The Danish Centre for Health Informatics, DaCHI (former Virtual Centre for Health Informatics, V-CHI) was established in 1995 to coordinate research activities within the field of health informatics at Aalborg University. Scientists from now six departments are participating in the centre: Department of Health Science and Technology, Department of Communication and Psychology, Department of Planning, Department of Mechanical and Manufacturing Engineering, Department of Business and Management and the Department of Sociology and Social Work.

This annual report presents the accomplishments of 2016. The research activities of the departments participating in the centre are introduced by a description of the projects and by the publications that communicate their research. Furthermore, the open meetings and conferences held in 2016 are mentioned in the report together with the centre’s network activities.

CHRISTIAN NØHR
Professor and director of Danish Centre for Health Informatics
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DaCHI operates within research and development and offers counselling and teaching of health informatics to the health care sector. DaCHI is a formal network between Danish universities, public and private companies, organisations, hospitals and regions. The interested parties are represented in a “Reference Group” and the daily activities are managed by an executive committee and the director of the centre. The affiliated researchers represent three faculties at Aalborg University. The DaCHI secretariat is located at Aalborg University.

MISSION
DaCHI’s mission is to expand and develop the mutual understanding and interaction between health informatics and the health care institutions, health professionals and the citizens.

NETWORK OF RESEARCHERS AT AALBORG UNIVERSITY
DaCHI is embedded in the research environment at Aalborg University where several departments collaborate in a number of health informatics research projects, i.e. Department of Health Science and Technology, Department of Communication and Psychology, Department of Planning, Department of Sociology and Social Work, Department of Mechanical and Manufacturing Engineering and Department of Business and Management. The DaCHI research network is associated with a wide range of network partners, i.e. North Denmark Region, Central Denmark Region, The Danish Institute for Local and Regional Government Research, Centre for Health Telematics, CHI – Vendor Forum, Aarhus University and Aalborg University Hospital. Through the anchoring of DaCHI at Aalborg University and the wide range of competences of our network partners, we provide an interdisciplinary understanding of health informatics research.

RESEARCH WORK
DaCHI primarily works within the following health informatics research areas:
• user interface and usability
• technology assessment and implementation
• organisation and management
• clinical decision support systems
• clinical information systems and EHR
• quality development and assurance
• user driven innovation
• clinical work practice
• welfare technology
• patient safety

Other competences are:
• network creation and management
• research and knowledge sharing between university, industry and clinic
• education and training
• project fund raising and management
THE FOLLOWING RESEARCHERS AT AALBORG UNIVERSITY PARTICIPATE IN THE NETWORK DACHI

Christian Nøhr, Department of Planning

Lars Botin, Department of Planning

Ann Bygholm, Department of Communication and Psychology

Helle Wentzer, Department of Communication and Psychology

Anna Marie Høstgaard, Department of Health Science and Technology

Janne Seemann, Department of Sociology and Social Work

Karsten Niss, Department of Health Science and Technology

Kirstine Rosenbeck Geeg, Department of Health Science and Technology

André Kushniruk, Department of Planning

Chunfang Zhou, Department of Planning

Lasse Riis Østergaard, Department of Health Science and Technology

Lone Stub Petersen, Department of Planning

Louise Pape-Haugaard, Department of Health Science and Technology

Ole K. Hejlesen, Department of Health Science and Technology

Pernille Bertelsen, Department of Planning

Ann Bygholm, Department of Communication and Psychology

Helle Wentzer, Department of Communication and Psychology

Anna Marie Høstgaard, Department of Health Science and Technology

Karsten Niss, Department of Health Science and Technology

André Kushniruk, Department of Planning

Chunfang Zhou, Department of Planning

Lasse Riis Østergaard, Department of Health Science and Technology

Lone Stub Petersen, Department of Planning

Louise Pape-Haugaard, Department of Health Science and Technology

Ole K. Hejlesen, Department of Health Science and Technology

Pernille Bertelsen, Department of Planning

Pia Elberg, Department of Health Science and Technology

Sidsel Villumsen, Department of Planning

Stig Kjær Andersen, Department of Health Science and Technology

Søren Vingtoft, Department of Planning

Vivi Thuy Nguyen, Department of Mechanical and Manufacturing Engineering
ORGANISATION
DaCHI is managed by an executive committee supported by a reference group.

The DaCHI secretariat is hosted by the Department of Planning and is managed by the director of the centre, Professor Christian Nøhr.

THE EXECUTIVE COMMITTEE
The executive committee consists of a representative from each participating department.

The representatives are together with the director responsible for the management of the centre.

The executive committee appoints a chairman and determines the rules of procedure.

The following research fields are represented in the executive committee:

• Research Group for Technoanthropology and Participation, Department of Planning represented by Pernille Bertelsen and Christian Nøhr
• Research Group for Information Practice Studies, Department of Communication and Psychology represented by Ann Bygholm and Anna Marie Kanstrup

REFERENCE GROUP
DaCHI has established a reference group to ensure and actively support DaCHI’s missions and fundings to match the ideas, requests and demands of a professional approach to health informatics in accordance to expectations from the public as well as private sector.

The reference group members shall contribute with mutual inspiration to each other and to DaCHI.

The reference group meet 1-2 times a year. At these meetings DaCHI presents results achieved and current projects and important subjects within health informatics are discussed.

The reference group is represented by:

• The North Denmark Region by Klaus Larsen
• The Central Denmark Region by Mogens Engsøi-Karup
• Aalborg University, Department of Communication and Psychology by Ann Bygholm
• Aalborg University, Department of Planning by Christian Nøhr
• Aalborg University, Department of Health Science and Technology by Stig Kjær Andersen
• Aalborg University, Department of Business and Management by Lars Ehlers
• Aarhus University by Kristján Skajaa
• Aalborg University Hospital by Karin Hedegaard
• Centre for Health Telematics by Ib Johansen
• CHI – Vendor Forum (CHI-Leverandørforum) by Jan Mark (CSC)
• The Danish Institute for Local and Regional Government Research by Helle Wentzer
SECRETARIAT

The secretariat’s staff:

Marianne Sørensen
Academic Officer

Christian Nøhr
Director of Centre
The researchers in DaCHI deliver research based teaching mainly in four programmes.

**CLINICAL SCIENCE AND TECHNOLOGY**
The Clinical Science and Technology MSC is directed to employees in the health care sector who aim to operate high technology devices and equipment at work.

The education focuses on analyses, evaluation and development of clinical practise within health care innovatively and well documented.

A Master’s degree of Clinical Science and Technology ensures competences to improve the usability of technology within the various health specializations. Furthermore, the ability of critically address this usability considering patient care and the existing documentation.

**MASTER IN BIOMEDICAL ENGINEERING AND INFORMATICS**
Biomedical Engineering at Aalborg University is an interdisciplinary program with focus on electrophysiology and human sensory motor physiology. Potential candidates are students with a B.Sc. in biomedical engineering, electrical engineering or an equivalent degree within information technology.

High level courses within medical technology, neurophysiology, signal processing, scientific communication, rehabilitation technology, etc. are offered. Large projects carried out in groups of students are a substantial part of the programme, where students design and implement solutions to real life problems.

**MASTER IN HEALTH INFORMATICS**
The master in Health Informatics is a part-time, continuing adult education for people with a health care background. The program focuses on planning, development and implementation of health care systems. The students obtain competencies in organizing work flow when implementing health care systems, and to evaluate the possibilities and limitations in the use of health informatics and technology in health care.

**MASTER IN TECHNO ANTHROPOLOGY**
The Master’s programme in Techno-Anthropology combines competence in carrying out anthropological studies of techno-science cultures with technological insight. The students deal with collaboration between technical experts in different settings and other stakeholder groups such as consultancy firms, R&D departments at multinational companies, advisory bodies, international organisations, public institutions, think tanks, NGOs, or universities. The students work theoretically and empirically on how such collaborations can be turned into sustainable technological innovation and responsible decision making regarding new technologies. The students use anthropological theory and methods to study how technology is used, and how it influences users.

**STUDY BOARD OF MEDICINE AND HEALTH**
Pia Elberg is chairman of the Study Board and Louise Pape-Haugaard is member of the study board.

Study Board of Techno-Anthropology Pernille Bertelsen is member of the study board.
CONFERENCES AND SEMINARS

In 2016 the following conferences and seminars were organised by researchers in the network and administered and coordinated by the DaCHI secretariat.

E-HEALTH OBSERVATORY - CONFERENCE 2016

The theme for the conference was “Hot spots in the digitalisation of the health care sector – challenges and results”.

The interesting and diverse ranging presentations at the conference provided an insight into the numerous activities and initiatives going on in the digitalisation of the Danish health care sector. 575 participants from government agencies, ministries, regions, municipalities, hospitals and enterprises participated actively in the 12 parallel sessions and 5 plenary sessions which focused on the hot spots of this years conference theme.

The Danish health IT vendors contributed strongly to the conference with many presentations and an interesting exhibition showing their latest products and visions for future solutions.

Inspiring international keynotes presented their work, among others John Halamka from Harvard Medical School, Aziz Sheikh from University of Edinburgh, David Lee from CSC and Clayton Hamilton from WHO. Representatives from Ministries, Government agencies, Regions and Municipalities presented their strategies and visions with the digitalisation of the Danish health care.

You can find slides and photos on the conference website www.e-sundhedsobservatoriet.dk

Organisers: Christian Nørh, Pernille Bertelsen, Stig Kjær Andersen and Søren Vingtoft
In 2016 researchers within DaCHI were involved in either Scientific Programme Committee (SPC), Editorial Committee (EC) or Local Organizing Committee in the following conferences and seminars.

4TH NORDIC CONFERENCE ON RESEARCH IN PATIENT SAFETY AND QUALITY IN HEALTHCARE
The conference took place on 19 – 20 May, 2016 in Hotel Puijonsarvi, Kuopio, Finland and gathered Nordic and international researchers and developers working in the field of patient safety and healthcare quality and effectiveness to share their knowledge and ideas. Please also see the conference website: http://www.uef.fi/en/web/nsqh2016
Lars Holger Ehlers from the Department of Business and Management was in the organizing committee.

CSHI 2017
The conference will take place August 18-19, 2017 at City University of Hong Kong.
The conference theme is Delivering 21st Century Healthcare - Building a Quality-and-Efficiency Driven System - Health informatics applications is a cornerstone in the next generation health care system. It will be able to contribute to quality and efficiency in health care delivery. Health care is delivered from many different specialties, to many different patients with complex diseases and comorbidity. A one size fits all approach is not adequate to reach the Triple Aim of improving the patient experience of care, improving the health of populations, and reducing the per capita cost of health care. Health informatics applications must be built to be adaptable and sensitive to the complex contexts they will be used in. The conference: Context Sensitive Health Informatics (CSHI) is calling for papers presenting research in innovative design for managing complexity in healthcare delivery.

Christian Nahr from the Department of Planning is member of the Organizing Committee.
PDC 2016 – PARTICIPATORY DESIGN CONFERENCE
Was held in Aarhus, Denmark, August 15 – August 19. The theme of the conference is Participatory Design in an Era of Participation – living in an era of participation prompts critical questions around the goals and practices of involving people in diverse aspects of developing, redesigning and using IT. PDC brings together a multidisciplinary and international group of researchers and practitioners from multiple fields encompassing a wide range of issues that emerge around cooperative design. www.pdc2016.org.

Co-chair: Anne Marie Kanstrup, Department of Communication and Psychology

SCANDINAVIAN CONFERENCE ON HEALTH INFORMATICS (SHI2016)
Was held on 6 and 7 April in Gothenburg, Sweden. The conference is organized by the national health informatics organisations in Denmark, Norway, and Sweden. The goal of the conference is to stimulate scientific discussion of health informatics issues in the Scandinavian countries. The target audience of the conference are people doing, or having an interest in, health informatics research in a wide sense, including any development, implementation, evaluation, or teaching of information technology and/or management in the health sector. Proceedings from the conference can be found at www.shi2016.org

Members of the SPC: Ann Bygholm, Department of Communication and Psychology, and Ole Hejlesen from the Department of Health Science and Technology
VISITING RESEARCHER, GUEST LECTURERESS

CHRIS SHOWELL
Dr. Chris Showell from the Ehealth Services Research Group, University of Tasmania, Australia gave a guest lecture at the Masters Programme in Techno Anthropology on May 3-4.

PAUL TURNER
Associate Professor Paul Turner from the Ehealth Services Research Group, University of Tasmania, Australia participated in a Research meeting about Holistic Care Models on May 9-12.

ARILD FAXVAAG
Professor Arild Faxvaag from NTNU in Trondheim, Norway visited Aalborg University to participate in a Research meeting on national eHealth Policies in the nordic countries. October 31 - November 1st.
ANN BYGHOLM
Professor Ann Bygholm was visiting professor at School of Health Information Science, University of Victoria

CHRISTIAN NØHR
Professor Christian Nøhr was on a research visit to University of Tasmania. He organised a summer course in participatory methods for students at the School of Engineering and ICT.

He also visited the Australian Institute of Health Innovation, Macquarie University, Sydney, and had meetings with, Farah Magrabi, Andrew Georgio, Enrico Coiera, Johanna Westbrook on collaborative research projects. Meeting with Neville Board, Director, eHealth and Medication Safety, Australian Commission on Safety and Quality in Health Care.

QUALITATIVE RESEARCH WITHIN HEALTH SCIENCE

Over the last decades qualitative research has risen from a novel and controversial approach to the study of different social and health issues to a widely practiced method for understanding how people view themselves and the world around them.

The objective of the course was to introduce and discuss different designs, methods, analytical strategies, ethical implications and approaches to conduct qualitative research in health sciences.

The PhD students reflected on their project and received feedback from the participants and lecturers in the course. The lecturers also presented their experiences from their use of different design and methods in qualitative research.

Organizer: Anna Marie Høstgaard from the Department of Health Science and Technology
DaCHI is secretariat for various networks and associations.

**CHI VENDOR FORUM (LEVERANDØRFORUM)**
The CHI Vendor Forum consists of a group of seven companies delivering IT systems to the health care sector. They have had two meetings in the period of reporting. The activities have been in various taskforce groups and special topic meetings with Jette Lundin from IT-Vest, Aarhus University and Flemming Christiansen and Anders Brahm from The Health Data Protection Agency.

Responsible for this forum are: Pia Elberg and Marianne Sørensen. More information: www.leverandoerforum.dk

**RESEARCHER FORUM FOR EHEALTH (FORSKERFORUM FOR SUNDHEDS-IT)**
for eHealth (forskerforum for sundheds-it) eHealth Researcher Forum was established in the autumn 2011. The participants of the forum are all active in research in health informatics i.e.: Copenhagen University, Technical University of Denmark, Roskilde University, Aarhus University, IT University of Copenhagen, Aalborg University and the public sector research institution KORA. The activities in this forum are primarily organizing and running PhD courses, exchange of experiences of planning and running research projects.

More information: sundheds-it-forskerforum.dk
RESEARCH CONSORTIUM RECONSI

ReConSI Research Consortium on Semantic Interoperability for health. The aim of this consortium is to perform internationally recognized common research on semantic interoperability for health. As parts of medical informatics groups in three universities in Denmark (Aalborg University), Sweden (Linköping University) and The Netherlands (Amsterdam University), we join forces in a consortium.

The consortium intends to collaborate on delivery of scientific contributions within the scope of our shared research interest, and to disseminate knowledge on semantic interoperability and its application.

The members are solidified by a signed agreement. A program for visits with seminars, Virtual meetings, Brainstorms for joint application is settled. Participants: Stig Kjær Andersen, Pia Elberg, Kirstine Rosenbeck Gøeg

ASSOCIATIONS
• EFMI the European Federation for Medical Informatics, EFMI, Stig Kjær Andersen is executive officer of this cooperation
• IMIA the International Medical Informatics Association, IMIA. Aalborg University is represented by Christian Nøhr, Stig Kjær Andersen, being an Institutional Member
• AMIA the American Medical Informatics Association has Stig Kjær Andersen, Christian Nøhr, and André Kushniruk as members

WORKING GROUPS
• Academic Council of the Faculty of Humanities at Aalborg University where Anne Marie Kanstrup is chair
• Center of Excellence for Artrose where Lars Ehlers is member of the Advisory Board
• Center for applied health care research in the municipality of Aalborg (CAKSA) where Anne Marie Lassen participates
• Danish Association for Clinical Telemedicine where Søren Vingtoft is member of the board
• Danish Medicines Agency where Lars Ehlers participates in a working group on guidelines for health economic analyses of medicine
• IMIA Working group on human factors engineering and usability in health informatics. Chairman of the group is Christian Nøhr and André Kushniruk is co-chairman
• National Advisory group on Health Information Technology in England 2016, where Christian Nøhr is member
• NeRN Nordic eHealth Research Network where Christian Nøhr and Sidsel Villumsen are respresented
• North Denmark network on welfare technology where Anne Marie Lassen is represented
• Partnership in PROM in clinical practice by Lars Ehlers
• Qualitative network group where Anna Marie Høstgaard is represented
• Research Group for close to home health care within the University College of Northern Denmark. Anne Marie Lassen is participating
• Steering Group for digitisation and big data in The Danish Academy for Technical Sciences (ATV) where Anne Marie Kanstrup is represented
• The Editorial Committee for the academy hearing 2017 at the Danish Academy for Technical Sciences (ATV) where Anne Marie Kanstrup is member
An extract of some of the projects in health informatics by some of the researchers. A list of all the projects of each researcher can be found at VBN – Videnbase Nord (Knowledge Base North) www.vbn.aau.dk having the status of projects in progress 2016.

**APP(ETITE)**

App(etite) is short for ‘design of an app(etite) for life with hearing impairment’. The app(etite) project focuses on improving hearing rehabilitation by facilitating information exchange between hearing care professionals, hearing aid users, and their families. The design process is human-centres and consists of three steps of user participation in carefully staged environments to facilitate the inclusion of older adults with hearing loss in design activities.

This project is a research cooperation between Aalborg University and Eriksholm Research Centre, part of Oticon.

The project is supported by The Danish Ministry of Higher Education and Science’s Agency for Science, Technology and Innovation.

**Participant:**  
Anne Marie Kanstrup
ASSESS CT – HORIZON 2020 ASSESS CT

will contribute to better semantic interoperability of eHealth services in Europe, in order to optimise care and to minimise harm in delivery of care. The ASSESS CT project, integrating a broad range of stakeholders, will investigate the fitness of the international clinical terminology SNOMED CT as a potential standard for EU-wide eHealth deployments. In a joint effort, the ASSESS CT consortium will

• address this challenge by investigating a number of issues related to the current use of SNOMED CT such as concrete reasons for adoption/non adoption of SNOMED CT, lessons learned, success factors, type and purpose of use, multilingualism, cultural differences, strengths and weaknesses
• review – using literature review, survey, interviews; focus groups and workshops – the current state of use of SNOMED CT and the fulfillment of semantic interoperability use cases, known technical and organisational drawbacks, and the way the terminology is improved and maintained.

• employ established evaluation approaches from social science. It will scrutinise adoption against two alternative scenarios: to abstain from actions at the EU level, or to devise an EU-wide semantic interoperability framework alternative without SNOMED CT.
• analyse the impact of SNOMED CT adoption from a socio-economic viewpoint, encompassing management, business, organisational, and governance aspects. Validation of all working tasks, both political and domain-specific, will be secured through four large workshops with a list of distinguished experts assembled in an Expert Panel, Committee of MS Representatives, and national focus groups.

Funding:
EU

Participant:
Kirstine Rosenbeck Gøeg
BUILDING STRONGER UNIVERSITIES (BSU)
The objective of the Building Stronger Universities programme (BSU) was to strengthen the research capacity of universities in selected Danida priority countries. Support was provided to their research environment and research processes. Activities included i.a. support to:

• strengthening research policies and strategies
• PhD schools
• development of research concepts
• enhancement of research quality assurance
• improving libraries and publication managements systems.

There were seven programme partners in the South, and the AAU involvement was with The Gulu University (GU) in Uganda.

Funding:
Ministry of Foreign Affairs of Denmark.

Participant:
Ann Bygholm

CLINICAL HANDOVER
This project aims to conduct an exploratory research on the work practices of shift-to-shift medical and nursing handover in five countries – Australia, Denmark, Norway, United States and Brazil, utilizing video observation methods, with a view to eventually developing a system to support clinical handover practices. The project aims to define shift-to-shift clinical handover practices across different countries and healthcare services. It further aims to develop a common understanding of the clinical handover process and explore the work practices in clinical handover in these countries. This project then aims to develop systems to improve clinical handover practices utilizing a user-centered approach. This project will be the first of its kind to explore and define clinical handover practices across different countries from the views of clinicians. This will help better define the process and develop an improved understanding of potential initiatives that could improve clinical handover.

Participant:
Christian Nørh. Project partner is University of Tasmania with Paul Turner and Ming Chao Wong.
DIGITAL SUPPORTED TREATMENT OF MILD TO MODERATE DEPRESSION

Region Southern Denmark has through a three-year project period developed and tested a prototype for Internet assisted treatment of patients with mild to moderate depression. The treatment includes a computer-based program with texts, films, exercises and questionnaires, supplemented with written support and video dialog with a psychologist. The overall objective was to test the use of cognitive behavioral therapy on the internet. The conclusions of the report Region Southern Denmark has succeeded in developing an academic environment and the “Telemedicinsk Center” has established a research and innovation environment being able to focus on working with data collection and study of the effect. In the long run, it is expected to achieve socio-economic benefits of the internet treatment over the conventional treatment of patients with a depression. Patients are not to spend time and costs on transportation.

The health care costs of the internet treatment are assessed, however - from a ceteris paribus approach - to be higher than the current treatment of talk therapy by psychologists in private practice under the subsidy scheme. According to a questionnaire the patients are satisfied with the treatment. However, the effect of the effort has not been investigated in this project, and there is a need that the patient recruitment will be cemented through implementation. The results from foreign studies show that it is too early to conclude on the effect of Internet assisted psychiatric treatment with cognitive behavioral therapy of patients with depression.

**Funding:**
Region of Southern Denmark and the Foundation for Social Technology

**Participant:**
Helle Wentzer
E-HEALTH OBSERVATION
This project aims to identify and analyze the Danish development of eHealth in both hospitals and primary care. Emphasized is uncovering the dissemination rate of the Electronic Health Records (EHR), detecting EHR stakeholder experience, identifying and evaluating key factors that promote the extension and use of EHR, as well as identifying and evaluating general barriers to the EHR. Furthermore, the project aims at communicating the experiences achieved among the primary actors. This is accomplished by an annual conference that brings together the most active partners within health informatics throughout the country.
Project homepage: e-sundhedsobservatoriet.dk

Participants:
Christian Nøhr, Pernille Bertelsen, Stig Kjær Andersen, Søren Vingtoft

EAST: ENGAGEMENT IN HEALTH WITH SOCIAL TECHNOLOGIES
EAST is an umbrella for studies on how social technology can support health promotion in a neighbourhood identified as a high risk health area. The project is a co-operation with residents, the health shop, the Medical Practice, and the GP Research Centre in East Aalborg. See also https://amkanstrup.wordpress.com/

Participants:
Anne Marie Kanstrup (PI), Pernille Bertelsen (CoPI), Jacob Østergaard Madsen (PhD student)

FULL FLOW OF HEALTH DATA BETWEEN PATIENTS AND HEALTH CARE SYSTEMS
The project examines integration of patient reported data in the electronic patient record and is hosted in Tromsø, Norway. A ph.d. study is focusing on “Integrating a full flow of health data from and between diabetes patients and primary and secondary healthcare EHRs” with Louise Pape-Haugaard as supervisor. The project is running from March 2016 to October 2020.

Participant:
Louise Pape-Haugaard
LABORATORY STUDIES OF CONTINUITY OF CARE WITH FOLLOW UP VISITS AT THE PATIENTS HOME WITH VIDEO

KORA assists Central Denmark Region with organizational innovation of cross-sectorial and cross-disciplinary cooperation using telemedicine technologies, especially video. The implementation of follow-up home care visits in the area of Århus is the chosen case.

Follow-up home care visits are an intervention to prevent readmission of elderly patients after treatment and discharge from hospital. The intervention consists of up to three contacts. The first visit is always carried out as a follow-up visit in the patients home with the participation of the patients own doctor and a community nurse.

An innovation group has produced a script with description of the users different roles, tasks, the clinical procedure of the conversation for the home visits and the use of video. This script is tested on real patients.

Through a minimum of 5 laboratory studies of the continuity of care the project examines the qualitative effects on the intervention on quality, safety and resource consumption for the GP, the patient, the community nurse and support from municipality and region.

Participant:
Helle Wenzter
MULTIPLEX BCT

The project aims to develop a diagnostic test that will rapidly provide Gram classification and, in parallel, identify the most prevalent infectious organisms in positive blood cultures in order to enable the selection of the most appropriate antibiotic treatment for the patient.

Combining the Gram and ID tests in one device enables optimized therapy selection at the earliest possible time. The test comprises a molded cartridge and pre-loaded assay reagents. The project also includes the development of a tablet-based reporting module that will facilitate the entry of patient data and test results and communicate the results to the hospital information system and directly to the treating physicians further reducing time lags in action being taken on the test results. The test and tablet software will be prototyped and tested in pre-clinical studies. The successful design and software will be transferred to manufacturing operations. The test will be validated in a clinical study conducted at Aalborg University Hospital.

The study is expected to form the basis for a CE-IVD certification of the test. An outcome study will be designed and conducted, also at Aalborg University Hospital, in which patient outcome and associated hospital expenses obtained with the use of the new test will be compared with those obtained with current methods. It is expected that the results of the validation and outcome studies will be described in separate manuscripts that will be submitted for publication by peer-reviewed clinical microbiology journals.

Participants:
Louise Pape-Haugaard, Ole Hejlesen
NATIONAL MONITORING OF DEVELOPMENT AND USE OF E-HEALTH IN DENMARK

Earlier we have experienced several research projects making status of penetration of eHealth systems. They have primarily been focused on EHR systems and mostly on whether they have been implemented or not.

However, the penetration has now reached a level making it more interesting to survey whether the systems are used and if so – to what extent and where in the daily clinical work practice.

This is a continual project making a survey every year questioning around 8000 clinicians about their use of e-health systems. The aim of the survey is to clarify the use of and the attitudes to e-health. This survey is the third in a row, addressing randomly selected physicians, nurses and medical secretaries. The survey is made in cooperation with “Lægeforeningen”, “Dansk Sygeplejeråd” and “Dansk Lægesekretærforening”.

In the long term the objective is to compare the results over several years, making tendencies of use and attitudes to e-health systems visible. Further, the results will make a comparison to other countries possible.

The survey is a part of the Nordic e-Health Research Network (NeRN) making equivalent surveys in the Nordic countries. Further, the project is a part of the OECD task force on model survey on the availability and use of information and communication technologies in the health sector.

Participants:
Christian Nøhr, Søren Vingtoft and Sidsel Villumsen
PATIENT SAFETY
There is evidence that health information technology (HIT) is central to improving safety and quality of health service. But research has also documented the ability of health information systems to introduce new types of errors (i.e. technology-induced errors) that arise from the design and development, the implementation and customization, or the interactions between the operation of a technology and the new work processes that arise from a technology’s use.

Within this theme we are engaged in a number of project activities:
- Co-chairing the launch of a new working group on patient safety informatics within the International Medical Informatics Association (IMIA)
- Critically review of initiatives that address safe HIT system design, build, implementation and use in a non-exhaustive set of exemplar countries identified by searching the websites of regional and national agencies and programs in England, Denmark, the Netherlands, the USA, Canada and Australia. 20
- Analysis of reports on adverse drug events in the Oncology Department at Aalborg University Hospital in relation to a newly implemented medication administration system (ONCMED).

Participants:
Christian Nøhr and André Kushniruk

PULSUP
The project is an intervention project exploring design of exercise networks for young adults diagnosed with depression, anxiety and a low physical activity level. The project is a co-operation with the General Practice ‘Støfjen’, Aalborg Municipality’s health shop, and The Research unit for medical practice in Aalborg.

Funding:
TrygFonden

Participants:
Anne Marie Kanstrup (PI) and Pernille Bertelsen (CoPI)
**SNA (SOCIAL NETWORK ANALYSIS)**
The project examines if SNA (Social Network Analysis) can be used to explain changes in cooperation and communication for/after the implementation of the Heart Failure Project and whether a change can be shown in the cooperation and communication of the involved participants. The project is carried out in collaboration with Telecare Nord.

**Participant:**
Karsten Niss

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**STANDARDISATION OF DANISH HOME-CARE NURSING TERMINOLOGY (FÆLLES SPROG III)**
In 2013 Local Government Denmark (KL) decided that any registration of home-care nursing interventions must be linked to specific problems registered by the nurse. Furthermore, KL decided that registration of core information in home-care, if possible, should be registered using international classifications and terminologies. These decisions led to initiation of collaboration with TaMiCS on developing SNOMED CT subsets for nursing problems and care procedures and also for registrations of a citizens level of functionality. The work is made in collaboration with groups of clinical experts and the methods used and resulting subsets was published during 2015. See also www.kl.dk/fs

**Participants:**
Pia Elberg, Kirstine Rosenbeck Gøeg
TELECARE NORTH
TeleCare North is an ambitious, large-scale telemedicine project to all severe COPD patients in North Jutland (according to GOLD criteria). The anticipated social and human benefits from this investment have also secured widespread support for the project: from all North Jutland municipalities, the North Denmark Region as well as hospitals, general practitioners, a patient advocacy organization and Aalborg University.

A large-scale project like TeleCare North where all healthcare professionals in the system engage in interdisciplinary telemedicine collaboration – not only concerning the patient but also involving the patient – is the first of its kind in Europe and also explains why the project is being closely monitored in Denmark and abroad. Yet, the project is also challenging: Setting a goal of health equality and turning the patient from a passive recipient of services into an active team player makes big demands on everyone involved.

Unprecedented types of collaboration must be established, new support and service functions must be set up for patients and their families, work routines must be changed, patients must be brought into the process and they must provide their own data.

Members of the steering group:
Professor Lars Holger Ehlers, Department of Business and Management, and Ole K. Hejlesen, Professor at Department of Health Science and Technology
VIDEO CONSULTATIONS IN CROSS-SECTORIAL PATIENT CARE
The research project will determine which communication and which diagnostic cooperation is possible in virtual environments, where the doctor, patients / citizens and nurses communicate via video. The doctor will not be able to examine his patient physically, but will be dependent on the patient / citizen and the nurse to show and explain the symptoms and findings. All three parties hereby have a new option using video consultation, but furthermore they have to face new communicative tasks. KORA examine these communicative processes and their influence to the involvement of citizen / patient, clinical decision making and coherent patient care.

Funding:
Central Denmark Region, Municipality of “Syddjurs” and KORA

Participant:
Helle Wentzer

WHAT DO THE USERS AND THE HEALTH CARE PROFESSIONALS THINK OF “SMART DEVICES” FOR REHABILITATION?
The use of smart devices (such as watches, bracelets and devices for belt/pants) for monitoring and feedback on life style related activities (fx physical activities, sleep, food and puls) have grown fast over the past years and they have become more and more advanced. These new technologies have mostly so far been purchased and used on private basis, but in recent years regions and municipalities have adopted the technology as a tool to support various behavioural changes. The objective of the project is to examine smart devices on rehabilitation on patients with Chronic Obstructive Pulmonary Disease and the health care professionals in the Health Care Center Aalborg.

Participant:
Anna Marie Høstgaard
**HOSPITAL PLANNING AND CONTROL SYSTEM**

The PhD research project is about analyzing hospitals and their production control system with a new approach, which emphasizes the consequences and tradeoffs by having a more patient oriented health care delivery. This means the analysis is a bottom up approach where it will be patient flow oriented using theoretical framework from process science. Hence, an understanding of the patient flow can offer in-depth understanding of the highly complex interdependencies existing in Danish hospitals’ network of service units. The objective of this PhD research is to develop a systematic way of making managerial decisions through the framework of production planning and control for hospitals to make efficient allocation of material, human and financial resources needed for delivery of high quality and effective care. A planning and control system framework will be proposed, which can support the hospitals to have better control of their logistics information and integration of planning across the independent departments. Currently we are working on developing an approach to plan and reallocate resources more effectively during the day by predicting crowding at the emergency department.

PhD project of Vivi Thuy Nguyen

**METHODS FOR IMPLEMENTING HEALTH CARE TECHNOLOGIES IN LOCAL PRACTICE**

The ph.d. project focus on examining the existing level of implementation of welfare technology solutions in Danish municipalities and on developing new implementation methods to the health care staff working in the local practice. The project is carried out in cooperation with University College North, Department for Senior Citizens and Disabled in the Municipality of Aalborg, the Center for Governmental Health Research in the Department of Health and Culture in the Municipality of Aalborg and Aalborg University


**MONITORING AND EVALUATION OF AVAILABILITY AND UTILIZATION OF HEALTH-IT IN DENMARK**

Many countries have national strategies for developing and implementing health Information Technology (health IT) systems, especially electronic patient records (EPR). Some countries follow up on these strategies by monitoring the availability and the use of health IT systems. In order to obtain insight in the progression, free of special interest and based on scientific methods, it is important that independent institutions perform the data collection and analysis. Further, it is important to apply suitable scientific methods in order to ensure reliable and valid data. This PhD project aims to develop a scientific methodical basis for the Regions of Denmark to monitor and evaluate the availability and use of health information systems. The methods for monitoring and evaluation aims to deliver input for the further strategic work on national and regional level. Further, the project aims at founding an effect monitoring. The project is currently working on a meticulous and exhaustive literature review following acknowledged guidelines.

PhD project of Sidsel Villumsen, period: October 2014 to Januar 2019
MARIE GLASEMANN

The research examined design participation with a focus on the involvement of youths and an understanding of the youths’ perceptions on using mobile technology for learning about diabetes.

Phd supervisor:
Professor mso Anne Marie Kanstrup, Aalborg University

Phd committee:
Professor Ann Bygholm, Aalborg University, DK (chair)
Professor Finn Kensing, University of Copenhagen, DK
Senior Lecturer Dr. Mark Dunlop, University of Strathclyde, UK
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