Looking Ahead: Systems, Data, and ***People***

William Hersh, MD
Professor and Chair
Department of Medical Informatics & Clinical Epidemiology
Oregon Health & Science University
Portland, OR, USA
Email: hersh@ohsu.edu
Web: www.billhersh.info
Blog: informaticsprofessor.blogspot.com

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Meaningful use of health IT requires attention to people

- Long-standing recognition of
  - Need for special people (Ash, 2003)
  - Failures mostly occurring due to people and organizational (as opposed to technology) issues, e.g.,
    - H.I.T. or Miss (Leviss, 2009)
    - Han (2005) study of increased mortality after CPOE implementation and fallout (e.g., Sittig, 2006)
- Until recently, little attention paid to health IT workforce (Hersh, 2008; Hersh, 2010)

What do we know about the HIT workforce?

- Largest (but not only) need now in healthcare settings
- Traditional groupings of professionals in healthcare
  - Information technology (IT) – usually with computer science or information systems background
  - Health information management (HIM) – historical focus on medical records; certified as
    - Registered Health Information Administrator (RHIA)
    - Registered Health Information Technologist (RHIT)
    - Clinical Coding Specialist (CCS)
  - Clinical informatics (CI) – often from healthcare backgrounds; focus on use of clinical information; sometimes called analytics

What do the data show?

- IT – HIMSS Analytics Database™ analysis shows need for ~40,000 more personnel (Hersh, 2008)
- HIM – Bureau of Labor Statistics data show expected growth of 35,000 by 2018 (BLS, 2009)
- CI – less clear but growing recognition of stature and need
  - Best (but not only!) exemplified by growth of Chief Medical Information Officer (CMIO) role (Leviss, 2006; Shaffer, 2010)

ONC estimated 51,000 needed for HITECH agenda in 12 workforce roles

- Mobile Adoption Support Roles
  - Implementation support specialist*
  - Practice workflow and information management redesign specialist*
  - Clinician consultant*
  - Implementation manager*
- Permanent Staff of Health Care Delivery and Public Health Sites
  - Technical/software support staff*
  - Trainer*
  - Clinician/public health leader†
  - Health information management and exchange specialist†
  - Health information privacy and security specialist†
- Health Care and Public Health Informaticians
  - Research and development scientist†
  - Programmers and software engineer†
  - Health IT sub-specialist†

(to be trained in *community colleges and † universities)

How do we build the workforce?

- Historically most education at graduate level
  - Informatics is inherently multidisciplinary and there is no single job description or career pathway
- More information on programs on AMIA web site
  - http://www.amia.org/education/programs-and-courses
- Commentary at
  - http://informaticsprofessor.blogspot.com
- Let's look at
  - Competencies
  - OHSU program experience
  - ONC Workforce Development Program

Inventory of competencies for various groups (Hersh, 2010)

- Competencies differ by group
  - Informaticians
    - Developing, implementing, and evaluating systems
    - Making optimal use of information
  - Clinicians
    - Applying informatics in delivery of care
  - Patients
    - Health information literacy

Table 2 Inventory of competencies in biomedical and health informatics.

Organization or Journal [Reference]	Year	Discipline	Title
Association for Computing Machinery [49]	1978	Computer science	Health Computing: Curriculum for an Emerging Profession
[50]	1992	Informatics	Recommendations of the German Association for Medical Informatics, Biometry and Epidemiology
Association of American Medical Colleges [51]	1999	Medical students	Medical School Objectives Project: Medical Informatics
International Medical Informatics Association [52]	2000	Informatics	Recommendations of the International Medical Informatics Association (IMIA) on education in health and medical informatics (updated in 2010)
UK National Health Service [53]	2001	Informatics	Health Informatics Competency Profiles for the NHS
American Nurses Association [54]	2001	Nursing	A Delphi Study to Determine Informatics Competencies for Nurses at Four Levels of Practice
...			
Nursing Clinics of North America [68]	2008	Nursing	Technology and informatics competencies
AMIA-OHSU 10x10 Course [69]	2009	Informatics	AMIA-OHSU 10x10 Program - Detailed Curriculum, Learning Objectives
AMIA Core Content for Clinical Informatics [35]	2009	Informatics	Core content for certification of physicians (with others to follow later)
TIGER Nursing Informatics [70]	2009	Nursing Informatics	TIGER Informatics Competencies Collaborative (TICC) Final Report
Office of the National Coordinator for Health IT [71]	2009	Electronic health record adoption	HIT Workforce Competencies by Role
Centers for Disease Control and Prevention, [72]	2009	Informatics	Public Health Informatics Competencies
International Medical Informatics Association [73]	2010	Informatics	Recommendations of the International Medical Informatics Association (IMIA) on education in biomedical and health informatics

Experience of the OHSU program

- http://www.ohsu.edu/informatics
- Graduate-level programs at Certificate, Master's, and PhD levels
  - "Building block" approach allows courses to be carried forward to higher levels
- Two "populations" of students
  - "First-career" students more likely to be full-time, on-campus, and from variety of backgrounds
  - "Career-changing" students likely to be part-time, distance, mostly (though not exclusively) from healthcare professions
- Many of latter group prefer "a la carte" learning
  - This has led to the successful 10x10 ("ten by ten") program that began as OHSU-AMIA partnership (Hersh, 2007; Feldman, 2008)

10x10™
Training Next-Generation Informatics Leaders

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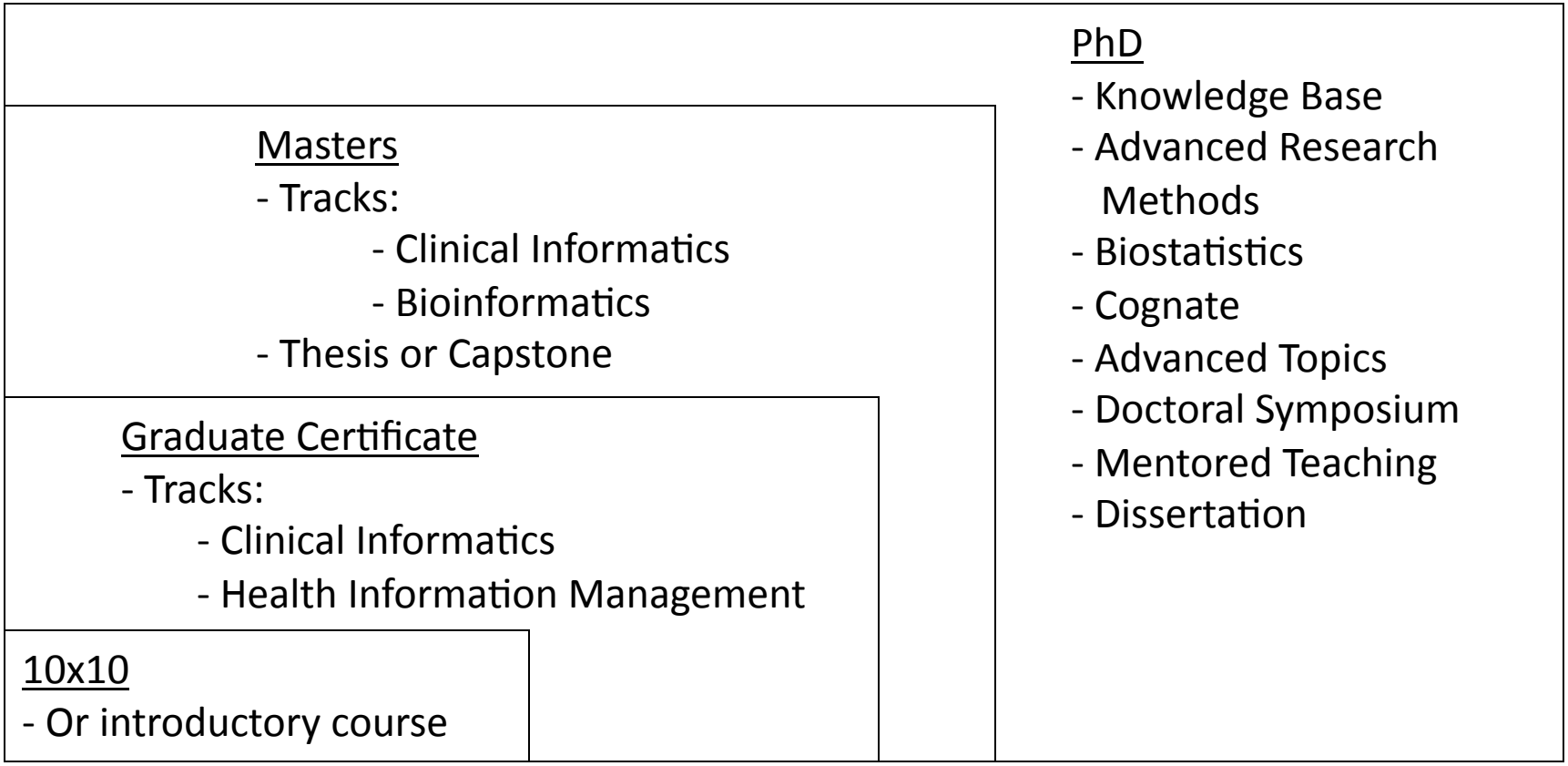
Overview of OHSU graduate programs



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ONC workforce development program

- Community College Consortia to Educate Health Information Technology Professionals Program ($70M)
- Curriculum Development Centers Program ($10M)
- Program of Assistance for University-Based Training ($32M)
- Competency Examination for Community College Programs ($6M)

Community College Consortia to Educate HIT Professionals Program

- Five regional consortia of 82 community colleges to develop short-term programs to train 10,000 individuals per year in the six community college workforce roles
- Anticipated enrollment of people with healthcare and/or IT backgrounds – probably baccalaureate or higher degrees

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Curriculum Development Centers Program

- Five universities to collaboratively develop (with community college partners) HIT curricula for 20 components (courses)
  - Oregon Health & Science University (OHSU)
  - Columbia University
  - Johns Hopkins University
  - Duke University
  - University of Alabama Birmingham
- One of the five centers (OHSU) additionally funded as National Training and Dissemination Center
- Version 2 of curriculum delivered to community colleges in May, 2011, with release to public in July, 2011
  - www.onc-ntdc.info

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Program of Assistance for University-Based Training (UBT)

- Funding for education of individuals in workforce roles requiring university-level training at nine universities with existing programs
  - Oregon Health & Science University (OHSU)
  - Columbia University
  - University of Colorado Denver College of Nursing
  - Duke University
  - George Washington University
  - Indiana University
  - Johns Hopkins University
  - University of Minnesota (consortium)
  - Texas State University (consortium)
- Emphasis on short-term certificate programs delivered via distance learning
- OHSU program run as "tuition assistance" program for existing programs
  - www.informatics-scholarship.info

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Other important workforce developments

- Physicians
  - Proposal to establish a clinical informatics subspecialty (Detmer, 2010) based on core curriculum (Gardner, 2009) and training requirements (Safran, 2009)
- Other health professionals
  - Nursing – TIGER initiative (Gugerty, 2009)
  - HIM (Wilhelm, 2007; Dimick, 2008)
  - Nutrition (Hoggle, 2010)

Conclusions

- People, especially well-trained HIT professionals, are an essential component to achieve meaningful use
  - Informatics has emerging identity as one with expertise in using information to solve biomedical and health problems
- There are tremendous opportunities now and in the future
  - Further research, policy development, and funding are required to optimize the workforce and its education
- Stay tuned for the results of the HITECH "experiment" in the years ahead

For more information

- Bill Hersh
  - http://www.billhersh.info
- Informatics Professor blog
  - http://informaticsprofessor.blogspot.com
- OHSU Department of Medical Informatics & Clinical Epidemiology
  - http://www.ohsu.edu/informatics
  - http://www.ohsuscholarships.info
  - http://oninformatics.com
  - http://www.billhersh.info/10x10.html
- What is BMHI?
  - http://www.billhersh.info/whatis
- Office of the National Coordinator for Health IT
  - http://healthit.hhs.gov
- American Medical Informatics Association
  - http://www.amia.org