Informatics: Opportunities to Improve Healthcare Through Rewarding Careers

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Outline

- Trends and consequences in healthcare
- Definition and role of informatics
- Health IT employment growth
- Educational opportunities at OHSU and elsewhere

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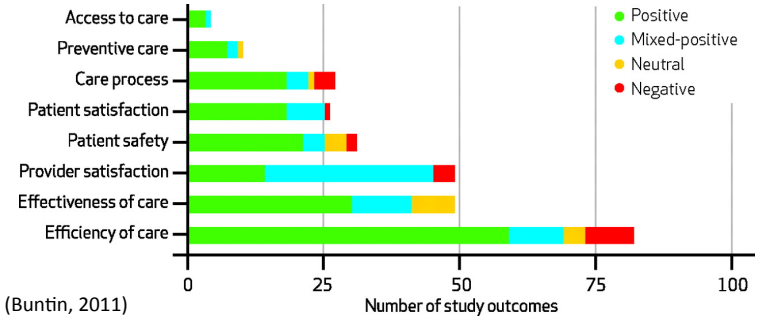
Trends and consequences in healthcare

Trends	Consequences
Healthcare is expensive and potentially dangerous	Electronic health records to facilitate: • Communication and coordination of care • Quality measurement and improvement
Ever-expanding knowledge base of health and medicine	Better search and clinical decision-support systems
Increasing data intensity of clinical and research activities	Need for skills in "big data" and data analytics
Patients want to interact with healthcare the same as they do with other industries	Personal health records and patient portals
Everyone wants to better manage health	Personal monitoring and devices
Concerns about privacy	Balancing privacy vs. public good of data use
Dispersed population	Use of telemedicine
Health threats – natural and human	Surveillance and public health

3

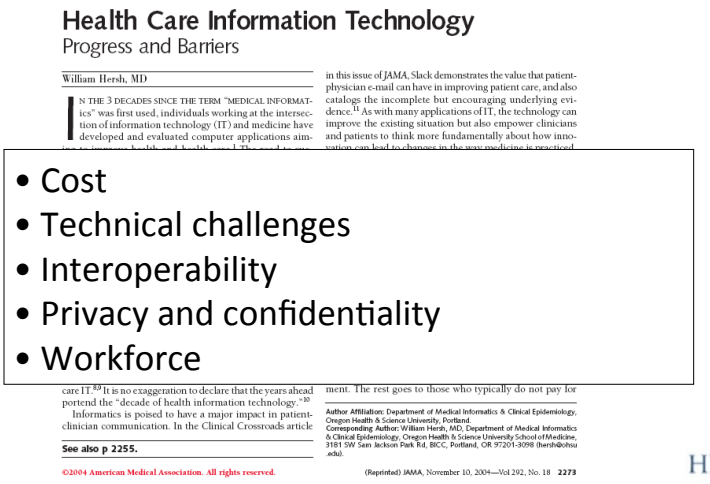
Growing evidence for value of informatics interventions

- Systematic reviews (Chaudhry, 2006; Goldzweig, 2009; Buntin, 2011; Jones, 2014) have identified benefits in a variety of areas



(Buntin, 2011)

But it has been difficult to get there (Hersh, 2004)



Health Care Information Technology
Progress and Barriers

William Hersh, MD

IN THE 3 DECADES SINCE THE TERM "MEDICAL INFORMATICS" was first used, individuals working at the intersection of information technology (IT) and medicine have developed and evaluated computer applications aim-

in this issue of *JAMA*, Slack demonstrates the value that patient-physician e-mail can have in improving patient care, and also catalogs the incomplete but encouraging underlying evidence.[11] As with many applications of IT, the technology can improve the existing situation but also empower clinicians and patients to think more fundamentally about how inno-

- Cost
- Technical challenges
- Interoperability
- Privacy and confidentiality
- Workforce

care IT.[10] It is no exaggeration to declare that the years ahead portend the "decade of health information technology."[10]

Informatics is poised to have a major impact in patient-clinician communication. In the Clinical Crossroads article

ment. The rest goes to those who typically do not pay for

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See also p 2255.

(Reprinted) JAMA, November 10, 2004—Vol 292, No. 18 2273

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All of these are addressed by biomedical and health informatics

- *Biomedical and health informatics* (BMHI or *informatics*) is the science of using data and information, often aided by technology, to improve individual health, health care, public health, and biomedical research (Hersh, 2009)
  - It is about information, not technology
  - http://www.billhersh.info/whatis
- Practitioners of informatics are usually called *informaticians* (sometimes *informaticists*)
- Overview textbooks: Hoyt, 2014; Shortliffe, 2014

6

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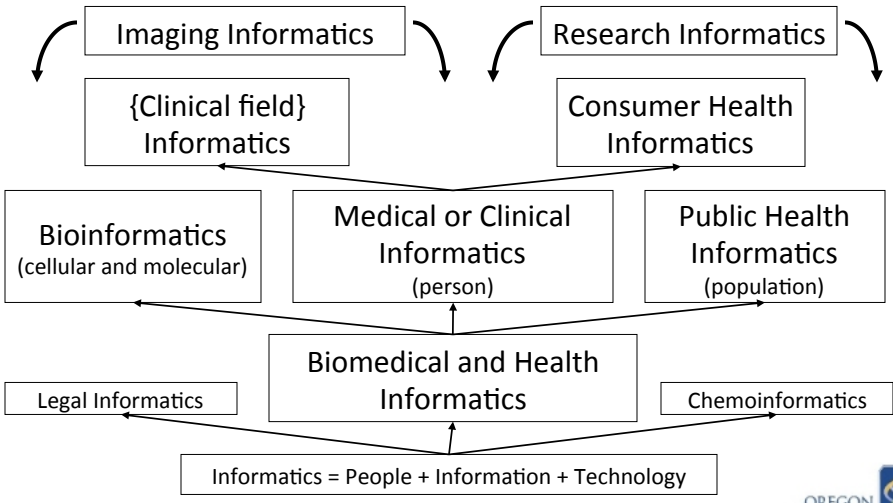
Informatics has many sub-areas



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7

Additional perspectives on informatics

Fundamental Theorem (Friedman, 2009) – based on "relentless pursuit of assisting people"

Goal of informatics is

Goal is not

Informatics is different from:

IT/IS
- More focused on information than technology
- Mostly clinical perspective

HIM
- Less focus on medical records per se
- HIM is in transition toward informatics

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8

Informatics received a boost from a new US president

"To lower health care cost, cut medical errors, and improve care, ***we'll computerize the nation's health records in five years,*** *saving billions of dollars in health care costs and countless lives."*

First Weekly Address
Saturday, January 24, 2009

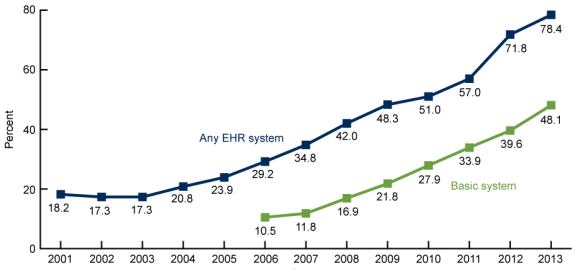
9

…and entered a new "ARRA"

- Health Information Technology for Economic and Clinical Health (HITECH) Act of the American Recovery and Reinvestment Act (ARRA) (Blumenthal, 2011)
  - Incentives for electronic health record (EHR) adoption by physicians and hospitals (up to $27B)
  - Direct grants administered by federal agencies ($2B)
    - Including $118 million for health IT workforce development – two of the many grants to OHSU

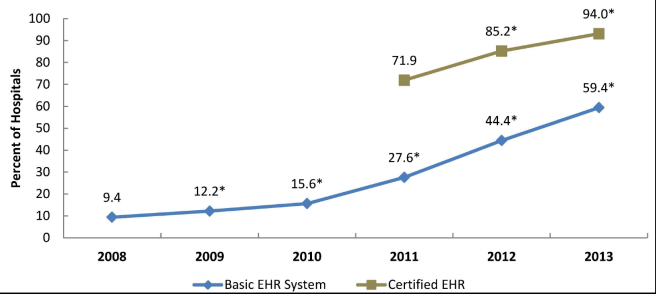
10

HITECH has resulted in substantial EHR adoption in US



(Hsiao, 2014)

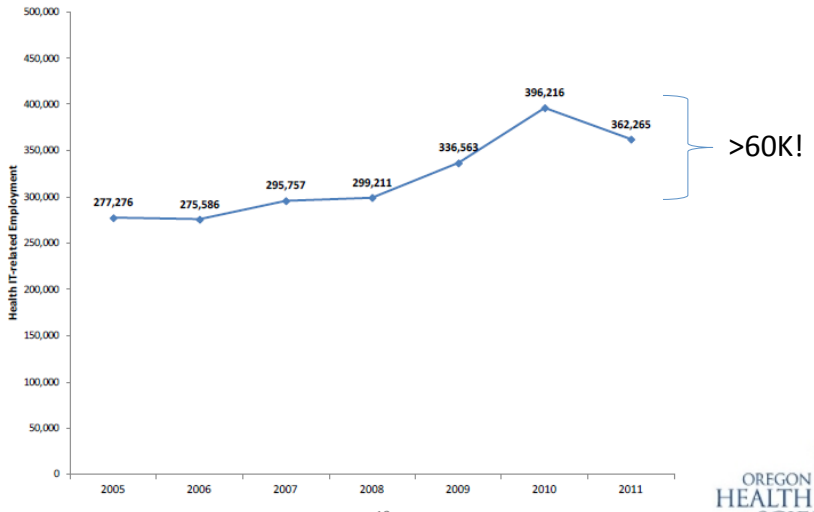
(Charles, 2014)



HITECH has also led to substantial health HIT employment (Hersh, 2010)

- Analysis of HIMSS Analytics Database™ estimated need of 41,000 additional HIT professionals as we moved to more advanced clinical systems (Hersh, 2008)
- ONC increased estimate of need to 50,000, leading to Workforce Development Program being part of HITECH Program (Hersh, 2012)
- Actual numbers hired have been even higher (Furukawa, 2012; Schwartz, 2013) – next slide
- Despite growth of jobs and number trained, shortfalls persist (CHIME, 2012; HIMSS Analytics, 2013; Towers-Watson, 2013)

HIT employment growth from Bureau of Labor Statistics (Furukawa, 2012)



13

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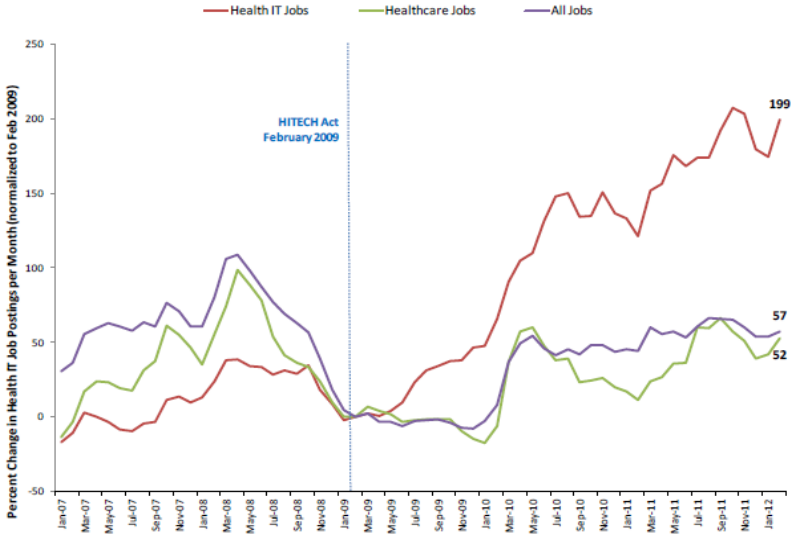
Job growth exceeding healthcare and general economy (Furukawa, 2012)



Continued evidence of job opportunities (HIMSS, 2014)

- Updated workforce survey of health systems and vendors
- Over 80% of both plan to hire
  - Vendors plan to hire more (though more health systems than vendors)
    - 20% of health systems, 47% of vendors more than 20 FTE
  - Variable plans to outsource
- Top areas of hires
  - Clinical application support – 64%
  - Help Desk – 57%
  - IT management – 45%
  - …
  - Clinical informatics – 29%
- Barriers and concerns
  - Lack of qualified talent in area – 69%; other talent lured away – 50%
  - One-third put projects on hold due to lack of staff

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Has led to proposal for Standard Occupational Classification (SOC) code

- Collaboration of ONC and many professional associations
- Recommendation to classify as a health (as opposed to technology) occupation
- http://www.amia.org/sites/amia.org/files/Recommendation-for-Health-Informatics-SOC-Proposal-2014-07-21.pdf

INFORMATICS PROFESSOR

THIS BLOG MAINTAINS THE THOUGHTS ON VARIOUS TOPICS RELATED TO BIOMEDICAL AND HEALTH INFORMATICS BY DR. WILLIAM HERSH, PROFESSOR AND CHAIR, DEPARTMENT OF MEDICAL INFORMATICS & CLINICAL EPIDEMIOLOGY, OREGON HEALTH & SCIENCE UNIVERSITY.

FRIDAY, JULY 25, 2014

Proposing the Addition of a Standard Occupational Classification (SOC) Code for Informatics

About a decade ago, as my interests and work activity began to focus more on informatics education and workforce development, I started to ask questions about the size, scope, and required education of that workforce. Despite seeing great interest in the informatics education programs at Oregon Health & Science University (OHSU), I could find very little data about how many people were working in the field, how many more were needed, what their job activities were, or what knowledge and skills they required. I noted these problems in the first paper on this topic I published [1], and then tried to answer some of the questions on the size of the workforce with the best data I could find, which was the HIMSS Analytics Database. This led to my widely publicized finding of a need for at least 40,000 more health information technology professionals [2], which was part of the motivation for including workforce development in the Health Information Technology for Economic and Clinical Health (HITECH) Act. At the same time, I was learning that many human resources (HR) professionals were unaware of the background and skills of those working in the growing number of clinical informatics roles in healthcare organizations.

WILLIAM HERSH

http://www.billhersh.info/

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TOTAL PAGEVIEWS

206,565

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Challenges for EHRs represent opportunities going forward

- Optimizing the electronic health record (EHR)
  - Analytics of EHR and other clinical data for increasing quality, efficiency, and coordination of healthcare (Hersh, 2014)
  - Standards, interoperability, and health information exchange (HIE)
  - Will expand to "big data" when we add in data from genomics, imaging, personal health devices, etc.
- Patient/consumer engagement
  - Use of personal health record (PHR) for engaging consumers and patients in their health and healthcare
- Precision/personalized medicine
  - Based in part on bioinformatics and computational biology, with potential to revolutionize diagnosis and treatment of disease

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Career development and study in informatics

- Many educational opportunities at a variety of levels, mostly graduate
  - http://www.amia.org/informatics-academic-training-programs
- OHSU program one of largest and well-established (Hersh, 2007)
  - http://www.ohsu.edu/informatics-education
  - Graduate level programs at Certificate, Master's, and PhD levels
  - "Building block" approach allows courses to be carried forward to higher levels

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Existing and emerging certifications

- Long-standing certifications in
  - Nursing informatics
  - Health information management – RHIA, RHIT, CCS
- New clinical informatics subspecialty for physicians recently launched (Detmer, 2014)
  - "Grandfathering" now; fellowships later
- AMIA developing plan for "interprofessional" certification for other disciplines
  - http://www.amia.org/advanced-interprofessional-informatics-certification

19

Career development (cont.)

THURSDAY, JULY 3, 2014

Advice to a Young Person Considering a Career in Informatics

One of the biggest challenges I face in introducing potential students to the myriad of career opportunities in biomedical and health informatics that potentially await them comes with young people. I believe that the main reason for this is this group's little exposure to our healthcare system and its myriad of problems and challenges. Like most young people, they tend to be healthy and have had very little experience with healthcare and other health-related areas. While there is little difficulty in explaining the problems that informatics tries to solve to older individuals, perhaps whose parents or children have been impacted by healthcare, or who are among the myriad of mid-

SUNDAY, APRIL 1, 2012

From Implementation to Analytics: The Future Work of Informatics

I am occasionally asked whether the work of informatics will be "done" when everyone is finishing implementing electronic health record (EHR) systems. Sometimes the query is further qualified by, "once everyone gets their HITECH money."

My answer is always an emphatic "No!" There is no question that some informatics implementation activity may slow down when healthcare organizations are no longer fueled by pursuit of HITECH incentive dollars. These activities may be impacted even further by bottom line woes that are likely to impact healthcare no matter what the outcome of healthcare reform, or whatever other distractions come along, such as ICD-10.

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http://www.billhersh.info/

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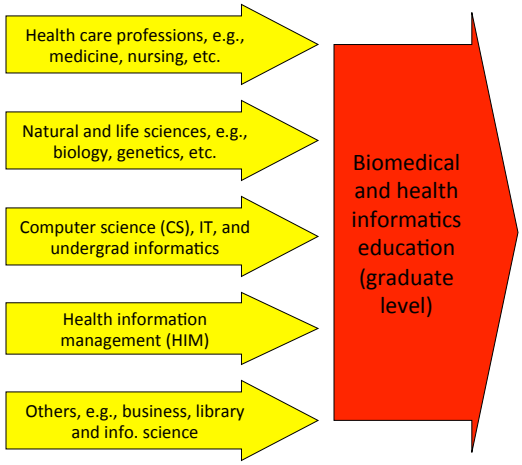
20

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



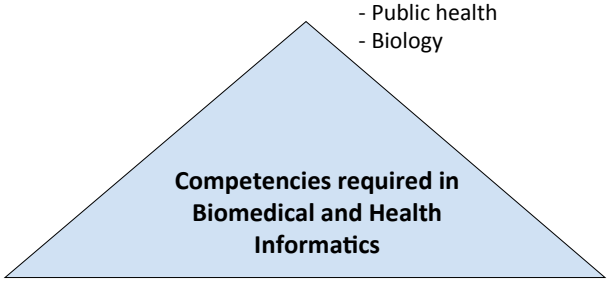
There is no single career pathway, ladder, etc.

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

21

What competencies must informaticians have? (Hersh, 2009)

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



People skills:
- Communication and presentation
- Organizational behavior and management
- Project management

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

22

OHSU program has three tracks

- Clinical Informatics
  - Original track, focused on informatics in health, healthcare, public health, and clinical research settings
- Bioinformatics and Computational Biology (BCB)
  - Focused on informatics in genomics. molecular biology, and their translational research aspects
- Health Information Management (HIM)
  - Overlapping with clinical informatics, focused on HIM profession and leading to Registered Health Information Administrator (RHIA) certification

OHSU offers a variety of degrees and certificates

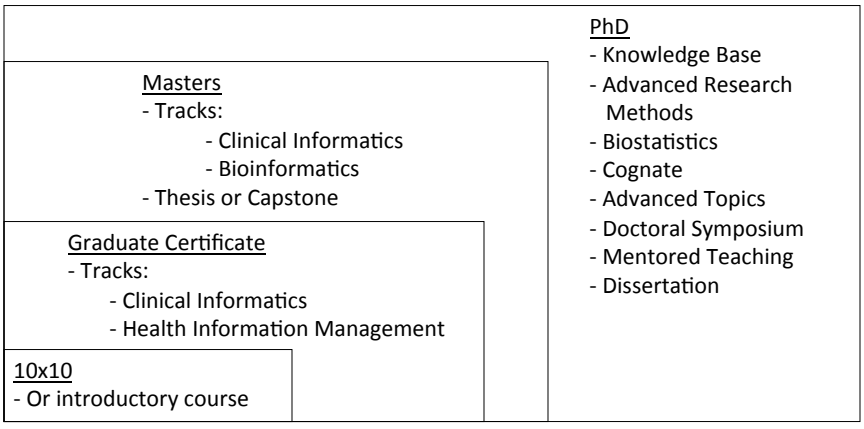
- Doctor of Philosophy (PhD)
  - For those who wish to pursue research, academia, or leadership careers
- Master of Science (MS)
  - Research master's, including for those with doctoral degrees in other fields who wish to pursue research careers
- Master of Biomedical Informatics (MBI)
  - Professional master's degree for practitioners and leaders
- Graduate Certificate
  - Subset of master's degree as an introduction or career specialization

Tracks, degrees and certificates, and availability

Degree/Certificate Track	PhD	MS	MBI	Grad Cert
Clinical Informatics	On-campus	On-campus On-line	On-campus On-line	On-campus On-line
Bioinformatics and Computational Biology	On-campus	On-campus		
Health Information Management		On-campus On-line	On-campus On-line	On-campus On-line

25

Overview of OHSU graduate programs



26

There are equally many pathways to informatics training

Ad Hoc

Combination of:
- Courses
- Personal experience
- Certifications

Graduate Education

- Single courses (e.g., 10x10)
- Graduate Certificate
- Master's Degree
- PhD

NLM and other training grants

Clinical Fellowship

For physicians only (for now): ACGME-accredited clinical informatics fellowship, leading to board certification:
- Didactic coursework
- Project work
- Clinical practice

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Another important activity is academia-industry collaboration

- Collaboration beyond usual federal grants
- http://www.ohsu.edu/idl

28

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Conclusions

- BMHI is an important science and profession for improving health, healthcare, public health, and biomedical research with data and information
- There are many opportunities for practitioners, researchers, and others

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For more information

- Bill Hersh
  - http://www.billhersh.info
- Informatics Professor blog
  - http://informaticsprofessor.blogspot.com
- OHSU Department of Medical Informatics & Clinical Epidemiology (DMICE)
  - http://www.ohsu.edu/informatics
  - http://www.youtube.com/watch?v=T-74duDDvwU
  - http://oninformatics.com
- What is Biomedical and Health Informatics?
  - http://www.billhersh.info/whatis
- Office of the National Coordinator for Health IT (ONC)
  - http://www.healthit.gov
- American Medical Informatics Association (AMIA)
  - http://www.amia.org
- National Library of Medicine (NLM)
  - http://www.nlm.nih.gov

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