Meaningful Use of Health Information Technology Requires a Competent Workforce

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Overview of talk

- Why we need more health information technology (HIT)
- What we know about the HIT workforce
- How we can/should build the HIT workforce
- The HITECH workforce development program

The biggest advocate for HIT

- "To improve the quality of our health care while lowering its cost, we will make the immediate investments necessary to ensure that within five years, all of America's medical records are computerized … It just won't save billions of dollars and thousands of jobs – it will save lives." (January 5, 2009)

Health Information Technology for Economic and Clinical Health (HITECH) Act

- Portion of the American Recovery and Reinvestment Act (ARRA) that allocates $40 billion to the Office of the National Coordinator for Health IT (ONC) to provide incentives for "meaningful use" of HIT through
  - Adoption of electronic health records (EHRs)
  - Health information exchange (HIE)
  - Infrastructure
    - Regional extension centers – 60 across country
    - Research centers – four centers in specific areas
    - Beacon communities – 15 "beacon" demonstration projects
    - Workforce development – four programs

Why do we need more information technology (IT) in healthcare?

- Quality – not as good as it could be (McGlynn, 2003; NCQA, 2009; Schoen, 2009)
- Safety – IOM "errors report" found up to 98,000 deaths per year (Kohn, 2000)
- Cost – rising costs not sustainable; US spends more but gets less (Angrisano, 2007)
- Inaccessible information – missing information frequent in primary care (Smith, 2005)

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
- Most research about workforce has focused on counts of professional groupings (usually IT or HIM staffing)

What do the data show?

- Mostly done in hospital settings; usually focused on one (of three main) groups
  - IT – HIMSS Analytics Database™ study
  - HIM – Bureau of Labor Statistics data
  - CI – mainly estimates
- Recent work focused on needs for the ARRA EHR agenda

HIMSS Analytics study

(Hersh and Wright, 2008)

- Assessed current and anticipated HIT workforce needs using HIMSS Analytics Database™ (www.himssanalytics.com), which contains
  - Self-reported data from about 5,000 US hospitals, including number of beds, total staff FTE, total IT FTE, applications, and vendors used for applications
  - EMR Adoption Model™, which scores hospitals on eight stages to creating a paperless record environment

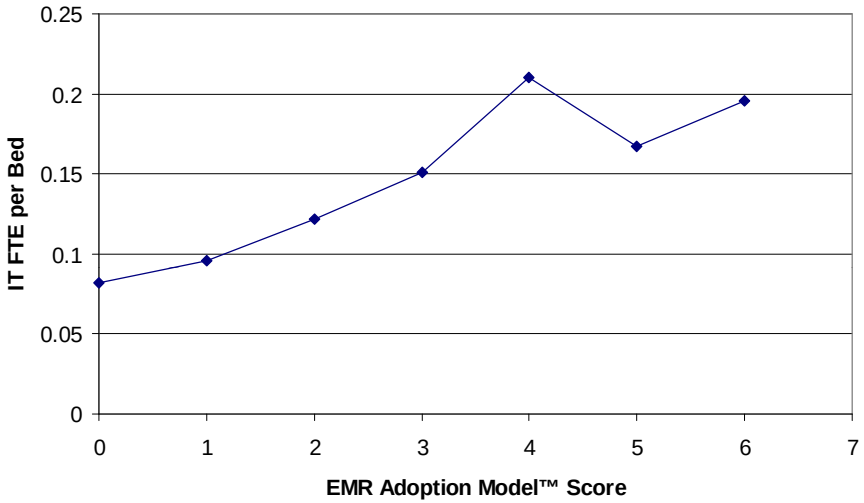
HIMSS Analytics EMR Adoption Model™

Level required for documented benefits of HIT (***meaningful use?)***

Stage 7	Medical record fully electronic; CDO able to contribute to EHR as byproduct of EMR
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS
Stage 5	Closed loop medication administration
Stage 4	CPOE, CDSS (clinical protocols)
Stage 3	Clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology
Stage 2	CDR, CMV, CDSS inference engine, may have Document Imaging
Stage 1	Ancillaries – Lab, Rad, Pharmacy – All Installed
Stage 0	All Three Ancillaries Not Installed

Results

- IT per non-IT staff ~ 1:60
- IT FTE per bed rises from stages 0 to 4
- Extrapolating to country as a whole
  - 108,390 IT staff at current adoption levels
  - Would increase to 149,174 if all stages <4 hospitals moved to stage 4
    - Sound bite: Need for >40,000 more!



Limitations of study:

- Extrapolations
- Data incomplete
- Does not include CI or HIM
- Current practices, not best practices

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HIM data from US Bureau of Labor Statistics

- From US Bureau of Labor Statistics occupational employment projections 2008-2018 (BLS, 2009)
  - Medical Records and Health Information Technicians (RHITs and coders) – about 172,500 employed now, increasing to 207,600 by 2018 (20% growth)
- Also employed as managers and in a variety of other occupations (RHIAs)

Clinical informatics

- Individuals who bring skills at intersection of health care and IT (Hersh, 2008; Hersh, 2009)
  - Focus more on information than technology
  - Likely to lead "meaningful use" of HIT
- Estimates of need
  - One physician and nurse in each US hospital (~10,000) (Safran, 2005)
  - About 13,000 in health care (Friedman, 2008) and 1,000 in public health (Friedman, 2007)
  - Growing role of CMIO and other CI leaders (Leviss, 2006, Shaffer, 2009)
  - Limitation: Lack of Standard Occupational Code (SOC) – more important than we think (BLS, 2004)

ONC estimates 51,000 needed for HITECH agenda in 12 job 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†

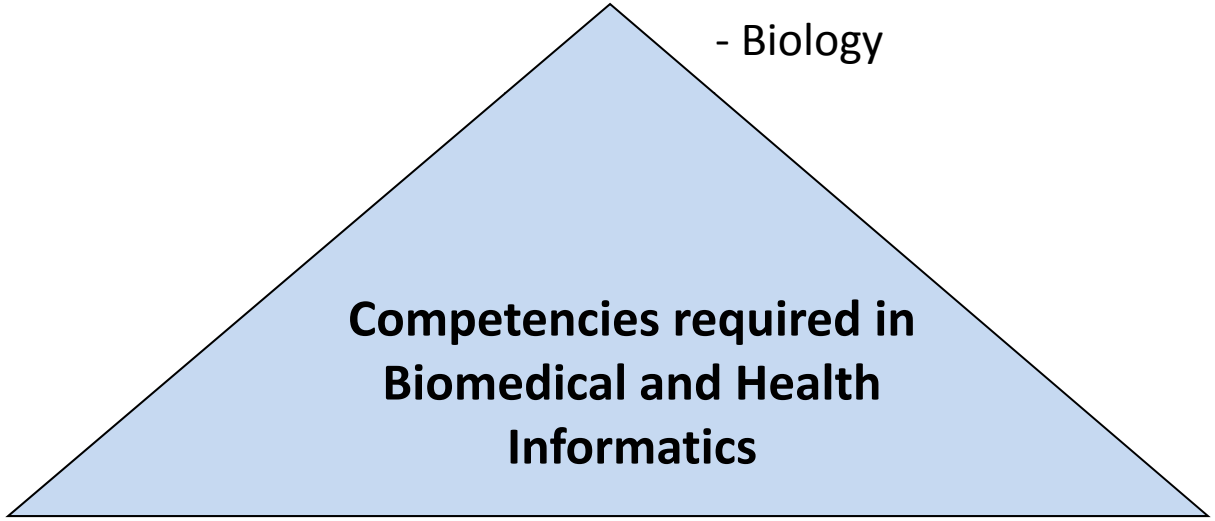
(to be trained in *community colleges and † universities) (Monegain, 2009)

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/informatics-academic-training-programs
- Commentary at
  - http://informaticsprofessor.blogspot.com
- Let's look at
  - Competencies
  - Career pathways
  - OHSU program experience

What competencies should the (informatics) workforce have? (Hersh, 2009)

Health and biological sciences:
- Medicine, nursing, etc.
- Public health
- Biology



Management and social sciences:
- Business administration
- Human resources
- Organizational behavior

Computational and mathematical sciences:
- Computer science
- Information technology
- Statistics

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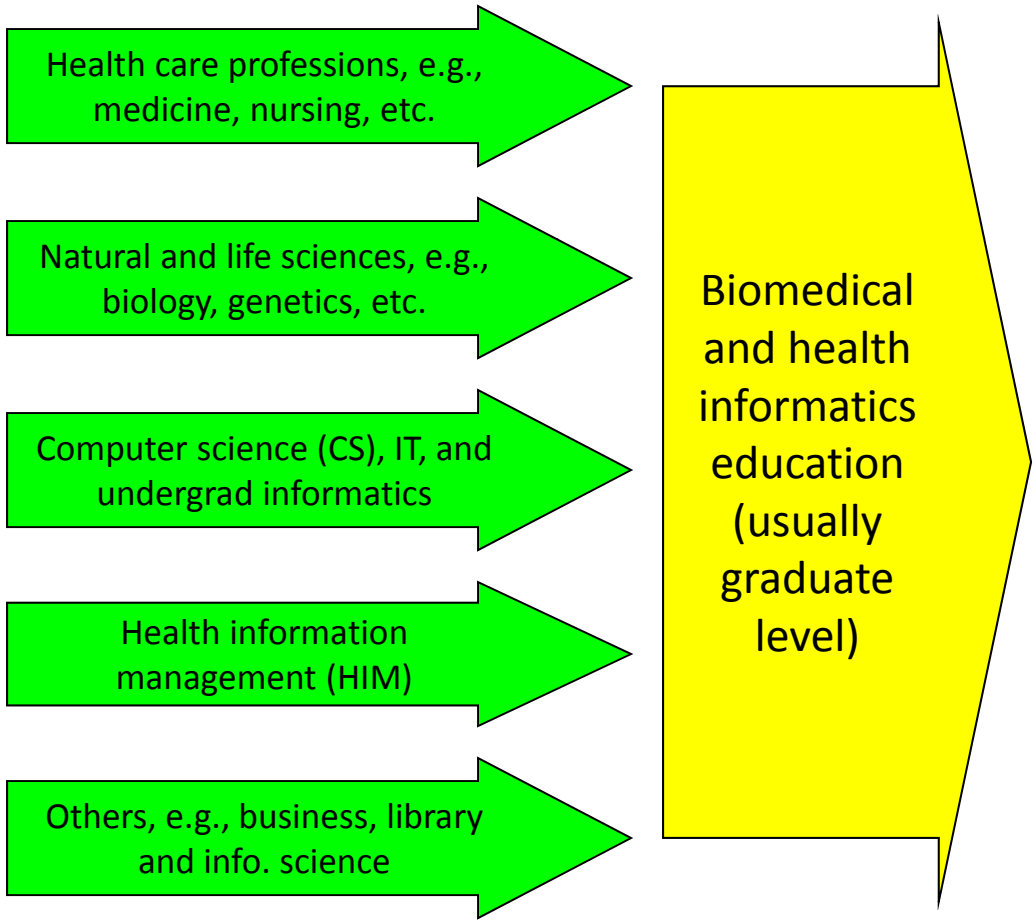
Career pathways have diverse inputs and outputs (Hersh, 2009)



There is no single career pathway!

Jobs in:
- Health care systems
  - Clinical leadership
  - IT leadership
- Biomedical research
- Industry
- Academia

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Experience of the OHSU program

- http://www.ohsu.edu/dmice/
- 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)

AMIA 10x10™
10,000 Trained by 2010

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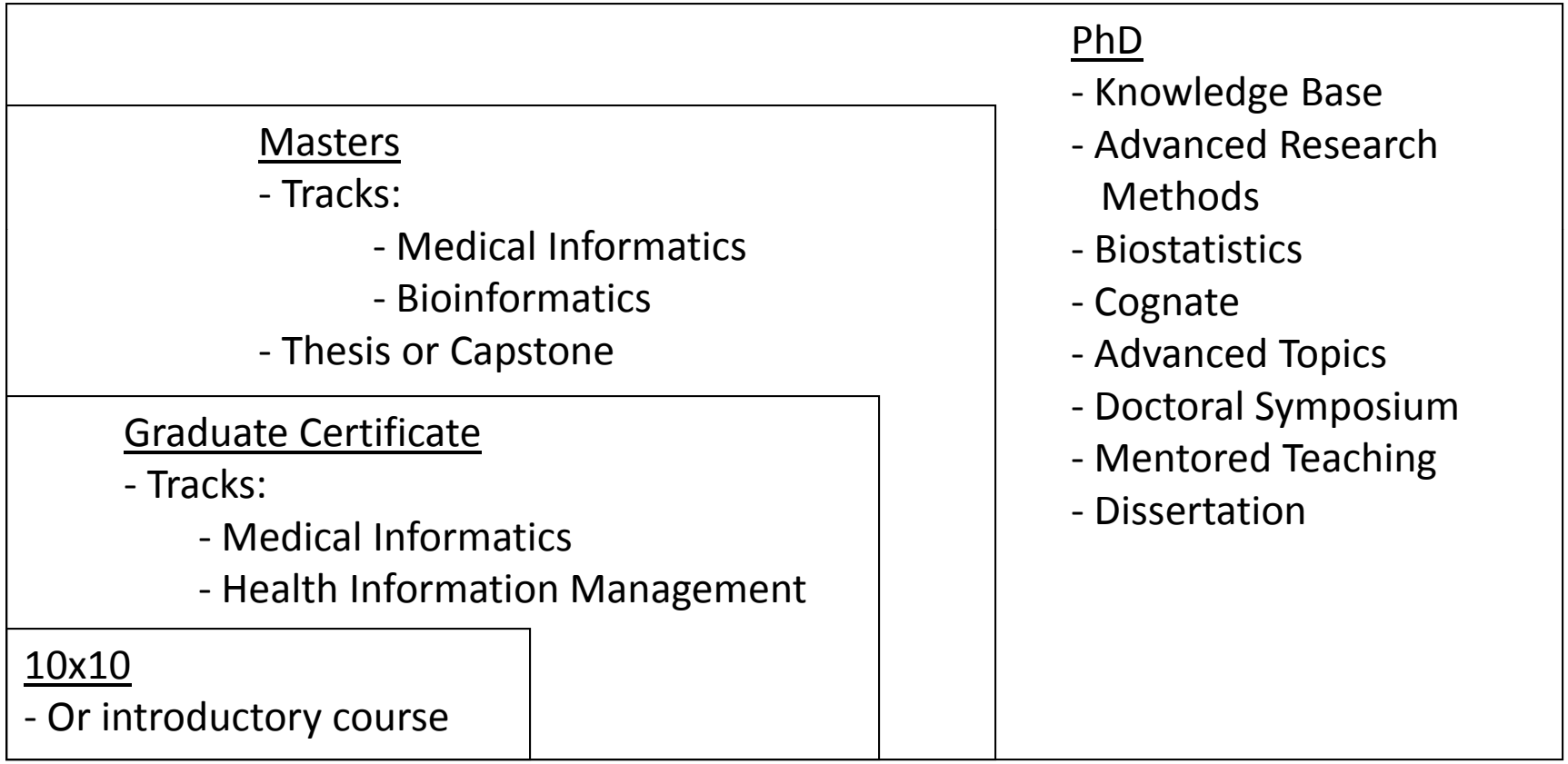
Overview of OHSU graduate programs



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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 70 community colleges to develop short-term programs to train 10,000 individuals per year in the six community college job roles

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Community College Consortium – Region A

- Lead – Bellevue College, Seattle, WA
- Partners
  - Portland Community College (Portland, OR)
    - With sub-partners – Mt. Hood, Lane, Umpqua, and Blue Mountain
  - North Idaho College (Coeur d'Alene, ID)
  - Salt Lake Community College (Salt Lake City, UT)
  - Montana Tech (Butte, MT)
  - Pueblo Community College (Pueblo, CO)
  - Dakota State University (Madison, SD)
  - Lake Region State College (Devils Lake, ND)

Community College Consortium – Region B

- Lead – Los Rios Community College District
- Partners
  - Cosumnes River College
  - Butte College
  - College of Southern Nevada
  - Cypress College
  - East Los Angeles College
  - Fresno City College
- Partners (cont.)
  - Honolulu Community College
  - Mission College
  - Orange Coast College
  - Phoenix College
  - Pima College
  - Santa Barbara City College
  - San Diego Mesa College
  - Santa Monica College

Curriculum Development Centers Program

- Five universities to collaboratively develop (with community college partners) HIT curricula for 20 components (topics)
  - 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
  - Training – event for 300-400 community college faculty in August, 2010
  - Dissemination – Web site and feedback collection for curricula

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Program of Assistance for University-Based Training

- Funding for education of individuals in job 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 to be run as "scholarship" program for existing programs
  - www.ohsuscholarships.info

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Conclusions

- Informatics is maturing as a discipline and profession
  - Field 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
  - A competent and well-trained workforce is an essential requirement
- Stay tuned for the results of this exciting "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/dmice
  - http://www.ohsuscholarships.info
  - http://oninformatics.com
- 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