

ITCH

2015

# Driving Quality in Informatics: Fulfilling the Promise

An international conference addressing Information Technology and Communication in Health (ITCH)



A word cloud featuring various terms related to healthcare, informatics, and quality. The words are arranged in a circular pattern and vary in size and color (blue, yellow, and purple). The most prominent words include 'informatics', 'usability', 'telehealth', 'quality', and 'health data'. Other visible terms include 'consumer', 'records', 'interactive', 'electronic', 'mining', 'evaluation', 'medical', 'support', 'imagination', 'public', 'nursing', 'patients', 'promise', 'experience', 'terminologies', 'interaction', 'education', 'healthcare', 'primary', 'patient-centered', 'simulation', 'technologies', 'personalized', 'mobile', 'digital', 'services', 'communication', 'errors', 'coding', 'e-learning', 'systems', 'computer', 'big', 'Information', 'patient', 'management', 'solutions', and 'clinicians'.

February 26 – March 1, 2015 | Inn at Laurel Point | Victoria, BC, Canada

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## LETTER OF WELCOME

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Dear Delegates,

On behalf of the School of Health Information Science and ITCH Steering Committee I am pleased to welcome you to ITCH 2015.

In March 1986 a Canadian colloquium with an international flavor addressed the impact of information technology on community health. It was sponsored by the School of Health Information Science and the British Columbia Ministry of Health. Notable speakers were Salah Mandil, Director, Information Systems Service, WHO, Geneva, Switzerland and Stan Dubas, the Deputy Minister of Health for British Columbia. This small, successful gathering was the predecessor of the Information Technology in Community Health conferences which followed in 1987, 1988, 1990, 1992, 1994, 1996, 1998 and 2000. The Canadian Public Health Association joined with the School of Health Information Science as co sponsors for these seven conferences. In 2007, we expanded to Information Technology and Communications in Health (ITCH). Over the years we have seen the conference grow and develop and we are thrilled to welcome you back to Victoria, British Columbia for our 13th gathering.

This year, we explore international, and largely unmet, commitments to patient-centered care. We wonder what may have made the difference in other spheres which might also radicalize healthcare. Over the next four days you will engage in workshops, paper presentations and panels focusing on our three guiding themes: **patients talking, the profession listening** and **services unleashing imagination**.

We hope you enjoy the conference, and thank you for contributing to the important work that we all do.

Sincerely,

A handwritten signature in black ink that reads "A.V. Roudsari". The signature is written in a cursive, slightly slanted style.

Abdul Roudsari, PhD  
Conference Chair

# GENERAL CONFERENCE INFORMATION

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## **CONFERENCE BADGES**

Please wear your name badge at all times to ensure admittance to the Opening Reception, conference sessions, and the Gala dinner.

## **PROCEEDINGS**

A hardbound volume of the formally submitted manuscripts, entitled "Driving Quality in Healthcare: Fulfilling the Promise" can be purchased at the Registration Desk for \$50.00. This is volume 208 in the Studies in Health Technology and Information series published by IOS Press and indexed by Medline. Copies of previous conference Proceedings will be available for purchase.

## **STUDENT POSTERS**

Judging of the student posters will take place between 1:00 – 5:00 pm Thursday, February 26, 2015, in the Terrace Room of the Inn at Laurel Point. The winners will be announced that evening.

## **PROFESSIONAL POSTERS**

The practitioner (non-student) posters are on display in the Terrace Room until 2:00 pm Saturday.

## **REGISTRATION AND INFORMATION DESK**

Registration desk staff are available to assist you with information and to sell bound Proceedings of the conference and West Coast Gala Dinner tickets. They can also answer your questions about Victoria. The Registration desk will be open throughout the conference.

## **OPENING RECEPTION**

The opening wine and cheese reception will take place in the Terrace Room Thursday, February 26 between 5:00 – 8:00 pm. The winners of the student poster presentation will be announced shortly after 5:00 pm. At this time delegates are encouraged to view the student and professional posters.

## **WEST COAST GALA DINNER**

Join us for a relaxing evening Saturday, February 27 starting with a cash bar at 6:30 pm followed at 7:00 pm by a gourmet West Coast buffet. If you have purchased a gala dinner ticket, you will be noted on our list of attendees. If you would like to purchase a ticket, please see one of our conference volunteers.

# STEERING COMMITTEE

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## CONFERENCE CHAIR

Abdul Roudsari, University of Victoria

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Karen Courtney, University of Victoria  
Alex Kuo, University of Victoria  
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## KEYNOTE SPEAKERS

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### James Coward Keynote Lecture, Friday, February 27 | 8:30 am



**Colleen McGavin** is a retired business educator having taught, among other things, courses in communication and information technology for nearly 25 years at Camosun College. After graduating with her BA and professional diploma in secondary education, she completed a post-graduate designation in computer based information systems, all at the University of Victoria. Colleen has extensive experience as a cancer patient and as a caregiver to her elderly parents and, since 2010, she has been an active volunteer with Patient Voices Network, a program that is supported under the banner of Patients as Partners through the Ministry of Health. In this capacity, she has worked with organizations such as the BC Patient Safety and Quality Council, Doctors of BC, the Ministry of Health, Island Health, and the Michael Smith Foundation for Health Research to make positive change in the health care system. She has been regularly invited to speak on subjects such as patient-centered care and patient engagement in health research and she is published in the *Journal of Family Nursing* on the subject of patient- and family-centered care. In 2014, Colleen completed the training to become a certified member of the International Association of Public Participation (IAP2).

Colleen's keynote address will relate a very personal patient story that illustrates the enormous human and financial costs associated with inefficient and ineffective health information systems. The intention is that her story will serve as a call to action and ground the work of participants for the rest of the conference as you work to examine what fulfilling the promise of patient-centered care means in terms of information technology and communication in health care.

### Denis Protti Keynote Lecture, Sunday, March 1 | 8:45 am



**Catherine Claiter-Larsen** joined Island Health in August 2005. As Vice President and Chief Information Officer, Catherine is responsible for the strategic and operational management of Island Health's Information Management and Information Technology portfolio. Catherine has extensive experience in strategic planning, senior IM/IT management, and clinical change management. Catherine is known in the health informatics industry for her passion, drive, knowledge of Electronic Health Record (EHR) solutions, and her commitment to capacity building through leadership development. Since joining Island Health, Catherine and her team have established the foundation for Island Health's One Patient, One Record EHR solution, with a single, integrated information system implemented across all acute and residential care facilities. With this foundation in place, Island Health is now pursuing the next generation EHR that will be used to realize safety and quality improvements across the continuum of care. Catherine holds a Bachelor of Science in Health Information Science from the University of Victoria, and is actively involved in a number of national Health Informatics committees and organizations.



## Steven Huesing Keynote Lecture, Saturday, February 28 | 8:30 am



### **David Bates, MD, MSc**

*Chief Quality Officer and Senior Vice President & Chief, Division of General Internal Medicine, Brigham and Women's Hospital;  
Medical Director of Clinical and Quality Analysis, Partners Healthcare*

**Dr. Bates** is an internationally renowned expert in using information technology to improve clinical decision-making, patient safety, quality-of-care, cost-effectiveness, and outcomes assessment in medical practice. A practicing general internist, Dr. Bates is Chief Quality Officer at Brigham and Women's Hospital in Boston where he is also Chief of the Division of General Internal Medicine. He is a Professor of Medicine at Harvard Medical School, and a Professor of Health Policy and Management at the Harvard School of Public Health, where he co-directs the Program in Clinical Effectiveness. He also serves as Medical Director of Clinical and Quality Analysis for Partners HealthCare.

Dr. Bates is a graduate of Stanford University, and the Johns Hopkins School of Medicine. He began his fellowship in general internal medicine at Brigham and Women's Hospital in 1988, and he received a M.Sc. in Health Policy and Management from the Harvard School of Public Health in 1990. He has been elected to the Institute of Medicine, the American Society for Clinical Investigation, the Association of American Physicians and the American College of Medical Informatics, and is past chairman of the Board of the American Medical Informatics Association. He chaired the Food and Drug Administration Safety and Innovation Act (FDASIA) Workgroup. He serves as external program lead for research in the World Health Organization's Global Alliance for Patient Safety. He is the president of the International Society for Quality in Healthcare (ISQua). Dr. Bates' special research interests include clinical decision-making and affecting physician-decision-making, particularly using computerized interventions; quality of care and cost-effectiveness and medical practice; and outcome assessment. He has published over 600 peer-reviewed papers.

Dr. Bates' keynote address, **Using HIT to Transform Safety and Quality**, examines substantial evidence that suggests that both the safety and quality of healthcare could be improved substantially, both inside and outside the hospital. Dr. Bates will briefly review that evidence, and then present frameworks for improving safety and quality. He will then describe interventions that can be used to improve safety and quality, with a particular focus on those which leverage HIT in new ways, for example through the use of mobile applications, sensors, and analytics, including review of several specific examples.

## **Ontology-Driven Configuration of Electronic Health Records Systems**

*Professor John Chelsom, BSc, PhD, City University, London*

This workshop shows how an Electronic Health Record (EHR) system can be configured entirely using an ontology model that mirrors the ISO-13606 and HL7 CDA standards.

The topics to be covered are:

- Open source, open standards for clinical information systems
- Clinician-driven EHR development
- The ontology-driven EHR
- Tools for ontology development
- Configuring the EHR data dictionary
- Form-based clinical data entry
- Summaries and visualisation of clinical data
- Clinical correspondence

Attendees will each receive a USB stick containing a fully functional, open source, EHR system (cityEHR) which can be run directly from the USB, without any local installation. All the techniques for ontology-driven modelling that are demonstrated in the workshop can be run using the cityEHR.

## **CPOE – Optimizing the Role of Clinicians to Achieve Successful Adoption**

*Carol Dueck, Director Healthtech Consultants; Carol Gresswell, Director Healthtech Consultants; Janet Roberts, Director Healthtech Consultants*

Computerized Provider Order Entry (CPOE) implementation and adoption is a challenging clinical informatics initiative. As many healthcare organizations in Canada prepare to move forward with CPOE and related initiatives, including Medication Reconciliation, there is an opportunity to share the key success factors and lessons learned from the early adopter organizations. The presenters bring a broad range of hands-on experience, having assisted several Canadian hospitals to plan for and implement CPOE and Medication Reconciliation, using different Clinical Information Systems.

Join this interactive workshop to explore key success factors and lessons learned from successful CPOE implementation projects.

The learning objectives will include an overview of the following:

- The structure of clinician orders and order set functionality in the electronic versus the paper record;
- The opportunity to implement and/or strengthen the use of evidence-based Order Sets;
- Identification of opportunities for provider satisfaction by maximizing technology for efficiency and enhancement of patient safety;
- Importance of streamlining current manual ordering processes and avoiding automating current “work arounds”;
- Importance of building from an ordering provider and end user perspective, ensuring a streamlined ordering process with a focus on patient safety;
- Importance of maximizing CPOE to seamlessly support Medication Reconciliation;
- Rollout options with interim workflows to support live and non-live departments and prevent errors;



# WORKSHOP ABSTRACTS: THURSDAY MORNING

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- Role of remote access for clinicians to strengthen adoption;
- Go Live support processes to prioritize issues and avoid reacting to personal preferences and requests;
- The need for strong leadership to ensure adoption and sustainability.

The workshop will include opportunities for participants to share their personal experiences and engage in dialogue to promote knowledge exchange.

## **Developing and Implementing National eHealth Services for Patients – An Interactive Exploration of Challenges and Potential Solutions**

*Isabella Scandurra, Informatics, School of Business, Örebro University, Sweden; Maria Hägglund, Health Informatics Centre, Karolinska Institutet, Sweden*

As a means to address current challenges for and demands on health and social care, e.g. quality of care and patient empowerment, information and communication technologies (ICT) are being used to supply citizens with various health services. One example is to give patients web access to their own electronic health records (EHRs). In this workshop, we will provide examples and experiences from ongoing work in Sweden to develop and implement eHealth services for citizens; SUSTAINS [1] and My Care Pathways [2]. The workshop participants will be engaged in interactive discussions regarding challenges and potential solutions based on their experiences from different contexts.

### **The aim of the workshop is twofold:**

1. To explore challenges for developing and implementing e-health systems for citizens to access their patient information and other e-health services online.
2. To suggest strategies and activities that could provide potential solutions to the identified challenge.

### **Workshop structure**

The disposition of the workshop is as follows: a 90 minute session, a 15 minutes break and another 75 minute session. The two sessions will contain both presentations from the workshop organizers and interactive discussions and work in smaller groups to engage all participants and share experiences from different contexts.

This disposition requires active participants to generate new ideas and knowledge through discussions and reflections where all participants contribute with their knowledge and understanding of the problem. The topic is expected to engage a lot of people, maybe not only those present at the workshop or at the conference. The workshop organizers will encourage live tweeting during the sessions and invite followers.

# WORKSHOP ABSTRACTS: THURSDAY MORNING | 9:00 am - 12:00 pm

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## Health Informatics-Enabled Workflow Redesign and Evaluation

*Eric L. Eisenstein, DBA, Duke Clinical Research Institute, Duke University, Durham, NC; Jos Aarts, PhD, FACMI, Department of Biomedical Informatics, University at Buffalo, Buffalo, NY; Elizabeth M. Borycki, RN, PhD, School of Health Information Science, University of Victoria, Victoria, BC; Andre W. Kushniruk, PhD, FACMI School of Health Information Science, University of Victoria, Victoria, BC*

Although health information technologies frequently serve as critical workflow components, we currently lack validated methods for identifying how health informatics can support workflow redesign and for evaluating redesign results. Researchers at Eindhoven University of Technology developed a general framework for business process redesign, identified generic workflow metrics, synthesized redesign best practices (heuristics), and validated these best practices in qualitative and quantitative analyses. Recently, health informatics researchers used components from existing health care evaluation frameworks to adapt the Eindhoven theory and methods for use in health informatics-enabled workflow redesign and evaluation. In addition, researchers at the University of Victoria have developed methods for analyzing real health professional workflow and activities by extending methods from usability engineering and clinical simulations.

Similarly, researchers at Erasmus University have applied interpretive theories to understand workflow in health care and the context of health information technology. In this workshop, we will describe these methods, demonstrate their use in case studies and provide hands-on experience in their application to health informatics development and implementation problems.

### Learning Objectives

After completing this workshop, participants will be able to understand and apply the following:

1. Understanding workflow
  - Define and characterize workflow in health care settings
  - How qualitative observations and interviews help identify key characteristics and
  - Inform the Eindhoven framework
2. Framework for health-informatics-enabled workflow redesign and evaluation
  - What are the framework elements and how they were derived
  - How the framework has been adapted for the healthcare setting
3. Workflow metrics
  - How patient outcomes and workflow metrics differ
  - How clinical research can be used to drive workflow redesign
  - How the devil's triangle of time, cost, quality (internal and external), and flexibility conspire to constrain workflow redesign projects
  - How to identify and assess key workflow metrics.
4. Workflow redesign best practices
  - How 29 general and 3 health-specific process redesign best practices were derived
  - How to select best practices when redesigning health workflows
  - What metric changes can be expected from each best practice
5. Health informatics mechanism for workflow redesign
  - What are the 4 health informatics mechanisms
  - How health informatics mechanisms can be applied in workflow redesign
  - How extensions of usability engineering and clinical simulations can be used to characterize healthcare workflow, identify potential issues and lead to optimized human-machine work systems.

# WORKSHOP ABSTRACTS: THURSDAY MORNING

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Through a series of interactive case studies, participants will gain hands-on experience in the following:

1. Evaluating workflows to determine components needing improvement
2. Selecting key workflow metrics and determining how they will be assessed
3. Selecting among best practices to achieve desired workflow metric improvements
4. Developing workflow redesign and evaluation plans

(both participants physically present in the room and others) on Twitter to engage in the discussion during and after the workshop. Twitter discussions will be summarized and all results of the workshop will be published on easily accessible web sites afterwards.

## Patient Experience (PX)

*Dr. Johanna Kaipio, D.Sc.(Tech.), postdoctoral researcher at Strategic Usability Research Group (STRATUS), Aalto University, Finland; Mari Tyllinen, M.Sc.(Tech.), PhD student at STRATUS, Aalto University; Dr. Marko Nieminen, D.Sc.(Tech.), Professor, Department of Computer Science and Engineering, Aalto University; Dr. Andre Kushniruk, PhD, FACMI, Professor, School of Health Information Science, University of Victoria; Dr. Elizabeth Borycki, RN, PhD, Associate Professor, School of Health Information Science, University of Victoria; Dr. Pernille Bertelsen, PhD, Associate Professor, Department of Development and Planning and Danish Center for Health Informatics at Aalborg University, Denmark*

Healthcare is moving towards employing more patient and consumer centric practices and approaches. Such a shift is reflective of the need to provide high quality services that lead to a pleasant if not even enjoyable patient experience (PX). In words by Gerteis et al. "What patients experience, and what they think of that experience, should also matter to healthcare planners, policy makers, and managers, because the experience as much as the technical quality of care, will determine how people use the healthcare system and how they benefit from it." This statement underlines the importance of understanding what patient experience is as a concept as well as developing methods and tools for researching and measuring it. But what do we know about patient experience? What is it about?

Motivation for the workshop derives from the need to define how to apply a patient-centred design and research approach (principles, models, methods) to the healthcare context with attention to the "patient experience". In order to do this we need to define what the concept "patient experience" is about and what kind of aspects it includes. Today there is little research literature that describes patient experience (PX). However, the concept of user experience (UX) has been an active topic of discussion in human-computer interaction (HCI) during this millennium. Key characteristics of UX have been outlined as follows: UX is ... a subset of experience, related to the experiences of using a system, about encounters with systems, unique to an individual, influenced by prior experiences and expectations, rooted in a social and cultural context. This provides grounding for further elaboration and definition of the "patient experience".

This workshop contributes to the discussion and definition of patient experience (PX). The aim is to promote discussions around the concept and its conceptualization. In the workshop, the presenters introduce the concept "user experience" with references to HCI literature and those few descriptions for patient experience which can be found from various non-academic sources. The presenters also describe what kind of patient experience related research has been conducted recently and is going to be conducted in the near future in Finland, Denmark and Canada. This will include introduction of "customer journey map" methodology and discussion of new user analysis approaches aimed at understanding patient experience in terms of the users' needs, desires, task and context of use of health information technology. After presentations participants will be given exercises through which they will consider and describe their own experiences on healthcare service use. These experiences and the emerging dimensions of experiences will be used to contribute to the discussion of "What is patient experience about, what kind of aspects and values is included?" In the end there will be group work around the topic: How can patient experience be researched and measured?

## How Island Health Leverages its Data to Assess and Improve the Safety and Quality of Care

*Kennard Tan, MD, Medical Microbiologist & IHealth - Physician Lead for Reporting and Analytics*

Vast quantities of clinical, laboratory, radiology and pharmacy data are created and stored within Island Health's transactional information systems. With appropriate extraction and architecture within a data warehouse environment, the data can be used to monitor drug and test utilization, assess metrics related with patient safety and quality, and look at related clinical outcomes. In essence, they allow decision-makers to view how the organization has progressed, assess the current status, and, if appropriately modeled, predict future issues.

In this workshop, two examples of clinical analytics at Island Health will be shared:

1. Transfusion Medicine Data Mart (TMDM): This system provides an information base for decisions regarding the administration and inventory management of blood products, and identifies variation in transfusion practices across medical interventions.
2. Surveillance and Epidemiology of Infections, (antimicrobial) Stewardship, Microbiology and Infection Control (SEISMIC): This system assesses the safety and quality of diagnosis, management and prevention of all infections.

The purpose of this workshop is to discuss the common key factors that contributed to their successes, and the lessons learned in each. Both examples had the principle goal of providing performance metrics timely and efficiently to facilitate quality-improvement decision-making. Both were led by a core group of clinical and informatics experts working closely together to facilitate information flow. The presentations will describe the past work, present status and future plans of clinical analytics at Island Health, focusing on the teams involved from conception to operation. Some technical topics will also be presented, such as the data structures, administrative requirements, and the tools used for analysis and presentation. The potential of analytics within IHealth will be discussed, as deeper and broader clinical information will be available. IHealth provides a new data warehouse and additional software tools for more powerful analysis.

Within the interactive portions of the workshop, audience members can share successes and challenges from their own organizations. As more health data are collected in standardized formats, opportunities for collaboration between organizations can be realized. These new partnerships will help find innovative ways to leverage information and be data-driven. By being insightful of their own data, healthcare organizations can optimize care for their patients to an individual and personal level.

## How to Integrate Human Factors and Sociotechnical Analysis in Health Informatics

*Jos Aarts, PhD, FACMI, Department of Biomedical Informatics, University at Buffalo, Buffalo, NY; Andre W. Kushniruk, PhD, FACMI School of Health Information Science, University of Victoria, Victoria, BC; Elizabeth Borycki, RN, PhD, School of Health Information Science, University of Victoria, Victoria, BC*

Health information technology (HIT) is all around us, whether we are patient, professional or citizen. Understanding our interaction with technology is crucial for its success. However, the best way to obtain that understanding has been debated. When considering Apple products, Steven Jobs was known to be dictatorial in what Apple products would look like. Walter Isaacson writes that "Jobs would point to models and sketches he liked and dump on the ones he didn't.

Jonathan Ive (Apple's chief designer) would then take the cues and develop the concepts Jobs blessed." Jobs would never allow user panels or user focus groups to inform design, because "customers don't know what they want until we have shown them." However, many of the base technologies used in the successful iPod's, iPhones, iPad's and other Apple products were previously developed and user tested in other laboratories, where considerable user

# WORKSHOP ABSTRACTS: THURSDAY AFTERNOON

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analysis had taken place over years. Understanding the user hinges on knowledge of the interaction of the user and technology and the context of use. A lack of knowledge of user interactions and needs may indeed be one of the stumbling blocks with regard to HIT as compared to applications developed for the general public (e.g. iPhone apps) that are much simpler and more constrained. The understanding of the interaction between users and systems in complex domains such as healthcare finds its roots in cognitive behavior. Studies addressed issues like how users scan information on a screen, how they can be prompted for action, etc. Cognitive theory recognizes that interaction is also determined in a latent way by outside artifacts, such as the presence of visible cues, e.g. the view of a patient next to the computer. This notion is embodied in the theory of distributed cognition. Context of use refers to the fact that interaction with technology is determined by organizational conditions, varying from guidelines that determine how patients should be treated to constraints imposed by regulations, working conditions, organizational culture, etc. Sociotechnical analysis presupposes this intertwining between technology and environment and their mutual influence. Empirically, it builds on the narratives of user experiences, careful ethnographic informed observations, and different forms of interviewing of stakeholders using social theory to interpret findings. In this workshop we will describe the underlying concepts and research approaches and present examples from our research how analysis can be integrated. Finally, we will present cases to the participants asking for suggestions how they would analyze them.

## **Learning Objectives**

After completing this workshop, participants will be able to understand and apply the following:

1. The principles of socio-technical design.
2. The principles of usability engineering.
3. Usability engineering principle and methods and how they relate to and intersect with sociotechnical design methods and approaches.
4. How user and task analysis, as well as clinical simulations can be applied to determine complex information and workflow needs for designing and evaluating HIT.
5. Theories and models from cognitive psychology, including information processing theory and distributed cognition.
6. Rational analysis of user interactions with HIT as it is employed using a multi-level view of interaction (starting with studies of individuals interacting with systems in isolation, to evaluation of system use in the context of clinical work, and finally to a view of interaction taking into account the full complexity of healthcare organizational and social aspects).
7. How human factors approaches can be integrated with sociotechnical design.

Through a series of interactive case studies, participants will gain hands-on experience in the following:

1. Designing approaches to healthcare system evaluation that takes into account both human factors as well as sociotechnical design principles.
2. Mapping out and understanding user information and workflow needs for HIT.
3. Approaches for understanding the socio-technical context of use of in complex healthcare systems.
4. Approaches for moving from theoretical models of user interaction to practical design and evaluation.
5. Integrating human factors approaches with sociotechnical approaches.

# WORKSHOP ABSTRACTS: THURSDAY AFTERNOON | 1:00 - 4:00 pm

## Patient-Centered Health Platforms: Developing a Strategic Approach

*Karl A. Stroetmann; Michael Bainbridge, ASE Consulting Australia, & UVic; Nicola Shaw, Algoma University, Canada; Mark Ballermann, Faculty of Medicine and Dentistry, University of Alberta, Canada*

**Learning objectives and collaboration opportunity:** The participants will be enabled to review their respective health service delivery context (be it a healthcare provider, a group of co-operating providers – e.g. for integrated care provision -, a jurisdiction, a region) and to initiate and support the development and implementation of an appropriate strategic approach towards a more patient-centred healthcare system.

The concrete learning objectives are how to cooperate in an open, peer-level context and collaboratively

- develop an evidence-based process towards a strategic approach to plan/newly adapt, implement and sustain a patient-centred health service supported by eHealth applications
- structure such a strategy
- optimally collaborate and involve all relevant stakeholders
- analyse opportunities and threats, success factors, risks
- assure longer-term sustainability
- monitor progress and adapt to new challenges

**Workshop method:** The focus is on collaborative learning, not on lecturing. Three short presentations will set the scene and provide both for an analytic structure as well as concrete cases and experience to learn from. Next participants will be divided into groups of 3-4 people and asked to identify, based on their own professional context or knowledge, a concrete healthcare provider or a healthcare system where they work or with which they are familiar (or it may also be an imaginary one/a vision). They will have one full hour to briefly analyse its patient-centeredness, how to improve it, what strategic perspective and implementation measures to develop, how to best involve patients and other key stakeholder groups.

Finally, each group will have 10 – 15 minutes to present its findings, with at least two persons participating in the presentation. The other workshop participants will be asked to briefly critically comment on what is presented. The three instructors will not intervene in the process of each group, but go around, listen to their discussions and be available for questions.

### Programme

#### Brief introductions: 40 min

1. Welcome & introduction of participants
2. Structuring a strategic approach towards patient-centeredness (with reference to three global cases from Sao Paulo, Brazil; Gilgit-Baltistan, Pakistan; Western Cape Province, South Africa) Karl A. Stroetmann, empirica GmbH, Germany, & UVic
3. The Australian Patient Controlled EHR (PCEHR) – strategy, implementation and lessons learned Michael Bainbridge, ASE Consulting Australia, & UVic
4. Two software design philosophies underlying two patient portal architectures to serve a single Canadian patient population. Nicola Shaw, Algoma University, Canada & Mark Ballermann, Faculty of Medicine and Dentistry, University of Alberta, Canada

#### Group Work: 70 min (facilitated, as needed, by all three instructors)

1. Establishing groups of 3-4 and introduction to the assignment
2. Group discussions and preparation of concise presentation
3. Break: 15 min

#### Presentations of group work and summary: 55 min



# WORKSHOP ABSTRACTS: THURSDAY AFTERNOON

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## Mobile Applications in Healthcare: How can they Support our Daily Work and / or Life?

*Dr. Johanna Kaipio, D.Sc.(Tech.), postdoctoral researcher at Strategic Usability Research Group (STRATUS), Aalto University, Finland; Mari Tyllinen, M.Sc.(Tech.), PhD student at STRATUS, Aalto University; Dr. Marko Nieminen, D.Sc.(Tech.), Professor, Department of Computer Science and Engineering, Aalto University; Dr. Andre Kushniruk, PhD, FACMI, Professor, School of Health Information Science, University of Victoria; Dr. Pernille Bertelsen, PhD, Associate Professor, Department of Development and Planning and Danish Center for Health Informatics at Aalborg University, Denmark*

Mobile applications are becoming increasingly popular, not only in our daily lives, but also in our working environments. There is a growing demand by patients as well as physicians and other healthcare staff to use mobile applications in the healthcare sector.

Mobile applications are already used for home monitoring, information on emergency services, making appointments with physicians, help living with allergies to mention but a few. In hospitals, information systems can be made available on mobile devices, physicians and nurses can access other information (such as drug interaction) wherever they are.

However, the rise of mobile applications also brings up new questions. Data security and privacy will become even more important for mobile devices. Different user interfaces (as opposed to large screens) require new concepts on the visual presentation of information.

Workflows may be altered by the introduction of mobile devices.

This workshop will help its participants to discover potentials but also challenges of mobile applications in healthcare. A special focus will be on mobile hospital information systems.

After an introduction and overview on the topic, the participants will work out possible requirements for mobile hospital information systems. This will be based on the experiences made in the University Hospital Muenster, where mobile hospital information systems have been pilot tested. Mobile devices with a demo version of a mobile hospital information system will be provided to the participants and give them the opportunity to evaluate this system on the basis of the prepared requirements.

### Learning Objectives:

On completing this tutorial, participants will:

- have an overview of mobile applications in healthcare
- gain knowledge on special aspects of data security and privacy relating to mobile devices
- know more about special requirements for mobile hospital information systems
- get hands-on experiences with a mobile hospital information system
- benefit from discussion with other participants from different backgrounds

Participants from all backgrounds are welcome to this workshop. Participants are also encouraged to shortly present their own mobile solutions. Any participant who intends to do so should contact the workshop leader before, so that applications can be installed on the devices before the workshop.

**Due to the limited availability of mobile devices (2 participants will share one mobile device), the number of participants of this workshop is limited to 12.**

# WORKSHOP ABSTRACTS: THURSDAY AFTERNOON | 1:00 - 4:00 pm

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## **Patient Access to Their Electronic Health Record**

*Professor John Chelsom, BSc, PhD, City University, London*

This workshop shows how patients can access their Electronic Health Record (EHR) and use it as a tool for communication with their care team.

The topics to be covered are:

- Requirements for patient access to the EHR
- Architecture for patient access to the open source cityEHR
- Viewing the record
- Annotating the record
- Assessment forms, created by patients
- Communication with the care team
- Clinician control of patient access

This workshop follows on from the Ontology-Driven Configuration of Electronic Health Records Systems, but can also be attended separately. Attendees equipped with suitable mobile devices or laptops will be able to interact, as patients, with the cityEHR running in the workshop.

# CONCURRENT PAPERS: FRIDAY MORNING | 10:15 am - 12:15 pm

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## **Spirit A/B | Moderator: Karim Keshavjee**

### **Patient Safety, Medical Errors and Quality Management**

#### **The Implementation Experiences of a Pharmacy Automation Drug Dispensing System in Saudi Arabia**

*Yahya Al Muallem, Majed Al Dogether, Rakan Al Assaf, Asma Al Ateeq and Mowafa Househ*

#### **SmartMed: A Medication Management System to Improve Adherence**

*Simon Diemert, Kirk Richardson, Paul Hunter, Jens Weber and Morgan Price*

#### **Information System Hazard Analysis - A Method for Identifying Technology-Induced Latent Errors for Safety**

*Jens H. Weber, Fieran Mason-Blakley and Morgan Price*

#### **Cultural Issues in Adverse Event Reporting – An Ethnographic Study**

*Christopher D. Harter and Christian Nøhr*

#### **Hospital Discharge and The Role of ICTs: Considering Patient Perspectives**

*Ming Chao Wong, Kwang Chien Yee and Paul Turner*

## **Spirit C/D | Moderator: Selena Davis**

### **Human Computer Interaction**

#### **A See Through Future: Augmented Reality and Health Information Systems**

*Helen Monkman and Andre W. Kushniruk*

#### **Using Usability Evaluation to Inform Alberta's Personal Health Record Design**

*Morgan Price, Paule Bellwood and Iryna Davies*

#### **Beyond Effectiveness: A Pragmatic Evaluation Framework for Learning and Continuous Quality Improvement of e-Learning Interventions in Healthcare**

*Tarig Dafalla Mohamed Dafalla, Andre W. Kushniruk and Elizabeth M. Borycki*

#### **Optimizing the Efficacy of Multimedia Consumer Health Information**

*Helen Monkman and Andre W. Kushniruk*

#### **Integrating Heuristic Evaluation with Cognitive Walkthrough: Development of a Hybrid Usability Inspection Method**

*Andre W. Kushniruk, Helen Monkman, Danica Tuden, Paule Bellwood and Elizabeth M. Borycki*

## CONCURRENT PAPERS: FRIDAY MORNING | 10:15 am - 12:15 pm

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### Merino Room | Moderator: Craig Kuziemyky e-Learning and Education

#### **The Impact of University Provided Nurse Electronic Medical Record Training on Health Care Organizations: An Exploratory Simulation Approach**

*Kathleen Abrahamson, James G. Anderson, Elizabeth M. Borycki, Andre W. Kushniruk, Shannon Malovec, Angela Espejo and Marilyn Anderson*

#### **Development of a Flexible and Extensible Computer-based Simulation Platform for Healthcare Students**

*Ivan Bindoff, Elizabeth Cummings, Tristan Ling, Leanne Chalmers and Luke Bereznicki*

#### **Integration of Electronic Health Records into Nursing Education: Issues, Challenges and Limitations**

*Elizabeth M. Borycki, Noreen Frisch, Jeannine Moreau and Andre W. Kushniruk*

### Informatics in Primary Care

#### **A Knowledge Translation Project on Best Practices in End-of-life Care**

*Francis Lau, Doris Barwich, Neil Hilliard, Colin Partridge, Bruce Hobson, Morgan Price, Douglas McGregor, Jesdeep Bassi, Dennis Lee, Julie Kim, Joanna Pyke and Gurprit Randhawa*

#### **Project ALIVE: An Action-research Exploration of EMR Value in Primary Care**

*Ted Alexander, Neha Singh, Shahrin Huda and Mohamed Alarakhia*

## PANEL PRESENTATION: FRIDAY AFTERNOON | 1:15 - 3:15 pm

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### Harbour Room

#### **Understanding the Context of Patient Safety Through The Lenses of Three IMIA Working Groups**

*Craig Kuziemyky, Christian Nohr, Elizabeth M. Borycki, Andre W. Kushniruk, Yalini Senthirajah*

Delivering safe patient centered care remains an important yet elusive goal across healthcare systems worldwide. The complexity of healthcare delivery and the unique contexts where it is delivered necessitates patient safety solutions that go beyond individual perspectives. This panel discussion will articulate the current state of patient safety research and HIT from the perspective of three International Medical Informatics Association (IMIA) working groups. The panel will also integrate the three WG perspectives into a unified agenda to support research, education and policy development for patient safety where HIT is concerned.

# CONCURRENT PAPERS: FRIDAY AFTERNOON | 1:15 - 2:45 pm

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## **Spirit A/B | Moderator: Helen Monkman**

### **Clinical Decision Support Systems**

#### **Using a Digital Marketing Platform for the Promotion of an Internet Based Health Encyclopedia in Saudi Arabia**

*Asma Al Ateeq, Eman Al Moamary, Tahani Daghestani, Yahya Al Muallem, Majed Al Dogether, Abdulrahman Alsughayr, Majid Altuwaijri and Mowafa Househ*

#### **The Role of Technology in Reducing Unnecessary Duplicate Diagnostic Imaging Examinations**

*Janessa Griffith, Elizabeth M. Borycki and Andre W. Kushniruk*

#### **The Importance of Telehealth for Directors and other Decision Makers**

*Juan J. Adriano Moran and Abdul Roudsari*

## **Spirit C/D | Moderator: Paule Bellwood**

### **Evaluation**

#### **Closed Circuit Video for Organizational Learning in Emergency Unit**

*Liisa Parv and Christian Nøhr*

#### **Health Informatics-Enabled Workflow Redesign and Evaluation**

*Eric L. Eisenstein and Keith A. Butler*

#### **An Evaluation of Health Information Technology Outsourcing Success**

*Shannon N. Malovec, Elizabeth M. Borycki and Andre W. Kushniruk*

## **Merino Room | Moderator: Gurprit R. Randhawa**

### **Electronic Health Records**

#### **Structured Data Capture from Multiple EMRs: Towards an Architecture for Clinical Research**

*Zaib Zaverree and Karim Keshavjee*

#### **Using Community Based Participatory Research as a Method for Investigating Electronic Health Records**

*Helen Almond, Elizabeth Cummings and Paul Turner*

#### **A Platform to Collect Structured Data from Multiple EMRs**

*Ahmad Ghany and Karim Keshavjee*

## CONCURRENT PAPERS: FRIDAY AFTERNOON | 3:15 - 4:45 pm

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### **Spirit A/B | Moderator: Mu-Hsing Kuo** **Nursing Informatics**

#### **Undergraduate Nurses' Preferred Use of Mobile Devices in Healthcare Settings**

*Carey Mather, Elizabeth Cummings and Penny Allen*

#### **The Evaluation of Electronic Perioperative Nursing Documentation Using a Cognitive Walkthrough Approach**

*Erin Usselman, Elizabeth M. Borycki and Andre W. Kushniruk*

#### **Nursing Handover Using an Electronic Application for Community Nurses**

*Nicole Michaud-Hamilton, Noreen Frisch and Abdul Roudsari*

#### **Readiness of Nurse Executives and Leaders to Advocate for Health Information Systems Supporting Nursing**

*Mary Oakes, Noreen Frisch, Pamela Potter and Elizabeth Borycki*

### **Spirit C/D | Moderator: Abdul Roudsari** **Mobile Technologies and Telehealth**

#### **Virtualizing Healthcare: Competing Visions**

*Karim Keshavjee, Don Lajoie and Jim Murphy*

#### **Usability Testing of a Prototype Multi-User Telehealth Kiosk**

*Karen L. Courtney, Judith T. Matthews, Julie M. McMillan, Laurel Person Mecca, Asim Smailagic and Daniel Siewiorek*

#### **Nurses: Extending Care Through Telehealth**

*Maryah Allen, Mya Aylott, Margarita Loyola, Mika Moric and Lisa Saffarek*

### **Merino Room | Moderator: Christian Nørh** **Consumer Informatics**

#### **Designing Electronic Medication Reconciliation for Patients: The Lead User Method**

*Paule Bellwood and Morgan Price*

#### **Danish Citizens' Expectations to the Use of eHealth**

*Pernille Bertelsen and Kristina Tornbjerg*

#### **Using Personal Health Records to Scaffold Perceived Self-Efficacy for Health Promotion**

*Helen Monkman and Andre W. Kushniruk*



# CONCURRENT PAPERS: SATURDAY MORNING | 10:15 am - 12:15 pm

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## **Spirit A/B | Moderator: Craig Kuziemsky** **Patient Safety, Medical Errors and Quality Management**

### **A Pharmacy Inventory Management System in Saudi Arabia: A Case Study**

*Majed Al Dogether, Yahya Al Muallem, Rakan Al Assaf, Asma Al Ateeq, and Mowafa Househ*

### **Awareness of Technology-Induced Errors and Processes for Identifying and Preventing Such Errors**

*Paule Bellwood, Elizabeth M. Borycki and Andre W. Kushniruk*

### **Building an Electronic Handover Tool for Physicians Using a Collaborative Approach between Clinicians and the Development Team**

*Peggy Guilbeault, Kathryn Momtahan and Jordan Hudson*

### **Workarounds to Computer Access in Healthcare Organizations: You Want My Password or a Dead Patient?**

*Ross Koppel, Sean Smith, Jim Blythe and Vijay Kothari*

### **Reducing Nosocomial Infections: A User-centred Approach to Developing an eHealth System for Sri Lankan ICUs**

*Nadish Kariyawasam, Ming Chao Wong, Palitha Mahipala and Paul Turner*

## **Spirit C/D | Moderator: Karim Keshavjee** **Health Modelling and Simulation**

### **Modelling Clinical Diagnostic Errors: A System Dynamics Approach**

*Shijing Guo, Abdul Roudsari and Artur d'Avila Garcez*

### **Using Heart Rate Variability for Automated Identification of Exercise Exertion Levels**

*Joseph Finkelstein and In Cheol Jeong*

### **Valuing National Effects of Digital Health Investments: An Applied Method**

*Simon Hagens, Jennifer Zelmer, Cassandra Frazer, Bobby Gheorghiu and Chad Leaver*

## **Big data, data mining, data warehouse**

### **Bridging a Divide: Architecture for a Joint Hospital-Primary Care Data Warehouse**

*Jeff An, Karim Keshavjee, Kashif Mirza, Karim Vassanji and Michelle Greiver*

### **Mining Association Rules in the BCCA Liver Cancer Data Set**

*Fabiola Pinheiro, Mu-Hsing Kuo, Alex Thomo and Jeff Barnett*

# CONCURRENT PAPERS: SATURDAY MORNING | 10:15 am - 12:15 pm

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**Merino Room | Moderator: Eric Eisenstein**

## **Consumer Informatics**

**Patient Perspectives on Patient Participation – Results from a Workshop with a Patient Council in a General Practice**

*Pernille Bertelsen, Anne Marie Kanstrup and Søren Olsson*

**Patient Narratives Representing Patient Voices to Inform Research: A Pilot Qualitative Study**

*Joan S. Ash, Erika Cottrell, Lauren Saxton, Lucas Newman, Eric Gebhardt and Mark Helfand*

**Know Me – A Journey In Creating A Personal Electronic Health Record**

*Amanda Buckley and Suzanne Fox*

**What is Missing from This Picture? Empowering the Health Consumer**

*Gail Gabel*

# CONCURRENT PAPERS: SATURDAY AFTERNOON | 1:15 - 2:45 pm

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## **Spirit A/B | Moderator: Francis Lau**

### **Public Health Informatics**

**Trialling an Electronic Decision Aid for Policy Developers to Support Ageing Well**  
*Elizabeth Cummings, Leonie Ellis, Eh Eh Tin, Kim Boyer and Peter Orpin*

**Framework for Effective Population Health Management Solutions**  
*Cheryl Hertel and Kevin McArdle*

**Supporting Dementia in the Community: A Human Factors Perspective**  
*Marcy Antonio, Elizabeth M. Borycki and Andre W. Kushniruk*

**Information Technologies to Improve Public Health: A Systematic Review**  
*Melissa Manhas and Mu-Hsing Kuo*

## **Spirit C/D | Moderator: Karen Courtney**

### **Ontologies, Trust, Coding, Terminologies**

**Conceptual Analysis of a Diverse Set of Healthcare Quality Indicators**  
*Pam White and Abdul Roudsari*

**In Case of Emergency – Are ICD-10 Codes Enough?**  
*Christian Juhra, Johannes Schenkel, Jürgen Albert, Norbert Butz and Judith Born*

**Modelling System Level Health Information Exchange: An Ontological Approach**  
*Josephine McMurray, Zhu Ling kai, Ian McKillop and Helen Chen*

## **Merino Room | Moderator: Andre Kushniruk**

### **Electronic Health Records**

**Using the NASA Task Load Index to Assess Workload in Electronic Medical Records**  
*Darren Hudson, Andre W. Kushniruk and Elizabeth M. Borycki*

**The Next Generation EMR**  
*Karim Keshavjee, Kashif Mirza and Ken Martin*

**Patient Access to Their Health Record Using Open Source EHR**  
*John Chelsom and Naveed Dogar*

# CONCURRENT PAPERS: SATURDAY AFTERNOON | 3:15 pm - 4:45 pm

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## **Spirit A/B | Moderator: Mike Bainbridge** **Evaluation**

### **Value Versus Use for Patients: Findings from an ICT supported Cystic Fibrosis Self-Management Project**

*Erin Roehrer, Elizabeth Cummings, Leonie Ellis and Paul Turner*

### **A Framework of 'p'-Benefits In Health Information Technology Implementation**

*Craig E. Kuziemsky and Karim Keshavjee*

### **Patient-centric Care and Chronic Disease Management: A Stakeholder Perspective**

*Karl A. Stroetmann*

## **Spirit C/D | Moderator: Kelsey Guo** **Mobile Technologies and Telehealth**

### **Determinants of Health Behavior Choices in Patients Using Computer-Mediated Decision Aid**

*Rita Kukafka, In Cheol Jeong and Joseph Finkelstein*

### **A Recommendation-based Mobile Web Application for Health Information Service**

*Shu-Lin Wang, Mu-Hsing Kuo, Yi-Shiang Shiu and Hsiu-Mei Huang*

### **Evaluation of a Portable Stress Management Device**

*Jeon Lee and Joseph Finkelstein*

## **Merino Room | Moderator: Christian Nørh** **Clinical Decision Support Systems**

### **Integrating Clinical Decision Support into EMR and PHR: A Case Study Using Anticoagulation**

*Dave-Gregory Chackery, Karim Keshavjee, Kashif Mirza, Ahmad Ghany and Anne M. Holbrook*

### **Using Business Intelligence for Efficient Inter-Facility Patient Transfer**

*Waqar Haque, Beth Ann Derksen, Devin Calado and Lee Foster*

### **Sociotechnical Design of an Electronic Tool for Managing Transient Ischemic Attack in the Emergency Department**

*Francis Lau, Colin Partridge, Andrew Penn, Dana Stanley, Kristine Votova, Maximilian Bibok, Devin Harris and Linghong Lu*

# CONCURRENT PANELS: SUNDAY MORNING | 10:15 am - 12:15 pm

## Spirit A

### **Integrating Human-centred Methods into the Public IT Procurement Process**

*Dr. Marko Nieminen, D.Sc.(Tech.); Sanne Jensen, RN, M.Sc.; Dr. Johanna Kaipio, D.Sc.(Tech.); Mari Tyllinen, M.Sc.(Tech.); Dr. Andre Kushniruk, PhD, FACMI; Dr. Elizabeth Borycki, RN PhD*

The overall aim of this panel is to promote the importance of this topic within health informatics and introduce theoretical approaches as well as practical examples for integrating human-centred activities into public healthcare IT procurement. The panel should gather together researchers and practitioners who have experience in IT procurement, who are or will be involved in making selection decisions about healthcare IT, or who are interested in learning about the topic. In the field of human-computer interaction (HCI) this topic has recently gained interest and there is an ongoing effort to support the development of a collaborative industry-academia community that would carry out research on and develop human-centered approaches for improved system procurement.

## Spirit B

### **How can Usability Engineering be more widely applied?**

*Marie-Catherine Beuscart-Zépher, Régis Beuscart, Roamric Marcilly, Sanne Jensen, Christian Nohr, Andre Kushniruk*

It has been increasingly recognized that the usability of health information systems is a critical issue. However, systems are still being introduced that are known to have usability problems and that may even be unsafe due to usability issues. The question therefore arises: How is Industry adopting and applying usability engineering ... or not! and also "What is the relation between academia and industry on this issue?". The panel will discuss these issues with perspectives from Canada, France and Denmark from researchers who have been working intensively in the area of healthcare IT usability for many years. Essentially, the panel will address: "How can usability engineering be more widely applied in healthcare?". The first of three short presentations will describe approaches in Europe to make usability a requirement for release of systems (i.e. as a requirement for CE marking). In the second short presentation, a laboratory in Denmark will be described that has been used to assess the usability of commercial healthcare IT. In the final short presentation, an approach known as low-cost rapid usability engineering will be described that can be applied widely for testing health information systems. Discussion with the audience will then be elicited.

## Spirit C

### **Addressing Public Health Informatics Patient Privacy Concerns**

*David Birnbaum, PhD, MPH, Principal, Applied Epidemiology; Bryant Thomas Karras, MD, Chief Public Health Informatics Officer, Washington State Department of Health; Elizabeth Denham, Information and Privacy Commissioner for British Columbia; Elizabeth Borycki, RN, PhD, Associate Professor, University of Victoria; Paulette Lacroix, MPH, CMC, CIPP/C, CIPP/S, PC Lacroix Consulting Inc.*

Overview of federal & state law under which the department's databases collect and use patient information (HIPAA and its public health exemption, state "sunshine laws" (<http://www.nfoic.org/state-freedom-of-information-laws>), Safe Harbor convention, etc.),

- CHARS and its public use data sets,
- Pros & cons of data use agreements,
- Reaction to Bloomberg news item

# DAY-AT-A-GLANCE: THURSDAY, FEBRUARY 26 — WORKSHOPS

8:30 am

**Registration & Continental Breakfast**  
Marble Lobby

9:00 am

## Concurrent Morning Workshop Sessions

Spirit A	Spirit B	Spirit C	Spirit D	Merino Room
<b>Ontology-Driven Configuration of Electronic Health Records Systems</b>  <i>Professor John Chelsom, City University</i>	<b>CPQE –Optimizing the Role of Clinicians to Achieve Successful Adoption</b>  <i>Carol Dueck, Director Carol Gresswell, Director Janet Roberts, Director Healthtech Consultants</i>	<b>Health Informatics-Enabled Workflow Redesign and Evaluation</b>  <i>Eric L. Eisenstein, Duke University</i>	<b>Developing and Implementing National eHealth Services for Patients –An Interactive Exploration of Challenges and Potential Solutions</b>  <i>Isabella Scandurra, Örebro University, Sweden</i>	<b>Patient Experience (PX)</b>  <i>Dr. Johanna Kaipio, Strategic Usability Research Group (STRATUS), Finland</i>
		<i>Elizabeth M. Borycki &amp; Andre W. Kushniruk, University of Victoria</i>	<i>Maria Hägglund, Karolinska Institutet, Sweden</i>	<i>Mari Tyllinen &amp; Dr. Marko Nieminen, Aalto University</i>
		<i>Jos Aarts, University at Buffalo</i>	<i>Dr. Andre Kushniruk &amp; Elizabeth Borycki, University of Victoria</i>	<i>Dr. Pernille Bertelsen, Aalborg University, Denmark</i>

10:15 am

**Nutrition Break**

10:30 am

**Morning Workshops continue**

12:00 pm

**Lunch Buffet**



## Concurrent Afternoon Workshop Sessions

1:00 pm	Spirit A	Spirit B	Spirit C	Spirit D	Merino Room
	<p><b>Patient Access to their Electronic Health Record</b>  <i>Professor John Chelsom, City University</i></p>	<p><b>How Island Health Leverages its Data to Assess and Improve the Safety and Quality of Care</b>  <i>Kennard Tan, Medical Microbiologist &amp; IHealth - Physician Lead for Reporting and Analytics</i></p>	<p><b>How to Integrate Human Factors and Sociotechnical Analysis in Health Informatics</b>  <i>Jos Aarts, University at Buffalo</i>  <i>Andre W. Kushniruk, University of Victoria</i></p>	<p><b>Patient-Centered Health Platforms: Developing a Strategic Approach</b>  <i>Karl A. Stroetmann</i>  <i>Michael Bainbridge, ASE Consulting Australia</i>  <i>Nicola Shaw, Algoma University</i></p>	<p><b>Mobile Applications in Healthcare: How can they Support our Daily Work and/or Life?</b>  <i>Christian Juhra, University Hospital Münster, Germany</i></p>

2:30pm

**Nutrition Break**

2:45 - 4:00 pm

**Afternoon Workshops continue**

5:00 pm

**Registration and Opening Reception**  
 Marble Lobby

# DAY-AT-A-GLANCE: FRIDAY, FEBRUARY 27 — CONCURRENT PAPER SESSIONS

8:00 am

**Registration & Continental Breakfast**  
Marble Lobby

8:30 am

**Opening Remarks**  
&  
**James Coward Keynote Lecture, Colleen McGavin**  
*Representative, Patient Voices Network*  
Spirit Rooms

9:45 am

**Nutrition Break**

10:15 am

**Concurrent Paper Presentation Sessions**

**Spirit A/B**

**Patient Safety, Medical Errors  
and Quality Management**

**The Implementation Experiences of a Pharmacy Automation  
Drug Dispensing System in Saudi Arabia, Y. Al Muallem**

**SmartMed: A Medication Management System to Improve  
Adherence, S. Diemert**

**Information System Hazard Analysis: A Method for  
Identifying Technology-Induced Latent Errors for Safety,  
F. Mason Blakley**

**Cultural Issues in Adverse Event Reporting – An Ethnographic  
Study, C. Harter**

**Hospital Discharge and the Role of ICTs: Considering Patient  
Perspectives, P. Turner**

**Spirit C/D**

**Human Computer Interaction**

**A See Through Future: Augmented Reality and Health  
Information Systems, H. Monkman**

**Using Usability Evaluation to Inform Alberta's Personal  
Health Record Design, M. Price**

**Beyond Effectiveness: A Pragmatic Evaluation  
Framework for Learning and Continuous Quality**

**Improvement of e-Learning Interventions in Healthcare,  
T. Mohamed Dafalla**

**Optimizing the Efficacy of Multimedia Consumer Health  
Information, H. Monkman**

**Integrating Heuristic Evaluation with Cognitive  
Walkthrough: Development of a Hybrid Usability Inspection  
Method, A. Kushniruk**

**Merino Room**

**e-Learning and Education**

**The Impact of University Provided Nurse Electronic  
Medical Record Training on Health Care Organizations: An  
Exploratory Simulation Approach, K. Abrahamson**

**Development of a Flexible and Extensible Computer-Based  
Simulation Platform for Healthcare Students,  
E. Cummings**

**Integration of Electronic Health Records into Nursing  
Education: Issues, Challenges and Limitations, E. Borycki**

**Informatics in Primary Care**

**A Knowledge Translation Project on Best Practices in  
End-of-life Care, J. Pyke**

**Project ALIVE: An Action-Research Exploration of EMR Value  
in Primary Care, T. Alexander**

12:15 pm

**Lunch Buffet**

**1:15 - 2:45 pm**

**Concurrent Paper Presentation Sessions**

**Sprit A/B**

**Clinical Decision Support Systems**

**Using a Digital Marketing Platform for the Promotion of an Internet Based Health Encyclopedia in Saudi Arabia,**  
A. Al Ateeq

**The Role of Technology in Reducing Unnecessary Duplicate Diagnostic Imaging Examinations,** J. Griffith

**The Importance of Telehealth for Directors and other Decision Makers,** A. Roudsari

**Sprit C/D**  
**Evaluation**

**Closed Circuit Video for Organizational Learning in Emergency Unit ,** L. Parv

**Health Informatics-Enabled Workflow Redesign and Evaluation,** E. Eisenstein

**An Evaluation of Health Information Technology Outsourcing Success,** S. Malovec

**Merino Room**

**Electronic Health Records**

**Structured Data Capture from Multiple EMRs: Towards an Architecture for Clinical Research,** K. Keshavjee

**Using Community Based Participatory Research as a Method for Investigating Electronic Health Records,**  
E. Cummings

**A Platform to Collect Structured Data from Multiple EMRs,**  
K. Keshavjee

**1:15 -**

**3:15 pm**

**Harbour Room**

**Panel**

**Understanding the Context of Patient Safety Through The Lenses of Three IMIA Working Groups**

Craig Kuziemy, Christian Nøhr, Elizabeth M. Borycki, Andre W. Kushniruk, Yalini Senathirajah

**2:45 pm**

**Nutrition Break**

**3:15 - 4:45 pm**

**Concurrent Paper Presentation Sessions**

**Sprit A/B**

**Nursing Informatics**

**Undergraduate Nurses' Preferred use of Mobile Devices in Healthcare Settings,** C. Mather

**The Evaluation of Electronic Perioperative Nursing Documentation Using a Cognitive Walkthrough Approach,**  
E. Borycki

**Nursing Handover using an Electronic Application for Community Nurses,** N. Michaud-Hamilton

**Readiness of Nurse Executives and Leaders to Advocate for Health Information Systems Supporting Nursing,** N. Frisch

**Sprit C/D**

**Mobile Technology and Telehealth**

**Virtualizing Healthcare: Competing Visions,** J. Murphy

**Usability Testing of a Prototype Multi-User Telehealth Kiosk,**  
K. Courtney

**Nurses: Extending Care Through Telehealth**  
M. Aylott, M. Moric, L.Saffarek

**Merino Room**

**Consumer Informatics**

**Designing Electronic Medication Reconciliation for Patients: The Lead User Method,** P. Bellwood

**Danish Citizens' Expectations to the Use of eHealth,**  
P. Bertelsen

**Using Personal Health Records to Scaffold Perceived Self-Efficacy for Health Promotion,** H. Monkman

# DAY-AT-A-GLANCE: SATURDAY, FEBRUARY 28 — CONCURRENT PAPER SESSIONS

**8:00 am** Registration & Continental Breakfast  
Marble Lobby

**8:30 am** Introductory remarks  
&

**Steven Huesing Keynote Lecture , David Bates**

*Chief Quality Officer and Senior Vice President, and Chief, Division of General Internal Medicine, Brigham and Women's Hospital  
Medical Director of Clinical and Quality Analysis, Partners Healthcare  
Spirit Rooms*

**9:45 am** Nutrition Break

**10:15 am** Concurrent Paper Presentation Sessions

**Spirit A/B**

**Patient Safety, Medical Errors  
and Quality Management**

**A Pharmacy Inventory Management System in Saudi Arabia:  
A Case Study, Y. Al Muallem**

**Awareness of Technology-Induced Errors and Processes for  
Identifying and Preventing Such Errors, P. Bellwood**

**Building an Electronic Handover Tool for Physicians Using a  
Collaborative Approach between Clinicians and the Develop-  
ment Team, K. Momtahan**

**Workarounds to Computer Access in Healthcare Organizations:  
You Want My Password or a Dead Patient? R. Koppel**

**Reducing Nosocomial Infections: A User-centred Approach to  
Developing an eHealth System for Sri Lankan ICUs, P. Turner**

**Spirit C/D**

**Health Modeling and Simulation**

**Modelling Clinical Diagnostic Errors: A Systems  
Dynamics Approach, S.Guo**

**Using Heart Rate Variability for Automated Identification  
of Exercise Exertion Levels, J. Finkelstein**

**Valuing National Effects of Digital Health Investments:  
An Applied Method, S. Hagens**

**Big Data, Data Mining, Data Warehouse**

**Bridging a Divide: Architecture for a Joint Hospital-Primary  
Care Data Warehouse, K. Keshavjee**

**Mining Association Rules in the BCCA Liver Cancer  
Data Set, M. Kuo**

**Merino Room**

**Consumer Informatics**

**Patient Perspectives on Patient Participation –  
Results from a Workshop with a Patient Council in a General  
Practice, P. Bertelsen**

**Patient Narratives Representing Patient Voices to Inform  
Research: A Pilot Qualitative Study, J. Ash**

**Know Me – A Journey In Creating A Personal Electronic  
Health Record, A. Buckley**

**What is Missing From This Picture? Empowering the Health  
Consumer, G. Gabel**

**12:15 pm**

**Lunch Buffet**

## Concurrent Paper Presentation Sessions

1:15 pm

**Spirit A/B**  
Public Health Informatics

Trialling an Electronic Decision Aid for Policy Developers to Support Ageing Well, E. Cummings  
Framework for Effective Population Health Management Solutions, K. McArdle

Supporting Dementia in the Community: A Human Factors Perspective, M. Antonio

Information Technologies to Improve Public Health: A Systematic Review, A. Kuo

**Spirit C/D**  
Ontologies, Trust, Coding, Terminologies

Conceptual Analysis of a Diverse Set of Healthcare Quality Indicators, A. Roudsari  
In Case of Emergency – Are ICD-10 Codes Enough? C. Juhra

Modelling System Level Health Information Exchanges: An Ontological Approach, J. McMurray

**Merino Room**  
Electronic Health Records

Using the NASA Task Load Index to Assess Workload in Electronic Medical Records, D. Hudson

The Next Generation EMR, K. Keshavjee

Patient Access to Their Health Record Using Open Source EHR, J. Chelsom

2:45 pm

## Nutrition Break

3:15 - 4:45 pm

## Concurrent Paper Presentation Sessions

**Spirit A/B**  
Evaluation

Value Versus Use for Patients: Findings from an ICT supported Cystic Fibrosis Self-Management Project, E. Cummings

A Framework of 'p'-Benefits In Health Information Technology Implementation, C. Kuziemyky

Patient-Centric Care and Chronic Disease Management: A Stakeholder Perspective, K. Stroetmann

**Spirit C/D**  
Mobile Technology and Telehealth

Determinants of Health Behavior Choices in Patients Using Computer-Mediated Decision Aid, J. Finkelstein

A Recommendation-based Mobile Web Application for Health Information Service, S.L. Wang

Evaluation of a Portable Stress Management Device, J. Finkelstein

**Merino Room**  
Clinical Decision Support Systems

Integrating Clinical Decision Support into EMR and PHR: a Case Study Using Anticoagulation, K. Keshavjee

Using Business Intelligence for Efficient Inter-Facility Patient Transfer, W. Haque

Sociotechnical Design of an Electronic Tool for Managing Transient Ischemic Attack in the Emergency Department, C. Partridge

7:00 pm

**Gala Dinner**  
Terrace Ballroom

# SCHEDULE: SUNDAY, MARCH 1 — PANEL PRESENTATIONS

8:00 am

**Registration & Continental Breakfast**  
Marble Lobby

8:45 am

**Introductory remarks  
&  
Denis Protti Keynote Lecture, Catherine Claiter-Larsen**  
*Vice President and Chief Information Officer, Island Health*  
Spirit Rooms

9:45 am

**Nutrition Break**

10:15 am

## Concurrent Panel Sessions

Spirit A

**Integrating Human-Centred  
Methods into the Public IT  
Procurement Process**

*Dr. Marko Nieminen,  
D.Sc.(Tech.)*

Spirit B

**How can Usability Engineering be more  
widely applied?**

*Marie-Catherine  
Beuscart-Zéphir*

Spirit C

**Addressing Public Health Informatics  
Patient Privacy Concerns**

*John Wiesman, DrPH,  
MPH,  
BC Privacy  
Commissioner  
Elizabeth Denham*

12:15 pm

**Closing Remarks**  
*Coffee & tea will be served*



# VISITOR INFORMATION

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*Tourism Victoria suggests the following classic Victoria attractions and dining*

## **Royal BC Museum**

675 Belleville Street

[www.royalbcmuseum.bc.ca](http://www.royalbcmuseum.bc.ca)

Follow in our dinosaur footsteps or slide back in time to the Ice Age, past a wall of ice and into the life of a woolly mammoth. See how the fur trade touched and forever changed the lives of BC First Peoples. Climb aboard Captain Vancouver's ship as she anchors in the Nootka Sound. And stroll through a forest for a visit with a cougar or grizzly bear. Or, come and lose yourself in British Columbia history at the BC Archives. We've been collecting and preserving photographs, documents, maps and historical records since 1984. Your experience doesn't end with our galleries. Our precinct includes sites like Helmcken House, St Ann's Schoolhouse, the Netherlands Centennial Carillon and Thunderbird Park. Come explore the Royal BC Museum. Located on Victoria's Inner Harbour, we are within walking distance of downtown hotels & restaurants. Visit [royalbcmuseum.bc.ca](http://royalbcmuseum.bc.ca) for a current exhibition schedule.

## **Fisherman's Wharf**

Fisherman's Wharf, 1 Dallas Road

[www.fishermanswharf victoria.com](http://www.fishermanswharf victoria.com)

Just around the corner from Victoria's Inner Harbour, Fisherman's Wharf is a hidden treasure waiting to be discovered. This unique marine destination offers food kiosks, unique shops and eco-tour adventures in a working harbour setting. Wander down the to the docks with your lunch, buy seafood fresh off the boat, check out the unique array of commercial, pleasure vessel and float home moorage, watch the commercial fishing vessels unload their wares, become a pirate, view wild seals

Victoria's most anticipated dining event, **Dine Around & Stay in Town**, happens February 20 to March 9, 2015. Tickle your tastebuds and dive into Victoria's culinary scene at over 60 participating restaurants. View the selection of three-course menus to, but be warned, your stomach may start growling immediately in expectation of a taste of Victoria. Scan the QR code to see the menus!





# Downtown Victoria & Area

## POINTS OF INTEREST

- |                                   |                          |                                  |
|-----------------------------------|--------------------------|----------------------------------|
| 1 Abkhazi Garden                  | 11 Fisherman's Wharf     | 21 Parliament Buildings          |
| 2 Art Gallery of Greater Victoria | 12 Government House      | 22 Point Ellice House            |
| 3 The Bay Centre                  | 13 Helmcken House        | 23 The Robert Bateman Centre     |
| 4 Beacon Hill Children's Farm     | 14 IMAX Victoria         | 24 Royal BC Museum               |
| 5 Belfry Theatre                  | 15 Langham Court Theatre | 25 Royal Theatre                 |
| 6 Cameron Band Shell              | 16 Maritime Museum of BC | 26 St. Ann's Academy             |
| 7 Carr House                      | 17 Market Square         | 27 Save-on-Foods Memorial Centre |
| 8 Chinatown                       | 18 McPherson Playhouse   | 28 Terry Fox Memorial Statue     |
| 9 Craigdarroch Castle             | 19 Mile Zero             | 29 Victoria Bug Zoo              |
| 10 The Fairmont Empress           | 20 Miniature World       |                                  |

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### LEGEND

- Main Road
- Ferry & Seaplane Routes to Seattle and Port Angeles; Seasonal Routes to Bellingham and San Juan Island
- Scenic Marine Drive
- Seaside Cycling Route
- Galloping Goose Trail
- Walkway
- Dock
- Park
- Beach
- Visitor Centre
- Washroom
- Full-Service Seaplane Terminal
- Helijet Terminal

















# SCIENTIFIC REVIEWERS

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*Many thanks to our 2015 scientific reviewers*

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