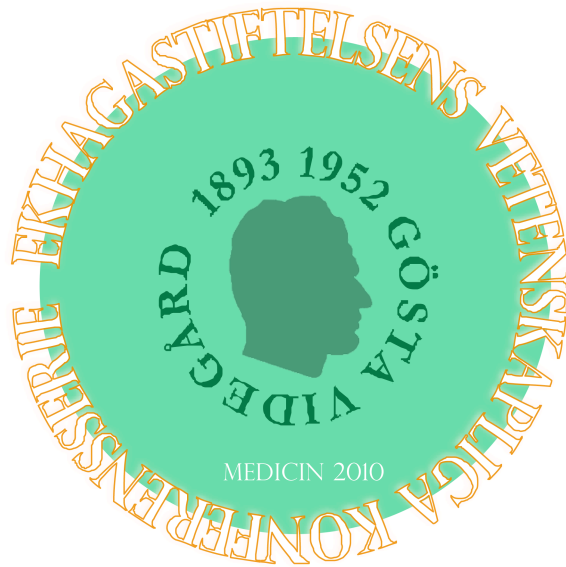


EKHAGASTIFTELSENS KONFERENSSERIE

Medicin 2010

THE EKHAGA FOUNDATION CONFERENCE SERIES: MEDICINE 2010



PROCEEDINGS

APRIL 22-23, 2010: VILLA KÄLLHAGEN, STOCKHOLM, SWEDEN

*Nu dricker jag visdom ur granarnas saftfyllda krona,
nu dricker jag sanning ur björkens förtorkade stam,
nu dricker jag makt ur det minsta och spädaste grässtrå:
en väldig beskyddare räcker mig nådigt sin hand.*

Edith Södergran, oktober 1922

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Preamble

The Ekhaga Foundation supports research and education within the fields of complementary medicine and ecological farming. The Board has increasingly recognised the need, not only to support research, but also to facilitate dissemination of research and to enhance communication between the various stakeholders. These aims will be met by a series of Ekhaga Conferences, providing a platform for leading researchers, politicians, health care decision-makers and media representatives to meet and informally discuss novel research findings, consequences for health services provision and challenges for implementation strategies.

This first conference was devoted to *Integrative Care* and *Gut Ecology and Allergy*. During the conference, internationally acknowledged experts presented state of the art research and perspectives for the future. In addition, some of the research projects which have received major funding from the Foundation during the last decade were presented.

Around 60 speakers and participants were invited to participate in the two-day conference (April 22-23, 2010) at the *Villa Källhagen* in Stockholm, known for its beautiful surroundings and excellent cuisine. The high standard scientific core of the conference was accompanied by cultural events, specifically developed for the occasion in the spirit of the initiator of the Ekhaga Foundation, Gösta Videgård.

These Conference Proceedings include a short introduction to the Ekhaga Foundation, followed by an introduction to some of the research areas which have received funding. The spirit of the presentations is indicated by excerpts from the keynote presentations. The scientific programme and the invited session abstracts are all included in the proceedings. A lay scientific summary in Swedish of the Ekhaga Foundation research projects is also attached.

More information about the Ekhaga Foundation, the Conference Series and all previously supported research projects can be found at the Ekhaga Foundation homepage: www.ekhagastiftelsen.se

We hope you will enjoy the proceedings and the other outcomes of this conference,

Torkel Falkenberg Wolfgang Doerfler Bengt Björkstén

Stockholm, September 2010

An Introduction to the Ekhaga Foundation

The Ekhaga Foundation (*Ekhagastiftelsen*) provides financial support to initiate and pursue research in two main areas, i.e. ecological farming, and complementary medicine. The Foundation was initiated in 1944 by the construction engineer and business man Gösta Videgård. He strongly believed in the healing forces of a natural lifestyle and the use of natural, organic compounds, rather than pharmaceutical drugs. He was also devoted to the value of biodynamic and ecologic farming. As a consequence, these are the main research areas supported by the Ekhaga Foundation. Hence, in line with Gösta Videgård's will, the Ekhaga Foundation supports efforts to strengthen sustainable agriculture based on an ecological and biodynamic approach and to scientifically bridge the gap between complementary and conventional medicine. This is done by supporting well-designed high-quality research pilots and full projects, employing qualitative and/or quantitative research approaches. The quality of the submitted research project proposals are assessed by a Board of scientific advisors. Emphasis in the assessments is on novelty, design, methodology, competence of the applicants and relevance to the aims of the Ekhaga Foundation. In particular, innovative pilot projects are encouraged.

Over the years, the Foundation has played a major role in Sweden for research related to ecologic agriculture and complementary medicine, by providing financial support amounting to more than 70 million Swedish SEK over the past 10 years. This funding has been essential for research within the two areas, as it is difficult to receive support from other, more traditionally working sources of research funding. Hence, in essence, the Foundation has been instrumental in building Swedish research capacity in the areas of ecological farming and Complementary Medicine. This is evident from numerous published scientific publications and doctoral theses acknowledging financial support from the Ekhaga Foundation.

The Foundation aims to support the best research internationally within complementary medicine and ecologic farming. As a consequence, considerable support has been given to research outside Sweden. In particular, an interdisciplinary project at the Louis Bolk institute

in the Netherlands, should be mentioned, in which experts from systems biology, anthroposophical medicine and several other areas jointly develop methods to evaluate individually based medicine as a complement to the evaluations on a group level. The latter is the customary approach within Conventional Medicine. Diabetes was selected as a model disease to study.

In conclusion, the Ekhaga Foundation has been a major funding contributor to otherwise insufficiently funded research areas and continues to be so. In order to further promote Complementary Medicine and Ecological Agriculture in the spirit of Gösta Videgård, a forum is now being created, where researchers, decision makers and other stakeholders can meet and share new knowledge, experience and implementation strategies. This First Ekhaga Conference will hopefully be followed by several more in a series of conferences, covering topics alternating between the two major interest areas of the Foundation. It is noteworthy that the contributions of the Ekhaga Foundation are very timely, given the international upsurge in the interest for Ecological Farming and Complementary Medicine. This attests to the visionary capacity of Gösta Videgård.

Complementary Medicine and Integrative Care Research

The authoritative National Institutes of Health's Center for Complementary and Alternative Medicine (NCCAM), in the United States defines Complementary Medicine as procedures employing diagnostic criteria and treatments that are to some extent possible to describe with the same terminology as for Conventional Care (in contrast to Alternative Medicine) and which are often used together with conventional medicine¹. Combinations of such treatment approaches are often referred to as integrative medicine or care. It can be defined as a care model focusing on health and healing, rather than on disease and symptomatic treatment. Integrative medicine includes bio-medical, social, psychological and, when relevant, spiritual interventions (e.g. religious service by a priest).

¹National Institutes of Health's Center for Complementary and Alternative Medicine (NCCAM): <http://nccam.nih.gov/health/whatiscam/> Accessed September 20, 2010

Gösta Videgård held strong confidence in the ideas and therapies that were provided at the health resort Cademario which at that time was advocating a concept of medicine which had a focus on prevention of disease, a more natural lifestyle and the use of natural, organic compounds and gentle therapies. He was particularly interested in therapies used under more scientific forms and which were provided by licensed physicians. This movement has until recently been predominantly present outside the ordinary health care system. In recent years however, it has increasingly been included in mainstream health care in many countries and is now commonly considered to be a component of Integrative Care. Indeed, one of the leading evidence-based health care researchers, Muir Gray, discusses modernization of health care in terms of post- modern medicine, in which the characteristics of modern medicine are taken into account while at the same time adapting to social concerns and trends², e.g. Integrative Care. Today, health care providers in many countries follow this trend to consider medicine in a more pluralistic and inclusive way. Such approaches are also endorsed by the World Health Organization through e.g., recent World Health Assembly Resolutions³. In a presentation from the County Council of Östergötland at the conference, Anna Kullberg discussed this trend on both the political and professional levels, presenting initiatives to inform current health care. Various means of education, information and communication strategies have been employed by the County Council to facilitate a dialogue among the different stakeholders involved in issues pertinent to the development of evidence-based Integrative Care. Today, a few complementary medicine modalities (e.g. manual therapies and anthroposophic care) are provided in combination with standard medical procedures for the benefit of interested patients, mainly within the preventative/ rehabilitation health care services.

In his presentation, Professor Harald Walach explained that most Integrative Care models include complex interventions, which make use of an array of specific and non-specific elements of care with varying efficacy. When complex interventions are deconstructed and components are isolated and tested individually and compared to placebo, using the same model as drug companies use to evaluate their pharmacological substances, superior

² Gray JAM: *Evidence-based healthcare*, 2nd edn. Edinburgh; New York: Churchill Livingstone; 2001

³ World Health Organization, The Sixty-second World Health Assembly, *Traditional Medicine*. WHA62.13, Agenda item 12.4; 22 May 2009

efficacy compared to placebo is often difficult to prove. This fact has been used as a major argument against the provision of complementary medicine within conventional health care. The problem with such a narrow perspective, often paraphrased as the “hypotheticodeductive model”⁴ is that this conventional approach is merely one mode of science, and not necessarily the one that is always the best for the evaluation of every medical and health care procedure. Indeed, the placebo-controlled, double-blind randomized clinical trial is but one evaluation procedure that is used successfully for the development and patenting of new drugs. Despite its prominence, this is not the only way for medicine to develop, as most health technology assessment boards internationally acknowledge. As a matter of fact, if such rigid and narrow requirements for evaluation were to be applied to current medicine, many treatments, especially the more complex ones such as surgery and nursing, would not meet the criteria. Indeed, Professor Walach concluded his talk by saying that for the evaluation of complex interventions, a combination of research methods within a pragmatic clinical trial procedure is more appropriate. For example, it would be important to compare an Integrative Care option with “treatment as usual”, assessing not only “hard data”, such as time to recover, but also wellbeing and other “softer” aspects of medicine. Despite the difficulty in proving specific effects of CAM interventions, when evaluated as a package of care they often prove very useful and sometimes even superior to conventional ones.

The invited speaker, Professor Finn Bengtsson, is a member of the Swedish Parliament and an opinion-leading politician engaged in Integrative Care health care reform in Sweden. In his talk, he emphasized that future regulation and legislation of the Swedish health care system may give priority to patient safety in assessments of technology, rather than merely requiring proof of efficacy. This, together with improved governmental regulation and quality assurance, including approved educational standards of complementary medicine practitioners, would enable Integrative Care initiatives to a larger extent in Swedish health care in the future. This is similar to recent changes in health care legislation seen in Norway.

⁴ Brody, Thomas A. *The Philosophy Behind Physics*, (Luis De La Peña and Peter E. Hodgson, eds.) Springer Verlag; 1993

There are indications that complementary medicine is becoming part of the general health care system. The emergence of integrative healthcare is linked to a need to adapt to the requirements of evidence-based medicine. This has led to new investigative approaches and to the development of novel infrastructures to support the management of the complex integrative healthcare services. In this process, the Ekhaga Foundation has supported strategic research projects, involving not only conventional clinical trial methodology, but also qualitative enquiry, medical management and health economic approaches. Thus, the Foundation has provided a broader basis for evidence-based decision making. Nowadays, this approach is also supported by major health technology assessment boards such as the leading National Institute of Clinical Excellence and Health (NICE) in the UK responsible for providing national guidance on promoting good health and preventing and treating ill health. Both NICE and German authorities (German Federal Committee of Physicians and Statutory Sickness Funds) recently approved of acupuncture as a treatment option for chronic back pain. The decision was based on convincing pragmatic clinical trials, which proved that acupuncture, but also sham acupuncture, is twice as effective as standard conventional care. The decision by NICE shows that, despite the surprising finding that both acupuncture and sham acupuncture are superior to conventional care, it is more important to know that a treatment intervention as a package is effective, than to understand the mechanism of its specific action, i.e. how it works. This novel approach in decision making has created a stir in the international scientific community which, as pointed out by Professor Harald Walach in his talk, until now has emphasized efficacy rather than effectiveness.

It is noteworthy that similar research projects, addressing the effectiveness of Integrative Care, has been supported by the Foundation. This attests to the innovative and somewhat controversial position of the Foundation among more conventional research funders in Sweden. The intention of the Foundation is to support high quality but often controversial pilot projects which have the potential to attract funding for future large-scale research projects with conventional research funders as major sources of financial support.

Internationally, there are many health resorts like Cademario and complementary therapies are integrated in care in many countries, including China and the US. An increasing number of hospitals, health care organizations and health insurers are developing models that integrate complementary therapies for their patients and customers. Examples of US-based

major hospitals and medical institutions providing specialized Integrative Care include Beth Israel Hospital New York, University of Maryland, Stanford University, Cedars-Sinai and Memorial Sloan Kettering hospitals, to mention but a few. This international trend may very well indicate the need for a new paradigm of reorganized health care that aims to create wellness and facilitate behavioural changes in individuals by providing tools for change and transformation. To chiefly focus on disease control and symptomatic relief reflects a limited perspective when it comes to managing most chronic diseases. Several of the invited speakers, including researchers and politicians, identified prevention, home-based care, safety concerns, comparative effectiveness research and health economy assessments as priority research areas.

Professor Walach pointed out that in a truly integrative approach, conventional medicine and complementary therapies learn about their own limitations and both contribute to a new patient-centred holistic care model that does not regard human beings as simply complex bits of machinery to be fixed mechanically but as developing individuals.

The international trend towards Integrative Care services is not reflected in Sweden, where Integrative Care is not an established service and where there are very few clinics or teams providing Integrative Care. However, the Swedish Association of Local Authorities and Regions (SKL) reported that 16 of 22 county councils in Sweden offer acupuncture and massage, and 13 county councils also deliver complementary therapies, such as qigong or tai chi. The few examples of comprehensive models of Integrative Care within the health care system in Sweden include the non-profit foundation Vidarkliniken and the Emergency Department at Huddinge, Karolinska Hospital Huddinge. The former is an anthroposophical hospital in Järna south of Stockholm, to which patients are referred from various parts of Sweden. The latter department includes a Centre for Integrative Care which has been in existence since 2004. The Centre was initiated by nurses at the Emergency Department and has subsequently expanded to provide e.g. massage and therapeutic touch linked to research projects in which the procedures are investigated with financial support from the Ekhaga Foundation. The Centre was presented at the conference by its Director Gunnar Öhlén.

There are several other complementary medicine projects which receive significant support from the Ekhaga Foundation, e.g. acupuncture, Qi Gong and tactile massage for various conditions, such as Inflammatory Bowel Disease, Infantile Colic, Menopausal Syndromes and Back-Neck pain. The Foundation was also first to fund research on the Rosen method, where the first published research results ever show that this is a treatment intervention of potential for conventional health care and high quality nursing. Further research into these methods is clearly warranted. Some of these research projects were presented by the project leaders at the conference, and abstracts of their presentations are included in this booklet. In addition, more information about similar projects not covered by the conference can be found at the website of the Foundation, www.ekhagastiftelsen.se.

Gut Ecology

Over the past 10 years, the Ekhaga Foundation has been a major contributor to the study of Microbial Ecology. Already more than 100 years ago, the Russian scientist Elia Metchnikoff suggested that the bacteria present in the gut are essential for health and wellbeing. His observations were more or less forgotten for many years, particularly with the advent of antibiotics, which for some years were thought to solve most of the problems related to infectious diseases. Over the past decade, there has been a renewed interest in the role of the gut microflora, as it has become obvious that antibiotics are not the solution to infections. Furthermore, it has been shown that many diseases associated with an affluent lifestyle are increasing dramatically. The latter diseases include allergies, diabetes and Inflammatory Bowel Disease. Recent research suggests a causal relationship with an altered composition of the gut bacteria, particularly in infancy. There seems also to be a strong relationship between obesity and the composition of the gut flora.

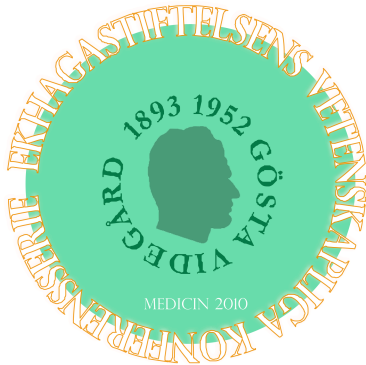
The gut flora, "The Microbiome", comprises 10 times as many organisms as there are cells in the human body. The over 1000 different types of bacteria, each with numerous different strains, comprise a complex eco system, which is as complex as that of a jungle. The number of genes contributing to this eco system is 30 times larger than that of the human genome. A modern lifestyle has resulted in changes in this "inner ecosystem" and this in turn seems to

be associated with an increase in a number of “Immunologically Mediated Diseases of Affluence”. With the advent of novel, powerful tools for molecular biology, the gut microbiota has become accessible to in-depth analysis.

The Ekhaga Foundation was a forerunner in Sweden in supporting this novel area of research and as the largest single provider of research support has contributed to the prominent position of Swedish researchers in the mapping of the human eco system and its consequences for health and disease. Thus, considerable support has been given to more than 10 projects ranging from basic research to clinical trials. Basic research aims to identify and define the numerous gut bacteria and how they interact with each other and with the host. This research forms a basis for identification of probiotic bacteria that would promote health in humans and domestic animals.

Examples of clinical research includes studies of the development of the gut microbiota after birth in different environments and the impact of human breast milk on the developing gut microflora. The Foundation also provided major funding to a controlled study, in which the risk of allergy development was reduced by the administration of probiotic lactobacilli to pregnant mothers during the last month of gestation and then to their babies daily for one year. The administration of bacteria reduced the risk of developing allergic eczema, particularly in babies of allergic mothers, and indicates the potential of future allergy prevention by mixtures of probiotic bacteria. In a similar study, supported by the Foundation, it was found that the administration of marine fatty acids to pregnant women considerably reduced the risk for their babies to develop allergy.

The Foundation has also been the major supporter of research related to the role of the microbial environment in agriculture. One of these projects has a direct bearing on Integrative Medicine. Thus, major support was given for several years to study lactobacilli in the gut of honey bees and ongoing research aims to define their role for health-promoting effects of honey. In one of these projects, the wound-healing capacity of honey is being studied.



Ekhagastiftelsens konferensserie:

Medicin 2010

The Ekhaga Foundation Conference Series: Medicine 2010

22-23 April 2010: Villa Källhagen, Stockholm, Sweden

Programme

Day 1 - Thursday 22 April

09:00 – 10:00

Arrival & Registration

Scientific programme: **Integrative Health Care** (*conference language English*)

10:00 – 10:10

Welcome and Conference Opening

Björn Edgren (Chairman, Board of Directors, Ekhaga Foundation)

10:10 – 10:20

General information and introduction to Integrative Health Care

Torkel Falkenberg (Associate Professor, Research group for Studies of Integrative Health Care, Division of Nursing, Dep. of Neurobiology, Care Sciences and Society, Karolinska Institutet & Member of the Research Evaluation Board of the Ekhaga Foundation) & Wolfgang Doerfler (Network Integrative Medicine, Östergötland County Council, Linköping, Sweden)

10:20 – 10:45

Presentation of the Ekhaga Foundation; Strategies and Achievements

Bengt Björkstén (Professor emeritus, Institute of Environmental Medicine, Karolinska Institutet & Chairman Research Evaluation Board of the Ekhaga Foundation)

10:45 – 11:05

Integrative Health Care: From Vision to Implementation in Sweden

Finn Bengtsson (Professor, Moderate party, Member of the Swedish Parliament) & Anna Kullberg (MSc, Network Integrative Medicine, Östergötland County Council, Linköping, Sweden)

11:05 - 11:15

Short coffee/tea break

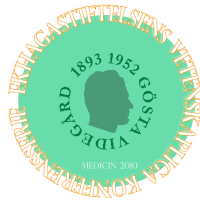
11:15 – 12:15

Challenges and Opportunities with Integrative Care

Harald Walach (Professor, Institute for Transcultural Health Studies –IntraG, European University Viadrina, Frankfurt-Oder, Germany)

12:30 – 13:30

Lunch Break



13:30 – 14:15

Integrative Health Care Services: the Swedish Perspective

Gunnar Öhlén (PhD, Faculty of Medicine, Director of the Emergency Department, Karolinska Hospital, Huddinge, Sweden)

14:15 - 15:15

Innovative deliveries of CAM: Contemplative enquiry and the internet

Walter Osika (PhD, Faculty of Medicine, Stressforskningsinstitutet, Stockholms Universitet) & Dan Hasson (PhD, Faculty of Medicine, Institutionen för fysiologi och farmakologi, KI & Stressforskningsinstitutet, Stockholms Universitet)

15:15 – 15:30

Coffee/tea break

15:30 – 17:45

Presentation of Four Ekhaga Foundation Financed Scientific Projects
(30 min/project):

● **Integrative Medicine in Primary Health Care**

Tobias Sundberg (PhD, Faculty of Medicine, Research group for Studies of Integrative Health Care, Karolinska Institutet)

● **Polycystic Ovary Syndrome (PCOS) – the Female Metabolic Syndrome. Effects of Electroacupuncture and Physical Activity**

Elisabet Stener-Victorin (Associate Professor, The Sahlgrenska Academy, Department of Physiology, Gothenburg, Sweden)

● **IBS/IBD and CAM utilisation**

Lena Oxelmark (PhD, Division of Nursing, NVS, KI)

17:00 - 17:15

“Take a breath” break

● **Acupuncture reduces crying in infants with infantile colic – a randomized, controlled, double blind clinical study**

Kajsa Landgren (RN, Lic Med Sc, Lund University, Sweden)

17:45 – 18:15

Panel Discussion:

“How to Establish and Reinforce Academic Research on Integrative Care and its Implementation within Health Care”

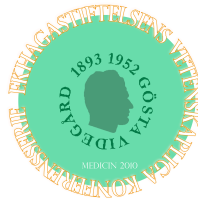
All speakers

Summary of the Day and Closing Remarks

Torkel Falkenberg, Wolfgang Doerfler

19:00 –

Dinner and cultural events



Day 2 - Friday 23 April

- 07:30 – 08:00 *Gentle wake-up (Qi-Gong)*
- 08:00 – 09:00 *Breakfast*
- Vetenskapligt program: **Mikrobiell ekologi/inflammation och allergi**
(conference language Swedish. På svenska)
- 09:00 – 09:10 **Sammanfattning av gårdagen**
Torkel Falkenberg, Wolfgang Doerfler
- 09:10 – 09:45 **Mikrobiell ekologi – en översikt**
Bengt Björksten
- 09:45 – 12:00 Presentation av fyra Ekhaga finansierade forskningsprojekt
(30 min/projekt):
- **Betydelsen av oligosackarider i bröstmjölken och tarmmikrobiota för utvecklingen av immunreglering och allergi**
Eva Sverremark-Ekström (Docent, Wenner-Grens institut: Immunologi Stockholms Universitet)
 - **Kan livsstil skydda mot allergiutveckling?**
Johan Alm (Med Dr, Sachsska Barnsjukhuset, Södersjukhuset samt Inst. för klinisk forskning och utbildning, Södersjukhuset, Karolinska Institutet)
- 10:45 – 11:00 *Kaffepaus*
- **Tarmfloras roll vid hälsa och sjukdom**
Lars Engstrand (Professor, Smittskyddsinstitutet, Karolinska Institutet)
 - **Maten och mikroberna på bondgården – vad är det som förmedlar skyddet mot allergi?**
Agnes Wold (Professor, Institutionen för biomedicin, avdelningen för infektionssjukdomar, Sahlgrenska Akademin, Göteborgs Universitet)
- 12:00 - 12:30 **Mikrobiell ekologi, prebiotika och probiotika; fakta, fiktion och framtid**
Bengt Björksten
- 12:30 - 12:40 **Sammanfattning och avslutning av konferensen**
Torkel Falkenberg, Wolfgang Doerfler & Bengt Björksten
- 12:45 – 14:00 *Lunch, avresa*



SPEAKERS

Day 1, 22 april:

- **Finn Bengtsson**

Professor, Moderate party, Member of the Swedish Parliament

- **Bengt Björkstén**

MD, Professor Emeritus of Allergy Prevention and Pediatrics, Institute of Environmental Medicine, Karolinska Institutet. Chairman Research Evaluation Board of the Ekhaga Foundation, Stockholm, Sweden

- **Wolfgang Doerfler**

MD, Head Department of Neurology, Motala Hospital, Network Integrative Medicine, Östergötland County Council, Linköping, Sweden

- **Björn Edgren**

Chairman, Board of Directors, Ekhaga Foundation, Stockholm, Sweden

- **Torkel Falkenberg**

Associate Professor, Head Research Unit for Studies of Integrative Health Care, Karolinska Institutet, Stockholm and Head, The Vidar Institute Foundation, Järna, Sweden. Member of the Research Evaluation Board of the Ekhaga Foundation

- **Dan Hasson**

RN PhD (Faculty of Medicine), Department of Physiology and Pharmacology, Karolinska Institutet & Stressforskningsinstitutet, Stockholms Universitet

- **Anna Kullberg**

MSc, Network Integrative Medicine, Östergötland County Council, Linköping, Sweden

- **Kajsa Landgren**

RN, Lic Med Sc, Lund University, Sweden

- **Walter Osika**

MD, PhD, Faculty of Medicine, Stressforskningsinstitutet, Stockholms Universitet

- **Lena Oxelmark**

RN PhD (Faculty of Medicine), Department of NVS, Division of Nursing, Karolinska Institutet

- **Elisabet Stener-Victorin**

Associate Professor, The Sahlgrenska Academy, Department of Physiology, Gothenburg, Sweden

- **Tobias Sundberg**

PhD (Faculty of medicine), Research Unit for Studies of Integrative Health Care, Karolinska Institutet, Stockholm, Sweden

- **Harald Walach**

Professor, Psychologist, Institute for Transcultural Health Studies –IntraG, European University Viadrina, Frankfurt-Oder, Germany

- **Gunnar Öhlén**

MD, PhD (Faculty of medicine), Head, Department of Emergency Medicine at Karolinska University Hospital, Stockholm, Sweden



SPEAKERS

Day 2, 23 april:

- **Johan Alm**

Leg läkare, överläkare, Med Dr, Sachsska Barnsjukhuset, Södersjukhuset samt Inst. för klinisk forskning och utbildning, Södersjukhuset, Karolinska Institutet

- **Bengt Björkstén**

MD, Professor Emeritus of Allergy Prevention and Pediatrics, Institute of Environmental Medicine, Karolinska Institutet. Chairman Research Evaluation Board of the Ekhaga Foundation, Stockholm, Sweden

- **Lars Engstrand**

Professor, Smittskyddsinstitutet, Karolinska Institutet

- **Eva Sverremark-Ekström**

Docent, Wenner-Grens institut: Immunologi Stockholms Universitet

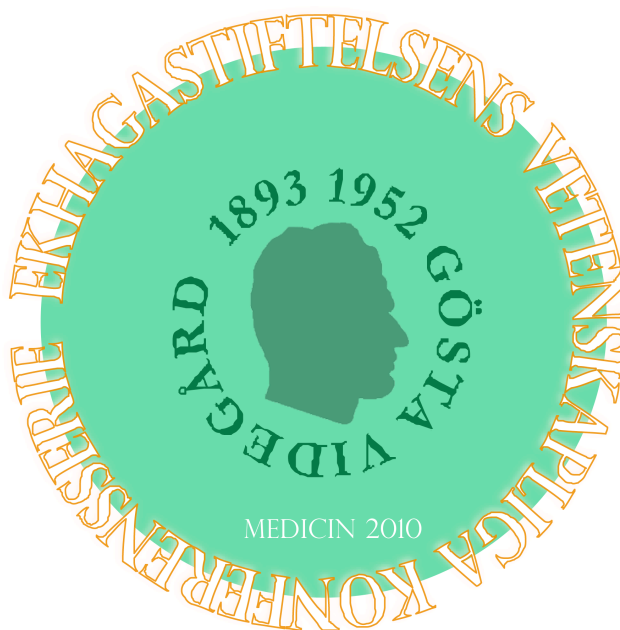
- **Agnes Wold**

Professor, Institutionen för biomedicin, avdelningen för infektionssjukdomar, Sahlgrenska Akademin, Göteborgs Universitet

EKHAGASTIFTELSENS KONFERENSSERIE

Medicin 2010

THE EKHAGA FOUNDATION CONFERENCE SERIES: MEDICINE 2010



ABSTRACTS

Integrative Health Care: From Vision to Implementation in Sweden – an example from the County Council in Östergötland County

*Anna Kullberg MSc, Network Integrative Medicine, Östergötland County Council,
Linköping*

Correspondence: Anna.Kullberg@lio.se

I will discuss implementing Integrative Health Care in the Swedish health care system in terms of four dimensions:

Political Dimension

As spokespersons for the citizens and buyers of health care, the politicians initiated the discussion of integrative health care in Östergötland County. Many citizens wish to be treated using integrative as well as conventional methods of health care. The Balanced Scorecard as formulated by the County Council delegates in Östergötland says: "Patients who so desire, should be offered some evidence-based complementary health care as a complement to the provision of regular health care." Currently, the County Council of Östergötland has contracts regarding anthroposophic medicine, chiropractic and naprapathy.

Knowledge Dissemination Dimension

The health care sector is knowledge-intensive and the demand for evidence is great. We have arranged a number of seminars to gain more knowledge about different integrative methods, how they work and when they are most useful. Increasing people's knowledge is essential in terms of gaining acceptance and support from the professionals.

Health Promotion Dimension

The Swedish National Board of Health and Welfare allows integrative healthcare to be used to a much greater extent for health promotion purposes than for curative ones. Many integrative methods are already part of health promotion. If we use the health promotion perspective when implementing integrative healthcare, we have a much larger arena to act on.

Networking Dimension

In Östergötland County, we have established a Network for Integrative Medicine. There are as yet still only a few professionals within the health care sector who are interested in this integrative field, so we need to meet, discuss possibilities and problems and how to solve them. Networking is very important to encourage health care personnel to implement integrative methods.

Challenges and Opportunities with Integrative Care

Harald Walach, Institute for Transcultural Health Studies, Europa Universität Viadrina, Frankfurt (Oder), Germany *Correspondence:* walach@euv-frankfurt-o.de

For about 20 years now, a variety of „alternative“ or „complementary“ medical approaches have been researched by a fringe group of clinical researchers. This movement was, unlike other developments in medicine, entirely patient driven. Patients demanded different treatment options mainly for three different reasons: 1) Conventional treatments did not help their mainly chronic, functional conditions; 2) Conventional treatments did help, but at the cost of severe or unwanted side effects; 3) Due to a generic shift in culture well educated people wanted their medical treatment to reflect their holistic world-view.

Only very recently has this movement led to some academic structure building: endowed chairs, positions paid for by research grants, training courses for medical students and postgraduates are starting to proliferate, together with some dedicated strands of research funds. The mainstream has woken up to this new development and a new movement is born: Integrative Medicine. Defined by the National Center for Complementary and Alternative Medicine at the National Institutes of Health in the US as evidence based treatment options that have hitherto not been available through conventional treatment, a new, pragmatic consensus arises: Everything that has stood the test of rigorous evaluation through randomised studies can be offered and is now “integrated” into a modern, evidence based health care. This works for some approaches well, especially, where elements can be standardised and used according to the pharmacological model. It becomes increasingly difficult, where an alternative or complementary approach comprises a whole set of interventions. Although also such complex interventions can be studied in randomised trials as whole treatment packs and compared to standard care, such pragmatic trials are comparatively costly and difficult to organise. More importantly, only the public purse really has any interest in knowing the outcome of such studies, since the active comparator, conventional care, would normally constitute some sort of pharmacological treatment. Those who have a stake in funding efficacy trials, pharmacological companies, have no interest in learning whether complex complementary interventions are equal to conventional care. On the few occasions, where this hypothesis has been tested, the German acupuncture trials and a recent US study for instance, conventional care was clinically and statistically significantly less efficacious than acupuncture placebos. The demand of evidence based knowledge as a basis for integration of complementary approaches into conventional care is, when seen from a distance, rhetoric of power and an argument that has not reflected its own preconditions well. While complementary approaches pose a challenge to the mainstream model to rethink its own foundations, the call of integration on the basis of evidence is a colonializing attempt that is based on the unchallenged precondition that the current paradigm of medicine is not only good enough, but also the best one available. A truly integrative approach would be one in which conventional medicine and complementary therapies learn about their own limitations and contribute to a completely new medical model: patient centred holistic care that does not treat the human being as complex machinery whose mechanics have to be fixed but as a developing individual.

Integrative Health Care Services: the Swedish Perspective

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The last 10 years has been very positive for the development of Integrative Health Care services around the world. As a representative for Emergency Medicine (EM) I see the world wide development of the speciality of EM as an important development returning to a more holistic view on Health Care needs. Now more than 50 countries in the world recognise the speciality.

In order to develop a true Integrative Health Care processes into our departments today I also believe that it is important that we in Western medicine connect back to the knowledge base concerning health that has been built up during 1000 of years. Some of the fundamentals described by Hippocrates 400 years BC have been disregarded over the last century. In both China and India for example the traditional knowledge base has been “kept alive” and is now gradually being evaluated and integrated with Western medicine. Such a development can contribute to a more holistic care and professional development that can help to reduce staff turnover and could contribute to the effectiveness of care.

I am writing this whilst travelling on a train in Europe and I find that sitting opposite me is a very experienced intensive care nurse. Asking her what she feels could be done to improve the conditions for more holistic hospital care in Europe. I receive the answer, with a smile and without hesitation: “Tear down the ivory towers of the clinical departments!” Tearing down the Ivory Towers, is that what we will be doing for the next decade? For the last 100 years we have established hospital departments based on a knowledge base which is mostly of similar age. The time has surely come to reorganise hospital care from a more holistic patient perspective based on old and new knowledge of today. The patient will need a care team that can take care of the whole patient and not just a single part.

“We must not look back in hopes of recreating what once was. We must look forward and create what has never been.”

Integrative Health Care Services: the German Perspective⁵

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The presentation will consist of three major parts: first, a brief overview of the situation of CAM in Germany, second and third, some insights into the history of our centre at Munich and our implementation of integrative medicine.

The current German situation of complementary and alternative medicine is traditionally referred to as naturopathy. An estimated 50% of the German population utilized any CAM therapy at least once within the previous 12 months. The attitude of medical schools towards the benefit of these methods is fairly positive depending on the specific CAM method. CAM is delivered predominantly in out-patient units (medical doctors, health practitioners or at some university hospitals) with an increasing number of providers with additional CAM qualifications. There are eight professorships of CAM affiliated to universities. Public funding of CAM research is limited; the German Social Code offers a special way of support to Statutory Sickness Funds in form of 'Modellvorhaben'. For some years a network of academic working groups has been developed focusing on education, research and health care.

The second part of the presentation will focus on the situation of our own institution. Starting in 1982 as 'Münchener Modell' the Munich centre evolved to the Centre of Complementary Medicine Research at the university hospital of the Technical University Munich. It was financially supported by the State of Bavaria. Effective January 1, 2010, a chair of naturopathy and complementary medicine was established by the faculty of medicine and sponsored by the Bavarian government and the Erich Rothenfußer Foundation. The centre will be referred to as 'Competence Centre for Complementary Medicine and Naturopathy'. The existing out-patient unit offers services for health promotion and disease management by distance lifestyle counselling among other things. It is achieved with lifestyle change programs by self-care and physician-delivered consultations and therapies. Among other indications the therapeutic focus lies on cardio-metabolic risk reduction and tumour-related fatigue therapy.

⁵ Due to the consequences of the ash clouds over Sweden, Dr Jack was not able to present this abstract orally at the conference.

Integrative Medicine in Primary Health Care

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Background

The integration of complementary therapies (CTs) with an emerging evidence base into conventional care services is common, despite limited evidence as to the clinical effectiveness of comprehensive models delivering such care, i.e. integrative medicine (IM). Low back and neck pain (LBP/NP) are two of the most common reasons for people to use CTs. The objectives of this research were to develop, implement and explore the relevance of IM as a potential health service option in Swedish primary care.

Methods

Acknowledging IM as a complex health care intervention, both qualitative and quantitative research approaches were used. During the development of the IM model, an action research approach with focus groups and key informant meetings with multiple conventional and CT stakeholders was utilised. The development progressed through iterative cycles of data collection, analysis, refinement of strategies and actions following research group consensus, followed by further data collection (immersion/ crystallisation). Perceived facilitators, barriers and strategies were identified and findings were categorised within a public health science framework of IM model structures, processes and outcomes. The feasibility and comparative effectiveness of IM vs. conventional primary care was investigated in a pragmatic pilot randomised clinical trial (RCT) of 80 patients with LBP/NP. Parametric and non-parametric statistics were used to explore outcome changes between groups after four months: SF-36 (main); self-rated disability, stress and well-being (0-10 scales), days in pain and the use of health care resources including analgesics, conventional care and CTs. Perspectives on receiving care were explored through focus group discussions with patients from the RCT and analysed by content analysis. A health economic evaluation was conducted alongside the RCT to explore the likelihood of the IM model being a cost-effective health service option.

Results

The developed IM model adhered to standard clinical practice procedures and involved active partnership between a gatekeeping general practitioner collaborating with a team of certified/licensed CT providers (Swedish massage therapy, manipulative therapy/naprapathy, shiatsu, acupuncture and qigong) in a consensus case conference model of care. The implementation of the IM model was feasible and most patients were women with chronic (≥ 3 months) LBP/NP. The conventional care mainly consisted of pain management advice (stay active) and analgesics, occasionally complemented by short-term sick leave or a physiotherapy referral. In addition to this, the IM model integrated seven sessions of two different CTs over 10 weeks on average. It was found that the pilot RCT was underpowered to detect statistically significant differences between groups, and that a full-scale RCT would require a minimum of 120 patients. However, the trend in the clinical quantitative results with an increase in the SF-36 domain "Vitality" and a decrease in the use of analgesics favoured IM. In addition, the qualitative findings indicated that the interviewed patients valued the IM combination of conventional biomedical diagnostic procedures with empowering CT self-help strategies. There was a conservative likelihood (67%) of the IM model being cost-effective at a threshold of EUR 50,000 per quality-adjusted life year gained.

Conclusion

Identification of IM facilitators, barriers and strategies by the different stakeholders contributed to feasible implementation within Swedish primary care. Triangulation of the various results suggests that IM is at least as effective as conventional care, with potential clinical benefits including empowerment and reduced need for analgesics. To verify the relevance of IM in Swedish primary care, future research should prioritise larger trials considering large variability, chronic pain duration, small to moderate effects, indirect costs and longer-term follow-up while adopting a mixed methods approach considering both general and disease-specific outcomes.

Polycystic Ovary Syndrome (PCOS) – the Female Metabolic Syndrome: Effects of Electro-acupuncture and Physical Exercise

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The most common endocrine disorder in women of reproductive age is the so called polycystic ovary syndrome (PCOS) affecting ~10%. The diagnosis of PCOS involves two of the following three characteristics: ovulatory dysfunction and/or clinical or biochemical signs of hyperandrogenism and/or polycystic ovaries. PCOS is often associated with metabolic disturbances such as insulin resistance, dyslipidemia and hypertension and obesity aggravate the symptoms. We have recently demonstrated that women with PCOS have enlarged adipocyte size which in turn is the strongest factor explaining insulin resistance in these women. Women with PCOS also display more symptoms of anxiety compared with women without the syndrome. However, the precise aetiology of the disease is unknown. A potential contribution of the sympathetic nervous system as a factor in the development and maintenance of PCOS has been proposed. Recently, we demonstrated, by intra-neural registrations, that PCOS is associated with increased sympathetic nerve activity and that the strongest independent factor was elevated testosterone concentrations characterizing PCOS. The augmented sympathetic outflow may contribute to increased prevalence of vascular disease reported in these individuals and may be involved in the aetiology of the condition.

The spectrum of therapeutic options for women with PCOS is broad and ranges from lifestyle intervention to specific pharmacologic agents. Pharmacological approaches are effective but have adverse effects. Because PCOS is a life-long disorder, PCOS patients need long-standing treatment due to increased risk of associated disorders. None of the pharmacological approaches has been evaluated for long-term use. Several studies report that low-frequency EA with repetitive muscle contraction appears to activate physiological processes similar to those resulting from physical exercise. Repeated acupuncture treatment in women with PCOS and women with undefined ovulatory dysfunction has, in uncontrolled trials, been shown to exert long-lasting beneficial effects on endocrine parameters *and* anovulation with no negative side effects. Physical exercise has also been shown to have positive effects on ovulation and cardiopulmonary function in women with PCOS. To our knowledge, no previous randomized controlled trial (RCT) has evaluated the efficacy of low-frequency EA compared to physical exercise on PCOS related symptoms in women with PCOS who is not attempting to conceive.

Low-frequency EA were more effective than physical exercise and untreated control for improvement of circulating androgens, estrogens and glucuronidated androgen metabolites and menstrual pattern in women with PCOS within one week *and* 16 weeks after last treatment. This effect may be explained by decreased activity in the sympathetic nervous system.

The Methodology of Personalized Medicine: Integration of Anthroposophic Medicine and Conventional Medicine⁶

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In healthcare there is a growing trend towards treatment on the level of the individual patient. However, the current dominating paradigm of Evidence Based Medicine is based on statistical analyses of large populations, thus: on the group level, and the implementation of these group-based results in guidelines and protocols. One of the core features of anthroposophic medicine is the orientation on the individual patient by means of individual diagnosing and subsequent individual treatment approach. In the last decades several studies have been performed in which the methodology of this type of individual diagnosing and subsequent individualized treatment has been described, tested and validated. However, until now, no study has been performed in which the contribution and surplus value of this so-called Methodology of Personalized Medicine has been demonstrated and scientifically validated.

The goal of this project is to test the contribution of the Methodology of Personalized Medicine for the diagnosis and treatment of Diabetes Mellitus type II in four phases:

- Development of a reliable measuring instrument to establish an individual diagnosis of Diabetes Mellitus Type II. This instrument will be developed on the basis of the expert knowledge of experienced anthroposophic doctors and scientific literature.
- Determining the correlation between systemic biological parameters and individual diagnoses.
- Developing a theoretical individualized model of diagnosis and treatment of Diabetes Mellitus Type II and testing the validity of the model.
- Evaluating the contribution and surplus value of the Methodology of Personalized Medicine for the diagnosis and treatment of Diabetes Mellitus type II by performing outcome studies in which the effects of the individualized approach and the group treatment approach are compared.

The results of the first phase study and the design of the second phase study will be presented at the conference.

⁶ Due to the consequences of the ash clouds over Sweden, Dr Baars was not able to present this abstract orally at the conference.

***Acupuncture reduces crying in infants with infantile colic –
a randomised, controlled, double blind clinical study***

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Infantile colic is common and interferes with optimal family relations and exposure to child abuse. The medical treatments presently used are either inefficient or unsafe. Acupuncture has, in spite of weak evidence, been used in infantile colic. The aim of this randomised, controlled, double blind study was to investigate whether acupuncture reduces the duration and intensity of crying in infants with colic. 81 infants, 2-8 weeks old, completed a structured programme consisting of six visits during three weeks to an acupuncture clinic. Parents blinded to the allocation of their children received verbal support from a nurse. The infant was subsequently given to another nurse in a separate room, who handled all infants similarly except that infants allocated to receive acupuncture were given minimal, standardised acupuncture for two seconds in LI4. Minimal acupuncture reduced both the duration and intensity of crying in infants with colic. Infants in the acupuncture group no longer fulfilled the criterion for colic during the second and third intervention weeks.

(Article is submitted)

Microbial ecology – a brief overview

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Redan för över hundra år sedan föreslogs att vissa levande mikroorganismer skulle kunna vara bra för hälsan. De här idéerna var det inte många som nappade på och de enorma framstegen inom medicinen kom istället att fokusera på farliga (patogena) bakterier och sätt att bekämpa dem. Inte förrän under de senaste 10 åren har mikrobiell ekologi väckt något större intresse.

Tarmslemhinnan från en vuxen individ har en yta på cirka 300m². Det är större än en tennisplan. Slemhinnan är koloniserad med över 1000 olika sorters mikroorganismer. Det totala antalet mikroorganismer i tarmen uppskattas till 10¹⁴. Detta är 10 gånger mer än antalet celler i hela vår kropp.

Tarmkanalen är steril vid födelsen men koloniseringen börjar omedelbart efter födelsen. Under de första månaderna varierar typen av bakterier, men mot slutet av första levnadsåret har tarmfloran stabiliserat sig och ett dynamiskt ekosystem etableras. Floran är sedan under normala förhållanden förbluffande stabilt hos den enskilda individen under resten av livet. Den kan rubbas tillfälligt av infektioner, antibiotika, och stora förändringar i dieten.

Sammansättningen av tarmens mikrobiota hos befolkningen förefaller ha ändrats under de senaste 50 åren i ett land som Sverige. Jämförande studier på 1990-talet mellan estniska och svenska spädbarn visade på skillnader i bakteriefloran i de två länderna, där den i Estland påminde om vad som rapporterats från Sverige i början av 1960-talet. Eftersom livsstilen i Estland i början av 1990-talet påminde mycket om den som rådde i Sverige 30-40 år tidigare, är det rimligt att koppla samman livsstil och tarmflora. Studierna i Estland visade också att både allergier och diabetes var mycket ovanligare än i Sverige, trots luftföroreningar och en diet som snare skulle innebära sjukdomsrisik.

Tarmbakterierna har betydelse för vår hälsa ur flera synpunkter. En balanserad tarmflora tycks innebära ett visst skydd mot invasion av patogena bakterier, åtminstone i måttliga doser. Tarmfloran är också av betydelse för upptaget av näring, bland annat genom att producera näringsämnen och genom att bryta ner kosten i mindre beståndsdelar som vi kan tillgodogöra oss. Under de allra senaste åren har ett eventuellt samband mellan en förändrad tarmflora och den ökande förekomsten av fetma väckt stort intresse.

Tarmbakterierna är nödvändiga för att vi skall utveckla normal reglering av immunsystemet efter födelsen. Enligt en hypotes ligger förändringar i bakteriefloran bakom den kraftiga ökningen av "immunologiskt förorsakade välfärdssjukdomar" såsom allergi, diabetes och inflammatorisk tarmsjukdom. Studier under senare år visar nämligen att

sammansättningen av tarmfloran inte bara skiljer sig mellan spädbarn i länder med hög, respektive låg förekomst av allergi, utan också mellan allergiska och icke allergiska småbarn redan under den första levnadsveckan, alltså innan de ens utvecklat symptom på allergi.

Ökningen under enare år av "immunologiskt medierade välfärdssjukdomar" är likartad i industrialiserade länder och hos överklassen i fattiga länder. Sannolikheten för ett samband mellan ändringar i tarmfloran och uppkomst av dessa sjukdomar stärks av att förlossning genom kejsarsnitt är en riskfaktor, åtminstone för allergi och diabetes. Det är känt att den inledande koloniseringen av det nyfödda barnet förlöper annorlunda hos barn som förs vaginalt än hos barn som föds genom kejsarsnitt. Traditionellt har barnet när det fötts kommit i kontakt med moderns tarmbakterier. Så är inte fallet idag med den noggranna hygien på en förlossningsavdelning. Förlossning genom kejsarsnitt och efterföljande isolering har minskat kontakten med moderns mikroorganismer ytterligare och försenar kolonisationen av tarmkanalen. Det har till och med visats att sammansättningen av bakteriefloran i vagina under graviditeten har ett samband med förekomst av astma hos barnet vid fem års ålder.

Det är i den här komplexa "inre miljön" som probiotiska bakterier anses kunna göra nytta. Intresset för probiotika har ökat närmast explosionsartat under de senaste tio åren. Det finns åtskilliga goda studier med några bakteriestammar, framförallt med laktobaciller och bifidobakterier. Tyvärr finns det också många produkter på marknaden som uppges vara probiotiska men som inte dokumenterats i välgjorda kliniska studier.

De bäst dokumenterade gynnsamma effekterna har setts hos barn, till exempel vid behandling av infektiös diarré. Det finns idag mer än trettio studier som visar att diarréperioden förkortas med cirka ett dygn i genomsnitt. Studierna omfattar både barn som behandlats på sjukhus, alltså tämligen svåra fall, och barn som behandlats i öppen vård. Andra dokumenterade gynnsamma effekter är lindring av spädbarnskolik och andra tarmsymptom. Man har också rapporterat att spädbarn i åldern 4-10 månader som vistades på daghem fick laktobaciller hade färre frånvarodagar från dagis och mindre feber och diarré.

Flera kontrollerade studier med några olika probiotiska bakterier visar en viss lindring av spädbarnseksem. Däremot saknas dokumenterad effekt av sådan eksembehandling hos äldre barn än två år och vuxna. Andra studier tyder på en viss förebyggande effekt mot eksemutveckling under de första två levnadsåren om man också ger laktobaciller till den gravida mamman under den sista graviditetsmånaden och sedan till det nyfödda barnet under 6-12 månader.

Vid behandling med antibiotika är diarré en inte ovanlig komplikation. Det finns nu mångas studier som visar att probiotika minskar den risken både hos barn och vuxna om de ges samtidigt som antibiotika, alltså som förebyggande behandling. Hos vuxna är gynnsamma effekter av probiotika också dokumenterade vid olika former av diffusa

magbesvär, exempelvis "uppkörd", "orolig" mage. I en studie fann man också att sjukfrånvaron var mindre hos personer som åt probiotika jämfört med de som åt placebo.

Vi har en lång historia av samspel med laktobaciller och det är faktiskt rimligt att säga att hela vår utveckling till människor från apor har skett i närvaro av dem. Det återstår mycket arbete innan man har kartlagt tarmfloran hos friska och sjuka människor. Men det är rimligt att förmoda att studier av vår "inre miljö" och det ekologiska samspelet i tarmen kommer att visa sig ha stor klinisk betydelse i framtiden. Vägen dit är lång, men redan idag finns det stark anledning att misstänka ett samband mellan förändrad tarmflora och diverse "vällävnadssjukdomar" såsom allergier, autoimmun sjukdom, inflammatorisk tarmsjukdom och fetma.

Breast milk and gut microbiota composition – how do they affect immune maturation and allergy development during childhood?

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Babies are born with an immature immune system, which gradually matures during their first year(s) of life under influence of the (microbial) environment. The interactions between the environment and the neonate will lead to a proper immune maturation and to an immune system which reacts sufficiently, but not excessively, to challenge. An altered early-life microbial exposure could result in poor immune maturation and/or altered immune balance and later also to immune mediated diseases, like allergy.

We have investigated breast-milk (colostrum) and gut microbiota composition in relation to immune responses and allergy development in children.

Breast milk is very rich in immunologically active components which could influence neonatal and childhood immune responses. Also, oligosaccharides in breast milk survive the passage through the stomach and are utilised by the gut microbiota. We found that maternal allergy did not relate to oligosaccharide content in breast milk; however allergic children tended to have consumed higher amounts of neutral oligosaccharides. Further, we found that breast milk cytokine and chemokine content seemed to influence inflammatory responses in gut epithelial cells and cord blood mononuclear cells.

In investigations of the early-life gut microbiota, we have demonstrated that children who develop allergy up to 5 years have a reduced diversity of their gut microbiota during their first 2 months of life. Also, infants colonized with several *Bifidobacterium* species had been exposed to higher amounts of endotoxin and grew up in larger families than infants harbouring few species. We further investigated how the early life microbiota related to mucosal and systemic immune responses up to 2 years of age. Increased early bifidobacterial diversity correlated with maturation of the mucosal SIgA system. Also, early intense colonization with *Bacteroides fragilis* correlated with reduced LPS responsiveness in infancy.

Possible implications of the findings will be discussed.

Can lifestyle protect against allergy?

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Allergy constitutes a widespread disease in children. Environmental factors in utero, contact with microbes, dietary factors, infections in infancy and stress are thought to be of importance for the development of the immune system. Children from anthroposophic families have a low prevalence of allergy. The anthroposophic life style is characterised by a diet containing live lactobacilli, restrictive use of antibiotics and vaccinations and by giving birth at home.

The overall aim of this prospective study is to assess the role of environmental and lifestyle factors for the development of allergy in children. 225 families from anthroposophic maternity welfare will be compared with 225 controls. Immunological markers in the parents, placenta, the newborn child, breast milk and vernix, establishment of microbiota in the gut and serology for viral infections are studied, compounds in the house dust assessed, and psychosocial factors including stress by saliva cortisol studied.

So far, we have found that saliva cortisol, and preliminary also allergic sensitisation, in infants of anthroposophic families are significantly lower, as compared to infants of families with conventional lifestyle. At present, 750 faecal samples from 75 children and mothers with most and less anthroposophic lifestyle are analyzed by genetic methods. The impact on the establishment of microbiota of the fact that 30% of the anthroposophic mothers gave birth at home is of special interest.

In collaboration within our research network further immunological, genetic and epigenetic studies will be performed in order to better understand mechanisms for how genes and environment interact resulting in a specific phenotype of an individual. Final outcome in the project is development of allergy during childhood. The project is expected to supply new knowledge on the development of our immune system in relation to life style- and environmental factors, and could bring about new preventive and therapeutic measures and better quality of life for children. The anthroposophical population has been shown to offer a unique possibility to study the consequence of various life style exposures.

The role of the Gut microbiota for health and disease

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Allergies and chronic inflammatory bowel diseases are major Public Health problems. The causes are unknown, although theories related to impaired immune defence, hereditary factors, infections, food and environmental factors have been suggested.

Our project is based on the hypothesis that disturbances in the composition of the gut microbiota early in life may be major underlying causes for the development of many inflammatory chronic diseases, including allergies. We aim to increase the understanding of how inflammatory conditions develop in the gut, not only Inflammatory Bowel Disease (Mb Crohn and ulcerative colitis) (IBD), but also the role of the gut microbiota in the development of allergic diseases.

The composition of the gut microbiota is analysed, employing powerful DNA technologies on samples from clinically well characterized patients and healthy individuals. These technologies allow us to identify and characterize many more bacteria than was possible employing conventional culture methods. We have access to unique samples obtained in population based studies, including tissue samples from the stomach and the gut from numerous healthy volunteers and from mono- and dizygotic twins with IBD. The postnatal development of the gut microbiota and the relation to subsequently developing allergic manifestations was studied in a unique cohort of newborn infants and their mothers. This cohort also allows an analysis of how probiotics affect the development of the gut microbiota. Within the project, biomarkers indicating future development of disease are evaluated and the prospect of alternative treatment strategies are considered.

The ultimate clinical goal is to find novel venues for improved health and cure by enhancing the development of a normal gut flora and modifying a disturbed gut microbiota through natural interventions, e.g. probiotics and diet

The food or the microbes – what in the farming environment protects against allergy development?

(Maten och mikroberna på bondgården – vad är det som förmedlar skyddet mot allergi?)

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Since 150 years, we know that people living on farms rarely become allergic. This fact was long forgotten, but rediscovered around year 2000 when it was shown that children growing up on farms have much lower risk of developing allergy than other children, including those living in the country-side, but not on farms.

Modern research has further shown that it is the child's environment during the first months or maybe years that determines the life-long risk to contract allergies. According to the hygiene hypothesis, the developing immune system needs to be stimulated by microbes in order to develop normally, including learning to react only to dangerous things (i.e. microbes) and avoiding reacting to harmless substances (foods and pollens, etc.).

The Farm Flora Study, sponsored by the Ekhaga Foundation, investigates the milieu facing the infant growing up on a farm in South West Sweden (the Skaraborg region). We compare bacterial colonization pattern, feeding pattern and immune development in farming and control children. The children will be followed regarding different manifestations of allergy until school-age. This will, hopefully, enable us to discover allergy-protective factors in the farming milieu.

Populärvetenskaplig sammanfattning av utvalda Forskningsprojekt vilka erhållit stöd från Ekhagastiftelsen

Pia Vingros, Vetenskapsjournalist, Reportagebörsen AB

Ekhagastiftelsen har under året stött ett flertal forskningsprojekt från grundforskning till kliniska studier. Ett av dem har nyss resulterat i en avhandling av **Tobias Sundberg**, Karolinska institutet. Han har studerat en modell med integrativ vård i primärvården. Patienterna sökte för nack- och ryggsmärta. Distriktsläkare har i en konsensusmodell, samarbetat med utövare av komplementär medicin för att ge dem vård. Resultaten visade att integrativ vård är lika effektiv som konventionell vård, men att den också innebar att patienterna själva stärktes (empowerment) och att behovet av smärtstillande läkemedel minskade.

Kan elstimulerad akupunktur dämpa aktiviteten i det sympatiska nervsystemet hos kvinnor med Polycystiskt Ovariesyndrom, PCOS (Cystor på äggstockarna)? **Elisabet Stener-Victorin** vid sektionen för fysiologi, Göteborgs Universitet har i sin studie sökt få ett svar på frågan. Sambandet mellan hög aktivitet på sympatiska nervsystemet och ökad produktion av testosteron har tidigare satts i samband med dessa kvinnors hormonproblem som ger övervikt, risk för diabetes, högt blodtryck och oregelbunden mens. I studien jämfördes effekten av elektrostimulerad akupunktur och fysisk aktivitet. Resultaten visade att lågfrekvent elstimulerad akupunktur var mer effektivt än fysisk aktivitet både en vecka och sexton veckor efter behandlingen. Förklaringen antas vara att den elektrostimulerade akupunkturen minskar aktiviteten i det sympatiska nervsystemet.

Kajsa Landgren vid Lunds universitet, är sjuksköterska och akupunktör. Hon har gjort sig känd för sin orädda kamp att ge kolikbarn lindring. I en dubbelblind randomiserad och placebokontrollerad studie har hon visat visar att barn som får ett stick i tumvecket får lindring snabbare än den gruppen som inte fick det.

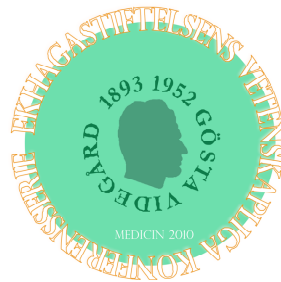
Lars Engstrand, smittskyddsinstitutet Karolinska institutet undersöker vilken roll tarmfloran har för att utveckla kroniska inflammatoriska tillstånd i tarmen, som vid Crohn och ulcerös colit. Man hoppas finna nya vägar till lindring och bot genom att utnyttja probiotika i läkningen.

Barn som växer upp på bondgårdar utvecklar mer sällan allergier än andra barn. Genom att de utsätts för de mikrober som kan ge allergier lär sig deras immunsystem att hantera dem, enligt den sk hygienhypotesen. Professor **Agnes Vold**, mikrobiologen, Göteborgs universitet följer i Bondgårdsflora studien barn i Skaraborgstrakten upp till skolåldern. Förhoppningen är att hitta vilka faktorer i bondgårdens miljö som skyddar mot allergi.

Johan Alm, läkare vid Sachsska Barnsjukhuset och vid Södersjukhuset, har i en tvärsnittsstudie jämfört allergirisken hos barn som växt upp med en antroposofisk livsstil med barn som inte gjort det. För närvarande studeras avföringen hos 75 barn som växt upp antroposofisk med DNA-metoder, för att se hur deras tarms mikrobiologi påverkats av att mödrarna födde barnen hemma.

Docent **Eva Sverremark-Ekström**, Wennergrens Institutet, Immunologi, Stockholms universitet har undersökt bröstmjölken sammansättning och tarmens mikrobiologi på små barn. Syftet är att se hur dessa faktorer hänger ihop med immunförsvaret och risken att utveckla allergi. Hon har bland annat kunnat visa att barn som utvecklar allergi vid fem års ålder hade en sämre mångfald mikrobiell flora i tarmarna vid två månaders ålder.

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