



# ANNUAL CONFERENCE 2016

## **NEW MODELS OF CARE. REINVENTING HEALTHCARE: WHY, WHAT, HOW**

ABSTRACT BOOK

# ABSTRACT BOOK

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Tuesday 14 June

10.00-12.00

## **The eHealth Lifecycle: Do's and Don'ts**

## A Review of e-Health Platforms for the Aging Population Living at Home in the Netherlands

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### Context

In the Netherlands responsibility for care is shifting from the health care system to community-dwelling elderly people themselves. This shift requires a new paradigm in which self-management competencies and independent functioning are highly valued. Previous research shows that e-Health can support this transition, e.g. by means of ICT platforms for communication, information access, healthcare and wellbeing services. In recent years various e-Health platforms have been introduced in the Netherlands. However, no systematic information is available about their characteristics, functionalities and usability in order to guide older persons and professional caregivers in choosing a suitable platform.

### Methods

A literature review was conducted in which relevant articles and reports were retrieved from scientific databases (PubMed), the Internet (websites of the developers of platforms, healthcare organisations and professional associations) and expert consultation. The included e-Health platforms have at least two functionalities (e.g. information on community activities, video calls with healthcare professionals, et cetera); are accessible for community-dwelling elderly people; aim at improving health(care) and/or wellbeing; are interactive; and are available and in use in the Netherlands. Information on the selected platforms was reviewed and assessed by three different researchers. We then described each platform according to a set of 17 indicators (e.g. type, goal, functionalities, status, costs, et cetera). Finally, the resulting overview was discussed in a focus-group interview with developers and experts in the fields of healthcare, ICT and long-term care.

### Results

The search resulted in 31 e-Health platforms that fulfilled the selection criteria. Five main types of platforms could be distinguished: Community-care-platforms which interlink community-dwelling vulnerable citizens with neighbouring informal caregivers to enhance social cohesion; Healthcare-platforms which support care professionals in providing remote care and treatment; Self-management-platforms which support individuals in participating in society and in self-managing their (health)care. Care-network-platforms which provide professionals and informal caregivers tools to coordinate, plan and communicate about persons in need of care; System-integrator-platforms which interconnect a variety of applications. Many of the selected e-Health platforms were merely employed in a pilot study and/or project. Furthermore, we ascertain that the majority of these platforms have yet to be evaluated. We therefore have insufficient knowledge about the effects of eHealth platforms on self-management competencies and independent functioning of community-dwelling elderly people.

### Discussion

This review shows the existence of many e-Health platforms for community-dwelling elderly people in the Netherlands. However, health care organisations, professionals and end-users seem to be confused about their nature and how they relate to one another. The assumption exists that all these e-Health platforms offer the same functionalities and solutions. Our review proves otherwise. There are different types of e-Health platforms for different health care demands. To guide users towards a suitable e-Health platform, a more uniform approach is needed. The system-integrator-platforms have the ability to integrate different (functionalities of) e-Health platforms into one system. This type of platform can therefore play an important role in counteracting fragmentation and in achieving uniformity.

## Patient Expectations of eHealth Benefits Differ Substantially between Chronic Conditions

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### Context

Self-management is believed to be an important component of chronic healthcare by primary care professionals. eHealth technology, like self-monitoring applications and online coaches, could be an excellent means to support patients in their self-management. However, before eHealth can be effectively implemented, it is important that eHealth fits the needs and expectations of the patient. Therefore, the objectives of this study are to explore the expectations and needs of people with a chronic condition regarding self-management and eHealth for self-management purposes, their willingness to use eHealth, and possible differences between patient groups regarding these topics.

### Methods

Five focus groups were conducted, including people with diabetes (n=14), COPD (n=9), and a cardiovascular condition (n=7). In order to explore possible differences between the disease types, separate focus groups were organized based on patients' chronic condition. The following themes were discussed: 1) the impact of the chronic disease in patients' daily life, 2) their opinions and needs regarding self-management, and 3) their expectations and needs regarding and willingness to use eHealth for self-management purposes. All focus groups were transcribed verbatim and a conventional content analysis approach was used for coding. Furthermore, in October 2014 and February 2015 a survey have been conducted among 1199 patients with diabetes, COPD and a cardiovascular disease to investigate patients' interests and motives towards the use of self-monitoring applications. Quantitative analyses will be performed from January 2016 until March 2016 to triangulate the results of the focus group study.

### Results

The focus group study showed indications of differences between patient groups regarding their expectations and needs towards self-management and eHealth. People with diabetes reported most needs towards self-management and were most willing to use eHealth, followed by the COPD group. In contrast, people with cardiovascular conditions mentioned to have fewer needs for self-management support because their disease had little impact on their life. In all patient groups it was reported that the patient, not the care professional, should choose whether or not to use eHealth. Moreover, participants reported that eHealth should not replace, but complement personal care. Many participants reported to expect feelings of anxiety by doing measurement themselves and uncertainty about follow-up of deviant data of measurements. In addition, many participants worried about the implementation of eHealth being a consequence of budget cuts in care. Results of the survey study will be presented at the conference.

### Discussion

This focus group study suggests that eHealth and its implementation need to be tailored to the patient group. The differences between people with diabetes, COPD and a cardiovascular condition in expectations and needs regarding self-management and eHealth might be related to differences in treatment, symptoms and degree of manageability among the disease types. Moreover, it seems that patients' expected benefits of using eHealth to support self-management and their perceived controllability over their disease play an important role in patients' willingness to use eHealth for self-management purposes. Informing patients clearly in a well-considered way about the possibilities, usage and reasons for implementation are important for encouraging the uptake of eHealth in primary care. However, when offering eHealth to patients it should be taken into account that not every patient is willing to use it.

## Development and Testing of an Online Platform to Support the Network of Caregivers of People with Dementia

[Renée Verwey](#)

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### **Context**

As a result of the increase in the complexity of requests for help and at the same time a decrease in available professional caregivers, in the Netherlands, care for people with dementia shifts from the formal towards the informal network. The use of care technology is regarded as useful in solving everyday problems, but care technology is used insufficiently to support the network of people with dementia. In this project we intend to integrate a range of services and applications into an online platform, with the aim to strengthen these networks and to support communication between their members.

### **Methods**

The two-year Network Support Dementia project started in March 2015. An iterative user-centred design method was used to integrate the services and applications into the platform (Figure 1). At first a 'use case' was written and nine semi-structured interviews with family caregivers and 15 with professional caregivers were held to specify the user requirements. The interviews were transcribed verbatim and the data were analysed following a directed content analysis method. General themes emerged and these themes were used as input for the user requirements document. Comments were given on the first prototype of the platform during a focus group with nine family caregivers and a focus group with seven professional caregivers. The platform consists of different 'cubes' representing different services and applications. From February until May 2016 a usability and feasibility study will be conducted using the second prototype of the platform.

### **Results**

In the 'use case', the imaginary platform consisted of an overview of relevant websites about dementia (care); a social map of health and welfare services; video communication between care professionals; a calendar and scheduling option for family caregivers and volunteers; a shared care plan to be used by family and professional caregivers; opportunities for peer support and for finding volunteers; sensors, cameras and GPS surveillance; and a list of recommended apps for people with cognitive disabilities. The feedback on the use case was positive; family and professional caregivers indicated that such a platform would fit their needs and facilitate communication in the network. The first prototype of the platform consisted of 'cubes' with information about dementia (care), video communication options, a calendar and a care plan. This prototype of the platform was valued, but privacy matters and registration issues were pointed out when using a shared care plan.

### **Discussion**

This abstract reports about the ongoing process of the user centred development of an online platform to support family and professional caregivers of people with dementia. Based on the results of the interviews and focus groups a prototype was built, which will be tested on its usability, feasibility and desirability during a pilot study in spring 2016. Participants were positive about the prototype, but there are still some barriers to overcome. Some services, such as providing information about local health and welfare services and monitoring of health and safety through the use of video cameras and sensor technology have not yet been realized within the platform. For a successful implementation, there are issues to be solved concerning privacy and integration/connection with record systems of the different professional caregivers' organizations.

## Evaluation of an eHealth Self-Management Support Intervention Delivered by Nurses to Outpatients with Cancer Pain

[Laura Hochstenbach](#)<sup>1,4</sup>, [Annemie Courtens](#)<sup>2</sup>, [Sandra Zwakhalen](#)<sup>1</sup>, [Maarten van Kleef](#)<sup>3</sup>, [Luc de Witte](#)<sup>1,4</sup>

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### Context

Pain is a prevalent and distressing symptom in outpatients with cancer. Ongoing pain review and management are extremely important, as fluctuations in cancer pain are characteristic and the introduction of pain medication requires careful consideration of effects and side effects. eHealth is promising in supporting patients at home and health professionals in primary or hospital care to improve monitoring and follow-up. After intervention development and feasibility testing, this study involved a two-armed multicentre randomized controlled trial that compared a 12-week self-management support intervention with care as usual and includes an effect and process evaluation.

### Methods

Patients were recruited from the outpatient clinics and inpatient oncology wards of an academic hospital, two regional hospitals and a radiotherapy institute in the south of the Netherlands. Outpatients with uncontrolled moderate to severe cancer pain, defined as pain  $\geq 4$  on a numerical rating scale (NRS 0-10) for  $\geq 2$  weeks, were invited for participation. After informed consent, randomization assigned patients to the intervention or control group. The intervention consists of a mobile application for patients and a web application for nurses specialized in pain and palliative care. Important components include monitoring of pain, adverse effects and pain medication as well as graphical feedback, education and nurse support. Effect outcomes were measured at baseline (T0), after 4 weeks (T1) and after 12 weeks (T2). Data for the process evaluation were gathered continuously over the study period.

### Results

A total of 55 patients were included over 14-months: 32 patients in the intervention group were assigned to the self-management support intervention and 23 patients in the control group were assigned to care as usual. Follow-up rates were 85.5% (n=47) at baseline, 74.5% (n=41) at 4 weeks and 50.9% (n=28) at 12 weeks. Per protocol analyses showed comparability of groups with regard to age (mean 63.3, SD 11.5 years), female sex (50%), living conditions (78.6% living with relatives) and education (57.1% lower level of education). The mean present pain score at baseline was 5.12 (SD 2.83) in the intervention group and 5.18 (SD 2.23) in the control group. After 12 weeks both groups reported a decline in pain, but no considerable difference was found: the mean present pain score in the intervention group was 3.53 (SD 2.24) and 3.64 (SD 2.01) in the control group.

### Discussion

Despite all strategies and efforts to stimulate patient recruitment (including department visits with inclusion updates and follow-up calls to patients) and to limit patient burden during the study (including study visits at home, helpdesk availability for technical issues, and assistance with filling out questionnaires), the inclusion of patients and the completion of participation proved to be difficult. As a consequence, the planned analyses require revisions in order to optimally use all collected data. The decline in mean present pain scores in both groups is at least noticeable and needs further exploration. Experiences question whether a randomized controlled trial in this setup is the best possible research design to evaluate this type of intervention in this group of patients.

## Broad Uptake of eHealth in Primary Healthcare: Experiences in a Living Lab

Ilse CS Swinkels<sup>1,2</sup>, Martine WJ Huygens<sup>2,3</sup>, Wendy d'Hollosy-Oude Nijweme<sup>2,4</sup>, Lex van Velsen<sup>2,4</sup>, Yvonne Jansen<sup>2,5</sup>, Marian Schoone-Harmsen<sup>2,5</sup>, Tim M Schoenmakers<sup>1,2</sup>, Luc de Witte<sup>2,3</sup>

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### Context

With a rising number of older adults and persons with chronic conditions and a decrease in healthcare professionals, extramural care, self-management and prevention become more important. In this context eHealth is expected to be helpful. Although many eHealth applications have been developed, uptake in primary healthcare is limited. The eLabEL project aims to establish Living Labs in which patients, healthcare professionals, entrepreneurs and researchers collaborate during the selection, integration, implementation, and evaluation of eHealth in primary healthcare. The experiences in these Living Labs offer an inside view of the process of broad uptake of eHealth in primary health care.

### Methods

Since 2013, seven primary healthcare centres, varying in type of organization, experiences with eHealth, patients' characteristics and region, participated in eLabEL. Other participants were ten entrepreneurs, offering different applications or services, and four research institutes, collaborating in the Centre for Care Technology Research (CCTR). These profit and non-profit organizations collaborated to select and integrate eHealth technology for implementation in primary care. An extensive process evaluation was performed based on reflective and process-based documentation which was written and collected during the project as well as reports of interviews and focus groups on the needs and expectations of patients and health professionals. Theoretic models of Wagenmakers et al. (2010), Nyström et al. (2014), Geels (2002), and Fleuren et al. (2004) on collaboration, innovation, uptake of new technology, and implementation were used to structure the data.

### Results

Many factors on different levels are related to the uptake of eHealth in primary care: on the patient's level, his/her willingness to use eHealth; on the healthcare professionals' level, his/her willingness and capacity to invest resources for a shift from 'traditional care' to 'technology-supported care'; on the level of the organization, its capacity for such a shift and the willingness of insurance companies to support a shift and the use of new technologies; on the entrepreneurs' level the expected return-on-investment. Moreover, those factors interact with each other: for example, insurance companies need to be convinced of the effects of the eHealth before decisions on incentives will be made, while entrepreneurs start investments only when return-on-investment is foreseeable.

The Living Lab participants differed in scopes, goals and values concerning the project as well as in participating conditions (like financing of working hours). As well, participants' expectations regarding others differed.

### Discussion

Successful uptake of eHealth in primary health care is complex because it depends on various interrelated factors on different levels, i.e. the patient, the health care professional, the health care organization, the health care and insurance system, and the entrepreneurs. For broad implementation of eHealth in primary care patients' involvement, fit of the innovation in the organization, commitment on structural financial incentives, value- and business cases for healthcare organizations, healthcare insurances and entrepreneurs are essential.

Different scopes, goals and values of the Living Lab participants influenced the progress of the project. Within a large and complex Living Lab with multiple players, needs and interests, from the start of the project equal participation of all stakeholders, transparency and a joint vision on short and long-term goals are essential. Moreover, a focus on the business models should be set from the beginning.

Tuesday 14 June

10.00-12.00

**Special Interest Group (SIG) on Primary Care**

## Teamwork in Lithuanian Primary Care: General Practitioners' and Community Nurses' Perspective

[Lina Jaruseviciene](#), [Ausrine Kontrimiene](#)

*Lithuanian University of Health Sciences, Kaunas, Lithuania*

### Context

A team approach in primary care has proven benefits in achieving better outcomes, reducing health care costs, satisfying patient needs, ensuring continuity of care, increasing job satisfaction among health providers and using human health care resources more efficiently. However, some research indicates constraints in collaboration within primary health care (PHC) teams in Lithuania. The aim of this study was to gain a better understanding of the phenomenon of teamwork in Lithuania by exploring the experiences of teamwork by general practitioners (GPs) and community nurse (CNs) involved in PHC.

### Methods

The study was performed in Kaunas region, the most central Lithuania's region, in 2012. The Bioethics Committee of the Lithuanian University of Health Sciences approved this qualitative study. All GPs and CNs were voluntarily involved in the study.

The focus group (FG) sessions were scheduled separately for GPs (3 FG) and CNs (3 FG). A total of 56 PHC professionals [29 GPs and 27 CNs] participated in this study. The FG discussions followed a semi-structured topic guide. The guide included open-ended questions prompting participants to describe their perceptions of the PHC team in general, their experiences of everyday collaboration, their perceptions of factors negatively and positively affecting such collaboration, and their thoughts about their personal roles in an effective PHC team. Each FG discussion was transcribed verbatim. The thematic analysis based on the inductive approach was initiated after all six focus groups were completed.

### Results

There were identified six thematic categories related to teamwork in primary care:

- Structure of the primary health care team
- Alliance between the primary care team members
- Explicitness of the roles and responsibilities of team members
- Competency of the primary care team members
- Communication between primary care team members
- Organizational background for team work.

The resulting thematic model is based on these findings: The formal aspects, including the explicit structure of a team, well-described functions and responsibilities of teammates and adequate competence of team members to perform designated duties, constitute the formal framework, which could be referenced as the "hardware" for teamwork. The individual aspects, such as non-hierarchical relationships, respect and communications among allied team members provide the behavioural "software" for teamwork. The formal and individual factors are interrelated; the organisational environment could have an enabling or inhibiting effect for the realisation of these factors.

### Discussion

There is broad consensus about the need for teamwork in PHC. However, the process of teambuilding is often taken for granted in Lithuanian PHC or not even considered as an issue. By providing insights that deepen the understanding of Lithuanian PHC teams, this study could induce specific policy changes to tackle weak points in teamwork. This study reveals that when aiming to strengthen PHC teams, both formal and individual behavioural factors should be targeted. This study underscores the need in Lithuania to provide explicit formal descriptions of the roles and responsibilities of PHC team members and to determine the boundaries of their involvement. The training of team members is an essential component in the teambuilding process, although not sufficient by itself.

## Perceptions of How a Reimbursement Model Influences Innovation and Value Creation in Primary Healthcare. A Qualitative Study among Managers and Medical Directors

[Pamela Mazzocato](#), [Carl Savage](#)  
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### Context

Value based healthcare (VBHC) is a vision to maximize value for patients. Value is defined as health outcomes achieved per unit of cost spent. By competing on value creation, healthcare providers are incentivized to innovate the way they deliver care. Payment plays a pivotal role, however, there is a paucity of evidence on the role of reimbursement systems in value based healthcare. This study explores how managers and medical directors in primary care perceive the influence of reimbursement models on innovation and value creation.

### Methods

This is an exploratory study based on semi-structured interviews with 21 managers and medical directors in primary healthcare facilities in a local Swedish healthcare system. The reimbursement model in use in primary care was a mixed of capitation and fee-for-service (FFS). This model had historically led to a focus on maximizing access to care for patients with simple conditions, leading to the unexpected negative effect of limited focus on patients with complex care needs. Hence, in 2014 the county council launched an initiative to develop a value based reimbursement model for primary care that focus on maximizing value for all patients.

The interviews were transcribed verbatim and analysed with an inductive content analysis approach. The analysis focused on the perceptions of the current reimbursement model and its influence on innovation, and how participants discussed the future developments to maximize value creation for patients.

### Results

There was a professional driving force to find ways of creating value for patients, despite the fact that the current reimbursement models did not support innovations for value creation. In some cases, the reimbursement model was perceived as counter-productive for value creation. The main perceived barrier for value creation was the pressure for high productivity, which in turn was experienced as a source of stress and demotivation for staff. While some perceived the focus on productivity as a barrier for new ideas and innovation, others perceived it as a trigger to find new ways to deliver care.

The managers' and medical directors' common perception was that an increased capitation and a reduction of fee-for-service would increase the value for patients. Case-mix adjustment based on care needs and socio-economic indicators was also deemed important. Investments in continual education was described as a key to develop a sustainable primary care.

### Discussion

The understanding of the relationship between reimbursement models, innovation, and value creation varies between primary care centres. This suggests that primary care cannot be viewed as a homogenous sector, but rather the specificity of different business models in primary care must be acknowledged in the development of reimbursement models. What is common though, is the need to show trust and support for the healthcare professionals' competency, and increase their autonomy.

This study suggests that what may actually maximize value in primary care, is not so much the choice of a reimbursement model instead of another, but rather to support the development of learning capabilities within the organizations.

## The Patients about the Interaction between Primary and Specialized Healthcare in Bulgaria

Ralitsa Zlatanova-Velikova<sup>1</sup>, Andrey Kehayov<sup>2</sup>, Tihomira Zlatanova<sup>1</sup>, Alexandrina Vodenicharova<sup>1</sup>, [Stefan Velikov<sup>1</sup>](#)

<sup>1</sup>Medical University - Sofia, Faculty of Public Health, Sofia, Bulgaria, <sup>2</sup>SEEMF, Sofia, Bulgaria

### Context

The relationship between primary and specializing health care and medico diagnostic activities, as well as highly specialized activities are governed on the basis of developed regulatory standards that enable the distribution of volumes according to people in the patients' list (number of acute cases or made dispensary persons) by issuing directions for professional and / or research. Access to specialized medical care will be made after consultation with the doctor and after direction giving.

### Methods

Public opinion polls regarding the relationship and interaction between the primary and specializing health care is important for health activities analysis and for the development of recommendations for improving the quality of medical care at the level of health care.

The purpose of this article is to examine and analyse the patient's opinion of the relationship and interaction between the primary and specializing health care in Bulgaria.

For this purpose, we suggest the following tasks:

- 1. Presentation of the broad guidelines in the organization of primary health care.
- 2. The organization and the scope of the specialized health care.
- 3. Patient's opinion survey about teamwork/relationship and interaction/ of their GP and the medical specialists of health care for consultations and medical examinations.
- 4. Presentation of the main conclusions and recommendations for solving the problems related to the interaction between GPs and specialists from primary health care.

### Results

To achieve the objective used documentary and questionnaire method.

The main legal documents regulating the organization of primary and specialized health care in Bulgaria are explored. There was an anonymous survey of 1342 patients from the entire country in October and November 2015.

The organization of primary and specialized health care, basic package for health care and access to them are regulated by the legislation of the Republic of Bulgaria.

According to the largest share of respondents 61.4% patients /824/ their GP gives a coordinates /address and phone/ of the specialist, while for 14% /188/ of the patients, GPs calling to the specialist in advance. Not a small proportion of patients 24.6% /330/, the GP tells them to fend for themselves after giving them direction to a specialist.

### Discussion

Most of the respondents 60.6% positively evaluated the interaction and communication of their GP with specialists working in laboratories since the GPs gave them the address and phone number of the laboratory / radiology services / where to make the necessary research. For a significant share of the patients 25.8%, their GP don't direct and tells them to go where they want. Only by 13.6% of respondents GPs call prior to the laboratory where the patients are sent.

After consultations with specialists the GPs need to preview the outcome of the review and recommended research and therapy. 90.2% of the patients believe that their GP calling them as soon as is possible to acquaint him with the outcome of the consultation and treatment assignment. This shows the interest of the GP of the results of the consultation and the desire for a good relationship and cooperation with specialized health care.

## A Serious Game for General Practice Management; Innovating Management Teaching and Practice

Ronald Batenburg, Jan Strien

*NIVEL, Utrecht, Netherlands*

### Context

General practitioners (GPs) are confronted with growing management tasks and responsibilities. This is specifically the case for the self-employed GPs, but salaried GPs likewise experience more managerial demands. While this development is often criticized for their burden at the costs of direct patient care, it can also be notified that GPs usually are not well prepared or trained to cope with management tasks. Improving the managerial skills of particularly young GPs can avoid that they become demotivated to conduct management tasks and, more positively formulated, experience that strategically running a practice is an interesting challenge that complements their clinical work.

### Methods

A serious game for general practice management is currently design and developed for young Dutch GPs that are interested in increasing their (strategic) managerial skills. The game is the hands-on backbone of a 1-year training program that consists of MBA-related modules as financial management, HRM and stakeholder management. Theories and methods are applied, integrated and practiced throughout the game setting. At the start of the game, pairs of young GPs found their own virtual practice and run it for four subsequent years, passing four levels. At each level the players need to make managerial decisions that cumulate in complexity and external orientation. Instant quantitative and qualitative feedback is provided by business and decision rules that are designed and implemented as 'game mechanics'. In addition, teachers facilitate that the game playing duos exchange their experiences, specifically the consequences of their (strategic) decisions in safe, yet challenging and competitive virtual world.

### Results

The serious game is designed and prototyped using so-called agile development methodologies. Panels of young (practising) GPs provided feedback in several 'sprints' after each game level was functionally designed by team of researchers and developers. After each sprint meeting, the decided set of decisions and their consequences for the performance indicators of the virtual general practices was turned into a technical design. All decisions at each game level were subsequently tested for logic of feedback or dialogue, as well as the usability of the system under design. Throughout the design and development process, the reality of the game in terms was assessed by experts and by building in factual data about Dutch general practices that are collected for over 20 years. The first game play test show that the essential balance between professional teaching and gamification of GP management skills is achieved, but evaluation is required to acquire evidence.

### Discussion

The teaching of general practice management is a relatively unexplored area, but is growing in relevance. Considering the new generation of GPs that are more and more engaged in activating and participatory ways of learning, serious games can specifically be successful in this new domain. The design and development of a serious game however, requires a trajectory in which end users as players need to be involved frequently and intensively. It also requires an interactive methodology and interdisciplinary team work to capture the synergy between learning theory, gaming, system design, and strategic management for (primary) health care organizations. As this is an explorative field, experiences with serious game design needs to be exchange in early stages, and practically by interactive demonstration and user trials.

Tuesday 14 June

13.00-15.00

**Special Interest Group (SIG) On Healthcare Workforce in Management**

## Medical Specialty Choice and Practice Location: The Case of Portuguese Junior Doctors

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### Context

Health systems throughout Europe currently face serious challenges regarding the number of available primary care physicians and their geographical distribution to serve populations in need. There are nowadays over 1 million Portuguese who lack a primary care physician. We study the determinants of medical specialty and residency location choice by recently graduated Portuguese junior doctors that are important to address this shortage.

### Methods

We apply a questionnaire based on a discrete choice experiment to a large representative sample of Portuguese junior doctors (N=503) and study these doctors' choices using a mixed logit model. Several medical education and sociodemographic characteristics of the participants were taken into account in the models. Appropriate policies are then simulated to address the issue of General Practitioners (GPs) shortage.

### Results

According to our simulations, a policy that includes monetary and non-monetary incentives may increase uptake of GPs in rural areas up to 30%. Marginal wages estimated from our model are realistic and close to market prices: an extra hour of work would require an hourly wage of 16,5€; moving to an inland rural setting would involve an increase in monthly income of 1150€ (almost doubling residents' current income); a shift to a GP career would imply an 849€ monthly income increase. Additional opportunities to work outside the National Health Service overcome an income reduction of 433€. We also show that doctors with rural upbringing or who practiced in rural hospitals during the 1st year general residency are more willing to set practice in an inland setting, with marginal wages of close to 500€, nearly half compared with their colleagues.

### Discussion

Our study provides an indication that this shortage of GP doctors in rural areas of Portugal may be effectively addressed with a careful policy design that mixes pecuniary and non-pecuniary incentives for junior physicians.

## Predictors of Healthcare Worker Satisfaction: A Strong Intriguing Relation between Role Clarity and Autonomy

[Stephen Atkins](#), [Melanie Audier](#)

*Otago Polytechnic, Dunedin, Otago, New Zealand*

### Context

Requirements for completing applied management degree-level qualifications in many parts of Australasia now include at least one semester of workplace-based research. As many Australasian business schools are physically located in very small local economies, it is fortunate that hundreds of medium-to-large organisations, all over the globe, have welcomed our research students into full-time research internships, in dozens of the world's larger cities. Host organisation for our present research programme was a not-for-profit hospital employing a few hundred staff. This research project has a particular focus on the evaluation of an annual staff satisfaction survey used at the host hospital.

### Methods

Four related questionnaire samples (...of hospital staffs and HR professionals) were collected to address the perceived value of staff satisfaction surveys, and their apparent quantitative reliability, in the host hospital setting. 25 hospital staff members and 31 HR professionals were surveyed regarding perceived utilities for annual questionnaires applied to the hospital's workforce. Actual questionnaire results from the host hospital's workforce were aggregated, where possible, to assess factor-based sub-scale reliabilities (N = 207). SPSS Scale analyses were applied to identify redundant, aberrant, or otherwise unhelpful items, given Atkins & Vanscotter's (2001) evidence of increasing respondent error variance for staff satisfaction or organisational climate survey questions occurring late in surveys (especially for wordier questions). Thus, the interest in shortening surveys or questions. Qualitative methods were also applied in this study (e.g., interview data, open-ended comment questions, thematic analysis, etc.), but reporting these are beyond the scope of the present paper.

### Results

SPSS metrics outcomes suggested our data matrices were suitable for factor analysis (e.g., KMOs of approximately .90 and Bartlett's  $p < .001$ ). Given our focus on common factor variance associated with attitudinal and perception constructs where non-trivial factor inter-correlations were anticipated, "oblique rotations of principal axis factors" were allowed (PAF/direct oblimin). Robust factor-based sub-scales appeared for healthcare worker perceptions or attitudes around concepts such as "Adequacy of organisational affordances, Adequacy of supervisory/managerial talents, Adequacy of executive leadership/communication, and Overall dis-satisfaction." Two items were identified as aberrant, redundant, or otherwise unhelpful. Surprisingly, two healthcare workforce perceptions, of theoretically-distinct origins, masqueraded as a standalone pseudo-factor or sub-scale (...strangely having negligible cross-loads on other factors). These were: "Role clarity" and "Perceived autonomy." In this paper, we discuss how this very strong dyad, apparent via 207 responses, connects to prior healthcare workforce research and theory.

### Discussion

Role clarity and perceived autonomy have, of course, been studied in healthcare workforces before. For example, Koekemoer (2005) measured autonomy and role clarity in a randomly-selected sample of 300 nurses. Findings in that study included evidence for the importance of problems in role clarity or autonomy predicting psychometrically-assessed vocational exhaustion. Problems with role-clarity also contributed to poor outcomes as regards work-family balance and mental distancing. But the healthcare workforce literature does not convey evidence of these two important constructs correlating so strongly that they evince as a pseudo-factor via dimension-reducing factor analyses. However, our evidence is likely strong enough to suggest future research testing these competing hypotheses: 1) Does a perception of high autonomy motivate a healthcare worker to pursue high role-clarifications (e.g., due to potentially lethal consequences of low clarity)?...or 2) Does a healthcare worker's conveyance of having high role clarity yield award of greater autonomy by one's supervisor?

## Major Challenges and Useful Tools in Health Workforce Planning

[Eszter Kovacs](#), [Edmond Girasek](#), [Miklos Szocska](#)  
*Semmelweis University, Budapest, Hungary*

### Context

Health workforce (HWF) planning is a complex activity and it aims to ensure the appropriate number of HWF for delivering quality healthcare and supporting the sustainability of the healthcare system in the long time run. Different Member States (MS) have different approaches and practices in HWF monitoring, planning and establishing projections for the future.

### Methods

The Joint Action on European Health Workforce Planning and Forecasting (JA - GA 20122201) is to provide a platform for collaboration and exchange between stakeholders, in order to better prepare Europe's future health workforce. The JA aims to improve the capacity for health workforce planning and forecasting by supporting collaboration and exchanges between MS and by providing state-of-the-art knowledge on quantitative and qualitative planning. Triangulation of different methods was used to gain deeper understanding of HWF planning practices and major challenges.

### Results

HWF planning activities across MS can be presented in a HWF planning development continuum, in which partially systematic and more advanced levels of comprehensive planning systems may be distinguished. HWF monitoring was found to be the most frequent activity among MS, while each activity (HWF monitoring, forecasting and planning) is most extensively established for medical doctors and much less for other health professions such as dentists, pharmacists, midwives and nurses. In terms of the preconditions and HWF planning-related processes, most acute gaps were found to limit accessing, managing and utilisation of appropriate data. Crucial issues reported by MS concerning HWF planning data gaps were the non-availability, the lack of validity and reliability, and the lack/misuse of quantitative planning models and the utilisation of qualitative methods. The "Toolkit on HWF planning" was designed to support MS in identifying bottlenecks and possible points for development in HWF planning systems.

### Discussion

"Toolkit on HWF planning" was designed by the Semmelweis team, in order to find possible solutions and to overcome the reported difficulties. The practical tools do not address every situation in detail, but they are adaptable for country environments. The Toolkit can contribute to self-evaluation and focussed attention towards improvement directions in order to foster systematic HWF planning in the EU.

## Impact of Digitalization in Health Workforce: A Challenge for Europe

[Luis Velez Lapão](#)<sup>1,2</sup>

<sup>1</sup>*Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Lisbon, Portugal,* <sup>2</sup>*WHO Collaborating Center for Health Workforce Policy and Planning, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Lisbon, Portugal*

### Context

The digital-revolution is deeply transforming healthcare. Technology is now very cheap making it pervasive to people/enterprises enabling them reach more markets. What will be the effect of digitalization in healthcare? Among researchers two ideas are dominating, opposing each other. One is sceptical about the payoff of new healthcare technologies, and the need to deal with healthcare-reorganization due to economic crisis and increasing demand for services. There is a threat on unemployment from change in healthcare services. Others are more convinced of the promise of innovation in healthcare, believing that the economic gains from the eHealth revolution are still to come.

### Methods

We used a mix-method approach combining literature review with the results from a focus group on this issue. Several experts from the WHO Collaborating Center for Health Workforce Policy and Planning, as well as some experts from the Ministry of Health and from Health Professional Associations contributed for this analysis.

We combined the usual understanding of eHealth services (services and patient experience frameworks) with Brynjolfsson and McAfee perspective on digitalization as reference method, as they argue about the future draws from an analogy to the industrial revolution suggesting that the digital revolution will be comparable in its effects on the long-run, and eventually creating significant unemployment in the short-mean time.

Our focus was on the impact of digitalization on healthcare services and on changes in employment.

### Results

The Moore's law was considered as the main-driver, allowing for improvements/ reductions in eHealth-technologies costs. As a result, healthcare-organizations are likely to find even wider use for sensors/medical devices, open-up the services to new categories of workers. Considering the scenario where there is the digitization of all processes in healthcare it would make possible a ubiquitous "Internet of things" and eventually providing the necessary information for continuing improvement. The participants were aware that basic routine changes in health organizations are not easy. The multi-professional environment and forces are often significant barriers for healthcare-services changes, from introducing skill-mix improvements to designing a new eHealthcare-service. The participants discussed each of the services in three aspects: the professionals that should be involved in each service; the special skills required to practice in the context of eHealth; and the impact for the workforce, in terms of the reduction or growth of health professionals' number.

### Discussion

All participants agreed that proper eHealth services implementation would require adjustments in the organization and on the workforce. Overall, it was not clear what would be the impact on health workforce. There are areas that the eHealth services will enable to optimize HR whereas other areas that will demand more health professionals, probably even promoting the emergence of other professions. Technological change eliminates routine labour, whether physical or cognitive, and it increases demand for non-routine work typically requiring more education. Nevertheless, the impacts of digitization are much more profound and raise many questions open to research. What new professions and what changes on the other health professions will digitization force? What new organizations and business models are necessary to address the healthcare demand? Will physicians will be using more sophisticated decision-support-systems and would this use reduce/increase the number of health professionals required to respond to the population demand.

## A qualitative assessment of the factors influencing psychiatrists' workplace preferences in Albania, Bulgaria and Romania

Marius I. Ungureanu<sup>1, 2</sup>, Ioana A. Duse<sup>1</sup>, Mara P. Timofe<sup>1, 3</sup>, Jonila Gabrani<sup>4</sup>, Antoniya Yanakieva<sup>5</sup>, Elena Bozdog<sup>1</sup>

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### Context

Healthcare systems worldwide are facing difficulties in recruiting, retaining and motivating health professionals. Low- and middle-income countries are particularly at the risk of significant imbalances, given the increasing rate of health professionals' emigration. The current status of psychiatric practice in Albania, Bulgaria and Romania calls for increased efforts into identifying effective means for improvement by recruiting and motivating its workforce. The aim of our study was to identify the factors could have an impact on the workplace choice of psychiatrists working in Albania, Bulgaria, and Romania.

### Methods

A total of 30 in-depth interviews have been conducted with stakeholders (including psychiatrists, representatives of professional associations, representatives of labour unions, representatives of funding bodies) from Albania, Bulgaria and Romania. The data collected was transcribed and coded. Qualitative analysis (content analysis of the interviews) was done using the NVivo 9 software. Following the main themes, data was coded and arranged into topics which were grouped for analysis.

### Results

The stakeholders interviewed in the three countries unanimously described the current working conditions as in need of improvement. The areas that were mentioned to be relevant when psychiatrists are considering a workplace were the monthly salary, the level of physical and mental demand, the number of patients seen daily, and the quality of interaction with their peers and superiors.

### Discussion

Our results suggest that the factors relevant for psychiatrists' choice of workplace are both institutional and individual. Addressing these factors in order to make the workplaces within the three studied countries more attractive for their national professionals requires better health workforce governance at national, regional and local level.

Tuesday 14 June

13.00-15.00

**Parallel Session: Patient Safety**

## Rethinking Clinical Governance: Healthcare Professionals' Views - A Delphi Study

[Kees Ahaus<sup>1,2</sup>](#), [Gepke Veenstra<sup>2</sup>](#), [Gera Welker<sup>2</sup>](#), [Erik Heineman<sup>3</sup>](#), [Maarten van der Laan<sup>3</sup>](#), [Friso Muntinghe<sup>4</sup>](#)  
<sup>1</sup>*University of Groningen, Faculty of Economics and Business, Department Operations, Groningen, The Netherlands,* <sup>2</sup>*University Medical Center Groningen, Center of Expertise on Quality and Safety, Groningen, The Netherlands,* <sup>3</sup>*University Medical Center Groningen, Surgery Department, Groningen, The Netherlands,* <sup>4</sup>*University Medical Center Groningen, Department of Internal Medicine, Groningen, The Netherlands*

### Context

Clinical governance is a quality improvement approach for health care. Since the definitions of clinical governance vary in the literature, different elements are considered part of clinical governance. The guiding principle of clinical governance is local responsibility, the assumption that healthcare professionals are the leading contributors to quality and safety of health care. However, little is known about what healthcare professionals perceive to be important for clinical governance. Therefore, the aim of this study is to explore whether the elements as described in the literature reflect what healthcare professionals perceive to be important for clinical governance.

### Methods

In order to make sure that most of the elements associated with clinical governance in the literature were considered during the study, a list of 99 elements about clinical governance was constructed after a five-phase literature study. This list was refined, completed and restricted during a Delphi study. The expert panel for the Delphi study was formed by 24 healthcare professionals from an academic hospital, which is leading in its expertise on clinical governance in the Netherlands. Both medical specialists and nurses from a variety of departments were represented in the panel. Opinions concerning the importance of elements of CG (measured on a four-point scale) could be given by the experts during three rounds. The experts could rephrase elements and suggest new elements. Elements that were perceived to be (very) important by at least 80 percent of the panel were included in the final list.

### Results

The experts added six elements to the list. A total of 50 elements was rated as important for clinical governance. Elements that referred to a bottom-up approach to clinical governance were perceived as important, as well as elements that referred to ownership, engagement and personal responsibility of healthcare professionals. Furthermore, practice-based feedback, learning from mistakes, and multidisciplinary teamwork were perceived as important for creating a clinical governance working environment. According to the experts, leaders should have a clear understanding of the clinical practice, and leadership should be a shared responsibility among healthcare professionals, managers and executive directors.

Elements that referred to hierarchical leadership and top-down managerial approaches, such as performance measurement, quality assurance and standardization of work were perceived as less important. Interestingly, the panel did not reach consensus about elements that referred to patient involvement.

### Discussion

From the viewpoint of the experts, clinical governance is a practice-based, value-driven approach with the goal to deliver the highest possible quality and safety of patient care. Bottom-up approaches, ownership, and effective teamwork are crucial for this goal, as well as continuous learning, shared responsibility, and good relationships between healthcare professionals, managers and patients.

Although the experts perceived patient outcomes as important, they did not reach consensus about patient involvement. A difference in attitudes among nurses and medical specialists might explain this finding. Additionally, patient involvement might require more attention within the organization where the study was done.

We suggest that future research should cover methods to improve collaboration between management and healthcare professionals to make clinical governance more practice-based. The emphasis on bottom-up approaches indicates that healthcare professionals' motivation to contribute to high quality and safe health care is an important issue for future research.

## Audits in hospital Care: Which Factors Determine the Effectiveness of Audits?

Lisanne Hut<sup>1</sup>, Rijk Gans<sup>2</sup>, Kees Ahaus<sup>1,3</sup>, Gera Welker<sup>1</sup>

<sup>1</sup>University Medical Center Groningen, Center of Expertise on Quality and Safety, Groningen, The Netherlands, <sup>2</sup>University Medical Center Groningen, Department of Internal Medicine, Groningen, The Netherlands, <sup>3</sup>University of Groningen, Faculty of Economics and Business, Department of Operations, Groningen, The Netherlands

### Context

To facilitate improvements in quality of health care, healthcare authorities and organisations are currently giving high priority to quality improvement strategies. In response to this increasing demand for quality improvement, Clinical Governance was introduced to encourage organisations to continuously improve quality and safety at all levels of healthcare provision. Subsequently, clinical audit was initiated as a quality improvement strategy to promote clinical effectiveness and to maintain high quality of professional performance. Previous systematic literature reviews have focused on the effectiveness of various types of audits without, however, identifying determinants which contribute to or impede the effectiveness of audits (Ivers et al., 2012; Flodgren et al., 2011; Brubakk, Vist, Bukholm, Barach, & Tjomsland, 2015; Greenfield & Braithwaite, 2008). Currently, from a new perspective on clinical governance we expect that bottom-up initiated (clinical) audits, the participation of engaged healthcare professionals, and subsequently local ownership of the audit will positively influence the effectiveness of audits. Building on the information collected from previous research we report a first draft of a systematic literature review that aims to provide an overview on audits as a quality improvement strategy, along with determinants which might influence the effectiveness of these audits.

### Methods

Eight major databases within the field of biomedical research and healthcare management were systematically searched for the period from 2005 - 2015. Included articles were hospital-based studies on the effects of audit. Two reviewers independently assessed articles for inclusion, and extracted information from the included articles regarding setting, type of audit and their determinants. The level of evidence was independently rated by two reviewers with the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) scale.

### Progress

A narrative synthesis of the findings will be provided from the included studies which emphasise multiple types of audits and determinants which contribute to or impede the effectiveness. The results were grouped according to the organisational context (e.g. motive, prior experience with audit, presence of a learning culture), characteristics of the audit (e.g. clinical relevance, focus of the audit on compliance or improvement, degree of tailoring the audit to stakeholder analysis and barriers analysis), the method of feedback (e.g. source, format, frequency, use of action plans and specific goals), and possible determinants such as a bottom-up strategy, participation, and engagement of healthcare professionals.

This review is unique in providing a structured overview of the scientific evidence on the effectiveness of audits. In addition, the main theoretical contribution of this review is that it provides a better understanding of determinants underlying the effectiveness of audits. Identifying these determinants is crucial for a better understanding of audits in the context of the new concept of clinical governance.

Wednesday 15 June

11.00-13.00

**PhD Students' Session: KMMC/EHMA Research Award Competition**

## The Multiple Middle: Managing in Healthcare

[Lieke Oldenhof](#)

*Institute of Health Policy and Management, Erasmus University, Rotterdam, the Netherlands*

### Context

Conventionally, middle management in healthcare is spatially defined as a place in-between the top and the bottom of the organization. However due to organizational delayering and the popularity of self-governance, the middle position in management is rapidly changing. The thesis ontologically opens up the middle by showing that the middle is not necessarily a fixed place in the organizational hierarchy, but dynamic and multiple in nature. Alternative forms of the middle that are being researched in this PhD thesis are the middle between conflicting values; different justifications towards stakeholders; horizontal organizational boundaries (health, social care and housing) and managerial-professional identities.

### Methods

The PhD thesis addresses an open qualitative research question: how is the daily work of middle management enacted and reconfigured in the Dutch long-term care sector? The primary focus is on work that is conducted in the (multiple) middle. When one asks a manager to describe his daily work, one usually gets abstract answers like 'planning' and 'coordinating'. To specifically articulate what work entails is difficult, because work is imbedded in unconscious routines and tacit knowledge. That's why it is important to observe managers while doing their work. Building on the tradition of other management scholars like Mintzberg, I used the technique of shadowing to capture the daily work of middle managers that were responsible for small-scale care facilities. I opted for a practice-based approach of shadowing which focuses on managerial talk, behaviour and interactions with professionals and clients. This allowed me to research managerial work 'in action'.

### Results

Based my ethnographic research, I distinguish different types of managerial work in the multiple middle: 1) valuation work, 2) justification work, 3) professionalization work, 4) boundary work, and 5) articulation work. The first important type of work that middle managers perform is valuation work: dealing with value tensions, such as the affordability and quality of care. Closely related to valuation work is justification work: the construction of compromises and the justification of these compromises vis-à-vis important stakeholders. Another type of work that is conducted in the middle of professional and managerial identities is professionalization work: professionalizing care workers via coaching of organizational competencies and methodical work methods. Boundary work is more externally focused: (re)constructing organizational boundaries between different public service providers in order to organize integrated service provision. Finally articulation work is establishing a total arc of work by connecting different lines of work activities.

### Discussion

The research outcomes have important implications. First, the typology of managerial work shows us that managing is not about neutral coordination and rational budget allocation, but is a highly normative affair due to conflicting valuations of care and shifting organizational boundaries. Educational curricula should pay more attention to strategies for dealing with value conflicts and diverging interests. Second, increasingly managerial work is being reconfigured and distributed to self-organizing professional and clients. For example, self-steering teams of professionals have to perform valuation work to keep care both affordable and of good quality. Because of these distributions, management becomes less a circumscribed position and more a distributed activity that can be conducted by various actors: both managerial, professional and lay persons. Thirdly, it is important to take into account that not all professionals and clients are able or want to manage care. Therefore diversity in different management forms is warranted.

## How to Successfully Implement Lean in Healthcare Organizations: the Application of a Socio-Technical System-Wide Conceptual Framework

[Federica Centauri](#)

*Catholic University of the Sacred Heart, Milan, Italy*

### Context

In recent years, as healthcare organizations have been struggling to meet the need of efficiency and quality improvement, Lean has been widely adopted to reorganize production processes. Despite the growing availability of literature on Lean implementation in healthcare, many studies have a speculative character lacking insights into how the factors facilitating organization-wide improvement initiatives effectively work within the organizational context in accomplishing successful implementation. The study draws on a system-wide perspective of organizations to investigate the enabling contextual patterns for Lean adoption in healthcare and how they interplay to facilitate effective and sustainable improvement initiatives within the organizational work system.

### Methods

Drawing from previous studies, a multi-component system-wide socio-technical framework is proposed to understand how the interrelated components of an organizational system (goals, human resources, organizational structure, working culture, operations), together with the external environment in which is embedded, can facilitate the adoption of Lean interventions in healthcare settings. The conceptual framework has been refined and devised by using evidence collected from a comprehensive literature review primarily conducted on the specific traits of the healthcare context and the fundamental aspects that play an enabling role in Lean change initiatives. In order to empirically assess the framework and investigate the role of each component (and of interplays among components) in nurturing Lean initiatives, the multiple-case study approach was adopted, including four Italian hospitals with a long experience (at least three years) in system-wide Lean implementations. The analysis was run until a satisfactory theoretical saturation was reached.

### Results

As emerged from the empirical analysis, Lean adoption needs coherent and concerted radical changes along with the socio-technical framework dimensions. In particular, the variability in the intended outcomes of Lean interventions has been demonstrated being the result of the interplay of contextual mechanisms identified within the socio-technical framework's dimensions: i) supportive culture / change capacity and clinical buy-in; ii) pervasive training program; iii) reshape of care delivery processes and organizational model towards patient-centred approach (functional and professional silos breaking down); iv) presence of a Lean promotion group/team; v) visible and sustained top management commitment; vi) integration of the improvement initiative into the organizational strategic planning; vii) creation of well-functioning multidisciplinary working teams.

### Discussion

In coherence with recent research calling for more attention to the influence of contextual dynamics while introducing improving quality initiatives in healthcare, the proposed framework, incorporating the organizational context, is a positive contribution to fill a gap in the literature offering valuable insights for future comprehensive and rigorous research on the variance in the outcomes of Lean intervention in healthcare. Furthermore, the study allows for a more in depth understanding of the contextual enabling patterns in nurturing system-wide Lean adoption within healthcare work system by highlighting the critical interrelated factors that hospital managers need to take into account when implementing such quality improvement approaches. Indeed, changes made on the organization triggered to introduce Lean approach should not be developed in isolation but in a collaborative and integrated manner, since overlooking the interplay among different organizational dimensions may lead to an early collapse of the initiative.

## Scaling Care. An Analysis of the Structural, Social and Symbolic Dimensions of Scale in Healthcare

[Jeroen Postma](#)

*Erasmus University, Rotterdam, the Netherlands*

### Context

Scale of care is a much-debated topic in media, the political arena and boardrooms of healthcare organizations in many countries. And the expectations are high: either 'upscaling' or 'downscaling' is assumed to contribute to more efficiency, integrated care, patient satisfaction or quality of care. This dissertation focuses on empirical cases of four developments in the Netherlands in which scale plays an important role: (1) mergers between healthcare organizations, (2) de-institutionalisation of long-term care, (3) decentralisation of care from the state to municipalities and (4) concentration of hospital care. Central are the tensions between expectations and realities of (changes in) scale.

### Methods

The dissertation is based on a combination of quantitative and qualitative research. First, I conducted a survey study among 239 healthcare executives to analyse motives for mergers between Dutch healthcare providers. Second, I performed a critical discourse analysis of 867 Dutch newspaper texts over the period January 1990 – June 2014 to study how scale is discussed in the media. Third, I interviewed managers and professionals and conducted observations to study scale in daily healthcare settings that are influenced by policies of de-institutionalisation, decentralisation and concentration of care. Together with fellow researchers, I interviewed 38 professionals in home care and emergency care, 17 middle managers in long-term care and emergency care and 13 executives in long-term care. Furthermore, we conducted a total of 119 hours of observation in emergency care settings. The observations included about 30 ethnographic interviews with managers and professionals.

### Results

The survey study showed that merger processes are influenced by developments in health policies (especially the increasing pressure from competitors, health insurers and municipalities) and personal dynamics between key actors (e.g. the compatibility between executives and the amount of support from non-executive directors). The discourse analysis of newspaper texts revealed four narratives about scale, each with their own values and ideas on how care should be organized: the human scale, the professional scale, the business scale and the system scale. The qualitative studies in long-term care, home care and emergency care revealed micro-level processes of 'scalar work' that is performed in response to changes in scale that are initiated on a macro-level. Managers and professionals adapt scale of care to what is needed in daily practice (e.g. by engaging in network collaboration); showing that there is no 'one scale fits all' in healthcare but a variety of 'good scales'.

### Discussion

Throughout the empirical cases, three dimensions of scale emerge. Scale as structure (1) points to scale as something tangible and measurable, e.g. the number of patients or the turnover of a hospital. The term scale also stands for space for social action (2), i.e. a site where managers, professionals and patients interact and where care is provided. Scale as symbol (3) comprises the rhetorical use of scale which conveys ideological views on how healthcare should be organized (e.g. 'bigger is better' versus 'small is beautiful'). Changes in the one dimension of scale impact the other dimensions. For example, a merger not only changes the legal boundaries of organizations, but also has an effect on social interactions and the symbolic meaning of the organizations. By understanding changes in scale as a three-dimensional combination of structural, social and symbolic changes, we are better able to understand how scale and care are related.

## Get Moving! Self-Management Support Using Mobile Technology

Sanne van der Weegen<sup>1,2</sup>, Renée Verwey<sup>1,3</sup>, Marieke Spreeuwenberg<sup>1,3</sup>, Huibert Tange<sup>1</sup>, Trudy van der Weijden<sup>1</sup>, Luc de Witte<sup>1</sup>

<sup>1</sup>Maastricht University, CAPHRI, Maastricht, the Netherlands, <sup>2</sup>Vilans, Utrecht, the Netherlands, <sup>3</sup>Zuyd University of Applied Sciences, Heerlen, the Netherlands

### Context

Increasing physical activity is an important element of health management in our current society. For many years, primary care providers, like general practitioners, and practice nurses face this challenge with their patients. The optimization and application of eHealth tools can improve care provider's coaching role and re-invent care. The objective of the It's LiFe! project was to develop, test and evaluate a self-monitoring- and feedback tool and a counselling protocol to stimulate physical activity. The aim was to evaluate if technology could reinforce conventional physical activity promotion.

### Methods

First the It's LiFe! tool was developed in close collaboration with patients (COPD and type 2 Diabetes) and care professionals in a user-centred design process. The developed tool consists of a 3D accelerometer (the MOX), a smartphone application, and a website for the patient and practice nurse. The counselling protocol consists of 3-4 consultations with the practice nurse in 4-6 months. The patients and practice nurse have access to the activity data at all times. Second, all parts of the tool were evaluated in a usability study both in a laboratory setting and in daily living. Third, the new developed accelerometer the MOX was compared to a 'state of the art' accelerometer (the ActiGraph GT3X). Finally, the effectiveness of the complete It's LiFe! intervention was investigated in a cluster randomised controlled trial. Alongside the trial, a process evaluation was performed using a mixture of quantitative and qualitative research methods.

### Results

The three-armed cluster randomised controlled trial in twenty four family practices revealed that the entire intervention (tool + counselling) resulted in more physical activity directly after the intervention than care as usual (mean difference 11.73 minutes, 95%CI 6.21 to 17.25;  $P < 0.001$ ), and the counselling only (mean difference 7.86 minutes, 95%CI 2.18 to 13.54;  $P = 0.003$ ). Three months after the intervention this effect was still present and significant (compared to care as usual: mean difference 10.59 minutes, 95%CI 4.94 to 16.25;  $P < 0.001$ ; compared to counselling: mean difference 9.41 minutes, 95%CI 3.70 to 15.11;  $P < 0.001$ ). The process evaluation revealed that the patients who received the tool and counselling were more satisfied with the intervention than the patients who only received the counselling.

### Discussion

The use of an eHealth tool as a part of a health management program proved to be an effective way to stimulate physical activity. Counselling without the tool was not effective. Implementation of this intervention on a larger scale, under more tailored conditions, in other target groups and by other care professionals are promising venues to explore. Health management should be a close collaboration between the patient and care provider and should not be limited to the consultation room. eHealth tools are a promising way to tailor health management to the individual, improve collaboration between patient and care provider and extend coaching to daily life situations of the patient.

Wednesday 15 June

11.00-13.00

**Special Interest Group (SIG) on Best Practice in Management**

## Process Optimization in the Emergency Department: Impact of Innovative POCT Devices on Efficiency and Effectiveness of the Treatment Process in Emergency Departments

[Wilfried von Eiff<sup>1,2</sup>](#)

<sup>1</sup>HHL Leipzig Graduate School of Management, Leipzig, Germany, <sup>2</sup>CKM - Center for Hospital Management, Muenster, Germany

### Context

In many German hospitals, emergency departments (ED) suffer from "crowding effects" caused by a yearly increase of patients' demand for emergency services by 7 %. Up to 18 % of ED patients suffer from "non-specific thoracic pain". 70 % of this group needs two troponin tests (cTn) for appropriate treatment. However, the average length of stay (ALOS) of acute coronary syndrome (ACS) patients varies between 3 and 7 hours. One reason for this uncontrolled situation is the high variation in the turn-around-time (TAT) of test results fluctuating between 42 and 121 minutes: a non-controlled process with blockade of ED resources.

### Methods

This study aimed to clarify to what extent a POCT-solution for troponin tests contributes to avoiding crowding effects and to reducing the ALOS. Additionally, the impact of how an investment into POCT pays off in terms of reducing staff workload and containing costs was examined.

A randomized single-centre trial was conducted at a university-affiliated hospital with 68.734 ED patient visits per year. In the first study phase, cTn measurement of patients with suspicion of NSTEMI-ACS was performed in a central laboratory setting (62 patients). During the first week after having implemented the POCT-solution for cTn, another 46 patients were observed in terms of therapeutic turn-around-time (tTAT) and LOS in the ED (second phase). The third phase, Six months later, included 48 patients. Again, tTAT and LOS were measured. The economic relevance of a POCT investment was proved by using a resource scheduling and smoothing programme and queuing theory approaches.

### Results

The POCT solution was associated with an accelerated availability of cTn test results (central lab: 70 min; POCT: 14 min), a shorter time to physician notification (92 min; 22 min), a shorter time to clinical decision-making (110 min; 40 min) and a reduced ALOS by 70 minutes. Furthermore, calculatory cost savings of 178 Euro per day could be verified. Also, there was an exoneration of ED capacity equal to the service capacity needed for seven patients. The resource levelling effect was the economic value of an avoided investment of 138,000 Euro.

### Discussion

POCT for cTn measurement has clinical relevance for ED patients with "non-specific thoracic pain" especially for high-risk patients with a low suspicion of ACS ("late responders"). POCT contributes to reducing "crowding effects" and containing process costs.

A change of setting from central lab testing to POCT in fact means a shift of workload from lab to the ED-staff. The employees' motivation to use a new implemented technology as a part of a new workflow organization is crucial to achieve a high level of effectiveness and efficiency. Its level could be leveraged if additional parameters critical to therapy could be measured by POCT (e.g. CRP, DD, CK-MB). In addition, change management efforts are needed. And it is highly recommended to shift responsibility for periodic calibration of POCT devices to central lab staff in order to disburden ED-staff from non-clinical duties.

## A Telephone-based Disease Management Intervention for Patients with Chronic Obstructive Pulmonary Disease: A Multicentre Randomized Control Trial

Michael Högberg<sup>1</sup>, Gustaf Edgren<sup>2, 3</sup>, Alejandro I Marcano<sup>3</sup>, Martin Magnusson<sup>4</sup>, Bo Billing<sup>5</sup>, Birger Forsberg<sup>2, 6</sup>, Joachim Werr<sup>3</sup>, Gunnar Öhlén<sup>7</sup>, Tommy Skau<sup>4</sup>

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### Context

Chronic obstructive pulmonary disease (COPD) is a major cause of morbidity, representing the third leading cause of death worldwide. The economic burden of COPD is sizable. Recognizing the clinical burden and that COPD drives a large fraction of preventable utilization of healthcare resources, a more structured approach for management is warranted. Disease management interventions have shown promise in managing COPD and the use of telephone-based programs provides clear advantages but has not been well studied for this disease. Our purpose was to evaluate if a telephone-based patient management protocol for COPD is able to reduce healthcare consumption.

### Methods

The intervention consisted of a nurse led, telephone-based disease management protocol. Our hypothesis was that patients who received the intervention would have unchanged or improved quality of life and a decreased utilization of healthcare compared with patients not receiving the intervention. The study was conducted in two counties in Sweden. Ethical approval was obtained. Patients were randomized according to Zelen's design, where all eligible patients are randomized and only patients who are allocated to the intervention group are asked for consent. Outcomes included number of hospitalizations, outpatient and emergency visits, total costs, and hospital days. Health outcome was measured with SF-36 during the study period. Patients with recent COPD exacerbations were included and were followed from the date of randomization until end of follow-up (1 March 2015), death, or for a maximum of 24 months. Only intention-to-treat analysis was performed. Statistical analysis was performed with both parametric and non-parametric tests.

### Results

Between 2011 and 2014, 3712 patients were randomized, 2401 (65%) to the intervention group and 1311 (35%) to the control group. Among patients in the intervention group there was a 5% decrease in overall rate of hospitalizations (95% confidence interval [CI], 1-10%), a decrease of 8% in unplanned admissions (95% [CI], 3-13%) and a 6% increase of overall outpatient care (95% CI, 4-8%) compared to the control group.

Health outcome improved for intervention patients but the difference was not significant. Nurse training program was successful and overall, patients were satisfied with the support. Reduced average number of hospital days was not significant and with a small number of patients having extreme healthcare costs, reductions of healthcare consumption did not translate into any significant cost reductions. Overall, the average cost in the intervention group was €15,861 and €16,613 in the control group resulting in a cost difference of €752 (-4.5%; p=0.61).

### Discussion

Our study provides evidence that a telephone-based nurse intervention can be successfully implemented on a large scale and lead to reductions in the frequency of hospitalizations but concurrently increases in the rate of outpatient visits. The randomization design has likely contributed to an underestimation of our results, including for average costs and number of hospitalization days which exhibited extreme skewedness and were not significantly different in the intervention and control groups. In order to successfully implement this type of intervention there are three major points to consider: i) adequate patient selection (excluding patients that would receive no potential benefit); ii) appropriate nurse training and; iii) a tailored, case-by-case approach. The study was conducted over a period of four years and is consequently the largest trial of a telephone-based disease management intervention for patients with COPD in the literature to date.

## Where Have All our Midwives Gone? A Multiple Case Study of Business Model Changes in Perinatal Care

[Pamela Mazzocato](#), [Isis Amer-Wåhlin](#), [Carl Savage](#)  
*Karolinska Institutet, Stockholm, Sweden*

### Context

The purpose of this study was to contribute to an understanding of business models in perinatal care. We explored the business models of a publicly financed Swedish regional health care system in which traditional hospital-based clinics co-existed with alongside-hospital birth centres. Into this mix, a new, publicly financed but entirely privately owned and freestanding birth center was introduced. The aims were: To characterize the business models of all the perinatal clinics and to explore how the establishment of a new privately run and freestanding birth center influenced the existing clinics in a system traditionally dominated by public providers.

### Methods

This study is an exploratory multiple case study. The unit of analysis was the business models of eight perinatal clinics in the regional health care system in Sweden. The Business Model Canvas with its nine components was used for data collection and analysis. Data collection included semi-structured interviews, study visit observations, and document analysis. Interviews were conducted with the managers and head midwives of each clinic. Eleven clinical managers and midwife managers (for some clinics, the manager was the head midwife) were interviewed. Interviews were transcribed verbatim and a deductive qualitative content analysis was performed. Meaning units were extracted from the transcriptions and then categorized according to components of the Osterwalder business model canvas. Interview data was combined with data from documents and field visits.

### Results

Three categories of business models were identified. Category I included clinics A (the new privately run freestanding center) and B. They exhibited a passion for breaking new ground in their field and placing themselves at the cutting edge of perinatal care. Category II was made up of clinic C. By its very existence, this clinic helped to preserve the well-being of the local community, providing a safety net, and kept the vulnerable community intact. Category III consisted of clinics D-H. They took on the role of "responsible" clinics that served all patients regardless of cost or complexity.

The opening of the new clinic led to an increased need of staff within the local system, resulting in a "staff carousel". Other direct consequences of these changes were the reduction of patient flow at all other clinics, which in combination with staff shortages led to the closing of delivery rooms.

### Discussion

The introduction of the freestanding clinic had a drastic impact on staff retention and work environment, and reduced patient volumes at the existing clinics. We found only a few examples of active learning from each other and there was no evidence of changes in the business models of the existing clinics.

Business models in perinatal care are not explicitly designed nor recognized beyond the cultural traditions of each clinic which is rooted in their unique tradition and history. Business model thinking has therefore the potential to help perinatal clinic managers to more proactively involve themselves in their organizations ability to develop value for patients and meaningful work environments for their staff.

Wednesday 15 June

14.30-16.00

**Parallel Session: eHealth and Digital Healthcare**

## The Big Bang Theory - The Homerton Hospital UK Goes Digital over a 24 Hour Period

[Helen Pardoe](#), [Kathy Adams](#), [Kat Eigener](#), [Danna Millett](#), [Luisa Cabrero-Moreno](#), [Sheila Adam](#), [Liz Sheehan](#)  
*Homerton University Hospital, London, UK*

### Short Paper

This short paper describes some of the process, successes and failures of converting a 400 bed hospital from traditional paper based records to full digital documentation for inpatients. The vision for the hospital was to enhance patient safety by using modern technology to revolutionise patient documentation. Bedside observations, clinical notes and prescribing became fully digital. Medical devices were to be connected via Wi-Fi for direct acquisition of observations. The contract was agreed with the technology provider in September 2013.

After designing the governance structure, experienced clinicians were appointed to lead the project including experienced nursing and allied health professionals and doctors. From February 2014 system development, hospital staff engagement and work with the technical teams progressed. The system was tested by a large number of hospital employees and all staff trained. Three months before go live the hospital focus shifted to project launch (A delay of 3 months from original date planned).

Go live occurred over a weekend in July 2015. The roll out progressed after a test ward as a wave through the hospital supported by additional clinicians and support staff. A team of doctors and pharmacists converted paper drug charts to the electronic system and digital records commenced. A few technical issues were highlighted however the roll out continued as patient safety was not compromised. Digital conversion commenced at 8am and was complete by 7pm.

The roll out has been successful and 6 months later inpatient medical, nursing and allied health professional documentation is within the same electronic patient record. We have improved safety in prescribing, and legibility of patient records has reduced errors in communication. We have achieved an accurate timeline of care delivered. Vital signs are recorded and the NEWS score automatically generated.

We were unable to achieve a few objectives. Integration of direct acquisition of vital signs was not ready by the time of nurse training and 6 months after go-live manual data entry continues. We have been unable to digitally record hospital processes needing patient signatures. Paper based records are still needed for cardiology reports and endoscopy reports.

Key factors in the success of the birth of our digital hospital were clinical leadership and a clear focus on patient safety. Other factors were a well-run training schedule for staff and the expert floor walking team. We would recommend a "Big Bang" approach to roll out without major adjustment to daily working practice to develop the digital skills in the workforce as quickly as possible. The baseline familiarity with digital technology in the UK population contributed to the success of the project. We would encourage hospitals to take the plunge in a bold way and reap the benefits of electronic patient records.

## The Digital Transformation of Healthcare Services is Challenging New Business Models

[Luís Velez Lapão](#)<sup>1,2</sup>

<sup>1</sup>*Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Lisbon, Portugal,* <sup>2</sup>*WHO Collaborating Center for Health Workforce Policy and Planning, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Lisbon, Portugal*

### Context

For many decades most telemedicine/eHealth projects were mainly deployed as pilot/research programs. Although the hype and the proven fact that it adds both clinical and economic value, the reality is that most cases did not reach routine-care, i.e. transformation. Several reasons are recognized as being responsible for that. Budget limitations and the lack of a proper business-models are the primary. The Momentum project, a thematic-network partially funded by the European-Commission, coordinated by EHTEL, and with the involvement of EHMA, has addressed this problem. There is a need to developed new business-models that better address the digital transformation challenges of today.

### Methods

The methodology used combines a literature review and the application of a survey to identify both TM development barriers and opportunities, and business-model issues (strategy, management, services, financing, etc.). This survey was applied in almost all European countries reaching the most significant TM cases. From this survey a set of good examples was chosen for further study. Here, the focus will be on business-models issues. The business-models used by these cases were analysed within the context of a maturity matrix developed to enable proper analysis; and to identify barriers and the necessary steps required to support the leap to routine care. The conditions required reaching successful deployment and what to avoid were carefully assessed. Among many issues, the importance of procurement and commissioning in the process is evaluated, as well as if the diffusion process depends upon the topology of TM services or on the innovation-skills of the people involved.

### Results

The most frequent TM/eHealth failure reasons are known: Lack of clear objectives (confusion between services and technology); Lack of leadership and coordination; Lack of training, more on the business and organisational side; Lack of business models (incentives, reimbursing schema); Lack of integration with the routine services. Moreover, it was found that this is a private and public health services phenomenon, as it is an international problem.

From the successful cases analysed there are mainly two different situations: either the TM/eHealth services is the continuity of previous services (only using TM/eHealth to extend it, like radiology or haemodialysis) or are new TM/eHealth services integrated in healthcare networks simply assumed as beneficial. It is very exceptional to have a business plan or reimbursing schemes supporting the decisions. Most of the TM/eHealth managers believe in their "non-existent" business-models, probably feeling that with more time and experience an innovative business-model will emerge.

### Discussion

Momentum, and other projects, have shown the importance of management, leadership and business-models in the development of TM/eHealth services. It is therefore important to understand how to develop TM/eHealth, considering that TM/eHealth is an important and relevant channel to reach digital transformation of healthcare services (with suitable use of technology, costs optimization, enabling quality improvements, supporting the empowerment of patients, etc.). However, are we sure to have the managers on-board with the right skills to tackle the challenges of launching TM/eHealth services? Are business-models incorporating real value in patients' lives? How can proper TM/eHealth planning make it possible? TM/eHealth services should be looked as a process requiring a business-model and an appropriate leadership and regulations, and the access to ease of use and low-cost technology. The learning from successful cases could further elicit to define a "Blueprint", as a set of guidelines, which will improve the odds of TM/eHealth services.

## Scaling up eHealth in Public Healthcare Systems: Sharing of Risk and Goals as Key Strategy for Sustainability

[Sabina De Rosis](#)

*Sant'Anna School of Advanced Studies - Institute of Management - Laboratory of Management and Healthcare, Pisa, Italy*

### Context

The diffusion of eHealth has increased in Europe because it's expected to contribute in tackling actual challenges for healthcare systems. However, it also imposes challenges, due to its: low diffusion and replicability; difficulty to sustain them in the long period; barriers related to the financing of innovation both in demand- and in supply-sides; dependence on local context. Financing models widely affect eHealth sustainability in the actual resource constrained environment. In sectors like as healthcare, the public actor may be the more important "buyer" and the public procurement could create opportunities for demanding innovative solutions from the private sector.

### Methods

The aim of this research is to understand (i) how public financing models may contribute to deployment and scaling-up of eHealth supporting innovation from private sector in public healthcare system for long-time, and (ii) if it is possible to draw insights and lessons also from experiences in other sectors.

Both an inductive and an exploratory research method were followed. The inductive research method was based in a case study, carried out in the Region of Tuscany (Italy) between September 2014 and March 2015. A multi-level and multi-stakeholder sample of 28 key informants was interviewed. Verbatim transcripts were analysed using the software ATLAS.Ti 7. The exploratory research method was mostly based on reviewing academic literature, "grey" literature and international agencies' reports on main public financing models, in particular public procurement processes but also financing models from other sectors or for other typologies of innovation. Financing models were compared.

### Results

Informants reported determinant factors of financing models success or failure mainly as impeding factors mainly at organisational and contextual levels, and related to two domains: vision & strategy, and financing models. In the latter domain, barriers were described in terms of: phase of the innovation process (too much focus on the first phases); type of project financed (primarily research projects); mechanism (only push); level of the financing source (mainly European sources and lack of national funds).

The analysis of financing models from both peer-reviewed and "grey" literature was realised on the basis of results from the case study. Each model presented some innovation-oriented characteristics, related for example to knowledge creation or market diffusion. It seems that a unique model which meets all the stakeholders' expectations doesn't exist. According to our results, some strategies are presented to fill-in the gap between what is possible and what is actually done.

### Discussion

The "public payer" could be a key lever to innovate, but only overcoming paternalistic approaches or governmental stewardship. Learning lessons from the Health Impact Fund, the venture capitalism, and direct collaborations with the private sector, a financing strategy is proposed, based on a risk- and goal-sharing model. For creating value for all, the evidence gap and the financial needs could be addressed with a push mechanism of funding, which in part pays for performance. The performance could be measured in terms of goals. Investments should take into account the need to finance and manage solutions and partnerships during their life-time, and to sustain changes in healthcare organisations. Private sector as well as users should participate in eHealth design and provision. A transversal eco-system should be in the middle of this strategy and financing models should be defined on the basis of this co-production approach.

Wednesday 15 June

14.30-16.00

**Parallel Session: Planning And Management Models I**

## How to Enact Resilience and Positive Health?

[Annemiek Stoopendaal](#)

*Erasmus University, Rotterdam, the Netherlands*

### Short Paper

Resilience is a new and generative concept in healthcare. Healthcare organizations are considered as complex adaptive systems, full of self-organizing, rich relationships that cannot exist without improvising. Patients can also be considered as complex adaptive systems. Healthy living asks for improvising within the limits of life, asks for resilience and a more positive framing of health.

Despite these conceptual developments, health policy and regulation still seem to be predicated on a linear perspective where regulation is based on work as it is imagined (WAI) in structures and guidelines, and not how work is done (WAD) in a more realistic, improvising manner. Wildavsky (1988) used the concept of resilience, describing it as a strategy to cope with uncertainty and surprises. Recognizing the limitations of the linear perspective, an important change has emerged in coping with safety in healthcare: a shift from safety 1 to safety 2. Whereas safety 1 is reactive, technocratic and focusses on negative events, safety 2 is proactive, focusses on actions, relations and things that go right. Hollnagel et al. (2013) introduced 'resilient healthcare' considering failure and success as two sides of the same coin. Safety 2 tries to understand safety as it is performed in everyday healthcare practices where healthcare workers have enough room -self organizing/management- to create adaptive practical knowledge that is considered to make their organization resilient. Mesman (2008) used the concept of 'exnovation' to emphasize the resources of strength that health professionals can use to improve their daily practices. Moreover, regulation still focuses on what goes wrong, instead of looking at what goes right and why. Walshe & Shortell (2004) coined the term 'developmental regulation' to point at other possible 'resilient' ways of regulation.

The conceptual development of resilience reflects in the micro. In 2011 Huber et al. challenged the WHO definition of health, formulated in 1948, that describes health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Huber et al. argue that this negative definition of health does no longer fit for purpose given the rise of chronic disease. They proposed to frame health as a more dynamic, positive concept. Rather than putting limitations on a person's functioning, 'positive health' puts emphasis on resilience and the potential in people.

What does this 'positive turn' mean for healthcare? Can those concepts change healthcare practices? HOW TO organize health care consequently in order to reach resilience?

In a master thesis group, five students explored the 'positive turn'. The analysis of five empirical explorations in the fields of care & cure will be presented to show what professionals, organizations and/or regulators already do in their daily work to enact adaptation, self-management and resilience.

## The EFQM Model as a Framework for Total Quality Management in Healthcare: Results of a Longitudinal Quantitative Study

[Steffie van Schoten](#)<sup>1</sup>, [Carolien de Blok](#)<sup>2</sup>, [Peter Spreeuwenberg](#)<sup>1</sup>, [Peter Groenewegen](#)<sup>1,4</sup>, [Cordula Wagner](#)<sup>1,3</sup>  
<sup>1</sup>NIVEL, Utrecht, The Netherlands, <sup>2</sup>University of Groningen, Groningen, The Netherlands, <sup>3</sup>VUmc, Amsterdam, The Netherlands, <sup>4</sup>Utrecht University, Utrecht, The Netherlands

### Context

To guide organizations towards Total Quality Management (TQM), various models have been developed such as the European Foundation for Quality Management Excellence Model (EFQM Model). This paper is a longitudinal investigation of whether the EFQM Model can serve as a framework for TQM in healthcare.

### Methods

Data on a national representative survey about quality management (QM) in the hospital population in the Netherlands were used to conduct this study. The survey had five measurement points between 1995 and 2011.

### Results

The results of our study show that applying the EFQM Model in hospitals is related to improvement in organizational performance over time, a feedback loop in which hospitals use their results to further improve their organizational processes is established, and improvement is stronger when all the model's elements are considered simultaneously. The results of our study can be applied by quality managers of healthcare institutions to achieve higher quality of care.

### Discussion

Previous research on the relationship between the EFQM Model and TQM neglects two essential characteristics of the TQM philosophy, namely the holistic perspective on QM and the presumed feedback loop of organizational performance that feeds a cycle of continuous quality improvement (QI). Our study provides new insights into the long-term benefits of applying the EFQM Model as a framework for TQM in healthcare.

## Barriers to Lean Implementation in Hospital Settings: a Survey near Professionals

Rui Cortes<sup>1,2</sup>, Luis V Lapão<sup>1</sup>, Ana M Silva<sup>1</sup>

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### Context

Lean in healthcare is being expanded all over the world, from US to Europe and mainly in hospital settings. One of the reasons for this is linked with how critical is to improve quality and efficiency in healthcare, reducing waste, optimizing resources and improve the patient-flow. One of the distinctive factors of Lean is the way professionals are engaged in the improvement process. Although recently strong evidence emerged in lean healthcare, there are still clear barriers in its implementation, therefore it is important to identify those barriers to be able to properly plan a successful Lean implementation.

### Methods

Twelve Lean implementations were study during 2015. Before each Lean implementation, a meeting was organized to identify the main barriers to LEAN implementation considering each hospital context. The twelve LEAN projects took place in different departments (5 Pharmacy, 3 Surgery Room, Purchase process, 2 Oncology day hospital, Paediatric emergency room). The same questions were asked again to identify (and recheck) barriers experimented by the professionals during Lean implementation.

The projects were developed using a LEAN tool named "Rapid Process Improvement Workshop". The whole process took between 5 to 7 team-work sessions, adding the time spent in the "gemba walk" as the initial observational study. All the teams were multidisciplinary and didn't have any previous LEAN knowledge. Four (out of twelve) of those projects had top management members presented in some sessions. The remaining had the department (middle) manager participating.

### Results

In the first questionnaire, four barriers received higher responses: a) lack of organizational culture, b) no or little understanding of LEAN added value, c) no top management engagement and d) lack of allocated time. This sort of responses indicate a low level of organizational maturity towards process quality improvement.

After the projects implementation a second questionnaire was proposed to the participants, and the following barriers were identified: lack of time, no organizational culture, lack of communication between professionals, but also, no shared information, and lack of human resources.

### Discussion

-Even in the context of an economic crisis time, with health professionals suffering wage cuts (about less 20%), and along with this some lack of motivational, across all the projects, most professionals openly accept the challenge to be engaged in a Lean process. They were often enthusiastic. This effort show that, at the end of the projects, how difficult is to engage an organization in quality improvement projects. The Lean implementation guidance throughout the process was critical to maintain the motivation.

Additionally, the LEAN training and awareness sessions focused on top and medium management roles was beneficial, in order to provide them with the understanding about how critical is to allow health professionals to allocated specific time to dedicate to process improvement activities.

Wednesday 15 June

14.30-16.00

**Parallel Session: Patient Empowerment and Centeredness I**

## Effects of the Modularisation of a University Hospital Outpatient Care Unit

Katariina Silander<sup>1,2</sup>, Paulus Torkki<sup>1</sup>, Minna Kaila<sup>2,3</sup>, Maija Tarkkanen<sup>3,2</sup>

<sup>1</sup>Aalto University, Espoo, Finland, <sup>2</sup>University of Helsinki, Helsinki, Finland, <sup>3</sup>Helsinki University Hospital, Helsinki, Finland

### Context

Modularisation and mass customisation are seen to be potential means to develop healthcare provision towards patient-oriented care by increasing customisation and simultaneously utilising advantages of mass production and standardisation. At present, empirical healthcare modularisation studies are scarce and most of the present studies focus on elderly or mental care. Studies of modularisation in specialised healthcare are limited. Similarly, only limited knowledge exists of the effects of modularisation on healthcare provision. This study focuses on comparing hospital usage of haematological patients before and after the modularisation of an outpatient care unit in Helsinki University Hospital, Finland.

### Methods

This quantitative study compares performance before and after modularisation and studies the effects of modularisation. The intervention in the study is the modularisation of an outpatient care unit. Data before the modularisation of the unit during years 2009-2010 and after modularisation during years 2013-2014 was obtained from the Helsinki University Hospital information system. Before the new outpatient care unit, haematological outpatient care patients were treated in wards or in the haematology outpatient clinic. The new outpatient care unit in the university hospital was founded in November 2010 to fulfil outpatient care need of different specialties and hosts approximately 16,000 annual treatment sessions and small procedures. Haematology ward (inpatient) and outpatient care usage before and after modularisation was compared. Additional performance measures were: Length-of-stay, inpatient episodes and productivity. An operational model was built to describe the re-engineering of operations in haematological care provision using interviews of personnel and management.

### Results

The study reveals that treatments and procedures that were carried out in the outpatient care unit were standardised (minimum annual volume 20) and clear rules of patient selection to outpatient care unit were documented. Overall, inpatient days have decreased 4% after modularisation between 2009 and 2014. This was mostly due to the decrease in 0-netday ward days (60% decrease) and 1-netday ward days (25% decrease) as these treatments and procedures can be carried out in the new outpatient care unit. At the same time outpatient treatments and procedures that were earlier carried out in the haematology outpatient clinic have increased in the outpatient care unit. Preliminary results indicate increase of productivity. The re-engineering of haematology care provision enabled the decrease of ward capacity.

### Discussion

Present healthcare modularisation literature lacks before-after research frames hindering the possibility to measure the effects of modularisation. This is the first study in healthcare modularisation to focus on the effects of modularisation in outpatient and inpatient hospital bed use. In the light of this study, modularisation can be seen as a means to develop healthcare. This study reveals effects of healthcare modularisation in a complex hospital surrounding in a specialty with large volumes of treatments and procedures requiring hospital care. The results indicate that modularisation may decrease the need of inpatient care as outpatient care can be carried out more efficiently in a standardised outpatient care unit. Altogether the generalisability of the results to other healthcare sectors and specialties and the attainment of more knowledge on healthcare modularisation effects require future research.

## The European Commission Initiative on Breast Cancer: A Model for Involving Patients and Stakeholders in the Development of a Person-Centred Healthcare

[Luciana Neamtiu](#), [Liisa Pylkkanen](#), [Cristiano Gusmeroli](#), [Asli Uluturk](#), [Zuleika Saz-Parkinson](#), [Silvia Deandrea](#), [Anke Bramesfeld](#), [Donata Lerda](#)

*Joint Research Center, European Commission, Italy*

### Short Paper

In Europe, breast cancer is the most frequent female cancer. There are substantial differences in incidence, mortality, prevalence and survival within and among countries in Europe. Although higher mortality rates may reflect higher incidence of breast cancer, in some countries they are due to lower survival of women with breast cancer. These differences suggest the presence of health inequalities among countries.

To contribute improving health and reducing health inequalities in Europe, the Joint Research Centre was assigned by the Directorate-General for Health and Food Safety with the task of coordinating the European Commission Initiative on Breast Cancer (ECIBC).

ECIBC main tasks are:

- a. To develop a voluntary European quality assurance (QA) scheme for breast cancer services covering all care processes based on the EU legislative framework on accreditation and underpinned by the evidence provided by guidelines
- b. To develop a new version of the European guidelines for breast cancer screening and diagnosis based on new knowledge and evidence and a platform of high-quality evidence-based guidelines covering all processes of breast cancer care.
- c. To develop a concept for the training of professionals in breast cancer screening in which a web-based training is also envisaged.

Preparation for the ECIBC included two consensus building workshops with (1) experts and (2) countries' delegates. In addition, several European surveys were conducted to gather information on the status and organisation and quality assessment of breast cancer services. To ensure the feasibility and adoption of the ECIBC deliverables in all countries, National Contacts were nominated. Also two working groups have been set up.

The ECIBC is built upon the principles of sustainability, continuity and the transparent inclusion of experts and stakeholders to develop a project that will have an impact on breast cancer care in Europe. The ECIBC is using multi-disciplinary approach with the person at the centre of the process. What is unique and new is that it will encompass all stages of the breast cancer care pathway, from screening and, diagnosis to end-of-life care.

These principles were translated into reality in the development and publication of the ECIBC web hub, the main interface with stakeholders: it is designed to serve different end-users (such as citizens, professionals, managers) and is as well the tool presenting the project deliverables.

For example, though the web hub the breast cancer services certified according to the QA scheme will be searchable via easy-to-use tools and end-users will be able to make an informed choice.

The aim of this presentation is to report the methodology and approach applied for the development of the ECIBC web hub as an example of an interface thought for transparently embrace science and citizens needs into a person-centred and European initiative.

Wednesday 15 June

16.30-18.00

**Parallel Session: Regulation and Commissioning**

## Who Deserves Care? Opinions of Policy Makers and the Population Compared

Maartje van der Aa<sup>1</sup>, Mickaël Hiligsmann<sup>1</sup>, Aggie Paulus<sup>1</sup>, Silvia Evers<sup>1,2</sup>

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### Introduction

Social health insurance (SHI) ensures access to healthcare services by arranging collection and redistribution of resources. The social dimension of these arrangements consists of the fact that they provide care to those in need almost unconditionally, which is highly solidary. This is based on the idea that individuals are not to blame for an illness and neither for subsequent needs. Increasing expenditures and increasing knowledge on the role of lifestyle in the development of diseases put unconditionality of solidarity under pressure.

In the Netherlands, conditioning of SHI is debated upon. Conditioning can broadly take place on either the coverage or financing dimension of SHI. In other words, healthcare access or insurance contributions can be made dependent on conditions, such as lifestyle and financial capacity. Different stakeholders (such as policy makers and the population) have different opinions on the importance of different conditional criteria. The main goal of our research is to identify these opinions.

### Methods

A Discrete Choice Experiment (DCE) was conducted among policy makers and the general population to assess their preferences for deservingness criteria. In the DCE, respondents were asked to choose iteratively which of two hypothetical care-seeking individuals, described by their characteristics (attributes), was most deserving care. Based on literature and expert interviews, we selected five attributes: need, financial capacity, lifestyle, cooperation and premium/package choice. Random parameter models were used to assess relative importance of attributes among both policy makers and the general population. Further, preferences of both populations were compared in a joint model using interaction terms.

### Results

The general population (n=345) showed preferences for more conditional attributes compared to policy makers (n=70). Need is the most important attribute for both policy makers and the general population. However, whereas need explains policy makers' decisions for 50%, this is only 30% for the general population. As a consequence, the population sample assigned higher importance to the conditional attributes - financial capacity (23% versus 16%), lifestyle (19% versus 15%), cooperation (19% versus 13%) and premium/package choice (10% versus 5%). Based on the interaction model, these differences turned out to be significant for need ( $p < 0.01$ ), financial capacity, lifestyle (both  $p < 0.05$ ) and cooperation ( $p < 0.10$ ), but not for premium/package choice.

### Discussion

The population prefers stricter conditioning of SHI compared to policy makers, who present them in the policy making process. This may be explained by the functioning of a mandate democracy, as well as the political realities of concessions to reach consensus. However, differing views between policy makers and the population could also indicate that democratic legitimacy is at stake, which affects success of policy decisions as well. From this perspective, it would be beneficial to involve the population in the policy process, which may be achieved through deliberative democracy.

## Reaching Goals of Managed Competition? The Challenge of Free Health Plan Choice

Romy Bes<sup>1</sup>, Emile Curfs<sup>2</sup>, Peter Groenewegen<sup>1</sup>, Judith de Jong<sup>1</sup>

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### Context

In the last decades, several countries have implemented a health care system based on managed competition. In such a system, health insurers are supposed to be prudent buyers of care on behalf of their enrollees. Selective contracting and channelling patients to contracted care providers is important, since it provides health insurers with a good bargaining position in negotiations with care providers. Although restrictive health plans are cheaper, enrollees generally resent restrictions in provider choice. The aim of this study is to explain enrollees' choice for a restrictive health plan in exchange for a lower premium.

### Methods

In 2014 a survey was conducted on members of the Insurance panel (response 78%; n=3.417). In this survey enrollees are confronted with three choice sets, where each time, they had to choose between two health plans.

### Results

The results show that 37,4% of enrollees are willing to choose a restrictive health plan in exchange for a lower premium. When the restrictive health plan option also included a longer travel time, the number of people choosing the restrictive health plan decreased to 22%. Enrollees who choose a restrictive health plan are younger and healthier than enrollees who prefer a non-restrictive health plan. Also, lower income individuals more often choose a restrictive health plan.

### Discussion

In a system of managed competition, it is crucial that enrollees who actually need care choose restrictive health plans, since otherwise health insurers are not able to channel patients to contracted providers. This study shows that in the current situation, restrictive health plans are unattractive for older and more unhealthy enrollees. This means that enrollees who use care will not be likely to choose a restrictive health plan and, thus, health insurers will not be able to channel them to contracted care providers. This undermines reaching the goals of the health care system based on managed competition.

Wednesday 15 June

16.30-18.00

**Parallel Session: Planning and Management Models II**

## A New Model of Quality Management: How to Use Patients' Experiences in Direct Feedback Loops to Improve Mental Health Care

Joyce Bierbooms<sup>1</sup>, Eric Van Daele<sup>1</sup>, Inge Bongers<sup>1,2</sup>

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### Context

Patients' experiences are increasingly seen as an important measure to stimulate quality improvement in healthcare. At the same time many healthcare organizations are adopting a new business model with decentralized responsibilities in self-organizing teams. The combination of these two developments requires a new model of quality management that takes patients' experiences as the basic principle, and supports a continuous quality improvement cycle through direct feedback loops which teams themselves can manage. Currently used monitoring systems do not meet these requirements, which means alternative instruments need to be considered and assessed regarding their applicability in the practice of a healthcare provider.

### Methods

At the mental healthcare institute of Eindhoven, the Netherlands (GGzE) patients' experiences are measured by using a new method: Positive Perception Program (PPP), developed by PPP-zorg ([www.ppp-zorg.nl](http://www.ppp-zorg.nl)). GGzE is the first mental healthcare provider in the Netherlands who adopted the method. It enables teams, in consultation with their patients and / or the patient's nearest, to design their own set of questions related to the quality aspects they want to monitor and improve. Subsequently, patients are asked to fill in the questions (max. 9), which means direct patient feedback is generated on multiple occasions and returned on a team level and, if desired, on an individual level. This way of gathering feedback gives ample opportunity for teams to manage their own patient driven quality improvement processes. At the start of the project the method was implemented in a pilot with nine teams. After one year, the pilot was evaluated.

### Results

An evaluation of the pilots have shown that PPP is very useful for teams to develop a process of continuously improving the experienced quality of care. Especially because the data are simultaneously processed and displayed in a real-time monitor. In addition, patient involvement is very high, which leads to much willingness to provide teams with feedback. In this way professionals have the opportunity to extract direct feedback on their individual interaction with a patient. Furthermore, using PPP enhances teamwork and the effect of joint improvement actions can be measured instantly. Because of the fact that teams can customize their own tool, it enhances commitment and intrinsic value in using this method. PPP offers the possibility to develop a quality monitoring system that, besides clinical outcomes, is based on patients' experiences. Based on the results of the pilots, it has been decided to adopt PPP for all teams in the organization.

### Discussion

The first pilots of using PPP have shown a positive indication with regard to the potential of the method to contribute to self-management of teams, to improve their own team effectiveness, and the quality of the services, in the broadest sense of the term, they provide. It has also shown that patients' experiences are of great value in improving the quality in healthcare. The results would benefit, however, from more elaborate research as to the validity of the method. Furthermore, the instrument is not yet adopted by health insurance companies as a valid method for quality improvement in healthcare. It would therefore be necessary to research the possibilities to use PPP data to develop information for external purposes. Finally, the use of PPP data for improving organizational processes and the possibilities to generate 'big data' systems provides an interesting challenge that needs to be further explored.

## A Journey towards Sustainable Healthcare: Evaluating the Efforts of the Dutch Network for Sustainable Healthcare and its 'Expedition to Sustainable Healthcare'

[Françoise Johansen](#)<sup>1,2</sup>

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### Short Paper

Healthcare systems worldwide are facing a number of challenges, including demographic changes such as the ageing of the population and related increase in chronic diseases, healthcare costs and increasing demands of society regarding the quality of healthcare. In the past decades different actors in the Netherlands have tried to meet these challenges by optimising the existing healthcare system, by means of policy reforms, cost control and incremental innovation. Different authors describe how the boundaries of optimisation are being reached, thereby showing that the current healthcare system is not sustainable (Transition Arena Care, 2009; Plsek & Greenhalgh, 2001; Broerse & Bunders, 2010). They argue that we need radically new approaches that contribute to a 'transition', a fundamental change (at system or societal level) of culture, structure and practices (Loorbach, 2007). A shift in the dominant way of thinking by relevant actors can influence existing culture, structures and practices. An organisation positioning to be a key actor in this transition is the Dutch Network for Sustainable Healthcare (in Dutch: MVO Netwerk Zorg), initiated in 2011. This network has published a 'Manifest for a healthy future of the healthcare sector' (2011) and aims to accelerate a transition to sustainable healthcare by spreading knowledge about sustainable alternatives in healthcare, such as new organisational and business models, cradle-to-cradle concepts or how we define health and healthcare. The network looks to inspire and motivate both healthcare organisations and system organisations (such as healthcare insurers and the Ministry) to experiment and to develop a vision and corresponding activities towards sustainable healthcare. The purpose of this research is to gain insight into ways to support an acceleration of the transition towards sustainable healthcare by contributing to the development practice-oriented concepts (interventions) towards changing culture, structures and practices in Dutch healthcare. The data is collected in a longitudinal study, from an actor perspective, by following the activities of the Dutch Network for Sustainable Healthcare and specifically the development and activities of eight Dutch healthcare organisations that have participated in the "Expedition to Sustainable Healthcare", a yearlong learning experience initiated by the network. This paper describes the effects within these eight organisations, in the two years after the "Expedition", as well as their views on sustainable healthcare and resulting changes in culture, structure and practices. The research is guided by the question: How does the interaction between organisations and networks in healthcare influence the diffusion of sustainable alternatives to mainstream level (by way of culture, structure and practices)?

## Introducing a LEAN System Culture Approach to Improve Nurses' Work Processes in an ICU Ward

[Luís Lapão<sup>1,2</sup>](#), [João Gregório<sup>1,2</sup>](#), [Inês Santos<sup>1</sup>](#), [Fernando Pinheiro<sup>3</sup>](#), [Pedro Póvoa<sup>3</sup>](#)

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### Context

Patient hazards like healthcare-associated infections (HAIs) are important cause of morbidity and mortality in Europe. Hand hygiene is still considered the most effective activity to reduce HAI. Thus, health professional's compliance to hand hygiene is essential. The barriers to this compliance have already been described in the literature, highlighting the necessity to improve healthcare workers' work efficiency through the promotion of a safety culture. The use of LEAN system approach as demonstrated its usefulness in to improve efficiency in different settings and contribute to better patient safety culture.

### Methods

A Lean system approach was initiated in an ICU ward of an urban public hospital, starting with a "gemba walk" observational study. The aim of this study was to understand nurses' work processes, to describe hand-hygiene compliance and to identify waste and opportunities for improvement. After this, a Value Stream Map (VSM) was designed and validated with the nurses of this ward. Following this validation, a one-day LEAN workshop was held with the objective of determining which interventions to implement (e.g. "external setup"). Two months after the implementation, a focus group was schedule to assess the influence of the LEAN intervention on nurses' work processes. Nurses, led by the chief-nurse, participated in all Lean processes, which included deep discussions on the most significant components of Lean Thinking.

### Results

From the observational study and VSM validation two processes were identified as the most important regarding hand-hygiene compliance: the provision of essential materials in the right places (and time) and the optimisation of the administration of medicines. This last process was found to be the one most subject to errors and waste. Organizational and structural barriers to the implementation of the necessary measures to improve these processes were found. Nevertheless, nurse participants declared that optimization of their workspace will be the most successful improvement, although they could not express the difference within such short time since the implementation and the focus group. Yet, they were very proud of the being part of the process and felt that the lines in the floor marking the location of equipment eases their daily working, and avoids spending time looking for it.

### Discussion

The findings of the observational study help to support the need for improvement of nurses' work processes. The notion of "lack of time" is somehow supported by our data, which made the necessity to improve ward and work processes organization more visible. However, several issues arisen from this study. The necessary commitment of the hospital administration was weak, leading to difficulties in implementing changes that involved different departments (e.g. the ICU connection to the pharmacy). The "lack of time" and resources that derives from government financial policies, and the consequent lack of motivation were found to be the biggest barriers to the prosecution of this study within the wards. As a global conclusion, hospital organizations (i.e., wards, surgery theatres, etc.) are urgently requiring Lean-trained managers to assist health professionals on improving their working processes. Both patient safety and process efficiency will benefit.

## Motivating and Managing Innovation in Complex Settings: Lessons from U.S. Hospitals and Academic Medical Centers

[John Kimberly](#)

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### Major research questions

I. What has caused a growing number of hospitals, particularly large academic medical centers, to establish leadership positions (e.g., Chief Innovation Officers) and/or “Centers” focused on motivating and managing innovation and how have these entities evolved?

II. What can the answers to the first questions tell us about how organizations manage cross-cutting priorities and how new organization forms diffuse through an industry?

### Preliminary findings

I. How common is the role of Chief Innovation Officer in U.S. hospitals?

We are currently still collecting data from hospitals, but at this point we are finding that roughly 10-20% of large teaching hospitals across the country have a senior leadership position tasked explicitly with managing innovation. Looking at the full spectrum of hospitals (non-Federal short-term) in California and Florida (which together give a decent representation of hospitals nationwide), we are finding that less than 5% of hospitals have adopted such a position.

Approximately half of these positions are identified as “Chief Innovation Officers” with the majority of other titles including “Vice President for Innovation”.

II. How do these new positions and centers define and approach innovation?

We’ve heard many times “If you’ve seen ten centers for innovation, you’ve seen ten centers for innovation...”, with much emphasis placed on the large variety of approaches taken to managing innovation. However, some common threads have emerged in conversations with and presentations by these leaders:

1. Innovation groups are the “residual” problem solvers. The problems that these groups tackle tend to be relatively (a) hospital-specific such that any solution would not readily serve a larger market and have significant commercial value, (b) cross-cutting such that no single department or unit has had sufficient incentive to address the problem themselves, and (c) of lower importance to overall hospital profitability such that no existing senior executive (e.g. CEO, CMO, etc.) has had sufficient incentive to address the problem themselves. Overall, we believe that the increased competitive pressures in the hospital industry have raised the value of this set of problems with criteria (a-c) such that investments in this still uncertain idea of Chief Innovation Officers and Centers for Innovation have become more and more worthwhile.
2. Implementation is the hardest part. Most models of innovation presented by these groups involve the following steps: problem identification, data collection, idea generation, idea testing, implementation, and refinement. Virtually all innovation leaders have highlighted the particular difficulties in actually implementing ideas due to factors such as cultural inertia and regulatory compliance (see challenges below). Hospitals, particularly larger teaching hospitals, have no shortage of the intelligence to generate new ideas, but the particular sets of skills needed to implement these ideas appears quite distinct.
3. Know when to source ideas from inside or outside. Generally, hospitals can look inside or outside their walls for potential solutions. Employees and faculty will undoubtedly have a better understanding of the particulars of any given problem and relevant hospital-specific issues; however, individuals outside of the hospital have a larger and wider array of skill-sets. It is up to these innovation leaders to identify which problems may be best suited with ideas drawn from either (or both) of these populations. As such, “Innovation Contests” have become a common function of many Centers for Innovation that enables hospitals to interact with individuals and other firms in a manner not previously possible through traditional contracts and organizational forms.

### III. What led to the creation of the innovation leadership position?

As referenced in II.1. (above), increased competition and regulation in the healthcare sector has increased the relative value for many previously unaddressed problems faced by hospitals. As the importance of these relatively firm-specific and cross-cutting problems has grown, so has the potential value of creating positions uniquely tasked with solving them.

As far as the particulars of each hospital's decisions and path to creating an innovation group, the stories appear to be very idiosyncratic. Some hospitals made relatively discrete decisions to institute an innovation group, while others chose to gradually increase the amount of resources dedicated to these groups. Some groups spawned out of initiatives initially targeted at addressing more financial-based problems (e.g. insurance) while others were initially focused more on medical care support.

### IV. What types of individuals are leading these innovation initiatives?

Examining the credentials of these individuals reveals that a large majority (~80%) of these leaders are MDs, but we have also identified leaders with MBAs, PhDs, and RNs as their terminal degrees. A majority of these innovation leaders appear to have been internally recruited from within the same hospital or hospital system. Furthermore, although our sample size is still too small for statistical analyses, we are finding that externally-recruited individuals are more likely to be non-MDs.

Combined with conversations with hospital leaders, it appears that this is indicative of there being two "sets" of knowledge that innovation leaders must utilize when managing innovation processes: (1) institutional knowledge- the particulars of the hospital's culture, norms, operating procedures and relationships with individuals across the hospital, (2) organization-science knowledge- the scientific and technical skills of managing the process of problem solving within complex firms. Internally recruited MDs appear to have cultivated a large body of institutional knowledge that enables them to effectively manage cross-cutting initiatives and provide the "weight" necessary to move ideas from theory to practice. Externally recruited non-MDs appear to have a large body of organization-science knowledge that is largely applicable across hospitals (or even industries- See: Roy Rosin from IT to hospital, Naomi Fried from hospital to pharmaceuticals). This org.-science knowledge appears quite distinct from the medical-science knowledge that many traditional hospital leaders are trained in. Innovation executives often refer to the occurrence of "brilliant" doctors being unable to effectively approach the types of problems commonly faced by these groups, which are often centered around work-flow, communication, training or IT, as opposed to the diseases and health technologies they have spent a majority of their time studying.

### V. What impact have these positions and centers had on hospital performance? What are their major challenges?

Many of the successes touted by these groups involve IT-based solutions for problems with care coordination and communication. Some examples include:

- A. Teledermatology at UPHS (<http://healthcareinnovation.upenn.edu/projects/teledermatology>)
- B. Patient Voice at UCLA (<http://uclainnovates.org/patient-voice-1>)
- C. Simulation Training and Education Lab at MedStar (<http://mi2.medstarhealth.org/health-innovation/medstar-sitel/>)
- D. Palm-based patient identification at NY Presbyterian (<http://www.innovatenyp.org/innovations/>)

Although we have not yet identified any innovation initiatives that have been halted or dramatically cut back by hospitals, the relatively small number of explicit innovation leaders suggests some industry-wide uncertainty as to the value of this approach. As such, one of the most frequently discussed challenges faced by these groups is the demonstration of value. For leaders and centers early in their development, success stories alone appear to sufficiently support their existence. However, it appears that to warrant any significant growth in the resources committed beyond the initial/early stages of investments, CEOs and Boards are wanting more concrete estimates as to the costs and benefits. This poses a large challenge for innovation leaders as the complex problems they identify often do not have succinct dollar-based outcomes to measure. As such, these leaders are spending considerable time developing new metrics for their hospitals in order to capture as much of their effect as possible.

Other commonly cited challenges facing these groups include cultural inertia, managing inter-organizational boundaries and legal/regulatory compliance.

- A. Culture: A large body of research has documented the tendency to stick with what is status-quo. Change is risky and it is natural to avoid risk, especially when the risks begin to involve patients' lives. The effort needed to overcome this status-quo bias grows with the number of individuals involved, which tends to be large when considering the problems faced by these groups. The number one concern that innovation leaders have mentioned in conversations and presentations is overcoming this bias. However, many have identified that small nudges can often go a long way. For example, many leaders have noted that events such as "town-halls" or mass communication highlighting simply the willingness of leadership to listen to suggestions for improvement can spark innovative ideas from all levels of the hospital.
- B. Unit overlap: Many hospitals have long had Offices of Technology Transfer to facilitate the commercialization of employee's discoveries. Although the products of many innovation groups tend to be relatively hospital-specific and not have much commercial potential outside of the home-hospital, this potential is rarely zero, and this continuum of potential commercial value creates uncertainty. Many innovation groups have mentioned difficulties in defining the conditions for when a project should be managed by OTT versus the innovation group themselves.
- C. Compliance: A core mission of innovation groups is to take uncertain steps. A core mission of many traditional regulatory and legal groups is to avoid uncertainty. This inherent conflict of goals is frequently cited as a barrier to effective collaboration between these two groups. These conflicts can be overcome by ensuring that the criteria with which different organizational groups are evaluated, does not conflict (too much). For example, compliance bodies that review requests to change hospital procedures are often evaluated by the number of adverse events associated with their approvals each year (e.g. they approved X requests that resulted in poor outcomes). This incentivizes caution and lengthy reviews as the penalty for poor outcomes after approval is much more than the penalty for no outcome after rejection. From an innovation standpoint this is in contrast to the "fail quick" mentality adopted by many. Instead, evaluations of compliance bodies could also be conditioned on the number of approvals (e.g. Y% of their approved requests resulted in poor outcomes) in order more align incentives between the two groups.

Wednesday 15 June

16.30-18.00

**Parallel Session: Patient Empowerment and Centeredness II**

## In the Patient's Shoes – a Multi-Point Sensitivity Framework for Understanding and Responding to the Patient Experience

[Alan Lilly](#)

*Monash University, Melbourne, Australia*

### Short Paper

There is an increasing focus and recognition on the importance of *the patient experience* and its positive correlation with the delivery of high quality, safe and effective care. At the same time, Health Services and clinicians around the world are grappling with the challenge of how to best **measure, manage and understand patient experience**.

While focusing on new models of care and reinventing healthcare, equal attention needs to be paid to **patient experience** in the world-wide health context of sustaining rising age, rising demand and rising costs.

One of the most significant reviews to **shine the light on the importance of patient experience** occurred in response to concerns around care in the Mid Staffordshire NHS Foundation Trust in the UK in 2008. As the NHS body responsible for driving improvements in quality and safety in healthcare, the Healthcare Commission identified initial concerns with regard to high mortality rates and later that year, completed a full-scale investigation into the Health Service. Subsequently, there were a number of inquiries into the Trust conducted by Sir Robert Frances QC. Following submission of Sir Robert's final report to the Secretary of State for Health (the Rt Hon Jeremy Hunt), Mr Hunt then commissioned a review of Patient Safety across England. The highly respected Dr Don Berwick, former President of the US Institute for Healthcare Improvement, led this review. In the review's final report "A promise to learn – a commitment to act" (2013), the Executive Summary's opening remarks were "**place the quality of patient care, especially patient safety, above all other aims (and) engage, empower and hear patients and carers at all times**" (p4).

However, actions speak much louder than words and Eastern Health's *In the Patient's Shoes* framework provides a focus on patient engagement and **patient experience** at multiple levels and has allowed the Health Service to develop specific strategies to improve both patient engagement and **patient experience**.

Eastern Health's innovative approach and focus on **patient experience** has attracted much interest right across Australia and this leading work was central to it being named the *Premier's Health Service of the Year* in November 2013 and again in October 2014, the only health service to ever achieve this prestigious award two years in a row. The framework was also specifically acknowledged with a Health Service Innovation award in 2012 and a Leadership in the Public Sector award in 2013.

This presentation will highlight **(i)** how the framework has been used **(ii)** how staff and patients have been engaged and **(iii)** the results which have been achieved.

In summary, new models of care need to carefully consider the **patient experience** and this presentation will provide practical insights into developing a local and effective strategy.

## What is the Role of the Elderly Patient with Multimorbidity in Primary Care Teams? An Explorative Study on the Perceptions of Patients and Professionals on the Role of the Patient in Primary Care Teams

[Kirti Doekhie](#)<sup>1</sup>, [Martina Buljac](#)<sup>1</sup>, [Mathilde Strating](#)<sup>1</sup>, [Jaap Paauwe](#)<sup>2,3</sup>

<sup>1</sup>*Institute of Health Policy and Management, Erasmus University Rotterdam, Rotterdam, The Netherlands,*

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### Short Paper

Western European Welfare states are increasingly focusing on reforming the primary care due to the rising health expenses and the growing aging population with multiple chronic conditions (multimorbidity) living at home. A paradigm shift is present from passive patients with little involved in their care, to active patients with a less dominant role for care professionals. More emphasis is laid on promoting patient involvement and living independently at home for as long as possible. Practice and research on patient involvement often specifically focuses on elderly patients with multimorbidity living at home. Their involvement is considered to be essential to chronically illness care, as it can improve patients' health outcomes and quality of life.

However, research focus primarily lies on patients' self-management of their care, for example adherence to treatment, managing daily life activities and involvement in medical decision making. Little attention has been paid to the role of patients in their primary care team. This is however of great importance, since elderly patients with multimorbidity are dependent on teamwork between multiple professionals who each have responsibility over a single element of care. Hence, managing their complex chronic conditions implies that patients have an active role in the team as co-producers and co-leaders of their care.

Our research focuses on the role of elderly patients with multimorbidity in primary care teams as perceived by patients themselves and by primary care professionals. The research is conducted in two phases, of which the first phase is completed. This first phase focuses on primary care professionals' perceptions on what a primary care team is. A survey analyses was conducted under 138 Dutch primary care professionals divided into 13 different disciplines (e.g. general practitioners and physiotherapists). The results show a misalignment between their perceptions on which other discipline is part of the team. Primary care teams can be seen as fluid entities and the patient is the only 'constant' factor of the team, emphasising the importance of the role that patients should play in the team.

In the second phase, we will analyse the role of elderly patients more in-depth by conducting interviews with elderly patients with multimorbidity and primary care professionals on this matter. From the patient's perspective, attention is given to the role patients play, wish to play and are able to play in the team. From the professionals' perspective, attention is given to role patients play, the role they should play ideally and what is needed to achieve that role. Also, we look at what factors influence the extent of patient involvement in the team in specific situations. This phase will result in more insight into the role of patients as co-leaders and co-producers of their primary care.

## Keep it Simple and Straightforward - Reforming Long-term Care by Empowering Service Users as Contract-Partners

[Henk Nies](#), Mirella Minkman  
*Vilans, Utrecht, the Netherlands*

### Short Paper

In January 2015 the Dutch government enacted a new Long-term Care (LTC) Act. It intended to empower service users, to support their participation in society, to improve their quality of live, to engage informal carers and the community and to provide care and support for those who are the most vulnerable in society. The Act was launched in a context of increasing burden of bureaucracy and accountability, a complaint that can be heard in many other European Countries (Leichsenring, Billings, Nies, 2013).

While the draft Act was still under debate, one of the presenters (HN) was invited to reflect on it in the Parliamentary Commission on Health. His main criticism was that the Act was too complex and didn't meet its intentions.

This criticism resonated well in the field. It was a reason to take up the challenge to formulate an alternative. Parliament had adopted an experiment article in the Act and the Ministry promised opportunities to pilot alternatives, for as long as they were in line with the intention of the Act. A network of some twenty CEOs of large and small LTC organisations (elderly care and care for people with disabilities) developed to take up this challenge. Ten of the CEOs studied the Act, its explanation, the full Parliamentary debate, stakeholder response very thoroughly during a two days' conference and developed an alternative new vision on how to the Act should be implemented. They enlarged their membership by ten, carried out a problem-analysis and worked out a new, simplified contracting and quality assurance system.

The key to the alternative was not a discussion of system shortcomings, but an analysis of client-journeys. Based on these journeys two necessary contracting-mechanisms were defined: the service user as the principle contract-partner and quality assurance on a basic level, ensuring safety and professionalism. The assumption is, that these two simple principles will encourage care providers to deliver high quality care, which really matters to service users. Accountability should be directed to users, not to system-parties, while at the main time, recognizing the system-responsibility of the government.

The presentation will go into detail on the problem analysis, the scenarios that are being drafted and the process. The latter was - and still is - a delicate interplay of CEO's, the Ministry, the umbrella organisations of service users and LTC providers, the Health Care Inspectorate, staff and clients of the CEO's organisations and Vilans, as the National Centre of Expertise for Long-term Care. The presentation will report how this 'coalition of the willing' has moved on and will discuss the contracting mechanisms with the audience.

Thursday 16 June

09.00-10.30

**Parallel Session: Integrated Care and Team Working**

## Self-Organising Teams in Mental Healthcare: How to Guide Teams towards a New Health Management Model

[Joyce Bierbooms](#), [Inge Bongers](#), [Alice Stokkink](#)  
*Mental Healthcare Eindhoven, Eindhoven, The Netherlands*

### Context

Many healthcare organisations are currently adopting a new organisation model with decentralised responsibilities in self-organising teams. In a mental healthcare organisation in Eindhoven, the Netherlands (GGzE), self-organisation was introduced as a way to facilitate growth and development of people, both patients and employees. Management was reorganised, teams were challenged to become self-organising and team coaches were appointed to support teams in their development. A process counsellor was appointed for the implementation and monitoring of the complete process. The implementation of this new management model demanded new instruments or tools for teams to support the process.

### Methods

At GGzE, the process towards self-organising teams was counselled by using a tool to identify the team's phase of self-organisation (Van Amelsvoort, 2004). Based on answering several questions regarding the issues task maturity, organisational independence, cooperation, purposiveness, and performance orientation, the teams members were able to determine their level of self-organisation and most importantly, the issues they encounter in their development towards a self-organising team. There are generally four levels or phases: 1) bundle of individuals, 2) group, 3) team, and 4) open team. After filling in the questionnaires, a feedback meeting was held, in which the findings regarding the team's phase profile and their relevant issues were discussed, resulting in determining the team's next steps to develop and grow as a team.

### Results

Currently, 493 questionnaires are filled in, which accounts for approximately 25% of all employees. A total of 55 teams is using the questionnaire and 33 teams had a feedback meeting. For the other teams these meetings are scheduled in the coming months. On average, teams score 2.25, which implicates that most teams are in phase 2. In the feedback meetings most teams recognise their score. It appears that most of the work content is well organised. Issues regarding work flow, policy, and decision making are less well covered. There are large differences between teams in the way they take up actions to become self-organised. This is mainly due to a lack of clarity about functions, competencies and responsibilities. A lack of guidelines regarding decision making is experienced by many team members. Teams express the intent to use their team phase profile to formulate their next steps.

### Discussion

The team phase profiles, including the feedback meetings, appear to be valuable tools for teams to identify relevant issues regarding the process of adopting self-organisation as a new health management model, and to discuss the next steps in the process. The appointed team coaches will have a role in supporting the teams, using their team phase profile as a guideline. It would be valuable to repeat the exercise of measuring team phase profiles, including the feedback meeting, after a period of 8 – 12 months to identify the developments the teams have made. For teams this may generate a feeling of achievement and forthcoming motivation to persevere on their route. Combined with measurements regarding employee satisfaction and team effectiveness, this generates knowledge about the aspects of self-organisation, and self-organisation as a whole, and their relation to potential organisational success.

## Lost in translation? Care pathways across the primary-hospital interface in Norway

[Ane Drougge Vassbotn<sup>1</sup>](#), [Jan Frich<sup>1</sup>](#), [Christina Sivertsen<sup>2</sup>](#), [Trond Tjerbo<sup>1</sup>](#)

<sup>1</sup>*University of Oslo, Oslo, Norway*, <sup>2</sup>*Norwegian Medicines Agency, Oslo, Norway*

### **Context**

Integrated care pathways that transcend the primary-specialist interface represent an attempt to translate hospital based care pathways to include and/or involve primary care. It also represents an attempt to utilize organization instruments designed for situations with low complexity in a setting with high complexity and many actors involved. The purpose of this study is to analyze the implementation of integrated care pathways that cross the hospital-primary care interface.

### **Methods**

Individual and focus group interviews with professionals, background interviews and document analysis. We first conducted 20 background interviews with key personell in 20 hospital trusts. Then we chose two cases for further study. Here we conducted 8 in-depth interviews and one focus group interview in the period from November 2014 to January 2015. Follow-up interviews will be carried out in the spring of 2016.

### **Results**

Care pathways for stroke and COPD across treatment borders are becoming more widespread through Norway, although the aim and content differs. The main challenges they face during planning and implementation is the institutional barriers, professional difference of diagnosis and function.

### **Discussion**

As a consequence, Norwegian care pathways that cross the primary - specialist interface are primary pedagogic and communicative instruments/interventions. The very same institutional factors that lead to an emphasis on these pathways makes implementing care pathways challenging. We argue however, that the current projects are not without merit and value. Several benefits are experienced through increased attention to standardization.

## The Flexibility Monitor, the Development of a Method for Monitoring Flexibility in Teams

Frank van Gool<sup>1,2</sup>, Inge Bongers<sup>1,4</sup>, Nicolet Theunissen<sup>3</sup>, Joyce Bierbooms<sup>4</sup>

<sup>1</sup>Tranzo (Tilburg University), Tilburg, the Netherlands, <sup>2</sup>Trifler BV, Rijen, the Netherlands, <sup>3</sup>Future Life Research, Apeldoorn, the Netherlands, <sup>4</sup>Institute for Mental Healthcare Eindhoven (GGzE), Eindhoven, the Netherlands

### Context

In Dutch mental healthcare, clinical care is reserved for patients with the most complex problems, often concentrated in 'High Intensive Care' wards. Crisis care is reinvented along with the organisational restructuring at the same time. To meet these changes, a lot of effort is put into buildings, treatment-models and competences. Less is invested in tools to prevent negative effects in teams working together in such a high pressure environment. Effects like rigidity, identification with the position, externalization, fixation on incidents, block the development of flexibility. A flexibility-monitor could help teams to perceive early warning signs and prevent unwanted processes.

### Methods

A practical experiment was conducted on a High Intensive Care ward in a mental health institution in the Netherlands with a team of about 60 team members; workers, nurses, psychiatrists and managers. Five representatives formed a workgroup coached by a science practitioner. Based on models of early warning signs we implemented a 'flexibility monitor'. In the four domains; learning behaviour, co-operation, decision behaviour and strength, indicators were collected by the workgroup-members by interviewing their colleagues. The indicators were sorted on four levels of flexibility; balanced, first signs, evident problems and crisis. Next, the possible interventions were formulated in each domain on each level. Based on the team-indicators a questionnaire with 24 questions was developed. This questionnaire will be filled-in monthly by all team members. The workgroup-members present the results to their colleagues each month together with the appropriate intervention.

### Results

The evaluation of this project will be completed in May 2016 so final results will be presented at the conference. Preliminary results are: The interviews and contributions of team-members resulted in about 130 indicators divided over all domains and all levels. Indicators for learning behaviour varies from "we exchange knowledge" in the balanced level, "complaining about courses" in the first-signs-level to "active resistance and sabotage of learning" in the crisis level. For each level the workgroup describe the interventions which they expect to work for them. The team-specific indicators are translated in 24 questions in a questionnaire filled in monthly by team members.

### Discussion

The value of the flexibility monitor is found mainly in the method; it gives a team a possibility to make hidden mechanisms explicit and talk about it before it manifests. It provides individual workers, teams and managers a framework that makes early signs recognisable and accompanying interventions which could be executed. An important part of the method is the team-based exclusive approach, each team makes its own monitor. The collection of indicators and interventions initiates discussions about the team and the behaviour on the different levels of flexibility. It makes the workers and managers aware of an insidious process and the fact they can do something about it. This was a practical experiment; research is needed to study the indicators, the interventions and the effectiveness of this method.

Thursday 16 June

09.00-10.30

**Parallel Session: Healthcare Moving Forward I**

## Reinventing Healthcare Asks for Reinventing Healthcare Research - Invitation for Dialogue

[Inge Bongers<sup>1,2</sup>](#)

<sup>1</sup>Tilburg university, Tilburg, The Netherlands, <sup>2</sup>Erasmus Center for Health Governance, Rotterdam, The Netherlands, <sup>3</sup>Mental Health Care institute Eindhoven, Eindhoven, The Netherlands

### Short Paper

Healthcare practitioners and - organisations, financiers, policy makers and patients are continuously reinventing healthcare. This happens at such a rapid pace that it traditional research designs and - systems can hardly keep up/follow.

The lifetime and innovation cycle of interventions and products is and will continue to be much faster than our traditional research process. Figure 1 shows how the relevance of research diminishes and how its results get outdated if research stacks to the traditional processes, designs and structures (see Riley et al. 2013).

For research to keep up the pace of reinventing healthcare, the proposition of Riley and colleagues (2013) is valuable: 'A culture shift in research is needed for research to remain informative, responsive and relevant to today and tomorrow's healthcare'.

Riley and colleagues (2013) plea for a dialogue among the health research community to challenge our current research enterprise and to consider "rapid- learning research systems" that integrate researchers, funders, health systems, practitioners, and community partners. Relevant clinical and societal questions are asked and researched for by using efficient and innovative research designs. The challenge is to use approaches which maintain scientific rigor and enhance practical relevance. In this way, research and practice are partners in reinventing healthcare. Research helps to take a underpinned next innovation step and gives leads about why, how and what can be reinvented. To meet this challenge Riley et al (2013) argue that the research community has to reconsider research designs, stakeholder engagement and research infrastructure as three major components of rapid-learning research systems.

In this session, I would like to invite people to think along and start a multi-disciplinary dialogue on whether and how healthcare research should and can be reinvented. A short outline of the article of Riley et al (2013) will be presented as a starting point for discussion. Subsequently, participants' ideas, views and perspectives on the setup, pros and cons of the three major components of rapid-learning research systems are exchanged in an interactive dialogue.

At the end of the session, you leave the room inspired and with raised awareness, and you will have met (new) partners in crime. Last but not least: within EHMA the dialogue on reinventing research to help reinventing healthcare has started!

Article as starting point for discussion:

Riley, W. T., Glasgow, R. E., Etheredge, L., & Abernethy, A. P. (2013). Rapid, responsive, relevant (R3) research: a call for a rapid learning health research enterprise. *Clin Transl Med*, 2(1), 10.

## Quantifying Cross-Border Care in the EU; an Analysis of Care Utilization Data in the Netherlands

Daan Westra<sup>1</sup>, Timo Clemens<sup>2</sup>, Helmut Brand<sup>2</sup>, Dirk Ruwaard<sup>1</sup>

<sup>1</sup>Department of Health Services Research, Faculty of Health Medicine and Life Sciences, Maastricht University, Maastricht, The Netherlands, <sup>2</sup>Department of International Health, Faculty of Health Medicine and Life Sciences, Maastricht University, Maastricht, The Netherlands

### Context

EU citizens have the right to seek healthcare from providers in any European member state and be reimbursed by the payer in their home country. The scope of cross-border care (XBC) has been estimated to be less than 1% of the overall healthcare cost in a country, but is believed to be higher in border regions. A large body of literature describes different frameworks, underlying motives, and types of patients seeking XBC. However, quantitative data on the extent, drivers, and users of XBC in member states is scarce. Evidence remains anecdotal due to various systems and owners of data.

### Methods

We combined two publicly available databases to analyse the utilization of XBC in the Netherlands. From Vektis, the Dutch information centre on healthcare, we retrieved data regarding the number of insured per municipality, as well as all expenses on services within the mandatory basic insurance package between 2011 and 2013. These expenses include XBC. From Statistics Netherlands (CBS) we collected demographic data of these municipalities such as the average income, whether the municipality is located in a border region, and the percentage of non-Dutch inhabitants. We combined both data sources by matching the names of each municipality in each year, resulting in a dataset of three observations for 393 municipalities. Based on the combined dataset we constructed a repeated measures random intercept model to analyse the average spending on XBC per municipality.

### Results

Between 212 and 282 million Euros were spent annually on XBC in the Netherlands, constituting roughly 0.75% of spending within the basic insurance package. XBC utilization differs between municipalities however. The average spending on XBC is significantly higher ( $p$ -value $<0.01$ ) in border municipalities and in some constitutes up to 16% of spending. Furthermore, the higher the average spending on primary care consultations ( $p$ -value $<0.01$ ) and the higher the percentage of inhabitants over 65 years of age ( $p$ -value $<0.05$ ) in a municipality, the higher the average XBC utilization in that municipality. Conversely, in municipalities with a relatively high percentage of male ( $p$ -value $<0.05$ ) and native inhabitants ( $p$ -value $<0.01$ ) average XBC spending is significantly lower. Lastly, a higher number of general practitioners and hospitals within a specific radius are marginally significant ( $p$ -value $<0.1$ ) indicators of lower average XBC spending.

### Discussion

Our work provides a quantitative analysis of XBC-utilization, its scope, and drivers within the Netherlands. The results of our analysis corroborate and quantify previous qualitative findings that XBC-utilization predominantly occurs in border regions and is in line with described types of patient motivations for XBC. Higher XBC-utilization in municipalities with a lower percentage of native Dutch inhabitants tends to confirm that citizens insured in the Netherlands predominantly seek care in the healthcare system they are most familiar with. The association between primary healthcare spending and the presence of general practitioners and hospitals offers a deeper insight into the interplay of the availability of domestic care and XBC consumption. Further research in these specific mechanisms is recommended as well as additional research on a personal level.

Thursday 16 June

11.00-12.30

**Parallel Session: Governance and Leadership**

## Do Hospital Boards Matter for Better, Safer, Patient Care?

Russell Mannion<sup>1</sup>, Huw Davies<sup>2</sup>, Ross Millar<sup>1</sup>, Tim Freeman<sup>3</sup>

<sup>1</sup>University of Birmingham, Birmingham, UK, <sup>2</sup>University of St Andrews, St Andrews, UK, <sup>3</sup>University of Middlesex, London, UK

### Context

Manifest failings in healthcare quality and safety in many countries have focused attention on the role of hospital Boards. In particular there has been concern to assess and strengthen how governing bodies can provide more effective oversight of the quality and safety of the care that their hospitals provide. While a growing literature has drawn attention to the potential impacts of Board composition and Board processes, little work has yet been carried out to examine the influence of Board competencies.

### Methods

In this work, we first validate the structure of an established 'Board competencies' self-assessment instrument in the English NHS (the Board Self-Assessment Questionnaire, or BSAQ). This tool is then used to explore in English acute hospitals the relationships between (a) Board competencies and staff perceptions about how well their organisation deals with quality and safety issues; and (b) Board competencies and a raft of patient safety and quality measures at organisation level. The analytical strategy used to investigate the research questions involved estimating multivariate models regressing aggregate measures of staff perceptions and aggregate measures of patient safety on the total BSAQ score (controlling for a number of hospital level characteristics).

### Results

We found positive and intriguing relationships between BSAQ scores at Board level and aggregate measures of staff perceptions around their organisation's ability to deal fairly and effectively with errors, near-misses and safety issues (a sub-set of whistleblowing questions contained in the NHS annual National Staff Survey). However, the results are not significant for the total BSAQ score in any of the patient safety measure regressions. For a few of the patient safety measures, hospital size is significant, suggesting differences in patient safety outcomes between small, medium and large trusts and teaching acute trusts.

### Discussion

This is, as far as we know, the first nation-wide study of Board-level competencies and their relationship with patient safety process and outcomes. It establishes the BSAQ as a validated tool in the English NHS context, and demonstrates through robust statistical analysis important relationships between Boards' competencies and staff perceptions. The lack of evidence of any direct and immediate effect of Boards on organisational outcomes leaves this still as an area for further empirical work. Complementary engagement between quantitative methods such as that reported here and deeper qualitative work to examine mechanisms in context would be valuable.

## First results of Gamified Leadership Evaluation in Five Health Care and Social Services Organizations in Finland

Anne Konu<sup>1</sup>, Elina Suutala<sup>1</sup>, Lauri Kokkinen<sup>3</sup>, Anu Järvensivu<sup>3</sup>, Katariina Tiitinen<sup>2</sup>, Juho Hella<sup>2</sup>, Jaakko Hakulinen<sup>2</sup>, Markku Turunen<sup>2</sup>, Nina Talola<sup>4</sup>, Jaakko Nevalainen<sup>1,4</sup>

<sup>1</sup>University of Tampere, School of Health Sciences, Tampere, Finland, <sup>2</sup>University of Tampere, School of Information Sciences, Tampere, Finland, <sup>3</sup>Finnish Institute of Occupational Health, Tampere, Finland, <sup>4</sup>University of Turku, Turku, Finland

### Context

The general aim of our project was to help develop leadership and thus the operation and effectiveness of social services and health care organizations. We produced the serious game called "JoPe" for that purpose. In the game, the manager faces several theory-based practical, strategic and ethical tasks regarding, for example, organizational procedures, human resources and prioritization. Current research presents the initial results of the managers' responses presented in Robert Quinn's Competing Values Framework.

### Methods

A serious game was used for data gathering and as an evaluation and feedback instrument for the managers in five participating social services and health care organizations. The middle and lower level managers were asked to play the game without taking an assumed role. The data gathering continues until the end of January 2016 (at the point of abstract writing more than 200 managers had played the game). The choices made in the tasks during the game were secured along with log data including e.g. timestamps. Quantitative analyses include e.g. correspondence and reliability analysis.

### Results

The serious game "JoPe" will be demonstrated in the conference as well as the initial analyses results concerning leadership roles and competing values in organization.

### Discussion

The majority of the managers have been eager to play the game while fewer of them have been suspicious about the usefulness of game as an evaluation and research instrument. The game worked well in evaluating leadership both on the individual and organizational levels. The data gathering via game play seemed to be a promising way to get managers to participate in research. On-line feedback and possibility to compare managers' own choices with others' may play an important role in motivating managers/leadership development.

Our project group includes research specialists from diverse fields: social and health policy and management, sociology, information science and biostatistics, together with leaders from the five collaborating social services and health care organizations. The project is funded by the Finnish Funding Agency for Innovation (TEKES) and the collaborating organizations.

## The Governance of Risk in a Changing English National Health Service

[David Smith](#)

*Manchester Business School, Manchester, UK*

### Context

This research project assessed the risk management capabilities of Clinical Commissioning Groups (CCGs) at the point of their authorisation to commission services within the National Health Service (NHS) in England following the changes made to the Health and Social Care Act in 2012. The Coalition Government claimed that the authorisation process of CCGs would allow for effective risk management procedures to remain in place (Government Response, 2011). This research project aimed to assess whether the Government's claim was true by assessing how robust CCG risk management procedures were at the point of authorisation.

### Methods

This project took a 'depth realist' neo-positivist approach to assessing the risk management capabilities of CCGs at point of authorisation (Blaikie, 2009; della Porta and Keating, 2008). A mixed methodology research strategy was adopted which used both quantitative and qualitative methods to gather information. Firstly, a best practice checklist was created from an extensive literature review of available risk management literature. Afterwards, the risk management policy documentation used for authorisation by 52 participating CCGs was assessed against the best practice checklist. After an assessment of the checklist results, interviews were conducted with the staff member with responsibility for risk management at 10% of the participating CCGs in order to gain a more in-depth understanding of the results of the best practice checklist and the changes taking place within CCGs at the time of authorisation.

### Results

The checklist identified that some areas of the risk management process within CCGs could be considered embedded, such as risk initiation, risk assessment and risk reporting, while other areas had weaker foundations, such as the identification and control of risk. The interview process identified large variations in how CCGs implemented their own risk management processes during the authorisation stage. There was little continuity in the organisational change methods adopted by each CCG in meeting the authorisation criteria set by NHS England. Additionally, when asked about the areas of poor compliance with the checklist, CCGs responded that staff engagement and understanding of risk management was a key issue. Therefore, they left some parts of the process out of policy in-order to promote staff 'buy-in'.

### Discussion

The large variations in the best practice checklist results between CCGs highlights a high level of inconsistencies in the way risk was managed within these new organisations. The interviewees cited the transition from PCT to CCG, problems with leadership and lack of a staff understanding as reasons for the variations. The findings of this research suggest that the Government's aim for the authorisation process for CCGs to allow for system-wide learning and to maintain effective risk management procedures (Government Response, 2011) contains some significant shortcomings.

This research project has made three key contributions:

1. The creation of a Best Practice Checklist for Risk Management which can be used by healthcare commissioning organisations globally.
2. Highlighted the insufficient risk management policies in place during the change from PCT to CCG.
3. Contributed to a better understanding of the process through which CCGs approached risk management during transition

Thursday 16 June

11.00-12.30

**Parallel Session: Healthcare Moving Forward II**

## Private Provision of Hospital Services: How Can Their Efficiency, Accessibility and Quality Be Optimised?

[Daniel Molinuevo](#), [Florien Kruse](#)

*European Foundation for the Improvement of Living and Working Conditions, Dublin, Ireland*

### Short Paper

This study carried out by the European Foundation for the Improvement of Living and Working Conditions aims to map out the extent and form of private (profit and not for profit) provision of hospital services in Europe since 2005 and the implications that private provision has for the quality, accessibility and efficiency of healthcare services.

The mapping out of private provision in Europe has been carried out by distributing a questionnaire amongst Eurofound's Network of European Correspondents. Their replies show that the full privatisation of hospitals is an uncommon phenomenon in Europe, with privatisation processes having been stopped in countries like Bulgaria and Spain due to public opposition. Corporatisation, (i.e. the change in legal status of public hospitals to become companies under private law) has become the main form of private provision in Portugal and has been used as a measure to reduce debt by local authorities (Poland) or to gain better access to funding (UK, Estonia). Public Private Partnerships and outsourcing are concerned mostly with non-medical activities.

In addition to this, a Rapid Evidence Assessment has identified European studies comparing service provision in public and private hospitals in order to establish links between hospital ownership and service delivery. This literature review identified studies showing that private hospitals are more often involved in 'upcoding' practices compared to public hospitals. Other studies highlighted the importance of the hospital financing scheme to explain differences in efficiency performance. Regarding accessibility, the studies identified describe the differences in the casemix and the socioeconomic status of patients in public and private hospitals. As for quality, several studies focus on length of stay (found to be shorter in private hospitals) and caesarean sections (with a higher rate being performed in private maternity units).

The preliminary findings of the study have been discussed at an expert workshop. Furthermore, ongoing case studies of private hospitals in different European countries provide further insight about the causal mechanisms underlying the link between private provision of medical services in hospitals and the efficiency, quality and accessibility of their medical services. These case studies will include semi structured interviews to relevant stakeholders such as hospital managers, staff, academic experts, health insurance organisations and inspecting bodies. The results of the interviews will be triangulated with documentary research. The case studies will also be used as the basis to draft policy recommendations about how to optimise service provision in private hospitals, how the public sector can contribute to this optimisation and how new models of care and combine public and private provision.

## A Military Healthcare Paradigm in the Netherlands

[Henk van der Wal](#), [Erwin Hoogeboom](#)

*Office of the Surgeon General (NLD Armed Forces), Utrecht, the Netherlands*

### Short Paper

The military healthcare is transforming to health 3.0. This transformation will lead to a health promotion instead of a disease approach. Supporting the military, the military healthcare will continue supporting the wounded or sick war fighter. However the transformation the military healthcare will also focus on recruitment of healthy soldiers, keeping them healthy and sending back healthy into civil society.

The military healthcare will continue to emphasize on its operational task. The necessary capacity needs to be high tech but has to be able to perform under low tech conditions as well. The need for a quick reaction, flexibility and specific training are limiting factors to outsource both medical personnel and material capacities.

The military healthcare of the Netherlands Armed Forces will follow the healthcare trends and accept all influences, direct and indirect. One of the great impacts will be precision medicine. Precision medicine demands tailoring military healthcare focused on the soldier/patient, using and creating big data, etc. The paradigm shift maybe even leads to a slimmer organization. This is just an example of the future of the military healthcare.

The presentation will give a broad overview of the changes in military healthcare, overall and more specific operational. Together with this presentation, there will also be a presentation of one to the main themes 'Sustainable Readiness' by Carola Linschooten and a presentation 'The positive health(care) paradigm; up close and personal' by Sarah Maduro.

## Measuring Levels of Entrepreneurship and Innovativeness in Health Management Students: Pilot Study Results from Turkey

Muhsin Fuat Bayik, Maral Erol Jameison  
*Istanbul Medipol University, Istanbul, Turkey*

### Context

In this paper, we would like to focus on the “How?” question in the title of this conference. As stated in the conference title, healthcare has been going through significant transformations globally, and the need for innovative approaches at the face of new challenges is evident more than ever. In this environment, ability to innovate and adapt for healthcare professionals, particularly healthcare managers is imperative. As educators in the field of health management, we argue that there is a growing need for reinventing the health management curriculum to help students acquire necessary skills and mind set for innovation.

### Methods

Part of this process of innovation is establishing the current situation. For that purpose, we designed and implemented a pilot study at the Health Management department of Istanbul Medipol University. We brought together three existent measurement tools to build a survey for our purposes, and conducted the survey online. The survey was divided into three sections, with questions measuring entrepreneurship, innovation, and values. The survey link was sent to the entire undergraduate student body of the department, and 82 students completed the survey in full. The survey results were analysed with SPSS for correlation, regression, and factor analysis for innovation.

### Results

Our analysis of the survey results did not provide a meaningful result in terms of correlation and regression. We attribute this result to the small number of answers we had for analysis, and think that we will have more meaningful results when we extend the pilot study and perform the same survey on more students. The factor analysis performed on the responses to answers given to innovation questions showed a KMO of 0.815, which explains 59% of the variance. Despite the small numbers of our pilot study participants, we believe that the results are still meaningful to show that we might have a problem with the current state of innovativeness in our student body.

### Discussion

Particularly when supported by anecdotal evidence from the educators in our program, our results demonstrate the urgency of the need for a reinvention of health management curriculum to include improvement of skills necessary for invention. This absence of innovation-related classes in the curriculum is not unique to our program. Even the top ten universities in the health management area in the US do not have innovation classes. As a solution, we suggest having required classes on innovation and entrepreneurship in the undergraduate curriculum, as well as developing more extracurricular activities such as business plan competitions and growth hacking activities.

Tuesday 14 June - Wednesday 15 June - Thursday 16 June

## Poster Session

## A Clinical Governance Approach to Work Motivation

[Gepke Veenstra](#)<sup>1</sup>, [Erik Heineman](#)<sup>1</sup>, [Eric Molleman](#)<sup>2</sup>, [Gera Welker](#)<sup>1</sup>

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### Short Paper

Clinical governance is an organisation-wide strategy aimed at continuous improvement of quality and safety of health care by all individuals that are involved in a patients' care. Clinical governance is aimed at improving health care from the bottom up. From this perspective, autonomous motivation in healthcare professionals is essential. However, little research has focused on the role of motivation of healthcare professionals in high quality and safe health care.

Hereby, we present the first draft of our model (see Figure 1) which aims to fill this gap in the literature. Based on self-determination theory, we will explain how factors in the working environment of healthcare professionals lead to outcomes of health care through healthcare professionals' motivation.

Self-determination theory distinguishes between autonomous motivation and controlled motivation. Autonomous motivation is defined as engaging in a behaviour because it is interesting or enjoyable in itself, or because the values underlying the behaviour are either endorsed or integrated into one's sense of self. Controlled motivation is doing something because it has instrumental value; it leads to a separable outcome such as money, or it averts punishment. Because autonomous motivation is generally associated with higher effort and performance than controlled motivation, the first part of our review will focus on these forms of motivation in healthcare professionals in relation to the outcomes of health care.

Furthermore, self-determination theory describes that activities that are executed on the basis of controlled motivation might become autonomously motivated. This process depends on the extent to which the three basic psychological needs for relatedness, autonomy and competence are fulfilled. The match between the fulfilment of the three basic psychological needs and the characteristics of the task determines the extent to which healthcare professionals are autonomously motivated. Since the characteristics of the task follow from factors in the working environment, the second part of our systematic review will focus on factors in the working environment that influence healthcare professionals' motivation.

More specifically, two developments in health care increasingly determine the characteristics of the tasks of healthcare professionals. These developments are the formalization of clinical practice and the increase of multidisciplinary collaboration. This research aims to investigate how formalization and multidisciplinary collaboration relate to the outcomes of health care through their effects on healthcare professionals' motivation.

This research increases our understanding of clinical governance by investigating how healthcare professionals become motivated to improve health care from the bottom up. This research will provide us practical insights for healthcare managers and policy makers. An example of such an insight relates to involving healthcare professionals in finding solutions for the increasing number of performance indicators as a result of formalization which increase bureaucracy but do not necessarily lead to high quality health care.

## A Way with Words - a Digital Tool for Health Professionals

[Vibecke Vallesverd](#), [Signegun Romedal](#)

*BarnsBeste - National competence network for children as next of kin, Kristiansand, Norway*

### **Abstract introduction**

"A way with words" (Snakketøyet) is a digital tool developed for adults who wish to support children whose parents suffer from illness, addiction or injuries. The tool is aimed at health professional and other adults who meet children in their daily lives, at school or kindergarten and who can provide important support. The tool is developed by BarnsBeste - a national competence network ([www.barnsbeste.no](http://www.barnsbeste.no)) and Superego ([www.superego.as](http://www.superego.as)).

### **Purpose / Methods**

Experiences from health professionals indicated that a lack of knowledge about how to talk with parents and children in challenging situations, can lead to a lack of important communication. The aim of this tool is to motivate adults to talk to parents and children by presenting recommendations and examples in a practical, easy and effective way.

### **Results**

The tool was launched in Norwegian in May 2014 and is not yet evaluated.

### **Conclusions**

"A way with words" is translated into english, danish and russian and more languages are coming up. The tool is digital, free and easy to use regardless of context. By translating into other languages, the tool can be adjusted and made available to support adults who meet children whose parents suffer from illness, addiction or injuries in other countries as well.

[www.snakketoyet.no](http://www.snakketoyet.no)

## Achieving Wider Interoperability of eHealth Services - Introduction of JAseHN Project

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### Short Paper

eHealth, the integration of ICT into health services, is a major supporting factor in enhancing the quality, efficiency and effectivity of healthcare services. The ultimate objective of EU Members States (MS) is to better integrate eHealth into health policy and better align eHealth investments with health needs. One aspect is the transferability of health data across MS borders, which is linked to the organizational, technical, semantic and legal interoperability of ICT in health. In order to ensure progress and bridge the gaps between the levels of governance, strategy and operation, a dedicated mechanism for eHealth at the EU level has been established: the eHealth Network (eHN).

In order to maintain this overall mechanism and to ensure further common political leadership and the ongoing integration of eHealth into health policy, the "Joint Action to support the eHealth Network" (JAseHN) was launched in May 2015 to take over this preparatory role.

The sole objective of JAseHN is to act as the main preparatory body for the eHN. By doing so, JAseHN aims to develop political recommendations and other instruments for cooperation in the four specific priority areas that are defined in the eHN's Multiannual Work Plan:

- (1) interoperability and standardization,
- (2) monitoring and assessment of implementation,
- (3) exchange of knowledge and
- (4) global cooperation and positioning.

JAseHN is a joint action mechanism that is led by the MS and co-financed by the European Commission (EC). JAseHN is based on eight work packages, with the content-related work packages representing the four priority areas as defined in the MWP. Its work is divided into a number of tasks. Documents and decisions intended for submission to the eHN are channelled through the strategic project steering committee, where all associated and collaborating partners are represented.

The work that JAseHN will carry out will result in the continuity, safety and efficiency of healthcare provided with the support of ICT. JAseHN's activities will foster a long-term political commitment in the field of eHealth and will also identify and propose future objectives that could be considered in follow-up activities. Furthermore, JAseHN will lead to an increased awareness and knowledge of eHealth as well as a greater willingness to take part in it.

The JAseHN consortium has a total of 40 beneficiaries from 28 different European countries. The consortium consists of 25 associated partners, including their affiliated entities, and 15 collaborating partners. Beneficiaries are represented by 15 ministries, 19 national competent authorities or national executive agencies, three universities and three health insurance funds. In this presentation the JAseHN project will be introduced in order to reach the widest range of health policy and management stakeholders.

## An Analytic Hierarchy Process (AHP) Model to Elicit Patient Preferences for Objectives of Diabetes Coaching Programmes

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### Context

Diabetes mellitus type II as a complex chronic condition has evoked an increasing number of coaching programmes in Germany in recent years. Since prevalence for diabetes is on the rise, new coping strategies beyond pure drug treatment are subject of health research. Aim is to offer additional lifestyle coaching programmes to prevent progression of the disease or secondary diseases. Knowledgeable trainers support the patient face-to-face or via phone to understand relationships between behaviour and (secondary) disease development, they help the patient to set personal objectives concerning his lifestyle and generate ideas how to implement behaviour changes into everyday life.

### Methods

First aim of this study was to assemble a comprehensive Analytic Hierarchy Process (AHP) model for diabetes coaching programs in order to provide practitioners with a suitable overview over potential objectives patients could expect from such a programme. Second aim was to investigate the applicability of the AHP methodology for a setting of individual patients, not a group setting. The AHP is a tool to facilitate complex decision making. A problem is decomposed into a hierarchy of categories which are to be judged in pairwise comparisons. Based on eigenvector estimation, utility weights for each single item can be derived. In phase 1, experts were interviewed consecutively for elaborating and consistently refining the preliminary AHP model until no further addition, omission or change of wording of items was expedient. In phase 2, a patient questionnaire was designed which consisted of the pairwise comparisons and socio-demographic, quality-of-life and self-efficacy data.

### Results

Phase 1 concluded with a mutually agreed, multi-level hierarchy model. Three main categories were identified: a) disease-related effectiveness which yielded 3 sub-categories, b) prevention of secondary diseases with 6 sub-categories and c) effects on the quality of life which was split up into psychosocial well-being consisting of 5 sub-categories and physical well-being with another 5 sub-categories. Phase 2 resulted in a dataset of 7 respondents (all diabetes type II patients) who answered the questionnaire partly within interviews, partly independently. Due to the very small sample size, no statistical analysis was applied. However, some main tendencies in utility weights are visible: high utilities are put onto more exercise / sport activities, weight loss and change of diet for physical well-being. Within psychosocial well-being, the importance of a reduction of anxiety and depressed mood is outstanding.

### Discussion

The hierarchy of coaching objectives developed in phase 1 yielded a suitable overview instrument for diabetes trainers. However, the AHP method (phase 2) appears to be of merely limited value for individual patients' settings due to its cognitive challenges. Several patients dropped out from the questionnaire or were not approached by their physicians because of the (anticipated) cognitive challenge to conduct multiple pairwise comparisons of health-related objectives. Thus, physicians only addressed the remaining patients capable of answering the AHP scale, providing grounds for selection bias. The AHP method is most suitable for experts or group settings in which items can be discussed in more detail. Patients are overcharged with evaluating the importance of various abstract health conditions. This is in accordance with the results in which patients emphasized the utility of well-known, tangible and less abstract items like weight loss or physical exercise.

## An Overview of Mental Health Policy and Financing Trends in Five Western Balkan Countries: What Do Input and Process Indicators Tell?

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### Context

In the western Balkan countries the financing, organisation and delivery of mental health service is in a process of transition. In order to delineate a new vision a review is required of the current status of the care now being delivered in Albania, Bosnia and Herzegovina, Montenegro, Serbia and The Former Yugoslav Republic of Macedonia.

This paper aims to delineate recent legislative and policy reforms related to mental health in Western Balkan countries and analyze how these reforms are reflected in mental health service indicators.

### Methods

The main methodology applied in this study relies on the WHO Assessment Instrument model which gathers information on mental health systems. An extensive literature review was also conducted. Available data was supplemented and validated through consultations with mental health experts from University of California, Berkeley.

### Results

All of the studied countries have developed new policies and mental health legislation, elaborating mental health reform strategies. The financing mechanisms for mental health care do not differ much from those for health care in general. All five countries rely on some form of social insurance scheme and general taxation. Total health expenditures as a percentage for GDP range from 5.98 % in Albania to 10.48% in Serbia. Budgets for mental health are not explicit, but some estimates exist, with 3% to 4.5 % of the health budgets allocated to mental health, most of which is devoted to mental hospitals. The number of psychiatrists per 100,000 population varies among countries, 1.83 in Albania to 9.98 in the Former Republic of Macedonia. Mental hospital admissions per 100 000 population of 56.12 in Bosnia and Herzegovina, 164.65 in the Serbia, 287.76 in Montenegro, and 161.5 in Macedonia, have been reported.

### Discussion

All the studied countries not only lack discrete mental health budgets, but mental health remains an area that is not prioritized for health spending. Western Balkan countries lack mental health workers when compared to other countries. Although the national mean bed occupancy is crucial in evaluating resource use, there is considerable missing data; discrepancies between countries exist, indicating both over- and underutilization of inpatient resources. Admission rates are relatively low.

Following the current pace of reforms, there is an urgent need for local level evaluation and health information system mobilization. The transition phase toward community centers will require additional funding for more trained workforce.

Limitations of the data indicate the need for further research in this area. There is also a need for further research in assessing and analyzing outcome indicators as the final and real tool measuring the success of the reforms.

## Analysing European Health Care Systems - What do the figures reveal?

[Eva Krczal](#), [Andrea Schütz](#)

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### Short Paper

Discussions on the effectiveness and efficiency of health care systems dominate current health care reform initiatives. Policy makers face challenging questions such as judging the appropriate level of health spending and evaluating the implications for health system performance. Projections on health system performance as well as estimations on the impact of a certain health reform initiatives imply serious challenges for researchers as well as decision-makers. There is an urgent need for information and reliable data in order to design decision models which provide assistance and advice to policy makers.

Our research project represents an analysis of trends and correlations in health related macro-economic figures with the key objective to identify influence patterns and interdependencies between health determinants, health care interventions and health outcomes.

The first part of the project focuses on the differences between health systems characteristics and their performance in terms of health outcomes. It starts with building clusters according to particular indicators that characterize a specific health care system. Thereafter we apply statistical tests to explore potential differences or similarities in health outcomes between the clustered health care systems. The results provide an overview of common practices and different approaches in the provision of health care. It also represents an effort to explain cross-country variation in health outcomes and health expenditure.

The second sub-project analyses the correlations between health interventions and health outcomes. Different sets of variables will be introduced in the calculation model to estimate their influence on health outcomes. Within this study we try to detect health care interventions with a high potential to increase health outcomes.

The third sub-project focuses on evaluating the effectiveness of health care reform measures. In applying time series analysis we explore potential effects of health care reforms on health expenditure, health resources, health care utilization and satisfaction with the health care system. The project aims to detect best practices in improving the performance of health systems.

The research project will be finalised by the end of 2016. We are now in the first phase of detecting potential correlations and influence patterns. Interdependencies that are revealed in the first phase will undergo further examinations and statistical tests. Preliminary studies for example have discovered that there is a significant correlation between health care expenditure and health care outcomes. The correlation is not linear but is characterized by a diminishing marginal utility of health care expenditure. We expect to present the first results of the project at the EHMA Conference in June 2016. The results can be used to formulate further research questions for empirical studies on specific relationships. They can be seen as starting points for following investigations to fathom the complexities and particularities of the field.

## Another Side of Medical Tourism's Coin: Travelers Improving Health for Local or Indigenous Peoples

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### Context

For the past decade-and-a-half, there's been sustained growth in volunteerism (Office of Research and Policy Development/CNCS/Indiana University, 2006). Specifically, overseas volunteerism has continued to grow markedly from 2006 to 2015 (Stanford University's Center for Responsible Travel, 2015; the latter reporting: "One sector that is growing particularly rapidly is volunteer or service vacations, dubbed "voluntourism" (p. 2). As seas rise (contaminating surface/coastal aquifers), and inexpensive antibiotic efficacy becomes more circumscribed, Rotary International predicts drinkable water will dominate humanitarian needs. Rotary thus wants improved robustness in its volunteerism-talents management systems, targeting water/hygiene/health/volunteerism first. Before increasing cross-cultural rigor, basic talent-profiling is being pursued.

### Methods

Our Rotary co-funded research team had pre-existing, though recent, data from relevance-ratings of 235 volunteerism work-talents (all drawn from classic modern sources: Personality-based Performance Requirements Form or PPRF, see Aguinis, 2009; and U. S. Dept. of Labor's O\*NET, 2000, e.g., see example work-related talents attached). These 235 items were rated for relevance to volunteer aid-work by 21 "aid-volunteerism" experienced university-students. They gave ratings (0=very unimportant; 10=very important) regarding how significantly an ability or knowledge would benefit persons conducting general aid work; and what features (required tasks, interactions and work styles) usually occur in common volunteering scenarios. Three researchers picked 87 items (of 235) relevant to water/hygiene and sanitation (WASH) aid work, then added 30 WASH aid-related tasks from the O\*NET taxonomy. Thus, 117 items were administered to six of Rotary's most experienced rural-health/hygiene volunteers. This virtual e-panel expertly rated the "hygiene/water-aid" relevance of these 117 PPRF/O\*NET work-dimensions.

### Results

The above methods, crossing 117 health-tourism dimensions across 27 aid-experienced raters, produced a Q (versus R) matrix of 117 times 27, or 3,159 data cells in total. SPSS metrics suggested these 3,159 cells, in aggregate, were suitable for dimension-reduction (KMO = .840; Bartlett's  $p < .001$ ). This Q-matrix was then subjected to competing SPSS AMOS CFA path models, where the competing models were based upon forcing a model solution via apriori knowledge of expert rater sources (e.g., health/hygiene medical voluntourists versus non-specialist volunteerism-experienced university-students). The competing model-solution was based on a visual interpretation of SPSS factor-plots from an exploratory cluster analysis (see attached figure). These results indicated that field-experienced health/hygiene voluntourists do reliably present as a relatively-distinct cluster of aid talent-requirement raters. However, there is a small but still noticeable subset of non-specialist volunteerism-experienced raters that cluster with them (e.g., their forced reassignment degrades CFI .827 to .775, RMSEA .098 to .110).

### Discussion

This research process has yielded sets of competencies recommended as criteria for medical voluntourists set to engage in "safe water/hygiene-related" visits abroad. More importantly, it's demonstrated a rigorous and multivariate methodology for establishing medical-tourism recruitment criteria/processes. These are consistent with the relevant literature's urgent call for substantially-increased "attention-to-detail" as regards "medical voluntourist accountability" and its requisite "medical voluntourist fit"/"cultural preparation" (Atkins, 2012). Follow-on health-voluntourist research and applications are clarified because we've been generously supported by Rotary, in support of its 40,000 member Water and Sanitation Rotarian Action Group ([www.wasrag.org](http://www.wasrag.org)) and the associated start-up of its global Rotary WASH e-club ([www.rotarywasheclub.org](http://www.rotarywasheclub.org)). Thousands of Rotary clubs have chosen their own austere/overseas aid-site, each club having a couple of members who annually travel there to see Rotary funds at work. These thousands of site-specific experts will help our research programme add needed cross-cultural training videos to our online health-voluntourist talent-management system.

## Cancer: from Patient Treatment to Integrated Disease Management. How We Do It at IPO Porto?

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*Instituto Português de Oncologia do Porto FG, EPE, Porto, Portugal*

### Short Paper

Chronic conditions are rising in western society. Cancer is among them. If we want to win the war against "cancer" we have to be innovative when managing this disease. Implementation of integrated disease management initiatives is the answer. In Portugal, some important steps have been taken in last years, such as the definition of national clinical guidelines and the implementation of bundled payment schemes for oncology. Nevertheless, we all can make a difference, from the national level to the individual.

Instituto Português de Oncologia do Porto (IPO Porto) is a Portuguese public hospital, specialized in cancer treatment. Oncological patients are usually treated for a long time and are submitted to different clinical interventions - surgery, radiation therapy, chemotherapy and/or others antineoplastic treatments, in a multidisciplinary approach. Treatment plans are personalized, complex and costly. Therefore, cancer treatment calls for a high level of technical differentiation. However, we cannot forget that we treat people, above all, and not only health conditions. Healthcare institutions must organize themselves around patients and their needs.

IPO-Porto implemented 11 clinics (or Porter's Integrated Practice Units (IPUs)) around 11 different cancers. Each one operates independently from the others and is organized around the needs of the patients suffering from each cancer type: head and neck, skin and soft tissues, breast, digestive system, urology, gynecology, central nervous system, hematology, lung, endocrine system and pediatrics. IPUs are multidisciplinary units where surgeons, medical oncologists, radiation oncologists and other healthcare professionals work as a dedicated team, under one roof, with the aim of delivery the best treatment for each patient. This organizational model fosters integrated care, along the treatment cycle, and a holistic view of the patient. At the same time, there is an optimization of patients flow within the organization and a decrease of redundancy. Let's take as an example our Breast Clinic. It was established on 2007 and the performance improvements we accomplished are:

- + 25% new patients;
- + 44% medical multidisciplinary appointments;
- - 68% on the cost for the hospital, of an appointment, including diagnostics expenditures;
- + 39% surgeries on breast cancer;
- - 45% waiting time for surgeries on breast cancer;
- - 41% on the cost of the medication supplied to an average patient.

Undeniably, implementing clinics that follow the Porter's IPU philosophy adds value to the patient and to the organizations because of: increased amount of time and resources available to care; increased volume and overall quality; increased comfort for the patient; enhanced access for the population; improved ability to transfer best practices by a network of affiliation; and reduced waiting times.

## Climate Change Malady as an Inspiration for Healthcare Sector – “Reinventing” Healthy Energy Choices

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### Short Paper

Climate change malady had united decision-makers, politicians and most diverse countries in their pursuit in preserving health and solving climate change process. Climate Summit in Paris COP21 in 2015. was not only an important but truly historical moment, where we saw that most decision makers, even they are not health professionals, directly or indirectly argued that climate change is practically and ethically essential to caring about public health.

According the evidence based data, climate change malady, resulting with rise in morbidity and mortality from different diseases. Beside morbidity and mortality climate change produce rise of absenteeism and health costs, also.

In our mission to preserve health, as health professionals, we have to persist in raising our voice for healthy energy combating climate change. Health Professionals, among other professionals, have a unique role in action for healthy energy.

Healthcare sector for its achievements and goals (to help individual and population becoming healthier, to manage different diseases...) but through its requirements and needs (a lot of medical and managerial knowledge and skills, equipment, consumables...) have become a major economy factor. More than that, healthcare sector requires a lot of energy for power generation, heating, lighting, electrical equipment, transport, supplies, ventilation, air conditioning and all other professional activities, which is combination knowledge, skills and energy needs. It was roughly estimated that EU hospitals responsible for 5% of the carbon dioxide emissions annually. The health professionals and health sector as whole have a considerable carbon footprint.

All countries in EU and wider should focus more attention in areas such as energy efficient buildings, renewable heating, cooling and transport in healthcare. Healthcare sectors should be persistent and united in their efforts to find win-win models which includes patient care and sustainable and healthy energy choices at the national and local levels.

Climate change is resulting in changing human resources needs in health sector, more equipment and consumables, better preparedness, smart organization and work on resiliency of health sector in future. But health professionals should give also an example within the sector by their own endeavor and behaviour that reduction of GHG footprint is possible.

One of the most important steps in that process is rethinking our priorities and needs at individual and professional level. Patient safety and care must stay the main goal, but also including advocacy for environmental health, ecologically sustainable healthcare, and high standards in energy efficiency.

"Reinventing" healthcare because of climate change malady is a big challenge and process. It needs help from other professions but we have to persist in our efforts to include topic on healthy energy into education of all health professionals in order to change our attitude in professional life and quality standards of health organizations.

## Comparative Study between Korea and UK DRG-based Payment System for Patients

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### **Context**

This paper studies the DRG-based schemes between Korea and UK, in special incentive systems.

Both countries are facing the problem of increasing financial risk on health care. So, DRG-based payment systems were introduced to control volume more efficiently and to secure patient accessibility more effectively.

But both countries healthcare payment systems before reform are different. Basically, Korean healthcare reimbursement system is Fee-for-Services and UK is Global Budget and Capitation. The paper reveals the difference and impact of DRG-based payment scheme for both countries.

### **Methods**

The comparative study was conducted on incentive system in the DRG-Based scheme between Korea and UK. There is considerable debate about the appropriate of setting efficiency in healthcare, and the paper focused incentive system the Public Loss incentive in Korea and MFF in UK to manage the unavoidable cost in DRG-based payment system.

### **Results**

Korea and UK have incentive systems in DRG based system to control unavoidable costs but those need to be included under the tariff and be abolished step by step.

But, there are some problems in those process ; Who are charged the burden, How does incentives put into the tariff and so on. Korea and UK have alternatives to solve above issues of their own ways.

### **Discussion**

Korea has reforming of DRG-based payment system but their issues of payment system are different from UK.

To success the reforming, we need a new idea is induced by experience and attempt. This paper will suggest that implications and useful resources for policy makers to perceive what we should do.

## Determinants of Using (non-)Fluoroscopy-Guided Positioning for Radiographs

Sofie Germonpré<sup>1</sup>, Paul Gemmel<sup>2</sup>, Dimitri Beeckman<sup>2</sup>, Jeroen Trybou<sup>2</sup>

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### Context

Internationally there is recognition that healthcare suffers from gaps in quality and safety of care. In this study, we turn to the case of radiographic positioning in Belgium. We focus on the use of Fluoroscopy-Guided Positioning (FGP) as a positioning aid for making radiographies. This is considered as undesirable since this increases unnecessary the patients' radiation dose. In many countries non-FGP is consistently applied without a loss of image quality and diagnosis capabilities, illustrating the practical feasibility of this technique. We focus on knowledge and attitudes of imaging staff with respect to applying non-FGP imaging and organizational factors.

### Methods

We used a mixed method approach. First in-depth interviews of radiographers and radiologists, non-participative observations and document analysis were obtained in order to develop an in-depth understanding of imaging practices. This qualitative case study research was performed at four Belgian hospitals. Afterwards 300 questionnaires were distributed to 15 radiology departments. At this moment 177 questionnaires were returned. At the end of January 2016 more questionnaires will be collected. The purpose of this quantitative study is to gain knowledge into the acceptance and use of non-FGP by radiographers in Belgium. Both qualitative and quantitative research were built on the concepts of the Unified Theory of Acceptance of Use of Technology (UTAUT). With the questionnaires we want to investigate which determinants of UTAUT predicts the acceptance and use of non-FGP and how well the predictors predict this. When we have collected all questionnaires, regression analysis will be run in SPSS 21.0.

### Results

The results of the case study research revealed that organizational factors are of major importance for adequate positioning. Clinical leadership of radiologists and chief radiographers as well as suitable X-ray devices and positioning aids were identified as important determinants. Furthermore a lack of skills and knowledge of (advanced) positioning techniques and negative attitudes towards non-FGP were present. More precisely, staff expressed concerns with respect to the impact on the workload and workflow. Finally, adequate supervision, regularly feedback and coaching (by radiologists, chief radiographers and peers) were identified as important enabling factors for increasing the quality of the applied imaging techniques. Based on this we hypothesize that the concepts facilitating conditions, self-efficacy, effort expectancy and attitudes are important predictors of the acceptance and use of non-FGP. The results of the analyses (which will be carried out in February 2016) will show if our assumptions can be confirmed.

### Discussion

This study is among the first to investigate the determinants of professional practice. Specifically we focused on imaging practices in Belgium. The outcomes of the exploratory case study illustrates the complexity of professional practices and confirms the importance of knowledge, attitudes and contextual factors. Therefore we argue that a holistic approach considering all these aspects is needed to improve imaging practices. Clinical leadership of physicians and supervisor was identified as an important enabler of high-quality care. Important determinants of using non-FGP will further be examined by analyzing collected data of questionnaires.

## Development of National Guidelines as a Part of Lithuanian – Swiss Cooperation Project “Improvement of Perinatal and Neonatal Health Care Services in Lithuania”

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### Short Paper

In 2012, Lithuanian – Swiss Cooperation Project “Improvement of Perinatal and Neonatal Health Care Services in Lithuania” started and the program activities included renovation of maternity care facilities, renewal of medical equipment and neonates’ transportation systems, creation of national database for monitoring of maternal and neonatal care indicators. In order to standardize perinatal care at different levels and regions and to achieve high quality evidence based practice 70 national obstetrical and neonatological guidelines were developed. After that, training practical courses based on guidelines material for more than 1540 perinatal care providers were conducted. The guidelines were developed using standard operating procedures (identification of priority questions, retrieval and assessment of evidence, adaptation and formulation of recommendations) during one year period. Each guideline includes a management part (I), surgical procedure description part and checklists (II), implementation part (III), audit part (IV) and patient information part (V). The management part (I) contains diagnostic, treatment recommendations, special designated algorithms and tables. Surgical procedure description and checklists (II) help healthcare professionals to uniform the surgical techniques and to increase safety in managing emergencies. Moreover, informed consent forms for patients on the different obstetrical and neonatological procedures were developed seeking to give standardize and evidence based information. Implementation and audit parts (III and IV) aim to describe process of practical guideline implementation in each medical facility and to carry out regular audits at the hospital and national level.

Forty obstetrical and thirty neonatological guidelines were developed by the group of national experts (19 obstetricians gynecologists, 2 midwives, 13 neonatologists providing perinatal care at the different level Lithuanian hospitals). The guidelines were reviewed by a multidisciplinary group of 39 reviewers that have an expertise in specific topic (infectology, neurology, anesthesiology, cardiology, microbiology, endocrinology, genetics, oncology, fetal medicine, ophthalmology, pediatrics). Patient information parts were evaluated and revised by representatives of non-governmental organizations. Final guideline document was approved by National Associations of Obstetricians and Gynecologists, Midwives, Neonatologists and by Ministry of Health.

Implementation of guidelines was started by standardized intensive practical courses for obstetricians gynecologists, neonatologists, midwives, nurses, anaesthesiologists. Currently, national database of perinatal indicators is being created and it will be used to measure the impact of guidelines on perinatal care quality.

## Elaborate an Electrical Registration - Controlling Measurement Errors, Structural Sampling for Health Management - A Special Method of Two-stage Stratified Cluster Sampling for Complex Survey

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### Context

Electric processes are parts of present communication. Organizations make important decisions like budgeting by using a register based administrative data.

There are several separate patient health recorder solutions in Finland. City of Vantaa is one of public producers where national structural electric registration has been taken in use in 2009. Over 90 % of electric, structural information has been transported from local health centres into national data storage in 2014.

National structured open data has been combined and linked for statistical environment. A result is structural sampling method for health management.

### Methods

This part of research focused on sample size, calculation methods and sampling design. Design effect measures a relationship between variances and it is possible to calculate. A local technical supporter gives an approximation 2500 - 3000 of total amount of those, who had applied a patient recorder in 2014. Two sample sizes were calculated. A sample size  $n_1=918$  supposing an effective sample size was 600, has been selected.

A data-matrix C has been built up. It consists of variables from Kela's SOTE-register, THL's AvoHILMO and a list of workers in primary health care, which has been collected by local authorities. The matrix C has been used in two-stage stratified cluster sampling for complex survey. A method has named structural sampling for health management. A first time, when a structural sampling method was in practical use in Finland was December 2014. A survey was focused on local users of a patient recorder.

### Results

National structured open data from KanTa and AvoHILMO have been used for a sampling design. Important fragments were 'Service mode', 'Short codes of working units' and 'Total names of working units' and those have been used for structure linkage.

'Service mode' worked well, while a list of workers in primary health care shared into 17 different stratum. Clusters have been formed 104. A cluster was small, if amount of service units in it were 9 or less. Then all service units of a cluster included into structural sampling. Large clusters gave 10 service units each other by random sampling. The total sample size was  $n_1=918$ .

The local list of workers combined SOTE-register has been used and sampled respondents of the survey. The sample size  $n_1=918$  has been used and produced three different samples of local workers in primary health care. There has been selected the sample, which expressed all working- groups representatively.

### Discussion

National codes and classifications could be in use more than have been used to think. It is possible to adapt two-stage stratified cluster sampling into administrative structure of open data and produce a practical and repeated sampling method, a structural sampling for health management. It utilizes standardized structures of national codes and classifications. A structural sampling may be useful for different kind of complex surveys, even if it has been developed for health care system.

## EU Nurse Mobility to the UK: A Multilevel Analysis of Portuguese Nurses in England

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### Short Paper

A message consistently emerging from the literature on health systems is how these are vulnerable to workforce fluctuations. The mobility of health professionals has the potential to determine the quantity, quality and efficiency of a health system, as well as how health services are organised, planned and delivered. The aim of this sequential mixed-method study is to examine the implications of European nurse recruitment for the cyclical nursing shortages in the NHS (England) from a policy, organisational and individual perspectives. The overall objective is to develop actionable recommendations for health workforce policy and planning in NHS Trusts.

The quantitative phase of this research started by extending the 12-country Registered Nurse Forecasting (RN4CAST) study evidence base with newly collected data from Portuguese nurses working in acute care hospitals. This phase was meant to make sense of the labour market dynamics affecting the profession as well as to gather a general understanding of their satisfaction with organisational factors, practice environment profiles and leaving intentions. First, it examined the association between patient-to-nurse ratios, work environments, individual nurse characteristics and intention-to-leave. Second, it explored how the organisational features of nursing care and individual characteristics included in the study interacted in explaining nurses' leaving intentions. Multilevel multivariate regression analysis showed that intention-to-leave is higher among nurses with a specialty degree, nurses aged 35–39, and in nursing units where nurses are less satisfied with opportunities for career advancement, staffing levels and participation in hospital affairs. Analysis with moderation effects showed the observed effect of age and of having a specialty degree on intention-to-leave during the regression analysis is reduced in nursing units where nurses are more satisfied with opportunities for career advancement. These findings suggest that promoting retention strategies that increase satisfaction with opportunities for career advancement among Portuguese nurses has the potential to override individual characteristics associated with increased turnover intentions.

At the time of writing this abstract, the subsequent qualitative phase of the study is still ongoing. The main objective of this phase is to collect, identify and analyse experiences, implications, practices and responses around mobility of EU/EEA nurses to England from the perspectives of individual nurses, NHS organisations and key-informants at the policy level. Data collection is being conducted in England via face-to-face and Skype semi-structured interviews. It started in November 2015 and it is expected to conclude around June of the following year. All qualitative data will be then organized, first separately and then together in a narrative synthesis for analysis following the principles of the Framework Method. The study received ethical approval on the October 2015 from the King's College Psychiatry, Nursing and Midwifery Research Ethics Subcommittee under the reference LRS-15/16-0862.

## Faculty Hour: Dedicated Time for Interaction in Multidisciplinary Teams

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### Short Paper

The perioperative process of the University Medical Center Groningen is organized in teams consisting of surgeons, anesthesiologists and OR-staff. These dedicated teams work together to deliver the highest quality of care to the surgical patients. However, the teams experienced lack of dedicated time for interaction with their colleagues mono- and multidisciplinary, resulting in long time periods for updating protocols, ineffective procedures with unnecessary delays and waste, and experienced incomprehension among each other.

We developed the intervention 'Faculty Hour' (FH) based on the design of Beth Israel Deaconess Medical Centre in Boston. Together with the stakeholders involved (e.g., anesthesiologists, surgeons, OR-staff) we analyzed the impact dedicated time for FH would have on our perioperative organization. This resulted in a design of FH with dedicated time from 7.30-8.15 hrs. every Tuesday, postponing OR-starting time from 8.00 hrs to 8.45 hrs. We organized a monthly structure with a distinct order for teams to meet. Participation was voluntarily and professionals were in the lead concerning leadership and organization of their meetings. The 5th Tuesday (4 times per year) we organized plenary sessions on overall issues with all team members and invited experts. See figure 1.

During the first year we evaluated the process and the effects of the intervention on a number of indicators:

- team functioning, need for interaction and interaction frequency per team, using the validated Team Climate Inventory (TCI),
- OR-production figures for all participating departments,
- OR-starting and ending times as well as cancellations due to running out of program,
- quality improvement, using focus group interviews with leaders of the dedicated teams.

After one year, all multidisciplinary teams still participate in FH, and monodisciplinary teams are still expanding. We saw neither increase in cancellations nor decrease in OR-production figures. Also OR-ending times showed no significant changes. FH was used to improve procedures (e.g. resulting in reduced waiting time for the patient during the process and collaborative instructions on postoperative pain reduction) and to investigate risks associated with new less invasive techniques, to pay attention to less routine situations, clinical lessons, training on devices and updating protocols. Collateral communication structures have developed. At the same time, there still is resistance to cooperate because of the early start of FH, resulting in difficulties in the private situation of team members. Having dedicated time to interact is more effective in taking up improvements within teams if there is a dedicated leader during the meeting.

On the basis of this one-year evaluation, it is decided to continue FH for another year; afterwards the effect of FH on team functioning will be re-measured using the TCI.

## Frequent Users of Primary Health Care in Northern Finland

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### Context

The purpose of this study was identify frequent user of primary health care and determine the characteristics of these patients. The Finnish health care service system is in need for reform, because of the sustainability gap in general government finances and the changes in the population structure due to population ageing. Cutting down the welfare and health services may impact especially the people living in North Finland. Frequent users are a heterogeneous group and estimated 5-8% of all primary health care users are frequent users. It is very important to recognize frequent users while developing primary health care system.

### Methods

Frequent users are defined as a patients with eight or more ( $\geq 8$  times per year) doctor visits within the previous 12 months. The data ( $n= 8461$ ) is a part of an extensive research project with the Northern Finland Birth Cohort 1966 (NFBC 1966) well-being and health program. Multivariate statistical methods are used in basic analyses. Postal questionnaires in 46 years of age provide information of the socio-demographic variables (e.g. sex, marital status, education), social well-being (satisfaction with current life, social support, coping), employment history and occupation, life style (e.g. physical activity, smoking, alcohol use, diet) and health status (e.g. self-reported health, mental health, managing with illness, somatic and psychiatric sickness and symptoms).

### Results

The results showed that frequent users of primary health care where individuals with specific characteristics as poor self-perceived health, dissatisfaction with the current life situation, female gender, family income below the poverty threshold, poor physical health, poor mental health, smoking, abstaining of alcohol and also heavily using other health care services. Poor self- perceived health was most strongly related to frequent use in primary health care. Frequent users are a considerable burden on all primary health care professional groups and therefore their identification is economically significant.

### Discussion

The identification of frequent user of primary health care requires a wide knowledge of the context. There is not been shown any specific reasons which affected to frequent use. It is essential to understand the social determinants of frequent users and increase understanding among health care professionals while developing primary health care services in rural areas. The vulnerable groups e.g. unemployed that are almost solely dependent on the publicly arranged services, are likely affected the most. Identifying frequent user of primary health care can be implement to avoid inequalities between individuals, and to reflect to the later health outcomes and overall well-being.

## Health Service Utilization and Medical Costs among Patients with Schizophrenia Receiving Long-acting Injectable

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### Context

According to health statistics, the number of patients with schizophrenia is increasing yearly, and those patients consume lots of medical care resources. One of the new developments regarding treating psychotics is long-acting injectable (LAI) antipsychotics. However, the issues of health service utilization and medical costs among patients with schizophrenia receiving LAI risperidone still remain under-recognized in many countries, including Taiwan. Hence, the current study aims to fill the gap.

### Methods

This retrospective matched case-control study evaluates health service utilization and medical costs between patients with schizophrenia who receive LAI risperidone (the case cohort) and those who take oral risperidone medication (the control cohort). The main data source is the 2008-2013 Psychiatric Inpatient Medical Claim Dataset in Taiwan. With respect to data analyses, we perform Propensity Score Matching (PSM), Two-part Models, and Generalized Estimating Equation (GEE).

### Results

Analytical results have demonstrated that there are significant reductions in total annual numbers of acute hospital admissions and lengths-of-stay in the case cohort, compared to the control cohort. However, the case cohort incurs more psychiatric service costs and total outpatient medical costs than the control cohort thanks to increased utilization of outpatient services.

### Discussion

To sum up, treatment with LAI risperidone is associated with a reduction of hospital service utilization but more medical costs in Taiwan. Findings of the current research hopefully could provide empirical evidence in helping the medical professional design better clinical guidelines, and thus improve health care quality of patients with schizophrenia.

## How Consistent Are Dentists and Patients When They Assess the Quality of Dental Care? Results from Romania

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### Context

The overall quality of dental care is one of the main motivational factors when patients select a dentist. However, quality management tools and practices are not being used to their full capacity in order to promote and improve the quality of dental care. This study aims to identify both patients' and dentists' perspectives and attitudes on quality management in dental care and the interest they pay to this issue.

### Methods

The study has a cross-sectional design and uses a quantitative approach. We analyzed the responses provided by 724 respondents who have visited a dentist during the previous 12 month before the study, as well as by 120 dentists. Descriptive statistics were performed on both populations in order to assess patients' and dentists' perspectives and attitudes about quality management in dental care.

### Results

According to our analysis, 89% (N=638) of patients perceive the evaluation of quality in dental care as necessary. Regarding their experiences, 74% of respondents perceive the received dental care services as of high quality. There is an average level of knowledge regarding quality management among dentists regarding quality assurance systems, total quality management and quality standards (ISO 9000). Nevertheless, the majority of patients (88%) perceive quality as being the most important aspect that needs to be taken into account when delivering dental care services. Out of the total sample of dentists, less than half of the respondents (44%) confirm the existence of a quality management system within their dental clinic, mentioning the following factors as being the main barriers in implementing such a system: improper quality definition within Romanian health policies, staff resistance towards the implementation of a quality management system, and lack of information and culture regarding quality management.

### Discussion

Our results suggest that both patients and dentists perceived quality management as being an essential tool in delivering dental care services at high standards. Still, according to our analysis, there are barriers that need to be taken into account in order to ease the process of implementing such a system.

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## Implementation of Falls Prevention of Older People in the City of Lahti

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### Context

Falls and related injuries are a major public health concern in elderly people in Finland. The falls and the injuries caused by falls increase health care costs and deaths among the elderly. The falls also deteriorate the quality of life and functional capacity. Despite extensive knowledge base about prevention of falls, widespread and systematic falls prevention was insufficient at Lahti City Social and Health Care Services. Along the structural change of Social and Health Care Services, starting in 2014, implementation of falls prevention and reducing the falls incidence was set into one of the strategic goals.

### Methods

The IKINÄ-model was chosen as a framework for the implementation and developing local fall prevention practices. The emphasis is on organised and systematic multiprofessional fall risk assessment, risk-assessment-based planning and execution of necessary interventions. Implementation was initiated with analysis of falls, practices of recording the falls and skills and competence of the health care staff.

### Results

One to two fall prevention and implementation champions have been trained from each nursing home units, home care and acute/rehabilitation wards (altogether 98 staff members). Head of each unit is liable for deployment of implementation in co-operation with the staff. Practices and scales for systematic fall risk factor assessment have been put into operation.

### Discussion

Target of the outcome and benefits of implementation are all citizens of Lahti and 1300 social and healthcare staff members. After two years, systematic fall risk assessment has become a fixed procedure. Documentation of falls, risk factors, patient safety incident reporting and preventive work has improved. Daily physical activity and exercise has become a norm in units. The implementation is an ongoing process. Next follow-up survey will be done in spring 2016, and incident of falls and fall injuries are monitored regularly.

## Implementation of the Lithuanian National Clinical Guidelines to Perinatal and Neonatal Medical Practice by Trainings with Multidisciplinary Team-Based Approach

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### Short Paper

The aim is to share the experience of the Lithuanian national clinical guidelines implementation to perinatal and neonatal medical practice by trainings with multidisciplinary team-based approach in order to improve antenatal, maternal and neonatal health care.

Clinical practice guidelines are one of the foundations of efforts to improve healthcare. In order to standardize the health care in all maternity institutions of Lithuania 40 obstetrical and 30 neonatological diagnostic and treatment national guidelines have been developed on the basis of Lithuanian – Swiss Cooperation Project “Improvement of perinatal and neonatal health care services in Lithuania”. In 2014, the guidelines were developed in conjunction with clinical expertise and patient values. Their aim is to guide specialists in decision making and to improve the quality of care as well as optimize the use of resources. Guidelines have been approved by national associations and ministry of Health, but this does not necessarily mean that the recommendations are actually followed in everyday medical practice.

In order to implement Lithuanian national clinical guidelines in medical practice, a strategy with 3 fields action was identified: 1) create standardized training courses for perinatal team specialists based on new guidelines; 2) improve professional competence and modern technology usage skills by utilization of multidisciplinary approach; 3) evaluate the effectiveness in real clinical settings, including clinical audit programmes and methods of feeding back information concerning current practice.

Based on the new national guidelines we developed five interactive standardized training courses: primary obstetric assistance, advanced specialized obstetric assistance, neonatal resuscitation, neonate stabilization and preparation for transportation, conflict management and communication with patients.

The trainings use ergonomic learning models, which consist of 1) online theoretical learning with access to “how to do it” training videos, obligatory self-assessment and 2) evidence-based hands-on simulation training with multidisciplinary team-based approaches to enable better management obstetric and neonatal emergencies. The courses are designed for maternity care providers, including: obstetricians gynaecologists, neonatologists, anesthesiologists, residents, midwives, nurses and other clinicians.

A 2 (or 3)-day emergency obstetrics or neonatology training course consists of minimal lecture time (short discussion) and small group workstations. Every multi-professional group of 3 participants (e.g. an obstetrician, midwife and anaesthetist) simulates emergencies in order to develop practical and teamwork skills. In the workstation every trainee has a role: leader, assistant or assessor. They work using the closed loop communication and the roles are changed every next simulation. An assessor uses checklists to help the leader improve the skills and gives feedback. In 2015, a total of 2337 staff members from 32 maternity institutions were trained in Lithuania. This model changes health care cultures, trains leadership and constructive feedback and also makes learning simple and efficient.

## Incidence Rate of Pre-Diabetes Progression to Diabetes: Modeling an Optimum Target Group for Intervention

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### Context

About 86 million (37%) of US adults 20 year or older has pre-diabetes. While our primary care practice sites serve over 6000 patients with diabetes, the number of individuals with pre-diabetes and rate of progression to diabetes remained unknown. This study aimed at determining prevalence pre-diabetes among patients served by primary care practice clinics of an academic institution in Midwestern US, to estimate rate of progression to diabetes at 5 and 10 years among this cohort and using observed data, to model the potential magnitude in diabetes incidence risk reduction of an intervention program in specific sub-groups.

### Methods

We conducted a retrospective cohort study using records of patients empanelled to three primary care sites in 2005. Eligibility criteria included patients 20 years and older considered to have pre-diabetes during Jan 2004-Jan 1, 2005 based on either fasting glucose or hemoglobin A1C level. A total of 106,821 patients were empanelled to one of the three primary care practices in 2005. Demographic characteristics were captured and incidence rates (in person years) at 5 and 10 years were determined.

Population attributable risk (PAR) statistics were calculated to estimate the impact of reducing fasting blood glucose on progression from pre-diabetes to diabetes in this cohort. Multiple intervention effects (reduction of glucose level by 5, 10, 15 and 20 unit mg/dl) along with multiple rates of adherence (10%, 25% and 50% of the population) were examined for those with initial glucose levels from 110-119 and  $\geq 120$  mg/dl.

### Results

Ten percent of patients (n=10,796) empanelled in one of three primary care sites had pre-diabetes in January, 2005. Over 50% of the cohort was male and 40.5% belonged to the age group 65 years and older. The prevalence of patients with baseline glucose of 110-119 mg/dL is 2743 (25.8%); only 6.0% (n=633) of patients had baseline glucose of  $\geq 120$  mg/dL. At 5 years, incidence rate is 40.2. The incidence rate at 10 years is 35.8.

Population attributable risk (PAR) statistics was applied to two target patient groups; outcomes based on percent reduction from baseline glucose and level of adherence to a theoretical intervention were modeled. The PAR for a 10 percent reduction in the 110-119 group with 25% adherence was 7.6% (95% CI = 6.5% to 8.7%). The PAR for a similar percent reduction and adherence level in the group of patients with baseline glucose of  $\geq 120$  is only 3%.

### Discussion

While incidence rate at 10 years appear to be lower, by then 57% of the cohort had been lost to follow up. Age and baseline glucose were independent predictors diabetes progression.

## Interventions That Increase the Use of Cancer Screening: a Systematic Review

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### Context

A vast amount of literature on different interventions that aim to increase the use of cancer screening has been published. However, the evidence has become fragmented and lacks a systematic overview. Our aim is to provide a comprehensive overview of the effects of interventions by synthesizing the findings of published empirical studies. Our research questions are: (1) to what extent have interventions been effective? and (2) what specific design features contribute to (un)desired effects?

### Methods

A systematic literature search in six electronic databases (Embase, Pubmed, Cinahl, PsychInfo, Web of Science, and Eric databases) for studies published between January 1990 and December 2015, supplemented by reference tracking. A methodological quality score for each included article was assigned.

### Results

Different types of interventions that focus on the participation of cancer screening were identified. These interventions focus on patients, providers, care organizations and the community at large. The different types of interventions are heterogeneous in nature and were frequently multifaceted. Specific interventions were the use of reminders towards patients and providers, feedback to providers and care organizations and financial incentives for patient, provider and care organizations. Most of these interventions were effective in increasing screening participation.

### Discussion

Cancer screening participation is of the utmost importance to public health. Unfortunately participation rates of cancer screening such as breast cancer screening, cervix cancer screening and colorectal cancer screening are frequently unsatisfactory. Our systematic review shows that design choices of screening programmes have an impact on participation rates. Health Policy makers should be aware of these possibilities and implement these features. Future research should focus on which specific interventions are most effective. Moreover, since these interventions are multifaceted in nature and can be combined we consider this as an avenue for future research.

## Iran's Health Network System; A Pioneer Model

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### Short Paper

Iran's health system has experienced several reforms in the past three decades. The most important reform was establishing the National Health Network in 1983 with the aim to reduce inequities, expand coverage and access to healthcare for all people regardless of their socio-economic status. Evidently, less than one decade the effectiveness of "health network system" has been proved, since it has provided a unique platform for not only Primary Health Care but also for family physician to deliver first level health services. The remarkable effects of this system on reducing health disparity between deprived and privileged areas have been pointed out in national and international reports. Improving vaccination coverage as well as maternal and child health care, declining infant and maternal mortality, decreasing thalassemia incidence, and control of many common communicable diseases are examples of such satisfactory and successful integrated system. These impressive achievements are mainly related to its holistic and systemic approaches with focus on health promotion and disease prevention. The following infrastructural principles were stated as the designing and planning policies:

1. Prioritizing preventive services over treatment;
2. Prioritizing remote and impoverished areas over privileged areas when allocating resources,
3. Prioritizing outpatient services over inpatient ones,
4. Decentralization in order to make different regions rely on themselves;

The core of this system was the Health House and health post for the rural and urban population respectively. These units deliver a wide variety of integrated primary health care free of charge to the rural population actively, while in urban areas are passive. This model has potential to be extrapolated in similar societies. Now, based on a close collaboration between the experts from Iran and the United States modified model of health houses is piloting in Mississippi. However, it has some limitation and challenges like; lack of on-time revision and improvement, carelessness of the policy makers and structural disconnection with other part of the health system.

## Lean Intervention in Nutritional Risk Assessment: Establishing a Culture of Quality Improvement through Strategic Alignment

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### Context

It is recognized that nutritional risk is associated with length of stay and surgery cicatrisation, with a significant economic and health impact. In several countries, there is a small number of patients that has their nutritional risk assessed. One of the main reasons is the lack of nutritionists available to assess all the inpatients at the different wards, side by side with the low awareness of how critical it is. Therefore, it is important to understand how to improve assessment processes to overcome this barriers.

### Methods

We started our approach with a "gemba-walk" observational study in two different weekly days, to understand how the risk assessment was made. In order to improve nutritional risk assessment effectiveness, a LEAN system approach was chosen. An internal Medicine ward, in a central hospital, was selected. At the internal medicine ward there was no assessment method of nutrition risk, therefore, during one week, the service nutritionist assessed the risk of all the patients admitted and waited 48 hours after the admissions to see if there was a request from the nurse or the physician.

Then, we designed patient and professional flows to help identify waste and improvement opportunities. After this, a Value Stream Map (VSM) was co-designed by nurses, nutritionists and physician. With all this data, we applied a LEAN tool called "External Setup". This LEAN implementation study took two observational days, five half days meetings and a one month evaluation.

### Results

What we found out was that if the intervention was dependent of doctor's request, the above situation would just happen in 55% of the risky patients and just 19% of those receiving a nutritionist intervention. Therefore, by using this methodology the intervention was expanded to 92%, 90% and 60% in three different weeks.

The application of the "external setup" enable to reorganize the process so that the risk assessment activity shift from nutritionists to nurses. Nutritionists are to be called just when they have high risk patients by the NSR 2002 scale. The shift from nutritionists to nurses allowed 92% of patients to be assessed, meaning an overall 42% improvement.

### Discussion

From the interaction process with the multidisciplinary team, it was clear that nurses got a better understanding about how important is to perform the nutritional risk assessment to inpatients.

The professionals understood how powerful the observational study was, helping them moving from perceptions to facts. The engagement of the top management was essential to support the change in the role owner. The lack of time and resources that derives from the economic crisis policies, and the consequent lack of motivation were found to be the biggest barriers to the prosecution of a proper nutritional risk assessment. To deal with the lack of resources we recommend:

- a) to change the assessment procedures from the nutritionists to the nurses team;
- b) the referral of the patients at risk shouldn't be conditioned by the doctors request, however the nutritional intervention should happen with the agreement of both nutritionist and the assistant doctor.

## Lithuanian – Swiss Cooperation Project “Improvement of Perinatal and Neonatal Health Care Services in Lithuania”

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### Short Paper

The international project worth € 27,9 mln. aims to improve maternal, and neonatal health care in Lithuania through six closely related activities.

The first Lithuanian–Swiss Confederation cooperation program was started in 1994. The key goals of the program were to regionalize perinatal care, to establish two well-equipped perinatal centers on the basis of university hospitals, providing modern neonatal intensive care and resuscitation units. It also sought for setting up of neonatal and high-risk maternal transportation and birth registration systems. This has largely contributed to achieve the maternal mortality incidence up to 3.3 and infant mortality rate 3.9 (2014).

Swiss Confederation decided to repeat financial support to Lithuanian in the year of 2010. At the beginning, the feasibility study was carried out that included the comprehensive evaluation of services from pregnant women maternal and newborn care.

The 6 fields of action were identified: 1) to install modern medical equipment for 27 hospitals; 2) to supply vehicles with special equipment for safe transportation of neonates for the three biggest maternal health care institutions; 3) renovation of 9 maternity care institutions; 4) development of 70 national obstetrical and neonatological diagnostic and treatment guidelines; 5) improvement of professional competence and modern technology usage skills of not less than 1540 maternal and neonatal health care providers; 6) to develop and establish the national database to monitor maternal and neonatal health care indicators nationwide.

In 2011 the project agreement was between the representatives from Lithuania and Swiss Confederation.

In less than a year before the end of the project there were successful completion of three project activities. First of all, 40 obstetrical and 30 neonatological care national guidelines were approved by national associations and the Ministry of Health. Furthermore it was directly related to the standardized interactive training courses for 2337 Lithuanian perinatal team specialists in 5 topics: conflict management and communication with patients; neonatal resuscitation; primary obstetric assistance, newborn stabilization and preparation for transportation; advanced specialized obstetrical assistance. Finally, the acquisition of three reanimobiles allows to transport severely ill newborns to the perinatal center. Currently, the renovation of maternity care institutions and installation of modern medical equipment are underway, as well as development of perinatal information system.

Complex, well designed and conducted, adequately funded program should improve quantitative and qualitative maternal and infant health indicators.

## Managing Complexity: How Hospital Administrators and Doctors Organize Specialized Care, Clinical Research and Medical Education in a Non-Academic Setting

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### Context

In the Netherlands, eight University Medical Centres (UMCs; also called 'Academic Health Science Centres') are responsible for providing specialized care for patients with rare conditions, conducting clinical research and training doctors. In 2014 the Ministry of Health initiated a policy experiment – 'TopCare' – that granted three non-UMC hospitals additional funds for a period of four years to undertake those complex 'academic' activities in specific fields (e.g. eye care and neurology). For this paper we are interested in what kinds of infrastructures the participating hospitals build and how these infrastructures are used to govern care, clinical research and medical education.

### Methods

The aim of the TopCare experiment is to find out whether a more open system for organizing and financing complex care, research and training is desirable (also allowing non-UMCs). We are currently one year into the evaluation of TopCare. So far, we have conducted 29 interviews with national stakeholders and key actors within the three hospitals. The interviews focused on the background and aims of TopCare; the management of specialized care, clinical research and medical training within each of the hospitals; and the infrastructures that are put in place to deal with this complexity. We have also studied policy documents about the organization and funding of Dutch hospitals in general and the TopCare program in particular. Finally, we are conducting ethnographic research of TopCare within the three hospitals: observing team meetings, discussions about complex patients and informal get-togethers as well as interviewing key actors 'on the job'.

### Results

In our analysis, we use the concept of 'infrastructures' as it is developed in Science and Technology Studies to understand how hospital administrators and doctors manage the complex and often intertwined activities of specialized care, clinical research and medical education. These infrastructures are material (e.g. high-tech medical equipment), spatial (e.g. meeting rooms), digital (e.g. clinical databases), procedural (e.g. protocols), informational (e.g. methodological expertise), personal (e.g. PhD-students, statisticians) and relational (e.g. collaborations with UMCs). Among other things, the infrastructures are used to strengthen accountability, quality control and sustainability of the new activities. The way managers and doctors govern the hospitals via the infrastructures, and the success they have with it, depends on the history of the hospitals ('path dependency'), the behaviour of internal key actors and the reputation the 'TopCare' departments of the hospitals have in the healthcare sector (e.g. whether they are seen as centres of excellence).

### Discussion

This study points to the wide variety of infrastructures that play a role in hospital governance. The infrastructures are dynamic and sociotechnical: they exist through interactions between people and materials, spaces and technologies. It takes a lot of time and effort from different actors to build, shape and maintain the infrastructures and make them meaningful in daily practice, i.e. embed the infrastructures in the realities of managers, doctors, researchers and patients. That is why agency and history matter: performing activities that have an 'academic' complexity requires advocacy from powerful internal actors and infrastructures that over time become ingrained in work routines. The analysis aims to show that managing complexity in hospitals that provide specialized care, clinical research and medical education requires infrastructures that have long-term effects both internally (e.g. quality control) and externally (e.g. transparency towards funders).

## Monitoring and Reducing Health Inequalities: a Case from Lithuania

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### Short Paper

Socioeconomic inequalities in health and health care are important challenges for public health. Systematic inequalities in morbidity, mortality, health services use and accessibility between socioeconomic groups exist in most of the countries. However, the vast of scientific data suggest, that these inequalities are more expressed in countries in transitions. In terms of health inequalities, Lithuania appears in the range of the countries with the most unfavourable situation. In 2014, the Lithuanian Parliament approved the Lithuanian Health Programme 2014-2025. One of strategic goals of this programme is to reduce health and health care inequalities in Lithuania.

For achieving the reduction of inequalities, Lithuania has started to implement the project „Development of the Model for the Strengthening of the Capacities to Identify and Reduce Health Inequalities“. This project is financed by the Norwegian Financial Mechanism 2009–2014 Programme “Public Health Initiatives” and will be implemented in 2014-2017 by Lithuanian University of Health Sciences, Vilnius University, Klaipeda University and the Institute of Hygiene. The project is aimed at development an evidence based platform for health and health care inequalities monitoring and strengthening administrative capacities of persons involved in the policy making at national and municipal levels.

As project is in the process of implementation since June 2014, some results can already be identified. The unified system for health inequalities monitoring has been developed. This system provides detailed guidelines for collecting of routine health statistics (as mortality and morbidity indicators) and performing life-style surveys for adults and schoolchildren populations. These guidelines include a “step-by-step” type instructions for identification of study population, sampling, collecting data, questionnaires etc. It is expected, that these guidelines will facilitate health inequalities data collection for municipal public health bureaus. In addition, these guidelines will reduce variations in data collection and will ensure reliability of statistical information and comparability among municipalities. All collected data will be publically accessible through newly developed web-based platform.

The second major activity is development of recommendations for reduction of health inequalities. The recommendations have been developed in the frame of the project and based on best research evidences and good-practice examples. They have been developed towards six major factors for health inequalities in Lithuania, i.e. smoking, alcohol abuse, nutrition, physical inactivity, mental health/suicides, and health care accessibility. These sets of recommendations provide some detailed “step-by-step” instructions for their implementation in communities.

The project will be concluded in running capacity building seminars for municipal and national level public health specialists and policy makers. It is expected, that these guidelines and recommendations will be regularly used by the target groups thereby improving health of population and reducing health and health care inequalities in Lithuania. Moreover, this practice could serve as transferable example for other countries, in tackling health inequalities.

## Practices and Attitudes of Health Professionals Regarding Global Breastfeeding Recommendations in Bulgaria

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### Context

Extensive researches have documented numerous benefits of breastfeeding ranging from healthy individuals to healthy families, society and environment. Breastfeeding promotion is known as one of the most cost-effective health interventions for preventing morbidity and death from different illnesses and gaining disability-adjusted life years (DALYs). Breastfeeding promotion can improve the health status of infants and young children. The World Health Organization (WHO) and UNICEF postulate 3 major recommendations in reference to breastfeeding practices: early initiation of breastfeeding (within the first hour after delivery); exclusive breastfeeding for six months; continued breastfeeding up to 24 months and beyond.

### Methods

The aim of this study was to explore health professionals' knowledge and attitudes regarding best practices, recommended by WHO and UNICEF. A sociological survey was carried among 165 health professionals (graduating bachelor students from Medical University- Sofia and practicing midwives and general and pediatric nurses in Sofia) using a self-administered questionnaire. The questions are based on information distributed by WHO, UNICEF and La Leche League regarding breastfeeding. The survey was conducted between April and October 2013. Data was analyzed using SPSS 15.

### Results

To the question 'As health professional breastfeeding promotion is one of my obligations.'

86.70% of the health professionals chose 'strongly agree' and 'agree' of the 5-point Likert scale. 56.40% of the respondents say that the statement 'Breastfeeding can be initiated within the first hour after delivery' is true. 69.70% answer approve exclusive breastfeeding for the first six months of life and 70.90% think it's acceptable mother to breastfeed her child up to 2 years if given other foods.

51.50% of respondents say that the main source of breastfeeding information is their personal experience, 40.60% - knowledge acquired at the university, 37.60% - information from friends/ relatives. Less than the half of the respondents (45.4%) say that they know about the work of voluntary breastfeeding consultants. Only 5 of them work in cooperation with voluntary breastfeeding consultant.

### Discussion

The results of this study show that the main source of knowledge about breastfeeding for the respondents is personal experience. Graduating midwives have better knowledge of the actual breastfeeding recommendations of WHO and UNICEF and more positive attitudes towards breastfeeding. Ordinance № 1 of 8 of February 2011 for the professional activities that nurses, midwives, associated health professionals and health assistants can perform by appointment or by themselves breastfeeding promotion is one of the obligations of health professionals in Bulgaria. Although 86.70% of the respondents agree with their role in providing breastfeeding support, there is a knowledge gap about recommended breastfeeding practices based on evidence. The implementation of these recommendations depends largely on the health professionals and their connections with "mother to mother" support groups. Tradition as a macro-social factor of health is a stronger predictor of health professionals' attitudes.

## Prescribing and Patient Safety; Technology Paves the Way

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### Context

Safe prescribing is crucial to minimising harm to patients. Poor prescribing practice can lead to patient safety incidents (PSIs) related to either errors in commission, e.g. wrong drug dose or errors in omission such as failure to monitor renal function. Research in UK hospitals has shown a prescribing error rate of 7%, a dispensing error rate of 0.02-2.7% and an administration error rate of 3-8%. Our hospital audits identified areas of poor prescribing practice. Electronic prescribing systems assist in the financial management of medication, but debate remains whether they significantly improve safe prescribing at patient level.

### Methods

Over a 2 year period, the hospital developed a strategy to optimize patient safety in relation to pharmacy prescriptions; we audited the legibility of prescriptions, traceability of prescribers, accuracy of time of drug administration, and documentation of the reasons for drug omission, on a medical, surgical and acute care ward. After the first audit cycle, primary interventions occurred. Doctors with poor prescribing practice were individually emailed and staff education in the form of presentations at medication safety meetings were used before data was re-audited to assess the impact of such interventions on prescribing practice.

In July 2015, over a single day, the trust transformed from using hand-written drug charts to electronic prescribing and a third audit cycle was used to ascertain the impact of computer aided prescribing on 'safe prescribing', as outlined by the criteria above.

### Results

Our baseline audit of hand written drug charts showed only 48% of charts had an identifiable prescriber, 99% had an allergy status documented and 88.3% drug charts had correct drug omission documentation. Despite these failings over 90% of the medications were still administered. Following primary interventions, 72% of charts had an identifiable prescriber. Documentation of allergy status remained at 99%. Initially, 5.19% of all drugs omitted were classified as critical medication. Following primary interventions, the figure deteriorated to 8.82% of omitted drugs. E-prescribing immediately increased prescriber legibility and traceability to 100%. In addition, prescriptions could no longer be made without an allergy status; this guaranteed 100% allergy status recording. Drug omission codes and the precise time drugs were administered were correct in 100% of patients (n=207). E-prescribing showed 7.24% of omitted drugs were categorized as critical.

### Discussion

Our hospital used hand-written drug charts for many years and local audits identified multiple failures in safe prescriptions of medication. A programme was implemented to improve safe prescribing which had good effect, however it was not until the hospital introduced an electronic prescribing system that poor prescribing practice reduced significantly and was maintained. Electronic prescribing was introduced across the trust on a single day, with minimal disruption and sustainable benefit, completely resolving prescribing failures which had compromised patient safety; our audit demonstrated an improvement in many aspects of safe prescribing to 100%. Currently the hospital policy is to allow system based prescription of drugs which the patient has a documented allergy to. Therefore although major safety improvements have been made, we have not completely reduced the risk of drug errors by introducing e-prescribing.

## Primary Health Care Services: Team Spirituality and Organizational Performance

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### **Short Paper**

The search for organizational effectiveness and efficiency has reinforced the role of employee commitment and creativity, and triggered a stream of research on work arrangements that improve the human experience, such as those that focus on workplace spirituality, to encompass employees' search for meaning and purpose at work as well as a meaning to their lives (Izak, 2012; Duchon and Plowman, 2005; Fry, 2003; Ashmos and Duchon, 2000) and its potential impact on organizational performance (Elm, 2003; Garcia-Zamor, 2003). The paper aims to study the influence of two dimensions of workplace spirituality (meaningful work and community) on perceived and objective organizational performance in two primary health care settings: health centers (HCs) and family health units (FHUs), differing in terms of work organization. Twenty teams were studied: nine non-self-selected teams (HC's) and eleven self-selected teams (FHU's). Data on workplace spirituality and perceived organizational performance were collected through a survey with a sample of 266 health care workers (doctors, nurses and administrative staff). Data on objective performance were obtained from regional health authorities. Contrary to previous studies three factors of team spirituality emerged from the Principal Component Analysis, namely: Individual, Team and Community. The first dimension, Individual, gauges the respect that the professional feels from the team regarding his/her individual characteristics. The second dimension, Team, reveals the professional's team identification and the third dimension, Community, expresses the community conscience of the team. The three dimensions were correlated with the organizational performance scores using Spearman's rho. The results obtained pointed to positive correlations between both Individual and Team dimensions with the organizational performance: higher levels of individual respect and team identification are associated with higher performance scores. Using multiple regressions, data analysis demonstrated that in both groups, perceived and objective organizational performance are predicted by Individual and Team dimensions. Although both dimensions explain performance in both work teams, they don't present the same order in terms of coefficient weight. In the case of HCs, Team dimension presented the highest score and Individual dimension the lower. In case of FHUs, data showed opposite results; Individual dimension presented the highest score and Team dimension the lower. Regarding FHUs case, since the team identification is implied due to the fact that they are self-selected teams, individual respect emerges as the most relevant. Primary health care services revealed the importance of Individual and Team dimensions, as emerging concepts of workplace spirituality. Work teams with higher Individual and Team scores, had higher performance results, which may therefore be an input in policy decisions regarding primary health care.

## Reasons for the Misuse of Antibiotics in Animal Fattening and Its Impact on the German Health Care System

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### Short Paper

Over the last two years the issue of multi-resistant bacteria found in food was broadly discussed in the German media. Pathogens like *Escherichia coli* (*E. coli*) or Methicillin-resistant *Staphylococcus aureus* (MRSA) are increasingly detected on food, especially on meat. Studies, which were conducted in upstream stages of the grocery chain like stables and slaughterhouses, demonstrate that especially fattened animals are contaminated with multi-resistant germs.

Multi-resistant pathogens result from the increased, untargeted and partly inappropriate use of antibiotics in hospital, in the outpatient area and in the agricultural sector. Only a strictly indicated use influences the epidemiological development of multi-resistant bacteria significantly.

Two thirds of the antibiotics used in Germany are applied to animals. They are systematically used to prevent diseases and to protect the animals against known pathogens. This approach does not fit to the original purpose of antibiotics, which is to treat infectious diseases and not to prevent them. As a consequence, some bacteria develop resistances against the applied drugs and survive. By consuming contaminated meat or through transmission via wounds humans can be infected with these multi-resistant bacteria, which could lead to failure of antibiotic treatments in future.

If a person is contaminated or even infected with multi-resistant bacteria, he is a vector for transmitting the bacteria in health institutions like hospitals, rehabilitation clinics, nursing homes, etc., as well as in the community. Infections with these bacteria accompany with higher mortality rates, prolonged hospital stays, psychological pressure and complications caused e.g. by drug-related side effects. Additionally, tremendous economic losses are caused by those infections. The treatment requires increased personnel effort, highly expensive antibiotics, increased use of laboratory services and opportunity costs result from blocked beds.

Reasons for the fast spread of multi-resistant bacteria in the agricultural sector can be found by revealing the disincentives in the German health care and agricultural system. There are mainly three aspects, which can be identified. Firstly, the price war and competition on the food market, especially regarding fattened animals. The consumer behaviour, characterized by a high consumption of meat due to low prices, is causal for this development and currently eliminates alternative farming methods, because the demand cannot be met. Secondly, the counterproductive incentive system in the veterinary medicine, where prescription and sale of drugs is not separated, leads to an increased sale of antibiotics. For many veterinarians the drug sale has become the main income. Countries like Denmark separate prescription and sale to avoid this disincentive. Thirdly, pharma companies are able to foster the purchase of antibiotics by discount campaigns.

As a consequence, the German Federal Ministry of Health has initiated the German Antibiotic Resistance Strategy (DART), which contains measures to identify, prevent and combat resistances in human and veterinary medicine.

## Reducing First-Case Tardiness in an Academic Medical Center Operating Room

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### **Context**

Hospitals around the world are increasingly adopting lean and six sigma (LSS) tools for redesigning care and inspiring a culture for continuous improvement.

LSS are process improvement methodologies that aim to identify inefficiencies in the process of care, eliminate non-value adding activities and reduce variability.

In the Operating Room (OR), first-case tardiness (FCT) - a delay of the first surgery of the day - is one frequent inefficiency with high impact in patients' satisfaction, particularly for fasting patients. Furthermore, when first cases start late, succeeding surgeries also delay, are extended beyond the regular schedule or get delayed for the next day.

### **Methods**

In this study, we report the impact of a lean six sigma project developed in the main OR of the largest Academic Medical Center in Latin America, with the aim of reducing operating room first case tardiness.

In July 2014, we started building an institution-wide package of measures in order to improve our on-time starts at the OR. Some of these initiatives were not confined to the OR, but also included the inpatient and ICU units. For instance, we streamlined OR check-in with an operational checklist for the inpatient units, changed nursing shifts and resized our OR team in peak periods, developed a new method of scheduling for surgeries that needed a post-surgical ICU bed, changed the trichotomies and surgical site marking protocols, provided on-site feedback for teams starting late and created an OR electronic "cockpit center", where OR nurses in charge could monitor patient arrivals and surgeries starts.

### **Results**

In the year after our intervention, mean first case tardiness reduced by 38% ( $p < 0.01$ ), to a monthly average of 37 minutes of delay and our proportion of on-time starts significantly increased from 13 to 49%. Moreover, our first-case tardiness for surgeries requiring post-surgery ICU decreased significantly and our mean delay at the OR check-in also decreased significantly. Yet, our proportion of first cases which were changed from previous day OR schedule remained unchanged.

### **Discussion**

The OR is a very complex and dynamic structure, with highly variable processes. We show that LSS is a valuable tool for improving efficiency in such setting. Our success was achieved by the standardization of the surgical patient flow, namely by improving protocols and communication with other clinical areas, namely the inpatient and the ICU units. We also provide a successful example of how to incorporate technology to enhance patient tracking and OR coordination. There is, however, some factors we have to improve in order to achieve a world-class performance. Further efforts should be made in order to increase case predictability and to decrease same-day cancellations, reducing the need for last-call surgical rescheduling. Reducing morning delays may not have a significant economic impact, but will help to reduce rushing during the day and may be the first step of the path to build a more efficient and safer OR.

## Resource Planning for Specialist Outpatient Clinics (SOCs) Using Discrete Event Simulation (DES)

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### Context

Continuous review on clinical resources in SOC is essential to ensure better customer satisfaction. This study was conducted in Musculoskeletal SOC (MSOC) in one of Singapore's largest multi-disciplinary hospitals with over 2,500 outpatients seen every day. MSOC consists of specialization in Hand Surgery (Hand), Orthopaedic Surgery (ORT) and Rheumatology, Allergy and Immunology (RAI), which serves about 15% of the overall outpatients of the hospital. Prolonged waiting time was observed in MSOC in the past few years. In this study, possible causes of prolonged waiting time were examined and required resources to cope with the volume of appointments was recommended.

### Methods

Based on historical data, MSOC had an average of 310 patients a day. A total of 35 consultation rooms was available throughout the clinic. For the three specializations, there was an average of 12 doctors for each discipline, alongside with a number of nurses and laboratory technicians to support daily work activities.

The G/G/n queuing models for various patient flows in MSOC random arrival and service time were built in MedModel® software to simulate as a discrete sequence of events in time. Patient flow included registration, internal and external investigation, doctor consultation and payment.

"As-is" scenario was built and validated against the historical data. Various "What-if" scenarios were examined by varying parameters to look into the effects of increment of doctors and the impacts of increased patient volume in the clinic.

### Results

From simulation results, the incremental effect of doctors help to reduce the waiting time. For Hand and ORT, with the increment of one doctor, there would be a huge reduction of waiting time which reduction gradually decreases with each addition of doctor. Hence, the increment of one doctor was recommended. For RAI, the reduction of waiting time was insignificant with addition of one doctor. For a significant reduction to be observed, at least two doctors need to be added to the clinic.

The effects of overbooking can be predicted by varying the "no-show" rate in simulation model. It was shown that the increase in waiting time was significant when the "no-show" rate decreased for the ORT discipline. Thus, it was not advisable to crowd the ORT discipline with too many appointments. This study provided recommendations on clinic resource capacity review and guidelines for medical personnel on the extent of overbooking.

### Discussion

Applying Discrete Event Simulation in testing of possible scenarios was made possible with minimal cost incurred. The identified possible causes for prolonged waiting time were concluded to be insufficient of doctors and over provision of appointments through the "What-if" analysis in this study. By varying parameters and recreating different "What-if" scenarios, the waiting time for doctor consultation was reduced. Further studies can be done to examine other possible factors that might affect waiting time in the clinic, for example, the clashed patient arrival timings.

## Screening in Atrial Fibrillation - Clinical and Economic Evaluation

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### Context

Atrial fibrillation is the most common arrhythmia in humans. The incidence of AF increases with age, and about 9% of 75 -79-year-old Europeans has AF. Particularly serious and having a significant impact on the fate of the clinical consequence is a stroke. AF increases the risk of ischemic stroke up to 5-fold. This is highly preventable with appropriate oral anticoagulant (OAC) therapy. However, many patients with AF present low compliance. Therefore, it seems that the screening for AF in a broad population aimed at the earliest possible detection of asymptomatic arrhythmias, could prevent many strokes.

### Methods

We performed a systematic review of clinical trials and cohort studies, by searching electronic medical databases, reference lists and Internet. The aim of clinical analysis was to assess the effectiveness of the ECG as compared with the lack of screening in adult population with average risk of AF. The aim of economic evaluation was to estimate the cost-effectiveness of the repeated ECG as compared with the lack of screening in adult Polish population with average risk of AF.

### Results

778 articles were found and 11 that fulfilled our inclusion criteria were taken into meta-analysis (24 710 patients; mean age 68.0 years). The incidence of newly detected, clinically silent, AF was 1,7% (95% CI 1,0-2,4%). The cost-effectiveness analysis of screening in 67-year-old individuals was based on a lifelong decision analytic Markov model. In the base-case scenario, screening of 1000 individuals resulted in 8.7 life-years gained, 15.4 more quality-adjusted life-years (QALYs) and fewer strokes.

### Discussion

It has been shown that screening for asymptomatic AF in 67-yearold individuals is cost-effective in Poland.

## Tackling the Quality of non-prescription medicines dispensing in pharmacies by combining a Balanced Score Card with change management: interim findings

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### Context

Dispensing non-prescription medicines (NPM) and informing consumers about these medicines are core missions of community pharmacists. Research indicates that pharmacy performance in supplying NPM, measured by commonly accepted clinical standards, is often suboptimal. A previous case study (Veiga et al, 2015) suggests the need of exploring an organizational approach to quality improvement. Recently, Jacobs and colleagues (2011) concluded that the organizational culture has been poorly investigated in community pharmacy. This paper aims to address this existing knowledge gap by developing and testing a managerial instrument - a Balanced Score Card (BSC) - for the quality supply of NPM.

### Methods

As usual in “proof of concept” studies, sample size is exploratory. Purposive sampling has been adopted, based on characteristics such as pharmacies location and number of staff members, as a proxy of turnover. Thirteen indicators were initially identified relating to four essential BSC perspectives (Lapão, 2011): customer perspectives (e.g. pharmacies intervention in self-medication requests, customers’ satisfaction with the service), internal processes (e.g. professional satisfaction), innovation/learning (e.g. organisational culture) and financial perspective (e.g. sales evolution). These baseline indicators were discussed in each participating pharmacy, to ascertain their applicability and relevance and to set goals, using an action research approach. Data on customers’ satisfaction and follow-up were collected by telephone-based questionnaires. Professional satisfaction and organisational culture were measured by the Warr, Cook and Wall overall job satisfaction scale and the Cameron and Quinn questionnaire, respectively. Monthly meetings have been held to discuss data yielded and potentially needed actions.

### Results

Preliminary results from three pharmacies indicate, overall, a high customer satisfaction with the NPM service (93%, 73 customer responses). Additionally, 88% of respondents reported satisfaction with the proposed pharmaceutical intervention to their minor ailment. Overall, professional satisfaction at baseline was high (83%). At baseline the dominant culture type in the three pharmacies was clan; graphical representations of the four organisational culture types (clan, adhocracy, market, hierarchy) were obtained. In the first months of BSC testing there was an increase in NPM margins, even when sales were lower comparing with homologous months.

### Discussion

Recruitment of more pharmacies is on-going. Three months after the study inception in the first three pharmacies, staff’s commitment is weaning, creating difficulties in data collection. This can be attributed to lack of time and staff shortages. On the positive side, BSC testing has enabled a better understanding of the mechanisms associated with the quality supply of NPM. Estimated study duration in each participating pharmacy is 6 months. After this period focus groups with consenting pharmacy staff will be conducted. This will allow more in-depth exploration of staff’s views on the usefulness and applicability of BSC as a quality improvement tool in NPM dispensing.

## The Analysis of the Bargaining Power between Hospitals and Health Insurers in China

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### **Short Paper**

There are two aspects on the negotiations power performance between hospitals and health insurers. Comparing with international level, a list of the basic situation of the negotiating parties showed that our health insurer had relatively weak bargaining power, controlling costs means more backward. Combined with international research, the thesis focused on the market concentration impact on the health care negotiations, and put Hubei empirical research as an object to confirm. The medical services industry in Hubei Province reached 67.82 percent of market concentration, indicating a high degree of market concentration. The author suggested that public hospitals should be separated regulating and running of health care organizations and the government should set up third-party monitoring mechanism to improve the efficiency of health care negotiations.

## The Campus Approach: Cross-sectoral Treatment of Complex Symptoms in Cardiology

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### Context

The necessity of creating innovative types of health service organizations results from the phenomenon of the ageing society (age ↑; multi-morbidity ↑), the shift of treatment interventions from the acute care sector to primary care (between 8 and 20 percent of the acute care service portfolio), the legislative reform pertaining to patient transfer management (§39 SGB V) and the introduction of a pay-for-performance reimbursement system. Especially the results of the REDIA study (von Eiff et al 2011) elucidate the necessity of changing medical care provision from sector-oriented care to a well-structured cross-sectoral cooperation and specialized networks of medical experts.

### Methods

The study is focused on the positive effects a campus organization causes regarding to cost containment and medical quality enhancement. Therefore, it was analyzed to what extent a transfer of cardiological patients from acute care to rehabilitation within a campus organization leads to significant savings in terms of direct costs and opportunity costs.

A campus is stated to be a locally concentrated cooperation of complementary medical specialties targeting a holistic and comprehensive medical treatment including curative and preventive service elements. Therefore, the campus idea is guided by the challenge to serve different, but interconnected symptoms: for example, about 35 percent of all patients suffering from a myocardial infarction are diabetics and more than 50 percent of diabetics are dented by vascular diseases (e.g. diabetic foot; vascular stenosis; peripheral arterial occlusion). Congruously, a campus brings together the treatment of heart, lung and vascular diseases.

### Results

By comparing the transfer practice on a campus with integrated rehab facilities with the handling of a patient transfer from an acute care hospital to an external rehab clinic three effects can be found:

- a) A campus organization enables to reducing the average length of stay (ALOS) by at least 0.5 days. As a consequence, an additional capacity of two acute care beds can be mobilized.
- b) An additional capacity effect of 300 days (= one bed) can be stated by optimizing the bed management for patients after heart transplantation and patients with ventricular assist devices.
- c) The number of MRSA cases can be reduced by implementing a search-and-destroy strategy. The opportunity costs of one MRSA-patient (caused by ALOS extension) are 6,500 Euro lost gross margin and the direct costs for an MRSA treatment are 3,500 Euro. The avoidance of one MRSA case equals an additional turnover of 26,000 Euro.

### Discussion

Especially two barriers antagonize a campus approach:

- a) The current practice of reimbursing rehabilitation services based on daily paid service fees of 100 Euro do not cover the real costs. For an appropriate rehab service 140 Euro per day should be calculated.
- b) The severity code of patients is not considered in the currently used reimbursement system. One has to keep in mind that transplanted patients, patients receiving an artificial heart or patients with combination procedures evince a 40 percent higher severity code compared to normal patients in heart surgery.

## The Health Tourism in Bulgaria – Present Situation and Trends

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### Short Paper

The contemporary direction of the health tourism is focused on the prophylactic but in most of its medical forms, it also involves healing activities and services related to post clinical treatment as well as treatment of some chronic diseases.

The medico-social effect of the health tourism is achieved through therapy, prophylactic and recreation. It is realized via various forms - medical tourism, balneological tourism, climatological tourism, SPA tourism, climate and balneo-prophylactic, thalassotherapy, etc. In the modern resorts, as well as in the SPA and wellness hotels, the medico-social aspects of the needs of resort healing and prophylactic are supplemented with healing and sport techniques. During the last decades, the needs for resort treatment and prophylactic in world scale immensely increase. As a result of the changed structure of the diseases and the bigger frequency of some social significant diseases as a result of overpressure and nervous overtiredness, bigger significance is given to the application of the resort factors.

The increase of these diseases which are favorably affected by the effect of the balneo-climatic factors which are used for the primary and secondary prophylactic, forms a large potential of the demand of the balneo-sanatorium treatment.

In Bulgaria, the bio-climatic and hydro-mineral resources have been investigated by their quantitative and qualitative characteristics. For their joint use and application in specialized procedures, the specialists indicate two combinations - the mineral waters in the mountain areas (mountain combination) and the mineral waters on our black sea coast (sea combination). Based on the natural healing resources in Bulgaria, 59 balneo-treatment resorts have been developed. Two regions are formed in the country with unique combinations of exuberance and variety of thermo-mineral waters, healing mud resources and bio-climatic resources:

- a sea combination covering mineral waters, peloids and sea healing resources - Shabla, Balchik, Tuzlata, Varna, Kamchia, Shkorpilovtsi, Pomorie;
- a mountain combination characterized with bioclimatic resources, land shaft and mineral waters - the region of Velingrad; Kostenets, Dolna banya and Pchelina, Devin - Beden, Sapareva banya and Belchin, Kyustendil, Sandanski, etc.

The presence of climatic conditions together with the bases built and well prepared specialists determines the development of the health tourism in our country.

## The Information Components as Part of the Interoperability in Health Care

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### **Context**

The information components forms the basis of intelligent systems that can provide decision support features that will improve care, especially from services that depend on people with a broad range of skills and expertise.

The importance of information components on presentation of processes in medicine and health care is determined by the need for medical information arising from the research and reviews, to be available in many heterogeneous information systems.

### **Methods**

What and how we eat largely determines how we feel. The relationship of the nutritional profile with variety of diseases determines the importance of the identification and development of the information components, for better understanding of this relationship and it's processing by automated systems for logical conclusion.

Based on of modern information technologies structural description of the subject area is proposed. Their usage provides an opportunity to integrated completely different systems and at the same time can be stored and processed and repeatedly be used from different sources. Currently has no developed semantic assets in the field of nutrition and this determines the importance of this initiative, which is in particular the development of such information components for repeated and multipurpose use.

The digitization of information components is bringing digital information structures so that they can be understood by the computer.

### **Results**

Data structures identified and described in a formal language are presented by language for digital presentation and they turn into information components. So they can be "read, understood and processed" by computers and can be used as components for the design and integration of systems in the area of nutrition.

The API is realized as an exclusive interface software, aimed at helping you reach a 100% customisation of components data. The communication with the systems's API is made via queries sent from your site/application and responses returned by the API. Each query may contain one or more commands and represents a GET/POST HTTP request. The query result output can be formatted using either XML, JSON or PHP serialization. This can be set at your discretion with the help of a "return\_type" parameter with values "xml", "json", "serialization", respectively. By default the output will be XML formatted.

### **Discussion**

So presented and developed information components are a prerequisite for interoperability and performance of medical information systems in two directions: the first is integration in systems for prevention after treatment or medical procedures, the latter one in systems for the prevention of basic chronic diseases, for selection and organization of the nutritional profile of the patient while there is an opportunity to organize themselves and determine the dietary behavior of the patient, as an aspect of self-management of chronic diseases.

## What Do We Know About Physician Leadership – a Systematic Review

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### Short Paper

Contemporary healthcare is faced by a number of challenges. The introduction of management has been an attempt to cope with complex hospital settings, rising healthcare costs and external pressure for more transparency about quality of care and public spending. Thereby, physician leadership is considered to play an important role in bridging the gap between the management and medical domain. Furthermore, it is suggested to be the essential ingredient in addressing the needs of other healthcare issues such as managing complex chronic conditions and multi morbidity. These issues require more teamwork and integrated care, whereas the medical profession used to be a rather individual profession.

In practice, many attempts have been made to integrate physicians in both formal and informal leadership roles. In literature, however, different opinions exist about the exact role of the physician leader and a clear definition of physician leadership lacks. Furthermore, it remains unknown which personal skills and organizational attributes are needed for successfully developing strategies of integrating physician leadership at a team and system level in order to improve healthcare quality in a hospital setting. Therefore, we aim to answer the following question: 'What is physician leadership and what is needed for physician leadership in terms of personal and organizational attributes?' We will address this question by conducting a systematic review of the literature. Specific inclusion criteria for articles which we will include are (1) peer-reviewed English-language publications, (2) articles including participants who are physicians in a formal or informal leadership role, working in a hospital setting, (3) focus on defining physician leadership (by physician leadership we mean physicians in a formal or informal leadership role), (4) focus on skills or competencies needed for physician leadership, (5) focus on organizational factors required for physician leadership. We will not make any restrictions for year of publication or for type of study design. The following databases will be searched: Embase, Medline, Web of Science, Google Scholar and ABI/inform.

By means of this systematic review, we expect to provide the tools for the further development of the concept physician leadership. During an interactive session we would like to discuss with you the preliminary results of the systematic review and its consequences for future research.

## “What is Your IMAN? It’s All What I Need!” Making Medical Consultancy Efficient Even across Borders

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### Short Paper

Our world is getting highly connected in a context of globalization making of the international virtual ecosystem a reality to deal with more than it has ever been. Health systems have dealt on their way with this evolution in various countries through different roadmaps like the development of telemedicine, e-health, paperless procedures & other country specific plans. Much is still possible to do to optimize their actions and face their challenges.

Let’s imagine a process of international standardization of paperless medical files identified through an International Medical Account Number (IMAN). A national healthcare provider would create this account where patient’s information and medical history are registered. The patient would have access to his medical file through a username and a password. Only healthcare professionals are allowed to bring out modifications and updates systemically along different consultations. They would identify themselves through a Professional Identifier Code (PIC).

This can be interesting on multiple levels and helpful in different issues. It would allow time saving for healthcare professionals and permit easier communication among them. A connected network would make modifications updating profiles immediately; such way of processing would lessen the double prescription of medical analysis and treatment. A detailed medical history would provide an easily accessible global vision for physicians other than the family doctor that allows a better diagnosis. A detailed pharmaceutical history can be beneficial to prescribe the best drug-of-choice, to establish an antibiotic use record and to avoid drug resistance, allergic reactions and drug interactions. The whole process would allow considerable savings in health expenditure.

The internationalization and standardization of such concept would facilitate consultations across borders. That would be helpful for actively moving people as well as for people living in areas with restricted mobility particularly for those with complex and rare cases. It would permit an international communication among medical researchers promoting innovative and efficient research.

Such connected and standardized network would permit through predefined criteria and statistics to have an endemic or epidemic alert even before arriving to an observational level of the incident in an identified zone. It would allow as well disease tracking and mapping to limit epidemic evolution.

The personal accounts would become a communication channel informing users about epidemic risks, new technologies, volunteering opportunities and needs for special case subjects for research.

The concept can be developed in different ways. However, it needs both national and international agreements among health policy makers; it requires the mobilization of information technology developers; it would engage as well technical training for healthcare professionals in order to get optimum use and to minimize human errors.

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