on whether individuals or systems are in focus, the consequences are desirable or undesirable. Early adopters may experience desirable consequences of an innovation, whereas later ones experience the opposite due to being forced to adopt. Early adoption is risk-taking, as not all innovations are bound to bring benefits. It is close to inevitable to avoid that an innovation will cause both desirable and undesirable consequences. Advantages of new technology, such as increased effectiveness, are up against such disadvantages as changing social values. Consequences that take place immediately after an individual or a system's adoption of an innovation are *direct*. Consequences of direct consequences of an innovation are *indirect*. Known and intended changes that occur as a result from an innovation are *anticipated consequences*, while unknown and unintended changes are *unanticipated consequences*. (Rogers 1995)

There is interdependency between the elements of a system that will effect the introduction of an innovation. To perform an optimal diffusion, full understanding has to exist about the functions of an innovation and the focal system's internal and external forces. Uncertainty of an innovation usually motivates individuals to seek information about it and its expected consequences through interpersonal networks. The information that peers give about an innovation often concerns desirable consequences, direct and anticipated. Innovation information about undesirable, indirect and unanticipated consequences is evaluation based and can only be obtained by the individual him- or herself. Change agents also have difficulties in informing about unanticipated consequences before adoption is done by many. Adoption of an innovation is more likely if the individual is well informed, but uncertainty never completely disappears. (Rogers 1995)

7.1.6 Form, Function, and Meaning of an Innovation²¹

The physical appearance of an innovation is the *form* and it is directly visible for any individual. The effect an innovation has on the members of the system where it is diffused is

²⁰ Sandra Brolin, Kristin Johansson, email December 2004

²¹ Sandra Brolin, Kristin Johansson, email December 2004

function. All members of a social system percept an innovation in different ways; its *meaning* varies for each one. Change agents generally cannot understand and anticipate the social meaning an innovation will have. If a desirable innovation is not used the way a change agent intends it to be or under different circumstances, consequences can become negative. (Rogers 1995)

7.1.7 Achieving Dynamic Equilibrium²²

How much change can a system go through with in order to gain maximum benefits of an innovation, without creating an uneasy environment for change? Stable equilibrium, dynamic equilibrium and disequilibrium are three different states possible for a system. When a minimum amount of change takes place in a social system there is *stable equilibrium*. When the change occurs at a rate that a social system can deal with there is *dynamic equilibrium*. Finally, *disequilibrium* is a state of a social system when the rate of change is so fast that the system can not adjust to it. This state in a system does not encourage change, as it is way too troublesome. The optimal situation for a system is to have dynamic equilibrium. If innovations are introduced at a rate adjusted according to the characteristics of a particular system, this can be achieved. (Rogers 1995)

7.1.8 Equality in the Consequences of Innovations

In the diffusion process, the consequences of innovations are affected by with whom change agents are working. The consequences contribute in increasing or decreasing equality among members of a social system. Introduction of new ideas widens socioeconomic gaps between early and later adopters, and individuals with high and low socioeconomic status. Three major possible reasons follow: First, innovators and early adopters usually have a more genuine interest to find information about new ideas and more resources to bring them in. Second, change agents focus on innovators for new ideas, who will continue diffusing to peers on the same level in the systems interpersonal communication network rather than to others down the hierarchy. Third, the gaps grow even bigger when innovators keep receiving incentives for adopting innovation at an early stage. If strategies are developed to stop the gaps from widening and even narrowing them, the degree of equality in a social system could increase. The average effects of a communication activity when diffusing an innovation can be measured a change in knowledge, attitudes or behavior among individuals in a system. Further, the equality of the effects – the difference in effects between individuals – of communication has to be assured. The differences concern increasing or decreasing socioeconomic status, innovativeness or knowledge. (Rogers 1995)

How an innovation is diffused and in what type of social system structure partly determines how much inequality its consequences cause. If an innovation is introduced in a system with an already unequal social structure with wide socioeconomic gaps, it is probable that the consequences will increase the inequality even more. That is, the adoption and impact of an innovation is related to the characteristics of the social system and the individuals. (Rogers 1995)

Change agents can use different strategies to prevent gaps from widening when innovations are introduced in a social system. In order to help lower-socioeconomic members in catching up with innovators regarding adoption,

- Innovators are given redundant or uninteresting information in between.
- Communication messages are created with their attributes in mind, to be addressed directly to them.

²² Sandra Brolin, Kristin Johansson, email December 2004

- Barriers to receive essential information are reduced by using communication channels that suit them.
- They are to be organized in groups enabling discussion and learning about innovations
- Change agents address late adopters directly and will thereby gain their trust and credibility as information sources.

To encourage communication between individuals at different levels of the socio-economic hierarchy,

- An opinion leader for the lower-socioeconomic members is to be identified for managing contact with change agents.
- Change agent aides among the lower-socioeconomic members are to be identified for informing peers about innovations.
- Lower-economic members are grouped to socially strengthen their decision-making process.

To overcome economic barriers in innovating for lower-socioeconomic members,

- Innovations that solve their problems directly are recommended.
- They are to be allowed adopting more expensive innovations by creating a social environment where resources are granted.
- They are involved in the planning and execution parts of the diffusion process.
- Change agents are to concentrate on them and meet their special needs. (Rogers 1995)

7.2 E-learning theory in practice

E-learning is defined in many ways. The one we have chosen in the project states as follows.

“Education via the Internet, network, or standalone computer. Network-enabled transfer of skills and knowledge. e-learning refers to using electronic applications and processes to learn. e-learning applications and processes include Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM.”

Reference: Glossary of e-Learning Terms </www.learnframe.com/aboutelearning/glossary.asp> (2004-12-03)

When you first think of e-learning you just think of a person sitting alone in front of the computer. This image is not totally true, developers of e-learning systems would like to see e-learning is a complement to traditional education and a new way to enhance the education. With e-learning the company can bring groups of people together and the groups can collaborate by sharing files and build learning communities.

The thought of e-learning is that it not only should support formal learning , like a course but also support learning on-demand. This is because when an employee needs some information when they have to solve the problem, the workers don't have time to wait for a course to take place. The e-learning system should then provide information in small chunks that does not take long time to read through.

With these basic ideas of e-learning we have contacted a company that produces and sells e-learning solutions. They have come up with some ideas that make a good e-learning system.

7.2.1 Adjust the system to the reality

The user should recognize herself and thereby gain experience of the knowledge the user already possesses.

If you work with examples from the reality the user understands, they don't have to learn the environment the system is located in. Instead the students can focus on the material in the course and learn faster.

7.2.2 Start from the work task

If you start your design from the students work task when constructing examples and exercises, the time the student has to interpret the material to the students own work is reduced. If the student has a possibility to practice in an environment that is similar to the reality, the knowledge experienced from the training is faster implemented in the real work. With this approach you have to think twice before introducing an area of subject that does not have any purpose for the student.

7.2.3 Reuse information

The main purpose of reusing information is to not waste work hours to write down knowledge that is already present in the group of students.

This approach may be obvious but a lot of information and documentation is rewritten when it is implemented in the e-learning system. Instead try to specify the source of the already known information, e.g. company policies and documents. If the e-learning system is constructed in a web environment it is easy to link documents.

7.2.4 Let the individuals need control

Every individual have different experience and different knowledge in the subject. In a traditional way of learning the course is made as broad as possible.

When dealing with an e-learning system there are new possibilities to adapt the education to the student. The student can choose when to do the education, in what speed, how much and in which order. The student can omit knowledge he already possesses or knowledge he doesn't have to learn. A prerequisite for the student to adapt the course to his needs is that the student knows the goals and purposes of the education. Hence the goal of the education must be well explained. It should be easy to choose in which order the student takes part of the e-learning system and the user should not be governed by the system in what order the student chooses to do the different tasks.

7.2.5 Modularization

If you modulate the system it is easier to develop and maintain the contents of the system. Modularization comes naturally if you facilitate for the user to choose preferred parts of the system. The developer has to construct relevant modules and each module got to have one purpose not many. It is easy to maintain a system built in modules because it is easier to update a course by creating a module and remove a module rather than rewrite the whole course. When using modules it's also possible to "upgrade" the system with animations if the system just had text information from the first time.

7.2.6 Make the system searchable

If the system is searchable it facilitates for the student to go back and revise information before new tasks.

7.2.7 Create a dialogue

When creating a dialogue between the teacher and the students, existing experiences within the student group is taken care of. In a classroom this comes natural, but with an e-learning system it does not.

To create a dialogue in an e-learning system you could mix the computer based lessons with lessons in a traditional class room or you could provide the e-learning system with a forum or a “coach” that the students communicate throughout the course with.

7.2.8 Conclusion

There are many factors that decides how the e-learning system should be constructed the subject, the target group, the budget and the time amongst others. But it is important to remind that the most important is that the students get the most effective education. It is about showing respect for the student’s time, their experience and their work situation. It is easy to focus on the subject instead of the students needs or to be too theoretical and there by give the student responsibility to convert the knowledge into practical use in the student’s everyday work.

7.3 The Swedish RA-archive

There are a lot of examples of other web based technology systems concerning the medical sphere and which are used in medical purposes at hospitals and clinics in Sweden. One of them that are widely used with great success is the Swedish RA-archive. Here is a short review presented that briefly describes how the system is constructed.

Rheumatoid arthritis is a non curable joint disease that is continuously treated with various treatments depending of the conditions of the patient. The goal of the web-based rheumatoid arthritis archive is to make sure that high quality standards are met in various treatments of this disease. This is done by continuous gathering of data regarding both results of prior treatments, about current status of the disease and about prescribed treatments in a constantly repeated cycle of feedback and progression. The archive also gives feedback to various levels in a hospital environment for constant improvements.

The RA-archive has, by putting many resources on developing the archive nationally, tried new paths on how an archive can contribute to quality development to everyone in all kinds of hospital environment. The concept of quality is not only about the life quality of the patient. The doctor or physician also need to have a way of measuring his or her quality by seeing the prior prescriptions given to the patient, and side effects of the drugs used by the patient. The archive also gives quality for medical administration that has a way of measuring the effects of different drug prescriptions. This information can be used by the administration for both economical and organizational planning. With the help of the RA- archive, politicians can analyze health issues through an economical stand point.

7.3.1 Which strategic choices have been concerning the RA-archive?

The Swedish health care system is dependent on many medical and social institutions; therefore the decision was made to work together with all the different institutions. New ideas in organization management and the latest technology is used to develop the system

7.3.2 Quality?

On the issue of quality, they come to the conclusion that the goal of medical care is to create a good general health that is equal to all – the quality is to be increased for patients and the general public first and foremost. The quality is created in the interaction between patient and physician. Because of the fact that the patient is the most important participant, and the others support the medical care, there are lots of common views on what quality is. The question of

how the general quality can be approved is the fundamental question and to answer it, one needs to define quality. If you don't know what defines quality, you cannot measure it. Because of this, measurements are required, so called "quality indicators", which can give measurements of increase or decrease of quality over time. The help of these measurements can successfully achieve progress, locally and nationally.

7.3.4 Which paths have been tried?

- Reporting through Internet to increase the coverage
- Patient involvement in reporting visits and treatment data
- A register for exercises on-line that can be used by anyone with a computer and an Internet connection.
- Three different time-charts for quality

7.3.5 How have everyone in Health Care been reached?

The patient, who is the most important part to reach, now has the opportunity to be a part of the work of the RA archive. For the meeting between the patient and physician to work smoothly, there are many support processes that are run by different players in health care. During the course of many years, the RA archive has worked together with all of them.

7.3.6 Which benefits has been achieved nationally?

The biggest achievement of the RA archive is the climate of cooperation that has been developed between different departments that are a part of the RA archive as well as different players in health care that are interested in quality progression.

7.4 What is the future vision of the RA-archive?

The "founders" of the RA-archive still have big ambitions about the future of the system. The many goals set, are not yet achieved. There is still a lot to be done concerning the development of the archive.

7.4.1 Practical- and organizational issues

In 1995, the idea of an archive for rheumatoid arthritis for better quality was born; the idea came from the existing archive called BARFOT that is an archive used for research relating to rheumatoid arthritis.

7.4.2 Organization

When the Swedish RA archive went from an idea to reality, a strong control-group comprised of a number of powerful people within the rheumatoid arthritis health care. Some of the people in this group are senior doctors within the RA discipline with a strong will to create good quality where the RA archive is considered to be the best tool. Furthermore, the members of this group have good connections, directly or indirectly, with different institutions that make up the Swedish medical care, such as the county council, which is an institution that works locally in different provinces in Sweden, other organizations and the medical products agency. This network of connections is vital to the marketing and the influence of the RA archives future expanding and penetrations in the country.

The groups' main goal was to create an organization with a wide knowledge and a passion for quality for medical care. In this organization, there is a great knowledge in the area of RA that can ease the development and creativity, the technical knowledge makes sure that the system works the way that the users want it to and that the archive is compatible with the latest technology. In the RA archives organization, there are individuals that were active in the

beginning of the systems development. These individuals can teach new participants in the RA archive to become experts with just as much knowledge. Because of this, there will be no decline of knowledge over time when the archive expands across the country. This procedure of using people with greater knowledge than is necessary creates an ease in the transitions of the responsibility in the registration of the Swedish RA archive.

7.4.3 Quality for all

When the RA archive was under development it came apparent that if the archive could create quality for a great number of people, and not just for those that come in contact with the RA medical care on a daily basis, the penetration would be much greater. Furthermore, if the RA archive could achieve economical success, this penetration would be even greater. This led to the design of the system to be designed in a way that made all the participants in the RA medical care, such as hospital departments, medical managements, county council and medical products agency, can see the economical improvement as well as other improvements in quality.

7.4.4 Progressive development

The RA archive has been developed in different stages; this has been done to secure the money that was needed. Every big project requires much money and to get this requires frequent reports of achievements as well as a reliable plan. The stages consist of developing stable easily manageable sub-functions. The functionality has then been developed further to more complex special features, such as feedback with statistics. The RA archive has from the beginning appealed to independent departments in hospitals, and has then moved more towards developing functions and connections to other parts outside the departments. One example of this is reporting side effects to medical products agency.

Because of the fact that the development has happened in different phases, the RA archive has presented a wide and stable to the financers. This way of working makes the development slow but good from a financial point of view.

8 Prototype

The prototype of the patient relation system will describe how to resolve the problems that have been found in the system available today, but also introduce a way to make the system available and usable for medical students. The prototype will also try to describe where missing elements such as feedback, administration of the system and adjustment to different user groups come into consideration.

The evaluation of the existing system has pointed out certain elements that should be improved in a new prototype. There has also been evaluation of areas not covered by the system today. First, there has been research about how the system today could be adjusted to more specific user groups, especially medical students, but also different target groups within the hospital.

One topic for discussion has been feedback to the system so that it is possible to update the system with new results from the participants. Another topic has been to investigate if there are any benefits of making the system today, or the prototype in a distributed environment. A last topic has been to evaluate how to improve the interactivity of the system available today.

Together with Dr. Gunnar Frostfeldt, co-responsible for the development of the new medical doctor program, some ideas were derived about how the system could be designed to be used in the physician program. This system could be used in a course called "Patient-doctor relationship". The first prototypes for medical students were created from these ideas. Medical students then evaluated the prototypes during different test sessions. These sessions led to information about how to modify the initial prototypes. Evaluation and comparing between the prototypes and another learning tool WebSP created for medical students by Uppsala Learning Lab, pointed towards the conclusion that the ideas behind the prototypes are good material to build on.

8.1 Prototype model

In the work with evaluating the existing system and identification of new areas and possibilities for a new prototype, several parts have been found that in one or more aspects interact with each other. Overall, three main areas have been identified. First, a new prototype for medical staff, changed compared to the system existing today. Second, a prototype for student education and third, general elements that makes the common foundation for both prototypes.

The general elements that make the foundation for the both prototypes are:

- **Information.** This information is all content that is used by both prototypes. It consists of movie clips, theory, questions and other material that both prototypes will be using.
- **Feedback control.** A tool to make results and new information from the education sessions available for extending existing information.
- **Administration.** A tool to administer both existing and new information from the feedback control.
- **Adjustment to different target groups.** It should be possible to adjust the information and the contents of the system to different groups, both students and special target groups in the medical staff.

These general elements are the foundation for the prototypes but most important, these general elements should be designed so that both prototypes can rely on only these elements in order to work efficient.

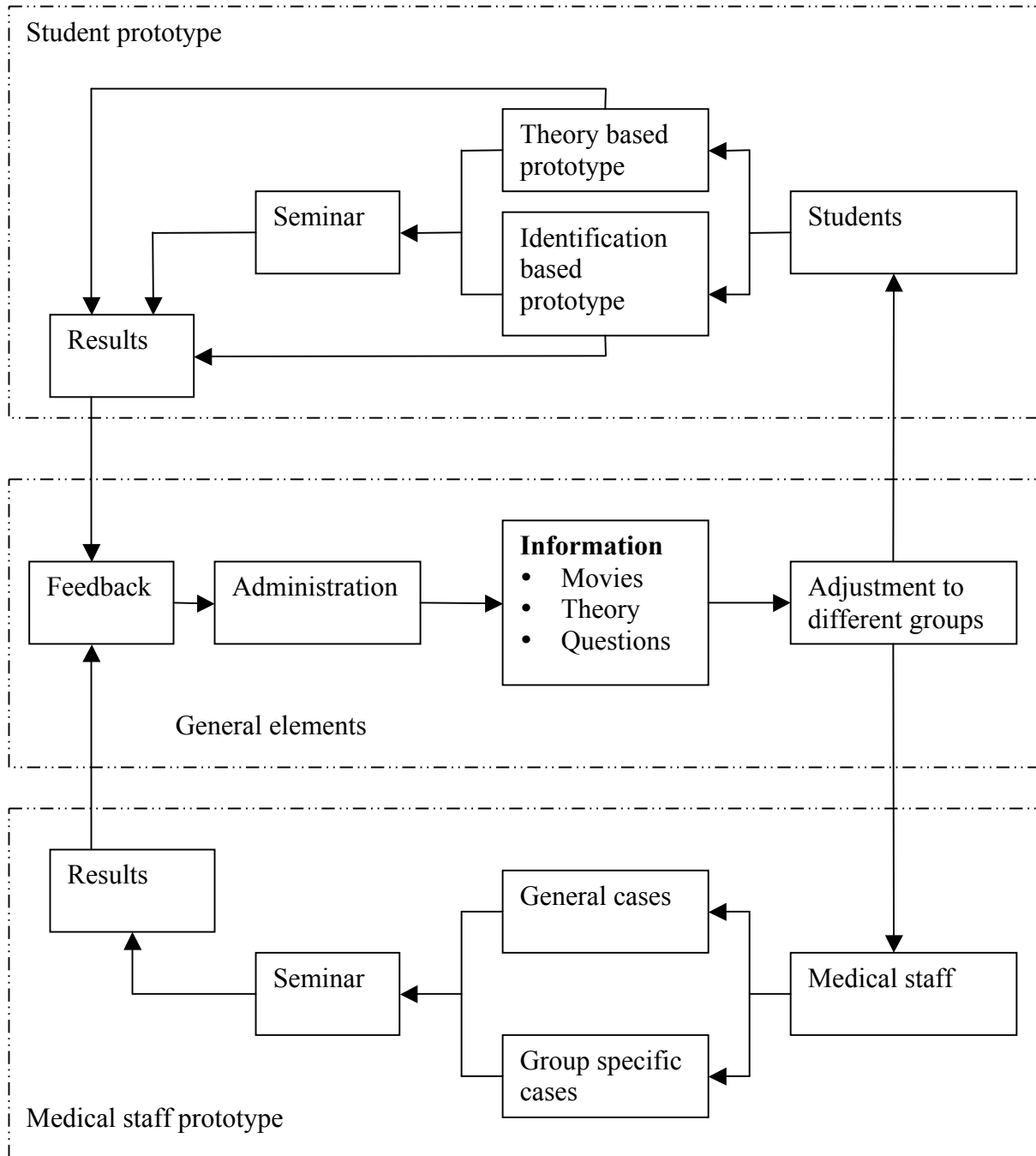
The prototype for medical staff will be designed to suit their needs and in a good way make sure that the goals of the education are fulfilled. In the prototype, two different types of scenarios are available; general cases that all staff can study and discuss and group specific cases that are adjusted to a certain group of medical staff.

The main idea about this prototype is to design it to be a tool for a discussion/seminar leader that leads to discussions about different scenarios.

The prototype for student education is designed in two parts, where the first is a guided education that gives the student relevant theory and background information about the scenarios and the problem in general. The first part has less room for extended discussions.

The second part is identification based, where the student uses the knowledge learnt in the first part to on its own identify and discuss problems and solutions about a specific solution. This part will be used in combination with discussions/seminars in similar way as the prototype for the medical staff.

In the model below the intended model is visualized with all the different parts and how they are related to each other.



The model shows the general elements that are central for both prototypes. It is important that these are designed so that they can be used by both prototypes. It is also important that the prototypes are designed to leave feedback with the general elements, which can then be used in either prototype. In this way, the information that the system is based on can be improved as a whole by either of its parts.

8.2 General elements

In the model in the chapter above there are some general elements used by the two systems: the system for medical staff and the system for medical students.

8.2.1 Feedback

The system today does not have any features to save results from the discussions. Therefore, it is difficult for the system to evolve in time using the results generated by discussion. These results from discussions could be cultural differences, differences in age, genus perspectives and more factors that the creators of the different cases did not have in mind when they first created the cases. When these results can be saved and used later, it is possible to improve the cases and the system so that the education can be even more useful.

In order to have a system that is able to evolve, it is important that the system can use results gathered from the users [ref.]. In this case, this will be done using a feedback database where results from discussions and user input are saved. The database should be able to save and present important and interesting results for both users and administrators of the system.

The feedback database should be a general element since it should be able to use data generated from all discussions without dependence on which of the two systems the result comes from.

The goals of the feedback system

Feedback from users of the patient relations game provides the opportunity to develop the system and to continuously extend it. Participants who come up with new ideas for scenarios or changes of existing scenarios should be able to present and document them through the feedback system.

The feedback system will provide the possibility to continue discussion of scenarios presented during sessions. Participants should have the opportunity to publish their opinions and get feedback from other people involved in the patient relations game.

During the game it should be easy to take advantage of the documented information. Participants should be able to see how other people have viewed the subject and use these ideas to stimulate their own discussion.

Input

After a session the game leader should somehow keep records of interesting discussions, new aspects of problems, and eventually new scenarios that occur during the session. Participants of the game could also keep records of any aspect that interest them. This should be totally voluntary to keep the patient relations game on a casual level. New suggestions for reference material that have been discussed during or after the sessions should also be made available to other groups.

The information that is published should not be a summary of what has been discussed during a session. The idea is that interesting material that can incite discussion and that can be useful for other groups should be published. That means that material that is put in the database doesn't have to cover the whole session, but that one or more interesting parts can be published.

Recording input during a session should not be recommended because it can disturb the ongoing session. Notes can of course be written down during the session, but publishable information should be put together after the session.

The information to be published can be presented through different channels. Examples include e-mail, web based forms, audio recordings and so on. To avoid further administration, a web based form that directly interacts with a database is the smoothest approach. The database can be directly linked with the web based version of the patient relations game. Then the information can directly be put in to the right scenario.

The ideas presented here are based on that all material is saved in text form. Other alternatives can be audio- or video recordings. However, these alternatives are hard to implement in a smooth way. A lot of editing has to be done to present non-textual information in a usable way.

Storage

The problem with producing, gathering and storing discussed material is that it needs some sort of administrative oversight in order to be useable. The database for feedback should function as a forum where ideas and opinions about scenarios are published. If participants of game leader come up with new scenarios or new angles of existing scenarios, the feedback system should support the incorporation of these.

Since classification of gathered data is a labor-intensive task, the database should be designed so that the game leader or the person that submits the information should be able to choose where the information should be stored. That means that if a user wants to store something for scenario A he/she should decide that it is stored under the scenario A section of the database. An administrator should have the rights to change the classification in the database if necessary.

Visualization

While playing the patient relations game, the inputs that have been made should be accessible. The game leader and the other participants should be able to see the inputs that have been entered in the database before, during, or after a session. To make the system easier to use, the inputs should be categorized. For example should it be made clear what input is; if it is a new angle on the scenario or if it is a suggestion to a solution? This way the information is more accessible during the course of the game.

Some of the information, such as suggestions of new scenarios, is not directly associated with an existing scenario. This information is more aimed at the administrators and developers of the patient relations game as grounds for adding new scenarios to the game.

8.2.2 Administration

Another good feature is the ability to update the system easily. The administrator of the system might want to update the system by using data that the users have entered. Therefore, it is a good idea to store the information in an easily accessible database. For example, the students might come up with answers and approaches that are correct, but not mentioned in the system. Therefore the administrator needs to be able to browse the database for new approaches to problems that are not supported by the system and use this information to update the system. Also the teacher can use this information to check the general knowledge of the students or for grading individual students. This data can be used to recognize weak spots in the student's knowledge about the subject. Using this information, the teacher can plan his lectures to focus on different issues.

8.2.3 Adjustment to different target groups

There are different needs in all the different units at the Uppsala University hospital. This should be considered when developing a new system prototype. For example, at the children's

hospital the interaction includes communication with the child (patient), while most patients are adults at the neurorehabilitation unit.

When dividing the hospital into smaller target groups, it is not adequate to do this according to professions. Working teams often consist of different professions. The general patient relation cases in the game are primarily based upon different patient and relatives situations from all parts of the hospital. Dividing target groups according to hospital departments instead of professions would in this case be more appropriate. However, a hospital department could consist of many different clinics. The children's hospital, for instance, has many separate departments and clinics. Another important factor is that some hospital clinics do have more problems concerning patient relations than others and therefore a greater need for the game. The need for better patient relation also has to do with the number of patient visits, and whether it is about a scheduled next visit or an emergency visit. For example in the emergency ward, stress and a high flow of patients effects the communication. The patients and relatives interact with medical staff that they perhaps have not met before. Likewise the medical staff interacts with new patients all the time. This differs from other departments where the patient visits are scheduled and the patient has been in contact with the medical staff before. Departments that must handle unscheduled patients, share some needs to discuss patient relations.

A part of the game should be adjusted to different target groups. There are general interaction problems in the hospital, and therefore the game should consist of some base topics, discussed by everyone. But when a topic concerns everyone in an organization, they all have a distance to it. An adjustment where the discussion is closer to the different working environments would result in greater benefits. This could result in discussions where the participants are more committed in addition to making them feel that they have gained more from the discussion.

The leader of the education game should be able to choose cases that are suitable to the discussion group and their environment. By doing this, the leader of the game can develop new sessions for each discussion group. The web-based version should also support this. The interface ought to be redesigned so that it allows the leader of the game to build their own sessions. The cases could be chosen from either a general part or a specific part that is adjusted to specific units at the Uppsala University hospital. The important issue is that the discussion group should not be forced to discuss the cases in a certain order, and instead be free to choose what case they want to discuss.

The most efficient way to attack the patient relation problem is to adjust at least some part of the education game to different target groups. No matter how the target groups are defined, the goal is to adapt the game according to different needs. As mentioned before, there is no obvious way to define the target groups, but preferably it should be done within the hospital organization.

8.3 Prototype description for medical staff

The prototype for the medical staff is based on the fact that the paper version of the existing system today works rather well, and therefore can be a system to build an extended prototype on. A main goal of the prototype is to generate extensive and thorough discussions between the participants of the educating session. The paper version of the existing system relies on a game leader, and the prototype will use a similar approach.

The prototype will be a tool for the game leader, instead of a computer based tool for each participant. The prototype will be a "scenario presenter" where the game leader, chooses a

scenario, gives the participant background information, show the participants the scenario film clip, and after that have a set of ways to start a discussion about the scenario.

An important feature of the prototype is that two types of scenarios can be presented: general and specific scenarios. General scenarios are the scenarios in the system today, while specific scenarios are created towards special target groups, e.g. a certain department within the hospital.

The leader of the education game should be able to choose cases that are suitable to the discussion group. By doing this, the leader of the game can develop new sessions for each discussion group. The cases could be chosen from either a general part or a specific part that is adjusted to specific target groups.

When choosing a scenario, the prototype will provide information about initial background information about the scenario, but will also have more information:

- Different problem approaches to the scenario
- Leading questions to start the discussion
- Follow-up questions that address certain detail discussions regarding the scenario
- Extended information about the scenario where the prerequisites of the scenario can be changed so the participants will have to handle the scenario from a different perspective
- Follow-up questions for the different extended prerequisites.

The big difference from the existing system today is that only the game leader has to interact with the system. The participants do not have to interact with the system since it more is important that they focus on evaluating the scenario and by discussion come to relevant conclusions.

Because of the type of discussion based sessions, it is important to create a way to have the participants to reflect about their conclusions and have them to give feedback about the session. In order to collect the most important results from each session, a final reflection will be introduced where the participants hand in important results about each scenario, as well as general reflections to the game leader. The game leader will then put these results into the feedback control.

8.4 Prototype description for medical students

The prototype intended for students has to join theory with questions about patient-doctor relations. This is good for educational purposes and to help the users to ponder all possible angles in the cases presented in the prototype. A mix between theory and questions is essential to a system created for educational purposes.

Dr. Frostfeldt saw the possibility that this system created with the right features would help in creating a more uniform course that would be less dependent on the teacher and more standardized, regardless of who is teaching the course. The first step will be to lead the student to the most suited answer and give theory and guidance along the steps that are taken. There are no rights and wrongs in the doctor- patient relation problem; however, there are answers that are more right than others. Therefore it is needed to create a system that evolves with new ideas about how different problems correspond to a certain situation.

The main problem with developing this system will not be the technical design. The problem will be creating the complexity with how the theory and questions have to be built to force the

students to ponder every angle, and at the same time provide the student with surprises to increase motivation. Two different prototypes will be presented in the next two chapters.

8.4.1 Theory based model

The theory based model is a prototype that creates an interactive system that provides the student with a basic understanding for the theoretical problems behind different scenarios. The intention of the prototype is to provide the student with the appropriate knowledge to handle problems involving patient relation. This is done in guided steps where the student chooses a problem approach to the specific scenario and is then presented with the background theory of that approach. When all scenarios are worked through the student will be prepared to analyze scenarios without guidance from the system.

The theory model in steps:

First, the user will be shown instructions about how to use the system. In the top left corner there is a video screen where the user can play a film clip of a scenario between doctor and patient. The user should be able to pause, stop and replay the film clip.

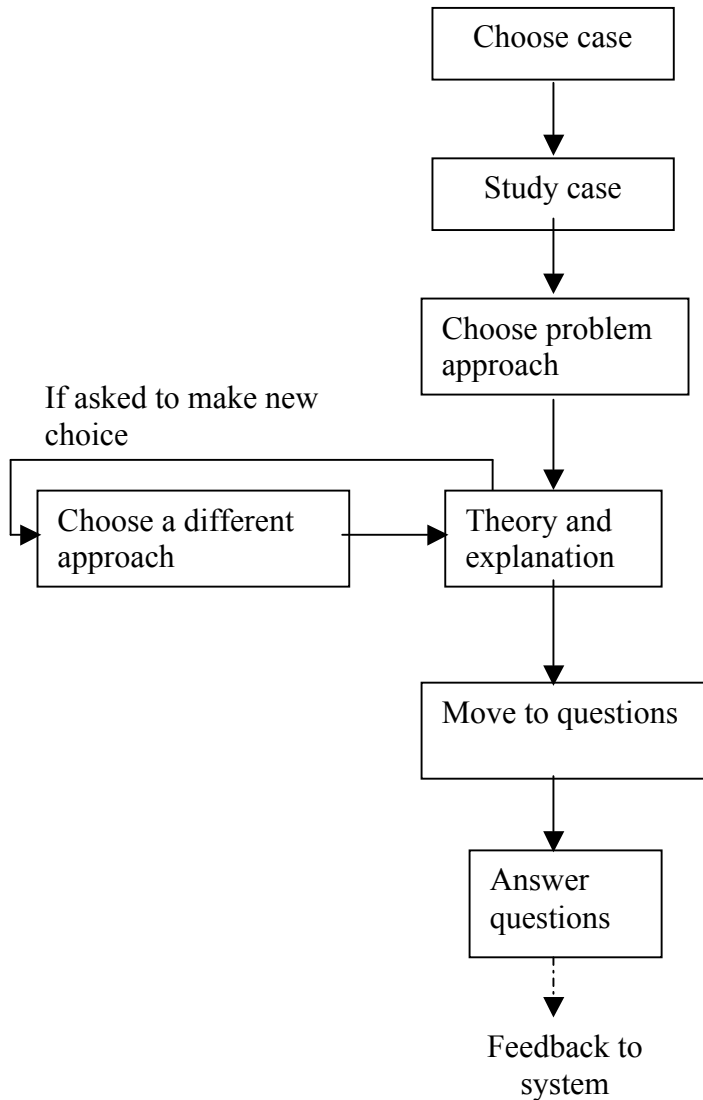
After watching the film clips the user is prompted to choose a problem approach to the scenario. There are four different approaches to choose from.

If the user chooses a less correct one, some theory will be displayed. Also the system will discuss why the user might have chosen this approach, and guide the user towards thinking about the problem in a different manner. For example, the system might ask the user to watch a certain segment of the film clip more closely and then choose another approach. This will give the student guidance without telling the answer.

If the user selects the most appropriate answer, some theory that will broaden the student's insight of the scenario displayed.

The user will be presented with extensive questions about the case so that the user will have to reconsider some approaches not available in the film clip.

The user then continues to the next movie clip.



8.4.2 Problem identification model

The idea with this prototype is to make the student reflect on different problems that might occur in doctor-patient scenarios. By letting students make their own reflections about the reasons and solutions to specific problems in a scenario, the system does not set boundaries for “correct” solutions. This design creates good characteristics for further discussions and an opportunity to see new solutions to problems with patient relation.

The identification model in steps:

A film clip on a doctor- patient scenario is displayed to the user. This film clip can be watched at any step in the system.

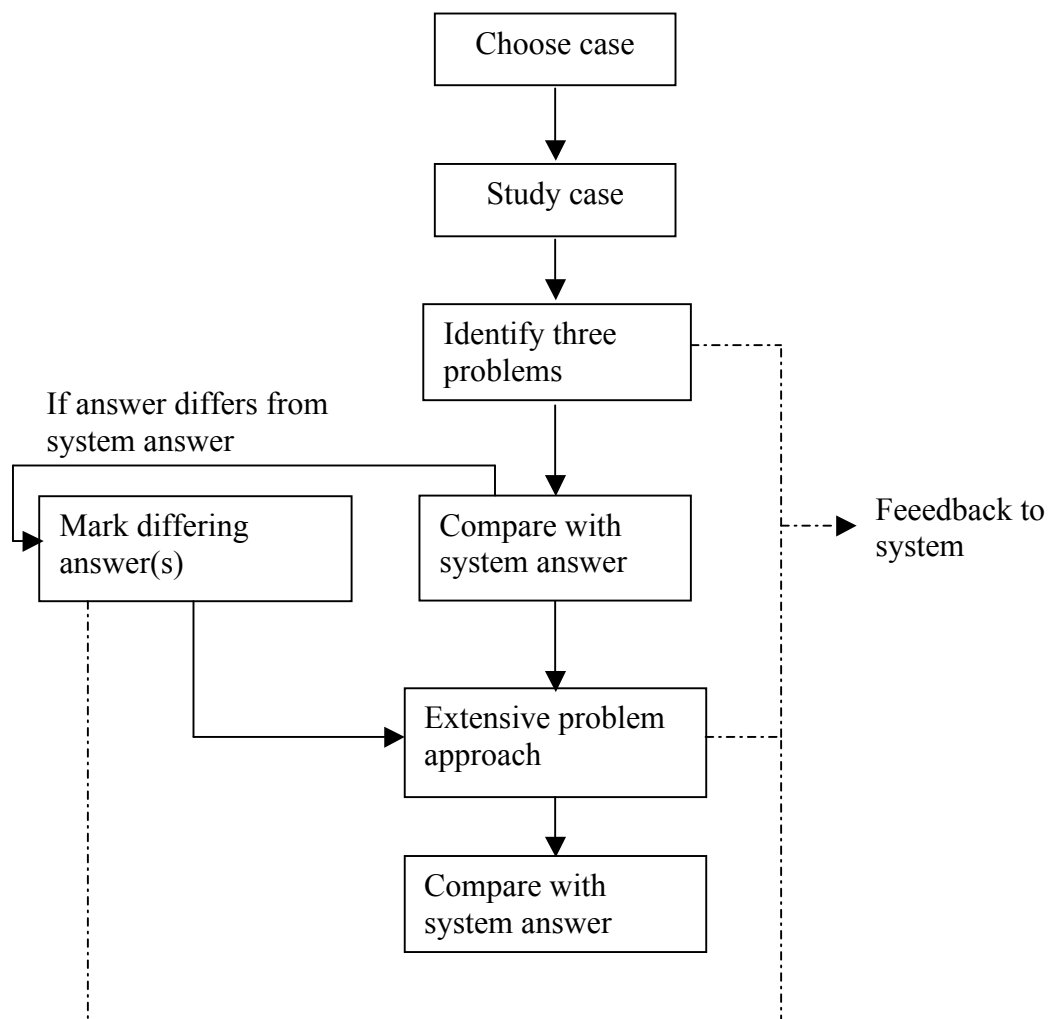
The user is prompted to identify three unique problems associated with the scenario shown in the film clip. Three text-boxes will appear on the screen where the user is asked to write a few sentences about the problems in the scenario that was identified. This will give the user a chance to reflect on different approaches to the problem. This is important since there is often not only one correct answer.

In the next step, the system answers will be displayed together with the answers that the user has entered. This way, the user can compare the different answers and identify the

similarities. The systems answers consist of three approaches to the problems of the scenario. If the user now feels that its answers are also correct but the solution is not mentioned in the system answer, the user is prompted to mark this answer with a check box.

In the next step, the user should come up with ways to handle the situation in a better way. The user enters a few sentences where he explains how the doctor should have acted to e.g. avoid offending the patient. This will make the student reflect on how the situation can be dealt with in a different way.

In the next step, the user will be shown the system solution to how the doctor could have handled the situation. This will make the student reflect on things not thought about and maybe he/she will discover that his answers are completely different from the given answers. The answer from the user will be saved for further use.



There are two reasons for marking answers that the user feels are correct. Firstly, it will be useful for the development and update of the system. For example, many users claim the problem in a scenario is based on issues relating to age. This might be an approach that the administrator of the system has not considered before. From this data, the administrator can update or change the system, using input from the students. Secondly, the teacher can look at this data and recognize that some errors are frequently made by the students and address this problem in the lectures.

By storing all the data in a database the teacher can look up the answers to be sure that all the students have done the exercise. It is also possible for the teacher to see how well the students have answered and the results might be used to grade the students. The system could also be used as a minor exam or assignment.

8.4.3 Evaluation of the prototypes

During development of the prototypes, a decision was taken to evaluate them together with a test group of students at the medical institution at Uppsala University. In this way, feedback on early prototypes would contribute to prototypes that suit the education of medical students.

The test sessions were set up as short walkthroughs of the existing system and a short analysis and discussion. The prototypes were first presented on paper-basis to make the test group feel that they were participating from the beginning. The final part of the session was a presentation of the designed prototypes where the test group pointed out changes that they felt necessary.

The theory based prototype was the prototype that received most negative response. The biggest issue is that the prototype has too much guidance towards what is the most appropriate solution. The students felt that this was an issue that should be changed since they felt that there is no single correct answer in patient relations.

A solution to this problem can be that whenever a user chooses an approach, a follow-up question is asked to the user to make the user reconsider another solution and by pilot the user through all theoretical aspects. Another way to increase involvement and, in a way, to surprise the user is to change prerequisites of a scenario and/or change the symptoms of the patient. The evaluations pointed out that, if the prototype manages to handle some of the clinical aspects, it is easier to point the user towards a more correct answer in set of solutions.

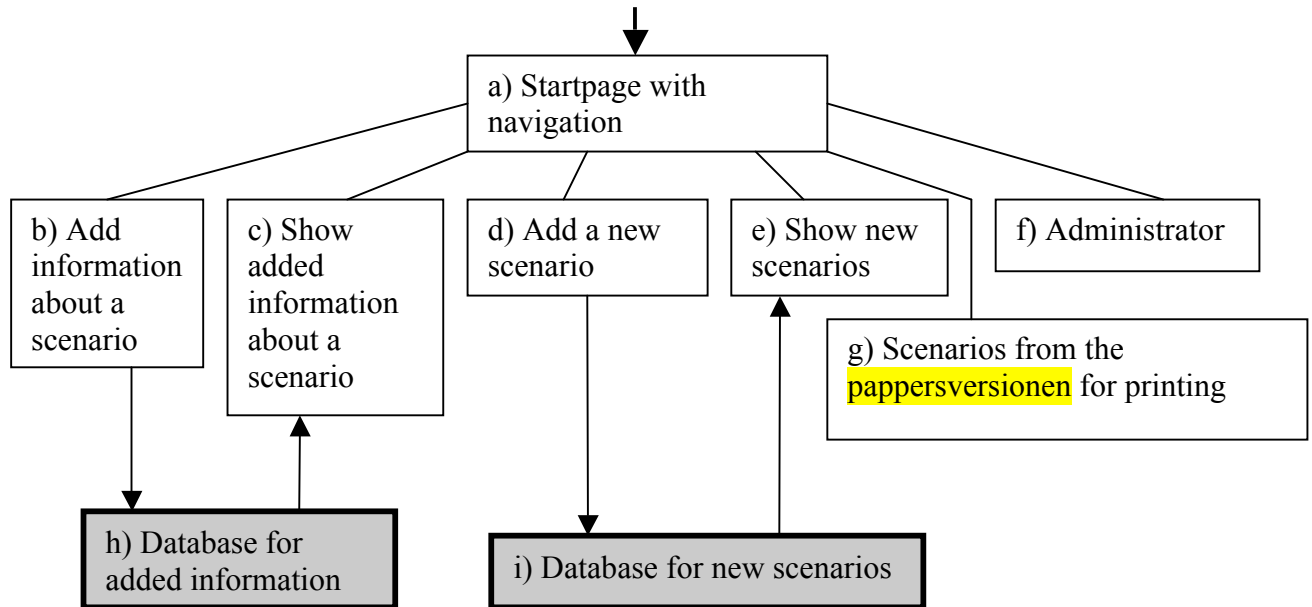
The identification based prototype received positive response. The test group was of the opinion that it was a good feature that the user was able to make the solutions in an order of precedence and in that way find the core of the problem, but also that it makes an opportunity to discuss why a solution is more likely than others.

Further, positive response was given to the possibility to save a solution that does not correspond with a system answer. These solutions given by the users are not alterable. A general opinion was that the prototype presumes that the user has received much information about how to use and interact with the prototype. Otherwise, there is a risk that the prototype will not benefit from these responses. It is important that a student is aware that the computer based prototype does not act as a test or an assignment that will be graded; instead that it is a tool for further discussion in seminars.

In general, there was an opinion that there is a risk with having a computer based tool since it can harm the level of discussion, which is a central part in this type of education.

8.5 Prototype for feedback database

Here is an overview of a design for the database, what parts it consists of, and how they interact. The user interface is supposed to be web based and written in HTML or similar.



Picture X: Design of the feedback database

a) The start page should provide an overview of the choices that can be made and also show a presentation of the service. There should be no need for login if the page is posted on an internal network. If the page is posted on the Internet, a login may be necessary to avoid misuse. This should be the same user id and password that personnel on the hospital use for the computers at work.

b) In this section, participants of the patient relations game can add information about the different scenarios. The idea is that they can provide input to both the video based scenarios as well as the paper based ones. The user chooses which of the cases that he/she wants to provide input about. For easy navigation, the scenarios should be represented with snap shots if they are in the video based scenarios and links to text files if they are in the paper based scenarios.

When a scenario is chosen the user can select what kind of input he/she wants to submit. Possible categories are for instance suggestions for solutions, topics and reference material. This approach will hopefully save the administrator the trouble of categorizing the input.

c) In this section a user can take part of what other users has written about the different scenarios. Game leaders can use it for inspiration to topics and users can see what has been discussed or they can take a look at the reference material. The feedback is presented in different categories for every scenario, as it has been submitted.

d) New cases that arise before, during, or after a session can be submitted to the database. The developers can use this information as inspiration if they are going to make new scenarios. Users can submit ideas for new scenarios here.

e) New cases are displayed here for everyone to take part of.

f) If information is offensive or inaccurate, or similar information is submitted, one or more administrators can login and remove or alter it.

g) The scenarios from the paper based version of the patient relations game can be posted on the Internet so that game leaders can print them out if they have forgotten the paper based version or if they want to use these scenarios while playing the web based version.

h) The database for feedback on existing scenarios should grant all users the rights to read and to add information. The rights to alter or remove data should only be given to the administrators.

i) The same rules as in the database for feedback should it be in the case of the database for new scenarios.

9 Conclusions

The game that was produced to educate medical staff in patient relation problems had its greatest goal to promote discussion around relevant topics concerning patient relation problems. By evaluating the system, participate in education for game leaders, listening to experts in medical educational issues, and listening to people who have been in contact with the game, a broad ground of information has been created. There have been both positive and negative responses to the game, and the goal has been to enhance the positive aspects, while exchange the negative ones with something better. Apart from that, a lot of new ideas have emerged. The system is designed to better fit needs of different target groups, so that the discussion is closer to the users working environment. The system is able to control discussion feedback, so that the results from seminars can be used to increase the information ground used in seminars.

The results from evaluating the system and the new ideas have been incorporated in a prototype. It is designed to fit two main target groups, students and medical staff. The reason for building a general prototype for both target groups is that there are a lot of issues that are handled similarly between the two groups. The information used is valuable for both students and medical staff, so is the possible new information gained through feedback. Still, there are many differences, e.g. the way seminars supposedly are conducted, so there is a need to divide the prototype into two parts, each of the specialized for each target group.

The adaptation of the system to the medical doctor program can shortly be described in this way; there is a big interest in the medical doctor program, by both students and program coordinators to develop a system concerning patient doctor relations. The system should be adjusted to problem-based learning and should be used as a complementary element in the education. We have observed that the need for such a system is big here at Uppsala University. After consulting a program coordinator and considered his opinions we constructed two prototypes with different approaches based on the existing system. Then we showed our prototype to a test group consisting of medical doctor students. They gave us valuable opinions about the system could be approved and how it could be integrated in the course concerning patient doctor relation. With the purpose of getting more feedback on our prototypes we consulted a professor in Human computer interaction, Bengt Sandblad. Also he gave us suggestions about how the prototypes could be improved. To sum up all the input we have been given we can come to the conclusion that we have succeeded to design a functional and useful tool for learning about patient doctor relation. What is still left to be done is that the system should be more developed regarding the input from the interviews and that there is a desire to integrate the system into the medical doctor program.

The prototype described is still just a description of what the system should look like. There is still the hard work of coding it into a working product. There are also details that should be examined more closely. There is more work to do on the feedback database, how it should be implemented to fulfill its intended goals. It could be interesting to examine how new scenarios could be dramatized in a cheap and easy way. Could the information database be shared among many different hospitals, even among hospitals in different countries? There are many questions unanswered, and a long way to go before there is final product.

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Appendix I

Table 1: Accountancy of income for the patient relations game

| Income (sek) | |
|---------------------|----------------|
| SISUS | 400 000 |
| County Council | 50 000 |
| Sum | 450 000 |

Table 2: Accountancy of expenses (exclusive of staff expenses) for the patient relations game, phase 1

| Expenses (sek) | |
|-------------------------------------|----------------|
| Administration fee | 20 000 |
| Official journeys | 9 555 |
| Expenses for artists | 5 000 |
| Expenses for lecturers | 31 147 |
| Theatrical performances | 52 700 |
| Photography | 761 |
| Office material | 2 830 |
| Books | 4 537 |
| Food (coffee, bread etc) | 9 891 |
| Service from caretaker when filming | 270 |
| Freight, transport | 751 |
| IT-material | 4 500 |
| Printing | 7 640 |
| Marketing, information | 306 |
| IT-consultant (Compendium AB) | 231 250 |
| Sum | 381 140 |

Table 3: Budget for expenses (exclusive of staff expenses) for the patient relations game, phase 2

| Expenses (sek) | |
|----------------------------|---------------|
| Material | 10 000 |
| Server maintenance | 20 000 |
| Educate discussion leaders | 5 000 |
| Marketing | 14 000 |
| Evaluation | 1000 |
| Sum | 50 000 |