PUBLICATIONS OF
THE UNIVERSITY OF EASTERN FINLAND

Reports and Studies in Health Sciences

IRMA NYKÄNEN (ed.)

4TH NORDIC CONFERENCE ON RESEARCH IN PATIENT SAFETY AND QUALITY IN HEALTHCARE

Kuopio, Finland, May 18-20, 2016

4th Nordic Conference on Research in Patient Safety and Quality in Healthcare

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Program and Abstracts

Publications of the University of Eastern Finland
Reports and Studies in Health Sciences
21

School of Pharmacy, Faculty of Health Sciences
University of Eastern Finland
Kuopio
2016

Distributor:
University of Eastern Finland
Kuopio Campus Library
P.O.Box 1627
FI-70211 Kuopio, Finland
http://www.uef.fi/kirjasto

ISBN: 978-952-61-2129-1 (nid.)
ISSNL: 1798-5722
ISSN: 1798-5722
Paino: Grano Oy

Nykänen Irma (ed.)
The 4th Nordic Conference on Research in Patient Safety and Quality in Healthcare Kuopio, Finland, May 18-20, 2016. Program and Abstracts. Publications of the University Eastern Finland. Report and Studies in Health Sciences 21. 2016, 119 p.
ISBN: 978-952-61-2130-7 (nid.)
ISSNL: 1798-5722
ISSN: 1798-5730

ABSTRACT

The 4th Nordic Conference on Research in Patient Safety and Quality in Healthcare is organized by the University of Eastern Finland, School of Pharmacy and Department of Health and Social Management, Kuopio University Hospital and City of Kuopio. The conference gathers Nordic and international researchers and developers working in the field of patient safety and healthcare quality and effectiveness to share their knowledge and ideas.

This book contains the program and abstracts of the 4th Nordic Conference on Research in Patient Safety and Quality in Healthcare held in Kuopio, Finland, May 18-20, 2016.

Medical Subject Headings:
Patient Safety, Quality Indicators, Health Care, Quality Assurance, Health Care, nursing, Treatment Outcome, Program Evaluation, Comparative Effectiveness Research, Medicine, Medical Informatics, Hospital Administration, Health Economics

Yleinen suomalainen asiasanasto:
Potilasturvallisuus, Terveydenhuollon laatumittarit, Terveydenhuollon laadunvarmistus, Hoitotyö, Hoidon vaikuttavuus, Ohjelman arviointi, Vertaileva vaikuttavuustutkimus, Lääketiede, Lääketieteellinen informatiikka, Sairaalahallinto, Terveystaloustiede

Welcome

Dear Conference participants,

It is a great pleasure to wish you welcome you the 4th Nordic Conference on Research in Patient Safety and Quality in Healthcare (NSQH2016) in Kuopio.

From the ninety research abstracts submitted to the conference, we have, with the aid of the Scientific Committee and external reviewers chosen an exciting programme with 34 oral and 47 poster presentations. These will be complemented by four key note speeches by speakers from Denmark, Finland, UK and USA, four workshops (one each organized by Denmark, Finland, Norway and Sweden), and two panel sessions. In addition to that, there will two preconference workshops, one on new innovations for patient safety in hospitals, and one on methods in patient safety and effectiveness research.

We are very thankful for our Scientific Committee for all the help and advice we have received during the planning of the conference. Furthermore, our sincere thanks go to the organisers and speakers of the individual preconference and conference workshops and panel sessions. We are also very grateful for the reviewers of the abstracts for the help in planning an interesting program. I also want to thank sincerely all my colleagues in the organizing committee for their relentless efforts to make the conference a success.

We sincerely thank all our sponsors: The Kuopio University Hospital, The city of Kuopio, the Finnish Patient Insurance Centre, Corame Oy, Duodecim Medical Publication Ltd, National Institute for Health and Welfare, Esior Oy, Newicon Oy, Medfiles Ltd and Led Suutari. Their contributions have enabled us to keep the registration fee as low as possible to allow also young scientist to attend the conference and thus get involved in the important field of patient safety and healthcare quality and effectiveness research.

We hope that your stay in Kuopio is both scientifically and socially rewarding.

Risto Roine
Chair of the organizing committee
University of Eastern Finland

4th Nordic Conference on Research in Patient Safety and Quality in Healthcare

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15.20-15.40	Hannu Kokki	Monitoring during anesthesia and potential new solutions provided by it
15.40-16.00	Mila Hildén	Novel monitoring systems for newborns
16.00-16.20	Elina Turunen	Carepath model for elective surgical patients
16.20-16.40	Juha Hartikainen	Monitoring cardiac interventions
16.40-18.00	Visit to the surgical ward and the ward for newborn babies with a chance to get acquainted with the new monitoring devices	

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13.18-13.23	Lina Nilsson	Sweden (via Skype)
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Town Hall

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NSQH2016 –program for poster sessions May 19-20, 2016, Kuopio, Finland		
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Bergerød	Inger Johanne	Improving the quality and safety of cancer care in hospitals: a study of next-of-kin involvement
Fagerström	Lisbeth	The impact of nurses' optimal workload level on patient safety and mortality – a multicenter study using the Rafaela system
Haatainen	Kaisa	We should listen to the patients – patients as promoters of patient safety in hospital
Haatainen	Kaisa	Deep analysis on adverse events among hospital patients using manual global trigger tool
Härkänen	Marja	Adverse drug events in adult hospital inpatients detected using the global trigger tool method
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Heiskanen	Jari	Which is more safe and effective - coronary artery bypass grafting (CABG) or percutaneous coronary intervention (PCI)?
Husebø	Sissel Eikeland	The practice of clinical leadership in the emergency department
Junttila	Jaana K	Can the incidence rate of adverse events be predicted by the optimality of nursing workload?
Jyrkkä	Johanna	Polypharmacy and the risk of upper gastrointestinal bleedings: the Finnish gastrointestinal bleeding (fin-gib) study
Kananen	Kristiina	External quality audition in Kainuu central hospital
Keränen	Tapani	Association of guidelines and clinical practice in early Parkinson's disease
Keränen	Tapani	Medication information needs of patients with Parkinson's disease
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Löwe	Katharina	Patient safety – the engineering point of view
Møller	Marianne	Information in medical treatment courses - a steering tool for the quality – a pilot study
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Rautalin	Mervi	Does the choice of surgical technique affect breast cancer patients' self-experienced quality of life?
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Reponen	Elina	Modified Rankin scale and short-term outcome in cranial neurosurgery
Roine	Eija	Costs in different states of breast cancer
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Salminen-Tuomaala	Mari	Patient safety issues in out-of-hospital emergency care as experienced by care providers
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Silén-Lipponen	Marja	Educational development in fall prevention – pilot study among nurse students

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Soini	Erkki	Setting quality of life benchmarks with matching-adjusted indirect comparison and icpc-2 codes: Berkson's bias beware
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Tjoflåt	Ingrid	Promoting nursing care during humanitarian assignments overseas: Experiences from the perspectives of Norwegian nurses
Tolppanen	Anna-Maija	Risk of pneumonia in relation to antipsychotic use in persons with and without Alzheimer's disease
Tolvi	Morag	In-hospital and 30-day post-discharge mortality in Helsinki and Uusimaa hospital district for years 2000-2013
Tuovinen	Anne	Effectiveness of low threshold health promotion; exercise counseling, physiotherapy and web-based weight control
Tyynismaa	Lotta	Developing a method for identifying a university hospital's high-alert medications

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Keynote speakers

LASSE LEHTONEN

M.D., LL.D.
Administrative chief physician,
Helsinki University Hospital
Professor of Health Law, University of Helsinki
Member of the Expert Panel on Effective Ways
of Investing in Health of the European Commission

PATIENT SAFETY AND QUALITY OF CARE IN THE EU

Although it seems a given that all EU citizens should have access to the same standard of safe, quality health care, it is sadly not always the case. In fact, roughly one in ten patients admitted to hospital in the EU suffers from adverse events during the course of their care. Some 25% of these cases are due to hospital-acquired infections, while others are due to human error, medical device failures and other factors. Much patient harm is preventable, but strategies to reduce harm are not implemented consistently across the EU.

Based on scientific evidence and on past EU projects on quality and safety, the services should be:
1. Effective and improve health outcomes
2. Safe and prevent avoidable harm related to care
3. Appropriate and compliant with current professional knowledge as well as meeting agreed standards
4. Patient-centred, and involve patients/people as key partners in the process of care
5. Efficient, leading to the best value for the money spent, and equitable for all, in relation to need, utilization and quality

A subset of indicators have been identified to measure and quantify the "amount" of health care quality and patients' safety, which will be crucial for measuring, evaluating and comparing the quality and safety of EU health care systems.

PATRICIA C. DYKES

PhD, RN, FAAN, FACMI
Sr. Nurse Scientist
Program Director, Center for Patient Safety Research and Practice Program Director, Center for Nursing Excellence Brigham & Women's Hospital

EVIDENCE AND BEST PRACTICES RELATED TO FALL PREVENTION ACROSS THE CONTINUUM

This presentation will address the challenges related to fall prevention across the continuum and present a range of strategies and tools that integrate evidence-based fall prevention interventions into practice.

The key points include the following:

- The extent of the problem of patient falls
- Evidence supporting successful efforts to prevent falls including patient engagement in hospital and community settings
- Challenges to integrating evidence into practice
- Available tools for engaging patients in the 3-step fall prevention process

BØJE HENNING ANDERSEN

Professor (human factors and healthcare management)
Technical University of Denmark DTU Management
Engineering Inst.
Human Factors Group

OVER IMPLEMENTATION OF STANDARDS

In this talk I will review the dangers of bureaucratization that threaten any comprehensive programme of accreditation in healthcare when it is put into practice.

I shall take as a concrete example the national programme of accreditation for hospitals in Denmark which, after two rounds of accreditation over a 10-year period, was abandoned. Front line staff and key stakeholders had come to associate the accreditation programme with excessive registration and documentation and a misguided focus on detailed specification of processes – that is, an over implementation of standards of quality.

While bureaucratization of quality and safety assurance efforts has brought benefits, it is difficult to control its unintended side-effects: an emphasis on documentation and control procedures rather than the work processes that are supposed to be controlled.

The review will highlight similar exaggeration of bureaucratization trends in other safety critical domains such as aviation and off-shore operations, where formalization and documentation approaches have been pursued as well, and again with mixed results.

The collapse of the accreditation programme in Denmark has shown us that staff motivation and acceptance may deteriorate seriously when the implementation of standards is seen to impose to great burdens of documentation. At the same time, it is unlikely that we shall find a prescription for identifying a unique sweet spot where the right amount of regulation and documentation balances against the right application of discretionary practitioner knowledge and skills.

TRISHA GREENHALGH

Professor of primary health care sciences,
University of Oxford, UK
Fellow of Green Templeton College at the University of Oxford

WHY DO CLINICIANS RESIST NEW IT SYSTEMS?

It is sometimes (wrongly) assumed that a new IT system will necessarily make patient care safer, and that clinicians who resist such systems are simply being stubborn. In fact, IT systems have their own inherent problems and can even sometimes make care less safe. Leaving that issue aside, 'resistance' is a social and professional phenomenon, not just a cognitive one. The careful study of clinician resistance, using theories from the social sciences, has important lessons for those involved in patient safety. This lecture will provide an overview of the literature in this area.

Abstracts

4. HEALTH-RELATED QUALITY OF LIFE OUTCOME IN PATIENTS WITH IDIOPATHIC NORMAL PRESSURE HYDROCEPHALUS – A ONE-YEAR FOLLOW-UP

Antti Junkkari, Antti Häyrinen, Tuomas Rauramaa, Harri Sintonen, Ossi Nerg, Anne M. Koivisto, Risto P. Roine, Heimo Viinamäki, Hilkka Soininen, Juha E. Jääskeläinen, Ville Leinonen
E-mail: antti.junkkari@kuh.fi.

Background: Idiopathic normal pressure hydrocephalus (iNPH) is a disorder that causes severe deterioration of health-related quality of life (HRQoL) amongst those affected. This impairment is partly owed to the well-known features of iNPH but also to the frequently present comorbidities and psychiatric symptoms. Vascular cognitive impairment and especially Alzheimer's disease (AD) are common comorbidities, and patients with these comorbidities have been reported to have poorer outcome. Although some of the symptoms of iNPH can be relieved with cerebrospinal fluid (CSF) shunt surgery there is barely any knowledge in the current literature about the predictors of the HRQoL outcome. Our primary aim was to investigate factors and comorbidities that may have an effect on the one-year HRQoL outcome of the shunting surgery.

Objective: This prospective study explored the factors affecting the health-related quality of life (HRQoL) outcome in patients with idiopathic normal pressure hydrocephalus (iNPH) one year after the installation of the cerebrospinal fluid (CSF) shunt.

Methods: HRQoL outcome was evaluated using 15D instrument, in which the minimum clinically significant change/difference has been estimated to be ± 0.015. The follow-up data (15D, Mini-Mental State Examination, Beck Depression Inventory, iNPH Grading Scale), frontal cortical biopsy, Charlson Age Comorbidity Index and body mass index (BMI) of 146 patients diagnosed with iNPH by clinical and radiological examination were analyzed.

Results: At one year follow-up 64 out of 146 [44%] patients had experienced a clinically significant improvement in HRQoL. Multivariate binary logistic regression analysis indicated that the absence of Aß and HPτ pathology in the frontal cortical biopsy (53 vs. 34%, absolute risk difference, 19%; adjusted OR=2.17, 95% CI 1.04–4.55; $p < 0.05$) and lower BMI (adjusted OR=0.90, 95% CI 0.84–0.99; $p < 0.05$) predicted favorable HRQoL outcome one year after the shunting.

Conclusions: Only half of the patients with iNPH experienced clinically significant favorable HRQoL outcome, partly explained by the patient's characteristics and comorbidities. The HRQoL approach reveals aspects that are important for the patient's well-being, but may also improve the quality of the outcome assessment of CSF shunting.

6. LEAN MANAGEMENT IN THE DEVELOPMENT OF HEALTH CARE

Heli Naukkarinen, Riitta Kalpio, Mari Liukka
E-mail: heli.naukkarinen@eksote.fi

The purpose of the study was to describe how Lean Management is used in the development of Health Care.

The aim was to investigate in which countries, units and activities Lean Management had been utilized when developing health care. Also Lean Management Tools and the outcome were of interest.

The research method was a systematic review of the literature. The data for this thesis were collected from Saimaa University of Applied Sciences and Lappeenranta University of

Technology Nelli-portal. Search words were lean manufacturing, lean management, health care, medical care and nursing. The literature were nine (N=9) English written articles from years 2007-2013. The results of the study show that Lean Management were used to improve access to care or to studies. Lean Management was used to speed up initiation of therapy and to improve treatment processes. The troughput times and waiting times were shortened. Furthermore, cost savings were also gained. The results of the study show that Lean Management is useful in improving health care processes.

7. ADVERSE DRUG EVENTS IN ADULT HOSPITAL INPATIENTS DETECTED USING THE GLOBAL TRIGGER TOOL METHOD

Marja Härkänen, Marjo Kervinen, Jouni Ahonen, Ari Voutilainen, Hannele Turunen,Katri Vehviläinen-Julkunen
E-mail: marja.harkanen@uef.fi

Background: Adverse drug events (ADEs) are common and represent a major concern in patient safety. The Global Trigger Tool (GTT), a method developed by the Institute of Healthcare Improvement (IHI), is a retrospective review of a random sample of inpatient hospital records using 'triggers' to identify possible adverse events.

Objectives: To identify the prevalence, preventability, and severity of ADEs in randomly selected adult hospital inpatients.

Methods: The study was conducted in a university hospital in Finland over a 12-month period. The GTT tool, containing 22 triggers (e.g. abnormal lab values, antidotes of drugs, patient symptoms), was developed for this study using previous GTT tools. Retrospective reviews of randomly selected discharged patients' records (n=463) and 2,933 patient days were undertaken. The prevalence, preventability, and severity of ADEs were studied.

Results: A total of 180 ADEs were found, and when calculating reviewed patient days and detected ADEs, there were 61.3 ADEs per 1000 patient days. Of the 463 patients, 27% (n = 125) had at least one ADE during their hospitalisation. 41.1% (74) of ADEs were preventable, meaning that there were medication errors behind the ADE. Of the ADEs, 94.4% caused temporary harm. An abnormal level of potassium in the blood was the most frequent ADE (n=37), followed by nausea (n=27), hypotension, dizziness or fall (n=24).

Conclusions: The GTT was proved to be an effective method, as ADEs were experienced by a quarter of randomly selected inpatients. Still, severe ADEs were rare. However, the GTT method alone is not enough to resolve problems; multi-professional team-work is required to identify adverse events and possibilities for their prevention. The database can detect the problem, but the collaboration of experts in different fields to define their clinical importance is required. In addition, the adverse events should be frequently discussed with hospitals' management teams so that recommendations for operational changes can be agreed. Based on our experience of using the GTT method, the development of the tool can be recommended for improving its usefulness.

8. IBM WATSON HEALTH: HOW COGNITIVE TECHNOLOGIES HAVE BEGUN TRANSFORMING CLINICAL MEDICINE AND HEALTHCARE

Maged N. Kamel Boulos
E-mail: mnkboulos@ieee.org; maged.kamelboulos@uhi.ac.uk

Background: IBM Watson Health (http://www.ibm.com/smarterplanet/us/en/ibmwatson/health/) belongs to a new generation of smart cognitive computing technologies (a type of artificial intelligence) that are poised to transform the way healthcare is delivered, and to vastly improve clinical outcomes, quality of care and patient safety.

Objectives: Our goal was to collect and document the huge potential of a range of emerging and exemplary uses of IBM Watson in healthcare in both developed and developing country settings.

Methods: A survey of current peer reviewed and grey literature has been conducted, looking for reports and case studies involving the use of IBM Watson in different health and healthcare applications.

Results, conclusions and clinical implications: With its ability to make sense of unstructured medical information by analysing the meaning and context of natural language, and uncovering important knowledge buried within large volumes of data and information, including medical images, IBM Watson is exceptionally well suited for clinical and healthcare decision support, where there are often elements of ambiguity and uncertainty. It has been (or is currently being) successfully deployed in many developed countries in the West, as well as in developing countries, such as India and South Africa. IBM Watson unlocks a complex case by acquiring information from multiple sources, e.g., accessing the electronic patient record, then parsing all related medical evidence at up to 60 million pages per second. After processing all of this information, Watson offers relevant and prioritised suggestions to the decision-maker, e.g., helping clinicians identify the best diagnosis and treatment options in complex oncology cases, and providing hospital managers with new operational insights. The ultimate goals are to reduce cost, medical errors, mortality rates, and help improve patients' quality of life.

9. NEXT-OF-KIN INVOLVEMENT IN PATIENT SAFETY IMPROVEMENT

Inger Johanne Bergerød, Siri Wiig
E-mail: Inger.johanna.bergerod@sus.no, Siri.wiig@uis.no

Background: In the Norwegian national cancer strategy, next-of-kin involvement in care is one of five objectives that are reported to improve safety of cancer care in Norway. There is however a need to highlight knowledge on how next-of-kin are involved in improving patient safety in cancer care.

Objectives: The purpose of this paper is to give an overview of the existing literature on next-of-kin involvement in patient safety mainly in cancer care, but also in general to reflect successful strategies, tools and methods that can be taken advantage of in cancer care. The following research question guided the review: Are next-of-kin involved in patient safety improvement and if they are, what strategies, tools or methods are used to involve them?

Method: The initial literature search identified 263 publications of which 17 met the inclusion criteria. Titles, abstracts and full-text articles were analyzed independently according to the Donabedian framework. A structured thematic quality content analysis is preformed organized into three patient safety themes: structure, process and outcome.

Result: In summary, there is limited evidence on how next of kin are included in safety improvement in health care services. This calls for more research to fill in the gaps in the evidence of methods, tools and strategies on how to involve next-of-kin appropriate and systematic in patient safety improvement. Despite this, study results presented in this paper indicate that next-of-kin involvement in health care services is a key source to success in patient safety improvement.

Clinical implications: Health care services and especially cancer care will benefit from interventions that are targeted to improve transfer across the health care settings to reduce readmission rates and adverse drug events. In addition future research should take into account next of kin's role and contribution to patient safety with new interventions that increase patient and family satisfaction, reduces burden and enhance patient safety.

10. IMPROVING THE QUALITY AND SAFETY OF CANCER CARE IN HOSPITALS: A STUDY OF NEXT-OF-KIN INVOLVEMENT

Inger Johanne Bergerød & Siri Wiig
E-mail: Inger.johanne.bergerod@sus.no

Background: In the National Cancer Strategy in Norway, next-of-kin involvement in cancer care is one of five objectives that are reported to improve the quality of cancer care. The Norwegian board of Health Supervision has done a risk analysis of Cancer Care in Norway. One of the top 16 patient safety hazards in this report highlights the lack of involvement of patients and their next of kin. There is a lack of knowledge on the influence of next-of-kin involvement in quality and safety within cancer care in hospitals. There is a need to increase knowledge about how next-of-kin experiences can improve cancer care quality and safety.

Objectives: The purpose of this paper is to explore how next-of-kin are involved in hospital cancer care in Norwegian hospitals and map methods used. The following research question guided the study: How are next-of-kin involved in hospital cancer care and what methods are used to involve them?

Methods: The study is based on a comparative case study of two hospitals within one regional health authority in Norway. Cancer care departments at two university hospitals have been recruited and data collection in this paper is anchored in qualitative semi-structured interviews with leaders and hospital staff. Data collection started in December 2015 and will end in March 2016. A total of approximately 40 semi-structured interviews will be conducted to create an in-depth understanding. The study applies the Organizing for Quality model (Bate et al, 2008) as the theoretical foundation.

Results: Preliminary results show that next-of-kin is considered an important resource for the patient and hospital staff in terms of improving quality and safety of care inside the hospital, but also in relation to transition between levels of care (primary and specialized). Some tools are identified related to collection next-of-kin experiences (letter to next-of-kin after the death of a patient with a questionnaire), regular user surveys, and documentation of conversations with children. The hospitals seem to lack a systematic approach to collect, analysis, and make use of next-of-kin experiences in terms of improving care quality and safety.

Clinical implications: A more structured way of guiding staff, such as a checklist, in next-of-kin involvement and on how to collect information on next-of-kin experiences could help increase awareness of next-of-kin as a source in improving care quality and safety.

11. RISK OF PNEUMONIA IN RELATION TO ANTIPSYCHOTIC USE IN PERSONS WITH AND WITHOUT ALZHEIMER'S DISEASE

Anna-Maija Tolppanen, Marjaana Koponen, Antti Tanskanen, Piia Lavikainen, Reijo Sund, Jari Tiihonen, Sirpa Hartikainen, Heidi Taipale
E-mail: anna-maija.tolppanen@uef.fi

Background: Pneumonia is one of the leading causes of morbidity and mortality in the aged population. Antipsychotics are commonly used for the behavioural and psychological symptoms of dementia and they have been associated with higher risk of pneumonia. Studies among persons with Alzheimer's disease (AD) or comparisons of individual antipsychotics are scarce.

Objectives: To investigate whether antipsychotic medication is related to higher risk of hospitalisation or death due to pneumonia in persons with and without AD.

Methods: Association between incident antipsychotic use and pneumonia was assessed in the MEDALZ cohort including all persons with AD who received a clinically verified AD diagnosis in Finland in 2005-2011 (N=60,584, n with incident pneumonia 12,225). To restrict the study sample to those who used antipsychotics for other indications than schizophrenia and bipolar disorders, persons with these diagnoses were excluded. A matched comparison cohort with no AD diagnosis (N=60,584, n with incident pneumonia 6,195) was used to compare the magnitude of risk. Comorbidities, concomitant medications, demographic and socioeconomic confounders were controlled by deriving a propensity score that was used as an adjustment factor. To test the robustness of estimates, and to account for unmeasured confounders, sensitivity analyses with case-crossover (case period 0-30 days, control periods 30-60 days and 336-366 days before pneumonia) and self-controlled case series designs were conducted.

Results: Antipsychotic use was associated with two-fold risk (adjusted hazard ratio (HR), 95% confidence interval (CI) 2.01, 1.90-2.13) in the AD cohort and somewhat higher risk in the non-AD cohort (3.40, 2.97-3.90). Sensitivity analyses with self-controlled case series (odds ratio (OR) 2.40, 95% CI 2.20-2.63 in the AD group, 2.02, 1.65-2.49 in the non-AD group) and case-crossover analyses gave similar results. OR with control period of 30-60 days before pneumonia was 1.74 (95% CI 1.38, 2.20) in the AD cohort and 5.22 (2.56-10.66) in the non-AD cohort. With control period set to one year before pneumonia, the ORs were 2.31 (2.05-2.60) and 4.94 (3.42-7.14) in the AD and non-AD cohorts, respectively. Higher pneumonia risk was observed already with short-term use, but the risk remained elevated also in the long-term use. The three most commonly used antipsychotics (quetiapine, risperidone, haloperidol) had similar associations with pneumonia risk.

Conclusions/clinical implications: The risk-benefit balance should be considered when antipsychotics are prescribed. Especially old persons who initiate antipsychotic treatment should be closely monitored.

12. EFFECTIVENESS OF LOW THRESHOLD HEALTH PROMOTION; EXERCISE COUNSELING, PHYSIOTHERAPY AND WEB-BASED WEIGHT CONTROL

Anne Tuovinen, Aku Kolari, Pia Aikio, Minna Väisänen, Ninna Mäkirinne-Kallio, Päivi Tikkanen,
E-mail: anne.maarit.tuovinen@kuopio.fi

Background: There is only a little empirical evidence to determine the long-term effectiveness of health promotion.

Objectives: The purpose of this project was to measure the effects of health promotion in respect of customers' health related quality of life (HRQoL).

Methods: City of Kuopio, health and wellbeing services participated in the project of University Hospital of Kuopio which used generic, comprehensive, 15-dimensional, self-administered 15D instrument to determine changes in customers' HRQoL. The 15D scale, HRQoL single index number, varies from 0 to 1, and a higher 15D index score represented greater health. The 0.015 change between cut-points is considered as clinically significant. The participants of this project were the customers of the City of Kuopio. The data was collected from three customer groups:
1) exercise and health counseling,
2) low threshold physiotherapy and health counseling (no doctor's referral necessary) and 3) web-based weight control/lifestyle group guidance. Data was collected during 11/2014-12/2015 using an electronic customer questionnaire which includes baseline and 3/6/12 month follow-ups. This report consists of the initial data between baseline and 3-month follow-up. Data was analyzed using SPSS 22.0 software.

Results: In total, 77 participants (18 to 80 years) have completed baseline and 3-month follow-up questionnaires. Participants' 15D score improved clinically significantly from 0.8654 to 0.8833. More than 50 % of participants in all groups reported positive changes in their perception of heath. Notable changes were decrease in discomfort or symptoms and increase in vitality. Among participants of physiotherapy (n=42) 62% reported improvement in HRQoL. The significant change between baseline and 3-month follow-up was the decrease in discomfort or symptoms ($p=0.04$) and increase in vitality ($p<0.01$).

Conclusions: The low threshold health promotion improved the customers' health related quality of life. The first results of the project thus far were promising although the number of participants was quite low. Electronic questionnaire seemed to be a useful way to collect customer data – however the follow-up answering percentage would requires more attention.

13. IN-HOSPITAL AND 30-DAY POST-DISCHARGE MORTALITY IN HELSINKI AND UUSIMAA HOSPITAL DISTRICT FOR YEARS 2000-2013

Morag Tolvi
E-mail: morag.tolvi@hus.fi

Background: Most quality issues in healthcare do not cause deaths and most deaths are not caused by poor quality of care. Most deaths are, in fact, part of the natural process of disease. Hospital mortality has not been thoroughly investigated in Finland. Researchers elsewhere have found a weekend effect, which has been thought to be caused by poorer quality and availability of care at weekends. Some have found that dedicated treatment centers, eg. stroke centers, cancel out this effect.

Objectives: To strive to find whether there is an admission effect (day of the week, month) in general. We will also analyze large volume patient groups for these effects.

Methods: We will examine the hospital administrative data and dates of death from the Population Register Center of Finland of all patients treated at HUS for the years 2000-2013 for any effect the timing of admission might have.
Results: The analyses will be done and the process improvements, if necessary, will be done in 2016.

Conclusion: Our conclusion will become evident once our analyses are ready.

14. ELECTRONIC PRESCRIPTION'S BENEFITS AND PROBLEMS – PHARMACY CUSTOMERS' EXPERIENCES IN FINLAND

Elina Lämsä, Riitta Ahonen, Maria Sääskilahti, Johanna Timonen
E-mail: elina.lamsa@uef.fi

Background: An electronic prescription (e-prescription) is issued, stored and dispensed electronically. In Finland, e-prescription was phased nationwide in by law since 2012. Approximately 90% of all dispensed prescriptions were electronic in 2015. The aim of e-prescription was to improve patient and medication safety as well as facilitate and expedite prescribing and dispensing of medicines. The introduction of e-prescription led to significant changes for pharmacy customers, such as viewing their own prescriptions with bank log-in IDs as an online service.

Objective: The aim of this study was to investigate pharmacy customers' experiences regarding benefits of and problems in e-prescription in Finland. Methods: We surveyed 1288 e-prescription customers (aged ≥18 years) purchasing medicines for themselves from 18 community pharmacies across Finland in autumn 2015. The questionnaire included open-ended questions about benefits and problems related to e-prescription. The answers were encoded and categorized using inductive content analysis, stored in SPSS for Windows and underwent descriptive analysis.

Results: More customers reported benefits (86%) than problems (23%). Purchasing prescription medicines from the pharmacy (48%) and storing of prescriptions (39%) have facilitated due to e-prescription. However, e-prescription has hindered customers from keeping up-to-date about own prescriptions (56%), for example names of medicines or amount of refills. Respondents experiencing the difficulty were unfamiliar with the online service for viewing e-prescriptions, felt uncomfortable to use computer or did not have an internet access or bank log-in IDs.

Conclusions: E-prescription has provided more advantages than disadvantages to pharmacy customers. According to pharmacy customers, e-prescription has facilitated purchasing prescription medicines from the pharmacy. However, customers' difficulties with keeping up-to-date about their own e-prescriptions can cause problems with medication safety. We need to consider how customers without internet access or bank log-in IDs can have up-to-date information about their e-prescriptions.

15. TEAMWORK IN NURSING HOMES AND HOME BASED CARE SERVICES – A LITERATURE REVIEW

Kristian Odberg
E-mail: kristian.odberg2@hig.no

Background: Even though most care is provided at the primary level, research on patient safety has mainly been focused on hospitals and is still in its infancy in primary care. Patient safety-related incidents in primary care are primarily associated with medication and diagnosis. Estimates of patient safety related incidents in primary care vary from 0 % to 24 % and it is estimated that 45 % to 76 % of the incidents are preventable. Contributing factors were failures related to communication among healthcare team members. Non-technical skills and teamwork are thus seen as important components in minimizing patient safety incidents. The World Health Organization also marks team-related categories such as leadership and coordination a priority for further research.

Objective: Based on the research literature, what are the characteristics of teamwork in nursing homes and home-based care services and how do they relate to patient safety?

Method: A systematic search was performed in the following databases: Medline, Embase and Cinahl using the following keywords: primary care, nursing home, home care, team, teamwork, patient care team, patient safety, quality of healthcare. In addition, a non-systematic search was performed in Google scholar. Thematic content analysis was performed on basis of a human factors framework. Critical appraisal was conducted and articles categorized according to identified themes.

Results: The literature documents that important prerequisites for effective teamwork are membership stability, adaptation of a problem-solving behavior, good communication and horizontal structures. Teamwork is overall more highly regarded by managers than by team-members, and the prevalence of teamwork in nursing homes and home care services seems to be low. Effective teamwork in nursing homes and homecare services is positively associated with professional and patient outcomes.

Implications: There seem to be a lack of studies employing a longitudinal design, when investigating teamwork performance and effectiveness in nursing homes and home care services. The results suggest that future research can profit on further investigating professional and organizational outcomes relating to teamwork in primary care. Practical implications are related to the awareness and knowledge of teamwork in nursing homes and home care services with managers and potential team members.

16. INDIVIDUALLY TAILORED DIETARY COUNSELING AMONG OLD HOME CARE CLIENTS - EFFECTS ON NUTRITIONAL STATUS

Satu Pölönen, Miia Tiihonen, Sirpa Hartikainen, Irma Nykänen
E-mail: irma.nykanen@uef.fi

Background: Nutrition is important in maintaining good health, functional capacity and quality of life among older people. Ageing is associated with decreased food intake, increased risk of malnutrition and loss of weight and muscle mass.

Objective: To evaluate the effect of individually tailored dietary counseling on nutritional status among home care clients aged 75 years or older.

Methods: Data were obtained from the Nutrition, Oral health and Medication (NutOrMed) intervention study in 2013–2014. The sample consisted of 227 home care clients (≥75 years) (intervention group, n=127; control group, n=100) who were at risk of malnutrition or malnourished. The Mini Nutritional Assessment (MNA), Body Mass Index (BMI) and plasma albumin were used to determine nutritional status at the baseline and after the six-month intervention. Mixed Model of linear regression was used to assess the effects of the nutritional intervention and the results were reported changes in MNA scores, plasma albumin and BMI. The intervention participants were instructed to increase their food intake with energy-dense food items, the number of meals they ate and their consumption of energy-, protein- and nutrient-rich snacks.

Results: The mean age of the home care clients was 84.3 (SD 5.6) in the intervention group and 84.4 (SD 5.3) in the control group, 70 % were women in both groups. In the intervention group, the mean change in MNA scores was 2.3 (95% confidence intervals [CI]:1.6 to 3.0) and in plasma albumin level, 1.6 g/l (95%[CI]:0.1 to 3.2), while in the control group both changes were negative -0.2 (95%[CI]: -0.9 to 0.5) and -0.1 (95%[CI]: -0.9 to 1.0) g/l, respectively. The intervention showed a significant effect on MNA scores and plasma albumin after adjustment for age, gender, MMSE and GDS-15.

Conclusions: Individually tailored dietary counseling may improve nutritional status among older homecare clients.

18. EDUCATIONAL DEVELOPMENT IN FALL PREVENTION – PILOT STUDY AMONG NURSE STUDENTS

Marja Silén-Lipponen, Marja Äijö, Tarja Tervo-Heikkinen
E-mail: marja.silen-lipponen@savonia.fi

Background: Research on fall prevention has been made plenty in Finland, but in health care education the issue has not been brought out enough. The Regional Fall Prevention Network (RFPNetwork) started operation in 2012 and its aim is to promote prevention of falls and fall-related injuries. Important part of the network is to ensure that already during education health care students are given enough evidence based knowledge and practical experiences about how to prevent falls. Savonia University of Applied Sciences (SUAS) and Kuopio University Hospital (KUH) co-operate in the network and developing educational innovations and teaching methods, which aim is to implement the methods both in professional primary and continuing education.

Objectives: The aim of this paper is to explore health care students' knowledge, understanding and attitudes about fall prevention at the beginning of a gerontological nursing course. The second phase of the study is to implement simulation pedagogy as a new teaching method in fall prevention education and third phase is to find out students' ability to apply their knowledge during a clinical practice.

Methods: The data of this pilot study´s phase 1 will be collected from the students' small group thematic discussions at the beginning of the gerontological nursing course. The students are asked to discuss about their previous understanding of environmental and personal factors related to falls and fall prevention. The data of the phase 2 will be collected by observation of the simulations and by using a thematic analysis of the educational debriefing. The phase 3 data will be collected by using an electronic diary where the students reflect their experiences about fall prevention.

Results: The results will contain about 30 health care students, who participate in a gerontological nursing course in spring 2016, conclusions about their knowledge of risk factors of fall and fall related injuries. In this presentation the first phase of the pilot study will be discussed and the other phases later on.

Conclusions/clinical implications: This pilot study is part of a larger research project which aim is to develop more effective ways to teach and motive health care students in patients fall prevention. Long term clinical implication in the future will be more safe patient care and effective fall prevention in all patient and customer care situations.

20. IMPLEMENTATION OF A MEDICATION BUNDLE IN RESIDENTIAL FACILITIES FOR THE DISABLED

Linda Aagard Thomsen, Mira El-Souri, Kirsten Pultz, Bjarke Abrahamsen, Charlotte Rossing
E-mail: lat@pharmakon.dk

Background: Persons with physical and mental disabilities in residential facilities often use many medicines and experience patient safety issues related to medication. More than 10,500 medication errors were reported from residential facilities in 2.5 years to the Danish Patient Safety Database.

Objectives: To achieve ≥ 300 days between medication errors requiring physician contact by implementing a medication bundle, which included:
1. medication reconciliation after hospital discharge
2. monthly screening of the medication lists
3. implementing checklists for safe dispensing and administration.

Methods: Ten municipal residential facilities participated in 2013 and 2014, spreading to 27 facilities in 2015. Staff completed an educational programme to enhance their competences in quality and safety in medication use, and then enrolled in the national Danish Patient Safety Programme (In Safe Hands). They implemented a medication bundle using the Model for Improvement (Institute for Health Care Improvement). Each facility established a team, responsible for implementation and data collection. The research team received monthly data on the four elements of the bundle. The goal was to achieve 95% compliance with the medication bundle over at least 3 months.

Results: Preliminary results show that out of the 37 residential facilities:
1. 15 reached the goal of implementing medication reconciliation
2. 12 reached the goal of implementing monthly screening
3. 16 reached the goal of implementing the checklist for safe dispensing
4. 13 reached the goal of implementing the checklist for safe administration

Six of the first ten facilities reached the goal of all elements of the bundle whereas one facility did not implement any. On average 2.7 (± 1.3) elements were implemented. The average number of days between medication errors requiring physician contact is 354 (from 49 to 571). One of the 27 facilities that started in 2015 reached the goal of all elements of the bundle, whereas 8 did not implement any. On average 1.0 (± 1.2) elements was implemented. The average number of days between medication errors requiring physician contact is 50 (from 13 to 84).

Conclusions/clinical implications: All improvement teams continuously monitor the processes of medication handling. Staff without healthcare training are capable of improving medication safety, but not all facilities are able to reach all goals or to sustain improvement over time. The final evaluation will cover the context factors and mechanisms determining successful implementation.

21. THE IMPACTS OF ELECTRONIC PRESCRIPTION ON THE MEDICATION SAFETY IN FINNISH COMMUNITY PHARMACIES

Hanna Kauppinen, Riitta Ahonen, Johanna Timonen
E-mail: hanna.kauppinen@uef.fi

Background: In Finland, a fully operational electronic prescription (ePrescription) system was implemented nationwide by law since 2012 in all community pharmacies and in health care. ePrescription was aimed to rationalize prescribing and dispensing of medicines and to improve patient and medication safety.

Objectives: To explore the experiences of pharmacists regarding the impact of ePrescription on medication safety issues in Finnish community pharmacies. A further objective was to explore how frequently errors or ambiguities occur in ePrescriptions. This study is part of the larger research project (Finnish ePrescription Project, FePPro) exploring the impacts of the implementation of ePrescription on the prescribing and dispensing of medicine and medication safety.

Methods: A cross-sectional postal survey was conducted to a random sample of Finnish pharmacists (n=1210) in the autumn 2014. The sample was collated from the registers of The Finnish Pharmacists´ Association and The Finnish Pharmacists´ Society. Respondents' experiences to medication safety issues were measured with Likert scale and structured questions. Descriptive statistical analyses were performed.

Results: Altogether 778 questionnaires were returned, yielding a response rate of 64%. Respondents felt that ePrescription improves medication safety in many areas: it reduces the risk of dispensing errors, promotes better management of the patient's overall medication, facilitates monitoring of duplicative therapy and drug interactions, and lessens the risk of incorrect interpretation of a prescription and prescription forgeries. However, 32% of the respondents reported that they had weekly found ambiguities or errors in ePrescriptions that required clarifications during the dispensing process. In addition, of the respondents, almost one-fifth (18.6%) had found such ambiguities or errors daily or almost daily. The three most common ambiguities or errors that respondents had found in ePrescriptions were incorrect total amount of medication (79.0%), missing notation of exceptional dosage instructions or purpose of use (SIC!) (69.0%), and unclear or incorrect dosage instructions (65.4%). In addition, incorrect strength (14.9%) and incorrect pharmaceutical form (14.2%) were also commonly experienced problems in ePrescriptions.

Conclusions: According to Finnish community pharmacists, the implementation of ePrescription has promoted medication safety in many areas, as anticipated. However, ambiguities or errors are common in ePrescriptions. Furthermore, some of these ambiguities or errors can delay dispensing of medicine, whereas others can cause serious risk to medication safety. The ePrescription system needs further development so that it better supports correct prescribing, and hence smooth and safe dispensingopment so that it better supports correct prescribing, and hence smooth and safe dispensing.

22. CAN WE IMPROVE IDENTIFICATION OF ADVERSE EVENTS BY FOCUSING ON PATIENTS WITH POOR PATIENT-REPORTED OUTCOMES?

Jari Heiskanen, Anna-Maija Tolppanen, Juha Hartikainen, Mikko Hippeläinen, Heikki Miettinen, Janne Martikainen, Risto P. Roine
E-mail: jari.heiskanen@uef.fi

Background: Identification of adverse events is crucial to be able to learn from them and improve practices. Voluntary reporting of adverse events, however, reportedly identifies only a minority of them, and scanning of patient records is tedious and time consuming. Focusing efforts on patients most likely to have suffered an adverse event could possible deliver better results. The Kuopio University Hospital (KUH) currently monitors the effectiveness of many of its services by routine collection of patient-reported outcome data. This allows the identification of patients with unsatisfactory treatment result, and may provide a possibility to concentrate efforts to identify adverse events on the right patients.

Aim: To test whether patients reporting unsatisfactory treatment outcome are more likely to have suffered an adverse event than those with a satisfactory outcome.

Methods: The treatment result of coronary artery disease patients having undergone either elective percutaneous coronary intervention, or coronary artery by-pass grafting were, based on self-reported health-related quality of life (HRQoL) change over the 12-month follow-up, categorized into good (an improvement in the 15D utility score of more than 0.015, i.e., the minimally important difference), or poor (a deterioration of more than 0.015). The electronic patient records of 50 patients with poor treatment outcome and 55 patients with good treatment outcome and living in the immediate catchment area of Kuopio University Hospital were reviewed to identify possible adverse events.

Results: The percentage of patients having had an infection during the follow-up was clearly higher in the group with poor outcome than in those with good outcome (14% vs. 5%) although the difference was not statistically significant. Likewise, major operative complications were more frequent (30% vs. 14%) in patients with poor HRQoL outcome. The percentage of patients suffering from other, unrelated conditions during the follow-up was statistically significantly higher in the group with unsatisfactory treatment result (82% vs. 61%, $p<0.05$).

Conclusion: The results of our preliminary study indicate that success of treatment, as measured by a patient-reported outcome such as HRQoL, may help to target efforts to identify adverse event to the right patients. This may increase the chance to more effectively detect unwanted effects of treatment and enables a more targeted approach to learning from past adverse events.

23. WHICH IS MORE SAFE AND EFFECTIVE - CORONARY ARTERY BYPASS GRAFTING (CABG) OR PERCUTANEOUS CORONARY INTERVENTION (PCI)?

Jari Heiskanen, Juha Hartikainen, Mikko Hippeläinen, Heikki Miettinen, Risto P. Roine, Janne Martikainen, Anna-Maija Tolppanen
E-mail: jari.heiskanen@uef.fi

Background: In most countries, PCI is nowadays the most commonly performed revascularisation procedure, although there is some evidence that CABG is more efficacious especially for more advanced disease. However, the more invasive procedure is intuitively related to a higher complication risk. There is an increasing demand for more evidence concerning the actual effectiveness of interventions under real-life conditions, especially with patient-centered measures such as health-related quality of life (HRQoL).

Aim: To investigate the complication risks related to CABG and PCI, and to assess whether these translate to differences in the post-operative HRQoL.

Methods: The study cohort included 378 patients who underwent CABG or PCI in the Kuopio University Hospital (KUH) during 2012-2014 and answered to the baseline HRQoL questionnaire and a follow-up 12 months after the revascularisation procedure. The minimally important difference (MID) threshold of 0.015 of the 15D HRQoL instrument was used to indicate a clinically meaningful decline (negative MID change) or increase (positive MID change) in HRQoL. The electronic patient records of a randomly chosen sample of 55 persons with positive MID change and 50 persons with negative MID change, who lived in the immediate catchment area of KUH, were reviewed to identify possible adverse events (infections, other complications, chronic diseases) that would affect HRQoL).

Results: In the entire study population of 378 patients, 53.6% of CABG patients (n=112) and 43.2% of PCI patients (n=73) experienced a positive MID change. A negative MID change occurred more commonly among those who underwent PCI than CABG (39.6% vs 25.4%, P=0.012). In our preliminary study based on clinical data available from electronic patient records (N=105), altogether 21.2% (n=7) of the CABG patients experienced an infection, while only 4.2% (n=3) of PCI patients had a mention of infection in their records (P=0.006). Other complications were also more common in the CABG group than PCI group (30.3% vs 18.1%, P=0.159). There was no difference in the incidence/prevalence of other comorbidities (72.7% and 70.8% in the CABG and PCI groups respectively P=0.842).

Conclusion: The results of our preliminary study indicate that although CABG is related to a somewhat larger complication rate, especially infection risk, a higher proportion of patients experience a clinically meaningful improvement in HRQoL during the 12-month follow-up after CABG in comparison to the less invasive PCI.

24. DEVELOPING A METHOD FOR IDENTIFYING A UNIVERSITY HOSPITAL'S HIGH-ALERT MEDICATIONS

Lotta Tyynismaa, Anni Honkala, Marja Airaksinen, Kenneth Shermock, Lasse Lehtonen
E-mail: lotta.tyynismaa@hus.fi

Background: There are medications that pose to a higher risk for harmful effects and medication errors (high-risk or high-alert medications) [1-3]. It is possible to use existing high-alert medication lists, although they reflect pharmacotherapies, clinical practices and health-systems in the contexts where the lists are compiled. Therefore, it is also preferable to use hospital-specific safety data to customize these lists to fit the local context. Patient safety incident and ME reporting systems provide data that could be used for compiling customized lists. In Finland, an electronic reporting system for patient and medication safety incidents (HaiPro) has been used since 2007 [4]. There are no publications where HaiPro data would have been used to identify high-alert medications.

Objectives: The study objective was to develop a method for identifying high-alert medications in a Finnish university hospital (HUS) by using medication error (ME) and near miss reports gathered through the hospital's ME reporting system (HaiPro).

Methods: Altogether 18 136 MEs and near misses were reported in 2007–2013. This study targeted to the reports where medications were coded as a contributing factor. Therapy groups and individual medications were identified. These were compared to the hospital's drug consumption and Institute for Safe Medication Practice's (ISMP) List of High-Alert Medications [3], which is probably the most widely used high-risk medication list. The reports including most reported and high-alert medications (120 reports) were qualitatively analysed by applying the simplified root cause analysis.

Results: The total sample included 249 reports with 280 medications of which 34% were ISMP's high-alert medications. The therapeutic groups most commonly related to MEs were antibacterials for systemic use (13%), psycholeptics (10%), analgesics (9%), antithrombotic agents (9%) and anaesthetics (7%). Serious patient harm was related to cefuroxime, enoxaparin, ibuprofen, midatsolam, propofol and warfarin. A half of the MEs were related to parenteral preparations. Typical ME types were administration (34%), dispensing (18%), prescribing (15%), and documenting (15%) errors. The qualitative method deepened the understanding about key safety risks with high-alert medications, drug nomenclature, formulations and administration routes, and changes in the formulary.

Conclusions: Combining qualitative and quantitative methods resulted in deeper insight when hospital-specific high-alert medications were identified. We identified several high-alert medications with quantitative methods, but qualitative method deepened the understanding about their key safety risks in the medication-use process.

25. PATIENT SAFETY – THE ENGINEERING POINT OF VIEW

Katharina Löwe, Thomas Schrader, Eberhard Beck
E-mail: katharina.loewe@fh-brandenburg.de

Objectives: With the aim to increase patient safety in clinical environments a competence center was built combining the expertise in clinical medicine, medical informatics as well as safety and human factors engineering. As part of an interdisciplinary research project the extensive technical methods of safety analysis were modified and extended to create a new systematic proactive approach for application in medical environments. This approach enables to identify and analyze possible errors and the underlying causes in a systematic way to implement suitable countermeasures to reduce the probability of errors in medical environments.

Background: Process plants (e.g. in chemical and petrochemical industries) are characterized by high complexity and also high risk potential where accidents can have dire consequences. For the improvement of safety, diverse analysis techniques have been developed and are widely implemented to systematically analyze process plants and to identify potential hazards. European law mandates the creation of a safety report for all plants that require an authorization. Usually the safety report includes the execution of a detailed safety analysis which requires the implementation of different methods.

Methods: Accidents in the process industries occur mostly as an outcome of multiple failures in the system, e.g. plant design and management, and their interrelation with operators' failures. Therefore safety analysis in terms of plant technical aspects cannot be performed independently from analyzing the human factor aspects. The system design, usability and work environment must be adapted to the human ability to minimize the operators' failure. Specific methods are needed to analyze the operator actions during performing their tasks.

Results: Various methods of human-factors-analysis were developed, which include a technique to identify the Performance Influencing Factors (PIFs). The PIFs evaluation allows quantifying how significant a specific factor affects the operator's performance during their work and enables the identification of sources of errors and the implementation of accurate improvements in the system.

Conclusions/clinical implications: This presentation will give an overview about the most important methods of technical safety-, risk and human factors analysis. Furthermore it will give an insight on the comprehensive complexity of human factors and describes new approaches and methods to achieve a better human factors quality in the system with regard to a practical application in medical environments. Based on these methods a new approach to prevent errors in medical environments was developed, which will be discussed in a second presentation. The know-how-transfer enables further improvements in patient safety.

26. DREAMS COME TRUE – A MULTISECTORAL FALL PREVENTION PROGRAMME WITH PATIENTS AND THEIR CLOSE ONES

Kaisa Haatainen, Raimo Ojala, Tarja A Tervo-Heikkinen
E-mail: Kaisa.Haatainen@kuh.fi

Background: Falls and fall-related accidents are a serious health issue globally, especially among elderly people. For example, falls increase hospitalizations and long-term nursing home admissions among elderly people, with worsening the quality of life and adding to the costs. This course has been noticed and taken seriously in Kuopio University Hospital (KUH) region. To tackle this issue, the Regional Fall Prevention Network (RFPNetwork) started operation in 2012 with the aim of promoting prevention of falls and fall-related accidents. One of the main tasks of the RFPNetwork plan of action for years 2014–2015 has been to establish the regional fall prevention programme which begins at home and goes through the care chain.

Objectives: The aim of this presentation is to describe the multisectoral fall prevention programme designed for the continuum which starts at home and continues to primary care as well as specialized health care, running through the care chain.

Methods: The multisectoral fall prevention programme has been generated in RFPNetwork. In this network, the nurses, physicians, pharmacists, physiotherapists, home aid and specialists in teaching among others maintain a close liaison with each other.

Results: The process description was modeled and utilized to reach an agreement of those involved in the process – the patients, the close ones, and the professionals. The fall prevention programme includes consistent guidelines, checklists, instructions on fall risk assessment, education and guides to the patients and close ones.

Conclusions/clinical implications: A large amount of notable information has been acquired with relation to the falls in KUH region, i.e. the number and characteristics of those with high risk on falls. Some preventive interventions have been planned and carried out on the basis of this information. And further, the number of falls will decrease – or at any rate not increase. In 2016–2017 we start to conduct multi-professional medication reviews to high fall-risk patients.

27. WE SHOULD LISTEN TO THE PATIENTS – PATIENTS AS PROMOTERS OF PATIENT SAFETY IN HOSPITAL

Kaisa Haatainen, Jaana Friari, Eija Kivekäs, Ulla-Mari Kinnunen
E-mail: Kaisa.Haatainen@kuh.fi

Background: Patients and their relatives may have information which could help to improve patient safety in hospital. Health-care professionals should increase patients' participation by encouraging them to communicate and to report safety incidents. Incident reporting system that is available online assists patients to make a report. Once these systems are integrated with hospital reporting systems, given information could be exploited to improve safety.

Objectives: The objectives of the study were to find out: 1) what kind of patient safety incidents are reported by inpatients/relatives, and 2) how patients' participation is represented in their reports.

Methods: The data was collected from specialized health care. Data consisted of patient safety incident reports (n=49) made by patients/relatives in 2013–2014. All reports were classified by health care professional according to Finnish patient safety incident reporting system HaiPro.

Quantitative method was used to analyze the nature and the type of incident, patient outcome and consequences for the hospital. Qualitative content analysis was used to analyze patients' participation and suggestions for actions to be taken to prevent incident in the future.

Results: The majority of the reports were made by patients (n=44). The reports made by the staff during the same time period were mapped. Only five of these incidents were also reported by health care professional. Main of reported incidents (82 %) happened to patient, 18 % of reports were near miss notices. One of third incidents related to information and a fifth was related to medication. The rest was related to operation, care and observation, and accidents like falls.

Moderate harm was caused to a patient in 23 % of reported incidents, slight harm in 32 %. Twenty-five percent of reported incidents have not caused harm to a patient, in 14 % of the data there were not any documentation. Damage to image (47%) was the main consequence for the hospital and the other were additional work, costs, and prolonged care. Patients participated the process by telling about their pain or medication and discussing with healthcare professionals. The contacts were often made by phone. The proposed decision for reconstructive actions could include discussions and information. A concrete example was marking an epidural catheter with bright color to separate it from an intravenous infusion tube.

Conclusions: Patients' or their relatives' incident reports are less yet noteworthy. They can provide us valuable information concerning patient safety. We can promote safety by listening to the patients.

28. MEDICATION ERRORS AT HOSPITAL DISCHARGE REPORTED FROM COMMUNITY PHARMACIES

Linda Aagaard Thomsen, Bjarke Abrahamsen, Charlotte Rossing
E-mail: lat@pharmakon.dk

Background: Regulation demands that Danish community pharmacies report medication errors associated with hospital discharge. Data from the Danish Patient Safety Database (DPSD) demonstrated a discrepancy between the expected and actual reported errors.

Objectives: To investigate the scale of medication errors reported from community pharmacies associated with hospital discharge.

Methods: The study had 3 parts.
Part 1: Analysis and categorisation of error types reported to DPSD from Sep 2011 to Sep 2015. The categorisation system was developed based on the extracted data.
Part 2: A convenience sample of 28 community pharmacies volunteered to prospectively report all medication errors associated with hospital discharge over a three-week period to the research group. To support incident reporting, pharmacies were provided with teaching materials and the possibility to participate in weekly phone meetings with researchers.
Part 3: A qualitative literature review to map interventions involving community pharmacies in prevention of medication errors in the post-discharge process.

Results: The analysis of data from DPSD revealed that the 220 pharmacies reported 322 medication errors 2011-2015, the most frequent errors being prescription error (78%), automatic dose-dispensing error (8%) and lack of patient information (4%). The 3-week incident reporting from 28 community pharmacies to the research group resulted in 969 medication errors [median 37, range 2-119], corresponding to 140.500 errors yearly from all pharmacies. The most frequent errors were prescription not available at the pharmacy (49%), prescription error (31%) and lack of patient information (7%). The only high-risk medication identified in both substudies was dalteparin. The literature review revealed that interventions improving patient safety across hospital and primary care focus on coordination, communication and information. Interventions typically rely on medication review or reconciliation followed by patient and physician follow up.

Conclusions/clinical implications: There is a significant under-reporting of medication errors associated with hospital discharge from community pharmacies. The purpose of the incident reporting system is organizational learning. However, this requires a patient safety culture that supports incident reporting. Barriers for reporting incidents to the DPSD at the pharmacies therefore need to be investigated. Most of the errors identified by pharmacies were administrative, revealing a focus on the prescription, whereas few errors and were identified at the patient-level, and only one high-risk medication.

29. PEER SUPPORT EFFICACY AMONG BREAST CANCER PATIENTS

Anu Susanna Toija, Tarja Kettunen, Risto Roine
E-mail: anu.toija@ejy.fi

Background: Breast cancer is the most common form of cancer in Finnish women. Every year over 4,000 women are diagnosed with it. Due to effective screening and treatment, however, about 90% of female breast cancer patients in Finland are still alive five years after diagnosis. In May 2013 the Helsinki University Central Hospital, together with the Espoo Association of Organisations, began providing peer support for breast cancer patients in their surgical ward. The peer support is provided by breast cancer survivors and trained volunteers.

Objectives: The study aims to examine the effects of peer support on the quality of life of breast cancer patients.

Methods: The research was conducted as a quantitative, randomized and longitudinal study. Voluntary participants (n= 247) were randomly allocated into two groups: a control group and an experimental group. The experimental group received peer support via telephone on 1 to 5 occasions, as the patient wished. Data was collected at baseline, and follow-up measures (questionnaires) were collected at 3, 6 and 12-month intervals. The 15D health-related quality of life instrument was used to determine efficacy outcomes.

Results: A full 94% of the 247 female patients responded to the 3-month follow-up questionnaire and 95% completed the 6-month follow-up questionnaire. The mean (SD) age of the participants was 60.5 (10.6) years. Their baseline mean (SD) 15D score, 0.919 (0.068), was very similar to that found in the general age-standardized female population. However at the 3- and 6-month follow-ups, the 15D score had deteriorated statistically significantly ($p<0.001$) and clinically importantly, to 0.883 (0.089) and 0.883 (0.087), respectively. Neither the baseline 15D total score nor any of the dimensions differed significantly between the groups. At 3 months, the 15D score was somewhat higher in the group having received peer support (0.893 versus 0.872, $p=0.082$). In terms of individual dimensions, symptoms/discomfort ($p<0.05$) and depression ($p<0.01$) were significantly lower in the experimental group. At 6 months, however, these significant differences between the groups had disappeared (0.891 versus 0.874). The decrease of the 15D score at the 3-month follow-up was statically significantly ($p=0.05$) lower in the group receiving peer support (0.027 versus 0.048). The same was also true at six months (0.031 versus 0.043), although the difference was no longer statistically significant.

Conclusions/clinical implications: Peer support for breast cancer patients appears to be beneficial in the short term, but long-term analysis is still needed.

30. PATIENT SAFETY – THE MEDICAL INFORMATICS POINT OF VIEW

Thomas Schrader, Katharina Löwe, Eberhard Beck
E-mail: thomas.schrader@computer.org

Background: To improve patient safety in a clinical environment a new systematic method, the Open.Process.Task-Model was developed, which implies the provision of tools for data collection, evaluation and presentation. The model is based on a systemic view on tasks in a process and describes the properties of a medical task. With increasing complexity of a task the probability of errors will increase. The Open.Process.Task-Model provides a description model for a prospective risk analysis including the influences and relations to the process itself and to the management.

Objectives: The Open.Process.Task-Model uses more than 50 properties to describe the specific situation of a medical task. Each property has its own possible attributes, comparable with value sets. Methods for automatic analysis of collected task descriptions were developed. To compare the different tasks in a process or different processes in a hospital, a simple visualization is essential to represent the current risk status.

Methods: The complete model is written as a well-defined, hierarchical structured text file, a so called JSON-object. This object is the starting point of an analysis process chain: This simple text-file is the source for the creation of an Excel-sheet-based survey. Using this survey, nurses, physicians and other employees involved in a specific process, can be asked about the properties of these tasks. The answers will be entered in this Excel-sheet. The automatic evaluation summarizes these data and creates another instance of this model: the specific description of a task. This instance is used to embed attributes and properties in a graph-model and this graph is plotted on a Cartesian diagram. The software for the evaluation and graphical representation based on Python3 and various libraries.

Results: The result of the evaluation process is a directed graph, embedded in a Cartesian diagram. On x-axis the fixed sequence of properties is listed, the attributes are printed as nodes against the y-axis accordingly to their deviation factor. Each attribute of a property is connected to the attributes of the next property. A specific risk profile is now recognizable. Lower deviation level of the attributes implies lower complexity of a task. The profile consists of hills and valleys. The graph-diagram can be modified from absolute risk profile to relative values and cumulative values.

Conclusions/clinical implications: The representation of risk of a task as a risk profile allows the user to review the different task very quickly and identify directly the risky properties. Different tasks in a hospital or the same task in different hospitals can be easily compared.

31. PATIENT SAFETY – PROSPECTIVE RISK ANALYSIS IN MEDICAL ENVIRONMENTS

Eberhard Beck, Thomas Schrader, Katharina Löwe
E-mail: beck@fh-brandenburg.de

Background: Concerning prospective methods applicable for clinical risk analysis there are only some systems usable due to the complexity of medical tasks and processes. The Systems Engineering Initiative for Patient Safety (SEIPS)-Model offers a differentiation between tasks, personal, environmental factors and other aspects but does not specify the possible properties of these factors. Currently to our knowledge no model exists to prospectively evaluate error promoting factors, facilitating the comparison of the results of such analyses.

Objectives: The aim of our approach is to develop a general task model, embedded in a process view and related to other influencing factors outside a specific task. This model is meant to represent all possible states of the various influencing factors and will map these to numerical values. These values are applicable for calculations and comparisons. This model, however, is not fixed and it is essential to add additional factors and properties during further development.

Methods: Based on the analysis of medical processes in hospital environments a general system model with input, output and influencing factors was used to describe the various reasons for complexity in medical tasks. The increase of complexity results in an increase in the risks that errors may occur. Each side of the system "task" was analyzed to identify components, their properties and their attributes.

Results: The Open.Process.Task-Model identifies on the input-side three main components influencing the complexity of a task: information, patient and specimen.

Concerning the output-side, the same three components of information, patient and specimen are present, only the state of these components has changed. The influencing factors of our system model are called assets and are differentiated in "in-assets" and "out-assets". In-assets are medical devices, personal, medical environment, medical supplies and others. Some asset components may contribute to the complexity of a task once this task has been completed: e. g. in surgical procedures various medical devices and/or consumables may be placed in a patient. The counts of these artifacts may be different between beginning and ending of the respective task. The personal should keep this in mind and evaluate this. Nevertheless, this situation is complex and errors can occur.

Conclusions/clinical implications: The Open.Process.Task-Model allows the analysis of tasks in a process prospectively and systematically. To each attribute of the components' properties a deviation factor is dedicated to reflect the deviation from normal or best state. A higher deviation factor implies a potential risk for this task.

32. COLLABORATIVE PLANNING FOR AN ACTION MODEL TO PROMOTE PATIENT SAFETY IN THE EVICURES PROJECT

Mari Salminen-Tuomaala, Liisa Ala-Hynnilä, Kati Hämäläinen, Heikki Ruohomäki
E-mail: mari.salminen-tuomaala@seamk.fi

Background: Patients admitted to intensive care suffer from one or multiple life-threatening organ failures, whereas patients treated in intermediate care facilities usually have a single potential or established organ failure of moderate severity. Care of critically ill patients requires competent staff and constant monitoring in specially equipped units. The EVICURES project has developed a user-oriented design model for intensive and intermediate care facilities. The model applies evidence-based design (EBD), with contributions from intensive care staff, patients, families and other cooperation partners. The model will be used to design and build Finland's first EBD intensive and intermediate care unit.

Objectives: The objective of this research and development project is to promote patients', families' and staff's wellbeing. The aim is to promote patients' wellbeing by increasing privacy and reducing the effect of outside stressors. Further objectives are to prevent hospital infections, reduce risk of medication errors, increase patient safety and satisfaction and improve smoothness and effectiveness of care. Another aim is to allow nurses more time for direct patient contact and improve communication and confidentiality.

Methods: Four rounds of collaborative workshops based on the Foresight Framework Model were held for the whole intensive care staff on patient safety and smoothness of care in 2015, each round comprising 4-5 components with 5-10 participants at a time. The first workshop aimed at gaining an overall perspective and at determining, which old elements of the unit should be retained in the new single patient room model. The second workshop focussed on opportunities of the new work environment regarding manageability of work, development of expertise and patient safety. During the third round, participants defined essential elements in nursing processes of the new action model, creating preliminary process models to guide nursing practice. The last workshop produced a visionary summary and finalized model.

Results: The workshops produced a theoretical model on promotion of patient safety and smoothness of staff action, with the core idea of achieving continuous, safe care throughout critically ill patient's care pathway from admission to transfer to another unit. The project also produced valuable insight into further development needs. Detection of critical points will help staff anticipate challenges.

Conclusions: The model will be tested in practice in the new EBD intensive and intermediate care unit at Seinäjoki Central Hospital. The model can help staff understand the totality of nursing care, including roles of various actors. It can promote collaboration and help orient new employees.

33. PATIENT SAFETY ISSUES IN OUT-OF-HOSPITAL EMERGENCY CARE AS EXPERIENCED BY CARE PROVIDERS

Mari Salminen-Tuomaala, Päivi Leikkola, Riitta Mikkola, Eija Paavilainen
E-mail:mari.salminen-tuomaala@seamk.fi

Background: Developing the quality of emergency care is a current concern, both internationally and nationally. In Finland, the focus is on promoting patient safety. The Ministry of Social Affairs and Health Decree states that all risk management and safety planning in health and social service organizations must start with patients and with ensuring that they receive safe, high quality care.

Objectives: The objective of the research was to describe factors that influence the quality and safety of patient care as experienced by emergency health care professionals especially in out-of-hospital emergency care.

Methods: Data were collected by semi-structured interviews (n = 15) in October 2014 within a single hospital district in Finland. The themes addressed in the interviews were connected to the quality of out-of-hospital emergency care and safety, as experienced by the emergency health care professionals. The voluntary participants, selected by discretionary sampling out of a total of 200 employees working in out-of-hospital emergency services of the hospital district, consisted of five paramedics, five nurses, three emergency medical technicians and two practical nurses. The data were analysed using inductive content analysis.

Results: Emergency health care professionals describe high quality emergency care as patient-centred, equal and professional. They stress the importance of considering factors that might jeopardize the safety of care. Realistic patient assessment may be affected by the presence of obscure symptoms, the patient's psychological or social problems or drug or intoxicant abuse. Physical and psychosocial factors related to the setting, for example the unexpected behaviour of those present on site, may increase safety risks. Safety also greatly depends on how successful the consultation with the doctor is and the degree to which appropriate care instructions can be received and implemented.

Conclusions: Besides the acute symptoms, emergency care providers must assess the patient's physical, psychological and social resources. They must find out whether the family's resources and the home environment enable the patient to cope with the situation. The care providers need clear instructions from the doctor on when patients can be left at home and when they should be transported to definitive care. The doctors in charge of consultation also need to informed of the scope of care that emergency care professionals are able to provide on site.

34. VIDEO REMOTE INTERPRETING AS A NEW INNOVATIVE TOOL TO OVERCOME LANGUAGE BARRIERES IN MEDICAL SETTINGS

Sabine Parrag
E-Mail: sabine.parrag@univie.ac.at

The number of people moving across borders increases and therefore societies as a whole as well as the health sector are confronted with patients of different linguistic and/or cultural backgrounds. As the medical interview is a central element of medical practice, communication-barriers are a major problem for patients and for medical staff. Thereby successful communication becomes crucial to quality assurance in medicine, not only for questions of understanding, relationship building and aspects of compliance and adherence, but also relating to patient participation, shared decision making, patient safety and patient rights (cf. Rasky 2009).

Abstract: While video remote interpreting for overcoming language barriers in healthcare has sporadically (such as in the USA) long been a fixed constituent part of the supply of foreign-language patients, the process of the establishment of a professional video remote interpreting service only recently starts in Austria and the whole German-speaking area. In the course of the pilot project, video remote interpreting (VRI) was tested in twelve different medical settings such as emergency units, outpatient departments, in-patient units, a psychiatric ward, a rehab hospital and a regional department for pension surveying throughout Austria. In the six-month testing period, professional interpreters were available via videoconference to translate during extra- and intramural care and provide barrier-free communication for healthcare personnel and patients. The aim of this project was to find out if the technological innovation of VRI on the one hand facilitates the transcultural doctor-patient interaction and therefore increases quality in care and on the other hand if VRI enhances medical staff satisfaction and basically whether it's a suitable solution for overcoming language-barriers in healthcare. For the evaluation of this tool mixed methods design was used which included a qualitative survey (46 semi-structured interviews), a quantitative survey (188 questionnaires) and the prepared/analyzed connection data (213 video calls) from six-month testing period. Proposed presentation wants to elaborate what problems occur in the communication between medical staff and patients with different linguistic and/or cultural backgrounds and how these problems and challenges are currently solved and alternatively could be overcome. Could VRI be used as an innovative and quality-guaranteeing technological tool to overcome communication-barriers and to increase equal opportunities in healthcare? However, as the presentation will show, this tool has to face challenges such as financial issues and issues of acceptance. A critical discussion of the use of VRI and its meaning for patient safety and safety of medical staff will be offered.

35. PROMOTING NURSING CARE DURING HUMANITARIAN ASSIGNMENTS OVERSEAS: EXPERIENCES FROM THE PERSPECTIVES OF NORWEGIAN NURSES

Ingrid Tjoflåt, Bjørg Karlsen and Britt Sætre Hansen
E-mail: ingrid.tjoflat@uis.no

Background: Western countries have a long tradition of providing nurses with expert knowledge in nursing care for humanitarian projects and international work overseas. There is a paucity of studies highlighting the way the western nurses' experience working with local nurses to promote nursing care in a hospital ward.

Objectives: The aim of this study is to describe how Norwegian nurses engaged in humanitarian assignments overseas experience working with the local nurses promoting nursing care in a hospital ward.

Methods: This study has a descriptive, explorative and qualitative design. The data were collected in 2013 by means of seven semi-structured interviews and analyzed using qualitative content analysis.

Findings: The data analyses revealed three themes related to the Norwegian nurses' experiences of working with the local nurses in order to promote nursing care in the hospital ward: (1) Breaking the code, (2) Colliding worlds, and (3) Challenges in sharing knowledge. The findings reflect that a shared understanding of nursing care is challenging to achieve when nurses from different health and educational systems work together to promote nursing care during humanitarian assignments.

Conclusion: Our findings indicate valuable knowledge gained about local nursing care and the local health and educational system. Additionally, they demonstrate challenges for the Norwegian nurses related to the local nursing standard in the wards and using the local nurses' experiences and knowledge when working together.

Relevance to clinical practice: The findings can inform nurses, humanitarian organizations, and institutions working overseas regarding the recruitment and the preparation of nurses who want to work cross- culturally or in humanitarian missions overseas.

36. ASSOCIATION OF GUIDELINES AND CLINICAL PRACTICE IN EARLY PARKINSON'S DISEASE

Tapani Keränen, Lauri J Virta
E-mail: tapani.keranen@thl.fi

Background: Little is known about the impact of clinical guidelines regarding Parkinson's disease (PD) by comparing the choice of first symptomatic drug treatment in PD in two different years.

Methods: Two cohorts of PD incident outpatients, diagnosed during 2005 (n=1,436) and 2012 (n=1,607), were identified from a Finnish nationwide register of special reimbursements for medication costs. Data on their PD drug purchases (ATC codes N04) were obtained from the national prescription register.

Results: Overall, levodopa (LD) monotherapy was the most common initial drug in PD and it was started in more than 80% of the cases aged >75 years. Dopamine agonists (DAs) and monoamine oxidase – B (MAO-B) inhibitors predominated in patients aged <60 years and the frequency of both drug classes decreased with advancing age. Significant changes in the prescription pattern occurred after the guidelines were issued, from the year 2005 to 2012 (p=0.002). The use of MAO-B inhibitors increased in patients aged less than 75 years. The use of LD decreased in patients aged 64–74 years while that of DAs increased.

Conclusion: The choice of first drug in PD shows significant age- and time-period-related variation. The prescription patterns for the first drug in PD in Finland seem to be in accordance with the principles of the national and international guidelines.

37. COLOR AROUND DOORS AS A PATIENT SAFETY TOOL PROTECT PATIENTS WITH DEMENTIA LEAVING HOSPITAL INADVERTENT

Solveig Gram, Sofie Ran Lindhardt Bossen, Tina Engstrøm
E-mail: solgra@rm.dk

Background: Reported adverse events show that patients with dementia leave the hospital and are in risk to be hurt or fall. In Denmark you are not allowed to lock the doors at hospital units. A Swedish study about color perception in an old age shows that color and shape can help to recognize places. In primary care colors are used on door and floor, as visual help for preventing people with dementia from leaving their home in elderly care. Colors as a patient safety tool have not been used in Danish hospital units before.

Objectives: To evaluate the effect of a clinical intervention, with color on floor and door as an interactive patient safety tool in a Geriatric unit at Randers Regional Hospital, Denmark.

Methods: In this study we will research if the knowledge and interventions from primary eldercare can be transferred to a Geriatric unit at the hospital, and used as a patient safety tool, preventing people with dementia from leaving the unit, and thereby improve the patient safety. The two front doors were painted blue and the floor black, as an imaginary hole. The amount of people with dementia leaving the unit before and after the interventions, are reported as an adverse event. In January 2015 the amount of reported patient leaving the hospital in 2014 was used as a baseline. The color intervention happened in April 2015. The results will be re-evaluated again in May 2016. Hospital staff is interviewed about their observations regarding the doors.

Results: Halfway results from April 2015 until December 2015 show, that there have been only 3 patients leaving the unit. The staff observed that patients with dementia stop and turn around, when they reach the black floor and the blue door. When other patients or relatives open the doors, there is a risk that patients with dementia will leave the unit. Final result will be measured in May 2016.

Conclusions/clinical implications: Color change on door and floor as an interactive patient safety tool are a promising tool, which can prevent patients with dementia leaving the hospital. We need to observe and compare with the baseline for a longer period to prove, that this is a patient safety tool for hospital units.

38. SAFETY ROUNDS IMPROVE PATIENT SAFETY CULTURE IN ACUTE ADMISSION UNITS

Ane-Sofie Sølvtofte, Sussie Laustsen
E-mail: anessoel@rm.dk

Background: Patient Safety Rounds (PSRs) are widely used in healthcare organizations to improve patient safety. There is limited evidence to support the effectiveness of PSRs to improve patient safety culture (PSC). The relationship between hospital staff assessments of PSC and PSRs needs further investigation.

Objectives: To evaluate the effect of an intervention with PSRs on PSC in an Acute Admission Unit at Randers Regional Hospital Denmark.

Methods: This was a follow-up study to evaluate the effect of an intervention with PSRs on hospital staff reporting the PSC at the unit level. PSC was measured with the questionnaire Hospital Survey Of Patient Safety Culture (HSOPSC) before and after an intervention with PSRs. A weak and immature PSC was found at baseline in November 2014. To improve PSC the Department Management and the Quality Consultant conducted PSRs once a week for two months during the period of February to April 2015 with random participation of clinicians and administrative personal. Post PSC was measured in April 2015.

Results: We found that PSR showed significant improvement in the dimensions 'Supervisor/Manager Expectations & Actions Promoting Patient Safety' with 19.8% (95% Confidence Interval (CI): 9.8;29.8) and 'Feedback and Communication About Error' with 13.7%, (95% CI: 0.4;27.0). The dimension 'Nonpunitive Response to Errors' increased non-significantly with 9.5.%, (95% CI – 1.7;20.6), while the dimension 'Overall Perceptions of Patient Safety' decreased after PSRs with – 7.7% (95% CI: - 16.0;0.6).

Conclusions/clinical implications: PSRs are a promising tool that can improve PSC in hospitals and thereby patients safety. Further examination is needed to determine the efficiency of PSRs on PSC over time; considering a longer intervention period and a control group for at stronger design.

39. ARTHROPLASTY IMPROVES PATIENTS HEALTH RELATED QUALITY OF LIFE AND JOINT SYMPTOMS

Ninna Mäkirinne-Kallio, Jukka Huopio, Hannu Miettinen, Leena Setälä
E-mail: ninna.makirinne-kallio@kuh.fi

Background: The main objective of arthroplasty surgery is to reduce joint pain in walking and carrying heavy weights but also at rest. Pain and stiffness cause also other problems in everyday coping.

Objectives: In Kuopio University hospital we have investigated patients' recovery from knee and hip arthroplasty by systemically collecting data about the impact of the disease and treatment on the quality of life and joint symptoms before and after surgery. This data gives opportunity to evaluate short-term benefits of joint replacement.

Methods: HRQol measurements have been done by 15D-instrument, which evaluates patient's condition in 15 different areas of life. The baseline data was collected from 1725 patients and 12-month follow-up data from 676 patients utilizing an electronic customer questionnaire in 0/6/12 month follow-ups. The results were compared with the experience of a population of similar age. Joint symptoms were estimated with Harris Hip Score (HSS-meter, score range 0-100) or Knee Society Score (KSS-meter, score range 0-200) in 1181 patients before operation and three months after surgery.

Results: Patients recover well from joint replacement surgery. The most important areas of quality of life for an osteoarthritis patient are mobility, sleeping, normal functions, discomforts and symptoms as well as the general vitality. The patients experienced significant decrease of these symptoms during the follow-up. After a knee arthroplasty the patients remain more symptomatic (15D mean difference 0.0349) than patients with healthy knees. In contrast, patients with a hip joint replacement recover better (15D mean difference 0.0639), achieving the quality of life similar to healthy hip population. The results represent the average results of the entire patient group and considerable variations may exist at an individual level.

According to disease specific instruments, hip symptoms decreased almost to asymptomatic level (score improvement mean 32.53, $p < 0.001$) while knee symptoms (score improvement mean 50.83, $p < 0.001$) failed to reach the level of an asymptomatic knee at this stage. In general, recovery from both operations takes usually at least one year before the final results can be estimated.

Conclusions: Hip or knee arthroplasty improves significantly the quality of life and joint symptoms in patients with osteoarthritis. Using 15D instrument simultaneously with disease specific instruments provides comprehensive view of treatment efficacy.

40. DEEP ANALYSIS ON ADVERSE EVENTS AMONG HOSPITAL PATIENTS USING MANUAL GLOBAL TRIGGER TOOL

Kaisa Haatainen, Merja Karppinen, Marja Luoma, Arja Robins, Outi Terävä-Tiitinen, Marjo Kervinen
E-mail: kaisa.haatainen@kuh.fi

Background: The use of triggers to identify adverse events (AEs) is an effective method for measuring the overall level of harm in a health care organization. The IHI Global Trigger Tool (GTT) method has been widely used in recognizing AEs. Adverse events are usually reported per 1000 patient days, per 100 admissions and percent of admissions with an adverse event. These numbers vary a lot in earlier studies. Comparing the results is difficult, even useless. To build patient safety and reduce AEs, every organization should know the basic level of them.

Objectives: The aims of the study in Kuopio University Hospital were: 1) to find out the triggers and AEs in the study group, 2) to estimate the seriousness of AEs, and 3) to find out the avoidable AEs. The results will be used for promoting the patient safety at hospital.

Methods: The trained study team consisted of four nurses, a medical doctor and a patient safety manager. In every second week, a randomized sample of all hospital patients who fulfilled the inclusion criteria was retrospectively driven and ten patients chosen for analysis. Two nurses individually examined the data by the means of manual GTT to find triggers and AEs. After that, the results were thoroughly analyzed with the doctor, AEs were classified and the preventability of them was assessed. The patient's perspective ("If I was the patient...") was emphasized as a basis for decision making whether the event was harmful or not. The results were then entered into SPSS program (version 22.0.) for further analysis.

Results: Altogether, data of 245 patients were gathered during September 2014–November 2015. Of the patients, 51% (n=124) were male. The mean age at arrival to hospital was 60 years (range 18–97 years). The length of stay varied from one to sixty-five days. In total, 359 triggers were found, most in patient care module (53%), and 228 AEs altogether, from one to seven per patient. Fifty-three percent of the patients had no AEs. Of those 228 AEs, 220 were mild and only eight were severe. And further, it is noteworthy that 43% (98 cases) of AEs were estimated to be preventable.

Conclusions: The amount of AEs in a university hospital setting was higher than previously reported. This may be because of the deep analysis used with patient's perspective. The results of the study provide us useful information in order to build patient safety.

41. HOW "THE SYSTEMS ENGINEERING INITIATIVE FOR PATIENT SAFETY" CAN INFORM INTERPROFESSIONAL TEAMWORK IN HEALTHCARE

Randi Ballangrud, Sissel Eikeland Husebø
E-mail: randi.ballangrud@hig.no

Background: "The Systems Engineering Initiative for Patient Safety" (SEIPS) can be utilized as a theoretical framework for research on interprofessional teamwork for improvement of patient safety and outcomes. SEIPS is a dynamic model based on the relationship between structure, process and results as in system theory, where different components of the "work system" interact with and influence each other. *The person(s)* in the "work system" may represent healthcare workers in a team. The team perform different *tasks* and relates to *tools and technology* in an *internal environment* within a specific *organization*.

Objectives: To address how the SEIPS model can provide a valuable lens to assist research on interprofessional teamwork in healthcare.

Methods: The principles of the SEIPS theory are discussed in relation to research on interprofessional teamwork. The impact of the SEIPS framework in healthcare is then reviewed.

Results: The SEIPS model provides a valuable lens to assist research on interprofessional teamwork a number of ways: a) to reframe how researchers observe and monitor interprofessional teamwork and interpret aspects of teamwork performance, b) to enable researchers to explore more deeply what contextual factors influence the healthcare team's performance, c) to measure the effect of interprofessional teamwork on patient safety and patient outcomes, and d) to help move discussion beyond teamwork training events (i.e. using simulation) and to provide evidence-based recommendations on the content, duration and frequency of teamwork training programs associated with clinical evidence.

Conclusions/clinical implications: Since the SEIPS theory is a promising framework to strengthen research on interprofessional teamwork and its impact on patient safety and outcomes, more research and experience of the application of the theory is needed. Through practical application of theory, we anticipate that researchers will be able to reflect and inform their current practices and develop new and innovative ways of perceiving and developing their interprofessional teamwork practice.

42. PSYCHIATRIC NURSES PERCEPTIONS OF THE NURSE-PHYSICIAN RELATIONSHIP IN RELATION TO MEDICATION SAFETY

Ann Lykkegaard Sørensen
E-mail: als@business.aau.dk

Background: Medication errors continue to challenge patient safety across health sectors, including psychiatry. Nurses are integral safeguards in the medication process and a growing body of research demonstrates that nurse's ability to ensure medication safety also depend on organizational factors such as hierarchical medical teams and the nurse-physician relationship (NPR). To date, there are no studies of how psychiatric nurses perceive the importance of the NPR in relation to medication issues.

Objectives: The objective of this study was to explore psychiatric nurses' perception of the NPR in relation to medication safety and medication management.

Methods: A qualitative design using a semi-structured interview guide. The interviews took place in two focus groups consisting of psychiatric nurses (Group 1 (n= 9) and group 2 (n=8)) from two bedwards in a Danish University Hospital. The interviews were carried out in December 2014 and January 2015. The design of the study was based on an interpretative hermeneutic framework consisting of three phases. Phase 1 was a literature review revealing the most important aspects of nurse-physician relationships with a focus on patient safety. Phase 2 was interviews based on the literature and phase 3 is a presentation of findings in themes.

Results: The analysis resulted in four major themes: 1) somatic experience and the feeling of hierarchy, 2) access to the physician, 3) professional roles and resignation and 4) pharmacological knowledge in psychiatric nursing. Nurses with somatic experience felt reduced in their professional competencies and perceived the hierarchy in the NPR as profoundly explicit compared to somatic care. Access to discussing specific medication problems with a physician could be difficult due to the type of rounds (an example was group care). Several nurses described some physicians as uninterested and unwilling to share a responsibility for the patients medication resulting in the nurses partially settling into resignation. The nurses were eager to engage more pharmacological knowledge in their care of patients and expressed a wish to work closer with and learn from physicians in relation to pharmacological safety issues.

Clinical implications: Psychiatric nurses with somatic experience may be an unexplored resource. Targeted interventions may utilize nurses' somatic skills and knowledge of medication to improve the quality of care. Professional roles in the NPR needs to be addressed as physicians perceptions are unknown. Leaders need to address the type of rounds applied in individual bedwards as it may be counterproductive for knowledge sharing between nurses and physicians.

43. DISCREPANCIES BETWEEN IN-HOME INTERVIEWS AND ELECTRONIC MEDICAL RECORDS ON REGULARLY USED DRUGS AMONT HOME CARE CLIENTS

Miia Tiihonen, Irma Nykänen, Riitta Ahonen and Sirpa Hartikainen
E-mail: miia.tiihonen@uef.fi

Purpose: To compare discrepancies between in-home interviews and electronic medical records (EMRs) on regularly used prescription drugs among older home care clients.

Methods: The participants were home care clients aged 75 years or older living in three Finnish municipalities. In-home interview data on regular prescription drug use from 276 home care clients were compared with EMRs. Agreement between the in-home interview data and EMRs was assessed using Cohen's kappa.

Results: A majority (83%, n=229) of the home care clients had discrepancies between in-home interview data and EMRs, and 40% had discrepancies that could clinically compromise their treatment. Living with a spouse or other family member, use of private health care services, diagnosed asthma/COPD or excessive polypharmacy was associated with having discrepancies.

Discrepancies were more common among clients with better functioning and ability to self-manage drug use. Agreement between in-home interview data and EMRs was very good or good for other drug groups, but moderate for opioids, paracetamol, benzodiazepines and benzodiazepine-related drugs and lubricant eye drops, and poor for selective beta-2-adrenoceptor agonists. The most common clinically important discrepancies were psychotropics, opioids and agents acting on the renin–angiotensin system and beta-blocking agents.

Conclusions: Eight out of ten home care clients had discrepancies between in-home interview data and EMRs. Of these discrepancies, 40% were clinically important.

44. LEARNING ABOUT PATIENT SAFETY – COMPARING FINNISH AND BRITISH PRE-REGISTRATION NURSING STUDENTS' EXPERIENCES AND EVALUATIONS

Susanna Tella, Nancy-Jane Smith, Pirjo Partanen, Hannele Turunen
E-mail:susanna.tella@saimia.fi

Background: Comparing patient safety education between different countries can provide illustrative information about the state of healthcare education and point out development needs. The UK has pioneered in the national policy regarding patient safety, while in Finland the work has been implemented years later. In recent years, international guidelines (EUNetPaS 2010, WHO 2011) have highlighted the importance of embedding patient safety in healthcare education.

Objectives: This study explored and compared Finnish and British pre-registration, final year nursing students' evaluations on their learning about patient safety in academic and in clinical settings to produce new knowledge for policy makers, nursing educators and healthcare managers.

Methods: First, with an integrative literature review (n=42), knowledge was synthesised from nursing students' learning about patient safety. Second, Finnish (n=195) and British (n=158) nursing students' learning about patient safety in academic and clinical settings was compared with a double-blind-back-translated Patient Safety in Nursing Education Questionnaire (PaSNEQ). The data were analysed with principal component analysis, Pearson Chi-Square and Mann-Whitney U tests, and logistic regression. Third, Finnish (n=22) and British (n=32) students' written important learning events about patient safety in clinical settings were collected with the critical incident technique and analysed with inductive content analysis.

Results: In the integrative literature review following themes emerged: patient-safety-centred nursing, responsible working, anticipatory actions, interprofessional team-working and learning from errors. Multiple teaching and learning methods were used to achieve continuing learning. Student's sensitivity to their own role and supportive learning environment were crucial for learning. The survey indicated Finnish and British students' positive attitudes towards learning about patient safety. Patient safety was high esteemed. However, both Finnish and British perceived lesser actual learning, Finnish students' being overall more critical on their learning. Training patient safety skills in academic settings and supportive and systems-based approaches in clinical settings were predictive factors for differences between the students. Finnish and British students' important learning events about patient safety involved preventing of errors and acting safely after errors. Neither students described independent reporting of an error. Furthermore, nursing students were not involved in analysing errors.

Conclusions: Developing patient safety education needs systems-wide support. National policy should give holistic structure and guidelines for healthcare and healthcare education organisations. Systems-wide education and training are needed to have in common organisational policy, structure and culture to enable systematic learning between and across the organisations. Benchmarking the education in international context can help in developing and harmonising patient safety education.

45. DIGITAL AND MULTIORGANISATIONAL SERVICE INTEGRATION

Anna-Mari Juutinen, Sakari Kainulainen
E-mail: anna-mari.juutinen@kuopio.fi

Background: The state welfare system in Finland is based on equal and universal public services. Specialized professionals offer citizens services they according the legislation are entitled to. This has caused a situation where especially the disadvantaged customers, due to the legislation, various professions, organizations and personal data records, have overlapping customerships, parallel service plans and evaluation criteria of their service needs.

Objectives: Kuopio participates in the local government trials of the Finnish Ministry of Finance. In the trial separate service plans are combined by using digital services. The combination called customer's personal welfare plan helps professionals target their services to solve problems that young customers themselves consider crucial, as well as to diminish the need of overlapping services. The model has been developed together with 18 professionals (of youth services, social and welfare services, student health care, substance abuse services, psychiatric services) working among young people.

Methods: The method that evaluates the young person's life situation, and is the basis of the welfare plan, is called "My Life". It consists of a visual "3X10D Circle of Life™" added with a 30-point questionnaire called "3X10D Survey™". The Circle of Life and the questionnaire deal with 10 themes, such as dwelling, family, friends etc.

The customer considers each theme from three viewpoints (importance, satisfaction, future). With the help of the Circle of Life and the questionnaire the professional in charge, together with the customer and the other professionals, will compose the personal welfare plan for the customer. The questionnaire and the plan are carried out by using an eService platform.

Results: With the help of the My Life method it is possible to get concordant information about the young person's life situation, wellbeing and his/her future goals regardless of the services, legislation or any ongoing help process. Shared information between the professionals and the young customer is an easier way to set and achieve mutual goals without problems caused by the lack of customer data or by the existence of simultaneous services and plans.

Conclusions: City of Kuopio Finland is during the years of 2015 and 2016 developing and testing customers and professionals combining digital service integration with the help of which the young persons' life control can be supported in a more holistic, customer friendlier way by exploiting the resources effectively.

46. QUALITY IN POSTOPERATIVE HANDOVERS: A CROSS-SECTIONAL SURVEY

Elizabeth Reine
E-mail: elizabeth.reine@studmed.uio.no

Background: A safe and efficient postoperative handover is important to ensure high quality care and to reduce the risk of patient harm. The postoperative handover represents a care transition that is especially critical for patient safety, as it is a complex process involving physical transportation of the patient and transfer of information and responsibility to other healthcare professionals. This study is a description of how nurses receiving and delivering patients after surgery perceive quality in the handover process.

Objectives: 1) To assess overall perceived quality of handovers in a postoperative care unit, and 2) To compare transferring and receiving nurse's evaluations of handover quality and patient assessment.

Methods: The study was conducted in a 14-bed postoperative care unit (PACU) in a Norwegian hospital. Cross-sectional design was chosen for the study. Data about the quality of the handover situation was collected using a translated version of a handover quality-rating tool, developed by Manser and colleagues (1). The questionnaire consists of 21 statements, where the respondent agrees or disagrees on each item on a four-point scale. The statements are related to conduct, teamwork, context and overall perceived quality of the handover. In addition questions addressing nurse experience, workload and evaluation of the patient were added to the questionnaire. Nurses who had received or delivered a patient in the PACU were handed the questionnaire after the handover was completed. The questionnaires were paired to the same handover without using patient identifiable information.

Results: A total of 192 questionnaires were returned from 101 handovers. The respondents were nurse anaesthetists, student nurse anaesthetists, intensive care nurses and registered nurses. The data are currently being analyzed, preliminary results show that nurses delivering and receiving patients after surgery have some differences in evaluations of the patient and handover process. Different roles between the two groups of nurses can be an important factor, but more research is needed to assess if patient condition, nurse experience and workload affect handover quality.

47. A NATIONWIDE CLUSTER RANDOMIZED CONTROLLED TRIAL OF UNANNOUNCED VERSUS ANNOUNCED PERIODIC HOSPITAL SURVEYS

Lars Holger Ehlers, Katherina Beltoft Simonsen, Morten Berg Jensen, Gitte Sand Rasmussen, Anne Vingaard Olesen
E-mail: kbs@id.aau.dk

Background: Since 2010 the hospitals in Denmark have been accredited by The Danish Institute for Quality and Accreditation in Health Care (IKAS) and have gained accreditation status based on The Danish Healthcare Quality Program (DDKM) version 1. The hospitals are currently undergoing accreditation based on DDKM version 2.

- Construction of the DDKM:
- 3-year cycle
- One announced on-site accreditation survey
- One announced periodic midterm survey
- 82 accreditation standards divided in three themes: organizational standards, continuity of care standards, and disease-specific standards
- 473 performance indicators

Objectives: Announced accreditation surveys have been criticized for taking up too much time and resources in preparation and that hospitals may "put on a show" to receive accreditation, instead of focussing on continuous quality improvement. Accreditation based on unannounced surveys was suggested as an intervention. This cluster-randomized controlled trial (C-RCT) aims at evaluating the effectiveness of unannounced surveys versus announced surveys in detecting non-compliance with a subset of accreditation standards from the DDKM version 2 of public hospitals.

Methods/Study design:

- Nationwide block and cluster RCT
- 23 public hospitals (3 university hospitals, 15 general hospitals, and 5 psychiatric hospitals
- 11 hospitals received announced surveys (control group)
- 12 hospitals received unannounced surveys (intervention group)
- 9 surveyors randomly allocated in surveyor teams
- Standardized survey tool
- 113 performance indicators
- 3-day survey: Two-day survey process and a third-day interview with hospital management.
- Example of included standard and indicator:
- Standard: Prescription of medicine
- Indicator: Indication for prescription of medicine is documented in the patient health record. The outcome measure was the level of compliance with 113 performance indicators from the abbreviated set of accreditation standards from DDKM version 2. The level of compliance was assessed

through tracer activities, and measured on a 4-point scale: “consistent implementation”, “consistent implementation with single deviations”, “weak implementation”, or “missing implementation”. Binomial regression analysis was applied in a pooled analysis of all performance indicators.

Results: This C-RCT provided 16.202 measurements applicable for data analysis. The intervention group obtained 8.519 measurements and the control group obtained 7.683 measurements. More than 95% of the measurements in both groups revealed 0,6 percentage points fewer consistently implemented standards in the intervention group with a p-value of 0.54.

Conclusion: This C-RCT showed no evidence of and increased effect of unannounced surveys in finding a higher level of non-compliance with accreditation standards. Regardless of survey type measurements demonstrate satisfactorily implementation.

48. QUALITY OF LIFE ASSESSMENT, POTENTIAL TO BENEFIT AND CONCORDANCE BASED ON PREFERENCES FROM 14 COUNTRIES

Erkki Soini, Johanna Heinonen, Elina Miettola, Olli-Pekka Ryynänen, Tuomas Koskela
E-mail: erkki.soini@esior.fi

Background: Quality of life (QoL) research in the primary health care (PHC) setting has been scarce. Furthermore, potentials to benefit or results with different country-specific value sets (i.e. preferences elucidated from the local public) and their concordance have been rarely presented. Yet, e.g. cost-effectiveness evaluations need PHC QoL inputs and local data may not be available.

Objectives: To assess PHC patient's 1) QoL of at baseline and 2) effectiveness using value sets from different countries as well as 3) potential to benefit and 4) concordance between different country results.

Methods: QoL was assessed based on unselected set of three health centre's patients who filled (N 519) generic self-administered EQ-5D-3L tool during Effective Health Centre Study (EHCS) in Pirkanmaa, Finland. Fourteen value sets (Canada, Denmark, Finland, France, Germany, Greece, Italy, Japan, Netherlands, Spain, Thailand, United Kingdom, United States, Zimbabwe) were used to calculate the QoL scores for the EHCS participants. Effectiveness was assessed as the QoL score difference between three months and baseline measurements during the EHCS. Potential to benefit and concordance was assessed with correlations at aggregate and patient level, respectively. All analyses were performed with Stata MP 14.1.

Results: In the baseline, the mean EHCS EQ-5D-3L scores ranged from 0.683 (Thailand) to 0.864 (Italy) demonstrating up to 0.182 differences in the baseline mean scores between the nations. The Finnish mean baseline score was 0.723. The pairwise patient-level correlations between the results with different country-specific value sets ranged from 0.691 (Denmark, Finland) to 0.993 (United States,United Kingdom). The effectiveness results of PHC in terms of mean score change ranged from Italy (0.014) to Thailand (0.035), and demonstrated strong (0.604-0.988) correlations. The effectiveness differences were less significant than the baseline differences between countries. For Finnish patient-level data, the best proxies were Japan, Thailand and Zimbabwe in terms of baseline EQ-5D-3L score or score difference, and the worst proxies were Denmark, Spain and Netherlands. Generally, there was inverse association with the mean baseline QoL scores and mean score changes showing most potential to benefit.

Conclusions: QoL is an important element of health care research that can be an indicator of need, potential to benefit and patient-reported effectiveness. Based on these results, local data on QoL should be collected and country-specific preferences used, because significant differences between value sets exist. Despite up to 2.5-fold differences in the effectiveness, the baseline concordance between countries was good and effectiveness changes were well in line.

49. EFFICACY OF A SURGICAL SAFETY CHECKLIST IN IMPROVING ANTIBIOTIC PROPHYLAXIS IN SURGERY

Hilde Valen Wæhle, Eirik Søfteland, Nick Sevdalis, Geir Egil Eide, Ingrid Smith, Stig Harthug, Arvid Steinar Haugen
E-mail: hilde.valen.waehle@helse-bergen.no

Background: Implementation of the World Health Organization's (WHO) Surgical Safety Checklist (SSC) has been reported to reduce surgical site infections (SSIs). An important mechanism through which the SSC is hypothesized to prevent SSIs is via provision of prophylactic antibiotics before incision.

Objectives: To investigate the efficacy of the WHO SSC in improving antibiotic prophylaxis practice in surgery.

Methods: In 2009–2010 a stepped wedge cluster-randomized controlled SSC quality improvement trial was conducted in two Norwegian hospitals. The checklist intervention was sequentially implemented in a randomised order until all clusters — orthopaedic, cardiothoracic, neurosurgery, general and urologic surgery — had received the intervention. Here we report the results of analysing a subset of data on prescription and administration of antibiotics, from the three first clusters in the largest hospital. Data were prospectively recorded in control and intervention groups during a 10-month period. Operating theatre staff was blinded regarding the study outcome. Data assessors were blinded regarding the intervention administered. Statistical analyses were done with Pearson's exact $x2$-test with Bonferroni correction.

Results: We compared 1398 control vs. 2304 intervention procedures, a total of 3702 procedures. Antibiotics were electronically prescribed in 13.3% (186/1398) of control procedures, and in 16.5% (380/2304) of intervention procedures ($P = 0.01$). Intra-operative administration of antibiotics was carried out in 70.7% (2616/3702) of the surgical procedures. Overall intra-operative administration of antibiotics increased from 35.8% (936/2616) to 64.0% (1680/2616) from control to intervention procedures ($P < 0.001$). In control procedures 67.0% (936/1398) of patients received antibiotics, whilst 72.9% (1680/2304) were administered antibiotics in the intervention procedures, $P < 0.001$. In intervention procedures where full (as opposed to partial) compliance with the SSC was observed, antibiotics were administered in 76.7% (1337/1743) of the cases, $P < 0.001$. Intra-operative administration of antibiotics >60 minutes before incision increased from 3.5% (33/936) to 18.9% (317/1680); administered <60 minutes before incision decreased from 77.9% (729/936) to 67.7% (1137/1680); administered after incision decreased from 16.9% (158/936) to 12.0% (202/1680); and administered after surgery (within operating theatre) decreased from 1.7% (16/936) to 1.4% (24/1680), all Ps < 0.001.

Conclusion/clinical implication: The WHO SSC was associated with improved timeliness and an overall improved intra-operative administration of antibiotics. Further interventions are needed to optimize antibiotic prescription to improve practices on antibiotic prophylaxis according to guidelines.

50. SETTING QUALITY OF LIFE BENCHMARKS WITH MATCHING-ADJUSTED INDIRECT COMPARISON AND ICPC-2 CODES: BERKSON'S BIAS BEWARE

Erkki Soini, Johanna Heinonen, Elina Miettola, Olli-Pekka Ryynänen, Tuomas Koskela
E-mail: erkki.soini@esior.fi

Background: In Berkson's bias all study groups include health care customers and spurious associations exist. In many real-life quality of life (QoL) studies matched general population control (MGPC) is not established; i.e. the comparisons can be Berkson's biased, and setting a treatment target and monitoring its fulfilment is hard.

Objectives: To estimate 1) QoL stratified based on comorbidities and International Classification of Primary Care (ICPC-2) chapters at baseline and three months, 2) QoL for MGPC (treatment target), 3) potential to benefit (need) in comparison to the MGPC QoL target, and 4) the target fulfilment (residual need).

Methods: A matching-adjusted indirect comparison (MAIC) method was developed to form balanced MGPC QoL for Effective Health Centre Study (EHCS, N 511, three Finnish health centres in Pirkanmaa) unselected patients based on an algorithm established from published Finnish general population results (N ~5144). Both studies used EQ-5L-3L self-administered QoL tool and United Kingdom time trade-off preferences. The MAIC included patient characteristics (age, sex, income, education, comorbidities). In order to assess the potential to benefit in comparison to the MGPC scores, the EHCS baseline scores were compared to them. To monitor the residual need, three month EHCS scores were compared to the MGPC scores. Stata MP 14.1 statistical software was used.

Results: In the baseline, mean EQ-5D-3L scores were 0.74 for all EHCS patients who replied and 0.81 for the MGPC, demonstrating a significant potential to benefit of 0.08 (95%CI 0.06-0.09). The lowest baseline score was observed for patients with neck problems, back problems or >5 comorbidities or ICPC-2 chapter L: Musculoskeletal, and highest for patients without comorbidities or ICPC-2 X: Female Genital. The benefit potential was estimated to be highest for ICPC-2 L: Musculoskeletal and lowest for S: Skin. After three months, the mean scores were 0.79 for patients who replied and 0.81 for the MGPC, demonstrating a minor residual need of 0.02 (95%CI 0.00-0.04). The lowest three month scores were observed for patients with neurological disease, neck problems or >5 comorbidities or ICPC-2 N: Neurological, and highest for patients without comorbidities or ICPC-2 S: Skin. The residual need was highest among ICPC-2 N: Neurological and lowest among T: Endocrine.

Conclusions: Indirect comparison method has been developed to form MGPC QoL. MGPC QoL may be a relevant target for real life studies, and the QoL difference to MGPC QoL can be used to benchmark potential to benefit and residual need.

51. CONTRIBUTING FACTORS TO SAFETY IN INTRA HOSPITAL PATIENT TRANSFER

Netta Pohjamies, Marita Ritmala-Castren, Lasse Lehtonen, Helena Leino-Kilpi
E-mail: netta.pohjamies@hus.fi

Objective: To summarize from existing literature the contributing factors to patients safety in intrahospital patient transfer. The ultimate goal was to strengthen the patients' safety in practice.

Background: In hospital, patients are exposed for number of intra-hospital transfers. Transfers can be a high-risk for patients and might cause threats to the patient safety.

Methods: A literature review based on electronic databases Ovid MEDLINE (1946 -2015), Cochraine, and Cinahl (1982 -2015). The search terms were patient safety AND transfer (OR trans*, patient trans*) AND intrahospital (OR in-hospital/ inhospital/intra-hospital/ interdepartment/interfacility/inter-facility). Inclusion criteria were:

(a) Intrahospital/inhospital transfer between ward/unit/department,
(b) Nonemergency transfer,
(c) Adult patient,
(d) Patient transfer performed by professionals, and
(e) Empiric research. Titles and abstracts of 355 papers were screened by two researchers (NP, MRC) independently and 16 studies were finally included in the review.

Results: The factors contributing the safety in intra-hospital patient transfer were a) controlled actions in organization, b) knowledge of professionals and c) cognitive support of healthcare client. Controlled actions consisted of controlled patient turnover, structured way of working, information processing and clearly defined roles. Knowledge of professionals consisted of common knowledge, adverse event awareness and adaptation to the changing situation. Cognitive support of health care client consist of cognitive support of patient and cognitive support of family.

Conclusion: Factors contributing patients' safety in intra-hospital transfer are multidimensional. For improving the safety, both organizational factors, as well as professionals and clients have to be taken in account. This study provides practioners and hospital policy makers and overview of the diversity of the contributing factors that may strength patient safety practice when transferring the patient from department to another.

52. THE PRACTICE OF CLINICAL LEADERSHIP IN THE EMERGENCY DEPARTMENT

Sissel Eikeland Husebø, Øystein Evjen Olsen
E-mail: sissel.i.husebo@uis.no

Background: Emergency departments are high pressure health care settings involving performance of clinical leadership for effective management, flow of patients, quality of care and patient safety. Without clinical leadership performed by nurses-in-charge and doctors on call, the provision of safe, high quality patient care will be jeopardized. Hence, a clinical leadership course was implemented in a Norwegian hospital emergency department.

Objects: This study examined performance of clinical leadership in an emergency department after implementing a clinical leadership course. Two research questions were formulated to address the study aim: 1) what do nurses-in-charge and doctors on call do? and 2) how do they perform clinical leadership?

Methods: Qualitative descriptive design was used to collect data. Five nurses-in-charge and four doctors on call were "shadowed" during their duty to explore performance of clinical leadership in the emergency department. During the field study, notes were taken of the observations made as well as of the informal conversations that were held between nurse-in-charge, doctor on call and staff.

Results: Preliminary findings reveal that nurses-in-charge and doctors on call perform three joint tasks:
1) coordinate and collaborate for effective patient flow, 2) facilitate and teach own and other professions and 3) use of information technology. Additionally, nurses-in-charge perform clinical skills and order services, whereas doctors on call order blood tests and examinations. Thematic analyses to answer research question 2: how nurses-in-charge and doctors on call perform clinical leadership have not yet been conducted.

Conclusions/clinical implications: Nurses-in-charge and doctors on call perform clinical leadership skills such as facilitating and teaching to ensure quality of care and patient safety in the emergency department. Another important task is the coordination and collaboration with other healthcare personal to promote patient flow. Both professions contribute to building a safety culture in their performance of clinical leadership. Healthcare managers in emergency departments need therefore to recognize the responsibility to ensure clinical leadership skills to secure quality of care and patient safety.

53. PATIENT-PATIENT VIOLENCE AND ITS PREVENTION IN FORENSIC PSYCHIATRIC HOSPITAL SETTING

Mari Leskinen, Anssi Kuosmanen, Hannele Turunen
E-mail: mari.leskinen@niuva.fi

Aim: Violence and aggressive behaviour is an acute problem in psychiatric care and it causes a threat to patient and staff safety. Majority of studies have focused on violence against psychiatric health care personnel. The purpose of this study was to clarify 1) the number and quality of patient-patient violent incidents in forensic psychiatric hospital setting and 2) how these incidents could be prevented according to staff.

Methods: The data were collected retrospectively from Niuvanniemi Hospital's web-based error-reporting database (Haipro®) in which hospital staff reports incidents (errors and near-misses) happened in patient care. The study period was two years (1.3.2012–28.2.2014), a total of 212 violent incidence-reports concerned patient-patient violence. These reports were analyzed statistically using SPSS 21.0 program and reported using frequencies and percentages.

Results: Actual violence incidents were 64,6 % (n=137) of all the incidents; the rest 34,5 % (n=75) were near misses. Most common form of violence caused by another patient was hitting followed by verbal aggression. The majority of patient-patient violence incidents happened on the corridor or in the day room. The most common reported trigger for violent incident (38,7 %, n=82) was an argument or a conflict between patients, but 31,1 % (n=66) of the incidents happened without specified reason. Majority of the incidents did not cause any harm to the patients (43 %, n=91) or were estimated to have caused mild harm (44,8 %, n=95). Evaluation of the harm was focused on physical injuries, emotional harm was noticed rarely. When filling the incident report, the hospital staff was also asked to define their own view on how incident could be prevented. Both therapeutic methods (like psychoeducation, therapeutic conversation and attendance), and restrictive methods (like seclusion and restraints) were mentioned. However, in 31,5 % (n=69) of the reports this section was left unfilled, and in 12,7 % (n=27) of the reports were thought that these incidents cannot be prevented.

Conclusions: Forensic psychiatric inpatients experience violence during their hospitalization and violence prevention is an important part of psychiatric nursing and patient safety. Identifying potential risk-factors can facilitate patient-patient violence prevention. Nursing leaders should also courage nurses to express their views on how violence prevention should be developed and innovative ideas to increase the safety and quality of psychiatric nursing. Leaders should also make sure that expressed ideas are processed properly and taken into clinical practice. By supplementary education both leaders and nurses can learn to understand patient safety better and to find new alternative practices to improve patient safety.

54. OPPORTUNITIES AND IMPEDIMENTS FOR PATIENTS TO PARTICIPATE IN ERROR PREVENTION AND MANAGEMENT OF ADVERSE EVENTS

Gunn Hågensen
E-mail: gunn.hagensen@uit.no

Background: Sadly, many patients still experience adverse events and are damaged when they are in hospital care. As actors in the field, patients may have the potential to be a part of safety-related behavior meant to reduce or eliminate the risk of medical errors or to mitigate the effects of an error when it occurs.

Objectives: This paper aims at illuminating the issue by exploring literature about patients' opportunities to participate in patient-safety improvement and at emphasizing impediments they come across.

Method: This study systemically searched the databases PubMed, Cochrane, and Scopus in April-May 2015 to find literature that covered patient participation in patient safety.

Inclusion criteria: English language, published 2010-2015, empirical studies (quantitative and qualitative), reviews/overview articles, or analyses that investigated patient participation in safety related to error-prevention strategies, evaluations, and effects. This gave sixty-two potential abstracts, which resulted in five selected articles.

Results: These articles highlight the importance of developing safety cultures that deal with both the prevention of harm to patients and a demand for greater accountability from health-care services and regulatory bodies. At the macro level, policymakers try to implement a higher degree of patient participation, for instance by marketing educational campaigns like the "speak up" campaign. However, it seems that there are difficulties at an individual level and at a relational co-productive level between patients and health personnel that make this problematic to carry through. Patients and health personnel in general have a positive attitude towards patient participation, but impediments like the patients being vulnerable from illness and different sociocultural factors affect the abilities to participate. Another factor is the hierarchical, elitist, and paternalistic culture of the medical profession that acts as an impediment to engaging in safety. Busy settings, lack of clinicians' time, and lack of continuity were other important barriers. When patients try to speak up or take action to prevent possible errors, the health personnel do not take them seriously enough or give them the information or opportunity they need to participate.

Conclusion: In order for one to reduce medical errors and adverse events, research and implementation strategies should promote a more collaborative approach by supporting the needs of both patients and health professionals. Further research on how to change cultural impediments in the paternalistic biomedical model seems necessary to make underlying factors more explicit. Attitudinal as well as practical changes are required if patients are to get the support they need to contribute in ways they feel comfortable and able.

55. AN EASY WAY TO COMPARE PATIENT GROUPS AND THEIR TREATMENT OUTCOMES USING THE 15D

Harri Sintonen and Risto P. Roine
E-mail: harri.sintonen@helsinki.fi

Background: There are compelling reasons for measuring the health status of patients and changes in it commensurably: 1) to be able to allocate treatments according to need and ethical guidelines (worst off first), and 2) to compare and promote effectiveness and cost-effectiveness of treatments of different illnesses and service providers.

Objectives: To show, with an empirical example, how the health status and outcome (effectiveness) of treatment of coronary artery bypass grafting patients provided by three hospitals can be compared by using the generic 15D health-related quality of life (HRQoL) instrument.

Methods: The HRQoL of 393, 281 and 86 patients was measured before and six months after treatment in 1999-2000 in Kuopio University Hospital (KUH), in 2000-2003 in Vaasa Central Hospital (VCH), and in 2002-2003 in Helsinki University Hospital (HUH), respectively. The 15D score, representing overall HRQoL on a 0-1 scale (1=full health, 0=being dead) is calculated by using a set of population-based utility weights. The minimum clinically important change or difference in the 15D score is 0.015. Independent samples and paired samples t-test were used to test differences in means between the hospitals and within hospitals over time, respectively, and linear regression to compare means with some background variables standardized.

Results: The mean 15D scores were at baseline 0.750, 0.831 and 0.830 in KUH, VCH and HUH, respectively. The differences between KUH and VCH or HUH were statistically significant ($p<0.001$) and clinically important. The mean change in the 15D score by 6 months was 0.119 in KUH, and 0.090 and 0.074 smaller in VCH and HUH, respectively. With gender, age and baseline 15D score standardized, the difference between KUH and VCH in the mean change of the 15D score reduced to 0.050 and between KUH and HUH to 0.033. These differences are still statistically significant ($p<.001$) and clinically important. A clinically important improvement in HRQoL was experienced by 85.8, 59.1 and 64.0% of patients and a clinically important deterioration by 6.8, 25.3 and 22.1% in KUH, VCH and HUH, respectively.

Conclusions: There were clear differences between hospitals in treatment indication and effectiveness in terms of HRQoL, i.e., mean change in the 15D score and percentage of patients experiencing a clinically important improvement or deterioration in HRQoL. For fair comparisons, standardization of relevant demographic and clinical parameters of patients at baseline is needed. Careful patient and treatment choice and scrutiny of treatment outcomes at patient level are needed to decrease differences.

56. DO FINANCIAL DIFFICULTIES IMPAIR QUALITY OF LIFE IN CANCER PATIENTS?

Koskinen Jyri-Pekka, Färkkilä Niilo, Sintonen Harri, Taari Kimmo, Roine Risto P, Saarto Tiina
E-mail: jpkoskinen@gmail.com

Background: Financial difficulties may affect negatively cancer patients' health-related quality of life (HRQoL).

Aim: To examine the relationship between financial difficulties and perceived HRQoL as a patient-reported treatment outcome. Furthermore, to study how the out-of-pocket payments of cancer treatments affect HRQoL, and to identify factors driving the payments.

Methods: A cross sectional study of 1 978 cancer patients having either prostate (n=630), breast (n=840), or colorectal cancer (n=508) treated at the Helsinki and Uusimaa Hospital District. HRQoL was measured by two generic HRQoL instruments, the 15D and the EQ-5D, and by the cancer-specific EORTC-QLQ-C30 quality of life (QoL) instrument. The monetary value of medical services and resources was estimated based on register data of the municipalities (primary care), Social Insurance Institution of Finland (medications and part of sick leaves) and hospitals (specialized in medical care). Data on demographic factors and self-reported use of health services were collected by a self-administered questionnaire. Financial difficulties were measured by patients' answer to the EORTC-QLQ-C30 four-level question "Has your physical condition or medical treatment caused you financial difficulties?"

Results: The mean 15D and EQ5D scores were lowest in the group reporting most severe financial difficulties. Furthermore, the out-of-pocket payments were also highest in the same group. In multivariate regression analysis, age and financial difficulties had a negative effect on HRQoL measured by the 15D score. However, the patient fees of cancer treatments did not have a significant effect on HRQoL. Unemployment and higher patient fees were associated with more financial difficulties.

Conclusions: Financial difficulties need to be taken into consideration because they have a clear negative effect on HRQoL. Cancer patients financial difficulties need to be surveyed and required support offered as financial difficulties have clear effect on HRQoL. Social factors, such as unemployment, are the strongest factors causing financial difficulties, the patient fees come only secondary after that. The patient fees do not have a straightforward negative effect on HRQoL, but they impair it indirectly by causing financial difficulties for the patients.

57. COSTS IN DIFFERENT STATES OF BREAST CANCER

Roine Eija, Färkkilä Niilo, Sintonen Harri, Taari Kimmo, Roine Risto P, Saarto Tiina
E-mail: eija.roine@helsinki.fi

Background: Breast cancer (BC) is the most common cancer in women and the most common cause of cancer deaths in women in Western Europe. The incidence of BC is high in working age women. Consequently, indirect costs, especially the productivity costs related to inability to work because of cancer or its treatment, may account for a great share of the total costs in BC.

Objectives: This cross-sectional study assesses resource use and costs in different states of BC in a real-life setting in the Helsinki and Uusimaa Hospital District. Costs were estimated as incremental costs due to cancer and they included direct medical costs, productivity costs and costs of informal care.

Methods: Altogether 827 breast cancer patients (aged 26-78; female 99.4%) answered a questionnaire enquiring about informal care, work capacity, and demographic factors. Furthermore, data on direct medical resource use and sick leaves were obtained from registries. Patients were divided into four mutually exclusive groups based on the disease state and the time from diagnosis: primary (local disease, the first six months after diagnosis; n=117), rehabilitation (local disease, more than six months after diagnosis; n=151), remission (local disease, more than 1.5 years after diagnosis; n=382) and metastatic (after detection of metastases; n=177). The costs were calculated for a six-month period.

Results: Costs differed markedly between the disease states. Mean direct health care costs for the six-month periods were: primary treatment state €13,874, rehabilitation state €3,160, remission state €1,235 and metastatic disease state €19,119. Productivity costs were highest (€8,887) in the primary treatment state and in the metastatic disease state (€7,412) and lowest in the rehabilitation (€605) and remission states (€415). Costs of informal care were highest in the metastatic disease state (€2,985) and in the primary treatment state (€2,191) and low in the rehabilitation (€453) and remission (€166) states.

Conclusions: The results provide disease state-specific estimates of the direct health care costs and indirect costs of BC in Finland. Although the direct health care costs were somewhat higher compared to productivity costs, also the latter should be taken into consideration when evaluating the costs of BC as many patients suffering from BC are of working age, and the productivity costs account for a great share of the total costs of the disease.

58. PATIENT SAFETY AND TELEPHONE NEUROLOGY

Hanna Kuusisto, Virpi Kröger, Pertti Knuth, Päivi Tiitola, Sanna Eloranta, Kaija Saranto
E-mail: hanna.kuusisto@khshp.fi

Aim of the study: To assess how primary health care physicians assess the risks possibly associated with telephone neurology, and to evaluate if there are any patient reported notifications to the Kanta-Häme Central Hospital (KHCH) Neurology Department, complaints to The National Supervisory Authority for Welfare and Health (VALVIRA)/Regional State Administrative Agencies ((AVI) or notices of patient injury to the Patient Insurance Center concerning telecare, or in contrast, long waiting times.

Background: Telecare is defined as patient care without a visit to the doctor's office. It is a part of the rapidly growing branch of telemedicine. Telecare can be provided by using various technologies, most often telephone. Benefits of telecare have been reported, but data on patient safety and possible risk factors associated with telecare are limited.

Material and methods: A questionnaire was distributed to primary health care physicians working at the Healthcare Centers of Hämeenlinna, Riihimäki and Janakkala, and occupational physicians working at Mehiläinen Riihimäki or Linnan Klinikka Hämeenlinna. The questionnaire included four statements on possible risks associated with telecare/telephone neurology and space for free comments. The form was delivered to 61 physicians. The notifications, complaints and patients injury reports recorded during 2008 – 2014 were evaluated.

Results: 58/61 (95%) physicians returned the questionnaire. 35/61 (57%) physicians reported as having experience on telecare of patients they had been referred themselves to the Department of Neurology in KHCH (=telephone neurology). Majority of the physicians (41/61, 67 %) evaluated that compared to standard care, telecare is associated with more patient safety risks. The opinion was not associated with the possible experience with telecare. The most important issues related to risks of telecare were thought to be the accuracy of the referrals and the reliability of the diagnosis, made by a specialist over a telephone conversation. Altogether 42 notifications, 31 complaints and 38 patient injury reports were recorded in 2008-2014. None of them was related to telecare, instead six notifications, two complaints and 13 patient injury reports were made due to long waiting time. In two of the patient injury reports the delay to the appointment had exceeded the health care guarantee law of three months.

Conclusions: Primary healthcare physicians had doubts on the quality of their own referrals as well as patient safety when treating a patient only by telephone. Telephone neurology had not resulted in any notifications, complaints or patient injury reports in KHCH.

59. OUTPATIENT WASTE

Riikka Maijala, Sini Eloranta, Tuija Ikonen
E-mail: riikka.maijala@tyks.fi

Background and objectives: A significant amount of waste factors have been detected to exist in health care systems. Waste factors are anything that does not add any value but increases costs of. The purpose of this project was firstly to test the Waste Identification tool (Institute for Healthcare Improvement) in eight pilot units in the Southwest Finland, and secondly, according to the results of the test support the implementation of the tool and the development process. The aim was: 1) to identify the waste factors in the care of outpatients and 2) to support the daily decision-making and action planning of the personnel. The main idea was to eliminate any activity or resource that does not add value to patients/customers and increase time spent on patient care to achieve better quality of care and better care results.

Methods: The data were collected in two different ways, which were 1) waste assessments done with Outpatient Waste Identification Forms and 2) operational decisions on removal of waste based on the analysis. The data were analyzed by statistical methods, and content analysis. The pilot units took care of outpatients in specialized health care, in regional specialized care and primary health care.

Results and conclusions: The results showed that the Waste Identification Tool can be used to identify the waste factors in outpatient care. The waste factors identified with the tool focused on the interruption reception, reception of a length longer than planned and poorly functioning equipment. Immediate corrections of operational models and/or development initiatives were launched to streamline functions and eliminate the waste in all eight units. Waste identification tool is useful in the recognition of waste factors in the care of somatic outpatients. The effects of identified waste can be estimated and the information obtained can be used in activities related to decision-making and planning, when the aim is to eliminate any activity or resource that does not add value and increase the time spent on patient care to achieve better quality of care and better care results. Standardized development process supports the implementation of continuous improvement.

60. SECURING SAFE AND EFFICIENT INFORMATION EXCHANGE WITH ELECTRONIC NURSING DISCHARGE SUMMARY

Anne Kuusisto, Paula Asikainen, Kaija Saranto
E-mail: anne.kuusisto@satshp.fi

Background: There is a growing need for patient safety to exchange nursing related information electronically from one health care professional to another over crossing institutional boarders. There is also an increasing demand for standardized documents in continuity of care because of National Data Repository in Finland (Kanta 2016). Today globally for example patient summaries are still rare and not in timely manner (Brodribb et al 2015).

Objective: The purpose of this study is to show how the nursing discharge summary (ENDS) supports continuity of care at patient discharge from hospital to primary care.

Material and methods: Cross-sectional study data (n = 180) were collected electronically, using a previously tested questionnaire at one hospital district in Finland in 2012. Data was analyzed statistically.

Results: Those primary care nursing professionals who received ENDS from special care assessed information flow more positively than those not received ENDS. Examples of benefits of ENDS are available at the conference.

Conclusions/Clinical implications: ENDS supports continuity of care and patient safety by promoting the flow of information between the various organizations and professionals involved.

61. ASSESSING PATIENT SAFETY – PATIENTS´ EXPERIENCES TALKS

Merja Sahlström, Pirjo Partanen, Hannele Turunen
E-mail: merja.sahlstrom@ylasavonsote.fi

Background: Patients have a critical, privileged perspective on many aspects of healthcare and therefore they can provide a unique perspective on system safety issues, and in so doing, can help to identify risks and suggest solutions for reducing harm caused by clinical errors. However, more research is needed on patients' perceptions of their role in promotion of patient safety.
Objectives: The aim of the study was to describe patients' experiences of patient safety during their most recent period of care.

Methods: A cross-sectional survey study of patients (n=175), who were treated in hospital day surgery unit and three health centres inpatient ward in Finland. Data were collected via Patient Experiences on Patient Safety (PEPS) questionnaire and analyzed statistically using nonparametric tests and a logistic regression modeling.

Results: In general patients' experiences of patient safety dimensions (medication-, treatment-, and device safety and patient participation) were positive on a scale 1-4, although there was variation by age, experience of error(s) and clinical settings. Patients aged 66-75 were most critical of treatment- (M=3.32, p=0.018) and medication safety (M=3.26, p=0.008). In turn, day surgery patients rated treatment safety (M=3.64, p=0.035) and patient participation (M=3.76, p p=≤0.001) more positively than other patients. Patients who had confronted error(s) were more critical towards medication (M=3.43, p=0.047) safety and patient participation (M=3.41, p=0.02). 22% of the patients had experienced an error at some time in their care. Of the participants who had experienced an error (n=37), only 36% were informed about the error by health care workers, and only 9% had received an apology for the incident from health care workers. 89% rated the patient safety level as excellent or very good and 11% as acceptable or poor. None of the participants recorded the level of safety as unacceptable. Day surgery participants rated level as excellent or very good more often than those who had been treated in inpatient wards (p=0.013). Likewise, younger participants gave more positive ratings than older participants (p=0.002) and patients who had not experienced error(s) gave higher scores than those who had or didn't know if they had experienced errors (p=0.024).

Conclusions: Patients experiences of patient safety were generally positive, but attention is needed in the development of patient safety culture where the patient is seen as an equal partner in promoting high-quality and safe care, but also open, timely and transparent error management to patients.

62. THREE OUT OF FOUR FINNISH DISEASE MODIFYING ANTI-RHEUMATIC DRUGNAIVE RHEUMATOID ARTHRITIS PATIENTS MEET REMISSION AT 12 MONTHS

Tuomas Rannio, Juha Asikainen, Pekka Hannonen, Timo Yli-Kerttula, Päivi Ekman, Laura Pirilä, Laura Kuusalo, Markku Mali, Marja Puurtinen-Vilkki, Satu Kortelainen, Johanna Paltta, Kirsi Taimen, Markku Kauppi, Kari Laiho, Satu Nyrhinen, Heidi Mäkinen, Pia Isomäki, Terhi Uotila, Kalle J. Aaltonen, Hannu Kautiainen, Tuulikki Sokka-Isler
E-mail: tuomas.rannio@ksshp.fi

Background: Finnish national combination treatment trials have demonstrated excellent outcomes in patients with early rheumatoid arthritis (RA) including 90% of patients reaching 28-joint Disease Activity Score (DAS28) remission. Whether similar results are reached in clinical praxis is not known.

Objectives: To assess what proportion of disease modifying anti-rheumatic drug (dmard) naïve early rheumatoid arthritis patients reach DAS28-remission over one year and remission variability across clinics in Finland.

Methods: Patients with dmard-naïve inflammatory arthritis diagnosed as new early RA were recruited. Comparison among sites were made in proportion of patients in 28-joint Disease Activity Score with 3 variables (DAS28-3) remission. Repeated measures were analyzed using mixed models approach with appropriate distribution and link function. Results 611 patients were recruited at 5 sites: 67% female; the mean age (SD) at diagnosis was 57 (16) years; respective 71% and 68% were rheumatoid factor and anti-cyclic citrullinated peptide positive; 23% had radiographic erosions. A total of 506 (83%) fulfilled the ACR/EULAR 2010 classification criteria for RA for further analyses. DAS28-3 remission was met by 68% and 75% at 3 and 12 months, respectively. Clinic had no effect in remission when adjusted for confounders. At baseline, a total of 68% used methotrexate based combination therapy, and 31% used triple therapy with methotrexate, hydroxychloroquine and sulphasalazine. In multivariate analysis, the only independent predictors of DAS28-3 remission at 12 months were lower baseline DAS28-3 and triple therapy as the initial treatment.

Conclusions: Three out of every four dmard-naïve early RA patients are in remission in Finland at 1 year. The clinic had no effect in remission when adjusted for confounders. High remission rates were achieved with use of DMARDs in combinations for majority of patients. Treatment with triple therapy is a predictor of DAS28-3 remission also in real-life rheumatology settings.

63. IDENTIFYING IT RELATED ADVERSE EVENTS

Lone Stub Petersen, Sidsel Villumsen, Christian Nøhr
E-mail: lonep@plan.aau.dk

Background: The registration, handling and use of adverse events reports are key components in ensuring patient safety in health care. In Denmark adverse events are reported by health care personnel and since 2011 also by patients and relatives in a system that allows free text description as well a very limited measure of categorization. The adverse events are then categorized on a regional as well as on national level [1]. However, information technology (IT) induced adverse events are not categorized specifically. A recent report from The Public Accounts Committee (Rigsrevisionen), who audits public spending on behalf of the Danish parliament, has criticized the poor utilization of the data gathered on adverse events [2].

Objectives: In this study we explore what benefits can be drawn from using a systematic framework for identifying IT induced adverse events.

Methods: To identify and categorize the reports, a framework developed by Magrabi was used [3,4]. The framework is based on a socio-technical concept of technology and covers three main categories: 1) Information input/output errors; 2) Software & hardware problems; 3) Contributing factors. The first category can be classified as human factors related or technical related. Category 2) is naturally technical related and 3) is related to organizational or human factors issues. Three researchers independently categorized 100 adverse events reports from a Danish region according to the framework. The categorization was then compared and each divergence discussed and adjusted.

Results: Out of the 100 adverse event reports 25 was included as IT induced adverse events and categorized according to the framework. The framework was found useful in determining and discussing the adverse events. Due to the socio-technical based framework a relatively high number of events could be categorized as IT induced adverse events. However, the complexity of some problems as well as the lack of detailed descriptions in some reports made certain categorizations hard to specify according to the framework. The framework was applied to a limited dataset, however, it show-case the usefulness of having and using a socio-technical based framework for categorizing IT induced adverse events and the potential for reactive as well as proactive measures for improving patient safety with the use of already existing systems for collecting data on adverse events.

Conclusions: When using a using a systematic framework for identifying IT induced adverse events, a potential for reactively and proactively improving patient safety appears.

64. MEDICATION INFORMATION NEEDS OF PATIENTS WITH PARKINSON'S DISEASE

Tapani Keränen, Heli Järvinen, Kirsti Laitinen
E-mail: Tapani.Keranen@thl.fi

Background: Medical treatment in PD is challenging due to the age range of the patients, common co-morbidities and complexity of PD drug regimens. Patient centered information on drugs may reduce the risk of drug related adverse effects which have detrimental effects on the quality of life of PD patient.

Objective: To survey medication information needs of patients with Parkinson's disease (PD) using the database of the Kuopio Medicines Information Centre (KMIC).

Methods: The data was collected from requests concerning PD drugs received at the KMIC during 17.8.2002–14.4.2012. Almost all inquiries to the KMIC service are made via telephone but the service can be also reached by fax, e-mail and web form. In the KMIC, the inquiries and responses are documented electronically. For the purposes of this study only inquiries concerning the ATC-class N04 (anti-Parkinson's drugs), made by PD patients or their relatives, were included.

Results: Majority of the inquiries concerned levodopa (n=158), pramipexole (n=85) and selegiline (n=58). The most common areas of interests were drug interactions (n=214), dosage and the use of a PD drug (n=67) and adverse effects (n=64). Interaction issues concerned mostly drug-drug interactions (n=205), especially possible interactions between concurrent use of an antipsychotic and a PD drug or the combination of levodopa and selegiline. Most common adverse effects mentioned were nausea, vomiting or other gastrointestinal symptoms, hypotension, motor symptoms, hallucinations, fatigue, and somnolence or falling asleep.

Conclusions: This study emphasized three areas in which PD patients need more guidance on: drug interactions, dosage and the use of drug and adverse effects. A telepharmacy service, such the KMIC described here, can supplement the education of given by other healthcare professionals.

65. PATIENT-REPORTED OUTCOMES IN ELECTIVE CRANIAL NEUROSURGERY

Elina Reponen, Hanna Tuominen, Miikka Korja
E-mail: elina.reponen@helsinki.fi

Background: The role of patient-reported outcomes (PROs) in elective cranial neurosurgery has been poorly studied and their significance in reflecting complication rates is unclear.

Objectives: To compare the usefulness of PROs with postoperative modified Rankin Scale (mRS) score.

Methods: A prospective, consecutive, and unselected cohort of 418 adult patients underwent elective intracranial operations between Dec 7, 2011 and Dec 31, 2012 in Helsinki University Hospital, Finland. The questionnaire-based PROs included subjective postoperative assessments of overall health, cognitive function and subjective change in functional status. Outcome measures included in-hospital major morbidity (including mortality), and in-hospital overall morbidity.

Results: In univariable analyses, all recorded PROs and 30-day mRS score ≥3 were associated with inhospital major and overall morbidity. After multivariable analyses, postoperative deterioration of subjective functional status remained associated with in-hospital major morbidity ($p=0.001$, OR 4.9, CI 1.9-12.0, sensitivity 71%, and specificity 70%), and with overall in-hospital morbidity ($p<0.001$, OR 5.7, CI 3.1-10.7, sensitivity 59%, and specificity 84%). Postoperatively impaired functional status was more sensitive but less specific in detecting in-hospital major and overall morbidity than the widely used mRS cut off value of 2. A simple composite score combining the three recorded PROs was highly sensitive and specific in detecting in-hospital major (sensitivity 87%, specificity 98%) and overall (sensitivity 72%, specificity 99%) morbidity.

Conclusions: In elective craniotomy patients, PROs seem promising patient-centered tools for outcomes reporting. Furthermore, neurosurgery-specific patient-reported outcome measures (PROMs) can perhaps be implemented to clinical use to improve patient safety and outcome comparisons in elective cranial neurosurgery.

66. PATIENT SATISFACTION AND SHORT-TERM OUTCOME IN ELECTIVE CRANIAL NEUROSURGERY

Elina Reponen, Hanna Tuominen, Miikka Korja
E-mail: elina.reponen@helsinki.fi

Background: Patient-reported experience is often used as a measure for quality of care, but no reports on patient satisfaction after cranial neurosurgery exist.

Objectives: To study the association of overall patient satisfaction and surgical outcome, and to evaluate the applicability of overall patient satisfaction as a proxy for quality of care in elective cranial neurosurgery.

Methods: We conducted an observational study on the relationship of overall patient satisfaction at 30 postoperative days with surgical and functional outcome [modified Rankin Scale (mRS) score] in a prospective, consecutive, and unselected cohort of 418 adult elective craniotomy patients enrolled between December 2011 and December 2012 in the Department of Neurosurgery, Helsinki University Hospital, Helsinki, Finland.

Results: Postoperative overall (subjective and objective) morbidity was present in 194 (46.4%) patients; yet almost 94% of all study patients reported high overall satisfaction. Low overall patient satisfaction at 30 days was not associated with postoperative major morbidity in elective cranial neurosurgery. Dependent functional status (mRS score ≥3) at 30 days, minor infections, poor postoperative subjective overall health status and patient-reported severe symptoms (double vision, poor balance) may contribute to unsatisfied patient experience.

Conclusions: Overall patient satisfaction in elective cranial neurosurgery is high. Even 9 out of 10 patients with postoperative major morbidity rated high overall patient satisfaction at 30 days. Overall patient satisfaction may merely reflect patient experience and subjective postoperative health status, and therefore it is a poor proxy for quality of care in elective cranial neurosurgery.

67. MODIFIED RANKIN SCALE AND SHORT-TERM SURGICAL OUTCOME IN CRANIAL NEUROSURGERY

Elina Reponen, Hanna Tuominen, Miikka Korja
E-mail: elina.reponen@helsinki.fi

Background: The modified Rankin Scale (mRS) was developed to monitor functional recovery after stroke, but nowadays it is a treatment outcome measure in elective neurosurgery.

Objective: To study how well mRS measures short-term surgical outcome.

Methods: Preoperative, in-hospital, and 30-day mRS scores came from a prospective, consecutive and unselected cohort of 418 adult elective craniotomy patients enrolled between December 2011 and December 2012 in Helsinki, Finland. Recorded data included subjective and objective postoperative in-hospital complications as well as changes in mRS score after surgery.

Results: Minor or major complications were detectable in 46% of the patients. In-hospital and 30-day postoperative increases in mRS score were inconsistent; among patients with no complications, 17% had a higher mRS score at discharge and 24% at 30-days, whereas 28% of the patients with major complications showed no increase in mRS score at discharge. Of individual complications, only new or worsened hemiparesis, silent stroke, and pneumonia were associated with postoperative increase (>2) in mRS score after multivariable analysis. For mRS-score difference > 1 at discharge in detecting major complications (including mortality), sensitivity was 45% and specificity 94%.

Conclusions: The mRS poorly reflects outcome in elective cranial neurosurgery. Neurosurgical community could benefit from a more refined tool for outcomes reporting.

68. EXTERNAL QUALITY AUDITION IN KAINUU CENTRAL HOSPITAL

Kristiina Kananen, Riitta Leinonen, Lea Käsmä-Ronkainen
E-mail: kristiina.kananen@kainuu.fi

Background: External quality audit is widely used and effective method to improve quality in industry. Many commercial health care services have been quality audited. In public health care internal quality audits have been performed for years but external quality audits are rare. We thought it might be useful method also in public health care.

Objectives: Objective is to evaluate usefulness of external quality audit in quality control development in public health organization.

Methods: Division of the conservative care (including specialties of dermatology, internal medicine, neurology, physiatry, pulmonary diseases and medical rehabilitation) was chosen to objective. Internal quality audits had already been well-established. Division has about 150 employees and its annual budget is about 30 million euros. First external quality certification audit was performed by Inspecta at September 2010 and re-certification audit at May 2015 by Labquality. ISO 9001:2008 criteria were used in both times.

Results: Most important improvement proposals of first external quality audit concerned balanced score cards (BSC), meeting records, equipment management and introduction to new employees. After audit BSCs were modified simpler and more goal-oriented. Each unit set few clear targets; specified ways to get there and set measurable indicators. After every meeting measures to be done are listed with schedule and person in charge. The list is checked at the beginning of next meeting and completed tasks are closed. Equipment registry was renovated and also small advices registered. Introduction check list was produced. It is signed by both employee and mentor after completing of introduction. In second external quality audit improvement suggestions concerned describing treatment processes more from patients' view and covering whole health care system; enhancing collaboration between other parts of the organization; developing structure and usability of organization's intranet system and quality of statistical data about patient safety. Yet more punctual follow-up of development measures was also recommended. Personnel's good motivation and cooperativeness, positive attitude towards development, promotion of lean philosophy and strong engagement of quality control and patient safety with management system were seen as some of the strengths.

Conclusions: External quality audits give valuable information also for public health care units. Systematic quality control strengthens organization and helps it in developing and managing although both human and material resources might be limited. Patients get equal, safe and effective healthcare. In conservative care focus of further development has in five years' time shifted from very detailed level to larger scale issues concerning whole organization.

69. THE EFFECT OF SURGICAL SAFETY CHECKLIST ON ANTIBIOTIC PROPHYLAXIS AND POST-OPERATIVE INFECTIONS IN VASCULAR SURGERY

Tia Abrahamsson, Veikko Nikulainen, Harri Hakovirta, Tuija S Ikonen
E-mail: tuija.ikonen@tyks.fi

Background: In 2007 WHO launched a worldwide program in order to reduce the number of operative complications. As a result of this program, and inspired by the aviation industry, a simple checklist was created. The checklist contains 19 questions divided into three phases (before anesthesia, before the surgery and after the whole operation is over). Each question is asked out loud in the operating theater, it takes 2-3 minutes to go through the whole checklist. In vascular surgery procedures, the most common post-operative complications are the surgical site infections, which can be managed for example with antibiotic prophylaxis.

Objectives: In this study we examine the effect of the WHO Surgical Safety Checklist in the use and timing of antibiotic prophylaxis and its effect on the occurrence of post-operative infections.

Methods: We retrospectively selected patients that were treated surgically for lower limb or aortic disease in the Turku University Hospital between January and November 2011. The patients were selected from the patient registry according to the procedure code. There were 265 patients on whom 316 procedures were performed. The patients were followed for one year postoperatively. The data collected was compared with the hospitals infection registry. The information was collected in an excel-file and analyzed using the SPSS-program.

Results: The WHO Surgical Safety Checklist was used in 75% of all procedures. It was used in 88% of elective procedures and in 66% of acute procedures. In emergency procedures it was used only in 18% of the cases. The timing of the antibiotic prophylaxis was better (77% vs. 48%, p=0,000), the antibiotic prophylaxis was forgotten fewer times (8% vs. 17%) and the number of infections was also lower when the checklist was used (12% vs. 32%, P=0,000).

Conclusion: This study proved that the timing of the antibiotic prophylaxis is crucial in preventing infections. When the timing of the prophylaxis was optimal 10% of the patients developed a postoperative infection, this figure was 18% when the prophylaxis was given at the wrong time. Most post-operative infections occurred when the prophylaxis was forgotten altogether. The use of the checklist improved the timing of antibiotic prophylaxis.

70. NURSES' COMPETENCE IN MOBILITY CARE AFTER KINAESTHETICS TRAINING: A CONCEPT DEVELOPMENT

Heidrun Gattinger, Virpi Hantikainen, Sascha Köpke, Stefan Marty-Teuber, Beate Senn, Helena Leino-Kilpi
E-mail: heidrun.gattinger@fhsg.ch

Background: Impaired mobility is a prevalent condition among care recipients (up to 75%). Nurses' competence, which is necessary to promote care recipients' mobility in activities of daily living and to practice safe mobility care is highlighted in curricular guidelines and professional nursing standards. Kinaesthetics training for nurses aims to develop such skills in order to provide qualitative good mobility care. However, the competence that nurses gain through kinaesthetics training has not yet been systematically described.

Objective: The aim of this study was to systematically describe nurses' competence in mobility care after kinaesthetics training.

Methods: The method was modelled after the three phases of the hybrid model of concept development by Schwartz-Barcott and Kim (2000). In the theoretical phase thesauri, textbooks and the online databases PubMed and CINAHL were assessed for the first literature review in July 2013. In the empirical phase experts (n=7) helped define the attributes during a workshop in October 2013. A second literature review was conducted in the abovementioned databases in January 2015. In the analytical phase the results from the theoretical and empirical phase were combined in order to define antecedents, attributes and consequences of the concept. A member-checking with three experts has been conducted for the final results.

Results: The concept development is based on 152 expert statements and 14 articles. The concept of nurses' competence in kinaesthetics includes two antecedents i) nurses' kinaesthetics training and ii) care recipients' need for mobility support in activities of daily living. This concept includes nine attributes in the four dimensions of i) knowledge (1), ii) skills (4), iii) attitudes (2) and iv) dynamic state (2). It contributes towards i) movement competence and ii) physical and psychological wellbeing of both care recipients and nurses.

Conclusions/clinical implications: The four dimensions and relevant attributes of nurses' competence in kinaesthetics have been systematically described for the first time. The concept of nurses' competence in kinaesthetics can support awareness and communication about qualitative good mobility care. This may enhance nurses' reflection of mobility support in order to provide safe mobility care for both care recipients and nurses. Furthermore, mobility care in terms of kinaesthetics can be assessed and evaluated for quality improvements.

71. DEVELOPMENT AND VALIDATION OF A TRIGGER TOOL FOR USE IN HOME-CARE SETTINGS

Mirjam Ekstedt, Marlene Lindblad, Lena Nilsson, Maria Unbeck, Kristina Schildmeijer
E-mail: mirjam.ekstedt@ki.se

Background: Medical advances have increasingly moved the administration of potent drugs and the use of complex medical technology into the patient's home. Little is known about no-harm incidents and adverse events (AEs) in home care. Such events can be identified by retrospective record review following the Global Trigger Tool method (GTT). This method has been successful in capturing hospital AEs, but its usefulness remains to be tested in home-care settings.

Aims: The aim of this ongoing study is to develop and validate a trigger tool to homecare settings.

Methods: The home-care trigger tool method is developed using a modified Delphi process, involving experts in the field at several stages. After a broad literature review, triggers for hospital settings were adjusted and complemented using interviews with patients, their relatives and home-care-experienced healthcare professionals. The initial list of triggers was iteratively discussed and revised in close interaction between the research team and a reference group consisting experts in home care and patient safety. The reference group was asked to add, change, and remove triggers while also adding relevant reference values to the triggers and changing the trigger definitions. A revised list with 35 triggers, definitions, and descriptions including decision support for the prevention of no-harm incidents and AEs is currently tested in a pilot study of 60 patient records. A two-stage retrospective review of 600 records in home care will be conducted by ten teams consisting of Registered Nurses and physicians with great experience within the field. In the next Delphi round, a final home-care GTT will be developed and tested at a larger scale.

Results: In 60 records reviewed, 33 AEs (range 1-6) were found in 21 (35.0%) patients and 15 no-harm incidents (range 1-2) were identified in 12 (20.0%) patients. Seven (11.7%) patients were affected by both at least one AE and one no-harm incident. Most of the ASs was categorized as less severe and associated with care fragmentation, lack of competence and lack of opportunities to monitor and follow-up. The ongoing study will provide richer data which will be presented.

Conclusions: Preliminary findings indicate that triggers identifying no-harm incidents and AEs in home care are qualitatively different from markers in hospital settings. Developing specific triggers for home care will facilitate early detection of no-harm incidents and AEs and increase safety in home care.

72. ENHANCING PATIENT SAFETY BY THESES – A TALE OF TWO CASES

Heikki Paakkonen, Elina Kilpiäinen, Anders Häggblom, Eivor Wallinvirta
E-mail: heikki.paakkonen@arcada.fi

Background: Since 2011 Arcada UAS in Helsinki has been running a Master program Advanced Nursing Practice – an educational program of Clinical Experts in a specialized area of Patient Safety. Students are obligated to write a thesis for graduating. We present two cases as examples in pursuit of improvement of patient safety by theses.

1. Patient safety culture at one Finnish department for rescue services – an interview study of emergency medical services personnel´s views.
2. Risky situations related to intra-hospital transport of critically ill patients – an analysis of patient safety incidents reports (HaiPro).

Objectives: 1. To find out possible areas in patient safety, that need to be improved. 2. To find out safety incidents, which may have compromised patient safety.

Methods: 1. Group interviews with a total of 15 informants in four professional groups were made. Deductive content analysis was utilized. 2. The data from voluntary incident reports filed by hospital staff in three hospital units: emergency room, OR and ICU, were analyzed. A total of 1010 HaiPro reports were filed of which 55 met the inclusion criteria. Descriptive statistics were calculated. The data were compared to the corresponding hospital district material.

Results: 1. Three main categories and 10 sub-categories were revealed:

a. Leadership, management and organization
   i. The structure of management
   ii. Resources and briefing
   iii. Instructions for clinical work

b. Competence in patient safety
   i. Being conscious
   ii. Motivation for safety
   iii. Learning
   iv. Communication in safety

c. Clinical emergency care
   i. Teamwork, communication, and human factors
   ii. Courses of action and operational environment
   iii. Traffic safety.

2. Documentation was the primary cause in more than 50% of safety incidents. Problems in documentation focused on incident types "Medications and infusions, transfusion, contrast agent or marker related" and "Information flow or management". This was parallel to the comparison material. The occurrence of the incident "Equipment or its use" was twofold compared to the comparison material. No more than a minor harm had caused to the patients.

Conclusions/clinical implications

Areas of improvement:

1. Organization and management
   a. Patient safety must be prioritized
   b. Training and education
   c. Safety incident reporting
   d. Equipment-related patient safety
   e. Structure for operational management
2. Mastery in documentation, pharmacotherapy and equipment and their use has to be emphasized as well as information flow and management.

Final conclusion: the master's theses can serve the purpose of improving patient safety by highlighting areas in the need of improvement.

73. IN REPORTING AND LEARNING SYSTEMS WHAT IS REPORTED DEPENDS ON WHO REPORTS

Øystein Flesland, Eli Saastad, Aurora Espinosa, Christine Torsvik Steinsvåg.
E-mail: oystein.flesland@helsedir.no

Background: Norway has a universal reporting and learning system (RLS) for serious adverse events, including near misses, in specialized health care institutions. Reports are submitted within 24 hours after detection and all hospital staff are allowed and required to submit such reports. Norway also has a haemovigilance system as required in the EU Blood Directives. Reports are submitted by the hospital blood banks.

Objectives: To determine if two different RLS with different reporters give different results and if two RLS give more information than only one.

Methods: Compare the incidence types reported in the two different RLS.

Results: In 2014, the haemovigilance system received 417 reports, 193 about complications in donors, 128 about complications in patients and 96 about other adverse events. Thirty-three near misses were related to donor selection and 15 were wrong labelling of blood samples or blood components.Nine events were serious. Six were incorrect blood transfused and two described donors fainting after leaving the blood bank, resulting in trauma and hospitalization. One report was about several donations by a donor not disclosing risk factors. In the universal RLS, we got 62 reports on events related to transfusion. Fourteen reports were about incorrect patient identification related to blood sampling or transfusion. Thirteen reports were about blood given too late, because of delays in the blood bank or on the hospital ward. Many of the other reports described uncertainty in the ward, often about whether pre-transfusion testing was performed.

Conclusion: In Norway, the haemovigilance system primarily gets reports about known complications in donors and patients, incorrect blood component transfused, and near misses related to donor selection and labelling. The majority of reports are about non-preventable events or events preventable by staff outside the blood bank or by the donor. The universal RLS also gets reports about incorrect patient identity. However, the most interesting thing is that in this system we also get several reports about delays in the delivery of blood components from the blood bank, and reports about uncertainty about whether pre-transfusion testing has been performed or not. Both problems may be considered the blood banks responsibility and one cause may be suboptimal communication between clinical staff and the blood bank. Hence, in our opinion it seems that it is easier to report non-preventable events and events involving others. Both RLS systems are necessary and complement each other, as they often give information about different problem areas.

74. MONITORING HOSPITAL READMISSIONS AFTER PERCUTANEOUS CORONARY INTERVENTIONS USING RISK-ADJUSTED CONTROL CHARTS – Comparing static and dynamic rolling risk-adjustment methods

Janne Martikainen, Jari Heiskanen, Risto P. Roine, Juha Hartikainen, Mikko Hippeläinen, Heikki Miettinen, Anna-Maija Tolppanen
E-mail: janne.martikainen@uef.fi

Background: Statistical process control (SPC) charts, commonly used in process manufacturing industry, are increasingly used to control and improve the quality of health care services. In health care settings, the SPC charts, such as the Variable Life-Adjusted Display (VLAD) charts, are applied to detect e.g. changes in the surgical failure rates. In continuous quality improvement monitoring, it is important to adjust the temporal changes in patient case-mix (e.g. proportion of high-risk patients may increase over time, which may lead to false conclusion on the level of performance). Therefore, the use of risk-adjusted SPC charts has been proposed.

Objectives: To compare static and dynamic risk-adjustment methods in monitoring the performance of percutaneous coronary interventions (PCI) using the risk of hospital readmission (365 days) as a quality indicator.

Methods: Data from 1557 consecutive patients undergone PCI operation in Kuopio University Hospital Finland in 2007-2014 were extracted from hospital's clinical registries. Logistic regressions were used to predict the pre-operative risk of hospital readmission based on clinical characteristics, such as age, sex, and the Canadian Cardiovascular Society (CCS) grading of angina pectoris. The VLAD charts with defined signalling limits (±30%) were used to visualize the difference between the expected and observed risk of readmissions. Compared risk-adjustment modelling approaches included no updating and dynamic rolling window modelling. In the "no updating" approach, the risk-adjusted model was fit using multiple logistic regression to the first 36 months of training dataset and with no update during the following study period. Whereas, in the "dynamic rolling window" approach, the risk-adjustment model was originally fitted using 36 months training data but it was also dynamically refitted after every new consecutive patient.

Results: During the study period, the readmission rates increased annually indicating potential changes in patient case-mix over time. Both applied approaches indicated this change in readmission rates. However, only the conventional static risk-adjustment approach signalled "out-of-control" performance according the applied signalling limits. Thus, the dynamic rolling window risk-adjustment approach outperformed the conventional static risk-adjustment approach by taking into account the changes in mix of patients over time. Conducted sensitivity analyses showed that the dynamic approach was sensitive the periodical width of training set.

Conclusions: The VLAD charts with the dynamic risk-adjustment methods give advantages to handle potential bias due to variable mix of patients over time in continuous monitoring and improvement of hospital performance.

75. RISK PERCEPTIONS AND RISK BEHAVIORS WITH NONPRESCRIPTION MEDICINES AMONG THE GENERAL PUBLIC IN FINLAND.

Hannes Enlund, Jaana Kuoppala, Johanna Jyrkkä, Katri Hämeen-Anttila
E-mail: hannes.enlund@fimea.fi

Background: The safe use of nonprescription medicines is an important issue in widening the availability of these medicines outside pharmacies in Finland. Little is known about risk behaviors of using nonprescription medicines and how it is related with risk perceptions

Objectives: To assess the associations between the reported use of nonprescription analgesics and risk perceptions of nonprescription medicines.

Methods: The survey was conducted among the 18–79 years old members of a nationally representative Internet panel. A stratified sample of 10524 members were invited and 2210 (21%) agreed to participate after the first invitation. High risk behavior was defined as using nonprescription analgesics daily or several times a week, using more often or higher doses than recommended or using two or more different analgesics, concomitantly. Perceived risks associated with nonprescription medicines were measured with four questions on a 5-point Likert scale.

Results: The participants of the survey were more often women than men (55% vs 45%), somewhat older and with a higher education than the Finnish population in general. Risk behaviors were reported by 8% who used analgesics daily or several times a week, 36% who used higher doses and 2% who used analgesics concomitantly. Half of the respondents thought that nonprescription medicines have risks even if you follow the instructions. Nonprescription medicines were perceived as safe regardless how one used them by 6%. One quarter of the respondents was worried about the side-effects. In general, younger respondents thought nonprescription medicines less harmful and were less worried about side-effects. Women were more cautious and more worried about side-effects than men. However, women tended to have a high risk behavior more often than men. A higher proportion of young persons used these medicines at high doses but less frequently compared with old ones.

Conclusions: Perceived high risk on nonprescription medicines is associated with age and female gender. However, these perceptions do not necessarily translate into lower risk behavior. It is most likely that the need for immediate pain relief overcomes the concern for potential adverse effects.

76. PATIENTS WITH MULTIMORBIDITY AND POLYPHARMACY: CHALLENGES FOR PATIENT SAFETY AND THE QUALITY OF CARE

Anneli Hujala, Helena Taskinen, Sari Rissanen
E-mail: anneli.hujala@uef.fi

Background: Currently an estimated 50 million people in Europe live with multiple chronic conditions, and this number will further increase. Especially among people aged 65 and over multimorbidity is common with prevalence rates estimated as high as 65%. The fragmented, disease-based structure of current health care systems does not meet the needs of people with multiple chronic conditions. Patients with multimorbidity need services from several care providers – health centres and general practitioners in primary care, hospitals, inpatient and outpatient clinics, nursing homes, rehabilitation facilities, home care and pharmacies. Collaboration and knowledge sharing of the professionals in these organizations are needed to assure patient safety and the quality of care of these patients. The study presented here is a part of the international ICARE4EU project, which aims to improve the care for people suffering from multiple chronic conditions.

Objectives: The aim is to describe and analyze the challenges multimorbidity poses for patient safety and the quality of care. In particular the study addresses the importance of inter-organizational and multiprofessional sharing of patient information as a crucial part of care processes for these patients.

Methods: The data was collected in 2014 within the ICARE4EU programme through a survey in 31 European countries. An on-line questionnaire was targeted to project managers of integrative programmes focusing on providing care for adult people with two or more medically diagnosed chronic or long lasting diseases. The final data includes 101 filled questionnaires.

In addition, eight programmes (in Belgium, Bulgaria, Cyprus, Denmark, Germany, Finland, the Netherlands and Spain) were visited to obtain an in depth insight in the characteristics of these programmes.

Results: The ICARE4EU findings show that several promising integrative initiatives have been developed and implemented in Europe to improve the care of people with multimorbidity and polypharmacy. The ways to improve care are 1) fostering coordination of care across organizational boundaries, 2) promoting collaboration between care professionals 3) improving professionals' competencies. Collaborative activities should focus on the sharing and producing joint knowledge between health care sectors and professionals to improve the care of patients with multimorbidity and to guarantee patient safety.

Conclusions: Care pathways connecting diverse care providers and professionals should be developed, taking into account the medical expertise needed in the care of patients with multimorbidity. In building bridges between different actors, the importance of ICT for sharing patient information is of great importance.

77. MEASURING PATIENT-REPORTED HEALTH BURDEN AFTER MASSIVE WEIGHT LOSS CAN HELP TO PROVIDE EQUAL CARE

Leena Setälä, Salvatore Giordano, Tarja Niemi, Outi Kaarela, Jussi Valtonen, Janne Jyränki, Paula Mustonen, Kai Saariniemi, Marja Blom
E-mail: leena.setala@kuh.fi

Background: More people go through massive weight loss (MWL), usually after bariatric surgery. This has created an increased demand for plastic surgical procedures to correct problems caused by the excess of loose skin. A decade ago these patients were met rarely and no established indications for surgery or standard care pathways were available in most European countries. To provide effective and equal treatment, we need better tools to evaluate the health burden in MWL and more knowledge about the impact of treatments on health-related quality of life (HRQoL).

Objectives: We wanted to develop a tool to measure bodily and mental symptoms related to MWL and to apply it in surgical patients and control cases. We also collected clinical data on these patients and measured their long-term HRQoL.

Methods: A prospective study was started in 2011 to recruit 150 patients from several hospitals offering plastic surgery services. Patients seeking for body contouring after MWL were asked to fill a 24-item questionnaire (named PBAR) about their body related symptoms. The questions were chosen using related literature and expert opinions of surgeons trained in postbariatric surgery. The presence of each symptom was expressed on 5-level Likert scale, varying from "never" to "always". HRQoL was measured using the 15D-questionnaire (Sintonen 2001). Both questionnaires were applied for surgical cases (n=118) preoperatively and one to three times postoperatively. Control patients with MWL but no plastic surgery (n=32) were followed-up to six months.

Results: Surgical and control groups were similar in age (44,5y and 48,5y, respectively), maximal body mass index (BMI 48,5 and 47,4) and the decrease in BMI (18,8 and 17,9). However, in surgical cases the amount of weight loss was higher (56,4 kg vs 46,3 kg), he abdominal skin excess greater and ulcers were more often present in their abdominal fold. Using PBAR, we were able to show that all patients with MWL suffer from various symptoms in their abdominal fold while symptoms in the flank and thighs are less frequent. Mildly symptomatic patients were separated from heavily symptomatic ones, latter being in greatest need of treatment. A detailed analysis is on its way to provide full description of the health burden and HRQoL after MWL. The study continues with postoperative follow-up until 2017.

Conclusion: PBAR questionnaire is feasible in evaluating symptoms after MWL. However, it must be validated before it can be properly used for patient selection for surgery or conservative treatment.

78. PREOPERATIVE PATIENT-REPORTED RISK FACTORS IN PREDICTING SHORTTERM OUTCOME AFTER ELECTIVE CRANIAL NEUROSURGERY

Elina Reponen, Miikka Korja, Hanna Tuominen
E-mail: elina.reponen@helsinki.fi

Background: Patient-reported preoperative factors hold promise in improving the prediction of adverse events after elective cranial neurosurgery, but they have been poorly studied.

Objectives: To study the applicability of patient-reported preoperative variables in predicting short-term outcome after elective craniotomy.

Methods: A prospective, unselected cohort of 418 adult patients underwent elective intracranial operations in Helsinki, Finland. We recorded the American Society of Anesthesiologists (ASA) score and Helsinki ASA score for each patient. The questionnaire-based patient-reported factors included subjective assessments of overall health, exercise habits, and cognitive function [Test Your Memory (TYM) test]. Outcome measures included in-hospital major and overall morbidity. We used Receiver-Operator Characteristic (ROC) curves to calculate Area Under the Curve (AUC) values for a composite score of patient-reported risk factors and both ASA scores with regard to outcomes.

Results: In-hospital major and overall morbidity rates were 18.2% and 46.4%, respectively. Poor self-reported preoperative health status, inability to climb stairs, and preoperatively diminished cognitive function were associated with in-hospital major morbidity. Only preoperatively diminished cognitive function remained a significant predictor of major morbidity after multivariable logistic regression analysis ($p<0.001$, OR 3.1, CI 1.7-6.0). Inability to climb stairs, irregular physical exercise, and Helsinki ASA score were associated with overall morbidity in univariable analyses. A composite score of patient-reported risk factors had a higher AUC (0.662) for major in-hospital morbidity than original ASA score (0.543) or Helsinki ASA score (0.572). In elderly patients, the composite score had an AUC of 0.735 for major morbidity.

Conclusions: Patient-reported risk factors seem promising tools for preoperative risk prediction and may be implemented to clinical use to improve safety and quality of care in elective cranial neurosurgery, especially in elderly patients.

79. THE IMPACT OF NURSES' OPTIMAL WORKLOAD LEVEL ON PATIENT SAFETY AND MORTALITY – A MULTICENTER STUDY USING THE RAFAELA SYSTEM

Lisbeth Fagerström, Marina Kinnunen, Jan Saarela
E-mail: lisbeth.fagerstrom@hbv.no

Background: A number of studies demonstrate negative effects of non-optimal nurse staffing in terms of numbers and qualification in hospital-based care on outcomes such as patient safety incidents and mortality. The results are largely inconsistent, and indicate a complex relationship between nursing workload, mortality and other patient outcomes. It remains largely unknown what the optimal level of nurse staffing is in relation to high quality, safe and cost-effective patient care.

Objectives: The aim of the study was to investigate if a staffing model based on optimal nursing workload, which includes daily measurements of patients' nursing intensity and daily registration of patient-related nurse resources, improves patient safety and reduces mortality.

Methods: Data were obtained from 36 units at four hospitals in Finland (2012/2013). Criteria for inclusion were daily, established use of the RAFAELA system, reliable nursing intensity data expressed in terms of an annual reliability test done by parallel classifications (requirement: unanimity >70%), and applicable optimal nursing intensity level measured with the PAONCIL method. Units that have undergone major organizational changes during the previous year were excluded. Data on the classification of patients' nursing intensity and registration of nurse staff resources were collected daily using the RAFAELA system. Data on patient safety were collected daily from HaiPro, a nationally standardized data system for reporting patient safety incidents. Data on deaths (daily level per unit) were retrieved from the local mortality register at each hospital. Odds ratios for different types of adverse events were estimated by multivariate logistic regression models.

Results: Our findings shows that the odds for one incident was around 20-30% lower, when the workload per nurse was below the recommended optimal workload level, and again about 20-30% higher if the workload was above the optimal level. Corresponding estimates for the odds of death were 20% lower and 40% higher, respectively. These results were quite uniform in both unstandardized and standardized models.

Conclusions/clinical implications: Hospital service outcomes can be bettered by improving the allocation and use of existing nursing staff. The patient-case mix is a crucial variable in calculating the need for nursing staff resources and also when analyzing the effect of nursing workload on patient safety and mortality. We found that minimum patient-to-nurse ratios are inadequate to ensure quality of care and that daily measurements of patients' nursing intensity are needed.

80. HEALTH ECONOMIC CONSEQUENCES OF RESUMING ANTICOAGULATION AFTER INTRACRANIAL HEMORRHAGE IN PATIENTS WITH ATRIAL FIBRILLATION

Anne Sig Vestergaard, Flemming Skjøth, Gregory Y.H. Lip, Torben Bjerregaard Larsen
E-mail: asv@business.aau.dk

Background: Oral anticoagulant therapy (OAC), e.g. warfarin, is guideline-recommended as stroke prophylaxis for the majority of patients with atrial fibrillation (AF); even following severe hemorrhage, such as intracranial hemorrhage (ICH). However, bleeding during OAC may cause clinicians to refrain from restarting therapy. The health economic impact of resuming OAC following ICH in patients with AF is unknown.

Objectives: To assess the health economic impact of resuming warfarin therapy following ICH in patients with AF over a 3-year period, by evaluating possible differences in survival and hospitalization costs of thromboembolism and hemorrhage between two patient groups; 1) patients who resume therapy within 90 days post-ICH and 2) patients who do not resume therapy within 90 days post-ICH.

Methods: Retrospective data were retrieved from nationwide, Danish registers to establish a cohort of AF patients who had suffered an ICH between 1 January 1997 and 1 April 2011 while on OAC with warfarin. Study start was 90 days post-ICH. Patient survival was evaluated by the Kaplan-Meier estimate. Hospitalization costs of thromboembolism and hemorrhage were estimated from the linkage of registered ICD-10 codes of events and relevant 2015 Danish Diagnosis-Related Group tariffs. The impact of resuming therapy on mean 3-year hospitalization costs per patient was estimated by use of multivariable regression analysis with adjustment for relevant between-group differences in baseline characteristics.

Results: In the inclusion period, 2,162 patients suffered an ICH; 1,098 survived the first 90 days and were included for analysis. Of these 24% (267/1098) resumed warfarin therapy within 90 days post-ICH. Large differences in baseline characteristics were present. When adjusting for these, mortality appeared to be lower for patients resuming therapy (OR: 0.79 [95%CI:0.61;1.01]). Mean survival was, consequently, longer for patients resuming warfarin therapy compared to those who discontinued therapy (2.6 years vs. 2.3 years). Resumption of warfarin therapy was not associated with a decrease in the risk of being hospitalized (OR: 0.92 [95%CI: 0.65;1.31]), however, the costs of hospitalized patients were lower for patients resuming therapy (effect: US$ -1,588 [95%CI: -2,925;-251]). Consequently, therapy resumption was associated with a reduction of mean 3-year hospitalization costs per patient (marginal effect: US$ -407 [95% CI:-815;2]).

Conclusions: Resumption of warfarin therapy was associated with increased survival and decreased hospitalization costs for patients with AF. This emphasizes the importance of adhering to clinical guidelines to ensure treatment quality and consequently patient outcomes, but also to diminish avoidable hospitalization costs.

81. PATIENT GUIDANCE FOR LABORATORY TESTS: DEVELOPING A CLINICAL PRACTICE GUIDELINE

Maija Saijonkari, Seija Tuokko
E-mail: maija.saijonkari@thl.fi

Introduction: In Finland, about 70 million laboratory tests are conducted each year. The biggest potential for error in the laboratory test process is before the analysis of a specimen is performed. It has been estimated that in Finland each year, up to 1.3 million laboratory tests (1.8 %) contain a pre-analytical error. The cost for re-sampling these tests is estimated to be about EUR 10 million per year. In addition, much higher indirect costs are incurred when patients have to make repeated visits to the laboratory and/or to the doctor. As a result of incorrect test results or where results are misattributed, patients may undergo unnecessary further investigation or be subject to incorrect treatment.

Objectives: The aim was to develop an evidence based guideline for laboratory sampling for patients and staff.

Methods: A systematic literature search was conducted on Medline, Medic, CHINAL, AHRQ, NHS and PubMed databases. The methodological quality of the returned articles was critically appraised, and selected studies were grouped by theme.

Results: The search yielded 4951 titles. Based on pre-established criteria, 134 full-text articles were obtained. Of these we included 51 studies that addressed the following laboratory test process areas: choice of laboratory examinations (13), laboratory request (6), the preparation of the patient for sampling (12), interaction with patients during sample collection (15), and samples provided by the patients themselves (7).

The following points of patient safety were highlighted in the literature, and may serve to reduce pre-analytical phase laboratory errors:

- Patient identification by at least two different identifiers (e.g. the patient's name and identification number)
- The use of a barcodes on the patient's wristband or sample identifier
- The use of patient information systems that require users to confirm or re-enter the identity of the patient
- A multi-professional quality improvement program between the laboratory and other health care units
- A decision support system integral to electronic patient records that can help in determining the appropriate test.

Conclusion: The resulting guideline (http://hotus.fi/hotus-fi/suositukset.) should be used to review the standard operating practices which guide the different stages of the patient sampling process, and to revise them as needed. The intended outcome is to ensure that correct processes are followed, to avoid unnecessary delay in treatment, and to improve the quality and efficiency of care.

82. DOES THE CHOICE OF SURGICAL TECHNIQUE AFFECT BREAST CANCER PATIENTS' SELF EXPERIENCED QUALITY OF LIFE?

Mervi Rautalin, Risto P. Roine, Tiina Jahkola
E-mail: Mervi.Rautalin@Helsinki.fi

Background: Past studies have proven different surgical techniques to be equally safe when treating breast cancer. The characteristics of the disease define the extent of surgery to a certain degree, but the technique is chosen individually. How different techniques affect patient-experienced health-related quality of life (HRQoL), however, is poorly known.

Objective: To study, during a prospective two-year follow-up, the effect of the surgical technique on the HRQoL of 1000 patients with newly diagnosed breast cancer in the Helsinki and Uusimaa Hospital District.

Methods: Patients were recruited at the start of their treatment when visiting the hospital. HRQoL was measured by two different questionnaires: the disease-specific EORTC QLQ-30 and the generic15D. The questionnaires were filled in at the time of diagnosis and then 3, 6, 12 and 24 months later. Clinical data was collected from hospital records.

Results: Up to date more than 1000 patients have been recruited and clinical information has so far been collected from 282 patients. The patients' age varied from 25 to 86 years. Surgical techniques used were resection (n=124, 44% of all), unilateral (n=128) or bilateral (n=5) ablation (47 % of all) and immediate reconstruction (n=25, 9% of all). Axillary clearance was performed for 131 patients (46 % of all). For the 282 patients, the mean baseline and follow-up HRQoL scores measured by the 15D showed a consistent difference at all measurement points between different groups: the mean scores were lowest in the ablation group (0.90; 0.87; 0.88; 0.88; 0.89) and highest in the reconstruction group (0.93; 0.90; 0.91; 0.91; 0.93). At the last follow-up point (24 months), the mean 15D score was highest, and had improved the most from the one-year follow-up, in the reconstruction group.

Conclusions: Preliminary results show that the operative technique appears to have an effect on the consequent HRQoL of breast cancer patients. The effects of axillary surgery, patient characteristics and oncological treatments, however, also need to be taken into account before drawing firm conclusions. Moreover, it will be interesting to see whether different reconstruction methods lead to different HRQoL results.

84. POLYPHARMACY AND THE RISK OF UPPER GASTROINTESTINAL BLEEDINGS: The Finnish Gastrointestinal Bleeding (Fin-GIB) Study

Johanna Jyrkkä, Sami Miilunpohja, Helena Kastarinen, Hannu Paajanen, Juha Hartikainen
E-mail johanna.jyrkka@fimea.fi

Background: Gastrointestinal bleeding (GIB) is a common emergency, with short-term mortality between 2.5–10%. Using drugs affecting the bleeding cascade predisposes to bleeding complications, especially in elderly patients with several comorbidities.

Objectives: The aim of this study was to assess the association between polypharmacy and the risk of upper GIB in patients admitted to hospital due to acute GIB.

Methods: The Fin-GIB Study includes all consecutive patients (age at least 18 years) who were admitted to the Kuopio University Hospital (KUH) due to their first acute GIB during the years 2009-2011. This sub-study includes patients having their first bleeding episode in gastrointestinal tract (n=751). Data on their health and medication were collected retrospectively from the hospital electronic databases. The dates and causes of death were derived from Statistics Finland. The amount of currently used drugs was categorized as non-polypharmacy (NPP, 0-5 drugs), polypharmacy (PP, 6-9 drugs) and excessive polypharmacy (EPP, 10+ drugs).

Results: Polypharmacy was present in 229 (30%) and excessive polypharmacy in 164 (22%) of patients. The spectrum of prevalent diseases correlated clearly with the increasing number of drugs in use. Acetylsalicylic acid, warfarin or clopidogrel were used by 28% in NPP, 70% in PP and 79% in EPP groups. The incidence of GIB was 125 per 100 000 person-years. The primary site for bleeding was upper gastrointestinal tract (n=562, 75%). Bleeding site was in lower gastrointestinal tract in 164 (22%) patients and in other place in gastrointestinal tract in 25 (3%) patients. The proportion of GIBs in stomach and prepyloric area (gastric ulcers) increased significantly with the number of drugs in use. There were no differences in therapeutic interventions, intensive care unit stays or in-hospital mortality between the polypharmacy groups.

Conclusions: Polypharmacy and excessive polypharmacy are very common among patients having their first GIB. Drug treatment may predispose to GIBs, especially gastric ulcers. However, the level of polypharmacy did not have influence on the severity of GIB.

85. REDUCING THE RISK OF GIVING DRUGS OR BLOOD PRODUCTS TO THE WRONG PATIENT

Eli Saastad and Øystein Flesland
E-mail: eli.saastad@helsedir.no

Background: Receiving wrong drug or blood product may be life threatening. Between 1.7.2012 and 31.8.2015 the Norwegian Reporting and Learning System received 291 reports from health care personnel were a drug or blood product was given to the wrong patient. Two patients died and four events caused serious harm. The remaining incidents showed various degree of patient harm.

Objectives: To identify common system patterns contributing to these adverse events and to identify possible quality improvements efforts that may reduce this risk.

Methods: We first classified all events according to a modified version of the International Classification System for Patient Safety from the World Health Organization. Then the narratives in the reports classified in the category «wrong patient» were analysed by qualitative content analysis.

Results: Most reports described inadequate identity control. Based on common contributing factors, we identified the following areas for potential quality improvements:

- Patient identity check: Several reports described lack of, or inadequate identity control. Never use yes/no-questions in asking for the patient's identity. The patient or his/her relatives should be asked to state full name and date of birth. This information should be confirmed against the identity band and the relevant forms, labels etc.
- Responsibility for identity control during handovers: the nurse administering an infusion/transfusion is responsible for correct identity control, even if a colleague already has performed an identity check. Suboptimal written or oral communication and task shifts increased the risk of mixing up patients.
- Parallel or mix of electronic and paper based processes in administrative lists and medicine trolleys increased the risk of giving a drug to the wrong patient. Minimizing the number of handovers of patient information may reduce the risk.
- Work overload: the hospital wards and personnel must be organized so that correct identity control can be performed even in situations with time pressure. Lack of support or supervision from a colleague increases the risk of mixing up patients.

Conclusion: Blood transfusions or drugs given to the wrong patient is potentially life threatening so quality improvements are necessary. We have shown that by using a combination of quantitative and qualitative methods in analyses of adverse events reports, we can identify risk factors and suggests improvements.

86. IMPLEMENTING ISBAR TOOL REPORTING BETWEEN SURGICAL WARD AND OPERATING THEATRE – A PILOT STUDY

Kaisa Haatainen, Mia Munter, Minna Mykkänen, Kirsimarja Metsävainio
E-mail: Kaisa.Haatainen@kuh.fi

Background: Transferring patients to the operating theatre and subsequent reporting takes a lot of work time of surgical ward nurses. We made a pilot study of reporting by phone using the ISBAR structure.

Objectives: Our aim was to develop an educational program to implement the phone report from a surgical ward nurse to an anesthesia nurse. With the phone report we wanted to reduce the workload of the surgical ward nurse. Using the ISBAR structure we aimed to systematize the reporting practices and promote patient safety.

Methods: We developed a common training session for both nurse groups. First we determined from Kuopio University Hospital electronic patient record all the essential items needed in the phone report. Then these items were put in an ISBAR structure and a check list was developed. During training sessions (60 min) both nurse groups practiced with a check list and an electronic patient record to give and receive a phone report. After training sessions we started a pilot trial between gastro-surgical ward and the operating theatre. The patients were transferred by the assistant staff. These assistants are not health care professionals and they didn't give any report to anesthesia nurses. However, they were trained to give first aid during transportation if needed.

Results: A common training session was held two times at the gastro-surgical ward and two times at the operating theatre. At the ward training was also performed as one-to-one sessions. Forty nurses were trained at the ward and other forty nurses at the operating theatre. A check list was implemented both at the ward and at the operating theatre. In addition, two educational sessions were held for the assistant staff as well as first aid education. The pilot trial period started in March 2015 and lasted four weeks. After the pilot the phone report was changed to standard method of pre-operative reporting.

Conclusions/clinical implications: We developed a phone reporting system between the gastro-surgical ward and the operating theatre. Both nurse groups were satisfied with this new structural way of reporting. Although pre-operative ward treatment period is very rare nowadays because of "From home to operation" (FHTO) -practice, there are still patient groups who come to the operation from the surgical ward. We are going to implement this new phone reporting system into all surgical wards in the future.

87. INFORMATION MANAGEMENT INCIDENTS IN ACUTE HOSPITALS: A NURSE SURVEY

Virpi Jylhä, Kaija Saranto, David W. Bates
E-mail: virpijylha@yahoo.com

Background: Failures in information management are generally understood as a contributing factor or a cause for adverse events. Information management in health care is a process that involves health professionals at all phases of care. It includes the acquisition, organization, retrieval, and dissemination of information. Various types of incidents occur in the process. Accurate patient data should be available at the point of care when needed. However, typical failures include inaccessibility of data and data accuracy.

Objective: This study aimed to describe information management failures and their occurrence in acute hospitals.

Methods: A cross-sectional design was employed. The data were gathered in conjunction with data collection for multi-country RN4CAST study. In our study, additional survey item developed for Finnish branch were utilized. Registered nurses (RNs) in surgical and medical units in hospitals (n=32) were surveyed between 10/2009-2/2010.

In this abstract the nurses' perception of the occurrence of information management incidents (n=10) are reported. Nurses were asked to rate how often information management incidents occurred in their units over the past year on a 7-point Likert-scale ranging from never (0) to daily (6). The occurrence were coded as follows: never, seldom (less than once a month), monthly and weekly. Descriptive statistics were used to the analysis.

Results: A total of 1088 nurses responded to the questionnaire for an overall response rate of 44%. Most nurses believe that missing (60%) or inaccurate data (58%) caused adverse events or near-miss situations in patient care seldom or never. One fifth of nurses perceive availability of patient data as a weekly failure, but 68% of nurses perceived that patient data were usually available. Over the half of nurses (54%) do not document patient data immediately weekly. One third of respondents neither forget to document patient data nor document inaccurate data. Most of the nurses perceive that they do not remember all details when documenting (26%), they forget to document the data (19%) or they document inaccurate data (6%) monthly or weekly. A total of 46% of nurses reported that they have documented electronic patient data using someone else´s username seldom. Surprisingly, 10% of nurses have done it weekly.

Conclusions: Information management incidents occur in hospitals frequently, but all of them are not occurring often. Special attention should be paid for the use of someone else´s username, which should not occur at all. The understanding of information management incidents is a key for improving this process.

88. INFORMATION IN MEDICAL TREATMENT COURSES – A STEERING TOOL FOR THE QUALITY – A Pilot Study

Marianne Møller, Stig Ejdrup-Andersen, Charlotte Bredahl Jacobsen, Erik Hollnagel, Charlotte Bredahl Jacobsen
E-mail: Marianne.moller3@rsyd.dk

Background: Unintended events and suboptimal treatment with medicines is a major burden for patients and health systems all over the world. Traditionally, patient safety has been viewed as the absence of errors, but another approach focus on learning from situations that goes well – also called resilience or Safety-II. This, combined with a broad understanding of quality, is the platform for this study.

Objectives: The overall purpose of this three-phased study is to investigate how information is used as a steering tool for quality in medical treatment courses. In the first part of the study, we analyze the role of information on medicine in relation to the quality of medical treatment courses.

Methods: The study investigate patient-medication as a process focusing on variability. Systems theory and cybernetics concepts (steering, timing and feedback) as well as a classic communication model is applied as theoretical frame. Two groups of patients and their information providers will be studied using qualitative methods. In the first phase, informants were interviewed about their use of medicines information, using a semi-structured interview guide. The interviews were fully transcribed. The qualitative data analysis focused on the aspects most relevant for the patients concerning their use of medicines information, including everyday use of medicines information and sources, actions in case of side effects/ treatment-related incidents and use of network and health system in search for information during medical treatment. The patient's feedback to health personnel were also discussed.

Results: Seven patients using either chronic pain medication or anticoagulants participated. They were recruited from GPs, hospital outpatients' clinics, pharmacies and patient organizations, and differed in age, sex, education, duration of disease, geography, co-morbidities, marital status and socio-economic relations. The data-analysis is ongoing. Preliminary results show that patients seem to take an active role in their use of, and feed-back on, medicines information. However, the extent varied among individuals. The patients' relations to health providers seemed important for their use of medicines information and this aspect needs further analyzing. Conclusions/ clinical implications. The results of this pilot study will form a base for further studies of patterns identified to have a role for medication safety and quality of treatment courses. The overall project results may provide health professionals with an insight into how patients' knowledge and experiences can be used more systematically to increase the quality of medical treatment.

89. EFFECT OF REHABILITATION DURING INTERIM STAY IN AALBORG MUNICIPALITY, DENMARK: A STUDY PROTOCOL

Morten Villumsen and Sidsel Villumsen
E-mail: mov@ucn.dk

Background: In the municipality of Aalborg, Denmark, the aim is to support citizens' rehabilitation through training and learning in order to be self-reliant. This effort is supported at interim stays at the nursing homes [1]. A recent external report has outlined that citizen are highly satisfied with the rehabilitation services offered by Aalborg Municipality, Denmark [2]. However, user satisfaction solely may not reflect the actual rehabilitation effect. The effect of rehabilitation needs to be addressed in order to ensure high quality in the rehabilitation services offered. Currently, highly structured data are available in the systems, containing information on rehabilitation services rendered during interim stays. However, available data on the effect of the rehabilitation are currently unstructured in free-text, which impedes the assessment of rehabilitation effect and thereby the quality assurance.

Objectives: The aim of this paper was to create a protocol containing information on background, objectives, methods, results and clinical implications investigating the effect of rehabilitation among citizens during interim stays at nursing homes in Aalborg Municipality.

Methods: Identification of citizens (n= 113) who have received rehabilitation during their interim stay at a nursing home in Aalborg Municipality during the last quarter of 2015. From ID numbers, data extraction will be performed, containing information on placement, type of intervention, type of treatment as well as therapists' time used on rehabilitation of the citizen. The rehabilitation effect will be extracted from the free-text in the records. The free-text will be categorized into rehabilitation effects of i) deterioration, ii) no effect, iii) effect of rehabilitation, or iv) not possible to classify from the text.

Results: This study will provide information on the association between the rehabilitation provided during the interim stays, based on structured data from the records, and the rehabilitation effect based on the unstructured free-text from the rehabilitation records.

Clinical implications: This study will provide novel information regarding the effect of the rehabilitation services rendered during interim stays at nursing homes in Aalborg Municipality. This study provides foundation for assessing the quality of the services and provide relevant information for citizens, therapists and decision makers regarding the future direction of the rehabilitation services supplied by the municipality.

90. PSYCHIATRIC TRIGGER TOOL FOR PATIENT SAFETY IMPROVEMENTS IN PSYCHIATRIC CARE

Carina Berglund, Charlotta Brunner, Urban Nylén, Pia Ram, Hans Rutberg
E-mail: carina.berglund@skl.se

Objectives: Can medical record review and GTT contribute to patient safety improvements in psychiatric care?

Background: Global Trigger Tool (GTT) is widely used as a tool for identification of patient injuries and for improvements of patient safety in somatic care. However, there is, as yet, no similar tool available for use in a psychiatric context. The risk areas differ from those in somatic care and more knowledge is needed. For psychiatric patients a seamless continuity between outpatient and inpatient care is important and should be assessed unseparated. The Swedish Association of Local Authorities and Regions (SALAR) has initialized a national project in Swedish psychiatric health care.

Methods: A trigger tool for psychiatric care has been developed. Experience of GTT in somatic care has been the basis. Areas with known patient safety risks were identified by a group of experts in mental health care. Triggers and a list of defined injuries have been formulated to cover the identified risk areas. Teams have reviewed 471 medical records to test triggers and definitions of adverse events. Both in- and outpatient care has been reviewed for each patient.

Results: A manual for the Psychiatric Trigger Tool is published. Teams from psychiatric departments nationwide are now trained and the method introduced in psychiatry. Improvements of patient safety in psychiatric care will then be facilitated both on a national level as well as in each participating department. In the project record review with the new Psychiatric Trigger Tool showed that the amount of outpatients where injuries could be identified was 10 %. 40 % of those injuries were considered avoidable. For inpatients the figures were 14 % and 50 % respectively. Most common injuries were related to medication, self harm and prolongation of the course of disease. The figures should be interpreted cautiously as they are not representative of Swedish psychiatry in total.

Conclusions: We now have an instrument that can be used nation-wide to measure adverse events in mental health care. The tool also is beneficial for identifying low compliance to guidelines and other deficiencies in quality of care even when there has been no patient injury.

91. GLOBAL TRIGGER TOOL FOR COMPARISON OF ADVERSE EVENTS IN NORWEGIAN AND SWEDISH HOSPITALS

Urban Nylén, Ellen Tveter Deilkås, Hans Rutberg
E-mail: urban.nylen@socialstyrelsen.se

Objectives: Can results from medical record review with Global Trigger Tool (GTT) in different countries be used for assessment of differences in patient safety?

Background: Teams at the Swedish Association of Local Authorities and Regions and The National Patient Safety Program, Norwegian Directorate of Health, have in parallel coordinated nation-wide medical record review according to GTT in both countries. This gives an opportunity to explore if medical record review can be used for comparison of aspects of patient safety in different countries. Efforts have earlier been done to find other relevant parameters for such comparisons without great success.

Method: Key-persons from the two national GTT-coordinating teams with access to the national data bases have cooperated. The significant parameters from the national results have been made available for description, analysis, comparison and conclusions.

Results:
- The results from nation-wide review of records from somatic care of adults were compared.
- Norwegian hospitals had significantly higher rates of surgical complications, urinary tract infections and pneumonia compared to Swedish hospitals.
- Swedish hospitals had significantly higher rates of pressure ulcers, falls and central line infections.
- In total there was however no significant difference between Norway and Sweden in the rates of hospital admissions with one or more adverse events.

Conclusions
- Medical record review with GTT has, in a similar setting, been performed in large scale in parallel in Norway and Sweden.
- The rates of some of the specific adverse events differ between the countries but in total the level of hospital admissions with one or more adverse events are similar between the countries.
- We find GTT to be suitable as a tool for comparison and analysis of aspects of patient safety between countries.

92. PATIENT SAFETY IN SWEDISH SCHOOLS

Anna Nordin and Lisbet Engh Kraft
E-mail: anna.nordin@kau.se

Background: According to Swedish school legislation, all children between 6 and 18 years of age are entitled to school health service (Ministry of Education, 2000). This service, free of charge, voluntary, and bound by professional privacy includes a school nurse and a school physician providing medical treatment. School counselors, psychologists, special education teachers as well as managers/ principals are also important parts of the extended school health team.

Swedish school health services have been available for over 150 years, originally focusing on hygiene, infectious diseases, and the physical health of the child. Emerging well-developed societal health care service and welfare priorities led to a greater focus on preventive measures including health promotion measures (Ministry of Education, 2000). Mortality rates for Swedish children and adolescents are low, the proportions of child accidents and bodily punishments are low and the proportions of vaccinated children are high. Unfortunately, Swedish schoolchildren's health has deteriorated and mental illness has risen during the previous years (The Board of Health and Welfare, 2014).

School health services have the competence to identify risk- and protective factors regarding children's psychological health, and can reduce risk factors and strengthen protective factors within the child by health promotions and preventions (The Board of Health and Welfare, 2014). School nurses' competence and professional role seeks to ensure a safe and secure care for pupils, a necessity since approximately 30.000 pupils are being injured in school annually (Swedish Civil Contingencies Agency, 2014.)

School health is a unique health care arena since all school-children are comprised by it. Therefore, school nurses have key-positions to create a safe, evidence-based school health care built on teamwork, communication and learning from earlier situations. The care is conducted in collaboration with teachers, the rest of the school health team as well as children and their families.

Somatic hospital health care has conducted intense research with following efforts to improve the safety of patients. Patient safety in school health care perspective is a rather unexplored area within patient safety research.

Method: This planned research is a collaboration project encompassing approximately 700-1000 school health care staff working in three counties in Sweden. The patient safety culture in this project will be studied using quantitative and qualitative approach.

Clinical implications: This project will hopefully shed some light over this understudied area of care and contribute to increasing knowledge of patient safety culture.

93. CAN THE INCIDENCE RATE OF ADVERSE EVENTS BE PREDICTED BY THE OPTIMALITY OF NURSING WORKLOAD?

Jaana K. Junttila, Aija Koivu, Lisbeth Fagerström, Kaisa Haatainen, Pirkko Nykänen
E-mail: jaana.junttila@kuh.fi

Background: There exists today a critical mass of studies showing that hospitals with more staffing and greater proportions of Registered Nurses tend to have lower rates of patient complications and mortality. However, staffing levels do not make sense as indicators of nursing workload without including controls for the amount of care that each patient needs and for daily or even shift by shift variation in staffing within a unit. The core idea of the RAFAELA Nursing Intensity and Staffing system is to ensure that nursing workload, expressed in nursing intensity points of patients divided by the number of nurses, remains at the optimal level. The RAFAELA has been rolled out across almost all hospitals in Finland and implementation has started in Iceland, Norway and Sweden.

Objective: To examine whether the incidence rate of adverse events can be predicted by the optimality of nursing workload determined by the RAFAELA.

Methods: In this cross-sectional retrospective observational study based on administrative data, monthly hospital mortality statistics, monthly reports of adverse events (HaiPro) and monthly reports of daily registrations from the RAFAELA system were gathered from 34 inpatient units of two Finnish acute care hospitals in 2012 and 2013 (732 unit-months in total). The association of adverse events with the chosen predictors (hospital, average daily patient to nurse ratio, average daily nursing workload and the optimality of average daily nursing workload) was examined by negative binominal regression analyses.

Results: The incidence rate of adverse events was associated with the optimality of the average daily nursing workload. In the months when nursing workload of a unit was at the optimal level, the incidence rate of adverse events was smaller than in the months when the average daily nursing workload was above the optimal level (understaffing) yet bigger than in the months when the average daily nursing workload was below the optimal level (overstaffing). Conclusion: Unlike in cases of the most patient classification systems, feasibility, reliability and internal validity of the RAFAELA have been studied thoroughly. However, this was the first study to examine the relationship to patient outcomes. The results should be considered with caution due to the limited data of this study. Monitoring the RAFAELA scores to keep nursing workload within the unit-specific optimal area is one of the evidence-based options for nursing management to assure the quality of care.

List of contributors

IRMA NYKÄNEN (ed.)

The 4th Nordic Conference on Research in Patient Safety and Quality in Healthcare is organized by the University of Eastern Finland, School of Pharmacy and Department of Health and Social Management, Kuopio University Hospital and City of Kuopio. The conference gathers Nordic and international researchers and developers working in the field of patient safety and healthcare quality and effectiveness to share their knowledge and ideas.

This book contains the program and abstracts of the 4th Nordic Conference on Research in Patient Safety and Quality in Healthcare held in Kuopio, Finland, May 18-20, 2016.

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EASTERN FINLAND

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**PUBLICATIONS OF
THE UNIVERSITY OF EASTERN FINLAND**
Reports and Studies in Health Sciences

ISBN 978-952-61-2129-1 (nid.)
ISSN 1798-5722