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# Programme

## Patient@home 2012-2018 - Project Results

February 1, 2018 - University of Southern Denmark, Odense, Denmark

**09:00** **Arrival and breakfast**

**09:30** **Welcome** - Room 0100

### Denmark's Largest Welfare Technology Project

*Peter Høngaard Andersen, Director, Innovation Fund Denmark*

*Stephanie Lose, President of Southern Denmark Regional Council, Region of Southern Denmark*

*Ole Skøtt, Chairman of the Board, Dean of Health Sciences, University of Southern Denmark*

**10:25** **Project Session 1**

- Innovation and Evaluation Methods - Room 099

- Rehabilitative Training - Room 097

- User Testing and Involvement - Room 096

**11:25** **Exhibition**

**11:55** **Project Session 2**

- Data & Geriatrics - Room 099

- Fast Track Projects - Room 097

- Emerging Technologies - Room 096

**12:55** **Lunch**

**13:50** **Project Session 3**

- Robots for the Care Sector - Room 099

- Telemedicine Solutions - Room 097

- Empowering Clinicians and Patients - Room 096

**14:50** **Exhibition**

**15:20** **Talk** - Room 0100

### Nextcare: A Journey Towards Novel Health Service Adoption

*Josep Roca, Professor, M.D., Hospital Clinic de Barcelona*

**15:50** **Debate** - Room 0100

### Experience and Learning Outcomes of a 6 year Research and Innovation Project

*Kevin Dean, Adjunct Professor at University of Southern Denmark, Managing Director of Smart Health Science Ltd.*

*Peder Jest, Executive Director and Chief Medical Officer, Odense University Hospital*

*Uffe Kock Wiil, Patient@home Project Manager, Professor, University of Southern Denmark*

**16:30** **Close of Conference**

Conferencier:

**Kevin Dean**

Adjunct Professor at University of Southern Denmark,  
Managing Director of Smart Health Science Ltd.

patient@home

# Session 1: 10.25 – 11.25

## Track 1: Innovation and Evaluation Methods

*Session chair: Jørgen Løkkegaard, Director, Danish Technological Institute*

The session introduces the innovation model and different activities used in Patient@home to facilitate the innovation process and product development, including the evaluation scheme used to evaluate the developed products and services.

### **The Patient@home innovation model**

*Jørgen Løkkegaard, Director, Danish Technological Institute*

An introduction to the general innovation model and related processes used throughout the course of Patient@home.

### **Smart Innovation Management**

*Kevin Dean Adjunct Professor at University of Southern Denmark and Managing Director of Smart Health Science Limited*

The SIM assessment tool has been used to help and accelerate partner companies' innovation management. Innovations have been assessed against a ten-factor structure, generating a series of critical questions to be addressed. A summary of the findings from the SIM-sessions is presented.

### **How to assess the value of innovative medical technologies? Experiences from Patient@home**

*Kristian Kidholm, Associate Professor and Head of research unit, Center for Innovative Medical Technology, Odense University Hospital*

MAST has been used from the onset of Patient@home and was defined as the overall framework for assessment of the value of the new technologies developed in the project. The presentation is on the different ways MAST has been used in Patient@home and provides examples and advice for the future use of MAST based on these experiences.

## Track 2: Rehabilitative Training

*Session chair: Per Kjær, Professor, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark*

Apps, games, sensors, and robots for healthcare are fast evolving. Nevertheless, how effective are these innovative technologies in fall prevention, self-management of pain, measures of neck movements, and training of impaired arm function?

### **RehApp: The feasibility of an app to guide self-management for patients with disc herniation in the neck**

*Hanne Rasmussen, Research Assistant and physiotherapist, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark*

This study investigated the feasibility of RehApp for patients with disc herniation in the neck and its potential effects on pain self-efficacy and activity limitation.

### **Development, testing and validation of sensor technology to be used for exercise therapy in people with disc herniation in the neck**

*Bue Bonderup Hesby, Ph.d. student, chiropractor, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark*

Neck pain is ranked fourth as contributor to years living with disability. Biomechanical measurements of neck posture and movement have potential to be used as tools for prevention and treatment of neck pain. Bue Hesby presents the challenges in applying and validating sensor technology for monitoring neck movement and posture.

### **Industrial robots for rehabilitation**

*Jacob Nielsen, Associate Professor, The Maersk Mc-Kinney Møller Institute, University of Southern Denmark*

Hear about the possibilities of rehabilitation of patients with stroke by using industrial robots where the therapist record the desired training path of the patients arm by means of the robot. The robot's sensors evaluate how much help the patient needs, thereby ensuring that the exercise is neither too difficult nor too easy.

### **How can patients benefit from augmented gravity in rehabilitation?**

*Anders S. Sørensen, Associate Professor, The Maersk Mc-Kinney Møller Institute, University of Southern Denmark*

Hospitalized patients in need of rehabilitation often have to be followed to training facilities outside the ward. Is it possible to rehabilitate patients with stroke at the bedside by using augmented gravity for immobile patients and patients with pain? How can training and rehabilitation be integrated in everyday life in an unobtrusive way?

## Track 3: User Test and Involvement

*Session chair: Christian Graversen, CEO, Welfare Tech*

The involvement of prospective user groups is central to the technological development process. This session examines the experience and results from user tests conducted in three different Danish municipalities.

### **Virtual visits in homebased care - obstacles and benefits**

*Martin Nitze, Chief Consultant and Dorte Møller, Healthcare Consultant, Odense Municipality*

In The City of Odense, video communication has been tested during 2016 in order to deliver homebased care with the use of this technology. The presentation is on how The Department of The Elderly and Disabled has implemented video communication in homebased care, and which benefits and barriers were encountered in the process.

### **Video Consultation in Specialized Palliative home Care**

*Karin B. Dieperink, Associate Professor, The Danish Knowledge Centre for Rehabilitation and Palliative Care, University of Southern Denmark*

This study set out to answer whether it is feasible to use video-consultations in specialized palliative home care, where the patients are very ill. Participants were observed and interviewed when they used tablets for video-consultations. Learn about the findings for use of specialized palliative care at home.

### **Making paraplegic patients walk again - Is it worth it?**

*Michelle Askholm, Project Manager, Center for Assisted Living Technology, City of Aarhus*

Exoskeletons show great effect to paraplegic patients' sequelae when used in rehabilitation. This project aimed to find out if it is possible to improve paraplegic patients' state of health and quality of life while improving the municipality's efficiency, when using exoskeletons as helping aids at home.



# Session 2: 11.55 - 12.55

## Track 1: Data & Geriatrics

*Session chair: Peder Jest, Executive Director and Chief Medical Officer, Odense University Hospital*

Can the use of telemedicine, new technology and analysis of geriatric data predict and/or prevent hospitalization? And can it contribute to early discharge from the hospital for home treatment?

### **Is a randomised clinical trial of Hospital at Home feasible for older acute patients?**

*Anette Tanderup, PhD student, Research Unit of Geriatrics, University of Southern Denmark*

In the future elderly patients will most likely be treated at home. The aim was to enlighten if a randomized clinical trial of Hospital at Home for elderly acute patients would be feasible. Within 36 hours of admission, suitable patients were transported home, care and treatment were established and electronic surveillance by means of telemedicine were installed.

### **The sentinel algorithm and how to prevent acute admission of older people (The GERI briefcase)**

*Karen Andersen-Ranberg, Clinical Professor, Odense University Hospital and University of Southern Denmark*

In frail elderly, delivery of primary health care increases prior to an acute admission. Health register data is used to develop a software sentinel algorithm that can identify persons at-risk, which subsequently are offered an in-home assessment by a trained acute community nurse using POCT and eHealth - the GERI briefcase.

### **Secure and Reliable ICT Systems for Telemedicine Applications**

*Lars Dittmann, Professor, Department of Photonics Engineering, Technical University of Denmark*

The scenario of moving a patient from a hospital environment to the private home is a major challenge for the ICT environment that surrounds the patient in order to provide the same monitoring, support and confidence in the home as at the hospital. However, this ability to provide treatment can also enable new ways of patient engagement.

## Track 2: Fast Track Projects

*Session chair: Claus Duedal Pedersen, Chief Innovation Officer, Center for Innovative Medical Technology, Odense University Hospital*

CIMT presents a selection of 'Fast Track' projects characterized by being quickly initiated and implemented. The purpose being to test newly developed technologies in a clinical context with the active participation of the technology supplier.

### **Video based interpretation in a clinical situation**

*Morten Sodemann, MD, Professor, The Migrant Health Clinic, Odense University Hospital*

A number of new services using videoconference for delivery of clinical services was tested and a great number subsequently implemented in daily practices. Videoconference for language interpretation in a clinical situation was shown to improve the communication between patients and health professionals while also being cost-effective.

### **Telemedicine service to newborn**

*Kristian Kidholm, Associate Professor and Head of research unit, Center for Innovative Medical Technology, Odense University Hospital*

Presentation on how a fast and systematic test and MAST evaluation of a telemedicine solution can save time and resources.

### **Visualization of data 'on the go'**

*Claus Duedal Pedersen, Chief Innovation Officer, Center for Innovative Medical Technology, Odense University Hospital*

Visualization of data or delivering the right information to the right person at an easy and convenient way becomes more and more important. Google Glass was tested as an example of a future technology for visualization of data.

## Track 3: Emerging Technologies

*Session chair: Kasper Hallenborg, Head of Department, Maersk Mc-Kinney Moller Institute, University of Southern Denmark*

Receive an introduction to three emerging technologies that each carries great potential to radically improve diagnostics and treatment of patients.

### **Designing assistive exoskeletons by means of musculoskeletal simulation**

*John Rasmussen, Professor, Department of Materials and Production, Aalborg University*

Demonstration of the design process for an assistive exoskeleton for upper limb paralysis. A process that uses virtual prototyping by means of musculoskeletal simulation. The process has resulted in a passive, gravity-compensating exoskeleton, parts of which are submitted for patenting.

### **Computer-vision for in-home medical diagnosis and monitoring**

*Mohammad Haque, Ph.D., Postdoc, Department of Architecture, Design and Media Technology, Aalborg University*

Presentation of a potential facial image-based diagnostic and a new method for contact-free extraction of the heartbeat signals from video sequences. Can it replace the traditional sensor contact-based methods that need to be installed on the human body?

### **3D measurement for monitoring wound healing**

*Line Bisgaard Jørgensen, M.D., Ph.d. student, Endocrinology, Odense University Hospital*

Three-dimensional measurements have the potential for assisting the clinicians in monitoring the wound healing process and to evaluate the effect of treatment. The results from a validation study of a prototype 3D camera are presented with focus on the strengths and limitations of the technology.



# Session 3: 13.50 – 14.50

## Track 1: Robots for the Care Sector

*Session chair: Norbert Krüger, Professor, The Maersk Mc-Kinney Moller Institute, University of Southern Denmark*

How can new types of robot technology contribute to assist caregivers and caretakers in their everyday life in the healthcare sector? In addition, how can engineers develop new robots for healthcare that interact smooth and seamlessly with the users?

### **How can the Care-O-Bot test platform inspire to develop new technology?**

*Leon Bodenhausen, Assistant Professor, The Maersk Mc-Kinney Moller Institute, University of Southern Denmark*

What should service robots do and how should they do it? Most often, it is insufficient just to solve a task, it is important to design robot behaviors such that smooth interactions with users are facilitated. We will outline how the Care-O-bot was used to generate an understanding on these interactions and its role in current research projects.

### **Interactive and Socially Assistive Robots**

*Karl Damkjær, Ph.D., Postdoc, Institute of Electronic Systems, Aalborg University*

In a not too distant future, robots will help people in their daily lives. However, the fantasy that robots will be conscious and intelligent like the Star Wars team C-3PO and R2-D2, is probably just that. We have developed a robot that uses the technologies of today to aid people in structuring their daily activities.

## Track 2: Telemedicine Solutions

*Session chair: Jane Clemensen, Professor and Head of Clinical Research, Center for Innovative Medical Technology, Odense University Hospital*

A session on collaboration to advance new ways of thinking, organising, developing and implementing telemedical solutions. A process that needs collaboration across sectors, across disciplines, across sciences and with industry to be successful.

### **Participatory design and development of an mHealth app for women newly diagnosed with osteoporosis**

*Pernille Ravn Jakobsen, Cand. Scient. San. Publ., Ph.d. Student, Center for Innovative Medical Technology, Odense University Hospital*

Through a Participatory Design process researchers, patients, physicians, healthcare professionals and IT developers have designed and developed an mHealth app, which support women newly diagnosed with osteoporosis without preceding fractures in decision-making and self-management of their disease. Preliminary results from the test phase will be presented.

### **Tele-health and hip fractures - a user-driven study on new ways to support self-care and empowerment**

*Charlotte Myhre Jensen, Ph.d. student, Department of Orthopaedic Surgery and Traumatology, Odense University Hospital*

Presentation of a study that has shown that improved methods of communicating health information and encouraging patient empowerment are required in pathways with short time stay in hospital. In a joint collaboration, a solution has been developed to empower not only the patients but also the health professionals.

### **Development of technology to support patients in the kidney transplantation process**

*Charlotte Nielsen, RN, MScN, Ph.D. student, Department of Nephrology, Odense University Hospital*

Presentation of a Participatory Design study. Findings from a qualitative study, forms the basis for development of new ways of involving patients in the kidney transplantation process supported by technology. Collaboration with patients and their families, healthcare professionals and other stakeholders have identified different features in an app that we are developing.

## Track 3: Empowering clinicians and patients

*Session chair: Uffe Kock Wiil, Professor, The Maersk Mc-Kinney Moller Institute, University of Southern Denmark*

A presentation of two projects that aim to empower clinicians and patients, respectively, through dedicated software solutions for clinical decision support and patient self-care, self-management and shared decision-making.

### **A personalized and interactive web-based innovation to Advance the Quality of life and care in patients with an Implantable Cardioverter Defibrillator (ACQUIRE-ICD)**

*Susanne Pedersen, Professor of cardiac psychology, Department of Psychology, University of Southern Denmark & Odense University Hospital*

The ACQUIRE-ICD project was designed to fill a gap in clinical practice, as patients with heart disease implanted with an ICD are placed on remote monitoring and seen less frequently in the clinic. The aim of the project is to increase patient empowerment and quality of life. The study uses a mixed-methods design.

### **Identification of High-risk Patients**

*Thomas Schmidt, Assistant Professor, The Maersk Mc-Kinney Moller Institute, University of Southern Denmark*

Presentation on the design and evaluation of a clinical decision support system for improving situational awareness of clinicians caring for patients in emergency departments. How can we reduce the risk of unexpected deterioration during admission?





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**We look forward to  
seeing you in Odense**

patient @ home



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