AKERSHUS UNIVERSITETSSYKEHUS

Resource use and research activity

Akershus University Hospital 2014

UiO : Universitetet i Oslo

HELSE SØR-ØST

Index

Introduction

In 2003, the Ministry of Health and Care Services introduced registration of research results and resource use in the health trusts. The measurement system is partly based on the health trusts' reporting of scientific publications in CRIStin (Current Research Information System In Norway) and completed doctoral degrees to NIFU (Nordic Institute for Studies in Innovation, Research and Education).

Based on the above reporting, we have prepared a report on resource use and research activity at Akershus University Hospital (Ahus).

The reporting shows that 153.5 full-time equivalents were used for research and development (R&D) in 2014. Furthermore, 238 articles were published with Ahus address and 15 employees completed their doctoral degrees. A short version of the individual theses is presented in chapter 3.

In addition to an overview of the number of publications and the number of completed doctoral degrees, the report presents an overview of the number of publishing researchers, the researchers' gender and age composition (chapter 6), as well as which partners the researchers have nationally (chapter 7) and internationally (chapter 8).

In addition to doctoral degrees and publications, the allocation of research funding is an important measurement parameter for research. The report therefore also contains an overview of which researchers and research groups have been awarded internal and external funding based on competition (chapter 10).

Finally, the three articles that were awarded the Outstanding Research Prize in 2014 are presented (chapter 11).

Lørenskog, 31. august 2015.

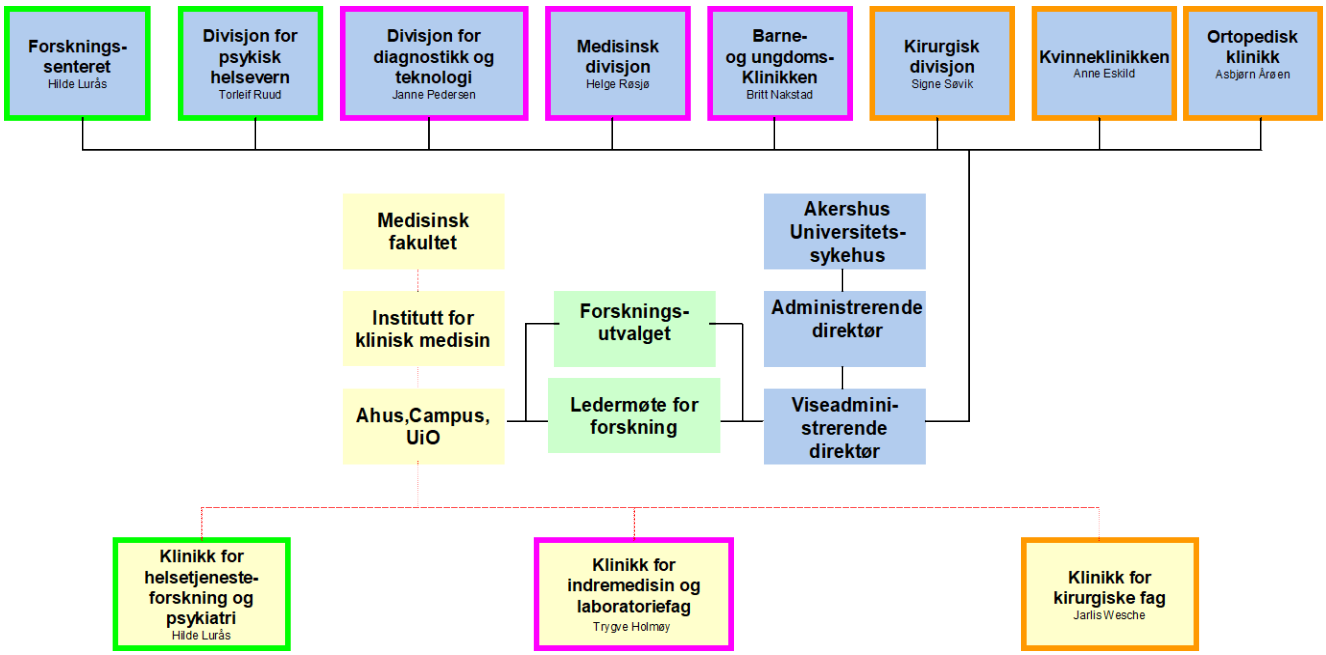
Øystein Mæland
Executive Director

Hilde Lurås
Director of Research and Innovation

1. Organisation

The research activity at Ahus is organizationally linked to two different reporting lines: the University of Oslo (UiO) (bright yellow boxes) and Ahus (blue boxes) see figure 1 below. The Division Director/Clinic Director has delegated responsibility for research in his unit to a research manager, named in the figure. The management meeting for research (bottom green box) that has representatives from both organisations is the operational leadership level for research, while the Research Committee (top green box) is a strategic body anchored in the Collaboration Agreement between UiO and Ahus. The leaders of the three UiO clinics have shared positions, and have research leadership responsibility for academic positions in several divisions, illustrated in the figure by the outline color of the various boxes. There are currently 19 active research groups at Ahus. An overview of these groups can be found in the appendix.

Figure 1: Organisation of research at Ahus



2. Resource usage

In 2014, total resource use for research and development (R&D) amounted to 153.5 full-time equivalents, 143 of these full-time equivalents are dedicated to research. This is distributed among 372 research participants as a result of the fact that most have combined positions with clinics. In addition, UiO finances almost 44 full-time equivalents at the hospital. Ahus has two combined positions with Oslo and Akershus University College (HiOA), one in the Division of Mental Health Care and one in the Department of Health Services Research. The centrally located research funding is partly funded from UiO and partly from Ahus, and amounts to 9.6 full-time equivalents distributed among 15 people. Research support includes libraries, data capture, statistics, biobank and administrative services. In addition, UiO has 10 employees in technical and administrative positions divided into 9.5 full-time equivalents.

Table 1 provides an overview of how the total number of full-time equivalent for research and innovation is distributed by division. For example, if we look at the column for the Division of Diagnostics and Technology (DDT), that division has a total of 1.4 UiO full-time equivalents and 13 Ahus full-time equivalents distributed among 37 people. Furthermore, we see that 12 of the full-time equivalents are internally financed, while 1.3 are financed externally. The South-Eastern Norway Regional Health Authority funds most of the external resources allocated to the research projects. Similar information for the other divisions can be found in the columns to the right. These figures are based on reporting to NIFU for 2014.

Table 1: Divisional distribution of full-time equivalents (persons) for research and development (R&D), 2014.

Ahus									
Internally funded	11,7	23,6	4,1	3,4	26,6	2,0	3,7	5,6	9,6
Number of employees	35	46	22	14	103	4	12	10	15
Externally funded	1,3	7,0	0,3	1,5	29,0	4,9	5,3	14,1	
Number of employees	2	13	1	4	43	10	11	27	
Ahus total	**13,0**	**30,6**	**4,4**	**4,9**	**55,6**	**6,9**	**9,0**	**19,7**	**9,6**
UiO									
Internally funded	1,2	0,4	5,6	3,2	12,6	1,9	1,2	1,4	9,5
Number of employees	6	2	12	6	23	4	2	4	10
Externally funded	0,2		0,6		4,1		0,2	1,4	0,3
Number of employees	1		3		7		1	3	2
UiO total	**1,4**	**0,4**	**6,2**	**3,2**	**16,7**	**1,9**	**1,4**	**2,8**	**9,8**

DDT: Division of Diagnostics and Technology
PSYK: Division of Mental Health
KIR: Division of Surgery
ORT: Orthopaedic Clinic
MED: Division of Medicine
KK: Division of Gynaecology and Obstetrics
BUK: Division of Paediatric and Adolescent Medicine
HØKH: Health Services Research Unit

3. Disputations of the Year

In 2014, 15 employees defended their thesis at Ahus. Table 2 shows the distribution of doctoral degrees by division. Below is a brief summary of the various theses.

Table 2: Number of public defences per division

	Number
Division of Medicine	5
Health Services Research Unit (HØKH)	4
Division of Gynaecology and Obstetrics	4
Division of Mental Health	1
Division of Paediatric and Adolescent Medicine	1

Espen S Kristoffersen

Cand.med. Espen Saxhaug Kristoffersen at the Health Services Research Unit defended his thesis on 10 January over the thesis: **Brief Intervention for Medication-Overuse Headache in primary care.** The main supervisor has been Christofer Lundqvist. Co-supervisors have been Michael B Russell and Jørund Straand.

Chronic headache (headache over half the days per month) affects 3-4% of all Norwegians. Medication-overuse headache (MOH) is a common cause of chronic headache, and occurs in 1-2% of the Norwegian population. It seems paradoxical that regular consumption of painkillers for headaches can, in fact, lead to the development of chronic headaches. Very few (3%) use appropriate preventive medicine. Drug withdrawal is the primary treatment, and this has previously usually taken place upon admission to hospital.

Saxhaug Kristoffersen et al. have found that the vast majority of people with chronic headache and medication overuse are in contact with their GP, while few have been in contact with the specialist health service. In the study, a behaviour-oriented brief intervention for MOH used by the general practitioner was developed and tested in a cluster randomized double-blind trial. After the intervention, a headache specialist followed up the patients with a headache interview. The results showed that 67 % of the participants no longer had drug overuse and 50 % no longer reported chronic headache in the intervention group. In the control group, 97 % still had medication overuse and 94 % had chronic headache. The differences remained over six months. Brief intervention by the GP can thus improve the situation for many severely afflicted MOH patients.

Aina Holmen

Cand.psychol. Aina Holmèn at the Division of Mental Health defended her thesis on 23 January: **Neurocognition in early-onset schizophrenia with a particular focus on executive function**. Supervisors have been Bjørn Rishovd Rund and Ingrid Melle. In her doctoral thesis, Aina Holmèn has investigated testing of cognitive functions in adolescents with psychosis disorders.

One of the central features of psychotic disorders is the failure of cognitive functions such as memory, attention and learning. These functions are central to most of what we humans do, especially in school and work situations. It is therefore very important to have these mapped, so that any problems are identified and can be met with adaptations in the treatment and school situation.

In this study programme, we have been particularly concerned with executive functions consisting of reasoning, planning and problem solving. This is important because executive functions have a central role in cognitive processes, and thus contribute to other observed cognitive difficulties. In addition, we know that there is a strong correlation between failure of these functions and poor functioning in everyday life, as well as quality of life.

One of the main problems in the field has been the lack of a standardized test battery that makes it possible to compare test results across studies – and thus agree on a cognitive profile in adolescents with psychosis. It has also been a goal to find out whether the cognitive impairment is general or specific – in other words, whether the adolescents have difficulties with everything, or whether there are any areas that turn out to be particularly problematic. We were the first to use the MATRICS test battery on young people. We found that this battery, which is designed for adults, can also be used on adolescents – with the exception of one test that measures social cognition. This is very useful for therapists who are investigating and making treatment plans for this group. Our study also shows that adolescents with psychoses have a general cognitive impairment, and that many have problems in most areas. However, there is a proportion of adolescents who do not have cognitive problems.

Psychotic disorders that start as early as childhood and adolescence have been seen as a more severe form than those starting in adulthood. It has also been assumed that adolescents with these disorders have had more severe deficits in executive functions than adults with the same disease. However, little research has been done on this, and we wanted to investigate this by comparing a group of adolescents and a group of adults with psychosis with the same tests. We found that the adolescents did not have poorer cognitive functions than the adults did. This can help reduce negative expectations and reduce stigma in this group.

Anne-Kari Johannessen

Cand.polit. Anne-Kari Johannessen at the Health Services Research Unit defended her thesis on 13 March: **The role of an intermediate unit in a clinical pathway**". Her main supervisor has been senior researcher Sissel Steihaug. Co-supervisors have been Hilde Lurås and Anne Werner.

In recent years, a number of specialised short-term units have been established for elderly patients who are too poor to cope at home after discharge from hospital. In her thesis, Johannessen studied the role of an intermediate care unit in a clinical patient pathway. The unit received elderly patients with somatic disorders who had completed their assessment in hospital, but who still needed health services before discharge to their own homes. The unit was a collaborative project between four municipalities and a university hospital. The doctoral study

shed light on the implications of the unit for collaboration between health personnel employed by the municipalities, the hospital and the intermediate care unit.

The results indicate that it was difficult to implement a new service in an established health service. A lot of time was spent on negotiations and disagreements between the healthcare personnel about what were the "right" patients for the unit. At times, it was difficult to find a sufficient number of "right" patients to utilise the unit's capacity. The healthcare personnel had different views on what the unit's function was and should be. The partners adhered to different legislation, tasks and objectives, which complicated the clinicians' cooperation. It seemed difficult for the partners to develop common overall goals and see their own service offerings as part of a coherent service. The patients were generally satisfied with their stay in the unit and felt that they received compassionate treatment and care. Several patients called for more individualised training and felt it was unsafe not to have a "24-hour" doctor present, and several found the transition to their own home difficult. The conclusion of the thesis is that such a "mid-range unit" is not an appropriate organisation of the health services for the elderly.

Helene C Dale Østerholt

Cand.med. Helene C. Dale Østerholt at the Department of Paediatric and Adolescent Medicine defended her thesis on 26 March over the thesis: **Hyaluronan in the neonatal period. An experimental and clinical study in asphyxia and infection**. The main supervisors have been Britt Nakstad and Ola Didrik Saugstad.

In her doctoral thesis, doctor and researcher Helene C. Dale Østerholt has addressed two of the main causes of death and morbidity in new-borns: oxygen deprivation in connection with childbirth, and infections. She has studied hyaluronane, also called hyaluronic acid, which is an important component of the supporting tissues of our body, and which has important functions in the lungs, among other things. Hyaluronan is broken down by tissue damage and various disease processes, and can then be released into the bloodstream.

Østerholt et al. examined newborn pigs that underwent oxygen deprivation, and showed increased breakdown of hyaluronan in the lungs of animals that were resuscitated with 100% oxygen compared to pigs that were resuscitated with room air. This adverse effect supports recent guidelines recommending initiation of newborn term babies with room air. The antioxidant N-acetylcysteine protected against the breakdown of hyaluronan in the lungs. The study is the result of an international collaboration with the research team at the Department of Paediatrics, University of Texas Southwestern Medical Centre, Dallas, Texas, USA.

In his treatise *Hyaluronan in the neonatal period*. Østerholt has also found an experimental and clinical study in asphyxia and infection using studies in umbilical cord blood that hyaluronan released into the bloodstream affects the immune system of the newborn. This may affect infants' susceptibility to infections. Some of the intestinal bacterium E. coli was used to mimic blood infection in the newborn. Hyaluronan caused a reduction of TLR4, an important factor in the immune system, on blood cell monocytes. Another study showed a reduction in the gene expression of TLR4, and other key factors in the immune system, in children who later developed a serious infection with respiratory syncytial virus (RS virus).


Himanshu Joshi

MBBS, MPH, M.Sc. Himanshu Joshi at the Division of Medicine defended his thesis on 3 April: **Towards pathway and network-based medicine in breast cancer.** The main supervisor has been Arnoldo Frigessi.
Breast cancer is a molecular heterogeneous disease and a leading cause of cancer-related death among women. Advances in molecular studies of breast cancer have shown that specific molecular changes manifest as an aggressive form of the disease and disproportionately contribute to the burden of metastatic, recurrent and chemo-resistant forms of the disease. Molecular categorization based on these alterations can be useful for planning effective diagnostic and therapeutic strategies aimed at preventing relapse and metastasis.

On the one hand, the complex nature of molecular heterogeneity is a challenge to robust, reproducible and clinically useful molecular categorization. On the other hand, molecular heterogeneity provides an opportunity to design new-targeted therapeutic interventions tailored according to the activities of cancer-driving biological processes in individual tumours. With the availability of high-throughput technologies to study and deduce the functional status of tens of thousands of genes at various genomic levels along with their potential regulators, such as transcription factors, microRNAs – it has improved the possibility of inferring the activity of biological processes, pathways and resulting functional networks.

In his thesis, author and physician Himanshu Joshi employed an approach based on biological pathways and networks to analyze gene expression profiles related to breast cancer. Based on networks of genes that define existing molecular classification, the thesis shows that TP53 is a topologically central gene in the key processes potentially shaping molecular classes of breast cancer. TP53 is also a known marker of prognosis, chemo-resistance and metastasis in breast cancer, but the underlying processes and pathways associated with TP53 functional status are not well defined. Using pathway and network-based methods, the thesis identified about 40 biological pathways that are differently active according to TP53 gene mutation status. Among the identified pathways, VEGF —, which is an important part of the VEGF signalling pathway — predicts strong survival even after controlling for TP53 mutation status and molecular subtype.

The most important finding of translational significance is that VEGF mRNA expression is associated with significant effects on survival among ER+/PR+ patients, but not in ER/PR patients. In addition, mutant TP53 and increased VEGF mRNA expression in synergy may indicate poor survival in the ER+/PR+ patient population. Thus, VEGF mRNA expression can further stratify the ER+/PR+ subgroup that is conventionally referred to as a group with relatively good prognosis. Based on the findings, the author suggests that interactions between ER, TP53, and VEGF signalling pathways are useful in robust categorization of breast cancer.

The thesis further uses VEGF gene expression status classes of breast cancer in the gene and miRNA expression profiles from the same patients. Differential co-expression analysis shows that upregulation of miRNAs that have their targets enriched with angiogenesis pathway, blood vessel development, TGF-β signalling and focus adhesion. This finding shows that differential VEGF expression between the two classes corresponds to differential miRNA activity, and contributes to the potential functional differences.

Fredrik Alexander Gregersen

M.Sc. Fredrik Alexander Gregersen at the Health Services Research Unit defended his thesis on 22 may: **Ageing, mortality and health care expenditures. The case of Norwegian hospitals and ambulances**. The main supervisor was Geir C. H. Godager, while Fredrik A. Dahl and Hilde Lurås were co-supervisors.

In his thesis, Gregersen examined the health expenses associated with the end of life. In addition to this, he compared the health expenditure of different age groups over time. The results showed that around 10% of the total hospital expenses in the period 1998 to 2010 went to people in their last year of life. Particularly high were expenses in the three months preceding death. Furthermore, Gregersen shows that the elderly and newborns use significantly more ambulance and hospital services than the rest of the population.

Gregersen also looked at growth in health expenditure for the elderly over time. He did this by looking at the change in average hospital expenditure per capita in the period 1998 to 2009. The analyses were performed for different age groups. The results showed that the elderly and newborns had a far higher growth in expenditure than the rest of the population. Developments for the elderly were in line with developments in a number of other OECD countries in recent years. More research is needed to shed light on the reasons for the differences in expenditure growth between different age groups over time. The differences in expenditure growth are probably driven by the fact that older people, compared with younger people, have more complex health service needs in combination with rising health budgets.

Camilla Haavaldsen

Cand. med. Camilla Haavaldsen from the Division of Gynaecology and Obstetrics defended her thesis on 5 June: **Fetal death: high maternal age at childbirth and the placenta**. The main supervisor has been Anne Eskild. Older mothers have an increased risk of fetal death in the womb. The reasons for this are not well understood. There is also limited knowledge about when during pregnancy older mothers have the highest risk of stillbirth. In the thesis 'Fetal death: high maternal age at childbirth and the placenta,' Camilla Haavaldsen and colleagues researched older mothers and their risk of delivering a stillborn child. Using data from the Medical Birth Registry, it was found that women aged 40 and older have an increased risk of stillbirth early in pregnancy and at term. The risk of delivering a stillborn child was more pronounced among the oldest mothers in the years 1967-1986, compared to the years 1987-2006. This may be related to improved maternity care in recent times.

The placenta plays a crucial role in providing the fetus with oxygen and nutrients, and placental insufficiency is a significant cause of fetal death. It is believed that older mothers have an increased risk of placental insufficiency. The weight of the placenta can be an indicator of its functional capacity. Haavaldsen and colleagues therefore investigated whether placental weight varies in pregnancies with living and deceased offspring. The risk of stillbirth was increased if the placenta was small relative to the baby's birth weight, particularly at term. In pregnancies with preterm birth (before gestational week 37), there was also a slightly increased risk of delivering a stillborn child if the placenta was large relative to the baby's birth weight. It was also found that the weight of the placenta increases with the woman's age, and older mothers have larger placentas relative to the baby's birth weight.

Small placentas likely have a reduced capacity to supply the fetus with oxygen and nutrients. The functional capacity of large placentas is unknown. Haavaldsen and colleagues

believe that large placentas may indicate a general lack of oxygen and that the large placentas in older mothers undergo compensatory growth to adequately supply the fetus.


Jovana Klajic

M. Sc. Jovana Klajic at the Division of Medicine defended her thesis on 17 June: **From normal breast to invasive carcinoma: DNA methylation profiling of stage and response to chemotherapy.** The main supervisor has been Vessela N. Kristensen.

Breast cancer is the most common form of cancer among women and the most common cancer-related cause of death in women. Despite improvements in therapy and diagnosis, there are subgroups of breast cancer patients who still have a very poor prognosis and limited treatment options. Breast cancer continues to pose a clinical challenge, particularly for patients who show unresponsiveness to therapy or are diagnosed with metastases. Changes in DNA methylation have been recognized as a widespread alteration in breast cancer and a promising marker for early detection, treatment response, and prognosis.

In her thesis, Ph.D. candidate Jovana Klajic has analyzed DNA methylation changes in breast cancer and studied how these changes are related to the clinical-pathological characteristics of tumors and how they can affect progression and prognosis. In the first part of the work, Klajic and co-authors showed that altered DNA methylation is an early event in breast cancer development. Furthermore, stage-specific DNA methylation changes during progression were observed, and an informative set of methylation markers was suggested. The candidate and co-authors have also demonstrated how different methylation changes are associated with different molecular subgroups of breast cancer. In the final part of the work, the significance of methylation levels on treatment response was investigated. Further research on DNA methylation changes in breast cancer is crucial to understanding its potential for diagnosis, prognosis, and treatment choices.

Ragnhild Størkson

Cand.med. Ragnhild Størkson at the Division of Medicine defended her thesis 20 June: **Clinical Challenges in Colonic and Rectal Adenocarcinomas.** The main supervisor has been Morten Jacobsen.

Today, there is an increasing risk of receiving a cancer diagnosis in our welfare society. The most common form of cancer in Norway for both genders is colorectal cancer.
The prognosis depends on the type of cancer and the stage at which it is detected. It also depends on the tools we have to treat the cancer and its potential spread. The current treatment approach involves surgical intervention on the primary tumor and, in some cases, on metastases to other organs. The main additional treatments today include chemotherapy and radiation therapy. In recent years, attention has shifted towards the characteristics of cells within the tumor.

An increasing number of gene defects are being discovered that are associated with certain types of cancer. If we can develop antibodies to neutralize these defects, it may be possible to offer patients tests to determine if they carry these defects. However, such a test should be simple, and it is essential to know which part of the gene products is relevant to the disease, such as mRNA or the end product—namely, protein.

Therefore, we investigated whether there was a linear relationship between mRNA and protein changes in the tumor. We found a correlation for a type of cyclin but not for all.
We also examined the genetic differences between colorectal and rectal cancer, showing that they have distinct biological profiles and should be considered separately to avoid undermining the significance of specific genes.

The metabolism of fat cells in certain selected genes may influence cancer occurrence through insulin resistance. Such genes include, for example, PAI-1, TNF-α, IL-6, and 11β-HSD-1. These genes were overrepresented in patients with colorectal cancer in our study.
The more we learn about the development and progression of cancer, the better treatment options may become. We are gaining deeper insights into the interplay between genetic changes and environmental/lifestyle factors. With increased knowledge, it is possible to tailor treatment for each patient, thereby improving the chances of recovery.


Gunvor Hilde

Gunvor Hilde at the Division of Gynaecology and Obstetrics defended her thesis 14 august: **Compare and contrast treatments (non-pharmaceutical) for overactive bladder (OAB): state of the current evidence.** Main supervisor Kari Bø.

In a new doctoral study, researchers found no effect of pelvic floor training after childbirth. Nevertheless, they strongly recommend that women train their pelvic floor muscles correctly.

More than a third of women who have given birth experience involuntary urine leakage. During vaginal childbirth, the muscle fibers in the pelvic floor can stretch up to three times their resting length. This can lead to a weakening of the muscle strength in the pelvic area. Vaginal childbirth doubles the likelihood of urinary leakage, and women who have given birth too many children have three times the chance of experiencing leakage.

The doctoral candidate followed first-time pregnant women from mid-pregnancy to one year after delivery. Key findings include:

- 35 percent of pregnant women reported training their pelvic floor once or more per week at mid-pregnancy, with only 15 percent training three times or more per week. This is significantly fewer than in other countries.
- Changes from mid-pregnancy to six weeks after delivery in women who had given birth vaginally showed a pronounced reduction in the function of the pelvic floor muscles. Muscle strength was reduced by 54 percent.
- Pelvic floor training after childbirth in the group of women with and without injury after delivery showed no effect on the occurrence of urinary leakage six months after childbirth.


Kashif Waqar Faiz

Cand.med. Kashif Waqar Faiz at the Division of Medicine defended his thesis 9 September: **Prehospital delay and patient knowledge in acute cerebrovascular disease.** The main supervisor has been Ole Morten Rønning.

Doctor and researcher Kashif Waqar Faiz has investigated causes of delayed admission and knowledge about symptoms and risk factors among patients with stroke.

Stroke is a serious and increasing public health problem, and during a major stroke, 2 million nerve cells disappear per minute. Intravenous thrombolytic (clot-dissolving) treatment is a safe and effective form of treatment, but due to a narrow time window of 4.5 hours from symptom onset, only a small fraction of patients receives such treatment. The most common cause is prehospital delay, meaning delayed arrival at the emergency department after symptom onset.

In his thesis "Prehospital delay and patient knowledge in acute cerebrovascular disease," Kashif Waqar Faiz and colleagues investigated the reasons for prehospital delay and patients' knowledge about symptoms and risk factors of stroke. 440 patients were included. The average prehospital delay was three hours, of which approximately half was the time from symptom onset to the first medical contact. Only 7.6% of patients received intravenous thrombolytic treatment. Faster admission was related to younger age, ambulance transport, and more pronounced symptoms. Respectively, 17% and 14% of patients were aware of the three most common stroke symptoms (facial paralysis, reduced strength in arm, and speech difficulties) and at least two of the three common risk factors (high blood pressure, smoking, and diabetes).

The results suggest that too many patients with acute stroke arrive late at the hospital, partly due to insufficient knowledge about stroke and the necessity of reaching the hospital quickly. Patients who had been previously admitted with a stroke did not arrive earlier than others, indicating that healthcare professionals may not provide sufficient information about stroke risk factors and symptoms and the critical importance of time for the outcome.


Eva Øverland

Cand.med Eva Astrid Øverland at the Division of Gynaecology and Obstetrics defended her thesis 14 November: **Shoulder dystocia at delivery: population-based studies of risk factors.** The main supervisor has been Anne Eskild.

Doctor and researcher Eva Astrid Øverland has studied risk factors for difficult shoulder delivery. Difficult shoulder delivery, or shoulder dystocia, is a rare complication that can cause serious injuries to both the mother and the child. The complication is potentially lethal for the baby.

In her thesis "Shoulder dystocia at delivery; population-based studies of risk factors," Eva Astrid Øverland and colleagues used data from the Medical Birth Registry and studied over 2 million vaginal deliveries in Norway from 1967 to 2009. In seven per thousand deliveries, the baby's shoulders were difficult to deliver.

High birth weight was by far the most important risk factor, and if the baby weighed over 5 kg at birth, the risk of the baby's shoulders getting stuck during delivery was over a hundred times higher compared to if the baby was small or of normal size (< 3.5 kg). The thesis shows that if the baby was large, difficult shoulder delivery occurred more often in women who had given birth before compared to first-time mothers. If the baby was large, there was also a greater risk of

difficult shoulder delivery if the birth occurred before the due date compared to if the birth occurred at term or overdue.

A woman who has experienced difficult shoulder delivery in a previous birth has over a 7% risk of experiencing difficult shoulder delivery again in the next birth. However, the risk of recurrence depends on the weight of the baby. If the baby she is carrying weighs more than 4.5 kg, she has a risk of over 20% of experiencing difficult shoulder delivery again. For this woman, a planned cesarean section would be the preferred delivery method. If, on the other hand, she is carrying a baby with low or normal weight, the risk of recurrence for difficult shoulder delivery is low (<1%), and she can give birth vaginally.

Antje Sundseth

Cand.med. Antje Sundseth at the Division of Medicine defended her thesis 1 December: **Acute cerebrovascular disease – A study of the effect of very early mobilisation after stroke and patients' knowledge of stroke**. The main supervisor has been Bente Thommessen.

Doctor and researcher Antje Sundseth has made findings indicating worse outcomes in patients mobilized very early after acute stroke. Additionally, she identified insufficient knowledge about stroke symptoms and risk factors among patients with acute stroke or transient ischemic attack (TIA).

Stroke is a leading cause of death and disability in the Western world, and in Norway, approximately 15,000 people are affected annually. Treatment in a stroke unit improves outcomes after acute stroke, and immediate hospital admission is crucial to initiate treatment as quickly as possible. Early mobilization is considered an important factor in stroke unit treatment; however, it is unknown when early mobilization should begin. Selected stroke patients may receive thrombolytic treatment within 4 ½ hours after symptom onset. Admission to the hospital within this narrow time window requires that patients or those around them are aware of stroke symptoms and respond appropriately. Furthermore, the population's knowledge of risk factors for stroke is important to improve individual risk profiles and prevent strokes.

In her thesis "Acute cerebrovascular disease – A study of the effect of very early mobilisation after stroke and patients' knowledge of stroke," Antje Sundseth and colleagues found a trend towards worse outcomes in those who were mobilized within 24 hours after admission for acute stroke compared to mobilization between 24 and 48 hours.

Furthermore, Sundseth and colleagues demonstrated that knowledge of stroke symptoms and risk factors among patients with acute stroke and TIA was insufficient. However, lower age, higher education, and previous information about stroke were associated with better knowledge. Measures to improve knowledge levels are important and necessary, contributing to stroke prevention and increasing access to thrombolytic treatment for more patients.

Ashi Sarfraz Ahmad

Cand.med. Ashi Sarfraz at the Division of Gynaecology and Obstetrics defended her thesis 8 December: **Fetal death – population-based studies of pregnancies in Norway.** The main supervisor has been Jeanette H. Magnus.

In the late 1960s, almost 1000 babies died annually in utero in Norway. This number has now been reduced to under 300. Thus, Norway has one of the lowest rates of fetal death in the world. The most significant reduction has been at term (>37 weeks of gestation), where fetal mortality has decreased by over 70%. However, there has been an increase in fetal death between gestational weeks 16 and 22 during the period 1967-2006. This is revealed in the doctoral thesis "Fetal death – population-based studies of pregnancies in Norway," where Dr. Ashi Sarfraz Ahmad and colleagues, using data from the Medical Birth Registry, conducted population-based epidemiological studies of stillbirths.

Advanced maternal age is a known risk factor for fetal death, but the cause of this is unknown. Ahmad and colleagues found that older women (>40 years) have an increased risk of fetal death throughout pregnancy, particularly after gestational week 37, where the risk was 2-3 times higher. However, the increased risk of fetal death among older mothers has significantly decreased between 1967 and 2006.

Women with high blood pressure during pregnancy and preeclampsia have an increased risk of fetal death, especially after gestational week 40. The thesis shows that the risk of fetal death among women with elevated blood pressure has decreased over the years 1967-2006, especially for women with preeclampsia.

Parvovirus B19 infection is a "harmless" childhood disease that, during pregnancy, can cause fetal death. Ahmad and colleagues examined 281 women with fetal death and 957 women with live-born children but found that parvovirus B19 infection did not occur more frequently in pregnancies with fetal death. The study was based on the Toxoplasmosis Study research registry with serum samples from over 30,000 pregnant women.

The thesis provides valuable knowledge about the significance of risk factors for fetal death, which can be a useful supplement in the development of strategies to reduce stillbirths.

Hege Therese Størksen

Cand.psychol Hege Therese Størksen at the Health Services Research Unit defended her thesis 18 December: **Fear of childbirth, mental health and obstetric outcome: a population-based cohort study.** The main supervisor has been Malin Eberhard-Gran.

Psychologist Hege Therese Størksen has studied risk factors for childbirth anxiety and the significance such anxiety has on women opting for a planned caesarean section.

In her thesis, Størksen and colleagues examined over 4000 pregnant women at the Division of Gynaecology and Obstetrics, Akershus University Hospital. Eight percent of the women in the study reported childbirth anxiety. Women who initially suffered from anxiety or depression had an increased risk of childbirth anxiety, especially if they experienced anxiety and depression simultaneously. However, the majority of women with childbirth anxiety had no other mental health issues. Women who had experienced childbirth complications had an increased risk of developing childbirth anxiety in subsequent pregnancies. Subjective childbirth experience, however, had a greater impact on the development of childbirth anxiety than objective events, and the objective events were often not consistent with the subjective experience.

Demographic and psychosocial factors such as high education, weak social support, and being a first-time mother were identified as independent risk factors for the development of childbirth anxiety. Childbirth anxiety often led to a desire for a caesarean section, but most of these women still gave birth vaginally. However, a previous negative childbirth experience had a strong influence on whether a woman chose a planned caesarean section or not.

The results suggest that childbirth anxiety is common. The subjective experience of delivery is crucial for both the development of childbirth anxiety and the risk of a planned caesarean section in subsequent pregnancies. Subjective experience is not necessarily associated with the actual obstetric events. Therefore, the importance of contributing to the woman feeling safe and well cared for must be emphasized.

4. Publications

Scientific publication channels for health trusts are ranked in two quality levels

- Level 1: Approved scientific publication channels (1 point)
- Level 2: Specially reputable scientific journals (3 points)

There are 238 articles registered by Ahus employees in CRIStin. In total, 20 % of the articles are published in a level 2 journal, the remainder at level 1 (Table 3).

Table 3: Number of scientific publications by level and total at Ahus.

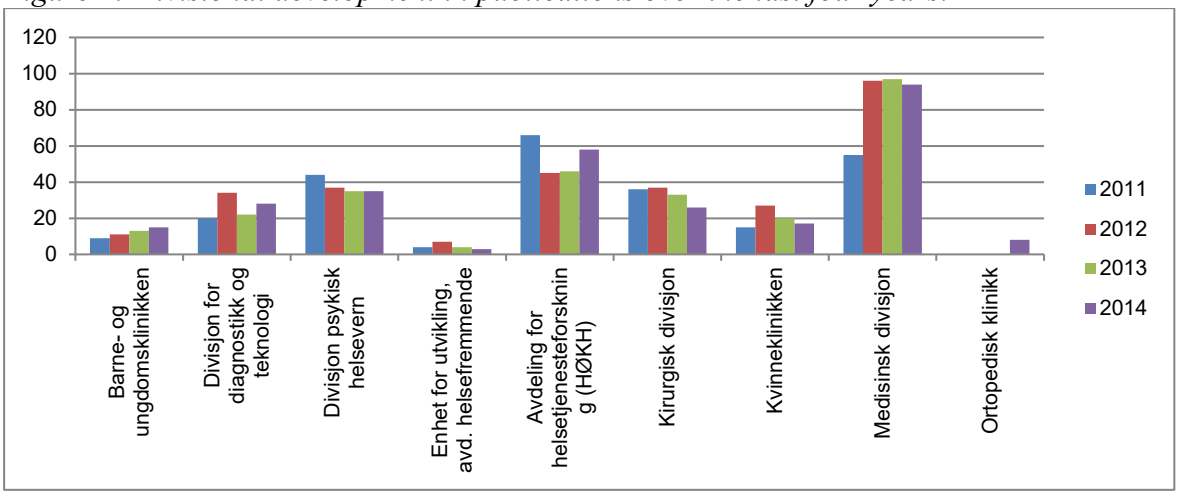
Level 1		Level 2	
Number	%	number	%
191	80	47	20

Table 4 shows an overview of scientific articles by division, while figure 2 shows the divisional development over the last three years.

Table 4: Scientific publications by division at Ahus

	Total	Level 1	Publ.points	Level 2	Publ.points
Division of Paediatric and Adolescent Medicine	15	13	2,45	2	1,81
Division of Diagnostics and Technology	30	26	7,10	4	4,40
Division of Mental Health	37	33	9,53	4	4,05
Unit for Development, (Health Promotion)	3	3	1,69		
Health Services Research Unit (HØKH)	58	44	11,84	14	20,68
Division of Surgery	28	23	6,94	5	3,77
Division of Gynaecology and Obstetrics	17	9	3,11	8	8,30
Division of Medicine	94	73	18,92	21	14,51
Orthopaedic Clinic	8	7	1,96	1	1,13

Figure 2: Divisional development in publications over the last four years.



5. Development in publications and doctoral degrees

Tables 5 and 3 and 4 show the development in the number of scientific publications and the number of completed doctoral degrees in the period from 2008 to 2014. The number of published articles has remained relatively stable over the past three years. The number of completed doctoral degrees has fluctuated somewhat, but there is underlying growth from 2008 to 2014.

Table 5: Publications and doctoral degrees 2008-2014.

	2008	2009	2010	2011	2012	2013	2014
Publications	108	107	130	210	238	228	238
Doctoral degrees	5	7	10,5	8	20	10	15

Figure 3: Development in the number of publications

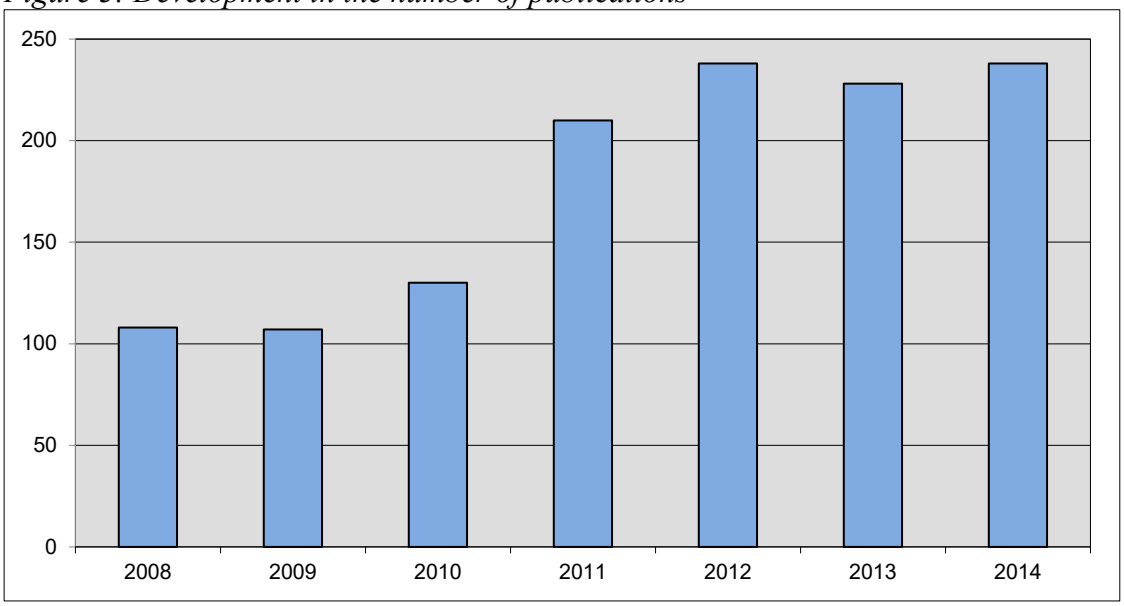
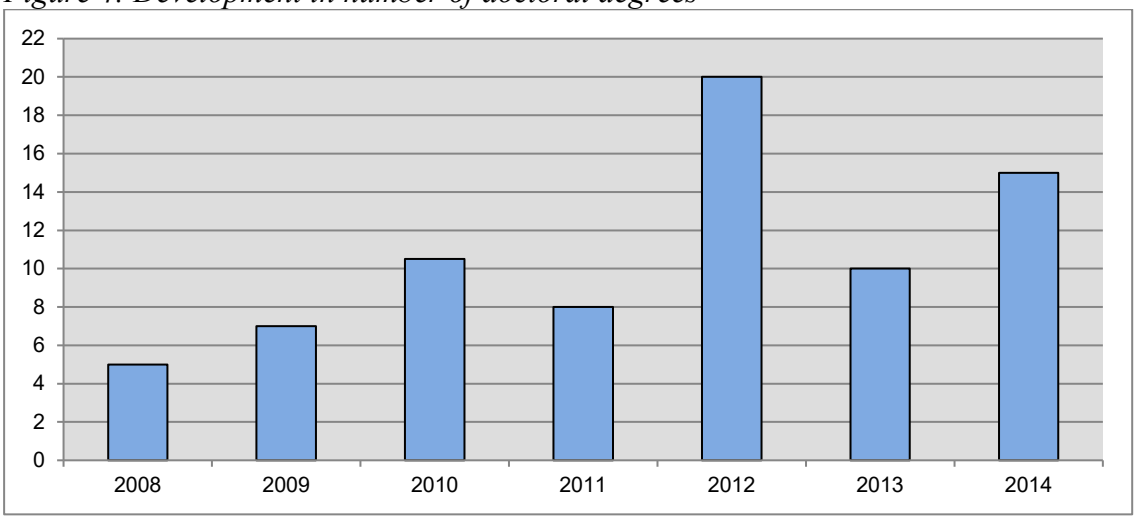


Figure 4: Development in number of doctoral degrees



6. Publishing researchers

The tables below show the number of researchers who have published at least one scientific article with Ahus as author address in 2014. Data were obtained from CRIStin.

Table 6 shows publishing researchers by gender and age, while Table 7 shows a similar overview per division.

Table 6: Publishing researchers by sex and age

Men		Women		Totalt	
Number	Age	Number	Age	Number	Age
104	47,6	110	44,4	214	45,9

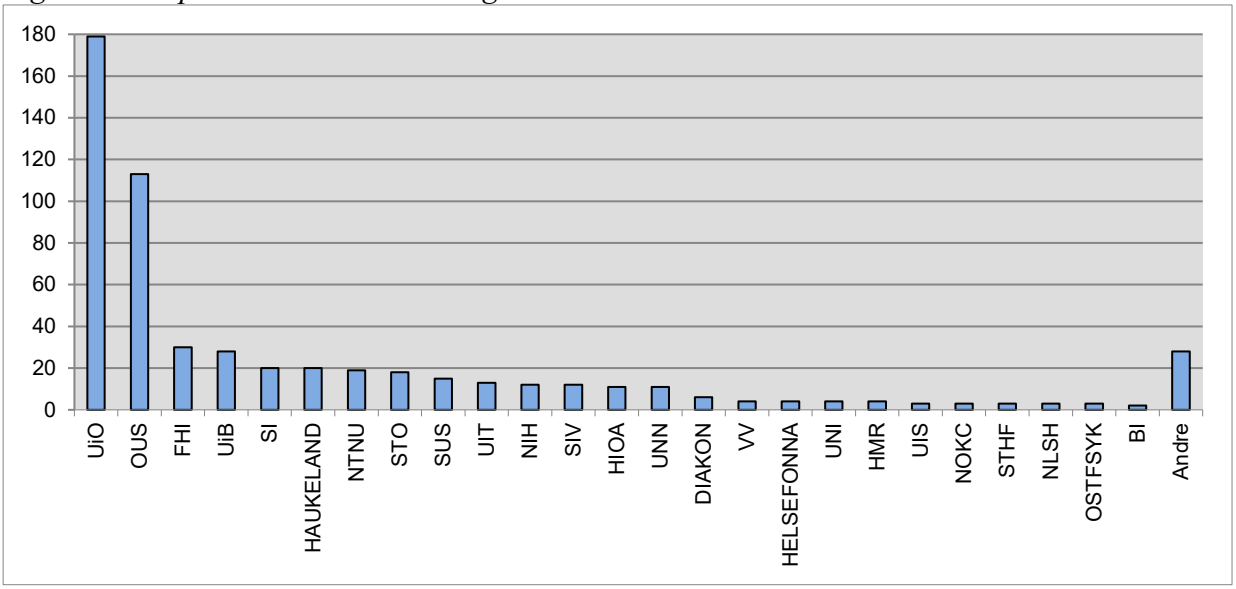
Table 7: Publishing researchers by sex and age by division

	Men		Women	
	Number	Age	Number	Age
Division of Paediatric and Adolescent Medicine	1	42	9	43
Division of Diagnostics and Technology	15	47	20	44
Division of Mental Health	9	51	11	52
Unit for Development, (Health Promotion)	0		3	52
Health Services Research Unit	13	44	14	45
Division of Surgery	21	49	6	43
Division of Gynaecology and Obstetrics	1	57	12	47
Division of Medicine	37	47	35	41
Orthopaedic Clinic	7	44		

7. National cooperation

Figure 5 presents an overview of Norwegian institutions with which researchers at Ahus collaborate and publish. The most common co-publications involve UiO (University of Oslo) and Oslo University Hospital (OUS).

Figure 5: Co-publication with Norwegian institutions



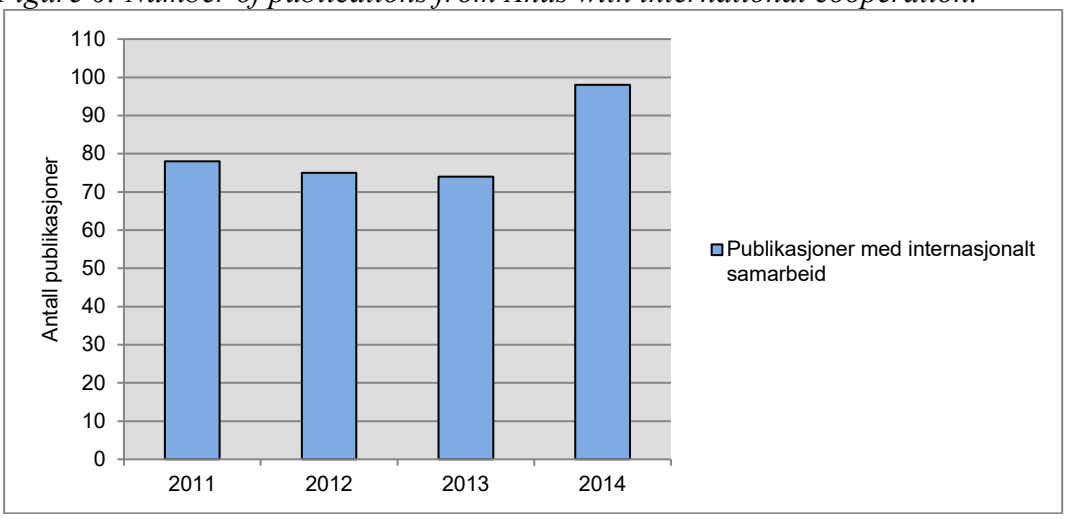
Description of the abbreviations in the figure above:

- UiO – University of Oslo
- OUS – Oslo University Hospital Trust
- FHI – Norwegian Institute of Public Health
- UiB – University of Bergen
- SI – Innlandet Hospital Trust
- HAUKELAND - Haukeland University Hospital
- NTNU – Norwegian University of Science and Technology
- STO – St Olav Hospital
- SUS – Stavanger University Hospital
- UiT – University of Tromsø
- NIH – Norwegian School of Sport Sciences
- SIV – Vestfold Hospital Trust
- HiOA – Oslo and Akershus University College
- UNN – University Hospital of North Norway
- DIAKON – Diakonhjemmet Hospital
- VV – Vestre Viken Hospital Trust
- Helse Fonna - Helse Fonna Hospital Trust
- UNI – Uni Research AS
- HMR – Møre og Romsdal Hospital Trust
- UiS – University of Stavanger
- NOKC – Norwegian Knowledge Centre for the Health Services
- STHF – Telemark Hospital Trust
- NLSH – Nordland Hospital Trust
- OSTFSYK – Østfold Hospital Trust
- BI – BI Norwegian Business School

8. International cooperation

International cooperation is important for research communities. In 2014, 98 articles or 41% of the published articles were co-publication with international partners. As figure 6 shows, the number of articles that include international cooperation has increased somewhat compared with previous years.

Figure 6: Number of publications from Ahus with international cooperation.



9. Grant of external research funding Ahus and Campus Ahus

Table 8 shows an overview of research projects that in 2014 were granted external research funding for PhD candidates, postdoctoral fellowships or larger operating grants. Most of these grants are multi-year; the right-hand column of the table shows annual allocations. Table 9 presents an overview of minor allocations from external sources. These are usually one-time grants.

Table 8: Projects granted external research funding to PhD candidates, postdoctoral fellows and larger operating grants.

Project title	Project Manager	Division/Clinic	Funded by:	Awarded 2014
Helpful help from ambulatory emergency teams	Trude Klevan/ Lars Tanum	Division of Mental Health	Extrastiftelsen, Health and Rehabilitation	665 000
Hepatitis C treatment for drug addicts	Olav Dalgard	Division of Medicine	Extrastiftelsen, Health and Rehabilitation	665 000
The aetiology and intention to treat in community-acquired pneumonia in children and adolescents	Britt Nakstad	Division of Paediatric and Adolescent Medicine	South-Eastern Norway Regional Health Authority	936 000
Trans-generational transmission of biological stress, the impact on fetal and postnatal growth and telomere length in a cohort of multi-ethnic preschool children	Line Sletner	Division of Paediatric and Adolescent Medicine	South-Eastern Norway Regional Health Authority	936 000
Chronic fatigue syndrome following infectious mononucleosis in adolescents: a combined prospective and cross-sectional study	Vegard Bruun Wyller	Division of Paediatric and Adolescent Medicine	South-Eastern Norway Regional Health Authority	936 000
Modelling the transmission and control of methicillin-resistant Staphylococcus aureus in community and health care institutions	Truls Michael Leegaard	Division of Diagnostics and Technology	South-Eastern Norway Regional Health Authority	936 000
National initiative - Health Services Research	Hilde Lurås	Research Centre (HØKH)	South-Eastern Norway Regional Health Authority	1 500 000
Hyperemesis gravidarum; the relation to anxiety and depression	Malin Eberhard-Gran	Research Centre HØKH)	South-Eastern Norway Regional Health Authority	936 000

Project title	Project Manager	Division/Clinic	Funded by:	Awarded 2014
Recurrence of preeclampsia and HELLP; the role of placenta	Anne Eskild	Division of Gynaecology and Obstetrics	South-Eastern Norway Regional Health Authority	936 000
Modifying autophagy and compromised endolysosomal function to combat age-related neurodegeneration	Tormod Fladby	Division of Medicine	South-Eastern Norway Regional Health Authority	936 000
Exosomes from Hypoxic Tumours - Mediators of Cancer Metastasis	Anne Hansen Ree	Division of Medicine	South-Eastern Norway Regional Health Authority	936 000
ACRedIT: Advanced ColoRectal Cancer – Individualization of Therapies	Anne Hansen Ree	Division of Medicine	South-Eastern Norway Regional Health Authority	2 000 000
Myocardial dysfunction in acute COPD	Helge Røsjø	Division of Medicine	South-Eastern Norway Regional Health Authority	936 000
Functional implications of RNA- and DNA-quality control in telomere maintenance and cancer	Hilde Loge Nilsen	Division of Medicine	South-Eastern Norway Regional Health Authority	2 242 000
ACE 1950	Ole Morten Rønning	Division of Medicine	South-Eastern Norway Regional Health Authority	390 000
Early clinical and molecular characterization of Inflammatory Bowel Disease in adults and paediatric patients. Relationship between gut barrier dysfunction and dysbiosis in treatment naïve, newly diagnosed patients.	Jørgen Jahnsen		South-Eastern Norway Regional Health Authority	936 000
Functional implications of the RNA and DNA processing activity of SMUG1 in telomere maintenance, stem cells and cancer	Hilde Nilsen	Division of Medicine	The Norwegian Cancer Society	1 064 041

Project title	Project Manager	Division/Clinic	Funded by:	Awarded 2014
ApGEM Pre-clinical genotype-phenotype predictors of Alzheimer's disease and other dementia	Tormod Fladby	Division of Medicine	The Research Council of Norway - EU PROJECT	2 176 000

Table 9: Projects granted smaller grants from external funding sources

Project title	Project Manager	Division/Clinic	Funded by:	Awarded 2014
The MPFL Project	Truls Straume-Næsheim	Orthopaedic Clinic	Aase Bye and Trygve J P Hoff's Fund for Scientific Medical Research	17 000
Achilles tendon study (Bye/Hoff)	Ståle Myhrvold og Sigurd E Hoelsbrekken	Orthopaedic Clinic	Aase Bye and Trygve J P Hoff's Fund for Scientific Medical Research	17 000
Graphic, structured and adaptive clinical documentation and decision support	Petter Risøe	Division of Medicine	HSØ - Innovation funds	270 000
Nutrition, growth and cognitive development among preterm infants (salary funds from OUS).	Britt Nakstad	Division of paediatric and adolescent medicine	UiO, funded by NFR	300 000
A prospective randomised trial comparing needletomy to clostridium histolyticum in the treatment of Dypytren's contracture	Ingi Thor Hauksson	Orthopaedic Clinic	Sophies Minde	350 000
The Blix Family Fund	Anett Ottesen	Division of Medicine	The Blix Family Fund	70 000
Fast track hip fracture - Sophies Minde	Christian Pollmann	Orthopaedic Clinic	Sophies Minde	225 000
Award from the Norwegian Surgical Association	Marianne Aarstad Merok	Division of Surgery	Norwegian Surgical Association	15 000
NORDSTEN study	Oliver Grundnes	Orthopaedic Clinic	Møre og Romsdal Hospital Trust	264 576

10. Grant of internal research funding

Once a year, internal strategic research funding is announced that employees at Ahus and Campus Ahus can apply for. External experts who provide an overall assessment of the quality of the individual application, and view this in the context of the hospital's strategic development plan and the professional and research strategy assess the applications.

In accordance with adopted procedures, applications where both external experts consider the application to be strongly recommended or recommended will be granted. The allocation amount varies between NOK 200,000 and NOK 250,000 per project. Applicants are encouraged to use peer feedback to improve their applications when applying for research funding from the South-Eastern Norway Regional Health Authority and other external sources.

In 2014, a total of NOK 25 million was applied for, divided into 66 applications. 26 projects were granted and a total sum of NOK 6 million was awarded.

Table 10: Projects awarded internal research funding 2014

Project title	Project Manager	Division/Clinic
Aetiology and the decision to treat: community-acquired pneumonia amongst children and adolescents in Akershus and North-Oslo	Britt Nakstad	Division of Paediatric and Adolescent Medicine
Prognostic factors, microbiota and treatment options in newly diagnosed inflammatory bowel disease (Morbus Crohn) in children and adolescents.	Britt Nakstad	Division of Paediatric and Adolescent Medicine
Do polymorphisms in the Toll-like receptor 2 gene predispose for invasive Staphylococcus aureus infections?	Hege Vangstein Aamot	Division of Diagnostics and Technology
Horizontal gene transfer in meningococcus	Ole Herman Ambur	Division of Diagnostics and Technology
Effects of first line management on employees work situation. A case study in Akershus University Hospital.	Petter Hurlen	Division of Diagnostics and Technology
Family-Based Treatment of Depressed Adolescents: A Randomized Controlled Trial with Clinic-referred adolescents	Pravin Israel	Division of Mental Health
Medication-overuse headache (MOH) - Behavioural dependency characteristics and behavioural treatment in primary care.	Christofer Lundqvist	Research center (HØKH)
Patient-reported result 5 years after anterior cruciate ligament reconstruction in knee with accompanying full-thickness cartilage injury	Asbjørn Årøen	Division of Surgery
Symptom, diagnosis and outcomes in knee ligament injuries	Asbjørn Årøen	Division of Surgery
Breast cancer and human cytomegalovirus infection (HCMV) as well as other metabolic and ambient factors for disease development	Katja Vetvik / Ida Bukholm	Division of Surgery
Long-term outcome after distal radius fractures in elderly patients	Per-Henrik Randsborg	Division of Surgery
Treatment and functional outcomes in patients with dislocated femoral neck fractures below 70 years of age.	Stein Erik Utvåg	Division of Surgery
Laparoscopic lavage vs primary resection as treatment for perforated diverticulitis (SCANDIV / Scandinavian diverticulitis trial)	Tom Øresland	Division of Surgery
Treatment of perianal fistulas, comparison of advancement flap surgery and collagen plug.	Tom Øresland	Division of Surgery

Project title	Project Manager	Division/Clinic
Translating, validating and testing for responsiveness of PFDI-20 and PFIQ-7 condition specific quality of life questionnaire for women with pelvic floor disorders in the Norwegian Population	Marie Ellstrøm Eng/Tom Øresland	Division of Gynaecology and Obstetrics/Division of Surgery
Novel pathogenetic mechanisms in inflammatory bowel disease	Andreas Rydning	Division of Medicine
Rectal Cancer - Tumour Hypoxia in Therapy Resistance and Metastasis	Anne Hansen Ree	Division of Medicine
The MetAction Therapy Study - Actionable Target Identification for Palliative Systemic Therapy in Cancer Metastasis	Anne Hansen Ree	Division of Medicine
Prehospital delay, stroke knowledge and early mobilization in acute stroke	Bente Thommessen	Division of Medicine
The role of chromogranin A in cardiac disease	Helge Røsjø	Division of Medicine
Functional MRI of hypoxia-mediated rectal cancer aggressiveness - the OxyTarget study	Kathrine Røe	Division of Medicine
TARGER Prostate Cancer: target kinases to prevent regrowth after radio therapy - collaboration with Trinity College Dublin	Kathrine Røe	Division of Medicine
Pathology in precerebral an cerebral arteries among middle-aged subjects of Akershus County	Ole Morten Rønning	Division of Medicine
Can circulating biomarkers predict cardiovascular injury following chemotherapy and the preventive effect of neurohormonal blockade	Torbjørn Omland	Division of Medicine
Mechanism, Risk, Complications, and Treatment of Thiazide-Induced Hyponatremia	Torbjørn Omland	Division of Medicine
Identifying myocardial dysfunction in patients with acute exacerbation of COPD	Kjetil Steine	Division of Medicine

11. Outstanding Research Award

Every year, the Outstanding Research Award is granted to three articles with the first author affiliated with Ahus. An important purpose of this recognition is to highlight the excellent research produced and published at the hospital. The Research Committee, based on publication points/impact factor of works published in the last year, recommends which articles are awarded the prize. The winners receive flowers, a diploma, and a cash prize (10,000 kroner) that can be used for conference participation or similar activities.

This year's award winners with CEO Øystein Mæland.
From left: Jorun Rugkåsa, Christopher Stephen Inchley, and Torbjørn Omland.

Professor Torbjørn Omland, Division of Medicine:

Torbjørn Omland; Marc A. Pfeffer; Scott D. Solomon; James A. de Lemos; Helge Røsjø; Jūratė Šaltytė Benth; Aldo Maggioni; Michael J. Domanski; Jean L. Rouleau; Marc S. Sabatine; Eugene Braunwald. **Prognostic Value of Cardiac Troponin I Measured With a Highly Sensitive Assay in Patients With Stable Coronary Artery Disease.**

The National Heart, Lung, and Blood Institute sponsored the PEACE trial with support from Knoll Pharmaceuticals and Abbott Laboratories. This biomarker substudy was supported by Abbott Diagnostics and Roche Diagnostics. Dr. Omland has received speaker's honoraria from Abbott Diagnostics, Siemens Healthcare Diagnostics, and Roche Diagnostics; and research grant support from Abbott Diagnostics and Roche Diagnostics through Akershus University Hospital. Dr. Pfeffer has received consulting fees from Amgen, Anthera, AstraZeneca, Biogen, Boehringer Ingelheim, Boston Scientific, Bristol-Myers Squibb, Cytokinetics, Daiichi-Sankyo, Genzyme, Gilead, GlaxoSmithKline, Medtronic, Nicox, Novartis, Roche, Salutria, Sanofi-Aventis, Servier, the University of Oxford, and VIA Pharmaceutics; and research grant support from Abbott, Amgen, Baxter, Celladon, Novartis, and Sanofi-Aventis. Brigham and Women's Hospital has been awarded patents regarding the use of inhibition of the renin-angiotensin system in selected survivors of myocardial infarction; Dr. Pfeffer is among the coinventors. The licensing agreement with Abbott, Boehringer Ingelheim, and Novartis is not linked to sales. Dr. de Lemos has received research

grant support from Abbott Diagnostics and Roche Diagnostics. Dr. Sabatine has received research grant support from Abbott Laboratories, BRAHMS, Critical Diagnostics, and Roche Diagnostics through Brigham and Women's Hospital. Dr. Braunwald has received grant support from Knoll Pharmaceuticals and Abbott Laboratories (as a supplement to the PEACE trial). All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Reprint requests and correspondence: Professor Torbjørn Omland, Akershus University Hospital, Division of Medicine, NO-1478 Lørenskog, Norway

J Am CollCardiol. 2013;61(12):1240-1249. doi:10.1016/j.jacc.2012.12.026

Cardiac Muscle Protein Troponin I leaks into the bloodstream when cardiac muscle cells are damaged or die. Previously, troponin measurements have been used to determine whether a patient has had an acute heart attack or not. With conventional measurement methods, only a small minority of patients with old heart attacks or stable angina pectoris ("heart cramps") show detectable levels of troponin I in the blood. With the introduction of high-sensitive troponin methods, a larger proportion of these patients will have measurable values, but the factors that contribute to determining the level in the blood and the prognostic value of such values have not been known.

In this study conducted by the cardiac research group at Ahus in collaboration with researchers at Harvard University, more than 98% of patients had measurable values with the new high-sensitive method. Several factors affect the level of troponin I in the blood. Men generally had higher values than women, and the level of troponin I increased with age. A high level of troponin I in the blood was associated with a significantly increased risk of later heart failure, heart attack, and early death. The study is published in the Journal of the American College of Cardiology, one of the world's leading cardiology journals.

Senior Consultant Christopher Stephen Inchley, Division of Paediatric and Adolescent Medicine (BUK):

Inchley, Christopher; Østerholt, Helene Dale; Sonerud, Tonje; Fjærli, Hans Olav & Nakstad, Britt (2013). Downregulation of IL7R, CCR7, and TLR4 in the Cord Blood of Children With Respiratory Syncytial Virus Disease.
Journal of Infectious Diseases. ISSN 0022-1899. *208*(9), s 1431- 1435.

Every year, several hundred infants are admitted to Ahus with pneumonia caused by the RS virus. During the first two years of life, almost all children are infected with the RS virus. Therefore, the question we asked was: "What characterizes the children who become so ill that they are hospitalized with the RS virus?"
By taking umbilical cord samples from over 2000 newborns, we have been able to examine their immune system at birth – often several months before the RS virus infection. We identified the children who were so ill that they were admitted to the hospital with an RS virus infection and compared them with children who were not as severely affected. We found that the sickest children already had lower levels of three key genes in the immune system against the RS virus at birth: TLR4, CCR7, and IL7R.
Dendritic cells are important cells in the innate immune system. They use TLR4, among other things, to detect the RS virus. When the virus is detected, dendritic cells recruit other immune cells

before traveling to the lymph nodes – a journey that is entirely dependent on CCR7. In the lymph nodes, the adaptive immune system is activated. The adaptive immune system organizes the innate immune system, a step that is necessary to get rid of the RS virus. Without IL7R, the adaptive immune system is not mature enough to handle the virus.
Our results show that infants admitted with the RS virus already at birth have differences in the immune system that can explain why they become sicker. These differences may represent an immune system that is less mature and therefore less equipped to handle an RS virus infection.

Senior researcher Jorun Rugkåsa, Health Services Research Unit (HØKH):

Rugkåsa, J., Dawson, J. (2013). **Community Treatment Orders: current evidence and its implications.** *British Journal of Psychiatry*, 203: 406-408doi: 10.1192/bjp.bp.113.133900.

Compulsory Mental Health Care without Inpatient Treatment (TUD) is used to assist patients with severe and persistent psychiatric disorders and frequent readmissions – often under coercion – to achieve more stability and prevent relapses. It is expected to be a less restrictive alternative to forced treatment in hospitals. Approximately 70 regulations for TUD exist worldwide, including in Norway, despite little evidence for the effectiveness of such compulsory treatment outside institutions. This article summarizes and analyses international research on the effects of TUD. Several case-control studies have been conducted, often with conflicting results regarding effectiveness. Methodological challenges make it difficult to generalize based on this group of studies alone. Three randomized controlled trials (RCTs) (two in the USA and the OCTET study in England) show that the use of TUD did not reduce readmissions over 12 months, despite a strong impact on patient autonomy. In the context of case-control studies, it appears that the quality of services, and not coercion itself, may affect readmissions. Since practitioners are obligated to use the least restrictive treatment option, these findings warrant a reconsideration of current practices. The article concludes that further RCTs may be necessary given the ongoing debate on the use of TUD, but existing evidence suggests that compulsory mental health care without inpatient treatment restricts patients' freedom without clinical effectiveness.

12. Subject and research day for the population

The annual subject and research day was organised for the fifth time on April 1st. An important purpose is to create a good reputation for the hospital. The day was widely promoted with the distribution of brochures in mailboxes and public places, the use of newspapers/media, and locally at the hospital (roll-ups, etc.).

There were approximately 150 attendees in the auditorium.

Menneskelig nær – faglig sterk

PROGRAM

Tirsdag 1. april 2014

kl 18.00 – 20.30

Auditoriet Akershus universitetssykehus HF

18:00 – 18:05
Velkommen til Akershus universitetssykehus HF
Hilde Lurås, Direktør for forskning og innovasjon/ Førsteamanuensis

18:10 – 18:25
Hva skyldes MS, og kan vi gjøre noe for å forebygge sykdomsutviklingen?
Trygve Holmøy, Overlege/ Professor
Nevrologisk avdeling

18:30 – 18:45
Kronisk utmattelsessyndrom (ME): Hva vet vi om årsaker og behandling?
Vegard Bruun Wyller, Overlege/ Professor
Barne- og ungdomsklinikken

18:50 - 19:05
Hva kan gjøres gjennom et lite hull?
Dan Levi Hykkerud, Overlege
Bildediagnostisk avdeling, Intervensjonsradiologi

19:10 - 19:25
Medfødt binyresykdom
Ingrid Nermoen, Avdelingssjef/PhD
Avdeling for nyresykdommer

19:30 – 19:45
Individualisert behandling av tarmkreft
Kathrine Røe, Postdoktor/PhD
Kreftavdelingen

19:50 - 20:05
Brystrekonstruksjon ved Ahus: Gjennomgang av tilgjengelige muligheter og valg
Ravi Bains, Overlege/PhD
Bryst- og endokrinologisk avdeling
Brystrekonstruksjon ved Ahus

20:10 - 20:25
Liker brukere av psykisk helsevern oppsøkende tjenester?
Ann-Mari Lofthus, Stipendiat
Divisjon for Psykisk helsevern

Attachments: Research groups

The following research groups were active as of December 2014. (Research group leader in parentheses.)

- Division of Surgery. Research Manager Tom Øresland
  - ENT research group (Magnus von Unge)
  - Urological Research Group (Stig Müller)
  - Gastrosurgical research group including maternal/endocrine, anaesthesia, vascular / thorax (Ola Røkke)

- Orthopaedic Clinic/forskningsgruppe. Research Manager Asbjørn Årøen.
  - Orthopedic Research Group (Asbjørn Årøen)

- Division of Mental Health/ R&D department. Research Manager Torleif Ruud
  - Psychobiology and substance abuse (Lars Tanum)
  - Child and Adolescent Mental Health (Pravin Israel)
  - Quality and implementation (Kristin S. Heiervang)
  - Relatives and users' experiences (Bente Weimand)

- Division of Paediatric and Adolescent Medicine. Research Manager Britt Nakstad
  - Research Group for Neonatal Resuscitation and Patient Safety
  - Research Group for Respiratory Infections
  - Research Group for Neonatal Nutrition, Growth and Development
  - PAEDIA (Vegard Bruun Wyller)

- Health Services Research Unit (HØKH). Research Manager Hilde Lurås.
  - Research Group for Health Services Research (Hilde Lurås)
  - Research Group for Clinical Communication (Pål Gulbrandsen)

- Division of Medicine – Avdeling for forskning. Research Manager Helge Røsjø.
  - Oncogenomics (Vessela Kristensen)
  - Cardiac thorax research group (Torbjørn Omland)
  - Clinical Neuroscience Research Group (Tormod Fladby)
  - Gastroenterology Research Group (Jørgen Jahnsen)
  - Hematologic Disorders Research Group (Anders Dahm)

- Division of Gynaecology and Obstetrics. Research Manager Anne Eskild.
  - Gynaecology and obstetrics (Anne Eskild)

- Divisjon for diagnostikk og teknikk. Research Manager Janne Pedersen
  - Infectious Diseases and Microbiology (Truls Leegaard)
  - Medical Biochemistry. Interdisciplinary Laboratory Medicine, and Technology (Tor-Arne Hagve)