

# Use of Information and Communication Technology in Health Care

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**Abstract.** This report describes the possibilities of information and communication technology in healthcare. Attention is paid of how ICT can support the communication between health care professionals mutually as well as the communication between professionals and patients. Besides this some barriers that hampers implementation in everyday healthcare practice are described.

**Keywords.** Information availability, teleconsultation, telemonitoring, teletreatment

## Introduction

There is an increasing pressure on the quality and finance of our health care system. Especially the increasing numbers of elderly and patients with chronic complex disorders who are structural dependent of care of others are responsible for this phenomenon. In the care for these patients a lot of professionals and disciplines are involved which complicates the health process. As a consequence load increases for the health care institutes whereas their capacity decreases and this leads to longer waiting lists. In order to reduce waiting lists, a considerable amount of patients will be dismissed quite earlier from the institutes with diffuse treatment advices. Other professionals get involved in treatment of these patients and care often becomes inefficient because there is a lack of tuning and cooperation between the different health care professionals and institutes.

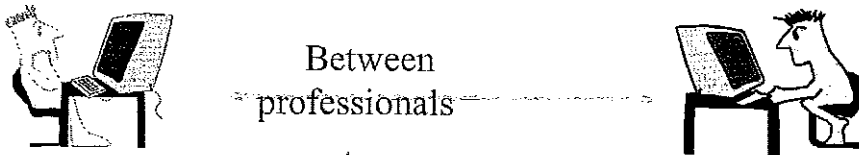
Information and Communication Technology can bring solutions for these problems. The increasing availability of low-cost mobile devices, ad-hoc and managed wireless networks and broadband services that give access to large volumes of information offer new and unique opportunities for our health care system to increase its efficiency and effectiveness. Especially to improve the communication, in a broad sense, between professionals mutually and between the patient and the professional.

## Methods

Different projects have and are performed to gain knowledge about the possibilities of ICT improve the communication, in a broad sense, between professionals and between the patient and the professional.

In more detail these projects concerns:

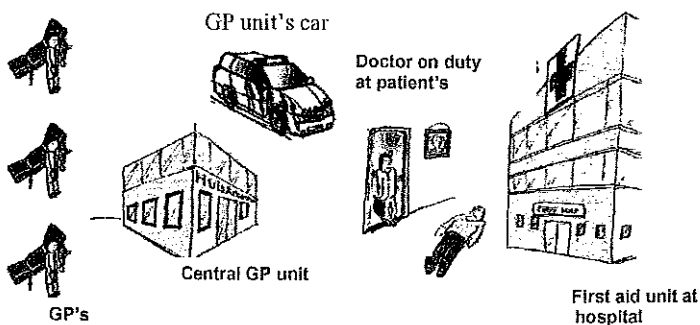
1. Communication between professionals mutually:



Examples are:

- a) Applications that focus on the availability of patient information any place, any time (Telecare [1]).

## Telecare application



- C-GP unit can filter patient data from information systems of all connected GP
- GP get call and relevant information about patient on PDA
- GP fill in **Subjective** information as experienced by patient
- Objective** information as measured by the physician
- Evaluation Plan** concerning treatment
- GP send information to hospital

Figure 1. This figure shows the results of the Telecare project that was aimed a providing availability of patient data anywhere, anytime for general practitioners involved in the acute care around patients with a possible cerebro vascular accident (CVA).

- b) Applications that focus on consultation between health care professionals (Mesh, Telefyssi [2]).

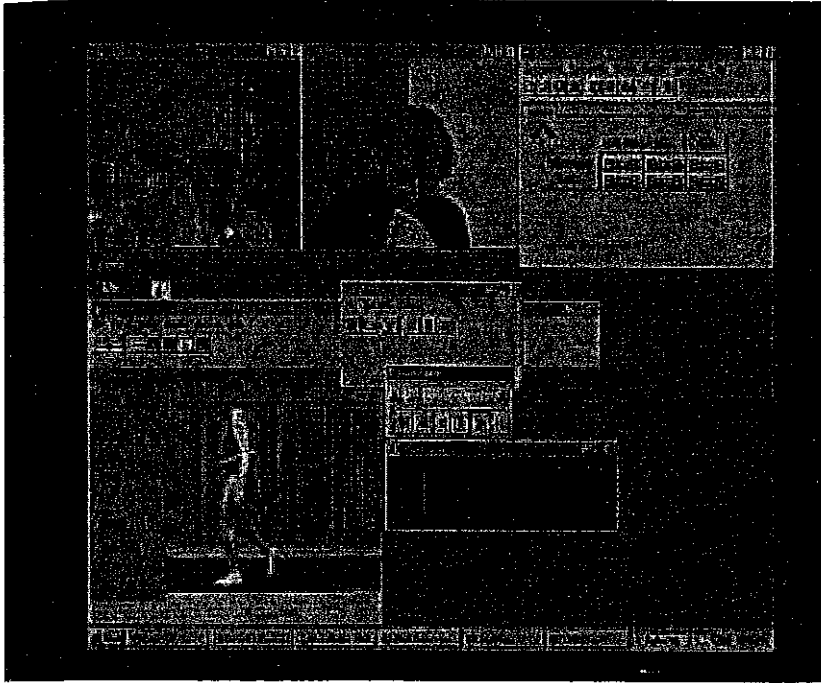
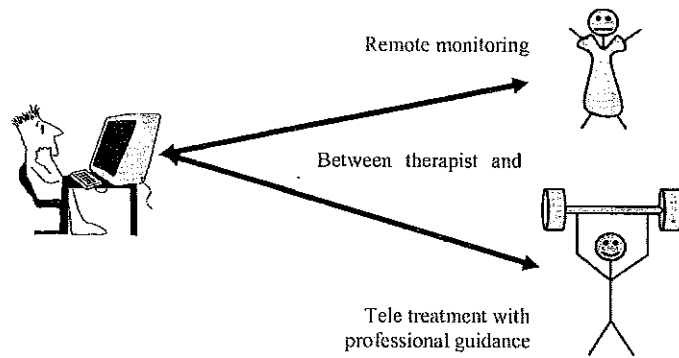


Figure 2. This picture show two rehabilitation physicians at different institutes discussion a patient by simultaneous looking at the movement patterns and other relevant kinematic parameters of this patient. This in order to come to adequate treatment operation advices.

## 2. Communication between professional and patient



Examples are applications were patients can train their functions at their one place (home/work) at for him/her suitable times with professional guidance on distances or applications that monitor relevant body signals of the patients, guards the patient on distance and deliver care when necessary (exozorg [3], awareness).

The advantages of such teletreatment/monitoring services are 1:n relationships, more freedom for patients 'at risk', the patient is more responsible for effects of training, better translation to every day live and thus more effective treatment.

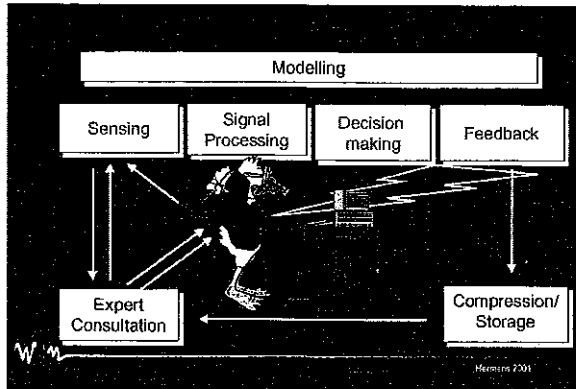


Figure 3. This figure shows a subject exercising his motor skills. His movements and other relevant characteristics are sensed and processed. Based on a comparison with training targets it is decided whether and what kind of feedback the subject gets on his performance. Simultaneously relevant data are stored and sent to a remote health care center that is able to monitor the training and to adjust the equipment anytime and anywhere. The patient will be regularly contacted to discuss the progress.

## Discussion

Many initiatives have been developed showing the working mechanisms of ICT based services in clinical practice and it is the assumption that ICT can play a role in improving efficiency and effectiveness of care. Efficiency is enhanced by information exchange between professionals and by enabling 1:n relationships in telemonitoring and/or teletreatment. More effective treatment when treatment is brought at home and is likely to become more intensive. However despite these many initiatives new innovative treatments and treatment supporting concepts using ICT do hardly find their way to every day care. Reasons for this might be:

- Lack of funding for the validation part in real clinical practice.
- Health care professionals are involved only marginal; a lot of projects are ‘technology driven’
- Lack of facilities to test new developments
- Lack of adequate financial arrangements from insurance companies for innovative ICT services.

Based on this it can be concluded that in new innovative treatments and treatment supporting concepts it is very important to look forward towards implementation. Health care professionals and other stakeholders need to be involved and much more adequate scientific validation studies need to be performed [4].

## References

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