WORKSHOPS

Morning workshops

A. The Expanding Universe of Health Informatics – The Evolving Competency Gap

Like our physical universe, the universe of Health Informatics appears to be expanding and possibly doing so at an increasing rate. As we delve more deeply into the human domain with more and more sophisticated tools, we are experiencing heightened awareness of new competencies/capabilities that must be in the armamentarium of informatics professionals. Some of these new requirements for competence derive from a deepening understanding of the true nature of human health and health care. Others have their origin in new technologies that we must ourselves use or foster for use by health professionals. Still others come from a greater and more realistic appreciation of the nature of Health Informatics itself, both at the basic and applied levels. The result is that there is more to learn and teach, more skills that need to be acquired and new demands for our own attitudes and personal development.

Emergent factors that stimulate the need for competency/capability development include: the nature of complexity and the implications of complexity research on the operation and management of the health system and the quantization of health information; precision/personalized Medicine; the cloud as an alternative to localized technologies; growing expectations of analytics and big data; the Internet of Things (IoT); deep learning and its implications in clinical decision support; the increasing overlap between Biomedical Engineering and Health Informatics related to devices and the data they produce (sensors and sensor networks in particular); consumer informatics; personal attitudes with their concomitant behaviors and their implications in our workforce; and many others.

Learning objectives

Participants in this workshop will be able to:

1. Recognize the need for new competencies/capabilities and position themselves to focus their efforts on acquiring them
2. Develop a list of new inclusions in either their academic programs or their own personal ‘bucket list’ for learning
3. Participate in the identifying competencies/capabilities either not typically addressed in existing educational programs and/or that have become apparent during work experience
4. Define the need for team competencies (leadership, cohesion, alignment, effective interaction) and the distribution of individual competencies over teams

Key Audience

We envision the participants in this workshop to be a mix of teachers, students, and working professionals.

Presenters

H. Dominic Covvey, University of Waterloo, Canada
Tom Rosenal, University of Calgary, Canada
B. Managing Public Access and Patient Privacy in Public Health Informatics

Workshop Description –

In 2015 at ITCH, we identified reasons that laws and regulations governing access to health information restrict access to public health information, and to emerging risks of breaching privacy. Suggestions for public sector privacy legislative changes were put forward by panel experts from Washington State and British Columbia. A publication of that session will be used as a handout to frame the issues for this workshop.

The workshop will progress in three parts:

1. Brief presentations, with ungraded self-assessment pre-test and post-test
   Overview summary of the situation in 2015; Overview summary of any progress since in North America or elsewhere; and, Description of the workshop activities
2. Scenario roll-play exercise
   Assignment to groups (some focusing on how to access the scenario databases, others focusing on how to limit access) and time for group-work; Presentation by each group of the approaches they decided upon; and, Response by workshop leaders, briefly commenting on how likely the suggested approaches would be to succeed and why
3. Political Reality
   Small group discussion of the approaches and responses from part 2 of the workshop relative to the concerns summarized in part 1; Report from each group on recommended strategies and tactics to offer the most viable path to improving current laws, regulations and practices; and, Consensus generating exercise with the entire audience to rank order the recommended strategies

Learning objectives –

Participants will be able to:

1. Summarize major concerns in providing open access to public health information while complying with privacy laws in Canada and the US
2. Identify strategies used by public bodies to balance access and privacy rights in compliance with privacy legislation
3. Discuss which strategies are likely to be the most viable for promoting improvements including legislative reform

Key Audience –

This workshop should be of interest to those who need access to health information databases (e.g. journalists, researchers) and those responsible for balancing freedom of information and patient privacy (e.g. clinical and public health professionals, informatics security professionals and health database product developers)

Workshop Leaders –

David Birnbaum, University of British Columbia, Canada
Paulette Lacroix, PC Lacroix Consulting, Canada
TBA, BC Office of the Information & Privacy Commissioner, Canada
Kathryn Gretinger, University of British Columbia Graduate School of Journalism, Canada
C. Medication-Related Alerting Systems: How to Apply Desirable Usability Design Principles?

Medication alerting systems are promising technologies but suffer from a poor usability. Defects in the design characteristics of those systems (e.g. issues in the types of information displayed, how they are displayed, when and to whom they are displayed) may question the expected usefulness of the technology and may even pose a risk to patient safety. Those defects are partly due to violation of usability design principles, i.e. usability flaws.

A recent research project intended to build a set of evidence-based usability design principles illustrated by actual instances of their violations and their consequences [1,2]. For this purpose, two independent analyses of the literature have been performed. On the one hand, usability flaws in medication alerting systems and their consequences for the clinicians, the work system, and the patient have been searched and organized; on the other hand, existing usability design principles specific to medication alerting systems have been searched and synthesized. Results of both analyses have been matched together to identify the existing evidence that non-applying usability design principles has negative consequences on the usage of alerting system and its impact.

This evidence-based knowledge will be turn into a tool to inform usability design decision. Yet, providing designers with textual descriptions of the desirable usability characteristics that alerting systems must meet may not be sufficient: the wording of the principles may lead to unforeseen misinterpretations or may not be understood. Therefore it is necessary to validate with experts in the field, the wording of the recommendations to ensure that they are unequivocal and understandable. Moreover, visual illustrations of the recommendations could be useful to help designers understand the recommendations.

The aim of this workshop is to validate the wording of the usability design principles for medication alerting systems, to improve it if needed, and to provide visual illustrations of the principles.

The workshop will start with the presentation of the process to build evidence-based usability design principles and of the main results (especially of the six meta-principles). Then, several working groups will be constituted. Each group will first work on the wording of the principles to ensure with the hosts of the workshops that they are clear and unambiguous enough. Then, they will be asked to produce visual illustrations of the applications of those principles. To support sketching the visual illustrations, use-case scenarios will be provided. In the last part of the workshop, working groups will be reunited and will present their proposals to the audience for discussion and enrichment.

References


Presenters

Romaric MARCILLY, Lille University, France
Sylvia PELAYO, Lille University, France
Jessica SCHIRO, Lille University, France
D. Hands-on with an Open Source EHR for Longitudinal Data

Electronic health records have the potential to provide a rich source of longitudinal data sets for use in clinical studies and trials. This workshop uses the cityEHR open source health records system to provide a hands-on insight into the issues of creating and manipulating longitudinal data sets.

Learning Objectives

Attendees will work with an installed cityEHR system to explore the practical challenges of creating, querying and extracting longitudinal data in the routine clinical record for use in secondary studies. They will:

1. Create their own EHR application in the cityEHR
2. Design the information model for a longitudinal data set
3. Create an example patient record, storing the longitudinal data
4. Use the example record to generate a larger set of test records
5. Query the longitudinal data to form patient cohorts, matching specified criteria
6. Export data for these cohorts, in formats suitable for secondary analysis or study

Prerequisites

Attendees must bring their own network-capable PC (ideally) or tablet. Information models will be created using standard spreadsheets, using any office application such as Open Office, Libre Office or proprietary MS Office. They can connect to the classroom server to create their own EHR instance, or install the cityEHR on their own PC (not suitable for tablets). They can use the information model of longitudinal data created as a demonstration by the instructor, or they can create a model of their own data set(s).

All software used in the workshop is open source and is available for download before or after the workshop, or can be taken away on a USB stick.

Presenters

John Chelsom, Seven Informatics Ltd., UK
Naveed Dogar, University of Oxford, UK
E. Educating the Next Generation of Biomedical Informaticians: The University of Utah’s Experience

CANCELLED
Workshop on PAHO/WHO e-Health Strategic Planning Toolkit and Latin America e-Health Initiatives

The goal of this workshop is to provide an overview major initiatives in Latin America, provide an overview of the Pan American Health Organization/World Health Organization (PAHO/WHO) national e-health strategic planning toolkit, challenges in implementation of e-health systems, overview of the PAHO e-health strategy for the Americas, and provide approaches for implementing programs using cooperative models.

Yuri Quintana, is focused on developing innovative technologies that empower communities of professionals and patients. He is Director for Global Health Informatics in the Division of Clinical Informatics, Beth Israel Deaconess Medical Center, and Assistant Professor in Medicine at Harvard Medical School. He is developing global online collaboration networks for health care delivery and applications in mobile health. Previously, he was at St. Jude Children’s Research Hospital, where he developed Cure4Kids, a pediatric cancer education and collaboration Website used by thousands of health professionals worldwide. Quintana was a principal investigator in the Canadian HealNet Research Network, and also served as director of the New Media Research Lab developing innovations in interactive media and online education. He has held high-tech positions at IBM Canada Limited and Watcom. Quintana obtained his engineering degrees from the University of Waterloo in Electrical and Computer Engineering and Systems Design Engineering.

David Novillo, serves as Regional Advisor on Digital Health and Knowledge Management at the World Health Organization (WHO) in Washington, D.C. At WHO, he advises and builds capacity in more than 45 countries and territories in the Americas Region on matters related to eHealth (Health IT), such as telemedicine, mHealth, electronic health records, health information systems, standardization and interoperability, and more. He obtained his Ph.D. from the Carlos III University of Madrid (UC3M), and has participated in more than 100 activities in eHealth and knowledge management, including articles in scientific journals such as Health Affairs, Clinical Medicine, and British Medical Journal. He also completed a Certificate Program in Leadership Strategies for Information Technology in Health Care by University of Harvard T.H. Chan School of Public Health; received a Diploma in Health Promotion by the Public University of Navarra; earned the Special Award of the Masters on Research in Documentation by UC3M; and received his Bachelor’s in Library and Information Science from UC3M. Prior to joining WHO, he served as Executive Advisor to the Minister of Health of Spain; he was responsible for the Knowledge Management Center at The High Commissioner for Support of Victims of Terrorism in the Presidency of Spain; and he worked as associate professor in the Department of Library and Information Science at UC3M.

Learning Objectives

1. Present examples of e-health Initiatives and strategies in Latin America
2. Provide overview of the PAHO/WHO National e-health strategic planning toolkit
3. Discuss models of public-private cooperation for global health challenges
4. Discuss strategies for managing non-communicable diseases
5. Discuss human-centric approaches to healthcare services
6. Discuss ways for managing the risks and impact of current and future epidemics

Key Audience

Government healthcare leaders, hospital healthcare leaders, public health officials, private healthcare sectors, non-governmental organizations in health, and academic researchers.

Presenters

Yuri Quintana, Harvard University, USA
David Novillo, World Health Organization, USA
Afternoon Workshops

G. Workshop on Big Data Analytics Education

This workshop is aligned with the effort from the IEEE Big Data Initiative (BDI) on Big Data Education (see http://bigdata.ieee.org/). The main objective of the education track was to democratize access to practical knowledge and skills for working with big data.

Big Data is a collection of data so large, so complex, so distributed, and growing so fast (or 5Vs- volume, variety, velocity, veracity, and vinculation). It has been known for unlocking new sources of economic values, providing fresh insights into sciences, and assisting on policy making. The challenges of the Big Data Analytics (BDA) are that too often, researcher’s choice of analytic approach is dictated and constrained by available resources because of a lack of knowledge and/or understanding of available computer hardware, software and methodologies; unaware existed similar successful application cases; and unconscious of better analytic methods, tools and resources. In addition, the Big Data skilled people are highly demanded. According to the Burtch Works' 2014 “Salaries of Data Scientists” study reports, the median base salary for Big Data professionals is between $120,000 and $160,000. A Wall Street Journal article indicates that new career track pays up to $300,000 for data analysts able to analyze Big Data. Based on the evidences and predictions, Big Data education is critical.

The goal of this workshop is to gather researchers, practitioner and industries to discuss approaches and strategies for establishing capabilities to educate decision makers using (health) Big Data for decision making (e.g. government/company managers), researcher/data analyst practical skills for BDA (e.g. data integration, analytics tools, privacy protection etc.), and related educators knowledge for BDA (e.g. university/college professor, high school teachers).

International Renowned Speakers

We plan to invite 3 international renowned speakers to give presentations in the workshop:

1. One speaker from Weill Cornell Medicine, Johns Hopkins, USA (Big Data Coursework for Computational Medicine (BDC4CM)
2. One speaker from Simon Fraser University
3. One speaker from Taiwan National Center for High-performance Computing

Panel Discussion: Strategies and approaches in (Health) Big Data Education

The panel discussion is to determine short term & long term objectives; to propose strategies and approaches; and to address various issues in (health) Big Data education. The panel discussion will involve panelists from academic, governmental and industrial communities.

Presenters

Alex Mu-Hsing Kuo, University of Victoria, Canada.
Steven M Miller, Global Leader Academic Programs for IBM Analytics, USA
H. Capacity Building for Clinical Informatics: Learning from Island Health’s Experience and Developing a 2020 Vision

To support the use and optimization of health information systems, there is a considerable need for Health Informatics (HI) professionals specialized in Clinical Informatics (i.e., Clinical Informaticists) in Canada and across the globe. However, there is currently a high shortage of Clinical Informaticists (HI/HIM Report, 2014). To address this, there is a need “to broaden the skills of current clinical professionals to better support them in Clinical Informatics roles” (HI/HIM Report, 2014, p. 67). In 2014, five Canadian HI and health information management organizations identified that the upgrading of Clinical Informatics skills of clinical professionals is a priority for human resources planning until 2019 (HI/HIM Report). Although the development of Clinical Informatics skills is being introduced into clinical curricula/training, there “continues to be a significant gap in the availability of skill broadening resources for incumbent clinical professionals” (HI/HIM Report, 2014, p. 67). Capacity building in Clinical Informatics is central to addressing this gap to fully realize the quality, accessibility, and productivity benefits of health information systems. Capacity building or development is “the process by which individuals, organizations, institutions and societies develop abilities to perform functions, solve problems and set and achieve objectives” (United Nations, 2006, p. 7). Capacity building is addressed at three-interrelated levels: (1) individual, institutional, and societal. To build capacity for Clinical Informatics, there is a critical need to examine the individual and institutional/organizational levels to (a) build on the existing knowledge and skills of clinical professionals and (b) foster an environment of continuous learning and adapting to change for Clinical Informaticists.

In 2014, Island Health created the Department of Clinical Improvements and Informatics to support clinicians and physicists with providing clinical change management and supporting the integration of computing and biomedical technologies into practice to ensure system usability and adoption. The Clinical Improvements & Informatics team initially included six Clinical Informaticists and has since grown to a team of over 30 Nurse Informaticists, Allied Health Informaticists, and Clinical Informatics Specialists in 2016. This workshop will describe the past, present, and future work and plans for developing capacity for Clinical Informatics at Island Health. Through interactive presentations, small group discussions, and group activities, participants will gain hands-on experience and understanding of the barriers and facilitators to developing capacity for Clinical Informatics.

Learning Objectives

Upon completion of this workshop, participants will be able to:

1. Develop a vision for capacity building for Clinical Informatics in their own organization(s) for 2020
2. Collaborate with peers to develop a global vision for capacity building for Clinical Informatics for 2020
3. Apply Island Health’s successes and challenges to (a) build on the existing knowledge and skills of clinical professionals to develop Clinical Informaticists and (b) foster an environment of continuous learning and adapting to change for Clinical Informaticists in their own organization(s)
4. Share and learn from the experiences of peers to develop capacity for Clinical Informatics in their own organization(s)
5. Participate in a network/community of practice for building provincial, national, and international capacity for Clinical Informatics

References


Presenters

Gloria Bouchard, Island Health Nanaimo, Canada
Gurprit Randhawa, Island Health Victoria, Canada
I. Using Medical Informatics to Improve Clinical Trial Operations and Clinical Trials of Health Information Technologies: Integrating Usability and Workflow Analysis with Clinical Trials

The relation between work in usability and workflow analysis and clinical trials has remained to be explored. One area where the two can be integrated is in the analysis and improvement of software associated with clinical trials. Site-based costs account for 60-75% of the typical clinical trial’s costs. This includes the work sites perform in the trial as well as work the coordinating center performs in managing sites. Half of site-based clinical trials costs may be amenable to novel information technology solutions. In addition, usability and workflow analyses are beginning to be integrated into larger studies of health information technology, where systems and innovations to be evaluated during randomized clinical trials first undergo a phased optimization process (applying usability and workflow analyses).

In the health informatics literature it has been noted that clinical trials of information technologies have resulted in conflicting results, where implementations of the same technology or system may have varying results in terms of success or failure, depending on the particular study site and differing optimization of technologies studies. The authors have been involved in developing a new model for technology evaluation that involves a phased optimization of systems or technologies to be implemented (using usability and workflow analyses) prior to being released for use and study in a controlled trial. The results if this approach are promising. In one study that will be described it was shown that conducting a phased approach applying usability and workflow analysis to prototype development of alerts embedded within a commercial electronic health record system resulted in high levels of user adoption once the optimized technology was released in a large-scale trial. Implications for conducting trials of related health information technologies (including electronic health records) will be explored.

There is increasing interest in the secondary use of existing health data to replace de novo data collection in clinical trials. However, the use of these data is associated with limitations in study design and data quality and may create new workflow and usability problems.

**Learning Objectives**

Workshop participants will gain a greater appreciation for:

1. problems confronting the clinical research enterprise
2. novel ways information technologies may be used to address these problems
3. the relation between usability and workflow analysis in trials of health information technologies
4. workflow and usability issues created by new information technologies

**References**


**Presenters**

Eric Eisenstein, Duke University, USA
Elizabeth Boryckii, University of Victoria, Canada
Andre Kushniruk, University of Victoria, Canada
J. Enhancing Informatics Capacity to Improve Population Health: Practical Tools and Lessons for Health Departments

CANCELLED
K. Usability Regulation for Medical Devices: Challenges for Patient Safety

A good innovation does not make a safe medical device (MD). There is a process that must be followed before the idea becomes a device in the hands of healthcare professionals or patients to ensure that it poses a risk that is as low as possible to those who use it and on whom it is to be used. Unfortunately, many examples of MDs’ use errors have been reported that have led to patient harm or death. In these examples, usability flaws of the human-machine interface have often been identified, among others, as root causes of the errors.

In many countries health authorities require that manufacturers demonstrate their MDs’ reliability and safety before they are authorized to put them on the market. For instance, in Europe, the European Commission reinforced the “ergonomic essential requirement” for CE marking: now, it is required that a safety oriented Usability Engineering Process (UEP) be integrated in the design and development lifecycle of MDs.

Yet, recent researches have shown that the various stakeholders (e.g. manufacturers, notified bodies) in Europe face difficulties in applying the UEP. Main issues include: (i) essential differences between the safety-oriented UEP required and the usual Human-Centered Design approach; (ii) necessity of a multidisciplinary expertise to implement the UEP; (iii) necessity of a minimum level of usability maturity from the manufacturers to implement properly the UEP; (iv) poor understandability of the harmonized standards that are supposed to guide manufacturers; and (v) methodological challenges to implement the final usability validation step.

Learning Objectives

1. Present the importance of the usability regulation for patient safety and elucidate the European regulatory demands
2. Make the audience discuss the various possible implementations of the UEP, the differences between the practices and the regulation in their own country compared to the European regulation and practices
3. Learn from the differences to improve the application of the usability regulations

The workshop will start with a presentation of common usability problems and how a usability engineering can uncover and eliminate them and with a tutorial on how manufacturers can establish a UEP as required by the European regulation for certification. Then, several working groups will be constituted by nationality (as far as possible). Each group will first describe a UEP (proceedings, methods) as practiced by the participants (or that participants can imagine) and the usability regulation of the countries of the concerned participants. They will be then asked to work on the difficulties encountered (based on a case study). In the last part of the workshop, working groups will be reunited and will present their proposals to the audience for discussion and enrichment. Potential rooms for improving practices will be discussed and formalized during this last part with the entire audience.

Presenters

Sylvia Pelayo, Lille University, France
Jessica Schiro, Lille University, France
Romaric Marcilly, Lille University, France
L. Novel Teaching Tools and Case Studies for Incorporation of Health Informatics into the Undergraduate Medical Education Curriculum

The introduction of information and communications technologies (ICT) across the world has changed the way we work, play and do business. Even countries that have lagged behind in adoption of health information technology, such as Canada and the United States, have now reached 70-80% adoption of electronic records by physicians. Although adoption rates are high, these technologies are not always used effectively to share and exchange information with other providers, share information with patients, manage patients with chronic disease or conduct quality improvement (Osborn et al., 2015). Use of ICT by patients including searching information on the Internet that may or may not be credible, use of health and wellness mobile apps and wearable devices to monitor health conditions and track behavior, and health-related social media bring multiple additional challenges.

Education is essential to better prepare our medical learners (students and residents) to practice in modern, technology-enabled, clinical environments. Yet, educational interventions that address the challenges are limited. In this workshop we will address the goals and challenges of designing and introducing eHealth topics into the undergraduate medical curriculum.

This workshop stems from the Physician in Training eHealth Curriculum & e-Learning project sponsored by the Association of Faculties of the Medicine of Canada (AFMC) in partnership with Canada Health Infoway (Infoway).

Phase 1 of the project created a peer-to-peer network that informed the creation of medical education resources, including: the eHealth Competencies for Undergraduate Medical Education and an environmental scan of eHealth in Canadian undergraduate medical curriculum.

Phase 2 focused on educating faculty and developing ‘train the trainer’ workshops. These workshops were delivered in Spring 2016. Webinar participants asked for more resources in French as well as English, particularly in the form of teaching tools, tips, case studies and clinical examples that can help bridge knowledge learned in the classroom setting with the realities of the clinical setting.

Phase 3 focused on developing the requested teaching tools (resources, case studies, and clinical examples) to be presented in this workshop.

Workshop Overview

We will present the learning materials developed in response to the needs identified in Phases 1 and 2. Working with a generic clinical case, participants will be taken through the process of case development and shown how this case can be introduced at the beginner level, intermediate and advanced learner levels. Within the workshop we will demonstrate the completed case and then with input from attendees work through the development of a second case, in particularly asking them for input into moving from simple principles into more complex learning outcomes and competencies for advanced learners and practicing clinicians. Examples from attendees' own institutions and ideas for further incorporation and integration into the medical curriculum will be solicited.

Presenters

Candace J Gibson, Western University, Canada
Aviv Shachak, University of Toronto, Canada
Reza Mirza, McMaster University, Canada
M. Working with SNOMED CT as Reusable Clinical Content

**Note:** This workshop only will be held at the University of Victoria, HSD A150 from 1:30 – 4:30

The uptake of SNOMED CT by health care organizations in Canada has been slow due to the lack of business cases, methods/tools and human capacities to justify, create, and maintain the terminology as reusable clinical content. In this workshop, we will draw on the methods/tools, results and lessons of an ongoing SNOMED CT adoption project in a Canadian Province to show how it can be achieved.

**Learning Objectives**

Specifically, participants will learn to:

1. Apply business case analysis to justify the value of adopting SNOMED CT in the organization
2. Use a Web-based terminology toolkit and a clinical dataset to work with SNOMED CT as reusable content
3. Assess, create and maintain SNOMED CT maps, expressions, extensions, subsets and queries
4. Implement SNOMED CT in electronic medical records (EMRs)

**Key Audience**

This workshop is aimed at clinicians, analysts and managers who wish to acquire hands-on knowledge working with SNOMED CT as reusable clinical content in their organization. Clinicians will learn to leverage their expertise to create and assess SNOMED CT content that is relevant to their clinical practice. Analysts will learn the methods/tools used to create and maintain reusable SNOMED CT content. Managers will learn the strategy, infrastructures, tools and resources needed to adopt SNOMED CT in their organization.

**Note:** Participants will need to bring their own laptop computers with wireless access to the workshop.

**Presenters**

Robyn Kuropatwa, RKL Consulting Ltd., Canada
Dennis Lee, RKL Consulting Ltd., Canada
Ronald Cornet, University of Amsterdam, The Netherlands