Introduction

During 2010 there were twelve research groups at the Department of Public Health and Caring Sciences: Caring Sciences, Clinical Nutrition and metabolism, Disability and Habilitation, Family Medicine and Clinical Epidemiology, Geriatric Research, Health Service Research, Oxidative Stress and Inflammation, Preventive Medicine, Psychosocial Oncology and Supportive Care. Research Ethics and Bioethics, Social Medicine and Sociomedical Epidemiology.

Caring Sciences
Caring Sciences includes theory, methods and techniques for the study of problems and interventions for individuals and groups within the health care system. The research emanates from a multi scientific and multi professional perspective which includes preventive, supportive, caring and rehabilitative actions. Research concerning health care organizing and education also falls within the scope of Caring Sciences.

Clinical Nutrition and Metabolism
The research at Clinical Nutrition and Metabolism (CNM) deals with dietary intake and metabolism during health and disease, and covers aspects of preventive public health nutrition, clinical disease- and age-related nutrition, child and adult obesity, circadian metabolism, dietary interventions, dietary assessments, energy metabolism, body composition, measurement and implementation techniques.

Disability and Habilitation
Research in disability is interdisciplinary and multi-professional with a fundamental perspective focussing the interface between the individual and his or her environment. A joint conceptual tool is found in World Health Organisation’s classification ICF (International Classification of Functioning, Disability and Health). Contextual Factors in particular serve as a framework for research programme activities in elucidating environmental aspects of disability.

Family Medicine and Clinical Epidemiology
Family Medicine is the dominating academic branch in Primary Health Care and reflecting the fact that primary health care is in the health care front line. Family Medicine research focuses on the most common diseases and illnesses in the population, for instance cardiovascular disease, diabetes, asthma, chronic obstructive lung disease, social insurance medicine (sick-listing and disability retirement), and musculo-skeletal disorders.

Geriatric Research
In geriatric research the main areas of research are: Molecular studies of dementia, clinical and epidemiological research and clinical and epidemiological research affecting the elderly population. The researchers are using cellular- and transgenic mice models of Alzheimer’s disease. The research group is also involved in genetic analysis of dementia in human samples. The major aim for the dementia research group in the future is to establish immunotherapeutic strategies to treat dementia.
Health Services Research

Health Services Research adopts three perspectives on health care research: provision, organization, and system of care. The focus is on governance and implementation, intra-organisational control, inter-organisational relations and patient relations. Study objectives include development of exploratory models for differences in public and private care, identification of barriers for implementation of patient choice reforms and identification of facilitators for patient centered care, especially within telecare. The group is multidisciplinary and the researchers have backgrounds in medicine, nursing and political science.

Oxidative Stress and Inflammation

The key research areas are inflammation in physiology and disease state specifically with bioactive eicosanoids. Additionally, oxidative stress which reflects increased levels of free radicals in the body that implicated both in ageing and several inflammatory diseases is another key research area. The research group has many national and international collaborative projects within the research vicinity.

Preventive Medicine

The research within preventive medicine addresses mechanisms of social inequalities in health, theories of the life course approach in current epidemiology and pertinent empirical topics like the combined effect of early life and later life risk factors on health and morbidity and risk factors triggering the onset of health problems.

Psychosocial Oncology and Supportive Care

The research within the Psychosocial Oncology and Supportive Care group study cancer during adolescence, psychosocial and health economic consequences and posttraumatic stress disorder among parents of children with cancer. The research group has collaboration with many Swedish centres for pediatric oncology, health IT specialist, and health-economists. The research is cross-disciplinary and is now integrated with the U-CARE program.

Research Ethics and Bioethics

The researchers conduct research on research ethics, bioethics and medical law. Research ethics involves the application of ethical principles and values to a variety of research topics. Bioethics, on the other hand, includes philosophical, theological, legal and social scientific aspects of medicine and biology. Medical law spans a wide range of traditional branches of law and there is collaboration with the Department of Law at Uppsala University.

Social Medicine

The research within social medicine focuses on three major and inter-related research areas. A common factor for the research is to enhance the scientific understanding of risk- and resiliency factors, as well as bio-psycho-social mechanisms, of relevance for sustained and equitable occupational and social health and well-being. The research also concerns determinants of and effective use of limited financial and human resources, and its implications for major health care stakeholders, including patients, staff, and third-party payers.
Sociomedical Epidemiology

The research integrates social epidemiology, prevention research and health services research. The aim of the research programme is to develop methods for identifying and analysing the mechanisms behind preventable disease patterns in the population, and to evaluate the impact of the health care system, and analyse psychosocial, behavioural and biological risk factors for ill health and how these factors may be influenced in order to improve preventive strategies.

The researchers, at the Department of Public Health and Caring Sciences published more than 200 articles in scientific journals during 2010 and the external funding was about 40 million Swedish crowns. Sixteen of the doctoral students successfully defended their dissertations.

In all, 170 persons had positions at the department and another 150 were associated as doctoral students or researchers. There were 19 professors (chairs, emeriti, promoted and adj), of which five were women, 10 associated professors, 39 researchers, 18 research assistants, 14 senior lecturers, 25 lecturers, 24 administrators and technicians. Seventy seven doctoral students were studying at the department and 24 of those had appointments.

At the undergraduate level, about 500 full time students were studying at the department. The students belonged to different programs and courses, 310 were educated within the Nursing programs, 70 within the Physician program, 22 within the MSc-program in Public Health and about 100 in other short courses.

Prices and awards

Maria Gottvall received the first price (500 Euro) for best oral presentation among young scientists at the European Congress of Contraception and Reproductive health in Haag.

Margareta Sanner were appointed honourable member at the European Donationsday 2010-10-23 in the Association “Life as a gift”.

The year 2010 has been a good year for the Department of Public Health and Caring Sciences and a lot of achievements have been accomplished by the staff and the students. Three of the research groups are situated at Dag Hammarskjölds väg 14B and the other nine at BMC but the good cooperation between the groups will remain. We are now facing 2011 with of new KoF evaluation, a new University organization, and economical, educational as well as scientific challenges.

Uppsala 2011-03-25
Marianne Carlsson
Head of Department
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Organization

**Head of Department**  
Marianne Carlsson

**Deputy Head of Department**  
Mats G Hansson

**Department Board**  
Carina Ahlstedt, Teacher and Researcher Representative  
Gunnar Bergström, Student Representative  
Monica Blom Johansson, Graduate Student Representative  
Tommy Cederholm, Teacher and Researcher Representative  
Birgitta Edlund, Teacher and Researcher Representative  
Margaretha Eriksson, Teacher and Researcher Representative  
Annica Ernesäter, Graduate Student Representative Deputy  
Ulf Holmbläck, Teacher and Researcher Representative Deputy  
Inger Holmström, Teacher and Researcher Representative Deputy  
Jonas Lindberg, Student Representative  
Annie Lundberg, Technical and Administrative Representative, Deputy  
Rose-Marie Marcusson, Technical and Administrative Representative  
Karin Nordin, Teacher and Researcher Representative Deputy  
Catarina Olsson, Protocol  
Anja Saletti, Teacher and Researcher Representative Deputy  
Charlotte Traneus, Economist  
Ulrika Winblad Spångberg, Teacher and Researcher Representative

**Professor Emeriti**  
Urban Rosenqvist  
Björn Smedby  
Kurt Svärdsudd  
Claes-Göran Westrin  
Bengt Vessby adj Professor Emeritus

**Directors of Graduate Studies**  
Mats G Hansson, Head  
Margaretha Eriksson  
Inger Holmström  
Karin Nordin, MSc in Public Health

**Directors of Undergraduate Studies**  
Karin Björkegren, Head  
Birgitta Edlund, Head  
Carin Ahlstedt  
Lena Kilander  
Sören Kjellberg  
Ragnar Westerling  
Annika Åhs
**Director of Clinical Issues**
Lars Lannfelt

**Professors and Research Groups Leaders**
Bengt Arnetz  
Samar Basu  
Karin Björkegren  
Marianne Carlsson  
Tommy Cederholm  
Louise von Essen  
Johan Hallqvist  
Mats G Hansson  
Inger Holmström  
Lars Lannfelt  
Karin Nordin  
Karin Sonnander  
Tanja Tydén  
Ragnar Westerling  
Ulrika Winblad Spångberg

**Adj Professors, Guest Professors and adj Senior Lecturers**
Annika Bardel  
Hans Basun  
Wulf Becker  
Mats Gulliksson  
Håkan Hall  
Marie Johannesson  
Gunnar Johansson  
Mari-Ann Wallander  
Thorne Wallman  
Anna Christina Åberg
Address List

Department of Public Health and Caring Sciences, IFV (Institutionen för folkhälso- och värdvetenskap)

Address: The Department is situated at three different locations:
BMC, Dag Hammarskjölds väg 14B, and Rudbeck Laboratory, Dag Hammarskjölds väg 20.

e-mail address: firstnamn.lastname@pubcare.uu.se

Aarts Clara
Adolfsson Päivi
Agnedal Maria
Ahlstedt Carina
Alaie Iman
Alfonsson Sven
Ander Malin
Andersson Anita
Andersson Caroline
Anderzén Ingrid
Anshelm Cecilia
Arnetz Bengt
Arnetz Judith
Arving Cecilia
Ashir Assalie
Ax Erika
Bardel Annika
Basu Samar
Basun Hans
Becker Wulf
Bergknut Eva
Berglund Marie
Bergström Joakim
Bjerg-Bäckström Rie
Bjermo Helena
Björkegren Karin
Blom Johansson Monica
Brantnell Anders
Bratteby-Tollerz Linda
Burell Gunilla
Bäcklund Linus
Carlsson Maria
Carlsson Marianne
Cederholm Tommy
Cernvall Martin
Daryani Achraf
Demmelmeier Ingrid
Denison Eva
Edlund Birgitta
Ekholm-Pettersson Frida
Engvall Gun
Eriksson Birgitta
Kjellberg Sören
Kuhlau Frida  frida.kuhlau@crb.uu.se
Källström Lillemor
Lampie Claudia
Lannfelt Lars
Lindahl Norberg Annika
Lindgren Björn
Lindstedt Helena
Ljungberg Anne-Marie
Lochan Ruth
Lundberg Annie
Lundberg Pranee
Lundin Birgit
Lundquist Annika
Lytsy Per
Magnusson Kristina
Magnusson Maria
Marcusson Rose-Marie
Marnell Harriet
Martinsson Carl Magnus
Masterton Malin  malin.masterton@crb.uu.se
Mattsson Elisabet
Modin Karin
Muntlin Athlin Åsa
Nilsson Gunilla
Nilsson Lars
Nordin Karin
Norinder Camilla
Normark Lena
Näsström Thomas
Ohlsson Anna
Olsson Catarina
Olsson Erik
Olsson Mona
Olsson Roger
O’callaghan Paul
Paulsson Ulrica
Peippo Maria
Pettersson Elisabet
Pettersson Mona
Philipson Ola
Pöder Ulrika
Rahman Mohammad Hafijur
Renberg Tobias  tobias.renberg@crb.uu.se
Riserus Ulf
Rissanen Ritva
Rosén-Hansson Inger
Roshanai Afsaneh
Rosvall Paula
Röing Marta
Saletti Anja
Schmidt Meta
Simu Barbro
Sjögren Per
Skärlund Mikael
Sonnander Karin
Stern Jenny
Stolt Ragnar
Sundelin Majbritt
Svanberg Ann-Carin
Svedberg Marie
Swenne Leo Christine
Tengblad Siv
Terner Annika
Thoudal Berit
Tirkkonen Leena
Torbratt Karin
Traneus Charlotte
Tydén Tanja
Törmä Johanna
Umb-Carlsson Öie
von Essen Louise
Wadensten Barbro
Wallander Mari-Ann
Wallenquist Monica
Wallman Thorne
Westerberg-Jacobson Josefin
Westerling Ragnar
Westin Marcus
Wiholm Claire
Winblad Spångberg Ulrika
Zethelius Björn
Zethraeus Niklas
Zhang Xiao
Åberg Anna Cristina
Åhs Annika
Ärnlöf Johan
Associated Researchers

e-mail address: firstnamn.lastname@pubcare.uu.se

Anderberg Ulla-Maria
Berglund Gunilla
Bernsten Cecilia
Björklund Bodegård Kristina
Björkman Ingeborg
Blomkvist Vanja
Bojner Horwitz Eva
Boll Madeleine
Boström Eva
Brattberg Gunilla
Brorsson Bengt
Bröms Kristina
Ekstrand Maria
Engström Maria
Falkeborn Margareta
Ferdous Tamanna
Gustafsson Carina
Hagerman Heidi
Hanning Marianne
Hansson Ann-Sophie
Hedov Gerth
Helmersson Johanna
Hjelmblink Finn
Hofsten Anna
Häggström Elisabeth
Ingelsson Erik
Jansson Pia von Voultée
Johansson Lars Age
Karlström Brita
Kjeldman Dorte
Kristofferzon Marja-Leena
Kullberg Kerstin
Kunkel Stefan
Kälvemark Sofia
Larsson Jan
Larsson Kjerstin
Lennernäs Maria
Lindahl Norberg Annika
Kindau Maria
Lindberg Magnus
Lindqvist Ragny
Lindström Veronica
Lisspers Karin
Ljunggren Birgitta
Lord Anna
Lunner Katarina
Lyskov Eugene
Muntlin Åsa
Mårtensson Gunilla
Nerelius Charlotte
Nilsson Annika
Olsson Gunilla Maria
Oscarsson Marie
Pless Mia
Rodhe Nils
Röing Marta
Skytt Bernice
Sanner Margareta
Skoglund Lena
Smedman Annika
Smide Bibi
Sobestiansky Sigvard
Ström Möller Kristina
Ståhlhammar Jan
Stållberg Björn
Svalastoga Anna Lydia
Swartling Malin
Söderback Ingrid
Wallman Thorne
Wasteson Elisabet
Veg Anniko
Welander Hedvig
Westerberg Jacobson Josefin
Wettergren Lena
Winterling Jeanette
Åhs Annika
Doctoral Students

Adamsson Viola
Atry Ashkan
Berg Peter
Bjermo Helena
Björn Catrine
Blom Johansson Monica
Boll Madeleine
Boman Jill
Bröms Kristina
Cedervall Ylva
Cernvall Martin
Degerman Gunnarsson Malin
Engström Sevek
Ermesäter Annica
Fagerqvist Therese
Fredriksson Mio
Glad Johan
Godskesen Tove
Gottvall Maria
Grunnesjö Marie
Gumucio-Gatica Astrid
Gustavsson Catharina
Gustavsson Hanna
Hagerman Heidi
Hakimina Roya
Halford Christina
Hallman David
Hayat Roshanay Afsane
Hedman Nils Olof
Höyer Marie
Iggman David
Isaksson Stina
Jalmsell Li
Jansson Stefan
Januss Grunnesjö Marie
Jobs Elisabeth
Johansson Hans-Erik
Johnsson Linus
Jönsson Birgitta
Kaminsky Elenor
Karlsson Bo
Kirsebom Marie
Kuhlau Frida
Lindberg Magnus
Lindberg Maria
Lytsy Per
Martinell Mats
Masterton Malin
Nerpin Elisabeth
Nordin Jenny
Nordlöf Hasse
Norrmén Gunilla
Näsström Tomas
O’callaghan Paul
Olai Lena
Olsson Erika
Paulsson Ulrica
Peterson Magnus
Pettersson Mona
Philipsson Ola
Rissanen Ritva
Rönnemaa Elina
Sehlin Dag
Sobestiansky Sigvard
Star Kristina
Stjernschantz Forsberg Joanna
Stolt Ragnar
Sundelöf Johan
Sving Eva
Söllvander Sofia
Terner Annika
Törmä Johanna
Vaegter Keld
Westerberg Jacobsson Josefine
Wiberg Bernice
Von Celsing Anna-Sofia
Östlund Ann-Sofí
Centres

During 2010, the Department of Public Health and Caring Sciences was the host of three Centres, Centre for Disability Research, Centre Research Ethics and Bioethics (CRB), and Uppsala University Psychosocial Care programme (U-Care).

**Centre for Disability Research**

([www.cff.uu.se](http://www.cff.uu.se)).

Director: Karin Jöreskog

The Centre for Disability Research was established in 1988 to coordinate in disability issues in various subject areas at the faculties at Uppsala University and to interact with society in issues related to disability research. The aim is to disseminate information about research and to stimulate long term acquisition of knowledge about issues involving disability by enhancing the flow of information among teachers, researchers, and doctoral students as well as interested parties outside the University. There is close collaboration with the research group Disability and Habilitation (p 56).

**Centre for Research Ethics & Bioethics (CRB)**

([www.crb.uu.se](http://www.crb.uu.se))

Director: Mats G Hansson

The Centre for Research Ethics & Bioethics is an interfaculty centre. The centre is integrated with the research group Research Ethics and Bioethics. The research profile includes research ethics, bioethics, and medical law. More specifically, research on animal and environmental ethics, autonomy, the ethics of biobanking, dual-use issues related to biosafety and biosecurity, codes and guidelines for research, clinical ethics, enhancement of human performance, genetic information and testing, medical law, neuroethics and the philosophy of mind, ethics at the beginning of life, priorities in health care and quality of life issues (p 159).

**Uppsala University Psychosocial Care Programme (U-Care)**

Director: Louise von Essen

The U-Care Programme is one of the strategic research fundings from the Swedish Government and was established in 2010. The Programme is integrated with the research group Psychosocial oncology and Supportive care. The research activities are performed within the areas of paediatric oncology, adult oncology, and cardiology in close collaboration with clinicians at Uppsala Akademiska Hospital and other Swedish hospitals. U-Care is a forum for interdisciplinary encounters and networking across the borders between social and medical sciences (p 151).
Scientific Reports
Caring Sciences

Research Group Leader Professor Tanja Tydén

Caring Sciences include theory, methods and techniques for the study of problems and intervention for individuals and groups within the health care system and in broader contexts of care. Outcome and relations between different, clinically relevant factors for care are evaluated, as well as the processes involved - all from a multi-professional perspective.

Research in Caring Sciences emanates from a multiscientific and multiprofessional perspective which includes preventive, supportive, caring, nursing and rehabilitative actions. One area of the Caring Sciences emphasizes social and behavioural science, including such theories and methods. An important field of study is the interaction between personnel, patients and their family/ significant others. The individual's resources for keeping and regaining optimal health, as well as his/hers ability to adjust to change in health status is another important focus for research. Resources within the health care system for support to the individuals and their families are also of great interest, particularly when such resources are lacking and in palliative care. Finally, research concerning quality of care, cultural aspects, health care organising and education is within the scope of the Caring Sciences.

Researchers
Our group consists of several researchers of which many are very experienced and have interesting ongoing projects of high quality. The group is multi professional, but the majority is RNs. We have four research themes;
Health and Care among Children, Adolescents and Young Adults
Psychosocial Genetics and Cancer Care
Quality of Care and Patient Safety
Health and Care among Elderly

All teachers including the professors are to a high degree engaged in education on undergraduate level, master and doctoral level. The education mainly concerns courses in caring sciences within the Nursing and Specialist Nursing Programs, single subject course and courses within the Master Program in Public Health. Some teachers are also engaged in teaching within other departments.

The following researchers and senior lecturers 2010:
Aarts Clara, RN, PhD, senior lecturer
Arving Cecilia, RN, PhD, researcher, guest lecture
Carlsson Maria, RN, associate professor, senior lecturer
Carlsson Marianne, PhD in psychology, professor
Edlund Birgitta, RN, associate professor, senior lecturer
Gunningberg Lena, RN, associate professor, senior lecturer
Hedström Mariann, RN, PhD, senior lecturer
Ingvoldstad Charlotte, PhD
Lampic Claudia, licensed psychologist, associate professor, senior lecturer
Leo Svenne Christine, RN, PhD, senior lecturer
Lundberg Pranee, RN and midwife, associate professor, senior lecturer
Nordin Karin, licensed psychologist, professor 50%, at Uppsala University and 50% at the University of Bergen, Norway
Pöder Ulrika, RN, PhD, senior lecturer
Tydén Tanja, RN, midwife, professor
Wadensten Barbro, RN, associate professor, senior lecturer
Winblad Spångberg Ulrika, political scientist, associate professor, senior research assistant

Lecturers fulltime or part time
Ahlstedt Carina
Bergknut Eva
Eriksson-Öhman Solveig
Hedlund Lena
Holm Marta
Hovstadius Eva
Kjellberg Sören
Lundin Birgit
Norinder Camilla
Normark Lena
Pettersson Mona
Rosvall Paula
Schmidt Meta
Staaf Anita
Svanberg Ann-Carin
Thoudal Berit

Associated researchers
Ekstrand Maria, RN and midwife, PhD
Engström Maria, RN, associate professor
Häggström Elisabeth, RN and midwife, associate professor
Kristofferzon Marja-Leena, RN, PhD
Kullberg Kerstin, occupational therapist
Lindberg Magnus, RN, PhD
Lindqvist Ragny, RN, PhD
Ljunggren Birgitta, RN, PhD
Lunner Katarina, PhD
Muntlin Åsa, RN, PhD
Nilsson Annika, RN, PhD
Oscarsson Marie, RN and midwife, PhD
Skytt Bernice, RN, PhD
Smide Bibbi, RN, PhD
Söderback Ingrid, occupational therapist, PhD
Wasteson Elisabet, licensed psychologist, PhD
Westerberg Jacobson Josefin, MSc, PhD
Winterling Jeanette, RN, PhD

Fundings over 100.000 SEK 2010
Community of Uppsala 500 000
Medical Faculty Uppsala University 1 076 000
The Swedish Cancer Society 1 822 000
The Swedish Institute of Infectious Disease 250 000
The Swedish Research Council 796 000
Uppsala/Örebro Regional Research Council 525 000
Licentiate dissertation 2008-2010
Kullberg Kerstin, “Food in older men with somatic diseases. Eating habits and approaches to food-related activities”, 2009

Dissertations 2008-2010
Eva Landström, “‘To choose or not to choose functional foods? – Attitudes to and use of functional foods among Swedish consumers and health care professionals’”, 2008

Kjerstin B Larsson, “Quality of Life and Coping with Ulcerative colitis and Crohn’s Disease”, 2008

Anniika Nilsson, ”Health Care Staff: Riskfactors for Pain, Disability and Sick Leave”, 2008

Mathilde Hedlund, “Coping, psychiatric morbidity and perceived care in patients with aneurismal subarachnoid haemorrhage”, 2009

Gunilla Mårtensson, “The insider and outsider perspective. Clinical importance of agreement between patients and RNs in cancer care concerning patients’ emotional distress, coping resources and quality of life”, 2009

Rastad Cecilia “‘Winter Fatigue and Winter Depression – Prevalence and Treatment with bright light’, 2009


Ingrid Demmelmaier, “Behaviours, Beliefs and Back Pain – Prognostic Factors for Disability in the General Population and Implementation of Screening in Primary Care Physiotherapy”, 2010

Afsaneh Hayat Roshanai, “Psychological and Behavioral Aspects of Receiving Genetic Counseling for Hereditary Cancer”, 2010


Ongoing PhD students at caring sciences in 2010
Björn Catrine
Gottvall Maria
Gustavsson Catharina
Hagerman Heidi
Höyer Marie
Isaksson Stina
Kirsebom Marie
Lindberg Maria
Health and Care among Children, Adolescents and Young Adults

2008


2009


2010


16. Engvall G, Skolin I, Mattsson E, **Hedström M** & von Essen L (2010). Are nurses and physicians able to assess which strategies adolescents recently diagnosed with cancer use to cope with disease- and treatment-related distress? *Supportive Care in Cancer*. Published online Mars 27


Psychosocial Genetics and Cancer Care

2008


2009


2010


Quality of Care and Patient Safety

2008


2009


2010


Health and Care among Elderly

2008

2009


2010


108. Kullberg K, Björklund A, Sidenvall B & Åberg AC (2010). ‘I start my day by thinking about what we’re going to have for dinner’: A qualitative study on approaches to food-related activities among older men with somatic diseases. Scandinavian Journal of Caring Sciences, Early view (Article on line in advance of print) Article first published online: 26 JUL 2010. DOI: 10.1111/j.1471-6712.2010.00813.x


Other articles

2008


2009


2010


Scientific Reports
Clinical Nutrition and Metabolism (CNM)

Research Group Leader Professor Tommy Cederholm

Metabolic and dietary interaction during health and disease is the research focus at CNM. Within this overall focus there are two major research pathways, i.e. 1) clinical disease- and age-related nutrition, which includes understanding of catabolic processes, consequences and treatment related to undernutrition, cachexia and sarcopenia in hospital, elderly care and community settings, and 2) preventive nutrition and metabolism, including nutritional epidemiology, obesity and metabolic intervention trials for elucidating effects on insulin sensitivity and cardio-vascular risk factors.

Fatty acid (FA) and carbohydrate metabolism, inflammation, dietary interventions, dietary assessment, energy metabolism, body composition measurements and implementation techniques are examples of methodology expertise. CNM has laboratories that analyze FA profiles in various tissues by gas-chromatography and measure body composition by air-displacement and bioelectrical impedance, and energy expenditure.

Epidemiological studies consider nutritional, metabolic and dietary factors in relation to long-term clinical outcomes, e.g. diabetes type 2, metabolic syndrome, cardiovascular disease as well as functional limitations, cognitive dysfunction, morbidity and mortality in young old and old old populations. Clinical trials concern understanding of sarcopenic mechanisms during disease and senescence, as well as potential effects of designed amino acid solutions and vitamin D to sarcopenic old adults. Techniques of implementation to improve nutritional routines in elderly care are investigated. Intervention trials in order to understand metabolic effects of healthy Nordic diet and by providing various fat qualities i.e. saturated vs. mono- and polyunsaturated fatty acids are performed in single-center as well as in larger multi-center controlled studies in order to assess effects on insulin resistance, inflammation, liver fat and other cardio-vascular risk factors.

Obesity, especially child obesity, is explored by metabolic characterization of insulin resistance, energy metabolism, and body composition. Sleep pattern effects and disturbed circadian rhythm effects on glucose metabolism are studied.

Members of the group during 2010

<table>
<thead>
<tr>
<th>Name</th>
<th>Academic title</th>
<th>Professional title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tommy Cederholm</td>
<td>Professor</td>
<td>MD</td>
</tr>
<tr>
<td>Wulf Becker</td>
<td>Adjunct professor</td>
<td>Chief nutritionist</td>
</tr>
<tr>
<td>Brita Karlström</td>
<td>Professor</td>
<td>Dietitian</td>
</tr>
<tr>
<td>Bengt Vessby</td>
<td>Professor emeritus</td>
<td>MD</td>
</tr>
<tr>
<td>Ulf Riserus</td>
<td>Associate professor</td>
<td>Researcher</td>
</tr>
<tr>
<td>Ulf Holmbäck</td>
<td>Post-doc</td>
<td>Researcher</td>
</tr>
<tr>
<td>Anja Saletti</td>
<td>Post-doc</td>
<td>Dietitian</td>
</tr>
<tr>
<td>Per Sjögren</td>
<td>Post-doc</td>
<td>Researcher</td>
</tr>
<tr>
<td>Viola Adamsson</td>
<td>PhD student</td>
<td>Nutrition manager</td>
</tr>
<tr>
<td>David Iggman</td>
<td>PhD student</td>
<td>MD</td>
</tr>
</tbody>
</table>
Roger Olsson  PhD student  University teacher
Helena Petersson  PhD student
Elisabet Rytter  PhD student
Johanna Törmä  PhD student  Dietitian
Sigvard Sobestiansky  PhD student  MD
Erika Olsson  Licentiat student  Dietitian
Erika Ax  PhD student under reg.
Fredrik Rosqvist  PhD student under reg.
Siv Tengblad  Laboratory technician
Barbro Simu  Laboratory technician
Eva Lena Andersson  Tutor
Linda Bratteby-Tollerz  Physiotherapist
Marie Berglund  Research assistant

Partly affiliated or associated to CNM
Stefan Branth  Postdoc  MD
Achraf Daryani  Postdoc
Tamanna Ferdous  Postdoc
Anders Forslund  Postdoc  MD
Maria Lennernäs  Professor
Anders Sjödin  Ass professor  MD
Annika Smedman  Postdoc
Eva Warensjö  Postdoc
Torbjörn Åkerfeldt  PhD student  MD

Publications 2008-2010

Original articles


72. De Jong A, Plat J, Bast A, Godschildk RW, Basu S, Mensink RP. Effects of plant sterol and stanol ester consumption on lipid metabolism, antioxidant status and markers of


Reviews 2008-2010


Other articles 2008-2010


5. Sjögren P. Ökad dödlighet hos män som äter lågkolhydratkost. Läkartidningen 2010;45:2784


**Dissertations 2008-2010**

**Tamanna Ferdous.** Determinants and Functional Impact of Nutritional Status Among Older Persons in Rural Bangladesh. Uppsala Universitet 2009.

**Associate professors 2008-2010**

**Ulf Risérus** 2010

**Agencies that support the work/Funding 2010 >100 000 SEK**

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<th>Agency</th>
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<td>Stockholm County Council – ALF (The OmegAD Trial)</td>
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**Future promising research at CNM:**

- Understanding sarcopenia from clinical, epidemiological and molecular perspectives, and its treatment.
- Implementation techniques of nutritional routines and development of assessment tools for meals in elderly care.
- Dietary pattern effects on development of cognitive impairment and prostate cancer.
- Omega-3 fatty acid effects on epigenetic markers, mononuclear blood cell gene expression and effects on inflammation resolution.
- Fatty acid effects on gene expression, insulin sensitivity, inflammation, endothelial cell function and body fat distribution (ectopic fat accumulation).
- Nutritional impact on metabolomics.
- Cardiometabolic, transcriptomic and epigenetic effects of a healthy Nordic diet.
- Evaluation of sagittal abdominal diameter as a valuable anthropometric risk marker.
- Individualized treatment of child obesity.
Descriptions of on-going projects

1) Nutrition, ageing and disease

Participants: Tommy Cederholm, Brita Karlström, Anja Saelletti, Johanna Törmä, Erika Ohlsson, Per Sjögren, Sigvard Sobestiansky

Sarcopenia in geriatric care – the importance of skeletal muscle in elderly patients (The SIGVARD Study)

Collaborators: Sigvard Sobestiansky, Anna Christina Åberg, Thomas Gustafsson, Andreas Fugman, Tommy Cederholm

Sarcopenia denotes the loss of muscle mass linked to physiological changes during ageing which is enhanced by age-related conditions like chronic disorders, chronic inflammation, insufficient dietary intake or low physical activity, including periods of bed-rest due to illnesses. Sarcopenia is the cause of disability and inability to recover from disease in the old subject. Increased attention has been paid to this condition during the last 10-20 years. In a joint effort with expertise on physiotherapy and muscle metabolism the prevalence of sarcopenia and methods to define and diagnose the condition will be studied in a group of 100 consecutively admitted geriatric patients. Body composition, physical strength, physical function and clinical outcome will be addressed. Progress: During 2010 the major part of collecting the patient material has been achieved.

Muscle cell gene expression patterns predictive of sarcopenia in old men and women

Collaborators: Sigvard Sobestiansky, Thomas Gustafsson, Brun Ulfhake, Lars-Erik Thörnell, Karl Michaelsson, Lars Lind, Lena Kilander, Ulf Riserus, Jamie Timmons, Tommy Cederholm

The objective of this project is if there is a specific gene expression pattern that predicts later development of sarcopenia. In the ULSAM study >1000 of the male participants at age 70 agreed to leave a muscle biopsy. From 100 subjects who also did DXA for body composition measurement at 88 years of age muscle biopsies at 70 will be utilized for microarray analysis in order to identify possible predictors through bioinformatic tools in combination with knowledge of body composition data obtained from the DXA scans. To quantify total number and number of activated satellite cells conventional immunohistochemistry will be used and to locate specific mRNA expression in situ hybridization will be used. In order to assess if gene expression patterns found in old men are also valid for older women, 100 female participants in the PIVUS cohort will be asked to leave a muscle biopsy at the age of 80. These specimens are planned to be analysed similar to those of the ULSAM cohort.

Changes in muscle morphology and muscle regenerative capacity in Swedish men from 70 to 90 years of age.

Collaborators: Sigvard Sobestiansky, Thomas Gustafsson, Brun Ulfhake, Lars-Erik Thörnell, Karl Michaelsson, Tommy Cederholm

The objective is to identify mechanisms involved in age-related muscle wasting by comparing molecular and cellular findings in biopsies taken at ages 70 and 88 years in 40 Swedish males. ULSAM cohort members who performed the 88 year follow-up, including DXA scan and had a muscle biopsy taken at the age of 70 will be asked if they are willing to leave a new biopsy at age 90. The material will be analysed according to the content of embryonic myosin (i.e. regeneration), expression of acetyl choline receptor subunits (i.e. denervation) and numbers and activity of satellite cells, which is the stem cell of muscle regeneration. Moreover, fiber type distribution, muscle fiber area and muscle capillary density will be compared between the biopsies from 70 to 90 years of age. Single nucleotide polymorphisms (SNPs) will be related to muscle phenotypic data.
Selective Androgen Receptor Modifiers (SARMs) for the treatment of muscle wasting/sarcopenia in free-living older adults

Collaborators: Ulf Holmståck, Maria Berglund, Torbjörn Åkerfeldt, Roger Olsson, Karl Michaelsson, Tommy Cederholm.

CNM was one of many international centers in a Phase II/III study performed by MSD to evaluate feasibility, safety and effects on muscle strength and functionality in community-dwelling older adults with limited functional impairments by a new Selective Androgen Receptor Modifier (SARM). CNM did a thorough screening of close to 50 subjects and finally was able to include 4 in a 6-month protocol. CNM was the most successful of all participating centers. Progress: The data collection was finished during 2009. Data analyses were performed in 2010. SARM gave a significant increase in muscle mass but only a trend-wise improved muscle strength.

Protein and vitamin enforced supplementation to sarcopenic older adults - The PROVIDE Study

Collaborators: Ulf Holmståck, Marie Berglund, Sigvard Sobestiansky, Tommy Cederholm

This project aims to evaluate the muscle strengthening effects of a liquid supplementation rich in essential amino acids, vitamin D and vitamin Bs, to subjects >65 years of age, altogether ~300, with reduced muscle mass and muscle strength. It is a RCT design and the intervention period will be 6 months. It is a multi-center study involving 5 international centers and the study is financed by Danone/Nutriticia, the Netherlands and is performed in collaboration with Good Food Practice, Uppsala, who provides logistic support. Progress: During late 2010 patient recruitment started and CNM has been able to enroll about one third of its allocated required participants.

Combined exercise training and dietary intervention by whey protein and vitamin D to sarcopenic old adults – The VIVE2 Study

Collaborators: Tommy Cederholm, Afsaneh Kochek, Anna Cristina Åberg, Margaretha Nydahl, Mai-Lis Hellenius, Roger Fielding

The aim is to test if provision of high-quality protein and vitamin D combined with an exercise program give a stronger anabolic effect than exercise training alone. The study has been planned during 2010 and will be performed as a joint venture between Uppsala University, Karolinska Institutet, Tufts University in Boston, USA and Nestle Nutrition Research, Schweiz. Inclusion criteria is reduced 400 meter walking speed and reduced score in Short Physical Performance Battery (SPPB). All subjects will participate in physiotherapist supervised exercise sessions three times per week for 6 months. The participants will be randomized to receive a newly developed whey protein and vitamin D enriched liquid formula or placebo.

Implementing nutritional routines into institutionalized elderly care (The MUMS Project)


In year 2006 the Uppsala municipality adopted nutritional guidelines for the elderly. In order to perform and evaluate the implementation process scientifically, the municipality searched cooperation with the University of Uppsala. The project consists of three substudies:

Nutritional, cognitive, functional and vitamin D interactions and relationships with 1–year mortality in elderly care residents

Undernutrition and vitamin D deficiency is common in residents of municipal elderly care and related to reduced physical and cognitive function and mortal outcome. In 172 elderly care residents in Uppsala, the nutritional status by Mini Nutritional Assessment, MNA 0-30 p (20), ADL by Barthel Index (0-20 p) and cognitive function by Short Portable Mental State Questionnaire (SPMSQ 0-10 p), were determined. From 110 residents blood samples were drawn for analyses of nutrition-related biomarkers, including plasma 25-hydroxy(OH) vitamin D, inflammatory/catabolic indicators and insulin-like growth factor-I (indicating anabolism). Population registers will be used for determining mortality rate within one year after base-line
examination. **Progress:** Preliminary results indicate prevailing undernutrition in elderly care residents with functional correlations for nutritional status and prevalent reductions of plasma 25-OH vitamin D concentrations.

**Implementing nutritional routines into elderly care**

Despite an improved nutritional awareness and several years of educational efforts, malnutrition and insufficient food intake is still common among elderly in community care. The hypothesis of this project is that an action research based implementation program will create an effective model for implementation of nutritional guidelines. Two interventions will be compared during the implementation project, i.e. one model is based on the four principles of action research; plan, act, observe and reflect. Action research involves both researchers and practitioners (managers, nurses and care staff from four nursing homes), and the other is a three-hour educational session. The effects of implementation on staff level are measured by a survey using process (actual care delivered in accordance with the nutritional guidelines) and outcome indicators (nutritional status, mobility, cognitive ability, blood samples and health-related quality of life (EQ-5D)). Process indicators will evaluate to what extent the staff screen for malnutrition and carry out nutritional care plans by document analysis. In addition, whether the length of the night fast and the number of meals is in accordance with the guidelines will be measured by dietary assessment. Finally, observations of the mealtimes will be carried out to evaluate the ambience during mealtimes. **Progress:** The questionnaire survey from baseline is collected and the 221 personal responses from the eight units are analyzed.

**Development of a tool for evaluating mealtime's ambience in elderly care**

Improvement of mealtimes in elderly care is one way to increase quality of life and nutritional status. During the MUMS implementation project it became clear that there is a need for a tool to measure ambience at mealtimes. As a template for such tool the Five Aspects Meal Model (FAMM) is used. It is based on restaurant visits and emphasizes “the room”, “the meeting”, “the food and beverages served”, together creating “the ambience” or the atmosphere surrounding the meal. These four aspects are in turn affected by “the management control system”. The tool will be created based on this model. A panel of experts consisting of researchers and practitioners will be asked to give their aspects of the norm of the mealtimes. The tool will be tested in a pilot study. The validity of the items in each aspect will be determinate through factor analyses. **Progress:** A literature search on mealtime effects has been performed. Out of 69 articles, 60 were reports from special housing, nursing homes and assisted living, and a few in the hospital setting. About half were performed in cognitive intact populations, and it was mainly older people's perspective that was highlighted.

**CNM as collaborating partner 2010:**

**Omega-3 fatty acid epigenetic effects, effects on gene-expression and on inflammation resolution - The OmegAD Study**

**Collaborators:** Tommy Cederholm, Samar Basu, Hans Basun, Yvonne Freund-Levi, Gerd Faxén Irving, Inger Vedin, Maria Jönhagen Eriksdottir, Lars-Olof Wahlund, Marianne Schultzberg, Jan Palmblad.

The OmegAD Trial, a collaborative study of 200 patients with Alzheimers disease (AD) given omega-3 fatty acids, mainly docosahexaenoic acid, in a randomized protocol for 6 and in an open protocol for another 6 months, has partly been able to confirm epidemiological evidence indicating that high intake of fish oils rich in omega-3 fatty acids may slow decline rate of cognitive impairment in patients with Alzheimer’s disease. Effects on cognition, behavior, nutrition, oxidation, inflammation and gene expression are studied. Tommy Cederholm is PI for this study. **Progress:** During 2010 data on fatty acid concentrations in cerebrospinal fluid during the treatment period was analyzed. Micro-array analyses of gene expression effects in blood mononuclear cells were performed. Studies on epigenetic effects of n-3 FA treatment were
prepared, and IRB approval was given for the analyses of DHA-metabolites with inflammation resolution properties, e.g. resolvins, protectins and maresins.

**Functionality and quality of life in stroke patients one year after the event**
*Collaborators: Birgit Wahlberg Tommy Cederholm, Lena Zetterberg, Karin Hellström,*
The aim of this study is to describe the functional capacity and psycho-social well-being in 200 stroke patients 65-85 years of age one year after the event. Nutritional status (MNA), body composition (BIA), function (ADL, gait speed, Physical Activity Scale) self-efficacy and coping will be tested. This project is performed in collaboration with the Department of Neuroscience at UU. **Progress:** Data collection was finalized 2010.

**Protein supplementation and bisphosphonates in elderly lean patients with hip fracture.**
*Collaborators: Tommy Cederholm, Amer Al Ani, Nils Dalen, Paul Ackerman, Lena Flodin, Margareta Hedström,*
In the frame work of the Stockholm Hip Fracture Group, a research joint action between the University hospitals in Stockholm, the effects on muscle and skeleton by the combined treatment with protein supplementation and bisphosphonates are studied. Lean elderly patients with hip fracture are randomized to active treatment or placebo for 6 months. Function, muscle mass and bone mineral density are the main outcome variables. The study is performed in collaboration with Fresenius Kabi. **Progress:** Initial power calculations indicated the need of 120 patients in the study. Currently 70 patients have been recruited.

**2) Preventive nutrition and metabolism**

**Fat and carbohydrates in the diet and the body**
*Participants: Ulf Risérus, Brita Karlström, Siv Tengblad, Per Sjögren, Bengt Vessby,*

**Effects of a healthy Nordic diet on cardiovascular risk and the metabolic syndrome**
*Collaborators: Ulf Risérus, Viola Adamsson, Bengt Vessby, Gunnar Johansson, Tommy Cederholm, Fredrik Rosqvist, David Iggman*
In a series of randomized controlled studies, we are currently investigating the role of a “healthy Nordic diet”, i.e. a diet containing foods traditionally used in the Nordic countries, and foods that have documented health effects on metabolic and cardiovascular risk factors,
- CNM, Uppsala is one of 11 academic centres in the consortium “Nordic Centre of Food, Nutrition and Health”, financed by NordForsk. The aim is to conduct a large dietary multi-centre intervention study using systems biology to investigate the genetic and metabolic effects of a Nordic diet in overweight subjects with the metabolic syndrome (SYSDIET project).
- We are also investigating the clinical effects of a Nordic diet in subjects with hypercholesterolemia (NORDIET project), as well as
- investigating the metabolic impact of a Nordic healthy breakfast (NORDBREAK project)

**Effects on liver- and abdominal fat accumulation when substituting saturated fat with polyunsaturated fat in the diet – The HEPFAT Study**
*Collaborators: Ulf Risérus, Håkan Akhlström, Peter Arner, Mats Rudling, Tommy Cederholm, Helena Bjermo, David Iggman*
Liver fat accumulation has been suggested to be causal for the development of type 2 diabetes. In a randomized controlled trial, HEPFAT, we aim to investigate if accumulation of hepatic and visceral fat can be reduced in abdominally obese subjects by substituting saturated fat with vegetable oils (n-6 polyunsaturated fat) in an isocaloric diet. Secondary aim is to investigate the effects on adipose tissue gene expression. Other clinical variables such as insulin resistance, blood lipids, oxidative stress and inflammation will also be investigated. **Progress:** The trial is conducted, the results are being analyzed and manuscript(s) are under preparation. We collaborate closely with the Radiology dept at Uppsala Academic hospital, with Karolinska
institutet on gene expression and assessment of mechanisms behind cholesterol lowering effects of unsaturated fatty acids. This study is currently followed up by another controlled study (LIPOGAIN study), where a similar protocol will be used but under hypercaloric conditions aiming at increasing the knowledge behind metabolic consequences of weight gain and the influence of dietary fats.

Clinical measures of abdominal obesity and the link to insulin resistance, metabolic disorders and cardiovascular risk

Collaborators: Ulf Risérus, Helena Bjermo, Johan Ärnlöv

It is known that abdominal, rather than generalized obesity is particularly health hazardous. For example, in many cases, waist girth is a better risk marker than the body mass index (BMI). Abdominal (visceral) fat distribution is closely associated with the metabolic syndrome and is a strong risk factor for type 2 diabetes, stroke and cardiovascular disease. In various populations we have compared different anthropometric measures that could be easily used in the clinic or in diabetes and cardiovascular research. In particular, we have reported in several studies that the "sagittal abdominal diameter", i.e. the "abdominal height" measured with the patient in lying position on a bench, seem an even better risk marker than waist girth and waist-to-hip ratio. Especially, the abdominal height predicts metabolic disorders related to insulin resistance. In collaboration with prof Mai-Lis Hellénius and prof Ulf de Faire at Karolinska Institute, we are now performing a large study comparing different anthropometric measures with regard to metabolic and cardiovascular risk. The aim is to identify the best anthropometric measure with regard to identifying those individuals at highest risk, and therefore require lifestyle and drug treatment.

LIPGENE; diet, genomics and the metabolic syndrome: an integrated nutrition, agro-food, social and economic analysis.

Collaborators: Ulf Risérus, Brita Karlström, Helena Bjermo, Bengt Vessby and researchers from 25 other universities and colleges across Europe.

Lipgene is a EU-project within the 6th frame work and the aim is to elucidate in the role of dietary fat in development of the metabolic syndrome. Genetic variability, production technology and consumer acceptance are taken into account. Uppsala University is taking part in a dietary intervention study that includes 8 other European universities and their participants.

Progress: The intervention is conducted and several manuscripts are recently published or under preparation.

Fatty acid composition in serum lipid esters and desaturases in health and disease - dietary and genetic aspects.

Collaborators: Ulf Risérus, Tommy Cederholm, Fredrik Rosqvist, Eva Warensjö, Tommy Olsson, Julia Goedecke, Marja Mutanen, Björn Sundström, Juan Jesus Carrero, Bengt Vessby.

It is well known that the fatty acid composition in serum lipids and estimated desaturase activities, as a marker of fat quality, is linked to obesity, insulin resistance, cardiovascular disease and diabetes. Associations between fatty acid composition, estimated desaturase ratios and clinical variables, metabolic disease and dietary intakes are studied in several substudies using various cohorts. The aim of our studies is to learn more about the FA-composition and estimated desaturase activities in relation to the metabolic syndrome, to cardiovascular risk factors such as endothelial markers, as well as a potential role in the development of malignancy. We will also study how the FA composition and estimated desaturase ratios change after a diet rich in either saturated fat or unsaturated fat. In addition, genetic differences (SNPs) in the SCD-gene will be studied in relation to obesity, insulin sensitivity and FA-ratios. The importance of delta-5-desaturase (FADS) will be addressed. Several of these studies will be carried out in the ULSAM- and PIVUS cohorts. We also have several international collaborations with this regard, e.g. in collaboration with University of Capetown and Umeå University we perform detailed phenotype characterization of white and black South African women in order to detect dietary, anthropometric and metabolic differences among these subpopulations, including fatty acid metabolism. Apart from our main focus on obesity-related
diseases and cardiometabolic disorders we have also several other projects going concerning other major diseases as well as rare diseases. We believe that fatty acid intakes play a role as well as an altered fatty acid metabolism in multiple diseases. For example, the relation between dietary fat, FA profiles in plasma and desaturase activity in young women from Mozambique will be studied. In collaboration with Umeå University FA-profiles in patients with rheumatic diseases, and in collaboration with researchers at Dept of Nephrology, Karolinska Institutet, similar questions will be addressed in patients with chronic kidney failure. These studies might influence future dietary recommendations since FA composition and desaturase activities are modifiable by diet.

**Effects on appetite and cognitive performance of meals with different glycaemic load**

*Collaborators: Agneta Andersson, Anders Sjödin, Bengt Vessby, Louise Dye and John Blundell.*

In within-subjects repeated-measures design the effect on appetite, cognitive performance and subjective state during the post-lunch period of composite meals with different carbohydrates sources is investigated. A computerised cognitive test battery is used to evaluate the cognitive performance before and after lunch. Simultaneous appetite and subjective mood is rated and analyses of blood glucose and insulin is performed. An ad libitum meal is finally used to assess effect on food intake later during the day. In these way possible relationships between glucose and insulin levels in blood, cognitive performance and appetite are evaluated. The project is performed in collaboration with the Biopsychology Group, Leeds University, UK and financial supported by VINNOVA. **Progress:** Data are collected. Manuscript will be written.

**Dietary patterns and health effects**

Participants: Wulf Becker, Brita Karlström, Bengt Vessby, Annika Smedman, Per Sjögren

**Dietary patterns and long-term health. Longitudinal studies in 70 year old men in the ULSAM Cohort**

*Collaborators: Per Sjögren, Erika Olsson, Erika Ax, Brita Karlström, Tommy Cederholm, Lena Kilander, Karl Michaelsson, Anna Bill Axelsson, Hans Garmo, Lars Holmberg, Marcello Maggio, Wulf Becker*

Dietary data collected in the ULSAM Study at 70 years of age, around 1100 males, is compiled into dietary patterns; i.e. Mediterranean-like Diet, WHO-recommended Diet and Carbohydrate Restricted (Atkins-like). Detailed dietary habits were available from 7-day dietary records and misreporters of dietary energy intake were identified. We investigate relationships between the adherence to the various dietary patterns and long-term health outcome, e.g. mortality, cardiovascular disease, cognitive function, osteoporosis and cancer. Corresponding studies are planned for the PIVUS cohort.

**Dietary pattern and mortality**

Aim: To study the impact of the habitual dietary habits on all-cause and cardiovascular mortality over a 12-year follow-up period.

Methods: The study was based on the third follow up of the ULSAM study. Degree of adherence to the various dietary patterns (described above) was related to all-cause and cardiovascular mortality (derived from national registries). Risk relations were calculated with and without dietary misreporters included, and adjusted for potential confounders. **Progress:** A first paper from this project was published during 2010 in the American Journal of Clinical Nutrition. We found strong protective effects on both cardiovascular and all-cause mortality from increased adherence to a Mediterranean-like diet. Conversely, adherence to a Carbohydrate restricted diet was associated with increased mortality, especially cardiovascular mortality in these men.
**Dietary pattern and prostate cancer**
Aim: To study the impact of the habitual dietary habits on the risk of prostate cancer over a 16-year follow-up period.
Methods: The study is based on the third follow-up of the ULSAM study. Degree of adherence to the various dietary patterns (described above) will be related to the incidence of prostate cancer, derived from the National Cancer Registry. Risk relations will be calculated with and without dietary misreporters included, and adjusted for potential confounders. The risk of competing events will be taken into consideration. Exploratory analyses will be performed to investigate the impact of individual nutrients. **Progress:** Preliminary data are presented. Corresponding studies have been initiated in other population based cohorts, one Swedish (H70, Gothenburg) and one Italian (InChianti, Parma).

**Dietary pattern and risk of cognitive disorders (The DICO Study)**
Aim: To study the impact of dietary intake and the risk of incident Alzheimer's disease, all-type dementia and mild cognitive impairment, respectively, in late life.
Methods: The study will be based on the third and fifth follow up of the ULSAM study. Data from the dietary survey at age 70 will be used and related to the incidence of Alzheimer's disease, all-type dementia and mild cognitive impairment, respectively. All participants in the first investigation of the ULSAM study were invited to a third follow up for a new investigation at the age of 70 years old. Risk relations will be calculated with and without dietary misreporters included, and adjusted for potential confounders such as ApoE-genotype. **Progress:** Dietary data and risk relations were computed in the beginning of 2010. Due to maternal leave the project will be completed 2011.

**Dietary patterns in relation to nutritional status, body composition, psychological status, health and disease in 82 year old men (ULSAM cohort).**
Collaborators: Per Sjögren, Erika Olsson, Brita Karlström, Karl Michaëlsson, Tommy Cederholm
The aim of the study is to evaluate dietary intake and dietary habits in the ULSAM population at the age of 82, i.e. energy and nutrient intake, meal pattern, and frequency of meals/food items. Moreover, to relate dietary intake/dietary habits to nutritional status and body composition (DEXA), risk of malnutrition (MNA), vitamin B12, folate, ADL, psychosocial situation, medical-, psychological and sociological factors, physical activity level, and parameters for health/diseases (coronary heart disease and diabetes). Dietary intake was measured at the fifth follow-up of ULSAM - Uppsala Longitudinal Study of Adult Men, when the participants were 82 years old, using a pre-coded 7-d record book and with a food frequency questionnaire (FFQ).

**An investigation of food intake in relation to environmental toxins in 70-year old men and women in the PIVUS cohort**
Collaborators: Per Sjögren, Erika Ax, Tommy Cederholm, Monica Lind, Lars Lind
Cross-sectional relations between food intake and environmental toxins in the body will be investigated. The study will be based on baseline data from the PIVUS cohort, a longitudinal study of 1000 men and women (all 70 years of age) initiated in 2001 and with ongoing reinvestigations and follow-ups. Detailed dietary habits are available from 7-day dietary records, including food groups and nutrients. Mis-reporters of reported energy intake will be identified. Quantitative measures of a wide spectrum of environmental toxins, such as PCB, dioxins and phthalates, are available from fasting blood samples of all participants. Associations between dietary patterns, food groups and nutrients and the different toxins will be investigated. **Progress:** Computation of dietary data was initiated in 2010 and associations to environmental toxins will be carried out in 2011.
Gene-diet-interactions and cardio-metabolic risk (The ULSAM, PIVUS and LIPGENE cohorts)
Collaborators: Per Sjögren, Ulf Riserus, Erik Ingelsson, Lars Lind, Jennifer A Nettleton
Our genetic background interacts with dietary modifications in determining health outcome. In this project we focus on the intake of certain nutrients, how they interact with selected gene variants and the effect on this interaction on intermediate risk factors for type-2-diabetes and cardiovascular disease. These studies are part of a large multinational collaboration (i.e. the CHARGE consortium) including several prospective cohort studies, and coordinated by JA Nettleton (Texas, USA). Progress: The first paper was published 2010, investigating the impact from the interaction of whole grain intake and selected gene variants on fasting plasma glucose and insulin levels. Similar studies on selected gene variants and their interaction with dietary patterns, coffee, zinc and magnesium, respectively, are in progress.

Effects of increased intake of fruit and vegetables on dietary composition, body weight and metabolic control
Collaborators: Anette Järvi, Brita Karlström, Wulf Becker, Bengt Vessby.
Project description: Sixty-four overweight adult men and women were randomised to either an intervention group that during 4 months received 500 g/d fruit and vegetables or a control group that received general dietary advice. The effects on dietary habits, anthropometry, blood lipids, blood glucose, antioxidant status, etc., were investigated. Progress: Data are collected. A manuscript will be written.

Obesity and overweight in children and adults
Participants: Ulf Holmbäck, Tommy Cederholm, Roger Olsson, Linda Bratteby Tollerz, Marie Berglund, Torbjörn Åkerfeldt, Arvo Hänni, Anders Forslund

Weight reducing operations and effects on body composition and endocrine function.
Collaborators: Ulf Holmbäck, Tommy Cederholm, Anders Karlsson, Arvo Hänni, Magnus Sundbom
Morbid obesity is treated with various operative techniques, depending on degree of obesity. Few studies have examined the impact of various operation techniques at weight stabilization. Using a cross-sectional approach, we are studying obese subjects after gastric bypass or duodenal switch and comparing them to weight matched non-operated controls. We are assessing body composition, energy expenditure, psychometric variables, expression of lipogenic genes, appetite regulation, inflammation and markers for fat, protein and muscle turnover. Progress: About half of the subjects have been examined.

Individualized treatment of pediatric obese patients
Collaborators: Ulf Holmbäck, Anders Forslund, Jan Gustafsson, Roger Olsson, Arvo Hänni
In spring 2008 the children’s obesity clinic opened in Uppsala. We have a multi-disciplinary approach with the aim of individualizing the treatment, both in terms of cognitive treatment but also dietary approaches, and by that keep patient satisfaction high and attrition low. Progress: A pilot study has started.

Assessment of nutrition status in pediatric patients
Collaborators: Roger Olsson, Marie Berglund, Linda Bratteby-Tollerz, Anders Forslund, Ulf Holmbäck
In various diseases, such as obesity, cystic fibrosis or neurological conditions such as cerebral pareses, correct assessment of nutrition status is important. Often caloric needs are estimated from equations, and these equations might underestimate energy needs in these patient populations. By using various techniques such as activity monitors, heart rate monitors and
activity diaries, together with indirect calorimetry and body composition assessment, we strive to get a more complete picture of these patients nutrition status. These, hopefully, more correct nutrition status figures will aid in the treatment and increase health in these patient populations. **Progress:** Data from more than 200 children have been collected. Preliminary data have been presented.

**The effects of nutrition and physical activity on muscle metabolism and biochemical variables.**  
*Collaborators: Torbjörn Åkerfeldt, Mats Stridsberg, Ulf Holmbäck.*

In various clinical settings, such as after surgical procedures, patients have to recover from loss of muscle mass and muscle function. Our projects aim to learn more about how to optimize nutrition support for muscle gain, and also to elucidate what changes occur within the muscle as well as on the whole body level. **Progress:** Data collection and analysis have ended; manuscript under preparation.

**Circadian Metabolism - Metabolic, endocrine and mental performance effects of sleep restriction with and without sleep misalignment**  
*Contact person and collaborators: Ulf Holmbäck, Rachel Leproult (University of Chicago), Eve Van Cauter (University of Chicago)*

Subjects are tested before and after sleeping 5 h per night, with or without sleep restriction. Among others, the following variables are studied: glucose metabolism, energy intake, mental performance, hormones and cardiovascular function. **Progress:** Data collection and analysis have ended. One article published and several manuscripts are under final preparation.

**Will short sleep in adolescents affect energy expenditure, glucose metabolism and appetite? – The SLOPUS Study**  
*Participants: Ulf Holmbäck, Anders Sjödin & Lars Klingenberg (University of Copenhagen) & Jean-Philippe Chaput (University of Ottawa).*

Adolescents will take part in a randomized interventions trial looking at the effects of short sleep on energy expenditure, glucose metabolism and subjective and objective appetite. **Progress:** All subjects have been run and initial data analysis have begun, Preliminary data have been presented at conferences.

**Undergraduate Teaching 2010**

**Biomedical Laboratory Science Program** - Biomedicinsk analytiker (BMA)-programmet.  
Energy balance, body composition and nutrition status in the course “Biochemistry”; lectures and seminars, together with the Department of Medical Biochemistry and Microbiology.

**Dietitian Program** – Dietistutbildningen  
Fifth semester – Pediatrics, geriatrics and nutritional status (course). Nutritional status in theory, methodological tools and practical applications. Body composition in practice, together with the Department of Food, Nutrition and Dietetics.

**Medical Program - Läkarprogrammet**  
First semester – Energy balance and nutrition status; lectures and seminars, together with the Department of Medical Cell Biology  
Sixth and seventh semester – Clinical nutrition and public health nutrition: lectures, seminars, case reports and discussion.
"Livsmedelsagronom"-programmet
Energy balance, body composition, substrate metabolism and nutrition status in the course “Human nutrition”; lectures and seminars together with the Department of Food Science, the Swedish University of Agricultural Sciences

Master in Public Health - Master i Folkhälsa
Responsible for the 15 HTPS course "Diet, nutrition and health; lectures, seminars, projects and examination.

Nursing Program - Sjuksköterskeprogrammet
First semester – Energy balance and nutrition status; lectures and seminars, together with the Department of Medical Cell Biology
Third semester: "Nursing for obese patients"; lectures, seminars, and memo
Sixth semester: “Nutrition for elderly”; lectures

Physiotherapy Program – Sjukgymnastprogrammet, together with the Department of Neuroscience, Unit of Physiotherapy.
Second semester – Rehabilitation towards increased physical activity (basic course). Caloric turn-over in theory, methodological tools and practical applications.
Fourth semester - Rehabilitation towards increased physical activity (advanced course). Caloric turn-over and nutritional status in theory, methodological tools and practical applications.

Centers and Facilities

International collaborations: CNM researchers have on-going collaborations with scientists from Tufts University, from Harvard School of Medicine and from Harvard School of Public Health, Boston, USA regarding research in exercise/nutrition physiology, nutritional epidemiology and n-3 fatty acid biochemistry. We work with University of Alberta, Nursing Science, Canada on issues of importance for elderly care and implementation research, and takes part of nutria-genetic collaborations within The CHARGE Consortium, University of Texas. Together with Cambridge/Oxford Integrative Physiology Consortium for Metabolic Diseases and Centre for Diabetes and Royal Society of Medicine, London we collaborate on the interaction between food and insulin resistance. Fatty acid metabolic collaborations are in progress with University of Cape Town, South Africa and University of Helsinki, Finland.
CNM is part of the LIPGENE Study funded in the EU 7th Frame Work Program. In the Systems biology in dietary intervention studies (SYSDIET), Nordic Centre of Excellence in Food, Nutrition and Health (NoCE), a vast Nordic collaboration is performed with University of Eastern Finland, Kuopio, and University of Copenhagen. OPUS is another Nordic collaboration between various Danish and international universities to orchestrate the world’s largest intervention study on the effect of diet and lifestyle on children and adolescents. The Provide Study is a multi-center study with centres in Brussels, Newcastle, Nuernberg and Cologne, performed in collaboration with Danone/Nutricia Research and where CNM is PI centre. In collaboration with University of Parma, Italy, joint efforts are performed with the InChianti Study to evaluate interactions of food and health in elder populations of different origins. Circadian metabolic disturbances and metabolism of sleep disorders are joint objectives with University of Chicago, and University of Ottawa.

International networks/memberships: Gerontonet - European Centre of Excellence in Geriatric Science. European Society for Clinical Nutrition and Metabolism (ESPEN): Council membership for chairmen of the national societies (Swespen). ESPEN Special Interest Group - Geriatric nutrition/The SIG GN works on a European level to coordinate research efforts and
recommendations for nutrition in the elderly. EFSA – Scientific cooperation & Assistance Directorate within European Food Safety Authority. Diabetes Nutrition Study Group – DNSG is a part of the European Association for the Study of Diabetes (EASD) and comprise of researchers mainly involved in the development of nutritional guidelines for the treatment of diabetes. Other international networks are EuroFIR – European Food Information Resource, which is an EU 6th Framework Network of Excellence in the area of food composition databases with 47 partners across Europe. Euronut – 15 European institutions with high quality nutrition research collaborating around Diet and ageing, in accordance with EU:s 7th Frame Program. Nordic Nutrition Academy – Nordic Nutrition School for young researchers in nutrition; six three day-seminars over two years. European Working Group on Sarcopenia.

National collaborations: CNM have numerous collaborations with researchers at Karolinska Institutet, at the departments of Geriatrics, Endocrinology & Metabolism, Physiology & Pharmacology, Clinical Neuroscience, Nephrology, Molecular Medicine, and Medical Epidemiology and Cardio-Vascular Research to name some. We also collaborate with the Kungsholmen Project, Aging Research Center, KI, the Stockholm Hip Fracture Group which includes Departments of Surgery at Karolinska University Hospital Solna and Huddinge, Stockholm Söder Hospital and Danderyds Hospital. Moreover we work together with University of Agricultural Sciences (SLU), Uppsala, Integrative Biological Medicine, Umeå University (sarcopenia and the KNOTA Project), Health 70 with University of Gothenburg, and Uppsala Community and Uppsala County Council (elderly care), Stress Research Institute, Stockholm University, Lunds University in the SYSDIET project, and Dept of Health and Social Sciences, Högskolan, Dalarna. At Uppsala University CNM collaborates with researchers in the Uppsala Longitudinal Study on Adult Men (ULSAM), Prospective Investigation of Vasculature in Uppsala Seniors (PIVUS), and has co-workers at Dept of Food Science, Dept of Medical Science, Dept of Radiology, Oncology and Radiation Science, Dept of Neuroscience, Department of Food Science, Faculty of Social Sciences, Dept of Surgical Science, Dept of Women and Children’s Health etc. Logistic services and collaboration in many studies, mainly intervention trials, is performed with Good Food Practice (GFP), a private enterprise for clinical nutrition trials.

People with disabilities often experience extensive difficulties in everyday life. Research in Disability and Habilitation is interdisciplinary and multi-professional with a fundamental focus on the interface between the individual and his/her environment. A joint conceptual perspective is found in the WHO Classification ICF. Contextual Factors in particular serve as a framework for research activities in elucidating environmental aspects of disability at present including adults with intellectual disability, mental health disorder or aphasia, children with significant developmental delay, as well as children at risk of neglect. More specifically, current study objectives include development of methods, environmental and personal factors as potential facilitators and/or barriers and the outcome of the person-environment interaction from the perspective of people with disabilities, their networks as well as of professionals.

Members of the group during 2010
Monica Blom Johansson, BA, PhD student
Johan Glad, BA, PhD student
Carina Gustafsson, PhD Faculty of Medicine, associated researcher
Gerth Hedov, PhD Faculty of Medicine, associated researcher
Kjerstin Larsson, PhD Faculty of Medicine, associated researcher
Helena Lindstedt, PhD Faculty of Medicine, senior researcher
Gunilla M. Olsson, PhD, associated researcher
Mia Pless, PhD Faculty of Medicine, associated researcher
Karin Sonnander, PhD, professor
Annika Terner, BA, PhD student
Öie Umb-Carlsson, PhD Faculty of Medicine, senior researcher

External partners
Amanthi Bandusena, PhD student, Department of Community Medicine, University of Sri Jayewardenepura, Colombo, Sri Lanka
Mats Brommels, PhD Faculty of Medicine, professor, Medical Management Centre, LIME, Karolinska Institute, Stockholm
Marianne Carlsson, PhD, professor, Department of Public Health and Caring Sciences, Uppsala University
Helge Folkestad, PhD, senior lecturer, Department of Social Education and Social Work, Bergen University College, Norway
Berit Höglund, PhD student, Department of Women’s and Children’s Health, Uppsala University
Ann-Britt Ivarsson, PhD Faculty of Medicine, associate professor, School of Health and Medical Sciences, Örebro University
Gunnar Janeslåt, PhD Faculty of Medicine, Centre for Clinical Research Falun, Uppsala University
Lennart Jansson, PhD Faculty of Medicine, Department of Neuroscience, psychiatry, Uppsala University
Ulla Jergeby, PhD, National Board of Health and Welfare
Margareta Larsson, PhD Faculty of Medicine, senior lecturer, Department of Women’s and Children’s Health, Uppsala University
Gunilla Lindmark, PhD Faculty of Medicine, professor em. ,Department of Women’s and Children’s Health, Uppsala University
Erik Lundström, PhD Faculty of Medicine, Department of Neuroscience, Uppsala University
Liselotte Norling Hermansson, PhD Faculty of Medicine, Clinical Research Centre, Örebro University Hospital, Örebro
Mariann Olsson, PhD, associate professor, Department of Neurobiology, Care sciences and Society, Division of Social Work, Karolinska Institute, Stockholm
Ingvar Pettersson, PhD Faculty of Medicine, senior lecturer, School of Health and Medical Siences, Örebro University
Birgitta Rosberg, occupational therapist, Uppsala University Hospital
Anna Cristina Åberg, PhD Faculty of Medicine, adj. clinical lecturer, Department of Public Health and Caring Sciences

Publications 2008-2010


Reviews 2008-2010


Dissertations 2008-2010
Halftime review: Monica Blom Johansson

External agencies that support the work/External Funding 2008-2010
Regional Research Council in Uppsala-Örebro Region: 350 000
Swedish International Development Cooperation Agency (SIDA): 200 000
The Sävstaholm Foundation: 430 000

Project 1: Living with aphasia: communication and communication strategies from the perspectives of significant others, speech and language pathologists, and persons with aphasia – a description of experiences, and a trial of intervention

Monica Blom Johansson, Marianne Carlsson, Karin Sonnander

The aim of this thesis is to obtain more knowledge about how the person with aphasia, the significant other and the speech and language therapist perceive the communicative situation between the significant other and the person with aphasia.

A second aim is to develop a model of intervention and carry out a trial of intervention for improving the couple’s communication skills.

Project 2: The HOME Inventory, Home Observation for Measurement of the Environment - A Swedish Adaptation

Johan Glad, Carina Gustafsson, Ulla Jergeby, Karin Sonnander

The aim of this thesis is to assess the relevance of an international published instrument (HOME) for assessing parental ability to satisfy children’s needs and to develop a reliable and valid Swedish version. Psychometric properties and issues pertinent to administration and implementation in a Swedish context will be established based on a national sample (n=150).
Project 3: A pilot study of a Swedish version of the Parent Assessment Manual (PAM) in a field setting
Carina Gustafsson, Lydia Springer, Karin Sonnander

PAM (Parent Assessment Manual) is a comprehensive tool for identifying family strengths and weaknesses. Although it can be used with all parents, it is geared towards parents with intellectual disabilities. The aim of this pilot study is to evaluate the clinical utility of PAM in the Swedish social services context and to evaluate the face validity and the preliminary interrater-reliability of the PAM scoring criteria (n=5).

Project 4: Support and information to parents of children with Down syndrome
Gerth Hedov

Down syndrome (DS) is the largest group of children born with a chronic condition. Today the incidence of DS in Sweden is 1/800 new-borns. In contrast to an international outlook there are few Swedish studies focussing this group of parents. The purpose of the project is to formulate evidence-based guidelines (based on empirical studies as well as experienced practice) on how to give initial support and information to parents of children with DS followed by a quasi-experimental intervention study. The project also includes a 10-year follow-up study of 165 Swedish parents (in 86 families) concerning workload, employment and sick-leave rate and parental stress.

Project 5: People with mental health disorder, implementing individual treatment goals and long-term follow-up in psychiatric rehabilitation.
Helena Lindstedt, Marianne Carlsson, Ann-Britt Ivarsson

The aim is to implement and evaluate a treatment concept with individualized measurable methodology of treatment and structured long-term follow-up (Goal Attainment Scaling, GAS) for people with mental health disorders. Patients (n=80) report subjective occupational performance, daily occupation satisfaction and quality of life. Occupational therapists (n=20) report work satisfaction.

Project 6: Early identification by parental assessment of children with developmental delay in Colombo, Sri Lanka
Amanthi Bandusena, Karin Sonnander

The general objective of this study is to estimate the prevalence of children aged eighteen months in the Colombo district with developmental delay, to describe their parents’ perceptions on selected aspects of care giving and facilities currently available for them.

Project 7: The concept of successful aging from the perspective of elderly men.
Birgitta Rosberg, Öie Umb-Carlsson, Anna Cristina Åberg

The aim is to describe, define and gain insight into the concept of successful aging from the perspective of elderly men. Elderly men born between 1920 and 1924 are interviewed concerning the concept of successful aging, contributory factors of successful aging and their lived experiences of successful aging.

Project 8: Pregnancy, childbirth and newborn health of women with intellectual disabilities and their infants.
Berit Höglund, Öie Umb-Carlsson, Margareta Larsson

The objective is to describe pregnancy, childbirth and health care from the perspective of women with intellectual disabilities. Women with intellectual disabilities in Sweden who gave birth 1973-2006 are interviewed regarding pregnancy and childbirth, including experiences of support provided by the health care system during pregnancy and childbirth.
Project 9: People with intellectual disabilities as participants in the research process.  
Öie Umb-Carlsson  
The aim of the project is to gain experience and further knowledge in involving people with intellectual disabilities in the research process. People with intellectual disabilities are involved in validation of a quality of life model, in identifying issues of importance in a quality of life scale and in production of the research report.

Project 10: Men and women with intellectual disabilities and quality of life  
Öie Umb-Carlsson, Helena Lindstedt  
The aim is to uncover the essence of the phenomenon quality of life from the perspective of women and men with intellectual disabilities. Women and men with mild and moderate intellectual disability are interviewed concerning their lived experiences of quality of life (n=21).

Project 11: Support in housing- a comparison between people with psychiatric disability and people with intellectual disability  
Öie Umb-Carlsson, Lennart Jansson  
The aim is to compare need and provision of support in housing among people with psychiatric disability (n=397) and people with intellectual disability (n=110) based on questionnaire reports.

Project 12: Parents' use of ICF and ICF-CY when reporting on focus in habilitation services for their children with developmental disabilities  
Mia Pless, Nina Ibragimova, Margareta Adolfsson, Eva Björck-Åkesson, Mats Granlund  
The aim is to report on parents' use (n=87) of the International Classification of Functioning, Disability and Health, ICF/ ICF-CY (Children and Youth version) when reporting on what focus habilitation services have concerning their children with developmental disabilities. The design is descriptive with a questionnaire using the structure and language in ICF model and with questions concerning identification, goal setting and intervention of function and health.

Project 13: Patient safety and electronic health record (EHR)  
Annika Terner, Helena Lindstedt, Karin Sonnander  
The aim is to investigate the relationship between patient safety and documentation by studying a shared EHR system in a Swedish county council. Research questions concern characteristics of applied terms in the EHR system, to what extent they are applied across eight different health professions as well as shared by these professional groups and how health professional users value the shared EHR system. Finally, reported aberrancy incidents before and after the implementation of a shared EHR system will be studied. Reported incidents related to documentation in patient records will be identified and analyzed.

Project 14: Evaluation and implementation of lean thinking in the development of new procedures for stroke patients  
Kjerstin Larsson, Mats Brommels, Karin Sonnander, Mariann Olsson, Erik Lundström  
The aim is to evaluate and implement an ongoing development work of new procedures using lean thinking, for stroke patients and their relatives. A second aim is to analyse qualitative text, i.e. patients’ comments, in follow up questionnaires from the National Qualitative Register (RiksStroke) and to develop and evaluate psychosocial support to the patients’ relatives.
Family medicine is the dominant academic field in primary health care. Moreover, it is the parent specialization of all other non-surgical physician specializations. The content of family medicine reflects the fact that primary health care is in the front line of all health care, i.e. it is the health care facility patients are expected to begin by consulting. For this reason family medicine research focuses on the most common diseases and illnesses in the population, for instance cardiovascular disease, diabetes, asthma, allergy, chronic obstructive pulmonary disease (COPD), musculo-skeletal disorders, low back pain, tennis elbow, fibromyalgia, pharmacoepidemiology, and the most common infectious diseases as well as social insurance medicine (sick-listing and disability retirement). In the research programme the focus is on patient-centred research, using clinical as well as epidemiological techniques.

The researchers at our section also teach the undergraduate curriculum in the medical and nursing programmes. In addition, the researchers lecture regularly each term at Uppsala University in the physical therapy program and the Master’s program in public health, as well as at other universities and university colleges at undergraduate level for students in the programs in physical therapy, health education, sports education, and for students in non-matriculated courses in sports psychology and continuing education courses for health care personnel at the Karolinska Institute and elsewhere.

**Members of the group during 2010:**

*Research supervisors:*

- **Dan Andersson** Associate researcher, postdoc MD, PhD
- **Annika Bardel** Associate researcher, postdoc MD, PhD
- **Karin Björkegren** Lecturer MD, PhD
- **Stefan Blomberg** Postdoc MD, PhD
- **Johan Bogefeldt** Postdoc MD, PhD
- **Kristina Bröms** Associate researcher, postdoc MD, PhD
- **Gunilla Burell** Senior researcher Psychologist, PhD
- **Jan Cederholm** Associate professor MD, PhD
- **Dag Elmefldt** Adjunct professor, emeritus MD, PhD
- **Lars Englund** Postdoc MD, PhD
- **Margaretha Eriksson** Researcher, postdoc PhD, Faculty of Medicine
- **Mats Gulliksson** Postdoc MD, PhD
- **Christina Halford** Postdoc MD, PhD
- **Mikael Hasselgren** Postdoc MD, PhD
- **Anna Hofsten** Associate researcher, lecture MD, licentiate
- **Sara Holmberg** Postdoc MD, PhD
- **Marie Johannesson** Professor MD, PhD
- **Gunnar Johansson** Professor MD, PhD
- **Lena Kallings** Visiting teacher, postdoc Doctor of Medical Science
- **Per Kristiansson** Associate professor MD, PhD
- **Karin Lisspers** Associate researcher, postdoc MD, PhD
- **Gunilla Normén** Postdoc MD, PhD
- **Lena Olai** Postdoc PhD, Faculty of Medicine,
- **Nils Rodhe** Associate researcher, postdoc MD, PhD
- **Åke Schwan** Postdoc MD, PhD
- **Jan Stålhämmer** Associate researcher, postdoc MD, PhD
Björn Ställberg, Associate researcher, postdoc MD, PhD
Kurt Svärdsudd, Professor emeritus MD, PhD
Malin Swartling, Postdoc MD, PhD
Rolf Wahlström, Associate researcher MD, PhD
Mari-Ann Wallander, Associate professor Epidemiologist, PhD, Faculty of Medicine
Thorne Wallman, Associate lecturer, postdoc MD, PhD
Ture Ålander, Postdoc MD, PhD

Doctorial students:
Anders Carlberg, PhD student Psychotherapist
Lars Carlsson, PhD student MD
Anna-Sophia von Celsing, PhD student MD
Sevek Engström, PhD student Dentist
Marie Grunnesjö, PhD student Doctor of Naprapathy
Stefan Jansson, PhD student MD
Bo Karlsson, PhD student MD
Linda Lännerström, PhD student RN
Sveinn Magnusson, PhD student MD
Mats Martinell, PhD student MD
Lars Nilsson, PhD student MD
Magnus Peterson, PhD student MD
Keld Vaegter, PhD student MD

Medical Programme - Professional Development
Annika Bardel, responsible for training of student tutors
Karin Björkegren, responsible for terms 1 and 2
Mats Gulliksson, responsible for terms 3 and 4
Bo Karlsson, responsible for term 11

Publications 2008–2010:

Publications 2010


4. Burell GK, Svärdsudd K, Gulliksson M: Stress management prolongs life for CHD patients: a randomized clinical trial assessing the effects of group intervention on all


**Publications 2009**


**Publications 2008**


**Dissertations 2008-2010:**


Normén G. To be or not to be sick-certified: with special reference to physicians and patient related factors. Medical sciences. Uppsala University, 2010.


**Agencies that support our work / Funding 2010 (SEK):**

- Swedish Asthma and Allergy Association 196.000
- The Vårdal Foundation for Health Care Sciences and Allergy Research 150.000
- Hjerpestedts stiftelse 40.000
- Dalarna County Council 1.300.000
- Gävleborg County Council 400.000
- Stockholm County Council 800.000
- Södermanland County Council 1.500.000
- Uppsala University and Uppsala County Council 2.160.000
- Västernorrland County Council 200.000
- Örebro County Council 1.000.000
Regional social insurance research group in the Uppsala-Örebro region (I:1)

RUFS is the Swedish acronym for the regional social insurance research group in the Uppsala Örebro Region in Sweden. This research group consists of senior researchers and PhD students from the primary health care county councils of Dalarna, Sörmland, Västmanland, Örebro and Uppsala. It was established in May 2010 and has already had two full-day meetings at which regional social insurance research was presented and discussed. This year the groups work was financed by the Uppsala-Örebro regional research council. The group was invited to arrange a seminar for the family medicine section at The Swedish Society of Medicine meeting in Gothenburg in December 2010.

Life and Health Sörmland (I:2)

FmG Sörmland is a local research group in the county of Sörmland, working with the regional study Liv & Hälsa (Life and Health), which contains data on 43,600 women and men 18-84 years of age. One article has been published [1] and another has been submitted for publication [2].

The natural history of disability pension – risk factors, track record and health consequences (I:3)

A consortium including the research group for cardiovascular epidemiology at the Sahlgrenska Academy, Gothenburg, the Swedish Social Insurance Agency and our unit of Family Medicine and Clinical Epidemiology was created to perform a project aiming at analysing the course of events leading to disability pension (track record), to find factors which, in addition to the underlying disease, affect the course of events, and to determine the consequences in terms of health situation, quality of life, continued health care utilisation and survival as compared with the corresponding general population.

The study population was created using data from five ongoing population studies with approximately 7,000 men and women who have been followed since 1980-1993 and onwards. Thorne Wallman, who completed his PhD in 2008 [3], is working with the study, which is financially supported by the Swedish Social Insurance Agency, the Medical Research Council, Sörmland county council, Västra Götaland county council and Uppsala University.

The first report shows that health care utilisation continued to be 3-4 times higher among disability pensioners than among the corresponding general population even 13 years after retirement. The health care diagnoses had no relation to the retirement diagnoses [4]. Retirement thus had no obvious curative effect, as has been claimed previously.

In the second report, survival after disability retirement was presented as compared to the corresponding general population. Male pensioners had a more than threefold and female pensioners an approximately 2.5-fold increased mortality rate, even when the influences of age, education, smoking habits, family structure, reason for retirement and health care diagnoses after retirement (underlying disease) were taken into account. The increased mortality rate is thus non-specific, i.e., not related to the underlying disease and could be attributable to factors relating to the retirement process per se [5].

In a third report, the track record measured as duration of sick-listing periods before retirement was analysed and compared with that of the corresponding general population. The sick leave track record was the most important predictor of the probability of being granted a disability pension in this study, even when the influences of other variables affecting the outcome were
taken into account [6].
In the fourth report, the quality of life before and after retirement was analysed. Quality of life has been measured on several occasions and in various points in time in relation to retirement. Time-dependent analysis was used in order to disclose a possible relationship to retirement [7].

**To be or not to be sick-listed (I:4)**

This project is based on approximately 600 appointments in Örebro primary health care, where sickness certification was a possible option. The physician and the patient each gave their view of what factors were of importance for the outcome, *i.e.*, to be or not to be sick-listed. In the first report, physician-related factors were analysed. A long professional career, part-time work and training in social insurance medicine all increased the probability of the patient being sick-listed [8]. In the second report, patient-related medical factors and functioning were analysed [9]. The strongest predictors for sick-listing were the patient’s and GP’s assessment of the patient’s reduced work capacity, with a striking concordance between physician and patient on this assessment. Patient complaints judged by the physician to be non-somatic increased the probability of the patient being sick-listed. In the third report, the patient’s family, leisure time, and work situation were analysed [10]. Work-related factors, indicating support in work and influence over the work situation reduced the probability of sick-listing, while worrying about becoming ill or injured at work almost doubled the probability of sick-listing. Family and leisure time variables had little impact on the probability of being sick-listed. The fourth report, analysed attitudes towards statements concerning health and social insurance matters among physicians and patients in relation to the probability of the patient being sick-listed. GPs and their patients had fairly similar views on the statements. Attitudes expressed by the GPs seem to have a greater impact than patients’ attitudes on the GP’s decision of whether or not to sick-list a patient [11]. The project has generated one PhD thesis (Gunilla Normén 2010) [12].

**Early prediction of patients at risk for long-term sickness absence (I:5)**

This work is based on a project carried out during eight months in 2004 at a primary health care centre in Eskilstuna, Sweden. The overall purpose was early rehabilitation of sick-listed individuals, considered to be at risk of long-term sickness absence, in cooperation with the Swedish Social Insurance Agency, jobseekers agency and the county council for social support, in order to regain work ability. The early prediction of patients at risk of long term sickness absence is essential for identification of individuals in need of rehabilitation measures. A team of experienced rehabilitation professionals, one physiotherapist, one physician and one administrator from the local social insurance agency categorised all sick-listed individuals into two groups considering risk factors for long-term sickness absence. The rehabilitation team used a few variables from the sickness certificate form when categorising all sick-listed individuals into two groups, group 1 (n=447) at risk for long-term sickness absence and group 2 (n=496) without risk factors. Variables at baseline were age, sex, sick leave diagnosis, extent of sick leave percentage, employment status, and periods of sick leave one year before baseline. In this three-year prospective cohort study, data was obtained from the Swedish Social Insurance Agency on all compensated days of sick leave and disability pension from 1 January 2003 until 31 December 2007. The aim of the study is to reveal whether risk of long-term sickness absence can be predicted on the basis of just a few variables from the sickness certificate [13].

We will also evaluate possible effects of the rehabilitation intervention in cooperation with primary health care and the Swedish Social Insurance Agency, jobseekers agency and the county council for social support. Do sick listed individuals regain work ability after an intervention to a greater extent than those who did not receive any intervention at all? The project is generating one PhD thesis (Anna-Sophia von Celsing).
Nurses’ experience of managing sick-listing issues in telephone advisory services (I:6)

The aim of this project is to produce a report performed in collaboration between our research group and the School of Health, Care and Social Welfare, Mälardalen University, Eskilstuna. The result of a previous Master’s degree thesis has been further analyzed, focusing on sick-listing management. Nurses working with telephone advisory services were interviewed in groups. The aim was to explore how sick-listing issues are present in their phone calls, how the nurses manage these issues and at factors obstruct and facilitate this work. This project is part of a future doctoral thesis aimed at describing experiences of long-term sickness absence and identifying preventive and predictive factors of return to work after sick-listing. One PhD student, Linda Lännerström, is involved.

Factors among doctors, patients and patients’ families affecting the risk of long-term sick leave periods and effects of early multidisciplinary assessment in primary health care (I:7)

“RUMPVALS” – is an acronym for “Randomized study of early multidisciplinary assessment in a primary care centre to prevent long-term sick leave” in Swedish. Patients who saw doctors for psychiatric or musculoskeletal problems and were sick-listed were invited to participate in the study. After randomization half of the participants were assessed by a physiotherapist, psychotherapist and occupational therapist. The other half received “regular care”, which does not include such early assessments. Our hypothesis was that such assessments would result in faster and more adequate rehabilitation leading to faster recovery and less need of sick leave. A manuscript is in progress. In upcoming studies, factors among doctors and patients’ families affecting sick leave will be studied. The project is generating one PhD thesis (Lars Carlsson).

Physicians’ views of the sick-listing commission (I:8)

This project is being carried out in collaboration between our research group, the rehabilitation section of the Department of Neuroscience, Uppsala University, and the social insurance centre at the Department of Clinical Neuroscience, Karolinska Institute. It is focused on obtaining information concerning physicians’ views of patients’ wishes to be sick-listed and the physician’s duty to the social insurance system, as a gatekeeper in society. Deep interviews and postal questionnaires were used. Two groups of physicians, general practitioners and orthopaedic surgeons, were approached [14-17]. The project was led by Rolf Wahlström, has generated one PhD thesis (Malin Swartling 2008 [18]) and has received financial supported from the Swedish Social Insurance Agency and Uppsala University.

Musculo-skeletal disorders

Karin Björkegren, Stefan Blomberg, Johan Bogefeldt, Kurt Svärdsudd and Mari-Ann Wallander

The Säter and Gotland studies (II:1)

These projects are based on two randomised controlled clinical trials of manual therapy (orthopaedic medicine therapy) versus traditional treatment (traditional physiotherapy and the patient’s own physical activities) with the aim of assessing whether manual therapy affects the pain level, use of analgesic drugs and return to work more than traditional physiotherapy. The two trials had somewhat different designs. In the Säter study the manual therapy was performed by one therapist and primary health care personnel performed the control treatment. In the Gotland study general practitioners trained in manual therapy performed the manual therapy and orthopaedic surgeons the control treatment. In both studies, patients who received manual therapy had a faster return to work and less sick-listing, and used less analgesics [19, 20].
In the Gotland study pain drawings were tested for their clinical value as predictors of pain course [21] and the nomenclature used by different categories of physicians for the same pain condition were described [22, 23]. The project has generated two PhD theses (Stefan Blomberg 1993 [19] and Johan Bogefeldt 2009 [24]) and another one is in progress (Marie Grunnesjö). The projects are receiving financial support from Stockholm stay-active clinic, the province of Gotland, and Uppsala University.

Prevalence and consequences of low back pain (II:2)

This project is based on data from a large number of ongoing population studies in Gothenburg, Eskilstuna, and Uppsala with a total of 14,000 observations and an age range of 25-99 years in both sexes and data collected during the time period 1980-1993. Some of the instruments used in the population studies were identical and will be used in the project. The aims are to analyse the prevalence of low back pain by sex and age, adjusted for a large number of possible other outcome-affecting variables, to analyse possible secular trends (cohort effects) related to increasing or decreasing back pain reporting over time, and to analyse the consequences of low back pain in terms of well-being, sick leave, health care utilisation, disability pension, and survival [25, 26]. The project has generated one PhD thesis (Johan Bogefeldt 2009 [24]) and is being carried out in cooperation with the research group for cardiovascular epidemiology at the Sahlgrenska Academy, Gothenburg, the Swedish Social Insurance Agency, and the National Board of Health and Welfare.

Epicondylitis (II:3)

Tennis elbow (epicondylitis) is a common pain condition that heals spontaneously within three months in 90% of cases. In the remaining 10% the condition becomes “chronic” or persistent and the diagnosis changed to epicondylitis. This project has three main purposes to map treatment methods currently used in primary health care, to test a new treatment method, and to shed some light on the pathophysiology of the condition. The first purpose was fulfilled in a postal questionnaire study involving general practitioners and physiotherapists, which showed that a large number of methods were used, some of which were not tested for efficacy, and even some that had been shown to be ineffective [27]. The second purpose was fulfilled in a double randomised controlled clinical trial in which the effect of exercise versus wait-and-see was first tested, and then the effect of two treatment methods (eccentric and concentric exercise) were compared. The study involved more than 200 patients in a multicentre setting in Uppsala and Linköping. A publication on exercise versus wait-and-see has been submitted [28]. A manuscript on eccentric versus concentric exercise is in progress [29]. The third part of the project is a study of the pathophysiology of epicondylitis by analysis of tissue biopsies from healthy and affected elbows in cooperation with Kings College, London. The pathophysiology is also being studied with positron emission tomography (PET) of the healthy and the affected elbows in cooperation with Uppsala Imanet. The PET scan data are almost completely analysed and a report is in progress. The project is generating one PhD thesis (Magnus Peterson) and is receiving financial support from the Medical Research Council, the Amershan Fund, the General Medicine Fund and Uppsala University.

Cognitive behavioural therapy in fibromyalgia (II:4)

This project, which is being performed in collaboration with the sections of social medicine and caring sciences at our department and the section for biological research on drug dependence at Uppsala University, is a randomised controlled trial of cognitive behavioural therapy (CBT) in fibromyalgia, the purpose of which is to assess the effects of CBT on this condition. Fifty
women with a fibromyalgia diagnosis in Northern Uppland were randomised to one of two groups. One group received CBT for one year with the other group as control. After one year the control group also received CBT. A large number of variables have been collected through questionnaires and blood samples. The data are now being analysed. The project is generating one PhD thesis (Bo Karlsson) and is receiving financial support from Uppsala University.

Subcutaneous injections of sterile water or saline solution in fibromyalgia tenderpoints (II:5)

A number of therapies have previously been tried with doubtful or only short-term effects in fibromyalgia. However, subcutaneous injections of small amounts of sterile water have been shown to decrease pain in other pain conditions with variable effect duration. There are two prevalent hypotheses of the origin of the fibromyalgia pain syndrome, and both predict influence on the nociceptor (causing the tenderpoint) of, for instance, substances with osmotic effects or mechanical irritation. In two pilot studies we showed that injections of sterile water were more effective than those of saline solution. In collaboration with the clinical chemistry and immunology laboratories at Uppsala University Hospital and the section for biological research on drug dependence at Uppsala University we are now performing a full-scale randomised controlled clinical trial of subcutaneous injections of sterile water versus saline solution in 60 women, half randomised to water and the other half to saline solution. Blood samples have also been taken for neuropeptide measurements. The project is receiving financial support from the Medical Research Council and Uppsala University.

The VIP study (II:6)

VIP is the Swedish acronym for well-being in the population – a population-based study. This project is a postal questionnaire-based case referent study of 150 women in Uppsala County diagnosed with fibromyalgia (cases) and 750 matched reference individuals from the general population. The purpose of the study is to compare cases and referents regarding psycho-socio-economic status, symptom reporting, and prevalence of functional gastrointestinal problems. This is one the first controlled studies in the world of symptom reporting among fibromyalgia patients that has shown that a considerable proportion of the fibromyalgia patients report not only traditional fibromyalgia symptoms but also high frequencies of other symptoms. A first report has been published [30].

Asthma, allergy and COPD

Kristina Bröms, Gunnar Johansson, Karin Lisspers, Björn Ställberg and Kurt Svärdsudd

A national study of the health of children at allergy avoidance and conventional day care centres in Sweden (III:1)

This project is a national study of the health of preschool children regarding asthma and various allergies, and of their home and school environments. The main purpose is to assess whether special allergy avoidance day care centres improves the situation for allergic children. All such existing day care centres in the country were identified and for each such centre two ordinary day care centres in the vicinity were chosen as controls, giving a total of 593 day care centre sections. All these sections received a postal questionnaire regarding the physical environment of the school, cleaning routines, rules regarding personnel and parents smoking and pets at home. A first report showed considerably less allergogenic environments at the allergy avoidance centres than in the control centres [31]. Later a postal questionnaire about the children’s health situation and home environment was sent to the parents of the 8,700 children at the allergy avoidance and control centres. All children who had signs of asthma in the returned questionnaires received a symptom diary to be filled out for two weeks in order to get a better measure of asthma severity than was possible from the questionnaire. In early 2007 a follow-up questionnaire similar to the first one was sent out to the parents.
The first results from the questionnaire are focused on providing reliable age and sex-specific prevalence. There are several earlier studies but they are either regional, local or small. We have computed one-year age class prevalence for boys and girls using five diagnostic criteria. Using physician-based criteria there are large regional prevalence differences, whereas physician-neutral criteria show no regional differences. Moreover, in an analysis of geographical asthma prevalence gradients, the strongest geographic/demographic variable was population density, as a proxy for degree of urbanisation [32]. In a third report the “atopic march” hypothesis was tested, i.e., that allergic children develop one atopic manifestation after another. A manuscript has been submitted [33]. A fourth publication is underway in which the asthma incidence is estimated [34]. The project has generated one PhD thesis (Kristina Bröms 2010 [35]) and is receiving financial support from Vårdalstiftelsen, the Asthma and Allergy Patient Foundation, Uppsala University, and a number of smaller funds.

The AIM study (III:2)

AIM is the Swedish acronym for “Asthma in Mid-Sweden”. In this project asthma management and treatment in adults at primary health care centres in the Uppsala-Örebro health care region was investigated. The purpose was both to assess asthma control and quality of life in patients with asthma and to assess the proportion of centres with special asthma clinics [36].

A random sample of approximately 1,100 patients from the 42 randomly selected centres was drawn and patients were sent a questionnaire regarding their socio-economic background, asthma symptoms, treatment and quality of life. The first report from the AIM study described the organisation of asthma care in primary care [36]. Another report demonstrated that Swedish adolescents with asthma were managed and treated somewhat differently in paediatric and primary care but with equal and, for the most part, satisfactory results [37]. A third report has been published showing a strong association between perceived quality of life and the asthma disease control [38].

A fourth report demonstrated that female sex, age, pollen and pet allergy, not having the asthma prescription filled owing to cost, and daily smoking were all independently associated with asthma severity [39].

A fifth report from the AIM study has demonstrated that having an asthma clinic at a primary health care centre improves asthma patients’ knowledge of the disease, and better asthma control is achieved if the nurse is allocated more time [40].

The project was led by Gunnar Johansson, has generated three PhD theses (Mikael Hasselgren 2006 [41], Karin Lisspers and Björn Ställberg in 2008 [42, 43]) and has received financial support from the county councils of the Uppsala-Örebro Region, and Uppsala University.

The ALMA study (III:3)

The ALMA project ("Att Leva Med Astma" living with asthma) is a national study of the limitations of living with asthma. The project was performed by a national project group as a telephone interview study in a random sample of 10,350 men and women nationwide, of whom 240 were later the subjects of an in-depth interview. A postal questionnaire was also sent to a random sample of general practitioners. It was found that asthma patients generally had more symptoms than their general practitioners were aware of [44]. Björn Ställberg was leader of the project which has now been concluded.

Asthma during childhood and adolescence (III:4)

This project is based on a series of measurements in 150 school children in a small municipality. The purpose was to evaluate the course of asthma with onset in childhood. The six year follow-up study demonstrated that many adolescents with current asthma do not achieve asthma
control. One reason might be undertreatment with inhaled corticosteroids. This study was part of Björn Ställberg’s dissertation; he is the project leader [45]. The project was supported by Sörmland’s county council.

**The Praxis-study asthma/COPD (III:5)**

The aim of the Praxis-study is to compare asthma and COPD guidelines with the actual care. A postal survey in 2005 was answered by 1,210 randomly selected patients with asthma and 1,113 with COPD from 56 randomly selected primary health care centres and outpatient clinics at 14 hospitals in the Uppsala-Örebro health care region. The records of these patients have also been examined. Two reports have been published, the first about asthma control, which concluded that in spite of treatment guidelines many patients in Swedish primary care still have insufficient asthma control [46]. The second evaluated how often a diagnosis of COPD was confirmed with spirometry [47]. A third report about sex-related differences in asthma was part of Karin Lisspers’ dissertation [42]. A fourth report regarding co-morbidity in COPD-patients has been submitted [48].

A follow-up investigation is planned for 2011. The project is being led by Karin Lisspers, Björn Ställberg and Christer Jansson (Professor at the Department of Medical Sciences: Respiratory Medicine & Allergology, Uppsala University). The project is generating one PhD thesis (Josefin Sund, Department of Respiratory Medicine, Örebro University Hospital), and is receiving financial support from the county councils of the Uppsala-Örebro Region, the Swedish Heart and Lung Association, the Swedish Asthma and Allergy Association, the Bror Hjerpstedt Foundation, Uppsala, and Uppsala University.

**International research collaboration in asthma and COPD in primary care (III:6)**

Karin Lisspers and Björn Ställberg are involved in international collaboration aimed at highlighting unanswered questions on the management of respiratory diseases of importance in primary care. This has resulted in a published Research Needs Statement from the International Primary Care Respiratory Group (IPCRG) [49].

They are also involved in an international research project comparing the management of COPD in primary care in different countries, the UNLOCK study [50].

**The physicians’ actions in the management of COPD (III:7)**

Björn Ställberg is involved in research collaboration with the Center for Family and Community Medicine (CEFAM), at the Karolinska Institute. The aim of this project is to study how quality of care for patients in primary care with COPD can be improved by better understanding of the prevalence, indicators, and physicians’ actions. The project is generating one PhD thesis (Hanna Sandelowsky, Karolinska Institutet, Stockholm).

**Validation study (III:8)**

Björn Ställberg, in collaboration with researchers at the Karolinska Institute, has published a validation study of the Clinical COPD Questionnaire (CCQ) in primary care [51].
**Clinical trials (III:9)**

Björn Ställberg has been involved as coordinator in two clinical trials in asthma and COPD respectively [52, 53].

Björn Ställberg is a member in the steering committee for a study about treatment of rhinosinusites, the SOSAR-study.

Karin Lisspers is a member of the steering committee for a study regarding screening for COPD, the DETECT-study [54].

**The NO-KOL study (III:10)**

This study was performed at one single centre, Nyby health care centre. 40 patients with chronic obstructive pulmonary disease (COPD) were randomized to double-blind crossover treatment with a inhaled steroid (mometasone). The purpose of the study was to evaluate the effects of the treatment on exhaled nitric oxide (NO). The level of exhaled NO has been demonstrated to be a good predictor of response to inhaled corticosteroids in asthma. The role of exhaled NO in COPD has been less studied.

The treatment with inhaled mometasone significantly reduced the NO as compared with placebo. The expiratory flows measured with spirometry (FEF75, FEF50 and FEF25) were significantly improved by the steroid treatment as compared with placebo. The baseline value for NO did not predict a positive response in terms of improvements in expiratory flows. Instead, the major reduction in NO after active treatment was related to significant improvements in expiratory flows. A study has been submitted for publication [55]. The project is being led by Gunnar Johansson and Kjell Alving and is receiving financial support from Schering-Plough.

**Treatment of asthma in primary health care using exhaled nitric oxide analysis (III:11)**

A total of 187 patients with asthma at 17 primary health care centres have been included in a study. The aim is to examine whether use of exhaled nitric oxide (NO) to guide anti-inflammatory treatment can improve asthma-related quality of life in adult patients with allergic asthma. The data have been collected and are being processed. The same study is examining whether there is an association between different circulating cytokines (systemic inflammation), exhaled NO and quality of life. The project is being led by Kjell Alving, Jörgen Syk and Gunnar Johansson and is receiving financial support from Karolinska Institutet.

**A retrospective epidemiological study to map outpatients with chronic obstructive pulmonary disease (COPD) and describe COPD health care in real-life primary care during the first ten years of the 21st century – PATHOS (III:12)**

This is a retrospective epidemiological study to map outpatients with COPD and describe COPD health care in real-life primary care during the first ten years of the 21st century. Data will be extracted anonymously from electronic patient records in primary care. By extraction of data from 80 primary health care centres it is estimated that we will obtain data on approximately 20,000 to 25,000 patients. In addition, data regarding morbidity and mortality will be collected from the Hospital Discharge Register (Slutenvårdsregistret) and the Cause of Death Register and information on prescribed drugs will be collected from the Prescription Register. Data on social-economic status will also be collected from Statistics Sweden (SCB). The merging of data will be performed by the National Board of Health and Welfare. The software program Pygargus Customized eXtraction Program (CXP) will be used to extract patient data from the electronic patient records of the participating primary care centres for all patients with a diagnosis of COPD (ICD 10: J44) and/or prescription of drugs in the ATC class...
R03 (pharmaceuticals for obstructive lung diseases). The social security number of identified patients will immediately be replaced with a study ID-number for further anonymous processing of data. No identification of patients will be possible once the database is finalized. Collected data are being processed. The project is being led by Gunnar Johansson and is receiving financial support from AstraZeneca. The data management will be performed by Pygargus and Uppsala clinical research centre.

Investigations on arteriosclerosis status in patients with chronic obstructive pulmonary disease (COPD) (III:13)

Patients with COPD often have cardiovascular diseases with a progression associated with advanced lung disease. At one primary care centre patients with COPD will be investigated with different methods regarding cardiovascular diseases and the results will be correlated to their lung function. Principal investigators are Sousan Elliin, Mansour Alemi and Gunnar Johansson and the study has been financially supported by the primary care.

Utilisations of pharmaceuticals

Annika Bardel, Kurt Svärdsudd and Mari-Ann Wallander

Women’s utilisation of pharmaceuticals (IV:1)

This project is based on a postal questionnaire sent to a random sample of 4,200 women in the Uppsala-Örebro region, 35-64 years old. The purpose of the project is to study utilisation of pharmaceuticals among women. In a first report the pharmaceutical panorama and the diseases for which the drugs were prescribed was presented [56]. In a second report the use of hormone replacement therapy at menopaus and symptoms reported by users and non-users was presented [57]. In a third report adherence to the prescribed drug and its determinants were presented [58]. Adherence increased with age, if a new appointment was scheduled and if the disease was serious or the drug necessary, while adherence decreased if the respondent had negative feelings about the safety of the drug. A fourth report shows the symptom prevalence across age and use of pharmaceuticals [59]. Symptom reporting is now being tested in the consort dataset (see above under natural history of disability pension) including more than 17,000 observations in men and women 25-99 years old. Later we intend to examine the relationship between symptom reporting among men and women and their sick-listing, disability pension, survival and use of hospital health care. The project is being led by Mari-Ann Wallander and Annika Bardel, has generated one PhD thesis (Annika Bardel 2007 [60]), and is receiving financial support by Vårdalstiftelsen, Sörmland county R&D and Uppsala University.

Rational drug prescribing (IV:2)

This project is based on the registration of prescribed pharmaceuticals in the county of Storstrøm in southern Denmark. Ninety-four practices for general practitioners were involved. The aim was to study factors leading to rational drug prescribing. In the first report, prescription data from the 94 practices (DDD/1,000 listed patients for 13 drug groups) were extracted from the database. Every six months for seven years a letter was then sent to each practice, asking about the level of prescriptions, and how they thought it compared with all the other practices. One report has been published [61].

In the second part of the project, a trained general practitioner made two visits, one year apart, to each practice. The GPs in the practice were asked to indicate their level of prescriptions, and to estimate how they thought that level compared with the levels of all the other practices. The
results of the first visit were somewhat better than chance, while on the second occasion they had improved significantly. A report has been submitted for publication [62].

In the third part of the project the 94 practices were randomized to two groups: an intervention group and a control group, to investigate the prescription of antibiotics (ATC group J). The groups were then switched for the next intervention, to investigate the prescription of non-steroid anti-inflammatory drugs (NSAID) (ATC group MO1). The same general practitioner as above visited the 94 practices once a year and discussed the use of antibiotics in half of the practices and the use of NSAIDs in the other half. The effects of these visits in terms of prescriptions were followed by examining register data. A third manuscript will be forthcoming. The project is generating one PhD thesis (Keld Vaegter), and is receiving financial support from Storstrøms amt, Sörmland county R&D and Uppsala University.

Pharmacoepidemiology (IV:3)

The area of pharmacoepidemiology is a fairly new branch of epidemiology and is methodologically still in its development phase. Research in this area requires access to high quality health care databases and collaboration with various academic groups in Europe and the US.

We have longstanding research collaboration with Dr Luis A García Rodríguez and colleagues at Centro Español de Investigación Farmacoepidemiológica-CEIFE (Spanish Centre for Pharmacoepidemiologic Research) which has resulted in numerous publications on the natural history of diseases including respiratory diseases such as COPD and pneumonia [63-65], diabetes [66], gastroesophageal reflux disease and irritable bowel disorder [67] [68], reumatoid arthritis [69] cardiovascular diseases like atrial fibrillation [70], MI [71], chest pain [72] and also studies investigating the safety and utilization of a new statin, rosuvastatin [73, 74].

In the study of the natural history of gastroesophageal reflux disease, research has also been done in collaboration with a research group in Bologna, Italy [75] and researchers from several Chinese Universities [76-79].

In recent years, we have also had research collaboration with Professor John Dent, Adelaide [68, 79], Professor Roger Jones, London, Professor Christos Lionis, Kreta, Professor Ken Rothman, Boston, Professor Hershel Jick, Boston, Professor Susan Jick, Boston, Professor Alexander Walker, Boston and Professor David Price, Aberdeen.

Cardiovascular disease and diabetes

Dan Andersson, Jan Cederholm, Margaretha Eriksson, Mats Gulliksson, Gunnar Johansson, Lena Kallings, Marianne Omne-Pontén, Jan Stålhammar and Kurt Svärdsudd

The impact of birth weight (V:1)

This project is a recently completed study of the impact of birth weight on the prevalence of cardiovascular risk factors, and the incidence of cardiovascular disease, diabetes and prostate cancer. The study population consisted of 1,800 men born in Gothenburg in 1913, of whom one fraction participated in the Study of Men Born in 1913. Birth weights and other obstetric data were retrieved from various archives. The men were followed regarding survival until age 85. For one fraction (the Study of Men Born in 1913), screening data were available from several occasions. In a first publication a quality control of the collected data was performed indicating sufficient quality for scientific use [80]. In a second report an inverse relationship was found between birth weight on the one hand and adult blood pressure and serum cholesterol on the other [81]. However, no relationship was found to adult myocardial infarction incidence, death from cardiovascular disease or death of all causes [82]. Moreover, there was a curvilinear
relationship between birth weight and adult diabetes incidence, with high incidence levels among those with a low and those with a high birth weight. Finally, a direct relationship was found between birth weight and adult prostate cancer incidence [83]. Barker’s hypothesis of intrauterine priming could thus be verified in certain respects but not in others. The project has generated one PhD thesis (Margaretha Eriksson 2005 [84]) and has received financial support from the Medical Research Council, Heart-Lung Foundation and Uppsala University.

**Morbidity and mortality among diabetes patients (V:2)**

This project is based on the 1,500 diabetes patients in the Tierp health care database during the years 1976-1994 and a matched control group of 4,500 individuals from the population register. The Tierp health care database is a longitudinal registration of all appointments at the Tierp health care centre, the only one in the area. The purpose of the project was to test the hypothesis that the aggressive diabetes treatment with better metabolic control used during recent years might have improved the survival outlook for diabetes patients. Preliminary data indicate that the diabetes patients have had less decline in mortality rate than the general population. Jan Stålhammar has completed his PhD within the project [85], which was supported by the Medical Research Council and Uppsala University.

**Determinants for the survival of diabetes patients (V:3)**

This project is based on the 800 diabetes patients followed and treated at Laxå primary health care centre since 1972 and approximately 4,000 referents from the general population matched to the cases by age, sex, and year of onset for the diabetes patients. The purpose is, firstly, to determine whether the diabetes patients have had the same decline in mortality rate as the general population, and secondly, to evaluate determinants for survival among the diabetes patients (blood glucose, blood pressure, blood lipids and others). A first report dealing with diabetes incidence and prevalence during 30 years of follow up has been published [86] as well as a study of mortality trends in subjects with and without diabetes during 33 years of follow up [87]. A third report will be forthcoming. The project is being led by Dan Andersson and Stefan Jansson, is generating one PhD thesis (Stefan Jansson) and is receiving financial support from Örebro University and Uppsala University.

**The Swedish National Diabetes Register (V:4)**

The Swedish National Diabetes Register (NDR), now including more than 70% of all patients with diabetes in Sweden, forms the basis for several research projects. With the register center located in Gothenburg, one of our senior researchers, Jan Cederholm, is responsible for the statistical and epidemiological analyses, in cooperation with Björn Zethelius (Geriatrics), forming the Uppsala branch of the working group of the NDR. More than 20 articles have been published in 2002-2010, as presented at [www.ndr.nu](http://www.ndr.nu) [88-109]. A summary of the development of risk factor control in type 1 and type 2 diabetes, and in patients with previous coronary heart disease (CHD) in recent years was published in Läkartidningen 2009 [105], including a report on the importance of risk factors for risk of CHD and cardiovascular disease (CVD). In summary, almost half (40-43%) of all cases of CHD and CVD could be prevented, if HbA1c (DCCT) ≥7.5%, blood pressure >140/90 mmHg, obesity and smoking could all be eliminated at the same time.

It has been shown that HbA1c (DCCT) <7% strongly reduced risk of CVD, with no increased risk at low HbA1c values, even in patients with longer diabetes duration in type 1 [106] and type 2 diabetes [110], and in patients with a history of CVD in type 2 diabetes. It has also been shown that systolic blood pressure (SBP) <140 mmHg strongly reduced risk of CVD, indicating a SBP treatment target well below 140 mmHg, although no significant differences in CVD risk was seen between SBP 130-139 mmHg and 110-129 mmHg [108]. Normal weight reduced risks
of CHD and CVD by 15% and 22%, as compared with overweight or obesity [101], and non-smoking at middle age reduced risks of CHD and CVD by 57% and 38% [102]. A multifactorial approach to risk factor control decreased CVD risk, and combined long-term control of HbA1c <7.5% (median 6.5%) and BP ≤140/90 mmHg (median 130/80) was shown to reduce risks of CHD and CVD by 31% and 33%, with additive effects of HbA1c and BP on outcomes risks [103]. High pulse pressure >75 mmHg (indirect measure of increased arterial stiffness) has been shown as an independent risk factor for CHD and CVD [104].

Long-term tight control of HbA1c [98] and BP were related to low BMI, HbA1c also to non-smoking, and BP also to absence of albuminuria [94]. Long-term development of renal complications (albuminuria and renal impairment) were predicted by elevated HbA1c and systolic BP, and also by elevated BMI and triglycerides [92, 109]. A simplified risk model for estimation of 5-year CVD risk has been introduced for clinical use [99]. More elaborated risk models for estimation of 5-year CVD risk in both type 1 and type 2 diabetes, as well as risk factor control in patients with type 2 diabetes and previous CHD, and lipid control associated with CHD risk, has been presented at the EASD Congress in Stockholm, September 2010.

All data in the NDR from a participating unit are reported back to the unit and also compared with corresponding national NDR-data in order to improve diabetes care. Patients can follow their own data together with a treating doctor or nurse at www.ndr.nu. The patient organization Swedish Diabetes Association strongly supports the NDR.

Real-life Effectiveness and Care Patterns of Diabetes Management – Recap-DM (V.5)

Recap-DM includes primary care data of 11,856 patients with type 2 diabetes (T2DM) residing in the county of Uppsala, Sweden, from January 1993 to October 2004. The register was created from electronic medical records by automated data-mining at 26 publically financed primary health care centres. Four additional data sources were used. The Akademiska Hospital provided data on the number of appointments study patients had at individual hospital outpatient clinics. The National Inpatient Register provided data on all hospitalisations in Sweden between 1987 and 2004, with information on diagnoses, surgical procedures and dates of admission and discharge. The Causes of Death Register provided comprehensive data on mortality and underlying cause of death until 2003. Finally, the Swedish Registry for Active Treatment of Uremia (SRAU) provided data on treatment for renal failure between 1988 and 2005, including the date of treatment start and the initial form of treatment. The aim of Recap-DM is to study fiscal cost, managemental praxis, treatment patterns, morbidity and mortality of T2DM in a real-life setting. So far, four publications have evolved from the project [111-114]. The first study described the incidence and prevalence of T2DM [111]. The second and third studies provided an in depth analysis of the resource use and costs of T2DM [112, 113]. In the fourth study the time to insulin treatment and factors associated with insulin prescription are described [114]. The project is being led by Jan Stålhammar, is generating one PhD thesis (Mats Martinell) and is being supported by primary health care in Uppsala and Uppsala University.

Recap-DM is a joint venture between us (Family Medicine and Clinical Epidemiology), the Karolinska Institute (A. Ringborg, PhD student) and i3 Innovus Sweden (P. Lindgren, PhD, MD). The data extraction and initial data management was financed by Merck Sharpe & Dohme (MSD), Sweden AB.

Prevalence of lipid abnormalities before and after introduction of lipid modifying therapy among Swedish patients with dyslipidemia – PRIMULA (V.6)

The objective of this study is to estimate the prevalence of dyslipidemia and attainment of goal/normal lipid levels in patients treated with lipid modifying therapy. It is a longitudinal retrospective observational study which covers time periods before and after treatment. Data
were collected from 1994-2007 electronic patient records in public primary health care centers in Uppsala county Sweden. Patients were included if they had been treated with lipid modifying therapy and had at least one lipid abnormality indicating dyslipidemia and if complete lipid profile data were available. Threshold levels for lipids were defined as per Swedish guidelines. 5,424 patients were included. Focusing therapy on low-density lipoprotein reduction allows 40% of patients to achieve goal levels and helps reducing triglyceride level during follow-up [115]. Almost 60% of patients experience persistent high-density lipoprotein and/or triglyceride abnormality independent of low-density lipoprotein levels. The data extraction and initial data management was financed by Merck Sharp & Dohme (MSD), Sweden AB. PRIMULA is a joint venture between us (Family Medicine and Clinical Epidemiology) and the Karolinska Institute.

A retrospective epidemiological study to investigate outcome and mortality with glucose lowering drug treatment in primary care - ROSE (V:7)

This is a retrospective epidemiological study of patients with diabetes mellitus and an investigation of the outcome and mortality associated with glucose lowering treatment in real-life primary care during the first ten years of the 21st century. Data will be extracted anonymously from electronic patient records in primary care. By extraction of data from 80 primary health care centres it is estimated that we will obtain on approximately 60,000 to 80,000 patients. In addition, data regarding morbidity and mortality will be collected from the Hospital Discharge Register (Slutenvårdsregistret) and the Cause of Death Register and information on prescribed drugs will be collected from the Prescription Register. Data on social-economic status will also be collected from Statistics Sweden (SCB). The merging of data will be performed by the National Board of Health and Welfare. The software program Pygarus Customized eXtraction Program (CXP) will be used to extract the patient data from the electronic patient records of the participating primary care centres for all patients with a diagnosis of diabetes mellitus (ICD-10: I10). The social security numbers of identified patients will immediately be replaced with a study ID-number for further processing of data. It will not be possible to identify patients once the database is finalized. Data are now being collected. The project is being led by Gunnar Johansson and is receiving financial support from AstraZeneca. The data management will be performed by Pygargus and the Family Medicine and Clinical Epidemiology section.

Cardiovascular events during primary treatment of hypertension – REAL-LIFE (V:8)

This study compared the effects of antihypertensive treatment with candesartan or losartan on cardiovascular disease (CVD) using Swedish registers (merged data from existing electronic patient records, and electronic hospital discharge and cause of death registers). Patients without previous CVD who were prescribed candesartan (n=7,329) or losartan (n=6,771) for hypertension during 1999-2007 at 72 Swedish primary care centers were followed up for 9 years. Adjusted risk reduction in all CVD was 14% with candesartan compared with losartan treatment [116] irrespective of sex, age, previous antihypertensive treatment, baseline blood pressure, and presence diabetes [117]. The project is being led by Jan Stålhammar and is receiving financial support from AstraZeneca. The data management is performed by Pygargus and the Family Medicine and Clinical Epidemiology section.

Effects of angiotensin converting enzyme inhibitors vs candesartan in reducing cardiovascular events in primary treatment of hypertension – ARB-ACE study (V:9)

The planned study will be a retrospective study on the effect of ACEis vs candesartan on cardiovascular events and on health economic effects in a “real life” setting in Sweden. The study procedure is the same as above described in the ROSE project (V:7). The estimated number of patients is 50,000. The project is being led by Jan Stålhammar and is receiving
SUPRIM (V:10)

This project deals with secondary prevention after a coronary heart event and is a randomised controlled clinical trial of two prevention concepts: optimised risk factor control and behavioural modification. The study population consists of 362 patients discharged from Uppsala University Hospital to their general practitioners who were cross-randomised according to a factorial design. First, their general practitioners were randomised into two groups, one receiving education in optimal risk factor control, the other left to handle the market information. The patients in each of these two groups were then cross-randomised into behavioural modification or no modification. The factorial design allows for evaluation of the two concepts separately.

After a baseline examination immediately after discharge, the patients were followed up with new examinations every six months for 30 months, where the risk factor levels were measured. A nutritional examination was also done twice, as has a video interview to measure the effects of the behavioural modification programme, and a large number of psycho-socio-economic variables have been measured by questionnaire. The trial has now been concluded. The first publication described the patients’ psycho-socio-economic status during the first year after a CHD event. It compared almost 1,000 matched referents, matched to cases by age, sex, and place of residence. In this first controlled study, disease and gender status both appeared to be determinants of psychological well-being, with gender status apparently the strongest [118]. In a second report the main results of the randomised trial were presented. During a mean 94 months of follow up, the intervention group had 41% fewer fatal and non-fatal first recurrent CVD (HR 0.59, 95%CI 0.42-0.83, p=0.003), 45% fewer recurrent AMI (HR 0.55, 95%CI 0.36-0.85, p=0.007), and a non-significant 28% lower all cause mortality (HR 0.72, 95%CI 0.40-1.30, p=0.28) than the reference group after adjustment for other outcome affecting variables. In the cognitive behavioural therapy (CBT) group there was a strong dose-response relationship between intervention group attendance and outcome. During the first 2 years of follow up there were no significant group differences in traditional risk factors [119]. The project has generated one PhD thesis (Mats Gulliksson 2009 [120]). This study has received financial support from Swedish Medical Research Council, Vårdal Foundation, the Swedish Council for Working Life and Social Research, the National Board of Health and Welfare, the National Heart and Lung Patient Association, Uppsala county council, Uppsala branch office of the Swedish Social Insurance Agency, and Uppsala University.

Secular trends in recurrent myocardial infarction (V:11)

This project is being performed in collaboration with Centre for Epidemiology (EpC) at the National Board of Health and Welfare and the Cardiovascular Epidemiology Group at Sahlgrenska Academy, Gothenburg. It is based on the National Swedish Myocardial Infarction Register at EpC, which contains all incidents of myocardial infarction (AMI) since the early 1970s, in total 1.2 million incidents. The purpose is to study the risk of recurrent AMI during the years following a first AMI, and how this risk has changed over the years. During the study period, the risk of a new event among survivors of a previous AMI decreased sharply during the first 2 years after the previous event, reached its lowest point after 5 years, and then increased slowly again. The risk of a recurrent AMI during the first year after a previous event was fairly stable over time until the late 1970s and then decreased by 36% in women and 40% in men until the late 1990s, irrespective of age and AMI number, mirroring the incidence decrease over the years for primary events [121]. In a second report the effects of degree of urbanisation on the risk of recurrent acute myocardial infarction were described. There was considerable geographical variation in recurrent AMI risk, the same for men and women, best explained by residential area population density [122]. The project has generated one PhD thesis (Mats
Gulliksson 2009 [120]), and has received financial support from the Swedish Medical Research Council, the Vårdal foundation, the Swedish Council for Working Life and Social Research, the Swedish National Board of Health and Welfare, the Swedish Heart and Lung Association, Uppsala primary health care administration, and Uppsala University.

**Damaged brain and susceptible life (V:12)**

The project is a one-year follow up of all 390 stroke patients discharged from Falun Hospital during a specified period of time and who, before admission, were living in their own homes. At discharge, the staff was asked to indicate their view of the patient’s prognosis. The patients were followed with an interview at home immediately after discharge, and again after 3 and 12 months. On the same occasions a close relative responded to a matching questionnaire. Furthermore, all health care utilization at hospital, primary health care, municipal social service support and the caring efforts of close relatives have been recorded. In the first publication the prognostic ability of the staff was analysed. Prognoses were given regarding health development, need of help and living condition. The prognoses were correct (67%) or much better than chance (33%), and were mainly influenced by the patient’s pre- and post-morbid state [123]. The risk of dying or having a new stroke decreased rapidly during the early post-stroke phase. Health care utilization, in hospitals as well as in primary health care, and municipal social service support were all considerably higher after the stroke than before, but the utilization of these services was lower than previously reported [124]. Health problem prevalence according to interview and record scrutiny was modest, peaked early after discharge and then declined [125]. Support from informal caregivers increased significantly after discharge and remained high during the first post-stroke year. The informal caregivers reported considerable strain and burden, with significantly higher levels of anxiety and depression than the stroke patients [126]. The project has generated one PhD thesis (Lena Olai 2010 [127]), and has received financial support from Vårdal foundation, Dalarna county council and Uppsala University.

**Screening for diabetes and hypertension in the Dental Care Service (V:13)**

The dental service is the only clinical area where patients on a large scale come for check-ups without having symptoms. This project deals with the possibility of using the dental health service as a screening function for high blood pressure and diabetes. The purpose is to evaluate to what extent new diabetes or hypertension cases, not known previously to health care personnel, can be detected. Three dental services in Gävleborg County, in places with only one primary health care centre, measured blood pressure and blood sugar in all patients attending the dental service, approximately 1,500 patients. All patients who had blood pressure or blood sugar above preset levels were referred to the primary health care centre for evaluation. Data from these units regarding the referred persons covering the three years preceding and following the screening occasion, in total more than 30,000 appointments, were obtained to find out whether the referred person was already known or, if not, if he or she came for evaluation and, if so, if he or she received a hypertension or diabetes diagnosis. A first publication based on a pilot study showed a strong relationship between high blood pressure and the prevalence of deep gingival pockets [128]. In a second report the efficacy of blood pressure screening in dental care and primary care work up of those who screened positive was analysed. The report has been submitted [129]. Currently the efficacy of diabetes screening is being analysed. The project is generating one PhD thesis (Sevek Engström), and is receiving financial support from Gävleborg county council, dental service Gävleborg and Uppsala University.
Physical activity in prevention and treatment of disease (V:14)

Physical activity is one of the most important public health determinants, and the health care sector is highlighted as a central setting in the promotion of physical activity in the population as well as at individual level. The project consists of several studies of methods for promotion of physical activity in patients with cardiometabolic risk factors. The main method is physical activity on prescription (PAP). Previous studies have shown that this method is effective in clinical settings and increases physical activity level and self-reported quality of life, and has good adherence [130-132]. Data collection from long-term follow ups of an RCT have been collected and will be analyzed, several papers are planned. One paper has been published from the 6-month follow up and, shows that PAP increases physical activity level at moderate intensity, and reduces sedentary time as well as reducing several cardiometabolic risk factors in elderly women and men with low physical activity level, overweight and abdominal obesity [133]. This study is being conducted in collaboration with several researchers at the Karolinska Institute, Uppsala University and Umeå University. The project leader is Lena Kallings. One RCT with patients with osteoarthritis in primary health care started spring 2010 and one PhD student is involved in the project which is financially supported by Gävleborg county council and Uppsala-Örebro regional research council. One clinical study with physical activity in treatment of depression will start in 2011 and one RCT with PAP to patient with depression is planned for 2012. One PhD student is involved in the studies with depression which is financially supported by Uppsala county council and Uppsala-Örebro regional research council. Adaption and testing PAP as a method to promote physical activity in children and adolescents is conducted as a method development, financially supported by Uppsala county council. Lena Kallings is responsible and a RCT is planned to start in 2012. On behalf of a “The Nordic network for physical activity, nutrition and health” an overview of existing approaches in physical activity prescriptions in the Nordic countries has been carried out during 2010 [134], financially supported by the Nordic Council of Ministers. This work has been reported on both Nordic level and international level (HEPA meeting in Czech Republic). As a result a similar work for the whole Europe will be planned in Slovakia Mars 2011.

Varia
Lars Englund, Christina Halford, Gunnar Johansson, Nils Rodhe and Kurt Svärdsudd

Infections in the elderly (VI:1)

The purpose of the project is to determine whether or not asymptomatic bacteriuria in elderly should be treated. The project is based on all individuals 80 years old or older in a health care district of Falun. The study population was followed for a few years with repeated assessments, bacterial cultivations and other lab tests. Four reports have been published, showing the prevalence of asymptomatic bacteriuria as measured by means of urine cultures, determinants of asymptomatic bacteriuria, change of bacterial strains indicating that the infections come and go, and the possibility of differ between simple lab tests innocent asymptomatic bacteriurias and those in need of treatment with [135-138]. The project was led by Lars Englund, has generated one PhD thesis (Nils Rodhe 2008 [139]), and the project has received financial support from Dalarna county.

Self-rated health (VI:2)

Simple global self-ratings of health (SRH) hold predictive validity in relation to functional ability, morbidity, health care utilisation, and mortality, and are therefore extensively used in public health monitoring and research. In this project, associations between stress-theory based psychobiological variables and SRH were investigated in 212 adult healthy women and men. Psychological resource and psychological strain variables were strongly associated with SRH in
women and men. Associations between endocrine variables and SRH were observed in men, but not in women. Furthermore, associations between age, year of investigation and SRH, and effects of SRH on risk of sick leave, disability-pension, hospital admission and mortality, were investigated in a population-based sample of 11,880 adult and elderly women and men. Age, year of investigation, and SRH were inversely associated, linearly in women, and non-linearly in men. Furthermore, in women and in men, SRH was inversely associated with number of days on sick leave, disability pension, and with mortality, during the follow-up period. Finally, SRH was inversely associated with first hospital admission rate in men, but not in women. Two articles have been published [140, 141], one manuscript has been submitted [142] and one manuscript is forthcoming (Halford, Preprint #1654). The project has generated one PhD thesis (Halford 2010, [143]). The project leader is Kurt Svärdsudd and the project is being financially supported by the Uppsala University.

**Vitamin D status among immiagated women from countries in the Middle East as compared with Swedish women (VI:3)**

Vitamin D in blood has been demonstrated in studies to be low in women from countries located in the southern part of Middle East and some countries in Africa. Immigrant women from countries in the Middle East will be investigated by a physician and a dietician in terms of different aspects of their vitamin D status and possible associated diseases. They will be compared with age-matched Swedish women. Preliminary results show a large difference in vitamin D levels with low values in many immigrant women in comparison with the Swedish women. Treatment with vitamin D and calcium is ongoing. The principal investigators are Anne Björk, Åsa Andersson and Gunnar Johansson. The project is receiving financial support by the Uppsala primary health care.

**Vitamin D status and the correlation to muscle function in patients with chronic obstructive pulmonary disease (COPD) (VI:4)**

Many patients with advanced COPD are affected by their decreased lung function and often have reduced muscular function as well. They consequents often do not go out, and their diet also tends to be low in products containing vitamin D. This study will investigate the vitamin D status and the correlation to muscle function in these patients with COPD. The study is planned to be performed at a primary health care centre by a physician and a dietician. If the patients are shown to have low values, treatment with vitamin D and calcium will be initiated. The principal investigators are Anne Björk, Åsa Andersson and Gunnar Johansson. The project is receiving financial support from the Uppsala primary care.

**Breaking borders and barriers for health (VI:5)**

The European population is ageing rapidly and it is necessary to develop new methods for improving quality of life for the elderly. In Sweden, Latvia and Finland population ageing implies a double burden on the public social security service sector with an increased flow of clients because of rising unemployment at the same time as municipal resources are being cut back. A network including primary health care in Uppsala county, Östhammar municipality, and Folkhälsans förbund (the public health association), Finland has been set up to work with the problem, shared by all, that the different systems dealing with health in a society/organization/country have difficulties co-operating communicating ideas. The network focuses its work on crossing system borders for health promotion. Gunilla Burell, senior researcher, and Bo Karlsson, PhD student, are involved in the project.
Psychiatric secondary prevention – Case management (VI:6)

This project is focused on psychiatric secondary prevention. The purpose is to determine whether case management in psychiatry reduces the risk of readmission to hospital. Case management using managers from outside the health care system has been tried earlier with moderate success. In this project we evaluated the effects of professional managers, i.e., psychiatric ward staff. All patients discharged from a psychiatric ward unit after at least three days in hospital and who agreed to participate (50 patients) were randomly allocated to one of two groups. One group was offered a case manager from among the staff in the ward, while the other group was referred to a psychiatric outpatient clinic. The case manager contacted or met with the patient regularly. Every third month questionnaires were filled out by the patient and the case manager. The control group was also sporadically in touch with the managers. After one year the control group was offered case managers and the first intervention group was able to go on with their contact at their own initiative. After one year the first case manager group had significantly fewer re-admissions to hospital than the control group. A manuscript will be forthcoming. The project leader was Lars Nilsson and the project has received financial support from the Social Insurance Agency, Karolinska Institute and Uppsala University.

References to the six research areas:


12. Normén G: To be or not to be sick certified with special reference to physician and patient related factors. Medical science. Uppsala University; 2010.


118. Gulliksson M, Burell G, Lundin L, Toss H, Svärdsudd K: Psychosocial factors during the first year after a coronary heart disease event in cases and referents: Secondary


122. Gulliksson M, Wedel H, Köster M, Svärdsudd K: Effects of degree of urbanisation on risk of recurrent acute myocardial infarction: more than 775,000 incidents followed for 30 years. Submitted.


**Undergraduate Teaching**

Medical programme

- responsibility for “Professional Development” on terms 1-4, with complementary teaching in "Leadership training" on terms 4-5, 7-8, and 10-11
- responsibility for the course in Family Medicine on term 11 including general practice and insurance medicine

Registered Nurse Programme

- teaching on various levels
- teaching on various levels

**Centres and Facilities**

Epidemiology Centre (EpC) at the National Board of Health, Stockholm
The Cardiovascular Epidemiology Group at Sahlgren’s Academy, Gothenburg
National Social Insurance Board
Centre for Clinical Research, Örebro County Council/Uppsala University
Centre for Clinical Research, Dalarna County Council/Uppsala University
Centre for Clinical Research, Gävleborg County Council/Uppsala University
Centre for Clinical Research, Södermanland County Council/Uppsala University
Scientific Report
Geriatrics
Research Group Leader Professor Lars Lannfelt

Ongoing Research

General description

The main areas of research are molecular studies of dementia as well as clinical and epidemiological research in these and other age related diseases, such as cardiovascular and renal disorders. Cellular and transgenic models of Alzheimer’s disease, Parkinson’s disease and Lewy body dementia are used to understand mechanisms of abnormal protein aggregation in the brain and to develop new biomarkers and disease-modifying therapies. We are using a broad repertoire of experimental techniques, e.g. molecular biology, biochemistry, histology and behavioural analyses in our dementia research.

Aβ protofibrils in Alzheimer’s disease (Assoc. Prof. Frida Ekholm Pettersson)

We are testing our hypothesis that large soluble Aβ oligomers, i.e. protofibrils, are neurotoxic in Alzheimer’s disease (AD). We have developed mAb158 and other Aβ protofibril selective monoclonal antibodies (mAbs). With ELISA based on these mAbs, we have found that increased Aβ protofibril levels correlate with impaired spatial learning in transgenic mice. At present, we assess brain, CSF, plasma and fibroblasts from AD patients for Aβ protofibril content. The ultimate goal of these studies is to develop a novel biomarker for early diagnosis of AD and for evaluation of amyloid-directed therapies.

Moreover, we aim to establish immunotherapeutic strategies for dementia. Immunotherapy is at present a promising strategy for treating AD and has received great attention worldwide. As a direct result of our research, a humanized version of mAb158, BAN2401, has now been brought to clinical trial. A single ascending dose study, launched in the US in August 2010, is carried out by Eisai Pharmaceuticals of Japan after licensing the rights from BioArctic Neuroscience, founded by Prof. Lannfelt. Apart from having brought BAN2401 to clinical trial, BioArctic Neuroscience is seeking to commercialise a number of novel therapeutic and diagnostic tools generated by the academic group at Uppsala University.

Pathology and amyloid imaging in transgenic Alzheimer’s disease mice (Assoc. Prof. Lars Nilsson)

For pre-clinical evaluation, we are treating transgenic Alzheimer APP mice with mAb158 and other Aβ protofibril selective mAbs. In addition, another transgenic mouse model for dementia, expressing human tau, is currently being generated and may be used for future treatment studies. For development of novel biomarkers, we have developed a new 125I-labelled antibody-based ligand that detects soluble Aβ protofibrils. The APP transgenic mice are now examined with micro-PET using this ligand and the general amyloid-ligand 11C-PIB. The ultimate aim is to bring our new biological ligand to the clinic, as a novel PET marker for early diagnosis and for monitoring functional decline in patients.

Parkinson’s disease (Assoc. Prof. Martin Ingelsson)

As aggregated proteins in brain is a general feature for neurodegeneration, immunotherapy could have potential also for other disorders. In Parkinson’s disease, alpha-synuclein deposits as Lewy bodies and Lewy neurites. As with Aβ in AD, large soluble oligomeric or protofibrillar forms of alpha-synuclein are believed to be particularly neurotoxic in Parkinson’s disease. We
are analyzing the formation of such intermediately sized species of α-synuclein, with the aim to develop new diagnostic and therapeutic principles. We generate recombinant forms of α-synuclein oligomers / protofibrils and analyze these with techniques such as high-performance liquid chromatography (HPLC), atomic force microscopy, circular dichroism and mass spectrometry. We are developing mAbs against α-synuclein oligomers / protofibrils and are currently evaluating them in cell-based and animal models.

**Genetics (Dr. Vilmantas Giedraitis)**

We are screening for mutations and copy number changes of established dementia-causing genes and searching for new disease genes with genetic mapping. We have access to a large and well characterised collection of familial dementia patients, diagnosed with various dementia disorders. Association studies searching for susceptibility factors are carried out, mainly in collaboration with other research groups.

**Clinical research (Assoc. Profs. Lena Kilander, Björn Zethelius, Johan Ärnlöv and Anna Cristina Åberg)**

The close contact between the laboratory and the Geriatric Clinic at Uppsala University Hospital facilitates access to appropriate clinical samples. The clinical research unit is currently categorizing dementia patients clinically and neuropathologically. This research is based on our own tissue bank with DNA, CSF, plasma, serum, fibroblasts and brain tissues. Longitudinal studies of dementia patients are carried out in collaboration with the Uppsala PET-center, using the amyloid-binding PIB ligand together with PET FDG and AD CSF-biomarkers.

Population based investigations have been performed on samples from the Uppsala Longitudinal Study of Adult Men (ULSAM), a cohort of initially 2322 50-year old men followed on six occasions since 1970. We have measured plasma levels of Aβ as well as other proteins and evaluated their respective predictive values for development of AD. Further, the role of cerebrovascular risk factors and dietary intake of fat as predictors of AD are examined. Impaired insulin secretion at age 50 has been shown to predict the development of AD at high age. Another population based cohort of AD patients and healthy controls have been collected, in which we perform replication studies of genes that have shown association to AD within ULSAM.

New powerful predictors for disease outcome are explored. An important article on cardiovascular disease was published in the New England Journal of Medicine in 2008. Data from Dr Björn Zethelius has shown that in men with or without prevalent cardiovascular disease, the simultaneous addition of several biomarkers substantially improved the risk stratification. In yet another epidemiological project, different pathways that may explain the interplay between kidney damage and the development of cardiovascular disease are explored. Dr Johan Ärnlöv is involved in international collaborations such as the CKD-prognosis Consortium and CKDgen. The project has received funding from Vetenskapsrådet and the Swedish Heart-Lung Foundation and has so far led to several publications in leading journals.

One line of research aims to investigate motor function and physical activity in relation to health among elderly people. Dr Anna Christina Åberg is studying new methods for clinical motor function assessment, as well as a potential association between motor function and subjective health aspects, such as life satisfaction and fear of falling. The research is mainly directed towards elderly with a need for rehabilitation due to multiple diseases/functional limitations, and those with specific neurological or neurodegenerative diagnoses, such as stroke or AD.
Ongoing, particularly successful, research

Our translational research efforts have been very successful and we have maintained an international visibility and high quality of publications. Among the expanded and new efforts, we have a particular focus on developing better principles of imaging and diagnostics for Alzheimer’s disease and explore possibilities for novel future therapeutics against α-synucleinopathies (Parkinson’s disease and Lewy body dementia). We are one of several groups focusing on protein aggregation and age-related amyloid diseases in Uppsala (Torleif Härd, Gunilla and Per Westermark and Jan Johansson are leading the other groups). The scientific environment in Uppsala provides a unique opportunity for collaborative efforts to increase knowledge on mechanisms underlying amyloid disorders, especially within the Berzelii Centre for Neurodiagnostics and in Sci Life Lab. We also believe it would be justified to increase support of our research considering the great unmet medical needs.

Compared to other dementia research teams in Sweden our focus on molecular mechanisms in the pathogenesis of Alzheimer’s disease has been very successful. We have a clear scientific strategy and a good research structure. Each larger project is headed by an associate professor. The preclinical and clinical activities have been successfully integrated in Uppsala, which enables a more efficient translational research process. A very fruitful collaboration has been created since Björn Zethelius joined the scientific data group of the Swedish National Diabetes Register in 2007.

The most promising research lines in a 5-10 year perspective

In 2009, we started to collaborate with GE Healthcare and Imanet on the development of imaging, targeting soluble Aβ with engineered antibody-fragments. Antibody-based ligands are new in PET imaging. The project was funded by a three-year grant from VINNOVA and two postdoctoral fellows were hired. Within only one year, we have rapidly generated promising in vitro and ex vivo data with a 125I-labelled antibody.

Prizes and awards

Prof. Lannfelt was awarded the “2010 Alzheimer Research Forum Outstanding Contributor Award”.

External recruitments

Hedvig Welander (Karolinska Institutet), Charlotte Nerelius (SLU), Marie Svedberg (Karolinska Institutet)
Kristina Magnusson, Veronica Lindström

New projects with external funding


International collaborations

Guest visits in foreign laboratories

Thomas Näström (with Dr. Tiago Outiero, Lisbon, Portugal; Febr-May 2010)

Foreign collaborative partners
Harvard Medical School, NIH, University of Goettingen, University of Kuopio, University of Ulm, INSERM, Max Planck/Berlin- 7 publications, Swedish National Diabetes Register- 11 publications, DECODE, A European diabetes research collaboration- 9 publications, Århus University, Denmark, profesos A Flyvbjerg- 4 publications, Odense University, Denmark, professor J Juul Holst – 2 publications, University of Tuebingen, University of Lisbon, Institut Pasteur de Lille, University of California San Diego, University of California San Francisco, Mental Health Research Institute, Parkville Australia – manuscripts in progress

*Adjunct professors*

Hans Basun, BioArctic Neuroscience, 2005; Håkan Hall, Uppsala Applied Science Laboratory, GE Healthcare, 2010

*Patents*

a) US7709695, transgenic mouse expressing arctic mutation E693G (LL, LN)- 2010  
b) NZ567888, improved protofibril-selective antibodies and use thereof (LL, FE)- 2010  
c) US2007248606, treatment for Alzheimer’s disease (LL) - 2007  
d) FP1450us00, Tau transgenic mouse, US provisional application (LN) - 2009  
e) 61/048,865, Antibodies and vaccines for use in therapeutic and diagnostic methods for Parkinson’s disease, dementia with Lewy bodies and other neurodegenerative disorders (LL, MI) -2008  
f) Antibodies and vaccines for use in therapeutic and diagnostic methods for IAPP-related disorders, US Provisional Application 61/333489 (LL, MI) - 2010

*Engagement in the external society*


*Personnel*

1. Professors – Lars Lannfelt (chair), Hans Basun (adjunct), Håkan Hall (adjunct)  
2. University lecturer – Lena Kilander  
3. Researchers – Lars Nilsson, Martin Ingelsson, Xiao Zhang, Vilmantas Giedraitis, Frida Ekholm-Pettersson, Joakim Bergström Johan Årnlöf, Björn Zethelius, Anna Cristina Åberg  
5. PhD students – Astrid Gumucio, Paul O’Callaghan, Sofia Söllvander, Therese Fagerqvist, Thomas Näström, Malin Degerman-Gunnarsson, Elina Rönnevarg, Ylva Cedervall  
6. Other personnel – AnneMarie Ljungberg (BMA), Sofie Ingvast (BMA), RoseMarie Brundin, Gunilla Gertz (research nurses).

*New associated professors*

PhD theses

Dag Sehlin (2010) Aβ Conformation Dependent Antibodies and Alzheimer’s Disease
Johan Sundelöf (2011) Amyloid Beta-Protein, Cystatin C and Cathepsin B as Biomarkers of Alzheimer’s Disease.

Licentiate theses

Kerstin Kullberg (2009) Food in older men with somatic diseases. Eating habits and approaches to food-related activities.

Original articles


33. Åberg AC. Care recipients' perceptions of activity-related life space and life satisfaction during and after geriatric rehabilitation. Qual Life Res 2008; 17: 509-520.


119. Kullberg K, Björklund A, Sidenvall B, Åberg AC. 'I start my day by thinking about what we're going to have for dinner' - a qualitative study on approaches to food-related activities among elderly men with somatic diseases. *Scand J Caring Sci* 2010.


123. Leavy B, Åberg AC. "Not ready to throw in the towel": perceptions of physical activity held by older adults in Stockholm and Dublin. *J Aging Phys Act* 2010; **18**: 219-236.


**Books**


Scientific Reports
Health Services Research

Research Group Leaders Associate Professor Inger Holmström and Associate Professor Ulrika Winblad

The aim of Health Services Research (HSR) in Europe is to evaluate and improve the contribution of health services research for evidence-informed health care policy. HSR adopts three contrasting but interconnected perspectives; at care provision - organisational - and system level. The Uppsala group is engaged in research at all three levels with focus on governance and implementation, intra-organisational control, inter-organisational relations and patient relations. More specifically, current study objectives include development of exploratory models for differences in public and private care, identification of barriers for implementation of patient choice reforms as well as identification of facilitators for patient centred care, especially within telecare. The group is multidisciplinary and the researchers have different professional backgrounds such as medicine, psychology, nursing and political science.

Members of the research group during 2010
Inger Holmström, RN, PhD, associate professor, research group leader
Ulrika Winblad, PhD, associate professor, vice group leader
Caroline Andersson, MSc, research assistant
Pia Bastholm Rahmner, PhD
Cecilia Bernsten, Registered pharmacist, PhD, associate professor
Ingeborg Björkman, Registered pharmacist, PhD
Madeleine Boll, Physiotherapist, Licentiate, PhD student
Eva Boström, RN, PhD
Gunilla Brattberg, MD, PhD, associate professor
Heléne Eriksson, administrator
Annica Ernesäter, RN, MSc, PhD student
Mio Fredriksson, MSc, PhD student
Roya Hakimnia, MSc (Medicine), PhD student
Finn Hjelmblink, MD, PhD
Johan Hopfgarten, Medical student, research assistant
David Isaksson, BSc, research assistant
Elenor Kaminsky, RN, BSc, PhD student
Dorte Kjeldmand, MD, PhD
Jan Larssson, MD, PhD
Åsa Muntiln Athlin, RN, PhD
Martin Rejler, MD, PhD student
Urban Rosenqvist, MD, Professor emeritus
Marta Röing, DDS, PhD
Margareta Sanner, Registered psychologist, PhD, associate professor
Ragnar Stolt,Licentiate, PhD student
Anikó Vég, PhD
Publications 2008-2010


**Dissertations 2008-2010**


Agencies that support the work/Funding (2008-10)  

**SEK**

The Swedish Research Council (Vetenskapsrådet)  
4 380 000  
2 300 000  
2 200 000 (collaboration with the Political Science Department, UU)

The Faculty of Medicine, Uppsala University 1 430 000  
Swedish Healthcare Direct 1177  
200 000

Swedish Associations of Local Authorities and Regions  
265 000

The Government and the Government Offices of Sweden  
760 000

Uppsala Regional Council  
90 000

Uppsala County Council  
100 000

**Total**  
11 725 000

Research projects on macro (system) level:

**Privatization of elderly care and its consequences on care quality**  
**Participants: Ragnar Stolt, Ulrika Winblad & Johan Hallqvist**

One of the major policy trends in recent decades has been the privatization of social services. Particularly in the elderly care sector with an increase of private providers from 1% in 1990 to 16% in 2010. The ongoing privatization of elderly care in Sweden and many other countries has raised important questions regarding the consequences of this policy transformation. The focus of this national research project is to explain the mechanisms behind privatization as well as the resulting effects on care quality. Almost all nursing homes in Sweden are included in the study. Preliminary results imply that privately managed elderly care has established itself mainly in metropolitan areas dominated by right-wing regimes. Furthermore, our findings indicate that privatization has indeed resulted in substantial quality differences. The number of employees per resident is significantly smaller (-10%) among private regimes. On the other hand the participation (+7%), the proportion of elderly with a reasonable length of nightly fast (+15%), and the number of food alternatives (+26%) are significantly in favour of private contractors. The overall aim with this research project is not only to assess the effects of privatization but also to use these findings to build exploratory models that explain these quality differences and can be used as tools to improve care quality.

Still, there are many questions unanswered, in ongoing studies we focus on perceived quality measured as e.g. elderly satisfaction. Are there any differences between private and public regime in this aspect?
Re-centralization of Swedish health care – a way to enhance equity?

Participants: Mio Fredriksson, Ulrika Winblad

One specific feature of the Swedish health care governance is the high degree of local and regional self-determination, reinforced through the Local Government Act. Another specific feature is the strong tradition of what may be termed consensus-based governance, where the intentions of the Swedish state are carried through in negotiations with local government rather than through binding legislation. However, this model has been challenged recently. The Swedish state has made efforts to increase equivalence in the whole country by imposing more binding regulations and by standardizing health care practice. Examples are the development of national quality registers, open comparisons, national guidelines and introduction of legislated choice in primary care. At the same time, many of the county councils emphasize their self-determination and focus more on regional political collaboration. The conflict of interest between the national and local political government is studied the doctoral thesis “Political governance in Swedish health care – relations between national equality and local democracy”. The project deals with political governance within Swedish health care and its effects on the tensional relationship between national equity and local self-governance. The dissertation is interdisciplinary and involves concepts and methods from health services research, political science and philosophy.

How does the design of the reimbursement systems affect the behavior of primary care providers?

Participants: David Isaksson, Ulrika Winblad

A new reform regarding free choice of primary health care provider was introduced in Sweden during 2010. The intent of the reform was to make it possible for patients to visit the health care provider of their choice. The reform aims at strengthening the patients and has a clear market-driven component where the choice of the patient affects the remuneration for the different health care centres – the money follows the patient. However, each county council has the right to design their own reimbursement system which means that there exist 21 different systems today. Through the design of the reimbursement system each county council creates financial incentives and thus steer the providers in a desired direction. The aim of the project is to examine how different designs of the reimbursement systems affect how private health care providers operate. To conduct the study data regarding the reimbursement systems is collected from each county council and a classification of each system is made. In a second stage it is investigated how the design of the reimbursement system affects how the providers operate with regard to number of GP visits, nurse visits, and number of new establishments.

Research projects on meso (organisational) level:

Telenursing in Sweden: what goes wrong and why?

Participants: Annica Ernesäter, Inger Holmström, Ulrika Winblad & Maria Engström

During the last years centralization of telenursing services has occurred in Sweden with a national telephone number for the entire country. In connection with this, the use of computerized decision support has increased. Hence, two studies have focused on telenurses’ experiences of working with computerized decision support from different angles. Qualitative methods were used to analyze interviews with telenurses. The decision support was perceived to be incomplete and lacking information, and not fully adapted to telenurses way of working. Yet it was a useful tool that provided a sense of security.

Despite a large number of citizens are able to call SHD for medical advice, there are no studies regarding adverse events within this expanding context. 450 incident reports regarding perceived errors within the context of Swedish Health Care Direct (SHD). The aim of this study was to describe errors that lead to an incident report and to analyze differences among incident reports based on who is reporting the error. Data were collected from all county councils that participated in SHD and yielded 426 incident reports describing 452 errors. The most frequent outgoing incident reports (i.e., sent from SHD to other health care providers) regarded
Accessibility Problems and the most frequently incoming ones (i.e., sent to SHD from other health care providers) regarded Incorrect Assessment.

In another study, the communication between telenurses and callers was analyzed. During 2010, analysis of 30 calls to SHD was carried out. The aim of the study was to analyze the communication between telenurses and callers with a clear request for a specific level of care. The conversation between the telenurses and callers was analyzed using the Roter Interaction Analysis System (RIAS). Preliminary results suggest that the calls are short, mean time 4 minutes and 14 seconds, and slightly telenurse driven; hence telenurses did most of the talking during telephone communication.

Developing gender competence in Swedish telenursing
Participants: Roya Hakimnia, Inger Holmström, Marianne Carlsson & Anna T Höglund
Telenursing is considered as first line health care and should, according to The Swedish National Board of Health and Welfare be patients’ first contact with the healthcare system. The telenurses’ assessment of the caller symptoms and their advice to the caller strongly affects the type of care the caller will get. Most telenurses are female. The majority of calls for children and elderly parents are made by women. Gender has become an increasingly observed aspect of health inequalities but there is still a lack of studies on if and how gender can impact the encounter between telenurses and callers.

The term gender refers to the social construction of femininity and masculinity. Theories of intersectionality hold that in order to understand oppressive structures in a society one must take into account that traditional markers of difference, such as race/ethnicity, gender, sexuality and class interact in a complex way. The overall aim in this project is to use theories of gender and intersectionality in order to investigate how factors such as gender, ethnicity, class and age can play a role in Swedish telenursing. Furthermore, the aim is to develop an instrument that can investigate gender competence in telenursing and to test an educational intervention for telenurses.

Gender competency could improve telenursing and contribute to more rational medical care system, more satisfied patients and contribute to diminish health equities. The results can also have direct application in nursing education and probably be used in other areas of healthcare and health care education.

Elderly care on contract-basis: How can quality be ensured?
Participants: Ulrika Winblad, Ragnar Stolt, David Isaksson
This project examines how Swedish municipalities supervise the quality of care services contracted out to private firms. The practice of contracting is fairly new in Swedish elderly care, but currently about 16% of all publicly financed care services for the elderly are carried out by private providers, mostly large, for-profit firms. There is great local variety, where many of the 290 municipalities have no private contracting, whereas others contract out more than half of all services they provide for the elderly to private firms. Even if care services are contracted out, local authorities (municipalities) are still legally obliged to ensure that the services are of high quality. The main question in the project is how they perform this function and what sanctions they use against the private providers if they find the care quality to be low?

The methods used in the project includes analysis of juridical and political documents (contracts, policy statements), interviews with politicians, civil servants and private providers in four selected Swedish municipalities, as well as a web-survey to all municipalities. The project brings knowledge about privatization which is a new mode of governance in Swedish health and social care. The project is run in collaboration with the Department of Government, Uppsala University.

Waiting-time guarantee – what is the role of the doctors?
Participants: Ulrika Winblad, Caroline Andersson
Different measures have been taken to shorten waiting times within Swedish health care. One initiative was to introduce a so called waiting-time guarantee that determined that treatments should be offered patients within a set time limit. The guarantee aims to put greater pressure on
healthcare providers to shorten wait lists, but also question the usual procedure that doctors use to determine when patients should be treated. The aim of the study was to investigate doctors’ attitudes and what actions they took to implement the guarantee. The result shows that most of the doctors did not consider themselves as important actors for implementing the reform. Information about the right to choose, for example, is still not part of physicians’ standard response, but something that patients need to activate themselves. One possible explanation for the lack of communication efforts may be that doctors in study show poor detail knowledge of the content of the reform and what they are expected to do. This in turn can be explained by the fact that hospital clinics so far have added little weight to inform their staff about the patient choice reforms and what rules will apply to these.

What information do patients and citizens need to make informed choices of health care providers?
Participants: Ulrika Winblad, Caroline Andersson
In 2008, the Swedish parliament passed a law that made it mandatory for all county councils to introduce choice models in the primary care model. The main purpose of the law was to give patients’ and citizens’ greater choice and control over care and treatment within the publicly financed health care system, by allowing them to choose between a number of both public and private health care givers on an open market.
A difficulty with choice models is the lack of transparency on the health care market. How can patients value the quality of different care providers on a health care market which is most often characterized by high complexity and product differentiation? On behalf of the Swedish government we therefore investigate what kind of information patients and citizens need to be able to choose a health care provider within the setting of health care choice models. Also, we investigate what type of information patients might need to be able to choose between different medical treatments.
Parts of the assignment is to describe what kind of information patients and citizens have access to at present, to investigate how other countries comparable to Sweden have managed the matter of patient information, and finally to give recommendations on how the information should be developed further in order to support informed choices among citizens and patients.

Teamwork at an emergency ward. Efficiency, patient safety, patient satisfaction and satisfaction with work environment.
Participant: Asa Muntlin Athlin
It is a challenging time for the emergency care. The fact that there is an increasing number of patients at the emergency departments, but a decrease in number of hospital beds for emergency care, will lead to new ways for optimizing care processes. The care time at the emergency wards has to be used in a more effective way. However, quality of care and patient safety must still be maintained. The overall aim of this study is to investigate how implementation of team work at an emergency ward can affect efficiency, quality of care, patient safety and patient satisfaction and work environment. The primary hypothesis is that teamwork will improve the communication and the work routines and then in turn make the care process more effective. A quasi-experimental design with pre- and posttest will be used. The intervention is teamwork at an emergency ward. The team consists of one physician, one registered nurse and one licensed practical nurse, which are responsible for a limited number of patients. Each team plan and work together during the day. In the middle of the day a short debrief will be conducted to ensure that the plans are followed. Patient questionnaires, staff questionnaires (diaries), review of patient health records and observations will be used for data collection. Data will be collected during spring 2011.
Right care to the right patient at the right time, at the right care level. Commissioned research/ Uppsala County Council

Participant: Åsa Muntlin Athlin

In 2008, a nurse led emergency care clinic was opened to meet the need for improvements in access to care. A systematic evaluation of the clinic was required from the county council, to assure patient safety and quality of care with this new level of care. The aim of the study is to investigate patient safety and quality of care at an emergency care clinic from the patients’ and the healthcare professionals’ perspective. Another aim is to identify if right categories of patients seeking care at the right care level. A design with mixed methods was used. Part I and III, has a cross sectional study design. A modified version of the questionnaire Quality from the Patient’s Perspective – QPP, was used for data collection. Totally, 300 patients answered the questionnaire. Health records for the included patients (n=300) were reviewed according to visiting characteristics, symptoms for seeking care, type of treatment or advice. Part II, has an explorative design. Three focus group interviews with staff (physicians, registered nurses, licensed practical nurses) at the emergency care clinic were carried out. The interview guide focused on patient safety and quality of care. Part IV, was a study with a descriptive observational design where data has been analysed with both qualitative and quantitative approach. Totally, 312 observations at the emergency department and 248 observations at the child emergency department at a Swedish university hospital were conducted. Data will be analysed during 2011.

The Swedish vaccination campaign – Why did not everybody get vaccinated against “the new influenza”? 

Participants: Margareta Sanner, Ingeborg Björkman, Inger Holmström

The main aim of this study is to explore the patterns of motives of individuals in Sweden who did not get vaccinated against “the new influenza” in 2010, how they came to this decision, and how they judged the risks of not getting the vaccination. As this kind of behavior is complex, even the motives are complex; therefore the study applies a qualitative design with in-depth interviews. The sample of informants is aimed at the most possible variation of the interview material. Possibly groups of people needing special attention and efforts in relation to pandemic vaccinations will be identified.

Learning anaesthesia induction - how to facilitate anaesthetists -professional development

Participant: Jan Larsson, Andrew Smith

This research project aims to study how trainees’ learning of anaesthesia induction can be improved in a powerful way. We will study how trainees and specialist anaesthetists perform anaesthesia induction and explore how they think about this procedure. Our aim is to understand the variation in thinking about induction that lies behind the variation in how anaesthetists perform and learn induction. Qualitative research methods are used. This research is important because the induction of anaesthesia can serve as a model for learning the practical work of giving anaesthetics: it is an often repeated procedure, it is associated with a number of potential risks for the patient, and it combines needs for practical skills and theoretical knowledge. It is our hypothesis that this procedure must be learnt by transfer of knowledge from the experienced anaesthetist to the trainee; that is includes the development of tacit knowing; and that the process may be disturbed by the trainee focusing too much on explicit knowledge. With this project we aim to increase our knowledge about how teachers of anaesthesiology can facilitate such trainees’ practical learning. This project is carried out in collaboration with Professor Andrew Smith, Department of Anaesthesia, Royal Lancaster Infirmary, Lancaster, UK.

How expert anaesthetists perform in theatre – a qualitative study on non-technical skills.

Participant: Jan Larsson, Inger Holmström

This is a focus group study, where experienced anaesthesia nurses are being asked about how expert anaesthesiologists act during anaesthesia work. The aim of the study is to explore, through the eyes of experienced anaesthesia nurses, what it is that expert anaesthetists do during
anaesthesia work that trainees or less competent anaesthetists do not do. Five focus group interviews will be done, with three or four anaesthesia nurses in each group. The heads of five clinics of anaesthesia in four Swedish hospitals have been contacted and asked to select, together with the head anaesthesia nurse, experienced and competent nurse anaesthetists.

**Drugs and patient behavior – the influence of organizational and professional actors**
**Participant: Cecilia Bernsten**
Drugs do not work if people do not take them has been a mantra of those researchers investigating how patients comply with directions given by a prescriber. Throughout the years compliance has been replaced by notions such as adherence and coherence, moving the act of compliance from blind obedience to a state of agreement between the professional health care worker and the patient.
The aim of this research was to investigate, describe and analyze patients’ and pharmacy customers’ drug use behavior and the factors influencing this behavior.
Randomized clinical trials with interventions as well as mapping of behavior have been used to study the different phenomena in question. Quantitative as well as qualitative data collection and analyze methods have been used.

**Competence of physiotherapists working in new contexts**
**Participants: Madeleine Boll, Urban Rosenqvist, Eva Boström**
The purpose of the project was to describe ways of understanding and approaching physiotherapy by interviewing professionals who no longer work with individuals but with groups or organizations. In the study seven physiotherapists in primary care working with health promotion in compulsory schools have been interviewed. In the next study 21 physiotherapists now working on organizational levels in health care organizations have been interviewed about their understanding of their work. The overall aim of these studies was to investigate how physiotherapists understand and approach their work when working with health promotion and organizational developments in health care services. Qualitative methods have been used in the two studies.

**Research projects on micro (care provision) level:**

**Telenurses’ understanding of work**
**Participants: Elenor Kaminsky, Urban Rosenqvist, Inger Holmström**
Telenursing is an expanding service in many western countries and telenursing is likely to be understood in a variety of ways. The way in which work is understood influences how work is performed. Telenursing demands a high level of competence. We investigated the variation in ways of understanding work among a group of Swedish telenurses. Data from 17 interviews was analyzed using a phenomenographic approach. Five different ways of understanding work were identified: (1) Assess, refer and give advice to the caller. (2) Support the caller. (3) Strengthen the caller. (4) Teach the caller. (5) Facilitate the caller’s learning. The first way can be seen as a base for the work of telenursing, the second has components of traditional caring and the third is a coaching function. In the fourth way the work of telenursing contains a teaching component, but having the caller’s learning in focus is only expressed in the fifth way. Telenurses who expressed the fifth way included all other ways of understanding. The categories can be seen as a telenursing work map. They and can be used for reflection, to expand the understanding of work, when developing telenursing further.

**Pediatric health calls to Swedish telenurses**
**Participants: Elenor Kaminsky, Inger Holmström & Marianne Carlsson**
During 2009 four million calls were made to Swedish Healthcare Direct. About 50% of them concerned pediatric health issues. Data about telephone triage calls concerning children in Sweden were collected. A sample of 110 pediatric calls was recorded. The transcribed data were analyzed regarding word count, reasons for calling, results of calls, ages and gender of children,
and gender of parents. The median call length was 4.4 min and the median child's age was 3.5 years. Mothers made 73% of the calls, but mothers and fathers called to the same extent about daughters and sons, and regardless of age. The most common reasons for calls were ear problems, rash/wound or fever. In nearly half the calls, the telenurses provided self-care advice. Call length, word count or caller's part of word count did not differ according to gender of parents or children. However, mothers were more likely to receive self-care advice while fathers were more often referred to other health services by the telenurses. Telenurses might need to improve their gender competence, and more male telenurses in the service would potentially be beneficial to callers. This study aims at performing a descriptive and exploratory interview study, with a strategic sample of 21 parents in Uppsala, Sweden. The transcribed interview data is analyzed using qualitative content analysis. The findings will be used to design a parental questionnaire. We intend to send 1,500 questionnaires to parents who recently called about paediatric health issues, with the purpose of describing, exploring and comparing their expectations and experiences. The intention is to perform frequencies and comparisons between groups, e.g. mothers and fathers, old and young, native-born or not, etc.

Relatives’ experiences of the request on deceased organ donation

Participant: Margareta Sanner, Linda Gyllström Krekula

At Karolinska Hospital, Stockholm, a project with a special nurse responsible for deceased organ donation has been carried out. This project is now being evaluated. The aim of this study is to describe what factors are important for the relatives to be able to make a well-grounded decision to the donation request, and what factors influence their experiences in connection with the death. Relatives who had/had not contact with this special nurse are interviewed in-depth in this qualitative study. This study is part of a forthcoming thesis by Linda Gyllström Krekula.

GPs and emergency care physicians' views on their role in drug prescribing

Participants: Pia Bastholm Rahmner, Inger Holmström, Urban Rosenqvist, Göran Tomson & Lars L. Gustafsson

Using qualitative methods, we have investigated emergency physicians’ expectations of a computerized drug prescribing support system before it was implemented. The expectations were high and the physicians were eager to use it. However, in a further study we found that the physicians did not use it in practice due to practical problems and lack of integration of systems. In addition, they did not find it as their task to adjust the patients’ drug list. Their focus was on the “here and now” and they only dealt with obvious side effects or well known interactions. In their view, other aspects of drug use should be handled by the patients GPs. When we studied the GP’s view on drug prescribing, they had five different views of it. Only a few had the patients’ entire life situation in focus, and a particular difficulty was the use of drugs to prevent future diseases. Aspects of environmental effects of drugs and economy were also mentioned. Drugs should be prescribed in a safe and effective manner. Decision support systems were not an integrated part of their drug prescribing work. Instead, they leaned on personal experiences and discussion with colleagues. This project was run in collaboration with the Karolinska Institute.

Understanding life after stroke

Participants: Finn Hjelmblink, Cecilia Bernsten, Margareta Sanner, Inger Holmström, Urban Rosenqvist

Qualitative methods based on different theories are used to investigate the meaning of stroke and subsequent rehabilitation to 19 stroke survivors. The essence of the meaning of stroke to those who postponed treatment was: Need of not giving up control. Three themes made up this structure: Acting as if nothing has happened, Need of control of decision-making, Need of being emotionally met as persons, not patients in consultations about stroke. Health care information has to convey the notion that emergency care of early stroke symptoms is a prerequisite, and not a threat to control. The core category of rehabilitation was social re-integration. The survivors
responded with defenses and coping strategies to overcome loss of certainty, and rehabilitation strategies to regain play in togetherness with near ones.

The stroke accident had caused a disruption in the lives of the patients, and a new awareness of human temporality and their uncertain future. Confronted with these problems of time, the stroke victims constructed narratives on the time models: time cycles and dissolution of time limits, exchange of time and exclusion from time. In this way, stroke patients handled their uncertain future by using temporal models in their narratives. Professionals can support stroke patients by reinforcing these models. Furthermore, we tried to reveal the meaning of rehabilitation to an aphasic person in a one person case study. The informant lived in a dichotomized situation. He was supposed to train in a goal oriented way and to believe in recuperation. At the same time he had to prepare himself and his next of kin for the consequences of failure.

On-site determination of breath alcohol in emergency care patients.
Participants: Åsa Muntlin Athlin

Many patients seeking emergency care are under the influence of alcohol, which complicates the medical assessment. There are also numerous common medical conditions for which the patient may be falsely believed to be under the influence of alcohol. The state-of-the-art alcometers are that they require cooperation from the patient and cannot provide quality assurance of the breath sample. The clinical requirements on an alcometer are also challenging with respect to measurement accuracy, specificity for ethanol, a small apparatus dead-space, fast response time, robustness, and user-friendliness. The aim of the present study is to test the reliability of a hand-held instrument based on Non-Dispersive Infra Red (NDIR) spectroscopy for on-site determination of breath alcohol in non-cooperative patients. A clinical trial in the emergency department at a university hospital in Sweden. Data collection in progress.
Scientific Report
Oxidative Stress and Inflammation

Research Group Leader Professor Samar Basu

The research group “Oxidative Stress and Inflammation” is newly established in January 2009 and previously was a part of research groups Geriatrics, and later Clinical Nutrition and Metabolism. The main research area of this group is “Oxidative stress and Clinical Inflammation”.

This research group “Oxidative Stress and Inflammation” is dedicated to research on inflammation in physiology and in disease state specifically with bioactive eicosanoids. Additionally, oxidative stress which reflects increased levels of free radicals in the body that implicated both in ageing and several inflammatory diseases is also a key research area. Lipid peroxidation products catalysed by free radicals and cyclooxygenases have revealed to be of importance in many inflammatory and oxidative stress related diseases. Bioactive prostaglandin formation by cyclooxygenases from arachidonic acid and their contribution to physiology and inflammation is well-described by our group in the past years in addition to the role of free radicals-mediated products isoprostanes in a range of diseases. The research group has developed crucial assays through raising specific antibodies against isoprostanes indicating oxidative injury and prostaglandin \( \text{F}_2\alpha \) indicating inflammatory response, and is also involved in development of assays on anti-inflammatory resolvins etc. In addition, we have also established immunohistochemical methods using specific antibodies to study organ damage following an acute or chronic inflammation and oxidative stress. These novel eicosanoids are imperative in healthy individuals and also in development of different human diseases. Collectively, the research group is devoted to experimental, clinical, epidemiological studies and also development of methodology specifically on eicosanoids. The research group has many national and international collaborative projects within the research vicinity.

Members of the group in 2010

Samar Basu, M.Sc., PhD, Professor
Johanna Helmersson, MD, PhD, Researcher
Elisabet Rytter, PhD student
Lillemor Källström, BMA, Bio Medical Technician
Maria Palm, MD, PhD student
Emma Lindström, M Sc., PhD student
Diana Larsson, MD, PhD student
Adriana Miclescu, MD, PhD
Erika Rodriguez (Guest Researcher from Spain)

The major projects include:

The sustainable aquafeeds to maximise the health benefits of farmed fish for consumers
Collaborators: Samar Basu, Johanna Helmersson, Philip Calder
Financed by the European Union (6th. Framework)
The project is performed in collaboration with Southampton, Granada, Bergen and China
Effect of fish oil in functional food, capsules or fish in the blood lipids and markers of oxidative stress in mice and humans  
Collaborators: Samar Basu, Rune Blomhoff and Liver Frøyland  
Financed by The Norwegian Research Council, Norway  
The project is performed in collaboration with Oslo Medical Faculty and Bergen University, Norway  

Ambulatory (24-hour) blood pressure, inflammation and free radicals  
Collaborators: Johanna Helmersson, Kristina Björklund Bodegård, Samar Basu  
Study design: A cross-sectional study of ambulatory blood pressure during 24 hours and prostaglandins and isoprostanes in elderly men from the ULSAM-cohort.  

Magnesium intake and diabetes development  
Collaborators: Arvo Hänni, Brita Karlström/Bengt Vessby, Johanna Helmersson  
Study design: Estimated intake of diet magnesium in relation to the risk of diabetes development in the ULSAM-cohort.  

Polymorphisms in the PLA2, COX-2, PG endoperoxide reduktase, 15-PGDH, 13-reduktase, interleukin-6, CRP, SAA, cystatin C gene and cardiovascular risk  
Collaborators: Johanna Helmersson, Anders Larsson, Samar Basu  
Study design: The project is performed in collaboration with the section of Molecular Medicine and is financially supported by Wallenberg Consortium North.  

Polymorhisms in the NF and TTPA gene, oxidative stress and cardiovascular risk  
Collaborators: Johanna Helmersson, Samar Basu  
Study design: The project is performed in collaboration with the section of Molecular Medicine and is financially supported by Wallenberg Consortium North.  

Polymorphisms in the 5-LO, 15-LO, FLAP, LTB4-R and LTC-4 synthase genes and inflammation and risk for cardiovascular diseases  
Collaborators: Lisa Kurland, Johanna Helmersson and Samar Basu  
The project is performed in collaboration with Molecular Medicine, Uppsala University and is financed by Wallenberg Consortium North.  

Oxidative stress, inflammation and angiogenesis during normal pregnancy, parturition and under normal menstrual cycle  
Collaborators: Maria Palm, Ove Axelsson, Anders Larsson and Samar Basu  
The project is a PhD project and performed in collaboration with the Department of Women's Health and Clinical Chemistry, Uppsala University.  

Oxidative stress among pregnant women exposed by iron, arsenic and cadmium  
Collaborators: Eva-Charlotte Ekström, Marie Vahter and Samar Basu  
The project is performed in collaboration with the International Maternal and Child Health, Uppsala University, MINIMAT (Bangladesh) and Karolinska institutet and financed by The Swedish Research Council.  

Prenatal food and multiple micronutrient supplementation and effects on child body composition, metabolic markers and mortality; mechanisms of early programming  
This is a PhD project and financed by The Swedish Research Council.  

Oxidativ stress, inflammation among 82-years ULSAM men and cardiovascular risk  
Collaborators: Johanna Helmersson, Anders Larsson and Samar Basu  
The project is performed in collaboration with the Clinical Chemistry, Uppsala University.
Acute inflammation and oxidative stress in septic shock
Collaborators: Mats Eriksson and Samar Basu
The project is performed in collaboration with the Department of Surgery and Anesthesiology, Uppsala University and financed by various sourses.

Effect of vitamin A on low-grade endotoxemia and inflammation
Collaborators: Christine Stabell Benn, Christian Erikstrup och Samar Basu
Study design: The project is in collaboration with the University in Copenhagen, Denmark and Uppsala University.

Oxidative stress and neuroprotection following cardiac arrest by different therapy
Collaborators: Samar Basu and Lars Viklund
The project is performed in collaboration with the Department of Surgery and Anaesthesiology, Uppsala University.

Oxidative stress and neuroprotection following cardiac arrest by hypothermia
Collaborators: Samar Basu and Sten Rubertsson
The project is performed in collaboration with the Department of Surgery and Anaesthesiology, Uppsala University.

Antibody and assay development on resolvins
Collaborators: Samar Basu and Charles Serhan
The project is performed in collaboration with Brigham and Women's Hospital, Harvard Medical School, Boston, USA

Free radicals, inflammation during heart surgery
Collaborators: Mika Lahtinen, Samar Basu
The project is performed in collaboration with Clinical Chemistry, Uppsala Akademiska Hospital.

Association between diet, obesity, oxidative stress and inflammation
Collaborators: Samar Basu, Bengt Vessby, David Jacobs, Alan Sinaiko
The project is performed in collaboration with University of Minnesota Medical School, Minessota, USA.

Association of oxidative stress and inflammation in coronary revascularisation and NSAID
Collaborators: Samar Basu, Kirsti Berg, Per Jynge
The project is performed in collaboration with Norwegian University of Science and Technology, Trondheim, Norway.

F-isoprostane metabolism and detection of oxidative stress
Collaborators: Denis Calleweart, Samar Basu
The project is performed in collaboration with University of Oakland (MI) and Vanderbilt University, USA.

Multi-laboratory study on biomarkers of oxidative stress (BOSS-study)
Collaborators: Maria Kadiiska with international colleagues, Ron Mason, Samar Basu
The project is performed in collaboration with NIEHS, National Institute of Health (NIH), USA and other institutions from several countries and is financed by NIEHS (NIH), USA

In situ localisation of oxidative stress and inflammation in the Alzheimer’s patients’ brain
Collaborators: Samar Basu, George Perry with colleagues
The project is performed in collaboration with Case Western Reserve University, Ohio, USA
Effects of antioxidants on oxidative stress, inflammation and metabolic control in humans.
Collaborators: Elisabet Rytter, Rikard Åsgård, Lennart Møller, Anders Sjödin, Lilianne Abramson-Zetterberg, Bengt Vessby and Samar Basu
The project is a PhD project, Uppsala University
Birth weight and inflammation in later life, a follow-up study of 70-80 years in a Swedish population
Collaborators: Johanna Helmersson, Liisa Byberg, Samar Basu, Ilona Koupilova, Anders Larsson, David Leon
The project is performed in collaboration with Clinical Chemistry and Pharmacology, Uppsala University Hospital, Department of Surgical Sciences, Uppsala University, Epidemiology unit, London School of Hygiene and Tropical Medicine, UK and Centre for Health Equity Studies, Karolinska Institute/Stockholm University, Sweden

Complicated pregnancy and inflammation
Collaborators: Samar Basu and Osamu Ishihara
The project is performed in collaboration with Saitama Medical School, Tokyo, Japan

Blood pressure, oxidative stress and genetics
Collaborators: Samar Basu, Nicola Fenty and Michael Brown
The project is performed in collaboration with Temple University, Philadelphia, USA

Conjugated linoleic acid and oxidative stress
Collaborator: Samar Basu, IU Brouwer and Martijn B. Katan
The project is performed in collaboration with VU University, Amsterdam, Holland

Dietary fatty acids and oxidative stress
Collaborators: Samar Basu and Anders Sjödin
The project is performed in collaboration with Copenhagen, Denmark

Funding over 100,000 SEK
European Union (EU, 6th Framework)
The Swedish Research Council
The Norwegian Research Council

Dissertation 2009
Adriana Miclescu. Cerebral protection in experimental cardiopulmonary resuscitation, Uppsala University, 2009

Half-way PhD
Emma Lindström, The development of chronic disease- Different mechanisms affecting metabolic status? 2010

Publications 2008-2010


14. Tholstrup, T., M. Raff, E.M. Staaarup, P. Lund, S. Basu and J.N. Bruun. A oil mixture with trans-10, cis-12 conjugated linoleic acid increases markers of inflammation and in


Alzheimer’s disease and Dementia: A Prospective Population-Based Study J. Alzheimer’s Disease, 18, 79-87.


Reviews


Book Chapters


Book Editor

Scientific Report
Preventive Medicine

Research Group Leader Professor Johan Hallqvist

The chair in preventive medicine was established in 2008 when Johan Hallqvist was installed as the first professor in preventive medicine at Uppsala University. At present cooperation with preventive activities in the county council and the regional primary communes are under development. The research focuses on mechanisms explaining the social inequalities in risk of disease and the aim is to contribute to evidence based health policy development, health promotion and risk management. Research areas of special interest:

- risk factors triggering the onset of health problems
- theories of the life course approach in current epidemiology and pertinent empirical topics like the combined effect of early life and later life risk factors on health and morbidity
- the role of social context in the causation of disease and how it interacts with human biology

Publications 2008-2010


Dissertations 2008-2010


Ongoing PhD-projects


Charlotte Björkenstam: Socioeconomic inequalities in the risk of suicide – epidemiological studies of school grades, criminal records, and medications in young adults. Supervisors: Rickard Ljung (KI), Johan Hallqvist, Gunilla Ringbäck (SoS), Peter Nordström (KI).

Lena Lundholm: Use of psychoactive substances as a risk factor for extrovert and introvert violence. Supervisors: Ingemar Thiblin (Forensic medicine, Uppsala University), Johan Hallqvist, Claudia Fahlke (Psychology, Gothenburg University).

Frida Fröberg: Ung vuxna och problem med spel om pengar. (Adolescents, young adults and problems from gambling for money) Supervisors: Anders Tengström (KI), Johan Hallqvist.


Ongoing research projects

The aim is to study the social aetiology of health problems with an emphasis on mechanisms explaining the social inequalities in risk of disease; hence, to contribute to evidence-based health policy development, health promotion, and risk management.

The study of disease causation in contemporary international social epidemiology takes advantage of the time and space dimensions of the causal field in a new and fruitful way. The life course approach, depicted by the horizontal arrows in the figure, makes use of the time dimension to discover how risk factors from different stages of life combine their health effects. The questions span from long term effects of early life circumstances to triggers acting immediately before disease onset. This research requires methodology able to handle issues like interaction, conditional causation and induction time. The second approach, illustrated by the vertical arrows, concerns the health impact of the social space conceptualized as social context. How characteristics of the social context interact with human biology to induce changes on the molecular level also calls for more advanced epidemiologic methodology like multi-level techniques.

Most of these projects are conducted together with external collaborators but founded on joint applications for funding.

Databases in use

Johan Hallqvist was responsible for the data collection in SHEEP (Stockholm Heart Epidemiology Program) which is a very large (2246 cases) case-control study with comprehensive exposure information set up in the early 1990-ies to study the causes of myocardial infarction. The data has so far been used in 18 doctoral studies and new information is still added and analyzed.

The case-crossover study Onset was nested in SHEEP with Johan Hallqvist as primary investigator. Johan Hallqvist is also primary investigator in TUF (Swedish acronym for triggers of sickness absence), a case-crossover study in 2005-2007 of more than 1000 spells of sickness absence nested in a cohort.
As responsible for the Public Health Surveys in Stockholm County Council 2002 and 2006, that each had sample sizes of more than 50000, Johan Hallqvist initiated the transformation of these cross-sectional studies into a cohort called SPHC (Stockholm Public Health Cohort) with extensive information from repeated questionnaires and follow up in registers. After the 2010 data collection the cohort contains approx 100000 participants.

A. Triggers of disease

The case-crossover methodology was developed at Harvard in the beginning of the 1990-ies and it opened up a new field of research; the study of risk factors with short induction periods, that is, triggers of disease. My group at Karolinska Institutet was early in adopting the new method and the group still has a unique competence in Sweden. We have contributed to the development of this particular methodology and we have published original findings regarding acute stressors at the work place and onset of myocardial infarction, triggers of injuries and of recurrent criminal violence among patients in forensic psychiatry. The group at Karolinska Institutet is now headed by my former doctoral student Jette Möller who recently became associate professor.

In the ongoing projects we aim to identify triggers of acute health events, and to quantify their effects. In the first four case-crossover projects we are applying the design to data bases extracted from Swedish National registers.

1. Side-effects of drugs.

The first aim is to identify harmful side-effects of pharmaceutical drug use and the second aim is to potentially develop a system for surveillance. We use a record linkage between the new drug prescription register (exposures and sometimes also outcomes) and the hospital discharge register (outcomes). Collaborators: Jette Möller (KI), Johan Hallqvist, Mauricio Malfert (KI), Johan Fastbom (KI), and Kristina Johnell (KI).

2. Psychiatric care as acute deterrent or trigger of suicide.

The inherent self-control in the design makes it possible to study the quality of the psychiatric evaluation of suicide risk in consultations. The study is based on record linkage between inpatient, outpatient and cause-of-death registers. Collaborators: Jette Möller (KI), Johan Hallqvist, Mauricio Malfert (KI), Christina Dalman (KI), Susanne Wicks (KI), Eleonor Mittendorfer-Rutz (KI).

3. Surgical procedures as triggers of myocardial infarction.

Based on record linkage between hospital registers and myocardial infarction incidence registers. The trigger effect is well known and RCT’s testing beta blockers as profylaxis has been undertaken. Our aim is to quantify the absolute and relative risks with different types of surgical procedures. Collaborators: Jette Möller (KI), Johan Hallqvist, Mauricio Malfert (KI), and Anders Ekbom (KI).
4. Acute life events (like death of close relative) as triggers of acute diseases like myocardial infarction and stroke.

Based on record linkage between the multigenerational register and the hospital and the cause of death registers. Collaborators: Jette Möller (KI), Johan Hallqvist, Mauricio Malfert (KI), Anders Ekbom (KI).

5. TUFS (Swedish acronym for triggers of sickness absence).

Part of Hanna Hultin’s thesis work. Based on extensive data collection from more than 1000 spells of sickness absence at six work places. Collaborators: Jette Möller (KI), Johan Hallqvist, Kristina Alexandersson (KI), Ingvar Lundberg (Occupational medicine, Uppsala University), Christina Lindholm (KI), Olle Lundberg (CHESS, Stockholm University).

6. TOFA (Triggers of falling).

Based on data collected from old men and women with hip fractures. Collaborators: Lucie Laflamme (KI), Jette Möller (KI), Johan Hallqvist, Karin Engström (KI).

7. Psychoactive substances as triggers of violence.

Part of Lena Lundholm’s thesis work. Based on data collection from individuals in custody in Stockholm because of criminal activities including violence (The Stockholm Social Medicine Custody Project). Collaborators: Anders Thiblin (Forensic medicine, Uppsala University), Lena Lundholm, Claudia Fahlke (Psychology, Gothenburg University), Johan Hallqvist.

8. Air pollution triggering myocardial infarction.

Based on the Onset part of the SHEEP study with data on air pollution added. Collaborators: Niklas Berglind (KI), Johan Hallqvist, Petter Ljungman (KI), Tom Bellander (KI), Göran Pershagen (KI), Jette Möller (KI).

B. Life course studies on the aetiology of health problems

Another line of research concerns life course mechanisms where we have shown that there are inherent difficulties in the task of disentangling time-related exposure constructs like accumulation, critical period and mobility. At present we pursue further in-depth analyses of specific hypotheses related to these theoretically based mechanisms. We also have a general interest in methodological issues related to the study of mechanisms behind inequalities in health and we have for example shown the importance of distinguishing between differential exposure and differential susceptibility when analyzing for example the effects of exposure to job strain.

1. Life Time Health: the effect of fetal exposures, social trajectories and social transitions on health and health behavior.

The aim is to study trajectories and transitions as important features of the life course and to find out how health related parameters are influenced and through which mechanisms. In this project we use the new Stockholm Public Health Cohort (SPHC) with repeated questionnaires and all kinds of register information for approx 65000 participants. In associated projects we use
the SHEEP data base and the Uppsala Birth Cohort to investigate the combined effects of fetal growth impairment, cognitive development, social trajectories and adult obesity on cardiovascular disease. Collaborators: Johan Hallqvist, David Blane (Imperial College, London University), Jette Möller (KI), Mauricio Malfert (KI), Christina Halford (Uppsala University), Kristiina Rajaleid, Bitte Modin and Denny Vågerö (Stockholm University).

2. Pain in the body and the soul

The aim is to identify life course factors that influence psychological well-being, psychological ill-health, depression and musculoskeletal pain. In this project we also use the new Stockholm Public Health Cohort (SPHC) and national register data bases. Part of the funding is from FAS’s Women’s Health Program. Kyriaki Kosidou’s thesis work is part of this project but there are also other sub-projects. Collaborators: Cecilia Magnusson (KI), Johan Hallqvist, Christina Dalman (KI), Lars Alfredsson (KI), Eva Skillgate (KI).

3. Life course risk factors and socioeconomic differences in the risk of mental illness.

Concerns risk factors like adverse marital trajectories, school failures, and criminal carreers. Register studies on the total population of Sweden. Collaborators: Charlotte och Emma Björkenstam, Gunilla Ringbäck (SoS), Peter Nordström (KI), Eleonor Mittendorfer-Rutz (KI), Johan Hallqvist. Rickard Ljung (KI)


Based on register information for all children in specific birth cohorts and their parents. Collaborators: Anna Månsdotter (KI), Lars Lindholm (Umeå University), Johan Hallqvist, Michael Lundborg (KI), Akı Tsuchiya (Sheffield University).

C. The social context as a risk factor of disease

The third line of research concerns the social environment and macro-determinants of disease. In carefully designed studies we have contributed with further empirical evidence to the yet unresolved questions on if and how social context in terms of socioeconomic deprivation or low social capital on the aggregate level impinge on the etiology of specific individual diseases.

1. Social context in Swedish municipalities and juvenile delinquency

The question is whether contextual characteristics like socioeconomic deprivation or lack of social integration influence crime rates among adolescents when individual characteristics are controlled for. Family based designs and multi-level analyses will be employed on register data of all Swedes. The projects is financed by NIH. Collaborators: Amir Sariaslan (KI), Johan Hallqvist, Brian D’Onofrio (University of Indiana, US), Paul Lichtenstein (KI)

2. Social capital, social inequality and health (different outcomes)

Investigates the health effects of various forms of contextual social capital on the parish level. Based on SPHC and registers of the total population in Stockholm County. Collaborators: Karin Engström (KI), Johan Hallqvist.
D. Other projects

1. Etiologic and prognostic risk factors in myocardial infarction. Based on SHEEP, which is a very large case-control study of myocardial infarction (2246 cases) that also has follow-up data for approx 8 years. The extensive exposure information makes it possible to study new questions. Collaborators: Imre Janszky (KI), Staffan Ahnve (KI), Rickard Ljung (EpC), Anders Ahlbom (KI), Johan Hallqvist.

2. How much of the population burden of disease can be attributed to socioeconomic inequality.

Several meta-analyses are first conducted to obtain estimates of the necessary parameters and then calculations of attributed disability adjusted live years (DALYs) will be made. Collaborators: Tahereh Moradi (KI), Johan Hallqvist, Peter Allebeck (KI), Emilie Agardh (KI), Edison Garcia (KI), Anna Sidorchuk (KI).

3. Psychosocial work environment and stroke.

Investigates this question in several different data bases. Collaborators: Sanna Toivanen (CHESS, Stockholm University), Johan Hallqvist, Birgitta Stegmayr (EpC), Petra Lindfors (Psykology, Stockholm University), Urban Janlert (Umeå University), Tomas Hemmingsson (KI). Örjan Hemström (Board of higher education).

Related tasks

The work environment and musculoskeletal disease.

A project set up by SBU – The Swedish Council on Technology Assessment in Health Care to examine the amount of scientific evidence supporting a causal effect of various work environment characteristics on risk of musculoskeletal diseases. The aim is to establish the evidence base for health promotion, prevention and for decisions regarding health and social insurance. Chaired by Christer Edling. Experts: Maria Feychtling, Johan Hallqvist, Carina Nordander, Jorma Styf, Kjell Thorén, Ewa Wigeus-Törnquist.

Scientific advisor in preventive medicine to the National Board of Health and Welfare since 2009.

EPIHEALTH

Johan Hallqvist is a member of the EPIHEALTH network set up as joint collaborative effort between epidemiologists at the universities of Lund and Uppsala. This excellence program is headed by Peter Nilsson in Lund and Lars Lind in Uppsala.
Invited speaker

1. The second meeting of the French Association of Social Epidemiology (ADELF) in Toulouse May 2009


3. The conference on Life Course Perspectives on Social Inequalities in Health – Moving towards an Interdisciplinary Science organized by the International Centres for Lifecourse Studies in Bern and London at Bielefeld University in March 2010

Examinations and evaluations

Scientific advisor in preventive medicine to the National Board of Health and Welfare from 2009 and onwards.

Member of the Council for research at Gävleborg County Council from 2008 and onwards.

Member of the Committee for Public Health Science at the Swedish Council for Working Life and Social Research from 2010 and onwards.

Member of the Committee for Public Health Science at the Norwegian Council for Research 2010.

Opponent/examiner for a thesis by Jeremy Walker at the University of Edinburgh, UK in December 2009.

Since 2007 assignment as expert at evaluations for positions: two positions as professors, Three positions as associate professor.

Teaching

An advanced one week course in epidemiology for doctoral students at Uppsala University. The course was initiated in 2009 together with Karl Michaelsson, Liisa Byberg, Rolf Gedeborg and Johan Sundström at Uppsala Clinical Research Centre (UCR) and was repeated in 2010.

Course leader and main teacher in the four week course in basic epidemiology for students in the Public Health Master Program in 2009 and 2010.
Teaching *introductory epidemiology* at Uppsala Graduate School in Biomedical Research (UGSBR) 2009 and 2010.

**SINGS (Stockholm Interdisciplinary Graduate School in Register Based Research)**

This graduate school in epidemiology received funding from the Swedish Research Council to become the teaching support to the research group nodes that were created at different universities as a result of the Swedish Research Council’s SIMSAM grant application call in 2008. Hallqvist was a member of the steering committee chaired by Olof Akre (KI) since the beginning but resigned during 2010.
Scientific Report

Psychosocial oncology and supportive care

Research Group Leader Professor Louise von Essen

With the help of the Swedish Government’s funding of the Uppsala University Psychosocial Care Programme: U-CARE, Uppsala University has been given the possibility to support our research group Psychosocial oncology and supportive care, that is internationally strong in basic and applied psychosocial care research. This immensely improved our possibility to reach scientific renewal by new recruits during and collaborations with strong research groups. Our group now consists of almost thirty persons, most senior and junior researchers and PhD students. Our research activities are performed within the areas of paediatric oncology, adult oncology, and cardiology in close collaboration with clinicians at Uppsala Akademiska Hospital and other Swedish hospitals.

The overarching goal of our group’s research is to promote psychosocial health among patients struck by somatic disease and their significant others, hopefully at a lower cost to the benefit of individuals and society. The main aims of our current research are: to, among different groups of patients with somatic diseases and their close ones, investigate psychological responses to trauma, including posttraumatic and to, among different groups of patients with somatic diseases and their close ones, investigate the clinical efficacy and cost-effectiveness of online self-help programmes of psychosocial care and cognitive behavioural therapy.

During 2010 we have, in connection with our collaborators, constructed a prototype for an internationally competitive and innovative Internet platform that in a first step will be applied within paediatric oncology, adult oncology, and cardiology to provide care and psychological treatment to patients and significant others; started building a high quality research-based, trans-disciplinary undergraduate and graduate education within the field of psychosocial care in the interactive society; provided stimulating and challenging career opportunities for young researchers; attracted approximately 8 000 000 SEK in external funding from the Swedish research foundations and established a forum for interdisciplinary encounters and networking across the borders between social and medical sciences where disciplinary differences lead to methodological progress. By bridging scientific and organizational borders, we offer a meeting place for researchers, clinicians, and students from different disciplinary backgrounds in a way that is unique, nationally as well as internationally, within the field of care science.

Members of the group 2011

Persons recruited to work with our group’s activities are listed below. In addition to these persons we have a large number of collaborators at different departments at Uppsala University and at other Swedish universities. In addition we collaborate with researchers at Muhimbili University in Dar es Salaam, Tanzania and at Nairobi University, Nairobi, Kenya.

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<tr>
<th>Name</th>
<th>Academic title</th>
<th>Professional title</th>
<th>Department/University</th>
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<tbody>
<tr>
<td>Louise von Essen</td>
<td>PhD, Professor</td>
<td>Psychologist</td>
<td>Department of Public Health and Caring</td>
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<tr>
<td>Name</td>
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<tr>
<td>Pär Ågerfalk</td>
<td>PhD, Professor</td>
<td>System analyst</td>
<td>Department of Informatics and Media, Uppsala University</td>
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<tr>
<td>Claes Held</td>
<td>PhD, Associate professor</td>
<td>MD</td>
<td>Uppsala Clinical Research Centre and Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Annika Lindahl Norberg</td>
<td>PhD, Associate professor</td>
<td>Psychologist</td>
<td>Department of Public Health and Caring Sciences, Uppsala University and Department of Women’s and Children’s Health, Childhood Cancer Research Unit, Karolinska Institutet</td>
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<tr>
<td>Elly-Ann Lindström</td>
<td>PhD, Post doc researcher</td>
<td>MSc in Economy</td>
<td>Department of Public Health and Caring Sciences and Office of Labour Market Police Evaluation, Uppsala University</td>
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<tr>
<td>Erik Olsson</td>
<td>PhD, Post doc researcher</td>
<td>Psychologist</td>
<td>Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Erik Grönqvist</td>
<td>PhD, Researcher</td>
<td>MSc in Economy</td>
<td>Department of Economics and Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Emma Hovén</td>
<td>PhD, Researcher</td>
<td>MSc in Behavioural science</td>
<td>Department of Public Health and Caring Sciences, Uppsala University and Department of Women’s and Children’s Health, Childhood Cancer Research Unit, Karolinska Institutet</td>
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<tr>
<td>Birgitta Johansson</td>
<td>PhD, Researcher</td>
<td>Registered nurse</td>
<td>Department of Radiology, Oncology and Radiation Science and Department</td>
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<td>PhD, Researcher</td>
<td>Registered nurse</td>
<td>Department of Public Health and Caring Sciences, Uppsala University</td>
</tr>
<tr>
<td>Niklas Zethraeus</td>
<td>PhD, Researcher</td>
<td>MSc in Economy</td>
<td>Stockholm School of Economics and Karolinska Institutet</td>
</tr>
<tr>
<td>Gunilla Mårtensson</td>
<td>PhD, Associated researcher</td>
<td>Registered nurse</td>
<td>University of Gävle</td>
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<tr>
<td>Sven Alfonsson</td>
<td>MSc, PhD student</td>
<td>Psychologist</td>
<td>Department of Public Health and Caring Sciences and Department of Psychology, Uppsala University</td>
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<tr>
<td>Malin Ander</td>
<td>MSc, PhD student</td>
<td>MSc in Psychology</td>
<td>Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Martin Cernvall</td>
<td>MSc, PhD student</td>
<td>Psychologist</td>
<td>Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Gunn Engvall</td>
<td>PhD student</td>
<td>Registered nurse</td>
<td>Department of Public Health and Caring Sciences and Department of Women’s and Children’s Health, Uppsala University</td>
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<td>PhD student</td>
<td>Registered nurse</td>
<td>Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Fredrika Norlund</td>
<td>MSc, PhD student</td>
<td>Psychologist, Licensed psychotherapist</td>
<td>Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Teolinda Toft</td>
<td>MSc, PhD student</td>
<td>Social worker</td>
<td>Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Marina Forslund</td>
<td>MSc, Research assistant</td>
<td>Dietician</td>
<td>Department of Radiology, Oncology and Radiation Science and Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Ruth Lochan</td>
<td>MSc, Research assistant</td>
<td>Software engineer</td>
<td>Department of Public Health and Caring Sciences, Uppsala University</td>
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<tr>
<td>Susanne Lorenz</td>
<td>Research assistant</td>
<td>Registered nurse</td>
<td>Department of Public Health and Caring Sciences, Uppsala University</td>
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Publications from the group 2008-


Dissertations 2008-2010


Agencies that support our work/Funding 2008-2010

The Swedish Research Society: 6 110 000 SEK
The Swedish Children’s Cancer Foundation: 2 700 000 SEK
The Swedish Cancer Society: 1 000 000 SEK
Uppsala County Council: 550 000 SEK
Indevelop: 50 000 SEK
Research projects 2008-

Project: Cancer during adolescence. Psychosocial and health economic consequences

Overall aim
To investigate potential psychosocial and health economic consequences of adolescent cancer; compare the psychosocial and health economic situation of those struck by cancer during adolescence vs. matched controls and investigate whether there are any positive consequences of adolescent cancer.

METHODS
The project has a comparative, longitudinal design with eight measurements from a month to ten years after diagnosis. Sixty-one adolescents have been included. Data from a control group of 300 healthy persons have been collected. All participants answer questions about quality of life, anxiety and depression via telephone. Additionally those struck by cancer answer questions about disease- and treatment-related distress, whether and if so how they cope with distress and whether they experience any negative and positive cancer-related consequences.

FUNDING
The project started 1999 and is since then funded by the Swedish Children’s Cancer Foundation and the Swedish Cancer Society.

Project: Occurrence and development of posttraumatic stress among parents of children with cancer

Overall aim
To investigate occurrence of posttraumatic stress, predictors of posttraumatic stress and health economic consequences among parents of children struck by cancer.

METHODS
The project has a longitudinal design with seven measurements from one week after diagnosis to five years after end of treatment. 250 parents have been included. Parents answer questions about e.g. posttraumatic stress, emotional support and the child’s medical situation via telephone.

FUNDING
The project started 2002 and is since then funded by the Swedish Research Society, the Swedish Children’s Cancer Foundation and the Swedish Cancer Society.

Project: Quality of life and needs of care and support among East Africans with cancer

Overall aim
To investigate quality of life and explore needs of care and support among East Africans struck by cancer.

METHODS
The project has a comparative, explorative design. 100 patients have participated in focus-group interviews and answered questions about quality of life.
FUNDING
The project started 2006 and has been funded by Indevelop and the Faculty of Medicine, Uppsala University.

Overall aim
To investigate the clinical efficacy and cost-effectiveness of a cognitive behavioural self-help programme delivered via the internet to parents of children struck by cancer.

METHOD
The study has a randomized, controlled design. 150 parents will be included and randomized to early programme – starting 6 weeks after the child’s diagnosis or late programme – starting 70 weeks after the child’s diagnosis. Inclusion started 2010. Parents answer questions about e.g. posttraumatic stress, anxiety, depression, quality of life and costs via the internet.

FUNDING
The project started 2008 and is funded by the Swedish Research Society, the Swedish Cancer Society and the Swedish Children’s Cancer Foundation.

Overall aim
To investigate the clinical efficacy and cost-effectiveness of a self-help programme consisting of support and cognitive behavioural therapy delivered via the internet to adolescents struck by cancer.

METHODS
The study has a randomized, controlled design. 150 adolescents will be included and randomized to early programme – starting 5 weeks after diagnosis or late programme – starting 20 months after diagnosis. Adolescents answer questions about e.g. posttraumatic stress, anxiety, depression, quality of life, posttraumatic growth and costs via the internet.

FUNDING
The project is funded by a strategic research grant to Uppsala University Psychosocial Care Programme: U-CARE.

Overall aim
To investigate the clinical efficacy and cost-effectiveness of a self-help programme consisting of support and cognitive behavioural therapy delivered via the internet to adults struck by cancer.

METHODS
The study has a randomized, controlled design. 250 adults with prostate-, breast- or localized colo- or rectal cancer will be included and randomized to a self-help programme or waiting-list.
Participants answer questions about e.g. posttraumatic stress, anxiety, depression, quality of life, posttraumatic growth and costs via the internet.

FUNDING
The project is funded by a strategic research grant to Uppsala University Psychosocial Care Programme: U-CARE.

Project: U-CARE: A randomized controlled trial of the effect of a self-help program via internet on anxiety and depression among adults after a myocardial infarct

Overall aim
To investigate the clinical efficacy and cost-effectiveness of a self-help programme consisting of cognitive behavioural therapy delivered via the internet to adults struck by a myocardial infarct.

METHODS
The study has a randomized, controlled design. 500 adults struck with a myocardial infarct will be included and randomized to a self-help programme or waiting-list. Participants answer questions about e.g. posttraumatic stress, anxiety, depression, quality of life, posttraumatic growth and costs via the internet.

FUNDING
The project is funded by a strategic research grant to Uppsala University Psychosocial Care Programme: U-CARE.

Education 2008-2010

Undergraduate education
Our group has been engaged in education in communication skills, psychosocial care and research methodology in the Nursing programme and in education in research methodology in the Psychology programme at Uppsala University.

Advanced education
Our group is engaged in advanced education in research designs and datacollection within quantitative and qualitative research and statistics and we provide two courses in research methodology at the postgraduate programme at the Faculty of Medicine, Uppsala University.
Scientific Report

Research Ethics & Bioethics

**Research Group Leader Professor Mats G. Hansson**

Research Ethics involves the application of ethical principles and values to a variety of research topics. It aims to create good research, while at the same time studying what good research is. Bioethics, on the other hand, includes philosophical, theological, legal and social scientific aspects of medicine and biology.

The Centre for Research Ethics & Bioethics (CRB) is an interfaculty centre placed at the Department. Read more about CRB’s research under “Centres and Facilities”.

**Centre for Research Ethics & Bioethics (CRB)**

Research Ethics and Bioethics has become increasingly important for Uppsala University. As a result, the Centre for Research Ethics and Bioethics was established on January 1 2008. The centre is placed at the Faculty of Medicine and administratively associated to the Department of Public Health and Caring Sciences.

Our research profile includes research ethics, bioethics and medical law. More specifically, we conduct research on animal and environmental ethics, investigate autonomy, the ethics of biobanking, dual-use issues related to biosafety and biosecurity, codes and guidelines for research, clinical ethics, enhancement of human performance, genetic information and testing, neuroethics and the philosophy of mind, ethics at the beginning of life, priorities in health care and quality of life issues.

Research ethics involves the application of ethical principles and values to a variety of scientific research topics. It has both a practical and a theoretical side. It aims to create good research, while at the same time studying what good research is.

Bioethics includes philosophical, theological, legal and social scientific aspects of medicine and biology. It deals with norms and value conflicts in health care and the biosciences. For example, it looks at ethical questions that arise in connection with priorities in health care, informed consent, palliative care, and neurobiological explanations of human consciousness, animal welfare and the use of biotechnology.

Medical law spans a wide range of traditional branches of law and is associated to the Centre through our collaboration with the Department of Law at Uppsala University.

Our work in research ethics has recently received international recognition. The European Science Foundation has completed a study of how institutions of higher education in different countries proactively approach research ethical issues. Uppsala University is highlighted as a good example and praised for its thorough efforts at preventing research misconduct and promoting sound research practices. Special mention is made of the University’s Centre for Research Ethics & Bioethics, which coordinates activities related to research ethics, bioethics and medical law, pursues associated research and trains students and researchers.

**Members of the group 2010**

- Ashkan Atry, MA, PhD student
- Ewa Axelsson, LLM, LLD student
- Stefan Eriksson, ThD, Associate Professor of Research Ethics, Senior lecturer in Research Ethics
Lilianne Eninger, PhD, Associate Professor of Psychology, Senior researcher  
Kathinka Evers, PhD, Associate Professor of Philosophy, Senior researcher  
Josepina Fernow, BA, Co-ordinator  
Joanna Forsberg, MD, PhD student  
Tove Godskesen, RN, PhD student  
Maria Gottvall, RN, PhD student  
Roya Hakimnia, MD, PhD student  
Mats G. Hansson, BS, ThM, ThD, Professor of Biomedical Ethics, Director  
Anna T. Höglund, ThD, Associate Professor of Ethics, Senior Lecturer in Nursing Ethics  
Li Jalmsell, MD, PhD student  
Linus Johnsson, MD, PhD student  
Ulrik Kihlbom, PhD, Senior lecturer in Medical Ethics  
Sofia Kälvemark Sporrong, PhD, Associated researcher  
Frida Kuhlau, BA, PhD student  
Malin Masterton, PhD, Postdoc  
Mona Pettersson, RN, PhD student  
Tobias Renberg, PhD, Postdoc  
Alina Rodriguez, PhD, Senior researcher  
Elisabeth Rynning, LLD, Professor of Medical Law, Senior researcher  
Pär Segerdahl, PhD, Associate Professor of Philosophy, Senior researcher  
Anna Lydia Svalastog, PhD, Associate Professor of Religious Studies, Associated researcher  
Kavot Zillén, LLM, LLD student

Publications 2008-2010

A characteristic feature of our interdisciplinarity is that we publish both in scientific journals, often together with researchers from other disciplines, and in monographs. The monograph format is customary in philosophy and humanities and it allows for more in depth analysis of conceptual issues. In fact only publishing in shorter articles would be a little irregular from the perspective of philosophers. Our monographs are often published in established series and always scrutinized in a peer review.

During this three year period the following monographs have been published:

The complete list for this period is:

7. Eriksson, S, On the need for improved protections of incapacitated and non-benefiting research subjects, Bioethics, online pre-publication: ISSN 0269-9702 (print): 1467-8519 (online).
27. Helgesson G, Eriksson S, Against the principle that the individual shall have priority over science, Journal of Medical Ethics. 2008;34:54-56.


52. Masterton, M, Hansson MG, Höglund AT, In search of the missing subject: narrative identity and posthumous wronging, Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences, Online pre-publication 1 November 2010;doi:10.1016/j.shpsc.2010.10.010


63. Svalastog A-L, Eriksson S, You can use my name; you don’t have to steal my story A critique of anonymity in indigenous studies, Developing World Bioethics. 2010;10(2):104-110.

In press

69. Hansson MG, Biobanking within the European regulatory framework – opportunities and obstacles, Biopreservation and Biobanking, (In Press)
72. Helgesson, G, Hansson, MG, Ludvigsson, J, Swartling, U, What parents find important when participating in longitudinal studies: results from a questionnaire, Clinical Ethics (In press)
75. Magnusson H, Felländer-Tsai L, Hansson MG, Ryd L, Cancellations of elective surgery may cause an inferior postoperative course. The ”invisible hand” of health care prioritization?, Clinical Ethics (In press).
76. Masterton M, Hansson MG, Höglund AT, In search of the missing subject. Narrative identity and posthumous wronging, Studies in History and Philosophy of Biological and Biomedical Sciences (In press).

80. Svalastog, Anna Lydia, Mapping Sami life and culture, in: Eva Forsgren and Per Bjarne Boym (eds), The Image of the Sami, Arthub Publisher (In press)


Reviews 2008-2010


Dissertations 2010


Agencies that support the work/Funding (figures from 2010)

**Swedish Research Council** (Vetenskapsrådet) 468 500
Controlling chronic inflammatory diseases with combined efforts (COMBINE)
Combine consortium consists of: Vinnova, Vårdalstiftelsen, Reumatikerförbundet, Invest in Sweden Agency, KK-stiftelsen, Stiftelsen för strategisk forskning

**The Swedish Childhood Cancer Foundation** (Barncancerfonden) 500 000
At the intersection of curative and palliative treatment in paediatric oncology

**The Swedish Cancer Foundation** (Cancerfonden) 565 000
Factors associated with participation in phase 1 and phase 3 oncology trials

**Swedish Research Council** (Vetenskapsrådet) 972 084
BBMRI.se (Biobanking and Biomolecular Resources Research Infrastructure)

**Swedish Research Council** (Vetenskapsrådet) 700 000
CODEX – Rules and Guidelines for Research

**The Swedish Cancer Foundation** (Cancerfonden) 265 000
Developing clearer definitions and clinical guidelines for Do Not Resuscitate (DNR) orders in oncology care

**Riksbankens Jubileumsfond** (Bank of Sweden Tercentenary Foundation) 400 000
Culture, health and bioethics. Conceptual clusters and cultural theory

**European Union** 241 982
AutoCure - Curing autoimmune rheumatic diseases

**Journal of Internal Medicine** 700 000
Is Medical Ethics Really in the Best Interest of the Patient?
The Swedish National Centre for Research in Sports (Centrum för Idrottsforskning)
Is Fair Play Compatible with Doping in Sport?

Research

1. **Prevention of doping through increased understanding of the sense of fairness in sport (PhD project)**

Collaborators:
- **Ashkan Atry**, MA, PhD student
- **Mats G. Hansson**, Professor of biomedical ethics, supervisor
- **Ulrik Kihlbom**, PhD, supervisor

This PhD project studies if, and in what sense doping is incompatible with fairness in sport and whether notions of fairness and fair play may function as a foundation upon which arguments opposing doping in sport can be based on in a constructive manner.

Doping sometimes is perceived as an admissible method used in order to render the sport fairer by levelling an otherwise unfair dispersal of natural talents in sport. In this view, those with less talent are given a possibility to compensate by means of doping and this will make sport fairer. However, the term fairness seems to have different meanings in the arguments concerning doping in general and gene-doping in particular.

This project constitutes an attempt to achieve an “inside-out” perspective in regard to ethical and philosophical questions concerning performance enhancement in sport. This entails that by understanding sport as a form of social activity, and by placing this activity within the broader social context, this project aims at addressing ethical and philosophical issues by considering, as a starting point, qualities that are inherent to sport.

2. **Ethical aspects of biobank research – Individual rights vs. the public good? (PhD project)**

Collaborators:
- **Joanna Forsberg**, MD, PhD student
- **Mats Hansson**, Professor of biomedical ethics, supervisor
- **Stefan Eriksson**, Associate professor of research ethics, supervisor

The purpose of this project is to use bioethical methods and theories to analyze the implications and tenability of viewing biobank based medical research from a public health perspective. The relationship between rights and duties of individuals and society in the context of healthcare and medical research will be investigated. Consequences of adapting a public health view on biobank research will be analyzed, for instance regarding the issues of consent and returning individual results. Possible prerequisites for accepting such an approach will also be explored, primarily in association to confidentiality. This research project is undertaken from an applied ethics perspective, and its focus will therefore be on practical consequences and policy implications of different philosophical positions, rather than on their theoretical underpinnings.
3. Vaccine against HPV – Ethical and social aspects: Survey, exploration and intervention (PhD project)

Collaborators:

- **Maria Gottvall**, RN, PhD student
- **Tanja Tydén**, Professor of caring sciences, supervisor
- **Anna T. Högglund**, Associate Professor of Ethics, supervisor
- **Margareta Larsson**, Associate Professor, Department of Women’s and Children’s Health, supervisor

Cervical cancer is caused by the human papillomavirus (HPV). Today, there are more than 100 different variants of HPV; of these, HPV types 16 and 18 are the most common oncogene virus types, which cause approximately 70% of all cases of cervical cancer. This cancer affects about 450 women annually in Sweden. HPV is even related to vaginal and anal cancer and to known cancers in the vulva, penis and pharynx.

Recently, two very effective vaccines against HPV have been registered. The National Board of Health and Welfare has recommended that the new vaccine should be included in the general vaccination program for children and youths in Sweden. The vaccine is very expensive and the recommendation was preceded by an intense debate on its cost effectiveness. The new HPV vaccine raises many questions from both ethical and gender perspectives, e.g., how youths and their parents should be informed; what effects the vaccine would have on youngster’s sexual habits; and how boys might be informed on HPV as the vaccine will only be given to girls.

The purposes of this project are:

- To survey youth’s knowledge on sexually transmitted infections and their consequences, together with their views on the use of condoms, with special focus upon HPV and the new vaccine against it.
- Through an explorative interview study, using focus group method, examine how midwives and school nurses view their task of informing youths and their parents on the vaccine against HPV.
- With these results as a base, carry out a targeted intervention, with the aim of increasing youth’s knowledge of STIs in general and of HPV in particular.
- To present constructive suggestions of clinical guidance for midwives and school nurses concerning the social and ethical aspects of the new HPV vaccine.

4. At the intersection of curative and palliative treatment in paediatric oncology (PhD project)

Collaborators:

- **Li Jalmsell**, MD, PhD student
- **Mats G. Hansson**, Professor of biomedical ethics, supervisor
- **Britt-Marie Frost**, Department of Paediatric Oncology, Uppsala University Hospital (Akademiska sjukhuset), supervisor

Today there is no clear picture about how children in terminal care and their families perceive the meaning and importance of palliative care in the Nordic countries. How patients and their families see the distinction between curative and palliative treatment has primarily been a focus for retrospective interviews with parents and there is a lack of knowledge in particular regarding the clinical and moral significance of hope.
The degree of activity for patients in the terminal phase of care varies, but there is only anecdotal evidence available. We need to understand how different paediatric oncology departments manage the intersection of curative and palliative treatment and how children and their relatives perceive the different activities offered to them.

This project will:

- examine to what extent there is a distinctive focus on palliative treatment in departments of paediatric oncology in Denmark, Finland, Norway and Sweden.
- examine how children in terminal care and their families perceive the meaning and importance of palliative care
- give an account of the clinical and moral significance of hope in paediatric oncology

The project is designed with an integration of three different methodologies. It has a descriptive, a qualitative and a philosophical/theological component.

5. Autonomy and trust in biobank research (PhD project, part of 11, AutoCure)
Collaborators:

- **Linus Johnsson**, MD, PhD student
- **Mats G. Hansson**, Professor of biomedical ethics, supervisor
- **Gert Helgesson**, Associate professor, Department of Learning, Information, Management and Ethics (LIME), Karolinska Institutet, supervisor
- **Stefan Eriksson**, Associate professor of research ethics, supervisor

People are often willing to participate in biobank research in spite of concerns raised in media about potential risks to personal integrity. Moreover, information about the research is often disregarded by participants. This suggests a connection between autonomy and trust; however, neither the nature of this connection nor the relative importance of these concepts is clear. In this project, these questions will be investigated. Factual inclination to participate in biobank research will be determined and contrasted with estimations made through contemporary attitude surveys. The concepts of autonomy and trust will be analyzed, their role in informed consent procedures elucidated, and their ethical value discussed.

6. Dual use and responsible life science research – A bioethical approach (PhD project)
Collaborators:

- **Frida Kuhlau**, MA, PhD student
- **Anna T. Höglund**, Associate professor of ethics, supervisor
- **Stefan Eriksson**, Associate professor of research ethics, supervisor
- **Kathinka Evers**, Associate professor of philosophy, supervisor

This project will examine the responsibility of biomedical researchers in circumventing proliferation of biological material, technology and knowledge to actors with malicious intents. Much of the biomedical research conducted today is of ‘dual-use’ nature, which means that it can have both peaceful (civil) and military applications. The current perception of a bio-terrorist threat (due to recent terrorist events) and the subsequent security countermeasures, demands the scientific community to take responsibility and assist in protecting biological material and knowledge of concern. Central questions include; if biomedical researchers have a responsibility to minimize the risk of proliferation and, if so, what does that responsibility entail, what is the
response to proposed obligations among life science researchers, and how is security consciousness to be implemented in life science research?

7. Retrospective DNA technologies and integrity for historical persons (PhD project)

Collaborators:
- Malin Masterton, Msc, PhD student
- Mats G. Hansson, Professor of biomedical ethics, supervisor
- Anna T. Höglund, Associate professor of ethics, supervisor

The project investigated the question whether or not dead people in general, and historical persons in particular, can be harmed. With the substantial successes of DNA technology it is now possible to acquire genetic information from very old DNA. DNA-analysis could help to answer questions regarding historical persons, for example whether or not Queen Christina of Sweden was a pseudo-hermaphrodite. Should the dead be respected in these situations or are we free to satisfy our curiosity? What duties (if any) do we have vis-à-vis the dead and what would be the basis of these duties?


8. Factors associated with participation in phase 1 and phase 3 oncology trials (PhD project)

Collaborators:
- Tove Godskesen, RN, PhD student
- Ulrik Kihlbom, supervisor
- Karin Nordin, Professor, Department of Public Health and Caring Sciences, supervisor
- Peter Nygren, Professor, Department of Radiology, Oncology and Radiation Science, supervisor

The aim of this project is to understand on what premises Swedish patients decide to participate in phase 1 and phase 3 oncology trials with emphasis on their attitudes regarding risk, own benefits and benefits for future patients. We will also investigate the implications of this understanding for information and consent procedures used when recruiting patients to such trials.

9. Developing clearer definitions and clinical guidelines for Do Not Resuscitate (DNR) orders in oncology care (PhD project)

Collaborators
- Mona Pettersson, RN, PhD student
- Anna Höglund, Associate Professor, supervisor
- Mariann Hedström, Senior Lecturer, Department of Public Health and Caring Sciences, supervisor

The aim of this project is to investigate attitudes to and perceptions of ‘Do Not Resuscitate’ (DNR) orders in oncology care among Swedish oncologists and oncology nurses. Further the experiences of education in DNR and understanding of DNR orders among students in nursing and medical school will be investigated.
10. Gender aspects in telenursing (PhD project)

Collaborators

- Roya Hakimnia, MD, PhD student
- Anna T. Höglund, Associate Professor, supervisor
- Inger Holmström, Associate Professor, supervisor
- Marianne Carlsson, Professor of Caring Sciences, supervisor

This project will use theories on gender and intersectionality to investigate the role of factors such as gender and ethnicity in Swedish telenursing. An instrument that can investigate gender competence in telenursing and evaluate the effect of an educational intervention with focus on gender competence for telenurses will also be developed.

This research will:

- Investigate gender differences in the communication and outcome of telenursing consultations (measured in GP appointments, self-care advice or referrals to other care providers) and explore these differences through the use of theories on gender and intersectionality.
- Develop a tool for analysis of gender competence including aspects of power and intersectionality.
- Test an educational intervention for telenurses, with focus on gender and intersectionality.

11. AutoCure - Curing autoimmune rheumatic diseases

Collaborators:

- Mats G. Hansson, Professor of biomedical ethics
- Linus Johnsson, MD, PhD student

AutoCure is an EU funded research project within the sixth framework programme. Involved in the project are 26 different partners, of which 6 are industrial partners and 20 are from the academia, from all over Europe. The project duration is 60 months from March 1st 2006 and the total budget is 11 m€.

The objective is to transform knowledge obtained from molecular research particularly within genomics, into a cure in an increasing number of patients suffering from inflammatory rheumatic diseases. Rheumatoid arthritis (RA) is used as a prototype since this disease offers unique opportunities to define and evaluate new therapies. Professor Lars Klareskog at Karolinska Institutet is co-ordinator of AutoCure.

In addition to providing an ethics management structure, the Centre for Research Ethics & Bioethics will actively work through a specific work-package in order to offer possible solutions to urgent problems estimated to arise in association with the research. A doctoral student, Linus Johnsson (MD) will work with a project comparing the attitudes to genetic and biobank research as it is revealed in public surveys and in actual decisions made by research subjects. He will examine and analyse the frequency of withdrawals to biobank sampling made by sample providers and elaborate the concept of risk related to this kind of research including a critical examination of what constitutes "dignitary harms". His theoretical framework will be developed through a philosophical analysis of the concepts autonomy and trust. More information about AutoCure is available at http://www.autocure.org/.
12. Cancer control using population based registries and biobanks (CCPRB)
Collaborators:

- **Mats G. Hansson**, Professor of Biomedical Ethics

CCPRB is an EU network of excellence. The CCPRB network has joined large biobanks with up to 30 years of follow-up and >60,000 prospectively occurring cancer cases and cancer registries with >40 years of population-based registration in order to provide the study base for uniquely large population-based prospective studies on cancer and define and implement a European Quality Standard for Biobanking. The aim is also to enable large-scale, population-based research on evaluation of cancer treatment and design optimal strategies for cancer prevention and its evaluation. Professor Joakim Dillner at Lund University is coordinator of the CCPRB network.

In CCPRB collaboration between large national and international biobank studies is aimed at validating the biological significance of previous research and detecting previously unknown causes of cancer. In order to achieve this goal discrepancy in national policies and regulation regarding information and consent procedures must be overcome. During the first period a comparative analysis of national and international ethical and legal frameworks has been made and on this basis a common ethical framework for all partners have been formulated, and also decided by the assembly of CCPRB. The ethical framework is consistent with general European guidelines, e.g. The Convention on Biomedicine and Human Rights by the European Council. Solutions to specific problems regarding international biobank collaboration are based on sound ethical research and results are published or submitted to international peer review journals in order to gain academic credibility and international recognition. More information about CCPRB is available at: http://www.cancerbiobank.org/.

13. Children's assent and participation in a longitudinal cohort study of child health
Collaborators:

- **Mats G. Hansson**, Professor of Biomedical Ethics
- **Anders Nordgren**, Professor of Bioethics, Director of the Centre for Applied Ethics, Linköping University (PI)
- **Johnny Ludvigsson**, Professor and PI of the ABIS-study and Chairman for Diabetes Research Centre, Linköping University
- **Ulrica Swartling**, PhD, Senior researcher, Division of Paediatrics, Linköping University

This is a collaboration with the Centre for Applied Ethics and representatives of the ABIS study at Linköping University, funded by the Swedish Research Council.

In this project will investigate how 11-year-old children in a longitudinal type-1-diabetes study look upon their participation in research studies.

We have studied ethical and psychosocial issues within this context since 2000. The ABIS study (All Babies in Southeast Sweden) is a population-based prospective cohort study in which newborn infants have been followed from birth and onwards with regular biological samples and questionnaires. The children will now be invited back for the 11-year control. From a developmental perspective, this age group is of great interest, standing on the threshold of adolescence and having reached a significant level of maturity, both cognitively and morally.

In this project we will investigate how these 11-year olds perceive medical research, what kind of information they would like and if they would like to assume a more active role as research partners when they participate in research. From this empirical vantage point, we will critically
examine the tradition of designing children's assent to research on the elements of informed consent and explore the possibility of a more participatory approach.

Methodologically the design includes focus groups and postal questionnaires. We believe that a participatory model of the kind proposed is worth exploring as a good way to show respect for children as persons.

14. Empower the patient: Hip fracture as outpatient care (R&D Project)

Collaborators:

- Leif Ryd (Principal Investigator), Karolinska University Hospital, Huddinge
- Mats G. Hansson, Professor of Biomedical Ethics
- Lilianne Eninger, Associate Professor, Senior Researcher, Department of Psychology, Uppsala University

This is a research and development project funded by the Stockholm County Council that started in 2005. The project is a collaboration between Professor Leif Ryd (Principal Investigator) at the Karolinska University Hospital, Huddinge, and researchers at CRB.

Within the health-care system, patients are often seen as helpless and in need of caretaking by healthcare professionals. This view may many times be disabling for the health-care process, extending rehabilitation, resulting in great costs both to the patient and to the health-care sector. It would clearly be beneficial if the health-care process could be made more efficient, with more expedient care, a shorter rehabilitation process involving more outpatient care and at the same time could be tailored more specifically to the individual patient’s needs and resources. Empowering patients to take charge of their own health and rehabilitation process is an important step in actualizing the overall goal of a more efficient health-care process.

Hip fracture patients constitute a large and resource-consuming group which could benefit from an increasing extent of outpatient care. A research project has been started, aimed at providing a new treatment framework by combining vertebroplasty, as an effective operative technique for hip fractures, with the patients' personal involvement and control of the rehabilitation process.

Addressing and changing the views and attitudes commonly held within the health-care system was determined to be essential in order for patient empowerment to be feasible. The first phase of the project, which is currently underway, therefore involves an evidence-based program, focused on educating health-care providers in a different way of interacting with patients, highlighting individual patient strengths and resources. After completion of this program, the subsequent phase of the project, involving the development of an individualized treatment and care process, will ensue. This process is designed to be sensitive to the multiplicity of personal values at stake and with self-control of the patient as the fundamental aim. The process starts from the moment of emergency admission of the patient to the clinic and ends when the end point in terms of quality of life during the post-operative rehabilitation phase has been attained.

15. Ethical dilemmas in telenursing

Collaborators:

- Anna T. Höglund, Associate Professor of Ethics, Senior Lecturer, Centre for Research Ethics & Bioethics
- Inger Holmström, Associate Professor, Department of Public Health and Caring Sciences, Health Services Research

This is a research collaboration between members of the health services research group and CRB.

A qualitative interview study revealed that telenurses experience a wide range of ethically troubling situations, covering subjects such as autonomy, integrity and prioritizing. Although
several of the identified dilemmas also occur in other areas of nursing it is reasonable to argue that these situations are particularly challenging in telenursing, as the encounter with the patient is faceless and the nurse can not be sure of the callers’ identity.

A similar study has investigated how gender impacts the encounter between the caller and the telenurse. The results revealed several aspects of how gender norms are present in telenursing. Questions of power relations, the picture of the mother/woman as the primary care taker of small children and distrusting men in their parental role were particularly highlighted.

16. Ethical aspects of longitudinal studies involving children

Collaborators:
- Mats G. Hansson, Professor of biomedical ethics
- Stefan Eriksson, Associate Professor of ethics
- Johnny Ludvigsson, Professor, Linköping University
- Gert Helgesson, Associate professor, Karolinska Institutet
- Ulrika Gustafsson Stolt, PhD, Linköping University

The ABIS study (All Babies in South-East Sweden) is a longitudinal predictive screening for type 1 diabetes (T1DM) that has followed a large birth cohort since 1997 (n=17,055). ABIS I followed children 0-7 years of age. Clinical data have been collected through diary, extensive questionnaires (at birth, 1 year, 2.5-3 years, and 5-6 years), and biological samples (cord and capillary blood, hair, stool, saliva, urine). ABIS II will follow the same children at ages 9-14. Tied to the ABIS biomedical research is a multi-disciplinary project aiming to analyse and suggest criteria for information, consent, and disclosure issues in Swedish longitudinal medical research involving children. This is a co-operation between the ABIS group and the Centre for Bioethics. A number of publications stemming from this co-operation are under production.

The project is a collaboration between researchers at the Centre for Research Ethics & Bioethics and the ABIS group at the Department of Molecular and Clinical Medicine, Linköping University. More information: http://www.abis-studien.se/

17. How do patients prioritize in situations of limited resources?

Collaborators:
- Mats G. Hansson, Professor of Biomedical Ethics
- Lilianne Eninger, Associate Professor, Senior Researcher, Department of Psychology, Uppsala University
- Li Tsai, MD, Associate Professor, Orthopaedic Surgery, Karolinska University Hospital, Huddinge
- Leif Ryd, MD, Professor of Orthopaedic Surgery, Karolinska University Hospital, Huddinge.
- Håkan Magnusson, MD, Orthopaedic Surgery, Karolinska University Hospital, Huddinge

This is a collaboration with researchers in orthopaedic surgery at the Karolinska University Hospital.

In times of limited resources within the health care sector, a pertinent issue for both health care administrators and politicians is that of making priorities between patients in need of treatment. An interesting aspect is that neither the public, nor the patients themselves, have been involved
in discussion on prioritizations. This research project aims to investigate how patients would make priorities among other patients on a waiting-list for major joint (hip- or knee) replacement, when resources are strained and it isn’t possible to provide treatment for all patients. A spectrum of motivations guiding patient priorities will be identified and documented. The prioritizations made by an orthopaedic patient group will be compared to priorities suggested by orthopaedic surgeons, general practitioners, and a representative sample of the general population.

Thirty patients on the waiting list for major joint replacement at the Karolinska University Hospital in Huddinge were invited to participate in the first phase of the study, and experienced orthopaedic surgeons assessed these patients’ relative priority for surgery using a validated clinical scoring instrument. Patients were also asked to complete questionnaires including psychosocial aspects of their health, such as quality of life. From these assessments, 10 patient vignettes, including clinical as well as psychosocial aspects, have been constructed and included in a questionnaire. In the second phase of the study, this questionnaire will be sent to a new group of orthopaedic patients on the waiting list at the Karolinska University Hospital, to a representative sample of the public, and to orthopaedic surgeons and general practitioners.

International Bilateral Collaborations

Centre for Biomedical Ethics (CBmE), National University of Singapore
The Centre for Biomedical Ethics (CBmE), National University of Singapore constitutes one of the nodes in the network on ethics at the end of life. They hosted a network symposium in Singapore in January 2010 where researchers from CRB, PEALS and ECEC participated. CBE and CBmE are currently planning other forms of bilateral collaboration.

CESAGEN, Cardiff University and Lancaster University
CRB collaborates with Cardiff University and CESAGEN (at the universities of Cardiff and Lancaster). This collaboration constitutes a joint conference series in medical ethics. The first conference took place in Uppsala 14-16 June 2010 and was entitled “Is Medical Ethics Really in the Best Interest of the Patient?”. The next conference will be held in Cardiff in 2012.

Expertise Center Ethics of Care at University Medical Center (ECEC), Groningen University
CRB’s collaboration with ECEC holds joint supervision of PhD students, developing of e-learning in medical ethics and we are learning from each other’s experiences of teaching medical ethics to medical students. Apart from teaching, we are also exchanging knowledge and experience in other fields. Researchers from ECEC will visit CRB to learn how from Swedish experiences of dealing with biobanking. In line with this exchange, Mare Knibbe, postdoc at ECEC presented her research on “The Good Patient” in our series of open higher seminars in May 2010. We are also planning exchanges on professionalism and ethics and family ethics.

Policy, Ethics and Life Sciences Research Centre (PEALS), Newcastle University
CRB and PEALS are currently working on an agreement to formalise our bilateral collaboration. This includes joint publications and project planning. Several research collaborations are underway, for example regarding the relationship between normative and empirical ethics, end of life care, reproductive ethics and patient perspectives in medical research. During 2009, Mats G. Hansson was visiting professor at PEALS, Newcastle University. Policy, Ethics and Life Sciences Research Centre (PEALS), Newcastle University. In November 2010 both centres met to discuss methodological issues at the intersection of ethics and social sciences, as well as future collaborations at a joint workshop.
The Hastings Center, New York
We have an ongoing exchange with the Hastings Center in New York. Mats G. Hansson of CRB is a Fellow of the Hastings Center and Tom Murray of the Hastings Centre has received a honorary doctorate degree from the Faculty of Medicine at Uppsala University. A Science publication resulted from Mats Hansson’s collaboration with Karen Maschke at Hastings Center.

International Network Collaborations

Biobank Ethics
CRB has worked extensively on biobank ethics and participates in several European networks and EU-funded projects on the ethical aspects of biobanking: the EU Network of Excellence CCPRB (Cancer control using population based registries and biobanks) that ended recently; AutoCure - Curing autoimmune rheumatic diseases, an EU funded research project within the sixth framework programme; BBMRI.se (BioBanking and Molecular Resource Infrastructure of Sweden) funded by the Swedish Research Council; and the IMI (Innovative Medicines Initiative) and the IMI funded BTCure (Be The Cure) focusing on Rheumatoid Arthritis (RA) and RA-like diseases.

End of Life
CRB collaborates with ECEC, CBmE and PEALS on issues relating to end of life care and decisions. A joint anthology is in planning, edited by Ulrik Kihlbom of CRB and Marian Verkerk of ECEC. This network held a first joint workshop workshop in Singapore in January 2010.

Family Ethics
CRB collaborates with ECEC, CBmE and PEALS on family ethics. A workshop in Groningen on 28-29 April 2011 will kick-off this collaboration that also includes Hilda Lindeman and James Nelson, philosophers from Michigan State University. More information at www.family-ethics.com.

Health, Culture and Bioethics
Together with researchers from universities and museums in Australia, Norway, Sweden and the United Kingdom, CRB has formed a multi-disciplinary network on health, culture and bioethics. The network is funded by Riksbankens Jubileumsfond (Bank of Sweden Tercentenary Foundation).

Neuroethics
Kathinka Evers of CRB has extensive collaborations on Neuroethics with Collège de France in Paris, where she is a returning guest lecturer, and the Pasteur Institute in Paris. There are also new collaborations with the Centro de Investigaciones Filosóficas (CIF), and the Institute of Cognitive Neurology (INECO) in Buenos Aires In 2010, CRB launched a web-based course in neuroethics, with lectures by several well known researchers in the neurosciences. Neuroethics has important clinical perspectives.

Research Ethics & Bioethics
CRB collaborates with the Swedish University of Agricultural Sciences (SLU) and Karolinska Institutet within the framework of the Network for Research Ethics and Bioethics (NRB). This network was formally established on July 1 2007.
CODEX - Rules and Guidelines for Research
CODEX is a website with rules and guidelines for research. The website, www.codex.vr.se, is a collaboration between CRB and the Swedish Research Council.

EACME
CRB is an associate member of the European Association of Centres of Medical Ethics (EACME).

Sustaining competitive edge through collaboration in applications
All researchers assign a significant amount of time in preparing and submitting research proposals to different funding agencies. This represents an important part of innovation in scientific work through formulation of innovative ideas, new research questions and hypotheses, and sharpening of research methodologies. Through exploration of new networks and bringing added value through collaboration across disciplinary domains CRB is sustaining a competitive edge. CRB is often approached by international groups who have learned about our world leading research in publications with high impact.

Current collaborations for the future
- PREDICTION – Grant application to EU FP7-Health regarding Cardiovascular genetics with 10 European partners. The application is co-ordinated by Colin Palmer at the University of Dundee. The application was successful in the first stage and a full application has been submitted. Our role is to investigate ethical issues related to complex risk information in pharmacogenomics to patients.
- EUGEDAS – Grant application to EU FP7-Science and Society regarding the use of forensic databases with 9 European partners. The application is co-ordinated by Lucia Scaffardi at Universita Degli Studi Di Parma. Our role is to investigate ethical issues related to the balancing of public security and personal privacy and do a public survey on attitudes to DNA surveillance.
- COMPARE – CRB is co-ordinating a proposal to IMI (Innovative Medicines Initiative) regarding the communication of pharmacogenetic information to patients and clinicians. An Expression of Interest has been submitted with 10 European partners including two European patient organisations. Models for shared decision-making and communication of risk will be developed.
- Getting old and staying well – what does it take? – CRB has co-ordinated a proposal to the Knut and Alice Wallenberg Foundation in collaboration with two other dynamic groups at Uppsala University: the Clinical nutrition and metabolism group at the Department of Public Health and Caring Sciences and the Social gerontology group at the Department of Sociology. This integrated multi-disciplinary project will address three questions: 1) If and to what extent ageist attitudes of health care professionals and their knowledge about age-specific needs affect the treatment of old people. 2) If and how socio-economic circumstances, gender and old-age transitions affect the understandings of successful ageing that older people uphold and the strategies they employ in order to age well. 3) The prevalence, causes and consequences of age-associated muscle loss (sarcopenia) in a population-based cohort of women and men in their nineties.
• **Clinical sequencing** – NIH application under submission together with the LifeSciLab Uppsala–Stockholm, co-ordinated by Kerstin Lindblad-Toh, Uppsala University and Broad Institute. Our role is to investigate psychosocial aspects together with Yvonne Brandberg at Karolinska Institutet and Karin Nordin in the Caring sciences group at the Department of Public Health and Caring Sciences, Uppsala University. We will identify patient and physician preferences and models for informed consent and shared decision-making.

• **When does pain and fear lead to suffering in animals?** – CRB has co-ordinated an Expression of Interest to Riksbankens Jubileumsfond (Bank of Sweden Tercentenary Foundation) in collaboration with researchers at different departments at Uppsala University: Dan Larhammar (Molecular Cell Biology), Bengt Meyerson (Behavioural Neuroscience), Erika Roman (Behavioral Neuropharmacology), Svante Winberg (Neuroscience). For animal suffering we will assume that both pain and fear matter. The analysis of these concepts will draw on philosophical, evolutionary psychological and neurophysiological accounts.

• **Improving the ethics climate in psychiatric outpatient clinics – An intervention study** – Project proposal sent to the Swedish Council for Working Life and Social Research (FAS) and to AFA Insurance. In this project we will measure the ethical climate in four psychiatric outpatient clinics. We will also do an intervention with supervised ethics rounds, aiming at improving the ethical climate. Main applicant: Mats G. Hansson, postdoc: Marit Stên in collaboration with Mia Ramklint and Kerstin Haglund at the Department of Psychiatry, Akademiska sjukhuset (Uppsala University Hospital).

• **Consensus or disagreement – How do health care stake holders prioritise in ethical and political value conflicts?** – Project proposal sent to the Swedish Council for Working Life and Social Research (FAS). Main applicant: Anna T. Höglund, postdoc: Mio Fredriksson, in collaboration with Ulrika Winblad Spångberg from the Health Services Research group at the Department of Public Health and Caring Sciences at Uppsala University. A similar application will be sent to the Swedish Research Council.

• **The experiences and ethics of sibling donations** – Project proposal to be sent to the Swedish Childhood Cancer Foundation. CRB collaborates with Britt-Marie Frost and Margareta Stenmarker, paediatric oncologists from Akademiska sjukhuset (Uppsala University Hospital) and the Regional hospital Ryhov, Jönköping, to investigate the experiences among sibling donators and their parents and the ethical issues surrounding this practice.

• **Native people, research and ethics: Ethical challenges when conducting research on the Sami.** – Project proposal to Riksbankens Jubileumsfond (Bank of Sweden Tercentenary Foundation) dealing with the implementation and development of biomedical ethics in medical-, quality-or-life and genetic research projects on the Sami. This is a collaboration with Mikael Svonni at the University of Tromsø and part of the network on Culture Health and Bioethics.

**Undergraduate Teaching**

At the Faculty of Medicine, ethics has for several years been part of the curriculum for nurses and doctors. Within the nurse's programme, ethics courses totalling 7,5 credits are distributed over the three years of the programme. For medical doctors, medical ethics and medical law is part of the professional training curriculum that runs through the programme from the first to the eleventh semester.
In the midwifes programme we are responsible for 4,5 credits. We also teach within the district/public health care nurses programme, the specialist nurses programmes and other educational programmes at Uppsala University.

Every second year we offer a course on Nursing philosophy and ethics in theories and models of caring sciences (7,5 credits) as an electable course for Caring Sciences B and OLVO A (Organization and leadership in health care and caring sciences). This course was offered in 2009 and will be offered again in 2011.

**Coming:** During 2010 we have developed a course in bioethics (5 credits) for one of the Engineering programmes at Uppsala University.

**Advanced level courses**

We offer an advanced level course in ethics and public health (7,5 credits) that can be taken both as a single subject course and as an electable part of the master programme in public health. The course is offered in Swedish. Starting 2011 this course will be mandatory for programme students.

In 2010 we also offered a web based advanced level course in neuroethics (7,5 credits) for the first time.

**Coming:** During 2010 we have developed courses for:

- Master programmes in infection biology and biomedicine.
- Archaeology and ethics, 3 credits, is a new electable evening course that will be offered spring term 2012.

**Postgraduate Teaching**

- **Science and Technology:** Research ethics A (1 credit) and Research ethics B (1 credit) are compulsory for PhD students admitted after July 1, 2008. The courses are open to all postgraduate students at the faculty.
- **Medicine and Pharmacy:** Research ethics and philosophy of science (1,5 credit) is compulsory for PhD students. The course can be taken separately, or as part of a 7,5 credit integrated course called Introduction to scientific research.
- **Social Sciences:** 4 credit course tailored for the social sciences. This course is electable and offered once a year since 2009.

The course research ethics A is open to PhD students from all faculties.

**Awards and Appointments 2010**

1. **Maria Gottvall**, Young Scientist Award (500 Euro) from the European Society for Contraception (ESC) conference in the Hague, the Netherlands, 2010.
3. **Mats G. Hansson**, Board Member, the Vårdal Foundation since 2010.
5. **Stefan Eriksson**, adjunct member to the Swedish Research Council’s Expert group on ethics since 2007.
Conferences and symposia

The Centre for Research Ethics & Bioethics has hosted an annual international multi-disciplinary symposia series on Biomedicine, Ethics and Society. This series ended in 2009 and was replaced by a bi-annual conference hosted by CRB together with CESAGEN at the universities of Cardiff and Lancaster. The first meeting in this series attracted 200 participants, of which over 70 speakers from more than 20 countries. Main sponsor was The Journal of Internal Medicine.

- **Searching for the Animal of Animal Ethics**: IX Annual Symposium on Biomedicine, Ethics and Society, June 11-12 June 2007
- **Dual Uses of Biomedicine: Whose responsibility?**: X Annual Swedish Symposium on Biomedicine, Ethics and Society: Seglarhotellet, Sandhamn, 9-10 June 2008
- **End of Life Decisions: Ethics in clinical practice, research and policy**: XI Annual Swedish Symposium on Biomedicine, Ethics and Society: Seglarhotellet, Sandhamn, 8-9 June 2009
- **Is Medical Ethics Really in the Best Interest of the Patient?**: Uppsala Konsert & Kongress, 14-16 June 2010
  - June 14: Should ideology be allowed to trump patient well-being?
  - June 15: What is the role of informed consent in medical research?
  - June 16: Ethical review boards: are they important ethical safeguards or over-burdensome and unnecessary bureaucracy?

Public outreach

The CRB website, www.crb.uu.se had approximately 25 000 unique visitors in 2010. CRB has several e-mail lists, together making up 2 800 subscribers. We use our lists to distribute information about conferences, seminars and to distribute our electronic newsletter and conference information.

Our higher seminar is open and invitations are distributed to a list where subscribers include the practical philosophy group at the Department of Philosophy, and the ethics group at the Department of Theology at Uppsala University, ethics lecturers at the Swedish University of Agricultural Sciences and the ethics group at the Department of Learning, Information, Management and Ethics at Karolinska Institutet.

CRB staffs are also giving lectures in different public settings in order to disseminate research results, secure funding, encourage debate and discussion on ethical issues and learn more about public concerns and interests.

PR activities

We collaborate with the press officers at Uppsala University on press releases. We also publish news on the CRB website, primarily promoting new publications. During the conference “Is Medical Ethics Really in the Best Interest of the Patient?” we also collaborated with the Akademiska sjukhuset (Uppsala University Hospital) press office. Our press activities in 2010 include:

- European Science Foundation report praises Uppsala University's work to secure research integrity on the the European Science Foundation (ESF) study of how
institutions of higher education in different countries proactively approach research ethical issues where Uppsala University is held up as a positive example.

- Duties to human remains in universities and museums on Malin Masterton’s doctoral thesis on the moral status of past people and protection for historical persons.

  - Related: Uppsala Universitet rapporterar från konferens om medicinsk etik
  - Related: Etiikregler diskriminerar dödssjuka, press release from Akademiska sjukhuset (Uppsala University Hospital)

- New ethical guidelines needed for dementia research, press release an article in the journal Bioethics, where Stefan Eriksson proposes a new approach to the dilemma of including dementia patients and others with limited decision making capabilities in research.

- International collaboration to meet ethical challenges, on the bilateral collaboration with PEALS, Newcastle University.

The activities we were involved in that received the most interest were:

  - 2010-12-06: Svårt att påverka ungas sexattityd, UNT

- Article: Kaminsky E, Carlsson M, Höglund AT, and Holmström I, Paediatric health calls to Swedish telenurses: a descriptive study of content and outcome, J Telemed Telecare doi:10.1258/jtt.2010.100110, online pre-publication, that was reported in
  - 2010-10-09: Pappor skickas oftare till läkare, Upplandsnytt, P4 Uppland, Sveriges Radio
  - 2010-10-12: Ojämställda telefonkontakter, Dagens Medicin
  - 2010-10-11: Sjukvårdsrådgivningen ger olika råd till mammor och pappor, Vårdförbundet

  - 2010-06-16 Etiknämnd stoppar forskning, UNT
  - 2010-06-15: Medicinsk etik - för vems bästa?, Läkemedelsvärlden
  - 2010-06-15 Etikmodell ska öka vårdssäkerheten, UNT
  - 2010-06-14 UNT rapporterar från konferens om medicinsk etik, UNT
  - 2010-05-10 Patientgrupper drabbas av strikta etiska regler, interview with Mats G. Hansson, Vetenskapsradion Sveriges Radio P1

  - 2010-05-25 Även döda människor har rättigheter, interview with Malin Masterton, SR Sameradion
  - 2010-05-20 Vem har rätt till Kristinas gener? interview with Malin Masterton, Vetandets värld, Sveriges Radio P1

  - 2010-03-29 Krigen mot terrorismen ur ett genusperspektiv, interview with Anna T. Höglund, Vetenskapsradion Forum, Sveriges Radio P1
• **Grant:** Gender aspects in telenursing, project funding from the Swedish Research Council
  - 2010-02-12 Genusmedveten vård på telefon, Interview with Anna T. Höglund at Genusflödet
Scientific Report

Social Medicine

Research Group Leader Professor Bengt Arnetz

The Division of Social Medicine (SocMed) focuses on three major and inter-related research areas. 1) Health and social systems’ approaches to workplace integration of vulnerable populations, 2) stress and performance management in high-risk populations, including first responders and knowledge workers and 3) health systems reform and patient-centred health care and its implications for quality of care and staff well-being.

SocMed’s mission is to carry out advanced laboratory-based research and translationary community outreach and engagement research. Furthermore, to ensure that all work is strongly anchored, not only in the academic environment, but also among key stakeholders in the community, in order to ensure that research is implemented in real-life in order to enhance cost-effectiveness of social and health care systems. A common factor for all our research is enhancing the scientific understanding of risk- and resiliency factors, as well as related bio-psycho-social mechanisms, of relevance for sustained and equitable occupational and social health and well-being, in addition to effective use of limited financial and human resources. Our research also focuses on the changing role of clients and patients in the current transformation of health care and social service systems and its implications for important stakeholders and efficacy.

1. Health and social systems’ approaches to workplace integration of vulnerable populations

There is an increasing marginalization of a large number of vulnerable populations, including employees with short- and long-term sickness absenteeism, immigrants, and refugees. Vulnerable populations are exposed to numerous stressors and lack many of the social structures that support resiliency. SocMed has developed and assessed risk factors for marginalization, as well as means to counteract marginalization among vulnerable populations, especially persons with complex, stress-related absenteeism, immigrants and refugees.

Immigrant and Refugee Health

We have ongoing international research on refugee health and integration. This research is done in collaboration with Swedish and United States-based researchers, municipalities, and numerous refugee integration agencies and refugee outreach support organization. The research is supported by National institutes of Health (Principal Investigator (PI) Bengt Arnetz, Wayne State University R01 grant), Wayne State University, Södertälje municipality, and by the “Impact of Religion”; a nationally competitive decade-long grant awarded to Uppsala University by the Swedish Research Council. Research in this area looks at psychosocial determinants, including socioeconomics, coping, lifestyle, and biological disease pathways and their relationship to important public health outcomes, such as disease, mortality, mental health, and sick leave behaviour.

In the domain of tobacco health risks, we have also initiated studies concerning the role of water pipe (hookah) smoking as a possible gateway drug, along with cigarettes, alcohol, and marijuana, and its trajectories to heavier drugs and other risky behaviour.

In the area of domestic violence and health, we just published a pilot study investigating the prevalence of domestic violence among a convenience sample of Iraqi immigrant women.
Stress-related Absenteeism and Return to Work

In collaboration with the Swedish Social Insurance Administration, the Swedish Public Employment Service, and the Primary Health Care sector, we have projects assessing the efficacy of various innovative return-to-work strategies, including the concept “Pathway Back to Work”. The aims of these projects are focusing on enhancing the pathway back to work and to identify factors that will help long-listed individuals return to the working life. We have developed and evaluated strategies to decrease sick leave and to improve the return-to-work processes. The Pathway to Work focuses on assisting people on sick leave to become more independent and to earn a living by targeting some of their health-related barriers and by providing financial support. The program has achieved national recognition as an innovative and cost-effective means to decrease sick-leave and facilitate return-to-work for people with long-term absenteeism due to complex, and stress-related disorders.

2) Stress and performance management in high-risk populations, including First responders and knowledge workers

A series of our projects focuses on the impact on health and well-being from our technology-driven society. We look at the impact on health, well-being and stress hormones from wireless technologies, the information technology society and increasing globalizations. We recently completed a large, multi-national study on the impact on health and performance of cell phone radiofrequency exposure under controlled laboratory conditions. Results revealed changes in cognitive functions, decreased deep sleep, and changes in salivary secretion of cortisol – a key hormone in the body’s stress response. We are currently involved in community-based research assessing the functionality of wireless sensor technologies and mobile phones to assess in real-time stress-related mental and cardiovascular responses in female middle managers – a risk group for stress-related disorders.

Another important area of research concerns the impact of acute and chronic stress on the health and performance among first responders, including police, fire fighters, EMS, coast guards, and the military. These groups of professionals are critical to maintaining a civil society and counteracting acts of violence and terrorism, yet little targeted work to strengthen first responders’ health and well-being has been done to date. We work closely with the Swedish Royal Foundation (Kungafonden) – to our knowledge, the world’s only foundation dedicated solely to assisting first responders through direct support and research.

Organizational Factors, Work Stress and Performance

Research in social medicine has shown a clear association between psychosocial factors in the organization, stress, and performance. We develop and evaluate workplace intervention programs and look at the effects on employee health, biological stress markers, and organizational productivity. In an interdisciplinary research program we combine two fields of knowledge; social medicine and Management control systems (MCS). The purpose is to examine and explain how MCS design affects psychosocial factors in the organization, stress, and performance. This is important because MCS are used for planning and evaluation in organizations. MCS can thus be expected to influence the psychosocial factors in organization that are associated with negative stress reactions, work-related health, and performance outcomes.

We also have research concerning psychosocial and biological determinants of changes in self-rated-health (SRH). One of our group members defended her PhD thesis on SRH. The research project has looked specifically at possible gender-related differences in determinants of and changes over time in SRH. SRH is an internationally-recognized marker of future mortality and morbidity risks. However, little is known about the biological underpinnings, linking psychosocial stressors to detrimental Self-Rated-Health.
Thus, our SRH research plays an important role in furthering enhancing fundamental knowledge contributing to the SRH-disease relationship.

3) Health systems’ reform and patient-centered health care and its implications for quality of care and staff well-being

A number of studies aimed at evaluating the implications of current structural and economic changes to patients, employees, health care organizations and society have been carried out. The focus is specifically on the implication for staff, patients and quality of care outcome indicators, including cost, morbidity and mortality, from enhancing patient involvement. Recently, we have initiated studies of organizational determinants of safety climate and patient outcome in nursing homes in order to design and evaluate effective measures to enhance quality-of-care in health care environments. We are also involved in looking at the implications of patient involvement and “patient centred care” on patient alignment with treatment goals, treatment outcomes, and, possible implications for health care staff work environment and professional roles. These studies make use of both self-rated as well as electronic medical records based data, thus allowing for the comparison of patient-based and health system-based outcomes. Part of this research is done in collaboration with the Uppsala Clinical Research Center.

As part of the multi-year, multidisciplinary research program, The Impact of Religion, financed by the Swedish Research Council, Vetenskapsrådet, we are looking at the organizational and individual role of spirituality and existential factors in promoting health and well-being among health care staff as well as in patients. We are also interested in how health care personnel utilize patients’ spiritual belief in the diagnostic and treatment processes.

In 2009, Professor Bengt Arnetz was appointed Chair of the Scientific Review Group for REHSAM. REHSAM is a strategic national project, financed by the Swedish Government, and managed financially and administratively by the Swedish Social Insurance Administration, focusing on funding controlled intervention Return-to-Work research studies. The overall budget for this multi-year program in 2011 is some 35 million SKR (approximately USD 5.5 million).

Centres and Facilities

CEOS, Center for Environmental Health and Stress Research is a collaborative effort between Uppsala Academic Hospital and Uppsala University. This is an academic research and development center with the overall purpose of improving basic and applied scientific understanding of the mechanisms behind, and effective treatment and prevention of stress-related disorders. The center is truly translationary in nature, with a multidisciplinary composition of researchers and clinicians.

CEOS has in collaboration with the Swedish Social Insurance Administration, the Swedish Public Employment Service, and the Primary Health Care sector, projects assessing the efficacy of various innovative return-to-work strategies, including the concept “Pathway Back to Work”. The aims of these projects are focusing on the pathway back to work and to identify factors that could help long-listed individuals return to the working life. We are currently in negotiation with the leadership of the Count County of Uppsala to transform CEOS into its natural next phase – a competence development and translation center for stress-related and mental disorders focusing on key primary care and public health stakeholders. A key characteristic for the proposed next phase of CEOS is close integration and collaboration between key stakeholders concerned about worker and population health.
Members of the Group in 2010

Ingrid Anderzén, PhD  
Bengt Arnetz, PhD, Professor  
Judith Arnetz, PhD, Associate Professor  
Christina Halford, MD, PhD  
Ann-Sophie Hansson, PhD  
Anna Liljestam Hurtigh, Research assistant  
Per Lytsy, MD, PhD  
Clairy Wiholm, PhD, Research Associate

External

Lisa Ekselius, MD, PhD, Professor  
Anna Finnes, Psychologist  
Lars Frimanson, PhD  
David Hallman, doctorial Student  
Kerstin Hedborg, doctoral student  
Lena Hillert, PhD, Associate Professor  
Anna Höglund, PhD, Associate Professor  
Per Johansson, PhD, Professor  
Bo Karlsson, MD, Doctoral student  
Niles Kuster, PhD, Professor  
Mark Lumley, PhD, Professor  
Eugene Lyskov, PhD, Associate Professor  
Anna Löfgren, Psychologist  
Linnea Molin, Psychologist  
Johan Lökk, MD, PhD, Associate Professor  
Arne Loweden, PhD, Assistant Professor  
Scott Moffat, PhD, Associate Professor  
Anna Olsson, MD  
Weisong Shi, PhD, Professor  
Kurt Svärdssudd, MD, PhD, Professor  
Jenny Thorell, Psychologist  
Anna Thunell, Economist  
Emma Wallin, Psychologist  
Carina Wennman, Psychologist  
Ragnar Westerling, MD, PhD, Professor  
Ulrika Winbladh, PhD, Associate Professor  
Annica Åbring, Occupational Therapist  
Torbjörn Åkerstedt, PhD, Professor

Publications 2008-2010


Dissertations and Awards 2008-2010


Awards: The Personal Renewal project was awarded the Uppsala County County’s Public Health Award (Projektet NySatsa/ Uppsala Läns Folkhälsopris, 2008).

Agencies that support the work/Funding 2008-2010

The Royal Foundation of Sweden (Kungafonden) SEK 1,400,000
The Swedish Research Council (Impact of Religion Program, Program Leader, Professor Anders Bäckström) Total SEK 50,000,000
The Swedish Council for Working Life and Social Research SEK 2,100,000
The Municipality of Södertälje SEK 2 100 000
The Swedish Social Insurance Agency SEK 6 467 650
Organisation for Financial Coordination Uppsala County SEK 1 055 000
Project 1: Spiritual and existential moderators of the stress – health relationship
Participant: Bengt Arnetz
This project concerns the adaptation and development of scales to assess to whether and to what extent existential and spiritual factors modify individuals and organizations response to stress. Furthermore, we will explore whether health care staff utilize patients’ existential and spiritual belief in the diagnostic and treatment processes. This project entails collaboration with Swedish and American researchers and study participants represent both countries as well. This project is part of a large, multi-year Linne’ research grant awarded to Uppsala University under the leadership of Professor Anders Bäckström.

Project 2: The importance of post-displacement institutional and stressors and resiliency factors and its implications for refugee post-displacement mental health
Participant: Bengt Arnetz
This is a comparative study of the importance of post-displacement stressors and resiliency factors in Iraqi refugees in the United States versus Sweden. In addition, there are plans to carry out policy and cost-benefit analysis of the two countries refugee integration program.

Project 3: Stress and global Self-Rated Health: Exploration of Possible Psychophysiological Mechanisms and Implications for Public Health
Participants: Christina Halford, Lisa Ekselius, Ingrid Anderzén, Bengt Arnetz, Kurt Svärdsudd
The main aim of this longitudinal project is to investigate associations between psychobiological markers of daily-life stressors and global self-ratings of health, in 200 healthy adult men and women. Among men, associations between SRH and endocrine variables were observed, with a decrease in SRH below the level of good significantly associated with differences in levels of testosterone and prolactin. In women some elements of the hypothesis, i.e., effects of coping resources and psychological strain variables on SRH, were supported, whereas other elements, i.e., effects of endocrine measures on SRH, were not.

Project 4: “Network of stress researchers concerning measurements and analyses of cortisol reactivity focusing on cortisol levels from ambulatory saliva sampling” 2007-2009
Participant from Uppsala: Christina Halford
The project, supported by the Swedish Research Council, includes 19 researchers from three Scandinavian countries. The aim of the network has been to discuss research issues concerning measurements and analyses of cortisol reactivity, focussing on ambulatory measurements of
cortisol in saliva. Collaboration within the network has resulted in an e-book, which is under progress, and to be published during 2010.

Project 5: Management control systems and stress: interdisciplinary field experiments

Participants: Ingrid Anderzén, Lars Frimanson

Management control systems (MCS) in organizations have become more complex. They measure performance on more objects, with new and more measurements, they provide information more frequent and quicker, and they are used at lower levels in organizations. But we do not know how these complex MCS influence the human body. Do they improve health, well-being and performance in organizations? Or do they make people develop insomnia, stress and other unhealthy outcomes that are economically and socially costly? This interdisciplinary research program combines two fields of knowledge: social medicine and MCS. The purpose is to examine and explain how MCS design affects psychosocial factors in the organization, stress, and performance. This is important because MCS are used for planning and evaluation in organizations. MCS can thus be expected to influence the psychosocial factors in organization that are associated with negative stress reactions, work-related health, and performance outcomes.

Project 6: “NySatsa Haninge” – A project to support individual’s on long term sick leave to return to working life through individual development and guidance.

Participants: Ingrid Anderzén, Ann-Sophie Hansson, Per Lytsy, Anna Liljestam Hurtigh

The project “NySatsa Haninge” has the overall aim to support individuals to return to working life through individual guidance. Fifty participants on long term sick leave have been given the opportunity to personal development and training through various tools for guidance. The objective has been to facilitate the return to working life, full-time or part-time, school studies, or other working life related activities based on the individual’s conditions, motivation and participation. The project started in July 2008. The follow up after one year shows that 52% of the participants have returned to working life. The study shows that long term sick absence due to diffuse and subjective health problems is not a permanent condition even in participants with substantial work absences periods. A cognitive approach to make individuals self-participate and develop a rehabilitation plan seems to be an effective method if combined with close interaction with other rehabilitation agents. The results in this study also support the idea that return to work is an important contributor to a better self-perceived and mental health for people who have been outside the labor market for a long time. The project has been evaluated in autumn 2010.

Project 7: “SAMKLANG”: In Cooperation – Acceptance, motivation and return to work among long-term sick listed.

Participants: Ingrid Anderzén, Anna Liljestam Hurtigh, Anna Finnes, Annica Åbring, Anna Thunell

The project “SAMKLANG” is founded by The European Social Fund (ESF) and the project is in cooperation with The Swedish Social Insurance Administration, The Swedish Public Employment Service and The Study Promotion Association. The aim of the project is to support individuals to return to working life. Sixty participants on long term sick leave have been treated with Acceptance and commitment therapy (ACT) by a Psychologist during three months. After one year 68% of the participants are ready to return back to work or studies. The
The project will go on with an interview study with those participants that had return to working life. The aim of this study is to find factors that predict Return to work for those individuals that had been on a long term sick leave.

**Project 8: VITALIS – An RTC study to support women on long term sick leave to return to working life through ACT or Team evaluation**

Participants: Ingrid Anderzén, Per Lytsy, Anna Åbring, Anna Finnes, Jenny Thorsell, Linnea Molin, Emma Wallin, Anna Olsson, Carina Wennman and Ragnar Westerling

This project is in collaboration with the Swedish Social Insurance Administration, the Swedish Public Employment Service, and the Primary Health Care sector. Fifty-five percent of people presently sick listed in Uppsala County are diagnosed with psychological problems, such as depression, anxiety and stress related symptoms, and/or chronic pain. The overall aim with this project is to develop, provide and evaluate accessible rehabilitation programs, for these complexes of problems, to help women on long term sick leave, to return to work. Vitalis started in Spring 2010 and will be completed in 2011. Approximately 320 women on long term sick leave due to pain, stress, depression and/or anxiety symptoms, identified by the National Insurance Agency in Uppsala County have been randomized into one out of three conditions: a multimodal team assessment and intervention, a home based internet supported unimodal psychological intervention (Acceptance and Commitment Therapy) and a treatment as usual (TAU) intervention. The project will evaluate the long term effects of those two different rehabilitation packages: multidisciplinary team assessment/intervention and CBT/ACT home based/internet treatment as compared to TAU, for the population of women who will lose insurance payments within 4 months.

**Project 9: Low impact stress among first responders. Implications for Health and Performance**

Participants: Bengt B Arnetz, Sarah Thomsen, Dana Nevedal, Matt Ventimiglia

Low impact stress among first responders (first line employees within the military, coast guard, customs control, and the police) are at increased risk to suffer from low-level, chronic stress exposure. We were interested to identify more in detail operational, organizational and personal sources of low impact stressors, their impact on health and performance, as well as means to cope with such stress. We carried out focus groups interviews with seventeen first responders. Results generated distinct areas of low impact stress. Results were used to develop a First Responder specific epidemiological survey. It will be distributed to a representative sample of Sweden’s First Responders in 2010. This unique epidemiological survey will collect representative prevalence data on specific low and high impact stressors, their relationships to health and performance and effective means to increase stressor resiliency. The research is done in close collaboration with Kungafonden (“The Swedish Royal Foundation”), and senior management and unions representing all of Sweden’s major First Responders professions, including the police, defence, coast guard, and customs.

**Project 10: Real-time assess of psychophysiological stress responses**

Participants: Bengt b Arnetz, Clairy Wiholm, Mark Lumley, Weisong Shi

Despite epidemiological research linking psychosocial stress to cardiovascular disease and other stress-related disorders, we still lack convincing evidence about the biological mechanisms
linking stress to cardiovascular disease. In a collaborative study between researchers at Uppsala University and Wayne State University, we have developed a prototype of a wireless heart rate sensor and Smartphone system that allows for the immediate transmission of heart rate data to a central server. The central server is programmed to send text messages to the phone when the heart rate deviates from a normal average. Text messages concerns stress and related questions of interest to identify possible reasons for the heart rate response. The pilot study will be critical for the design of a system at will subsequently be used to trace cardiovascular and emotional responses in inner-city inhabitants as well as female managers: a high-risk group for stress-related disorders.

**Project 11: The involved patient: implications for treatment outcome and secondary prevention of myocardial infarction.**

**Group participants: Judy Arnetz, Anna Höglund, Ulrika Winblad, Bengt Arnetz**

This project studied the implications of patient involvement for length of stay, compliance, treatment outcomes, and the work of physicians and nurses caring for heart attack patients. Initiated in 2004, this project was a multidisciplinary collaborative effort with Uppsala Clinical Research Center which administers the Swedish national quality registry for cardiovascular disease, RIKS-HIA.
The primary objective of the research is to analyze mechanisms behind social differences in health and health care and to develop and evaluate health system interventions in order to increase equity in health.

The fields of the research programme is to 1) develop methods for identifying and analysing the mechanisms behind preventable disease patterns in the population. 2) evaluate the impact of the health care and other parts of the society on these preventable disease patterns. 3) analyse the associations between the social situation and psychosocial, behavioural and biological risk factors for ill health and how these associations may be influenced in order to improve preventive strategies. 4) develop, plan and evaluate health system interventions.

This program line is implemented for different fields of public health, in accordance with the Swedish National Public Health Goals, such as the health of children and families, health related to working life, health related lifestyle as well as health orientated medical care and the prevention of adverse events in medical care. Several doctoral students are involved in these studies and several collaboration projects are included. The research group is multi professional including persons with the backgrounds as medical doctors as well as from behavioural, economical and Public Health sciences. Several studies have been performed in collaboration with national and international groups and organisations.

Members of the group during 2010

Ragnar Westerling, Professor
Per Lytsy, MD, PhD. University adjunct.
Annika Åhs, PhD, Researcher.
Marcus Westin, MD, PhD Research physician
Stefan Kunkel, PhD.
Marianne Hanning, PhD
Lars-Age Johansson, PhD
Ulrika Paulsson, Doctoral student
Peter Berg, M.D. Doctoral Student, Research physician
Achraf Daryani, PhD. Researcher
Mikael Skärlund, Research assistant
Susanne Sundell Lecerof, Doctoral student, collaboration with Lunds and Malmö University
Anna Ohlsson, M.D. Clinical research assistant.
Hans Nordlöf, Doctoral student, Collaboration with University of Gävle
Ebba Hallberg, MPh student.
Josefin Wångdahl, MPh student
Erik Berglund, MPh.
Publications 2008-2010

1. Kunkel S. Quality Management in Hospital Departments : Empirical Studies of Organisational Models. Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine, 2008:309


3. Johansson LA. Targeting Non-obvious Errors in Death Certificates. Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine 2008:305.


20. Sundell Lecerof S, Westerling R, Moghaddassi M, Östergren PO. The association between overweight and information on physical activity and healthy diet among recently settled, 18-64-year-old Iraqi migrants in Sweden: Implications for practice. (Accepted for publication.)

21. Lytsy P, Berglund L, Sundström J. A Proposal for an Additional Clinical Trial Outcome Measure Assessing Preventive Effect as Delay of Events. (Submitted)

22. Berg P, Sundelin C, Westerling R. The connection between socioeconomic and psycho-social factors and bicycle helmet use among school children and teenagers. Department of Public Health and Caring Sciences, Social Medicine, Uppsala University (Submitted)


26. Lytsy P. Slutrapport. Utvärdering av samverkan med rehabkoordinatorer och kontaktpersoner i primärvården respektive psykiatrin under 2010 (In Swedish: Final report. Evaluation of collaboration between rehabilitation coordinators and contact persons in primary care and psychiatry, respectively in 2010.). Dnr PUBCARE 2010/1


32. Westerling R. Internationella jämförelser av åtgärdbar dödlighet. (In Swedish: International comparisions of avoidable mortality) (Accepted for publication)


37. Paulsson U, Edlund B, Westerling R. Relationship between unhealthy behaviours and a general unhealthy behavioural factor in Swedish school students. Department of Public Health and Caring Sciences, Social Medicine, Uppsala University (Submitted).


42. Lytsy P, Burell G, Westerling R. Cardiovascular risk factor assessments and health behaviours in patients using statins compared to a non-treated population. Department of Public Health and Caring Sciences, Social Medicine, Uppsala University. (Submitted).

43. Gjertsen F, Johansson LA. Changes in statistical methods affected the validity of official suicide rates. (Accepted for publication J Clin Epidemiol).

**Dissertations 2008-2010**


**Agencies that support the work/Funding 2008-2010**

International Health Communicators (partnership with Malmö University, Lund’s University and the region of Skåne and Västra Götaland, the county of Blekinge, the municipalities of Botkyrka, Eskilstuna, Kinda, Malmö, Blekinge institute of technology, Östsam and the National Board of Health and Welfare). 6835 tkr, 2009-2011. European refugee fund.

Avoidable mortality in the European Union: towards better indicators for the effectiveness of health systems (European partnership; with Erasmus University in Rotterdam, London School of Hygiene and Tropical Medicine and INSERM in Paris). European Union: Programme for community action in the field of Public Health 1150 tkr, 2008-2011.


Health, Migration and Integration. ((partnership with Malmö University, Lunds University, the municipalities of Bollebygds, Herrljunga, Marks, Svenljunga, Tranemo, Ulricehamn and the employment office of Borås. European Integration Fund. 3 635 000 2010-2012.

Academic hospital, Uppsala.

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Project 1: Studies of Avoidable mortality and diffusion of innovations
Ragnar Westerling, Marcus Westin, Anna Ohlsson, Marianne Hanning

According to the concept of studying "avoidable" mortality the health care may prevent mortality from a number of causes of death by means of preventive or therapeutic measures. An agglomeration of deaths from avoidable causes is a warning signal motivating further investigation of factors which may increase the possibilities to prevent these causes of death. The method has been used in several studies from different countries and has been applied to Swedish conditions by our research group. We have contributed to the development of the studies of avoidable mortality by integrating this concept into the field of quality and equity in health care, by introducing a gender perspective, by developing methods for small-area analyses, by performing comparisons with former Soviet Baltic states and by evaluating studies of avoidable factors preceeding death.

Our research group is one of the partners of a European research initiative aiming at further developing the method. The partners are Johan Mackenbach's group at the Department of Public Health at Erasmus University in Rotterdam, Martin Mekeé’s group at London School of Hygiene and Tropical Medicine and Eric Jouglas’ group at INSERM in Paris. We also collaborate with researchers in Spain, Germany and Estonia.

In this project a systematic review of the literature is performed in order to assess the extent to which different causes of death can now, in the light of available evidence, be considered avoidable. The project also include trend analyses as well as analyses of the timing of introduction of innovations, i.e. whether these coincides with measurable declines in deaths from the corresponding causes. Furthermore the potential influence of changes and variations in cause of death classification rules has been assessed and the time trends adjusted for changes in classification. The findings are presently used in a Delphi study involving experts from across Europe, in order to update a set of avoidable mortality-based indicators of the effectiveness of health systems which can be used in surveillance systems. We are presently also preparing an in-depth study of equity in treatment of heart failure in Sweden as part of this research field.
Project 2: Targeting non-obvious errors in cause of death statistics  
Lars Age Johansson, Harry Rosenberg, Charlotte Björkenstam, Ragnar Westerling

In our studies we have found considerable differences between death certificates and corresponding hospital discharge records. These differences have been further examined in order to find out whether this can be explained by the ICD selection rules. The ACME, a standard software for the selection of underlying cause of death was used to examine the compatibility between the underlying cause of death and the final main conditions. This is to our knowledge the first study of this kind. One third of the difference could not be explained by ICD selection rules. Adding hospital discharge data changed the underlying cause in 11% of the deaths.

We have performed a structured assessment of the causes of death based on 1200 medical acts. The death certificates identified to be problematic by the ACME-test were about twice as often as other death certificates questioned also in this assessment. For these death certificates a change of the choice of cause of death was suggested. Thus, this test should be useful in screening for potential quality problems in the cause of death statistics, which was the objective of Lars Age Johansson’s thesis. Furthermore, an in-depth analyses of the cause of death statistics for suicide and for prostate cancer has been performed. These assessments would be useful also since we in a methodological review have found considerable quality problems in studies aiming at evaluating the quality of causes of death statistics.

Project 3: Patients and physicians expectations on lipid-lowering drugs  
Per Lytsy, Gunilla Burell, Ebba Hallberg, Erik Berglund, Ragnar Westerling

Preventive treatment with statins is shown to significantly reduce the absolute risk of coronary heart disease; yet long-term compliance is poor. We have studied the expectations and factors that might affect expectations on statin treatment among patients. A total of 909 Swedish statins users were identified and a questionnaire was used to obtain information on the health of the study objects, cardiovascular risk factors, life style and expectations on statin treatment.

On average, statin treated patients believed that 53.6% of statin users would avoid a coronary event as a result of a five-year treatment period. Thus, patients highly over-estimate the general preventive effect of statins. Higher education lowered expectations, but factors commonly used to assess cardiovascular risk, such as age, sex, BMI and previous coronary heart disease, did not affect expectations at all. Patients’ expectations of their own possible treatment benefits were found to be more negative among those with a poor social network and patients not socially active. The health related habits of statin users were compared to non-statin users are analysed showing more concern with meal habits and exercise among statin-users. In a second questionnaire to 600 statins users the expectations were also related to questions about the adherence to the medication. The quantitative studies of the expectations on statin use is presently also combined with an interview study with patients newly prescribed statins.

The physicians expectations and attitudes towards statin treatment has also been analysed showing some gender differences in the prescription habits among physicians. This study is performed in collaboration with the pharmaceutical committees in the county of Uppsala and Gävle and supported by the Academic hospital in Uppsala and is included in Per Lytsy’s thesis together with studies of the patient’s expectations.
Project 4: Quality systems in hospital departments  
Stefan Kunkel, Urban Rosenqvist, Ragnar Westerling

In a recent thesis Stefan Kunkel has analysed what organisational factors that influence the quality of quality systems in medical care. Stefan Kunkel, has analysed interviews with heads and quality managers of hospital departments and surveys to about 600 such departments. The studies include both qualitative analyses and advanced statistical modelling, such as LisRel-analyses.

The result was a new framework with three organisational aspects of quality systems each with two sub-aspects: structure (resources and administration), process (culture and cooperation), and outcome (evaluation of goal achievement and development of competence). Strong positive relationships were confirmed among structure, process, and outcome. Quality systems could be classified into three organisational degrees. For instance, quality systems of high organisational degree often had adequate resources and administration as well as positive organisational cultures and high cooperation among different professions. Advanced designs required quality systems of high organisational degrees. Examples of such designs were coordination between departments, random check ups, and accreditation. The organisationally demanding quality systems had been implemented through cooperative implementation, that is, directed by managers while at the same time giving opportunities for staff to participate in planning and designing.

Project 5: Health and health care utilization among the unemployed  
Annika Åhs, Gunilla Burell, Mikael Skärlund, Ragnar Westerling

The last decades there have been considerable changes in the Swedish labour market. During the 1990s the level of unemployment increased considerably and the last years the level of sick leave has been high. In a number of studies we are analysing the risk factors for ill-health among different employment groups. In a recent study we have found that the unemployed experiences depressive mood and indications of potential depression already after a few months of unemployment to a higher extent than employed persons. This depressive pattern occurs irregardless of sociodemographic factors, economic situation and social network factors. However, the unemployed abstained from seeking medical care although when they perceived a need for that more often then the employed did. This was the case also when there were signs of depression or of the so called burned out syndrome. Presently we are analysing the social and health related factors that may predict the chances that the unemployed will be employed one year after the unemployment period started. Economic stress, ill health, and being an immigrant to Sweden seems to have predicted a higher risk of being unemployed also one year later.

Project 6: Health promoting information among immigrants to Sweden  
Achraf Daryani, Josefin Wångdahl, Ragnar Westerling

We are evaluating the impact of international health advisors on health and health care utilization among immigrants to Sweden. The health advisors are working with information to immigrants about health related factors and medical care in Sweden.

In the first part of the project a cross-sectional study of health and health care utilization and experiences of contacts with health advisors among refugees from Iraq has been performed as a post-doctoral project for Achraf Daryani. In another part a longitudinal study has been designed aiming at analysing the effects of contacts with health advisors on the health as well as on the health related knowledge and behaviours of Iraqi migrants to Sweden. Furthermore, focus group interviews are performed with immigrants from Somalia and Thailand, on health related factors in order to get a basis for planning interventions also for these groups. The
studies are performed in collaboration with Lund’s University and Malmö University. The projects are funded by the European Refugee Fund and Immigrant Fund, respectively. In the longitudinal study, Ragnar Westerling is jointly supervising doctoral student Susanne Sundell Lecerof.

Furthermore, a project has started in Uppsala, in which information about health issues and the Swedish health care is developed for study groups among immigrants in Uppsala. A study material has been translated to several immigrant languages and presently study group leaders are being trained. This project is supported by The Public Health Fund in Uppsala and the project is performed in collaboration with municipality of Uppsala, the county of Uppsala, the County Administrative Board and NBV (The Educational Association of the sobriety movement- a study circle organization).

**Project 7: Health and health care utilization among lone parent families**

*Marcus Westin, Claes Sundelin, Ragnar Westerling*

We have studied inequity in health and health care utilization with regard to whether parents in Sweden are single or couple. Besides traditional sociodemographic factors, economy and social network. In the project we also analyse what contribution the concept of social capital may give to the understanding of the health situation of the families.

Both single fathers and single mothers were reporting worse health than their married or cohabiting counterparts. However, single fathers had contact with a physician more frequently than married or cohabiting fathers, whereas single mothers had not. On the contrary, single mothers refrained from seeing a physician, despite a medical need, much more often than non-single mothers. Low level of social capital, when adjusted for socio-economic and sociodemographic variables, was clearly and positively associated with less than good self-rated health. Social capital was unevenly distributed between single and couple mothers but not between single and couple fathers. The thesis also showed, that both lone parenthood and low level of social capital influences also the children’s mental health negatively. The analyses were based on SDQ (Strengths and Difficulties Questionnaire) measures of the children’s mental health. Presently, the social and health related situation of the families is followed up in a longitudinal study.

**Project 8: Unhealthy life habits and vulnerability among school-children**

*Ulrika Paulsson, Birgitta Edlund, Ragnar Westerling*

The objective of this project is to study factors that influence health behaviours in general among schoolchildren. We analyse the associations between different health related behaviours, socio-demographic factors and psychosocial vulnerability. Health related behaviours included in the study are alcohol habits, smoking, exercise and food habits. Furthermore, we analyse the influence of health information in school on these different factors.

The study is based on two questionnaires to school children in school classes 7-9. The first is the survey Life and Health conducted by the county of Uppsala. This material includes data from about 10 000 pupils in 2007. The second is a questionnaire developed for this project and directed to a strategic sample of schools in Sweden. Structural equation models is used in order to analyse the relation between sociodemographic factors, psychosocial vulnerability factors, health behaviours in general as well as specific health related behaviours. The studies will be included in a doctoral thesis by Ulrika Paulsson. The preliminary results shows that a general unhealthy behavioural factor is related to the self-esteem and well-being of the children, factors that differ between gender and socioeconomic position.
Project 9: Bicycle helmet use among school-children
Peter Berg, Claes Sundelin, Ragnar Westerling

We have analysed the use of bicycle helmets among school children as well as the associations with the involvement of parents and school. There was a clear link between parental involvement, children’s attitudes and children’s helmet use. However, parental involvement decreased as the children grew older. An intervention study has been performed in a Swedish municipality – Bålsta – aiming at increasing the voluntary bicycle helmet use among school children. A nearby municipality is a reference area in the study. The activities has been conducted towards parents, children and schools. There has been a significantly higher increase of bicycle helmet use among schoolchildren in ages 11-14 years in the intervention community compared to the reference community. We have continued the evaluation after the introduction of a bicycle helmet law for children under the age of 15. The helmet law seemed to have had limited effect on the children’s helmet use, especially when it was not combined with intervention campaigns like those performed in our study in Bålsta. In a recent study we have further analysed the impact of socioeconomic and psychosocial factors on helmet use as well as the association with other health related behaviours, such as alcohol, smoking, exercise and eating habits.

Project 10: Health system intervention for persons on long term sick leave
Social Medicine department/CEOS, Academic hospital.
We are involved in intervention projects for persons on long term sick leave at the Social Medicine department/CEOS at Academic hospital (See other part of Social Medicine presentation :Vitalis and Samklang).

Project 11: Implementing safety promotion in an industrial working environment
Hans Nordlöf, Katarina Wijk, Ulrika Winblad, Ragnar Westerling

In a recently started doctoral project for Hans Nordlöf the process of change and learning when implementing a safer work environment in an industrial company is explored. The study is performed in a large Swedish steel industry in collaboration with University of Gävle. The project is organized as a case study of the implementation of a Behavioural Based Safety program and the enabling and obstructing factors in the process of change of framework for the safer work environment. The study includes analyses of documents, questionnaires to and interviews with key persons as well as observations at strategic meetings and of working processes at the industry.