Remote Rehabilitation Support (RRS)

Thomas Hohn, project manager

midt regionmidtjylland

DEN EUROPÆISKE UNION
Den Europæiske Fond for Regionaludvikling
Vi investerer i din fremtid

Alexandra Instituttet A/S

Caretech innovation

The RRS Project

- Purpose:
  - To support and strengthen the connection between home and hospital in optimized fast track orthopedic surgery procedures
  - To bring preoperative education of the patient, dissemination of information and postoperative support to a new level
- Interdisciplinary research:
  - Computer science, health science, physiotherapy, ethnography
- Cooperation between the Region Hospital Silkeborg, Computer Science Department AU, Capgemini, TDC, SAS institute A/S and Caretech Innovation

Background

- The total hip arthroplasty (THA) procedure is one of the most successful surgery treatments used
- In 2006, 7,645 patients underwent this procedure in Denmark. 79% of these surgeries were grounded in primary (ideopathic) arthrosis
- In the future, the number of patients suffering from primary arthrosis, and thereby the need of the THA procedure, is expected to increase which is partly due to the consequence of obesity, but also the fact that there exist a higher level of physical activity as well as an expectation of a high quality of life among elderly people

Background (cont.)

- In 2005 the average time of hospitalization for patients in Denmark undergoing THA surgery was 6.7 days
- For patients undergoing fast track procedures at Region Hospital Silkeborg the average time of hospitalization is 3.5 days in 2007
- Patients undergoing fast-track procedures do not experience a higher risk of complications, readmissions or mortality

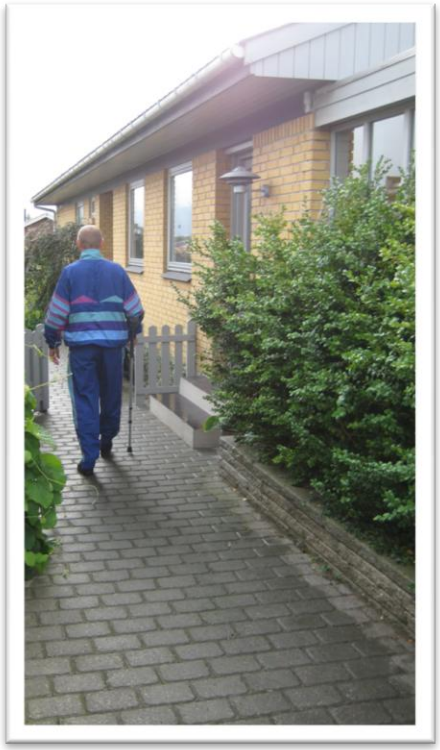
Background (cont.)

- It is believed that people who receive information about surgery and recovery will be less anxious and better able to handle the stressful, emotional and physical impact of the procedure
- This will help the patients to better cope with pain, and it also reduces their time at the hospital

Goals

- To evaluate the effect of telemedicine as one of few RCT (Randomized Clinical Trial) studies in the area of Telemedicine
- To reduce time of hospitalization period
- Ability to create an environment for rehabilitation, which corresponds to the hospital or better
- To gain experience in the field of health infrastructure/application in the homes of patients
- Use Participatory Design (PD)/User Driven Innovation (UDI) in design and development process

PD/UDI activities:
Field study and workshops



IT-solution

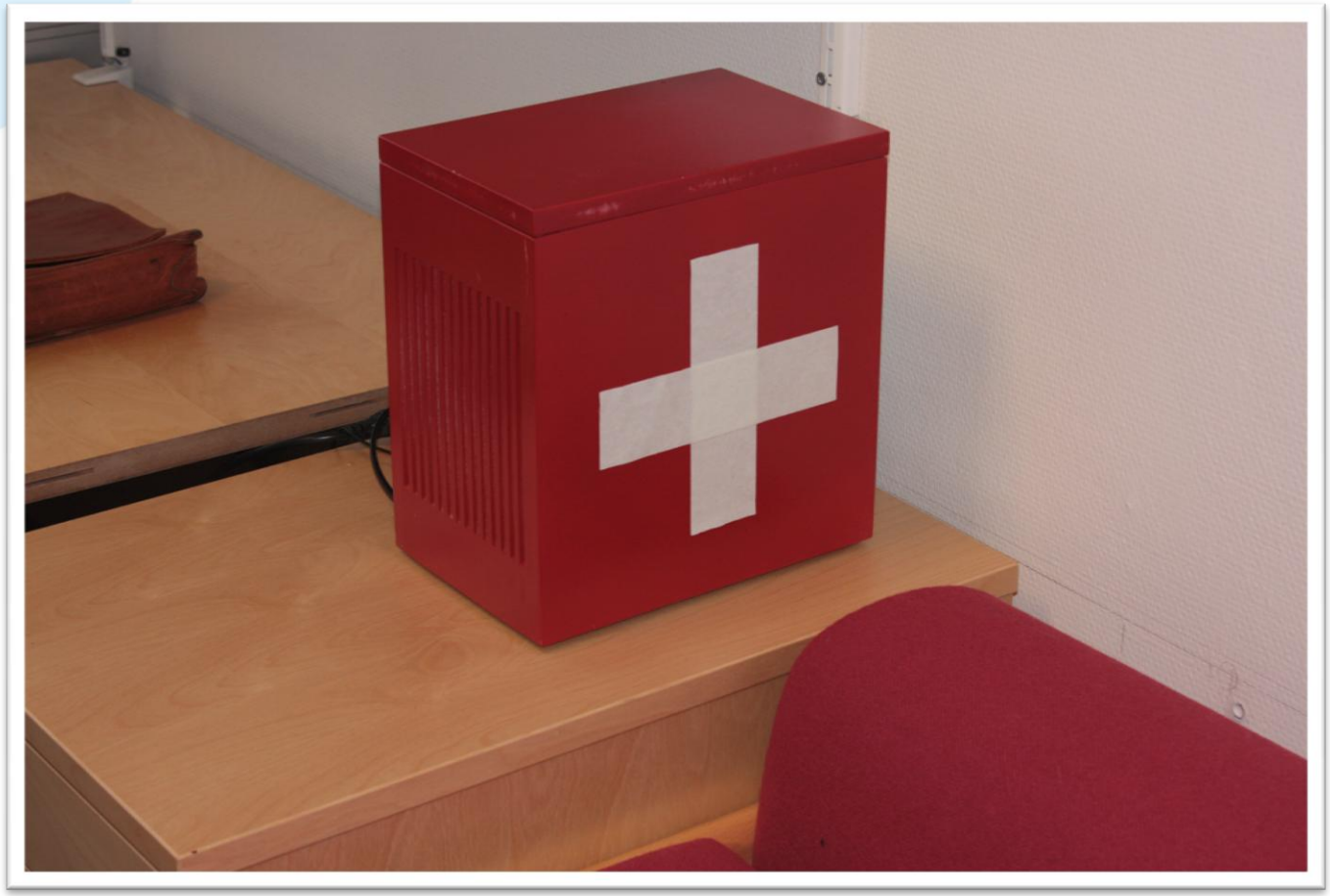
- Custom IT-unit - HealthGateway
- Connected to hospital (wireless) via internet/3G connection or another IP-enabled communication system
- Installed in the home of patient by the patient
- Information is displayed on the patient's TV-set
- Operated via simple Remote-control

Design issues solution

- Unit should be easily operated due to primary age group of 60+ years
- Unit should not indicate disease since patients in our case generally are considered ”healthy”
- Unit should not represent an extension of the hospital
- Unit should naturally fit into the home of the patients

Design

- Does not fit naturally into a livingroom and indicates disease



Design (cont.)

- Does not indicate disease – fits into home environment

IT-solution facilitates

- Communication between patient and hospital (video via Skype)
- Group communication between patient-group and hospital
- Exercise program for rehabilitation through:

1. Video
2. Animation
3. Split screen animation/exercise

- FAQ regarding knowledge, best practice and experience from hospital and other patients

IT-solution facilitates (cont.)

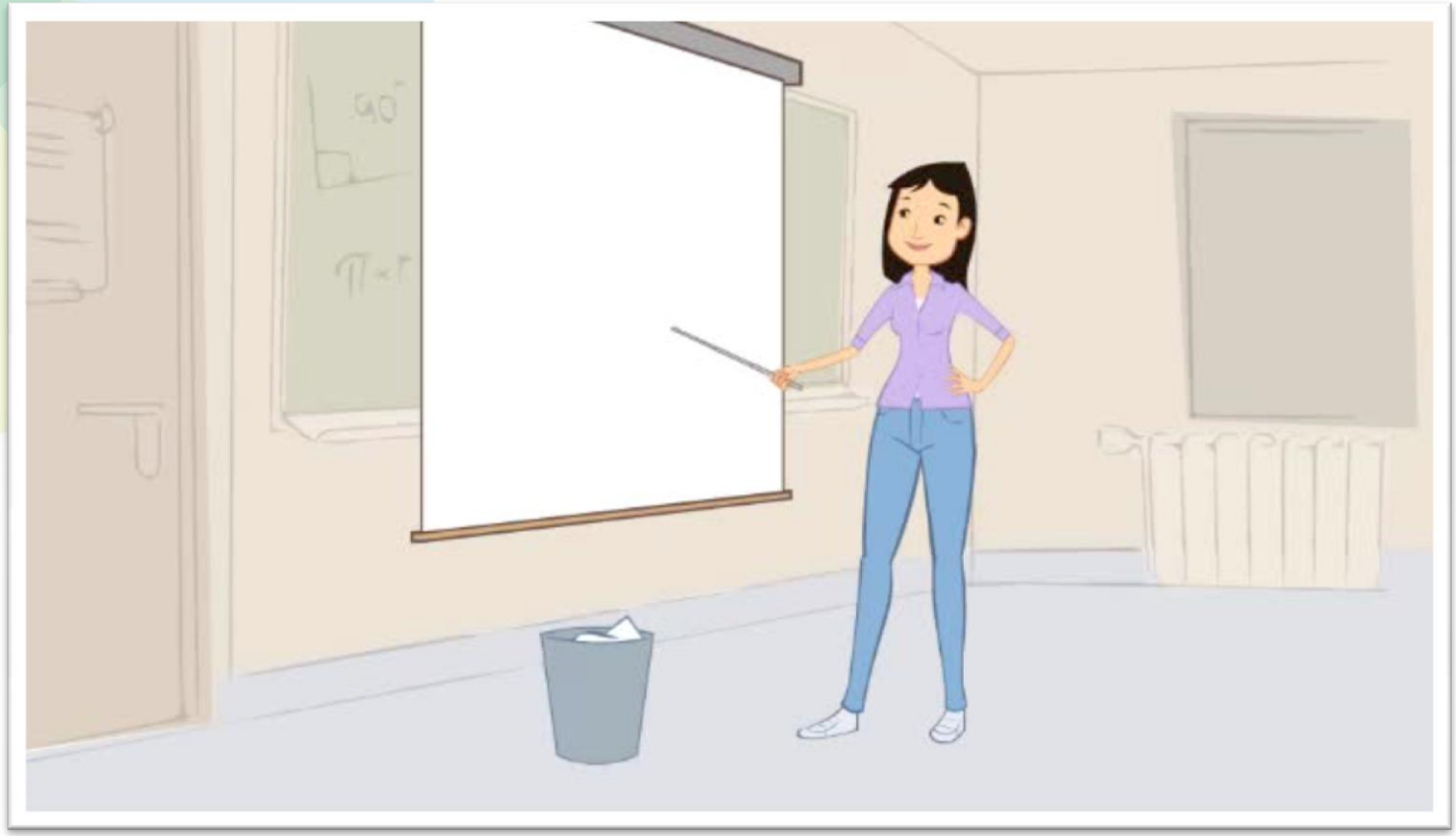
- Medication overview and management at hospital
- Image handling:

1. Possibility to display x-ray images
2. Possibility to display wound images
3. Grab wound images via Skype at hospital and consult doctor to examine wound healing process

- Ability to send small “inquiries” to the hospital – like SMS

Movies and Animations

Movies and Animations



The RRS PhD Project

- The effect of a telemedicine solution for communication, information and remote support of rehabilitation for patients undergoing, first time, total hip arthroplasty surgery.

The aim of the study

- The RRS project will evaluate a fast-track orthopedic surgery procedure *(control group)* for THA with an estimated average of 2.5 days of hospitalization with the *optimized* fast-track orthopedic surgery procedure *(intervention group)* for THA supported by RSS and the goal of an average of 1.5 day of hospitalization

The aim of the study (cont.)

- With elements of participatory design (PD) and user driven innovation (UDI) the study will document the effect of direct involvement of healthcare providers, patients and support persons in the development and implementation of new ways of treatment
- The RRS Project will be the first of its kind for orthopedic patients and to our knowledge the most advance solution ever tested on patients undergoing orthopedic surgery
- It will be one of few RCT studies evaluating the effect of telemedicine

Study design

Randomised Clinical Trial (RCT)

N = 74

Follow-up period: 12 months

Next Step

- Pilot patients from June, 2009
- Inclusion for study August, 2009
- PhD ultimo 2011

Thank you

- Thomas Hohn: thomas.hohn@alexandra.dk