MASTER OF HEALTH INFORMATICS WEBINAR
WHAT IS HEALTH INFORMATICS

Health informatics is the interdisciplinary study of the design, development, adoption and application of information technology (IT)–based innovations in healthcare services delivery, management and planning.

As defined by the U.S. National Library of Medicine, Jan 7 2014
www.himss.org/health-informatics-defined
what’s the Problem?
What has changed in healthcare since 1950?
Evolution of healthcare into a complex system of systems has created new needs for access to information and coordination of care

• High volume of medical knowledge and patient information
• Increase in specialization
• Increased demand for care coordination
• Increased patient engagement
Healthcare got complicated
Patient Chart is the repository of your health history.
Where does patient information come from?
Year 2000 The Institute of Medicine (IOM) report on medical errors created an intense public response by stating that between 44,000 and 98,000 hospitalized Americans die each year as a result of preventable medical errors.
“Subject to forces and changes...

The academic health informatics discipline has evolved from grassroots, and continues to evolve as opposed to stemming from other professions.”

Source: COACH CDWG Report 2013
Health Informatics Education in Canada

1975
COACH Establi shed

1981
University of Victoria HI Program

1980s & 1990s
HI training by ‘accident’ and through on the job experience

1980s to Mid 2000s
Rising employer and project management expectations of HI knowledge

Mid to Late 2000s

$2.1 billion infusion from Canada Health Infoway
COACH identifies rising demand for HI professionals by 39% - 78% (5 yr.) New eHealth Projects (a lot of trial & error)

Mid to Late 2000s
Surge in Health Informatics programs: graduate, undergraduate, diploma and certificate

Diagram J. Zarb.
Content source: COACH CDWG Report 2013
HI Educational Programs in Canada

15 Canadian programs
4 categories
• Diploma
• Certificate
• Undergraduate
• Graduate

<table>
<thead>
<tr>
<th>School/Program</th>
<th>Program Rationale &amp; Theory</th>
<th>Program Demographics</th>
<th>Program Attributes</th>
<th>HI Knowledge Domains</th>
<th>Exit Graduate Competencies</th>
<th>Program Impact</th>
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<td>DIPLOMA</td>
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<td>University of Waterloo</td>
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Matrix source: COACH CDWG Report 2013
PROFESSIONAL/MASTER’S DEGREE PROSPECTS

Earnings and unemployment rates by educational attainment, 2015

- **Doctoral degree**: Median usual weekly earnings $1,623, Unemployment rate 1.7%
- **Professional degree**: Median usual weekly earnings $1,730, Unemployment rate 1.5%
- **Master’s degree**: Median usual weekly earnings $1,341, Unemployment rate 2.4%
- **Bachelor’s degree**: Median usual weekly earnings $1,137, Unemployment rate 2.8%
- **Associate’s degree**: Median usual weekly earnings $798, Unemployment rate 3.8%
- **Some college, no degree**: Median usual weekly earnings $738, Unemployment rate 5.0%
- **High school diploma**: Median usual weekly earnings $678, Unemployment rate 5.4%
- **Less than a high school diploma**: Median usual weekly earnings $493, Unemployment rate 8.0%

All workers: $860

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.

http://www.bls.gov/emp/ep_chart_001.htm
## Health Informatics Professional Career Matrix

<table>
<thead>
<tr>
<th>Level</th>
<th>Clinical &amp; Health Services Domain</th>
<th>Canadian Health System Domain</th>
<th>Project Management Domain</th>
<th>Organization and Behavioural Management Domain</th>
<th>Analysis and Evaluation Domain</th>
<th>Information Management Domain</th>
<th>Information Technology Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Master Level</strong></td>
<td>Chief Clinical Information Officer</td>
<td>Chief Information Officer</td>
<td>Project Services Vice President</td>
<td>Chief Transformation Officer</td>
<td>Chief Knowledge Officer</td>
<td>Chief Privacy Officer</td>
<td>Chief Technology Officer</td>
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<tr>
<td><strong>Expert Level</strong></td>
<td>Clinical Informatics Director</td>
<td>eHealth Program Director</td>
<td>PMO Director</td>
<td>Change + Evaluation Services Director</td>
<td>Senior Methodologist</td>
<td>Standards Director</td>
<td>IT Director</td>
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<td>eHealth Strategist</td>
<td>Project Director</td>
<td>Process Improvement Director</td>
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<td>Information Management Director</td>
<td>Enterprise Architecture Director</td>
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<tr>
<td><strong>Proficient Level</strong></td>
<td>Clinical Informatics Manager</td>
<td>eSafety Manager</td>
<td>PMO Manager</td>
<td>Change Manager</td>
<td>Senior Information Analyst</td>
<td>Privacy Specialist</td>
<td>Security Specialist</td>
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<td></td>
<td>Clinical Informatics Specialist</td>
<td>Sr Business Analyst</td>
<td>Program Manager</td>
<td>Process Improvement</td>
<td>Outcomes Specialist</td>
<td>Data Architect</td>
<td>Service Manager</td>
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<td></td>
<td></td>
<td>Business Development Specialist</td>
<td>Project Manager</td>
<td>Specialist</td>
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<td>Standards Specialist</td>
<td>Solutions Architect</td>
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<tr>
<td><strong>Competent Level</strong></td>
<td>Clinical Informatics Analyst</td>
<td>Business Analyst</td>
<td>Project Analyst</td>
<td>Trainer</td>
<td>Information Analyst</td>
<td>Data Integrity Analyst</td>
<td>Senior Testing Analyst</td>
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<td>eHealth Analyst</td>
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<td>Product Specialist</td>
<td>Benefits Evaluation Analyst</td>
<td>Privacy Analyst</td>
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<td>eSafety Analyst</td>
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<td>Process Improvement</td>
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<td>Standards Analyst</td>
<td>Technical Lead</td>
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<tr>
<td><strong>Emerging Professional Level</strong></td>
<td>Clinical Informatics Coordinator</td>
<td>Junior Business Analyst</td>
<td>Program Coordinator</td>
<td>Training Coordinator</td>
<td>Research Coordinator</td>
<td>Privacy Coordinator</td>
<td>Service Desk Analyst</td>
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<td></td>
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<td>Project Coordinator</td>
<td>Project Coordinator</td>
<td>Product Analyst</td>
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<td>Data Coordinator</td>
<td>Testing Analyst</td>
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*HICM® is a registered trademark of Digital Health Canada.*
HEALTH INFORMATICS RESEARCH
MSc Health Services Research
PhD Health Services Research

MASTER OF HEALTH INFORMATICS
MHI Professional Program
MHI Executive Professional Program

Institute of Health Policy, Management & Evaluation
UNIVERSITY OF TORONTO
U.S. News & World Report ranks U of T as the number one school in Canada and number 20 globally

“We’re proud to see the University of Toronto recognized for its world-renowned research and commitment to academic excellence,” said U of T President Meric Gertler.
Why Dalla Lana School of Public Health?

Public health at the University of Toronto is ranked number five globally in a new ranking of academic subjects by the Academic Ranking of World Universities.
Harmonize education & experience.

IHPME

IHPME integrates the collective of healthcare professionals to empower intellectual exchange and transform how people think and what they do to improve healthcare.
WHY ARE WE HERE?

MHI enables professionals to build health informatics careers across a full spectrum of organizational, clinical and technology domains, structures and systems in healthcare.

MHI allows a return on your educational investment by offering a professional pathway within a high-demand arena.

• Build critical thinking skills and professional network
• Breadth and depth of knowledge to position well in specialized market.

Health informatics is our shared way to make a difference in healthcare.
MHI HEALTH INFORMATICS FOCUS

Health Information Systems

Emerging Technologies

Data Analytics & AI

Decision Support

Leadership & Organizational Behaviour

Knowledge Management

Change Management
WHY ARE WE HERE?

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Health informatics is our shared way to make a difference in healthcare.
Master of Health Informatics

MHI graduates demonstrate the leadership necessary to bring judgement and order to the process of assimilating digital technologies and related knowledge into healthcare.
Master of Health Informatics

Our learners bridge and translate between digital technologies and the healthcare system, engaging principles of responsible innovation and knowledge-based implementation.
Master of Health Informatics

MHI is focused on upstream development of the healthcare complement in areas of policy, management and evaluation, to best prepare for downstream AI-based change.
Well-positioned at the nexus of healthcare’s clinical, business, administrative and patient systems:

- Develop strategy, create policy and make high-level decisions
- Contribute system analysis, solution architecture and project management
- Facilitate the development, implementation and management of technological applications and change
Q: What personality traits are best for the field?

A: You see the sharing and use of information as enabling and transformative within healthcare. You have embraced the promise and recognized the challenges of informatics within healthcare.

- You want to fix the broken parts in the system
- You want to innovate for change

As a topline, you demonstrate

1. Excellent critical thinking, analysis and communication skills
2. Orientation toward achievement, collaboration, facilitation, and leadership
3. Capacity for systems thinking, change management, and an aptitude for strategy
TWO OPTIONS: ONE DEGREE
MHI & EMHI
MHI

For candidates seeking to transform career to HI focus.

- 16 month program
  - September to December the next year
  - Full time over 4 consecutive semesters
  - 5 half courses per semester
  - 4 month practicum placement:
    - Clinical
    - Technical
    - Analytical
    - Business Intelligence

- Practicum is 600 hours/ 35 per week x 16 weeks in summer semester:
  - Hospitals
  - Health research organizations
  - Government and government agencies
  - Consulting firms
  - Planning bodies
  - Information and communication technology vendor organizations
  - Pharmaceutical firms
  - Medical device manufacturers
  - Integrated delivery systems
  - Community-based agencies

**Q:** Am I able to work while completing MHI? What is the workload?

**A:** We recommend no more than 10 -15 hours per week.

**Q:** Are practicum placements guaranteed? Are they paid?

**A:** Some students initiate their own opportunities, and the course instructor develops the practicum structure. A stipend is suggested. Practicum placements are paid up to $16k, however 20+ are unpaid.
EMHI Executive Stream

For candidates seeking to refine HI career direction, with credentials.

22 month program
  • Modular format
  • Approx. 12h classes every 3-4 weeks (occasional weekly courses)
  • 400 hour project to be supported by candidate’s employer or undertaken in an external organization.

Q: Do I need a project before I apply?
A: No, but you need general support from your employer. We develop the project together over the course of the year. The bulk of the project is delivered in the summer after your first full year.

Q: How is the workload?
A: In addition to the modular format, students make time for group work and 2 courses that run weekly (evenings). The workload is heavy but students report it as manageable.
Remember
• Foundational courses

Understand
• Conceptual courses

Apply
• Work integrated learning

Analyze
• Experiential reflection

Evaluate
• Applied theory

Create
• Applied thinking

Diagram J. Zarb.
Source for Knowledge Dimensions: COACH CDWG Report 2013
MHI OBJECTIVES of Health Informatics

1. UNDERSTAND
   Internalize & integrate theoretical foundations

2. DEMONSTRATE
   Working knowledge of interrelated methods, tools, standard practices

3. APPLY
   Initiate innovative & custom solutions to healthcare system problems
Map breadth and depth of health informatics to build a base of theoretical and practical understanding.

- MHI1001H: ICT in Health Care
- MHI1002H: Complexity of Clinical Care
- MHI2001H: Health Informatics I
- INF1003H: Information Systems, Services and Design
  - Critical analysis of the design fabrication, deployment, use and maintenance of information systems and services.
IN1341H: Analyzing Information Systems
  - Mediate among system developers, business managers, clinical/health users.

MHI2002H: Health Informatics II
  - Applications, vocabulary and standards, organizational, ethical, legal issues.

MHI2007H: Quantitative Methods + INF2183H: Knowledge Management and Systems
  - Create, manage and transfer information and knowledge from data to meet health care organizational needs.

MHI2003H: Consumer and Public Health Informatics
  - Studies and methods on making information accessible to consumers, with an overlap on public health informatics.
3. APPLY

Initiate innovative & custom solutions to healthcare system problems

MHI2004H: Human Factors and Change Management
- Techniques and issues relevant to HI adoption in complex environments

MHI2008H: Project Management
- Develop capacity for solution architecture

MHI2005Y: Health Informatics Practicum (MHI only)
- Placements onsite.

MHI2015Y: Health Informatics Project (EMHI only)

HAD5010H: Canada’s Health System and Policy I
- Critically analyze key issues and trends in Canada’s health care system

Advanced Topics
- Generalize skills across multiple contexts through assessment, design and critical evaluation of e-health innovations (MHI2009H); strategic frameworks (MHI2006H), performance measurement (HAD5726H) and one elective
Health Informatics programs seek to build foundations of sustainable theories and models for students to apply in highly-variable live settings that are replicated by practicum placements, internships and co-op work.
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<tr>
<th>WCIH</th>
<th>Humber River Hospital</th>
<th>Heart &amp; Stroke Foundation</th>
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<tr>
<td>Lifelabs</td>
<td>Public Health Ontario</td>
<td>York Region Home HealthCare</td>
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<td>Centre for Global eHealth Innovation</td>
<td>VERTO</td>
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<td>Government of Northwest Territories</td>
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<td>Centre for Addiction and Mental Health</td>
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<td>self care catalysts</td>
<td>West Park Healthcare Centre</td>
<td>St. Michael's Health Network</td>
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**MHI PRACTICUM PLACEMENTS 2018**
WHAT ARE WE HEARING?

How did your practicum Contribute to your career?

- having the MHI degree, with my practicum experience at Humber River Hospital, and a referral from a graduate landed me this position.
- My practicum experience combined with my experience in working on a capstone project with the MoHLTC was crucial in helping me demonstrate my value to my current employer.
- Jump started my career. The field was new for me but provided relevant entry level job experience through the practicum.
- Prior to MHI, I did not have the experience of working extensively in a clinical/healthcare environment.
- MHI and IHPME brought me great networks and academic recognition.
- MHI was a great introduction to wide variety of healthcare concepts and theories that I use today. The connections that I was able to make have been very helpful.
WHAT ARE WE HEARING?

Gave me the necessary skill-sets to understand strategy, design and business requirements essential to being a good Product Manager.

Helps me play roles of Subject Matters Expert and Business Analyst efficiently. I am able to view workflows through unbiased lenses.

MHI degree has proven an asset in finding employment and being successful.

MHI definitely opened up several possible career pathways. My degree makes so much more sense after working in the HI field.

MHI and IHPME brought me great networks and academic recognition.

MHI was a great introduction to wide variety of healthcare concepts and theories that I use today. The connections that I was able to make have been very helpful.
How long did it take to find a job post grad?

- Recruited out of practicum
- 1 week after I finished the program
- Hired right after my practicum
- ~1 month after graduation (x3)
- Had the job lined up before graduating
- ~2 months
- ~3 months

Source: J.Zarb
Placement of Professional Stream Graduates

MHI Employment Settings

Source: Combined responses to T Bird-Gayson, MHI Evaluation & J. Zarb Survey. 2017

- MHI graduates 2010-2013 n=26
- MHI graduates 2014-2015 n=21
Employment Titles: MHI 2010-2013 Graduates

Source: Combined responses to T Bird-Gayson, MHI Evaluation & J. Zarb Survey. 2017
- MHI graduates 2010 -2013 n=26
- Not accounted graduates in academics and other industries (5).

Source: Combined responses to T Bird-Gayson, MHI Evaluation & J. Zarb Survey. 2017

MHI graduates 2014-2015 n=21
Q: Do I need healthcare and information technology in my background?
A: Ideally, but it is alright to be very strong in one area and have less experience in another.

Q: Is there a lot of IT coding/programming involved? Do I need to know how?
A: MHI is an academic program and not a space for technical training. Knowledge is an asset, but the program is more focused on building critical thinking and management ability at a systems level.

Q: What is the cost?
A: Tuition for MHI & EMHI is identical. It is currently at ~$15K total.

Q: Do both of my reference need to be academic?
A: If they are not, contact the Graduate Assistant after applying to notify.
Applications Open Now

VISIT
http://ihpme.utoronto.ca/academics/pp/mhi/

TO APPLY
http://ihpme.utoronto.ca/community/students/apply/

ADMISSIONS QUESTIONS?
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Program Director
Julia Zarb
Julia.zarb@utoronto.ca