We would like to thank the following sponsors

Healthcare Information Management & Communications Canada

Canadian Institute for Health Information

Vancouver Island Health Authority

With support from:

International Medical Informatics Association

Canada’s Health Informatics Association

National Institutes of Health Informatics

Information Technology Association of Canada
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Duke Clinical Research Institute  
Durham, NC USA

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University of Hong Kong  
Hong Kong

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University of Victoria  
Victoria, BC Canada

Jeremy Wyatt  
Institute for Digital Healthcare  
Warwick, UK
GENERAL INFORMATION

The language of the conference is English. The conference sessions will take place at the Inn at Laurel Point, 680 Montreal Street, Victoria, BC Canada. There is no smoking allowed inside any public buildings in Victoria. The Inn at Laurel Point, including balconies, is a non-smoking property and the only designated place to smoke is outside the entrance of the hotel. An ashtray is available in that area.

Business Centre
The Inn at Laurel Point Business Centre is located in the Marble Lobby across from the Boutique. Guests will find 2 PCs, a laser printer and a USB port/memory card reader. Guests may access the computers at a cost of $0.49 per minute or print documents at a cost of $0.50 per page. Payment can be made with most major credit cards (minimum $3 purchase) or guests may purchase $5 and $10 access cards from the Front Desk. Please contact the Concierge or Front Desk for assistance with other business services such as FAX, photocopy, and courier services.

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 copy of the proceedings on CD-ROM is in your delegate bag. A hardbound volume of the formally submitted manuscripts, entitled “International Perspectives in Health Informatics,” can be purchased at the Registration Desk for $30.00. This is volume 164 in the Studies in Health Technology and Information series published by IOS Press and indexed by Medline. Copies of the 2009 Proceedings will be available for $15.

Student Posters
Judging of the student posters will take place between 4:00 – 5:00 pm Thursday, February 24, 2011, in the Terrace Room of the Inn at Laurel Point. The winners will be announced that evening and again before the James Coward Lecture on February 25th. The first prize of $500 is sponsored by the National Institutes of Health Informatics (NIHI).

Non-student Posters
The practitioner (non-student) posters are on display in the Merino Room until 5:00 p.m. Saturday.

Conference 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 between 5:00 – 7:00 pm after the student poster judging. At this time delegates are encouraged to view the student posters and the exhibitor displays.
Vendor Exhibits
Vendor exhibits will be on display throughout the conference in the Terrace Room. The exhibit hours are:

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Thursday, February 24</td>
<td>5:00 pm – 7:00 pm</td>
</tr>
<tr>
<td>Friday, February 25</td>
<td>8:00 am – 5:00 pm</td>
</tr>
<tr>
<td>Saturday, February 26</td>
<td>8:00 am – 1:30 pm</td>
</tr>
</tbody>
</table>

Exhibitors:
- Canadian Institute for Health Information (CIHI)
- School of Health Information Science

West Coast Gala Dinner
Join us for a relaxing evening starting with a cash bar at 6:30 pm followed at 7:00 pm by a bountiful gourmet West Coast buffet to tantalize your taste buds. There are sign-up sheets for dinner seating at the conference Registration Desk.

West Coast Gala Tickets
If your registration includes a ticket for the West Coast Gala, it is included with your nametag. If you do not wish to use your ticket, please return it to the Registration Desk so we may give it to one of our volunteers.

Currency
If you need to exchange currency, please check with the Hotel Registration Desk for the nearest bank.

Job Posting Board
Delegates are welcome to post job advertisements on the job posting board located near the Registration Desk. These advertisements may not be printed on anything larger than letter paper.

Contact Numbers

Leslie Wood  
Business Coordinator ITCH 2011  
c/o School of Health Information Science  
University of Victoria  
PO Box 3050, STN CSC  
Victoria, BC V8W 3P5  
Telephone: (250) 721-8581  
FAX: (250) 472-4751  
e-mail: lwood@uvic.ca
**Transportation**

**Shuttle to the Victoria International Airport**

The Airporter shuttle bus services all downtown hotels. You must make reservations. Check with your hotel registration desk. You can arrange for this service even though you may not be staying at a hotel. The shuttle leaves every hour and costs approximately $19.00. The Airporter telephone number is (250) 386-2525. A taxicab, which can carry up to four people, costs approximately 60.00.

**Bus Transportation to Vancouver International Airport/Downtown Vancouver**

Pacific Coach Lines has routes between downtown Victoria, Vancouver airport and downtown Vancouver. The buses have priority loading on the ferries and travel time is approximately 3.5 hours. For information call 1-800-661-1725.

**Ferries to Vancouver**

BC Ferries, which have a sailing time of 1 hour and 35 minutes, travel between Tsawwassen (39 Km south of Vancouver) and Swartz Bay (32 Km north of Victoria). This is the recommended route for those travelling to and from Victoria by car. Daily sailings in February are between 7:00 am and 9:00 pm, on the odd hour. The fare is $13.75 for each driver or adult passenger. A car costs $45.75. For information call 1-888-223-3779.
## FINAL CONFERENCE PROGRAM

**Thursday, February 24, 2011**
(Note: Abstracts for workshops begin on page 19.)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:30 am</td>
<td><strong>Registration for workshops</strong></td>
<td>Main lobby</td>
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<tr>
<td>9:00 am</td>
<td><strong>Concurrent Workshops</strong></td>
<td>Harbour Room</td>
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<tr>
<td></td>
<td><strong>Open Health Informatics – Developing EHR Using Open Source Software</strong></td>
<td></td>
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<tr>
<td></td>
<td>and Agile Methodologies</td>
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<tr>
<td></td>
<td>John Chelsom, City University, London, UK</td>
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<td></td>
<td><strong>Promoting Good Practices for Primary Health Care Electronic Medical</strong></td>
<td>Spirit A</td>
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<td></td>
<td>Record Systems</td>
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<tr>
<td></td>
<td>Morgan Price, University of British Columbia, Vancouver, BC Canada</td>
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<td></td>
<td>Patricia Sullivan-Taylor, Canadian Institute for Health Information.</td>
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<td></td>
<td>Francis Lau, University of Victoria, Victoria, BC Canada</td>
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<td></td>
<td><strong>Usability Engineering Workshop</strong></td>
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<td></td>
<td>Andre Kushniruk, University of Victoria, Victoria, BC Canada</td>
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<td></td>
<td><strong>Privacy, Security, and Information Sharing Agreements: A Primer for</strong></td>
<td>Spirit C</td>
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<td></td>
<td>EHR Stakeholders</td>
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<td></td>
<td>Gerry Bliss, Bliss Informatics, Victoria, BC Canada</td>
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<tr>
<td>10:15 am</td>
<td><strong>Break</strong></td>
<td>Main lobby</td>
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<tr>
<td>10:30 am</td>
<td><strong>Workshops (cont’d)</strong></td>
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<tr>
<td>Noon -</td>
<td><strong>Lunch Buffet</strong></td>
<td>Cafe and Wickers Area</td>
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<td>1:00 pm</td>
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</table>
1:00 pm  Concurrent Workshops

Open Health Informatics – Developing EHR Using Open Source Software and Agile Methodologies  Part II
John Chelsom, City University, London, UK

A Practical Framework for Guiding Health Information Technology Evaluation
Eric L. Eisenstein, Duke University Medical Center, Durham, NC, USA
Don Juzwishin, Alberta Health Services, Edmonton, AB Canada
Andre W. Kushniruk, University of Victoria, Victoria, BC Canada
Meredith Nahm, Duke University Medical Center, Durham, NC, USA

Clinical Simulation of Health IT Use
Christian Nøhr, Aalborg University, Denmark
Sanne Jensen, Capital Region, Denmark
Elizabeth Borycki, University of Victoria, Victoria, BC Canada

An Introduction to the WHO HMN Tools and Work in Emerging and Developing Countries
Liz Peloso, Jembi Health Systems, Canada

Phil Gooch, City University, London, UK

2:30 pm  Break
Main lobby

2:45 pm  Workshops (cont’d)

4:00 pm  Student Poster Judging
Closed to public and registrants

5:00 pm  Registration
Main lobby

5:00 pm  Opening Reception
Terrace Room (exhibition area)
**Friday, February 25, 2011**

<table>
<thead>
<tr>
<th>8:00 a.m.</th>
<th>Registration and continental breakfast</th>
<th>Main lobby</th>
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<tbody>
<tr>
<td>8:30 a.m.</td>
<td>The Conference Chair, Abdul Roudsari, will introduce Mary Ellen Purkis, Dean of Human and Social Development, University of Victoria</td>
<td>Spirit Rooms</td>
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<tr>
<td></td>
<td>Opening remarks by Mary Ellen Purkis, and introduction of keynote speaker</td>
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<tr>
<td>8:45 a.m.</td>
<td><strong>James Coward Lecture</strong></td>
<td>Spirit Rooms</td>
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<td>Speaker: Sally Stansfield, Executive Secretary, Health Metrics Network, World Health Organization</td>
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<tr>
<td></td>
<td>“<em>Health Informatics: Transforming Health Systems and Outcomes</em>”</td>
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<tr>
<td>9:45 a.m.</td>
<td>Break and view exhibits</td>
<td>Terrace Room</td>
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**10:15 a.m.  Concurrent Sessions**

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<tr>
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<tbody>
<tr>
<td></td>
<td>Omid Shabestari, City University of London, UK</td>
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<tr>
<td></td>
<td><em>Data that Makes a Difference in Quality Improvements in Primary Health Care: Approaches Through a Pan-Canadian Voluntary Electronic Medical Record Source</em></td>
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<td>Patricia Sullivan-Taylor, Canadian Institute for Health Information, Canada</td>
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<tr>
<td></td>
<td><em>Situation Awareness and Risk Management Understanding the Notification Issues</em></td>
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<td>Plinio Morita, University of Waterloo, Canada</td>
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<td></td>
<td><em>Design of Adverse Drug Events - Scorecards</em></td>
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<td>Romaric Marcilly, University Lille Nord de France, France</td>
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</tbody>
</table>
Human Computer Interaction

Cognitive Analysis of a Medication Reconciliation Tool: Applying Laboratory and Naturalistic Approaches to System Evaluation
Andre Kushniruk, University of Victoria, Canada

Usability Analysis of the Tele-nursing Call Management Software at HealthLink BC
Simon Hall, HealthLink BC, Canada

Adapting Usability Testing Techniques to Gather User Requirements: An Illustrative Proposal
Paule Bellwood, University of Victoria, Canada

Robots, Multi-User Virtual Environments and Healthcare: Synergies for Future Directions
Ajung Moon, University of British Columbia, Canada

Clinical Decision Support

Decision Support and Automation Bias - Methodology and Preliminary Results of a Systematic Review
Kate Goddard, City University, UK

Automated Recognition and Post-coordination of Complex Clinical Terms
Phil Gooch, City University, UK

Study of the Effects of Clinical Decision Support System's Incorrect Advice and Clinical Case Difficulty on Users' Decision Making Accuracy
Kamran Golchin, City University, UK

Automation Bias - A Hidden Issue for Clinical Decision Support System Use
Kate Goddard, City University, UK

12:15 – 1:15 Lunch and view poster exhibits
Terrace Room

1:15 – 2:45 Concurrent Sessions

Standardization and Interoperability

Development of a Draft Pan-Canadian Primary Health Care Electronic Medical Record Content Standard
Patricia Sullivan-Taylor, Canadian Institute for Health Information, Canada

Data Encryptions Techniques for Electronic Health Record Exchange
Tony Sahama, Queensland University of Technology, Australia
### Health Records

*Use of Ontologies for Monitoring Electronic Health Records for Compliance with Clinical Practice Guidelines*

Pam White, City University, UK

*The Use of Biometrics in Personal Health Record*

Wilfred Bonney, Capella University/HL7 International, USA

*Longitudinal Analysis on Utilization of Medical Document Management System in a Hospital with EPR Implementation*

Shigeki Kuwata, Tottori University Hospital, Japan

### Initiatives in International Health Informatics

*POND4Kids: A Web-based Pediatric Cancer Database for Hospital-based Cancer Registration and Clinical Collaboration*

Yuri Quintana, St. Jude Children's Research Hospital, USA

*Occurrence Detection and Selection Procedures in Healthcare Facilities: A Comparison Across Canada and Brazil*

Plinio Morita, University of Waterloo, Canada

*An Online Method for Diagnosis of Difficult TB Cases for Developing Countries*

Richard Scott, University of Calgary/PANACeA, Canada

### 2:45 – 3:15 Break

Lobby

### 3:15 – 4:45 Concurrent Sessions

#### On-line Communities

*Getting Better Together? Opportunities and Limitations for Technology-Facilitated Social Support in Cardiac Rehabilitation*

Jules Maitland, National Research Council of Canada, Canada

*The Role of User-Centred Design Within Online Community Development*

Erin Roehrer, University of Tasmania, Australia

*A Requirements Engineering Approach for Improving the Quality of Diabetes Education Websites*

Omid Shabestari, City University of London, UK
Methods

Health Information System Access Control Redesign - Rationale and Method
Kenneth Moselle, Vancouver Island Health Authority, Canada

National Patient Flow Framework: An Ontological Patient-oriented Redesign
Fragoulis Papagiannis, City University, UK

A Model For Representing Formal, Informal and Hybrid Communication in the Clinical Communication Space
Craig Kuziemsky, University of Ottawa, Canada

The Action Case Method in Health Informatics Research
Mowafa Househ, King Saud Bin Abdulaziz University for Health Science, Saudi Arabia

Evaluation

Clinical and Economic Results from a Randomized Trial of Clinical Decision Support in a Rural Health Network
Eric Eisenstein, Duke Clinical Research Institute, USA

Economic Analysis of Centralized vs. Decentralized Electronic Data Capture in Multi-Center Clinical Studies
Anita Walden, Duke University, USA

Sociotechnical Evaluation of a Clinical Transformation Project in a Specialized Cancer Care Centre
Meg Bishop, University of Victoria, Canada

Defining a Framework for Health Information Technology Evaluation
Eric Eisenstein, Duke Clinical Research Institute, USA

Friday evening is a free time to network, relax, and enjoy the City of Victoria.

Material from Tourism Victoria is in your delegate bag, or feel free to speak to anyone at the Registration Desk if you have any questions.
Saturday, February 26, 2011

8:00  Registration  Lobby

8:30  Introduction of Keynote Speaker by Elaine Huesing  Spirit Rooms

8:45 – 9:45  Steven Huesing Lecture  Spirit Rooms
Speaker: Jeremy Wyatt, Institute of Digital HealthCare, Warwick University, UK
“Why Does Telehealth Fail, and What Can We Do About It?”

9:45 – 10:15  Break  Terrace Room

10:15 – 12:15 Concurrent Sessions

**Telehealth**  
*Functional Safety in Telecare: A Proposal for Implementation and Joint Validation*  
Abdul Roudsari, University of Victoria, Canada

*Tele-ICU - A Canadian Review*  
Reza Shahpori, Alberta Health Services, Canada

*Usability Evaluation of a Pilot Implementation of the Electronic Clinical Transfusion Management System IT Specification for Blood Tracking*  
Omid Shabestari, City University of London, UK

**Nursing Informatics**  
*Application of Language Processing Techniques to Capture the Use of Nursing Clinical Terms from Narrative Statements: Report of a Pilot Study*  
Noreen Frisch, University of Victoria, Canada

*Leveling: An Approach to Advanced Human Simulation which Maximizes Learning and Available Resources*  
Shannon Lanctot-Shah, Selkirk College, Canada

*Usability of Electronic Nursing Record Systems: Definition and Results from an Evaluation Study in Finland*  
Johanna Viitanen, Aalto University School of Science and Technology, Finland

*Emergence of a New Consumer Health Informatics Framework: Introducing the Healthcare Organization*  
Paulette Reid, University of Victoria, Canada
**Clinical Informatics**  
*The Signout Discharge Summary System: Using Workflow Byproducts to Pre-Populate and Assemble Discharge Summaries*
Joseph Kannry, Mount Sinai Medical Center, USA

*Delivery of Psychosocial Care for Cancer Patients: A Pilot Investigation*
Kathleen Abrahamson, Western Kentucky University, USA

*Critical Care Providers Refer to Information Tools Less During Communication Tasks After a Critical Care Clinical Information System Introduction*
Mark Ballermann, University of Alberta, Canada

**12:15 – 1:15**  
Lunch and view poster exhibits

**1:15 – 2:45 Concurrent Sessions**

**Health Informatics in Developing Countries**  
*Monitoring of Congenital Anomalies in Developing Countries: A Pilot Model in Iran*
Yaghoub Sheikhzadeh, University of Victoria, Canada

*Economics of Health Informatics in Developing Countries*
Ron Hebert, Heron Technology Corp, Canada

*Early Development of an Enterprise Health Data Warehouse*
Mowafa Househ, King Saud Bin Abdulaziz University for Health Science, Saudi Arabia

**Methods**  
*Who's Users? Participation and Empowerment in Soci-Technical Approaches to Health IT Developments*
Andre Kushniruk, University of Victoria, Canada

*Grounded Theory Evolution and its Application in Health Informatics*
Liz Cummings, University of Tasmania, Australia

*Use of Qualitative Methods Across the Software Development Lifecycle in Health Informatics*
Elizabeth Borycki, University of Victoria, Canada
Healthcare Modeling and Simulation

Making Eco-friendly Transportation Safer: Developing Computer-based Simulations to Assess the Impacts of Bicycle Accident Prevention Interventions on Healthcare Utilization
Christian Juhra, University Hospital Münster, Germany

Model Human Behaviour - Don't Constrain It
Dominic Covvey, National Institutes of Health Informatics Research, Canada

Waiting Time in Emergency Department by Simulation
Sima Ajami, Centre for Research in Healthcare Engineering, Canada

2:45 – 3:15 Break Lobby

3:15 – 4:45 Concurrent Sessions

Health Records

Informed Use of Patients' Records on Trusted Health Care Services
Tony Sahama, Queensland University of Technology, Australia

Scenario-based Stress Testing of the Electronic Patient Record Systems in Thin-client Computing Implementation
Kei Teramoto, Tottori University Hospital, Japan

EHR Strategy - Top Down, Bottom Up, or Middle Out?
Thomas Bowden, HealthLink, New Zealand

Beyond Individual Patient Care: Enhanced Use of EMR Data in a Primary Care Setting
Marianne Tolar, Simon Fraser University, Canada

eHealth Promises and Challenges: Some Ethical Considerations
Eike-Henner Kluge, University of Victoria, Canada
E-Learning and Education

Harmonizing the Competency Cacophony
Dominic Covvey, National Institutes of Health Informatics Research, Canada

The National Student Forum and the Emergence of Health Informatics Clubs
Shirley Fenton, National Institutes of Health Informatics, Canada

Clinical Informatics in Undergraduate Teaching of Health Informatics
Stefan Pantazi, Conestoga College, Canada

Development of a Graduate Level Course in E-health and Emerging Technology in Saudi Arabia
Mowafa Househ, King Saud Bin Abdulaziz University for Health Science, Saudi Arabia

Critical Success Factors for Implementing Healthcare e-Learning
Alex Kuo, University of Victoria, Canada

Initiatives in Developing Countries

National Strategies for Health Data Interoperability
Alex Kuo, University of Victoria, Canada

Applying a Methodological Approach for a Telecare Solution in Saudi Arabia
Abdul Roudsari, University of Victoria, Canada

Developing a Medical Records System at the Ola During Children's Hospital, Freetown, Sierra Leone
John Dawson, University of Victoria, Canada

*****

6:30
Cash bar pre-dinner reception
Lobby

7:00
West Coast Gala Dinner
Terrace Room
Sunday, February 27, 2011

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:00 a.m.</td>
<td>Registration</td>
<td>Lobby</td>
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<tr>
<td>8:30</td>
<td>Jochen Moehr, Professor Emeritus, University of Victoria will introduce the keynote speaker</td>
<td>Spirit Rooms</td>
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<tr>
<td>8:45 – 9:45</td>
<td>Plenary Session</td>
<td>Spirit Rooms</td>
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<tr>
<td></td>
<td>Speaker: Denis Protti, School of Health Information Science, University of Victoria, “Reflections on 45 Years in Health Informatics”</td>
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<tr>
<td>9:45 – 10:15</td>
<td>Break</td>
<td>Lobby</td>
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<tr>
<td>10:15 – 11:15</td>
<td>Concurrent Sessions</td>
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<tr>
<td>Methods</td>
<td>Application of a Non-Linear Autoassociator to Breast Cancer Diagnosis</td>
<td>Spirit A,B</td>
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<td>Joel Ferstay, University of British Columbia, Canada</td>
<td>10:15 – 11:15</td>
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<td>From Complexity Theory to a Generalized Governance Model: A Practical Architectural Pattern for Health Care and Wellness Economies</td>
<td>Spirit C,D</td>
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<td>Bogdan Motoc, Allied Bionics Inc., Canada</td>
<td>10:15 – 11:15</td>
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<tr>
<td>Telehealth</td>
<td>Teleoncology Uptake in British Columbia</td>
<td>Spirit C,D</td>
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<tr>
<td></td>
<td>Melissa Clarke, University of Victoria, Canada</td>
<td>10:15 – 11:15</td>
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<td></td>
<td>Strengths and Weaknesses of Using Conferencing Technologies to Support Drug Policy Knowledge Exchange</td>
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<td>Mowafa Househ, King Saud Bin Abdulaziz University for Health Science, Saudi Arabia</td>
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Sunday cont’d
Harbour Room
10:15 – 11:15

Design and Testing of an Architecture for a National Primary Care Chronic Disease Surveillance Network in Canada
Karim Keshavjee, InfoClin Inc., Canada

Mandatory Public Reporting: Build It and Who Will Come?
David Birnbaum, Washington State Dept of Health, USA

11:15 – 12:15
Merino Room

An interactive “Audience with Professor Denis Protti”, founder of the School of Health Information Science, University of Victoria
Facilitated by Abdul Roudsari, University of Victoria

12:15 – 1:15
Terrace Room

Lunch

1:15 – 2:15 Concurrent Panels

Panel A

Mobile e-Health: International Advances and Trends in Pervasive Healthcare

Panellists:
Christian Nøhr
Shigeki Kuwata
Omid Shabestari

Moderator: Abdul Roudsari, University of Victoria

User Driven Development of IT Support to Everyday Life with Diabetes
Christian Nøhr, Department of Planning, Aalborg University, Denmark.

Abstract: The MaXi project works with design of interactive systems to support everyday living with diabetes. People with type 1 diabetes need strict control of their blood glucose level obtained by balancing food intake, insulin dosage and exercise. On a daily basis this is managed by the diabetic and their relatives. Self management implies that the diabetics every day are challenged with complex tasks like calculating insulin doses, counting carbon hydrates in food, tracking the blood glucose level, and planning their exercise etc. The use of IT to support registration and management of diabetes data like blood glucose measurements and food intake has increased during the last decade. In the MaXi project we want to challenge this medical provider perspective on IT support with an everyday self-management perspective, by placing the diabetic and their family in the drivers seat for innovation.
Metaboli-Net: Online Groupware System Providing Counseling Guidance for Patients with Metabolic Syndrome
Shigeki Kuwata, Tottori University Hospital, Yonago, Tottori, Japan

Abstract: This study presented a newly developed online groupware system, Metaboli-Net, to yield counseling guidance on diet and exercise to patients with metabolic syndrome. A distinctive feature adopted in the system to maintain the retention rate of patients was the social network service (SNS) that enables the patients to share their dietary and relevant health information with other participants in the same group on the network. A pilot study was conducted to prove the effectiveness of the system in improving the patient’s lifestyle and dietary health awareness. SNS also contributed to the participant’s adherence to intervention programs.

Evaluation of Using Web 2.0 Technologies in Diabetes Education for Adolescent and Young Patients
Dr. Omid Shabestari, Centre for Health Informatics, City University, London, UK

Abstract: Diabetes Mellitus is a major chronic disease with multi-organ involvement and high-cost complications. Although it has been demonstrated that structured education can control the risk of developing these complications, there is a substantial room for improvement in the educational services for these patients. Most of the current e-learning solutions for diabetes were designed by computer experts and healthcare professionals, but the patients, as end-users of these systems, have not been deeply involved in the design process. Web 2.0 technologies include a series of social and technological changes in the web applications which facilitate the interaction and collaboration between users on the web platforms. These changes can improve the level of involvement of the end-users in the web-based diabetes education systems. To increase their level of interest in these systems, it is very important to understand their expectations from different characteristics of these systems and to measure their level of satisfaction considering those characteristics. In the CareNet study, a prototype system was developed and the above mentioned parameters were measured, plus an evaluation about the effectiveness of the developed prototype in a prospective pre-test / post-test study.
Panel B

Making Healthcare Information Technology Safe for Patients and Clinicians

Panellists:
Ross Koppel
Hiroshi Takeda
Elizabeth Borycki

Moderator: Andre Kushniruk, University of Victoria

Making Healthcare Information Technology Safe for Patients and Clinicians
Ross Koppel, University of Pennsylvania, Philadelphia, PA USA

Abstract: Healthcare Information Technology (HIT) is presented as the panacea for many medical errors, inefficiency, lack of care coordination, and high medical costs. Yet few if any studies find confirmation of these assertions. We know, also, for example:

- Over 90% of all computerized decision support alerts are ignored or overridden;
- Physicians using EHRs generally spend more, not less, time with their patients to accomplish the same amount of work without EHRs;
- Medical malpractice carriers are starting to charge higher premiums to institutions with HIT – because of the double-edged sword of documentation retrieval, time stamps, and the difficulty of forensic computer engineering.

In this presentation, Professor Koppel discusses the design, use, implementation and unintended consequences of HIT. Finally, he suggests ways of remediating several of HIT’s current difficulties.
MIERUKA or “Visualization” of Medical Document Management by Means of DACS (Document Archiving and Communication System) in a Japanese University Hospital
Hiroshi Takeda¹, Kazue Nakajima² and Yasushi Matsumura³
1) Graduate School of Health Care Sciences, Jikei Institute, Osaka, Japan
2) Osaka University Hospital, Suita, Japan

Abstract: Patient safety should be considered at the standpoint of healthcare quality management. A medical error may be regarded as an outlier in a normal distribution of medical quality, if it will be measured. Although an electronic patient record system (EPR) is a potent tool to illuminate total medical process of a patient, it will be required condition but not enough to integrate whole patient data. We have proposed a document archiving and communication system (DACS) in a component of a hospital information system (HIS). In 2010, Osaka University Hospital has launched a totally paperless HIS, including medical charts and other medical documents.

By analyzing the registered DACS time log for surgical operation-related and discharge-related documents, an important visualization (MIERUKA) of key documents clearly indicated some critical cases for quality control of document management in medical care.

In this paper, the concept of healthcare quality control, the role of DACS and some cases for documentation control will be presented and discussed.

(This study has been made in cooperation with Fuji Xerox Japan, Co. Ltd.)

From Technology-Induced Error to Making Healthcare Safer – Promoting and Improving System Safety”
Elizabeth Borycki, University of Victoria, Victoria, BC

Abstract: Healthcare information systems promise to improve and modernize not only healthcare practice but also patient safety. However, in recent years there has also been a growing body of literature indicating that if not designed, tested or implemented properly then healthcare information systems may actually cause or “induce” users to make medical errors. In this presentation, work is presented in developing frameworks, models and methods to address issues related to patient safety and healthcare IT. The work is aimed at identifying and rectifying potential technology-induced error well before healthcare systems are released on a widespread scale.
Workshop Abstracts

OPEN HEALTH INFORMATICS - DEVELOPING EHR USING OPEN SOURCE SOFTWARE AND AGILE METHODOLOGIES

Professor John Chelsom, Centre for Health Informatics City University, London, UK

This one-day workshop provides a practical overview of open health informatics, using agile development methodologies to implement EHR systems using open standards, open source software and open interfaces.

Learning Objectives

- Understand the core practices of open health informatics
- Assess available open standards for the practical implementation of EHR
- Map key functional requirements of EHR to open source software
- See how to add value by using open systems interfaces
- Learn how to reduce project risks with agile development methodologies
- Hands-on use of an open source toolkit to reinforce the concepts covered

By attending this workshop you will gain a practical insight into how to make the best use of open standards and open source software for implementing EHR systems at departmental, local, regional or national level. You will learn about the key concepts of Open Health Informatics, but also see those concepts in action in the hands-on exercises. And because all the software you use is open source, you can take it away to continue learning in your own time.

PRIVACY, SECURITY, AND INFORMATION SHARING AGREEMENTS: A PRIMER FOR EHR STAKEHOLDERS

Gerry Bliss, Bliss Informatics, Victoria, BC Canada

The vision for the electronic health record is to have personal health records available to caregivers and patients where and when they need them. This requires the integration and consolidation of vast volumes of personal health information from a wide range of sources systems. The protection of privacy of the individual to whom this health information belongs depends as much on the organization of privacy roles and accountabilities within stakeholder organizations as it does on information security technology. In addition, the contractual agreements which enable the information flow between these organizations must contain clear descriptions how these roles interact and accountabilities are shared between signatories, to provide clear evidence of information custodian due diligence and protect information as it flows between organizations, often across jurisdictional boundaries.

The success of EHR initiatives depend fundamentally on the ability of organizations with custodial responsibility for personal information to be able to protect personal information assets and comply with privacy legislation. No organization or project is exempt.

This workshop will provide an overview of the ethical and legal accountabilities that accrue to health information custodians and the review strategies for ensuring privacy and security goals are met both within organizations and between organizations that share personal health records. A risk management approach to personal information protection and legislative compliance will be
detailed and discussed, and the key components of successful information or data sharing agreements reviewed. The take away for attendees will be a base of knowledge that can be applied to enabling their EHR projects and sponsor organizations ensure that risks to personal information are not overlooked or increased by the EHR.

Individuals who will benefit from this workshop include health informaticians and researchers, health organization board members, executive, patient care and information systems managers, legal counsel and risk management officers, and EHR project managers and team members.

**PROMOTING GOOD PRACTICES FOR PRIMARY HEALTH CARE ELECTRONIC MEDICAL RECORD SYSTEMS**

*Morgan Price, Department of Family Practice, University of British Columbia*

*Patricia Sullivan-Taylor, Canadian Institute for Health Information (CIHI)*

*Francis Lau, School of Health Information Science, University of Victoria*

Increasingly, physicians are automating their office practices with electronic medical record (EMR) systems. Yet little is known about how they should use these EMR systems effectively to improve their work practice, patient care and overall experience.

This workshop will introduce a set of evaluation approaches that can be used to support clinicians and clinical teams in maximizing EMR adoption and assessing their impacts. The need for EMR content standards and how they can improve the quality of care for patients and populations will also be examined.

Through this workshop you will learn the latest evidence available on EMR systems and pragmatic evaluation approaches to demonstrating their value and effects. You will discover the importance of early intervention to ensure good information quality. You will also learn about EMR content standards and how they can help improve the quality of care. The workshop will be interactive in nature, providing ample opportunities for you to engage in active discussions and share ideas/issues with others on this important topic.

**USABILITY ENGINEERING WORKSHOP**

*Andre W. Kushniruk, University of Victoria, Victoria, Canada.*

The workshop goal is to familiarize participants with human aspects of health informatics and human-centered approaches to the design, evaluation and deployment of both usable and useful healthcare information systems.

It has become increasingly recognized that ensuring the usability of healthcare information systems (such as the electronic health record) is a key factor to successful and system deployment and adoption. Usability can be defined as a measure of how effective, efficient, safe, easy to learn and enjoyable to use a system is. Successful design, implementation and deployment of healthcare information systems is dependent on careful consideration of usability. This includes the study of the impact of systems on healthcare workers’ cognition and workflow as well as consideration of interrelated social factors related to successful technology deployment. Indeed, the field of health informatics is littered with examples of systems and projects that have failed in large part due to lack of consideration of human-computer interaction and more specifically usability.
In this workshop a practical framework for improving usability of healthcare systems will be presented. In particular the application of methods from the emerging field of usability engineering to healthcare will be described and demonstrated. This includes study of human computer-computer interaction in the design of a range of health informatics applications and consideration of low-cost rapid usability engineering methods. These methods, which can be deployed in any setting at a minimal cost, can provide powerful input into evaluating, and improving system usability and usefulness. In addition, approaches to the design of systems that are safe and that reduce human error will be discussed.

AN INTRODUCTION TO THE WHO-HMN TOOLS AND WORK IN EMERGING AND DEVELOPING COUNTRIES

Liz Peloso, Jembi Health Systems, Canada

Health Metrics Network HMN began in 2005 as the first global partnership focused on strengthening health information systems. HMN is hosted in the World Health Organization headquarters in Geneva Switzerland. HMN and its network of partners engage in a variety of work highlighting how accurate, reliable information leads to effective decision making resulting in better health outcomes.

HMN has developed a framework and a number of tools that have already been in use in a large number of developing and emerging countries. These tools assist nations to evaluate and promote/plan for strengthening their health information systems and the use of health information to improve decision making.

This workshop will introduce the participants to the HMN framework, the tools and their use and present a sampling of the projects (both past and current) that HMN and its partners are involved in globally. We will also discuss ways in which participants may be able to contribute to this important partnership and ongoing tool development. Through a series of interactive exercises, and review of actual country assessments and strategic plans, users will have an opportunity to both gain a better understanding of country level health information systems, as well as having the opportunity to contribute comments and feedback directly to HMN to improve their tools and guide the development of new tools.

A PRACTICAL FRAMEWORK FOR GUIDING HEALTH INFORMATION TECHNOLOGY EVALUATION

Eric L. Eisenstein, Duke University Medical Center  
Don Juzwishin, Health Technology Assessment and Innovation, Alberta Health Services  
Andre W. Kushniruk, School of Health Information Science, University of Victoria  
Meredith Nahm, Duke Center for Health Informatics, Duke University Medical Center

Governments and providers are investing in health information technologies with little evidence as to their ultimate value. This workshop will present a conceptual framework that can be used by hospitals, clinics, and health care systems to evaluate their health information technologies.

The framework contains three dimensions that collectively define generic evaluation types. When these types are combined with contextual considerations, they define specific evaluation problems. The first dimension, domain, determines whether the evaluation will address the information intervention or its outcomes. The second dimension, mechanism, identifies the specific components of the new information technology and/or its associated health care system that will be the subject of the evaluation study. And, the third dimension, timing, determines whether the
evaluation occurs before or after the health information technology is implemented. Answers to these questions define a set of evaluation types each with generic sets of evaluation questions, study designs, data collection requirements, and analytic methods. When these types are combined with the details of the evaluation context, they define a range of methods that can be used in a specific evaluation study.

As an example, assume a hospital is introducing decision support for their computerized provider order entry system with e-prescribing capabilities. The first dimension, domain, separates the evaluation team’s work into assessments of whether the decision support component is working correctly (the information intervention) or whether it is producing desired changes in the health care system (the information intervention’s outcomes). The second dimension, mechanism, might highlight the value proposition in this system: whether the use of decision support is associated with reductions in medication errors and adverse events. The third dimension, timing, recognizes whether the team will perform the evaluation before or after the decision support system is implemented.

The workshop will contain three sections. First, we will review the conceptual framework and describe a simple set of tools that can be used to organize an evaluation study. Second, we will demonstrate how the framework can be used to guide decision making in framing evaluation problems and constructing an evaluation plan. Third, we will assist students in working through a series of case studies so that they can gain experience in designing evaluation studies. If students wish, they can present their own evaluation problems as case studies for the workshop.

The workshop will be of value to those involved in designing, conducting, commissioning or contemplating evaluations of health information technologies and systems. This includes health care managers and providers, health informatics practitioners, and students.

**Extracting and_encoding information from patient records and clinical guidelines: introduction to open-source BioNLP tools**

*Phil Gooch, City University, London, UK*

The use of natural language processing in the biomedical domain (BioNLP) continues to attract much research interest, largely because of its application in a variety of areas, such as gene and protein identification in MedLine abstracts; identification of primary diagnosis, comorbidities and treatments in discharge summaries; and extraction of clinical rules and algorithms from clinical guidelines.

However, the tools developed for these purposes are often not transferrable between domains or even institutions. Researchers have previously collaborated on libraries of shareable, open-source clinical guideline models. In the same way, researchers could consider collaborating on the development of shareable, open-source natural language processing rules to solve knowledge extraction problems in the medical domain.

In this workshop, we will look at how rules for identification and classification of clinical terms can be developed using the open-source General Architecture for Text Engineering (GATE) framework. How to export data, either as a complete record (e.g. discharge summary) for transformation to HL7 CDA XML, or as individual terms for reporting purposes
CLINICAL SIMULATION OF HEALTH IT USE.

Christian Nøhr, Aalborg University, Denmark
Sanne Jensen, Capital Region, Denmark
Elizabeth Borycki, University of Victoria, Canada

Design and implementation of modern health IT systems are very often closely interrelated. Implementing health IT systems in a complex organization will however most often reveal problems that was impossible to foresee and plan for, and this can be very complicated and expensive to remedy. A considerable number of these problems can however be detected, analyzed and resolved if the systems are tested in a simulated clinical environment.

In the ITX laboratory in Copenhagen we have several years experience in setting up simulations of health IT systems. During this workshop all the participants will get hands on experience from all the phases of a simulation project by playing specific roles during the day: Instructor, test coordinator, observer(s), clinician(s), patient(s), technician. A prototype system from the PSIP project (Patient Safety through Intelligent Procedures in medication) will be used for the simulation, and a screen capture program and video cameras will be applied to collect the data for analysis.

Thank you for attending ITCH 2011