Informatics is Not Just for Clinicians: Opportunities for a Future in Informatics

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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Overview

- Role of health information technology (HIT) and informatics in improving our healthcare system
- Needs and opportunities for a competent professional workforce
- Important recent HIT workforce developments
- Opportunities for education in informatics

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Regardless of your political views, the US healthcare system needs fixin'

- Recent IOM report (Smith, 2012) analyzes data to find annual
  - $750B in waste (out of $2.5T system)
  - 75,000 premature deaths
- Sources of waste
  - Unnecessary services provided
  - Services inefficiently delivered
  - Prices too high relative to costs
  - Excess administrative costs
  - Missed opportunities for prevention
  - Fraud

http://www.iom.edu/Reports/2012/Best-Care-at-Lower-Cost-The-Path-to-Continuously-Learning-Health-Care-in-America.aspx

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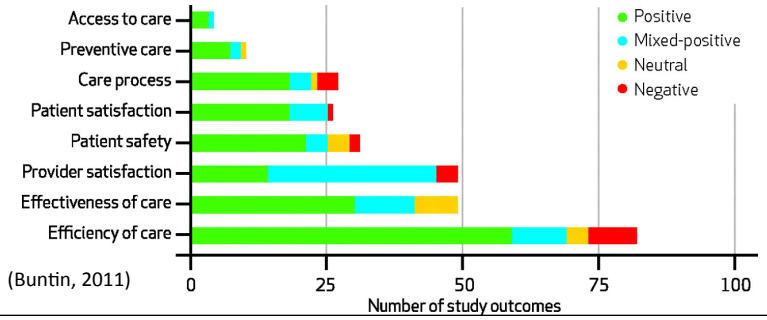
Health information technology (HIT) is part of solution

- Systematic reviews (Chaudhry, 2006; Goldzweig, 2009; Buntin, 2011) have identified benefits in a variety of areas
  - Although 18-25% of studies come from a small number of 'health IT leader" institutions



(Buntin, 2011)

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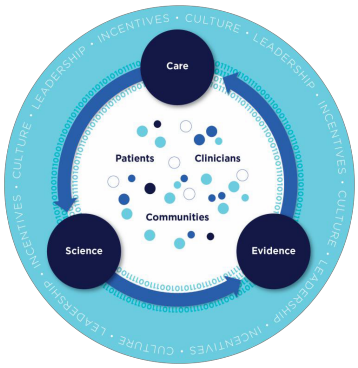

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Why has it been so difficult to get there? (Hersh, 2004)

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.[9] 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

See also p 2255.

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Author Affiliation: Department of Medical Informatics & Clinical Epidemiology, Oregon Health & Science University, Portland.
Corresponding Author: William Hersh, MD, Department of Medical Informatics & Clinical Epidemiology, Oregon Health & Science University School of Medicine, 3181 SW Sam Jackson Park Rd, BICC, Portland, OR 97201-3098 (hersh@ohsu.edu).

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Help was provided by a (then) new US president

*"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 by reducing the deadly but preventable medical errors that pervade our health care system."*

January 5, 2009

Health Information Technology for Economic and Clinical Health (HITECH) Act of the American Recovery and Reinvestment Act (ARRA) (Blumenthal, 2010)

- Incentives for electronic health record (EHR) adoption by physicians and hospitals (up to $27B)
- Direct grants administered by federal agencies ($2B, including $118M for workforce development)

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One of the challenges has been lack of a professional workforce

- 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) – see next slide
- Despite growth of jobs and number trained, shortfalls persist (CHIME, 2012)

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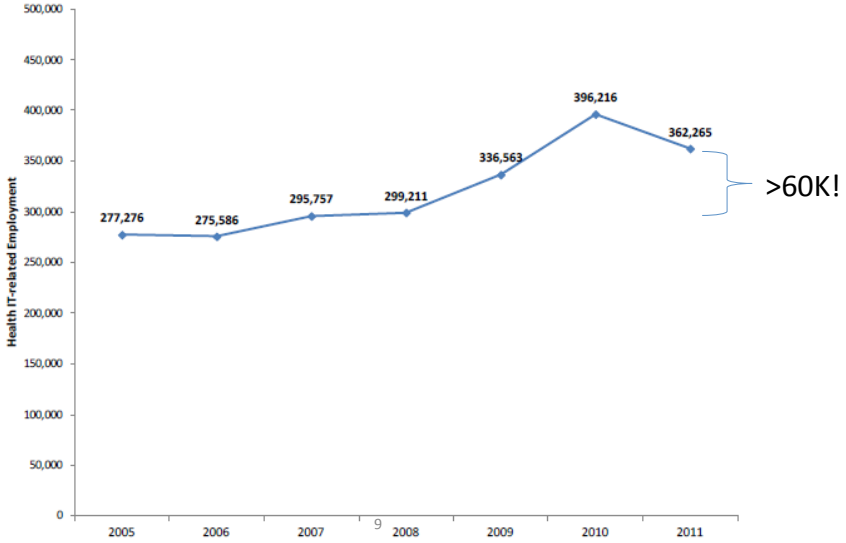
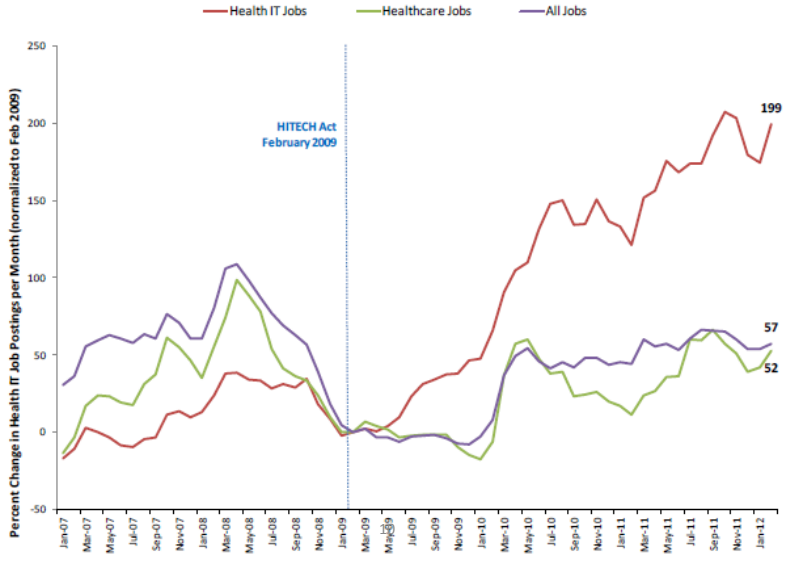
HIT employment growth from Bureau of Labor Statistics (Furukawa, 2012)



Percent change in online health IT job postings per month (Furukawa, 2012)



Demand still persists for experienced health IT staff (CHIME, 2012)

- Skills most often in demand
  - Clinical software implementation and support staff (e.g., EHR, CPOE) – 74%
  - Infrastructure staff – 47%
  - Business software implementation and support staff – 45%
- 71% said IT staff shortages could jeopardize an enterprise IT project, while 58% said they would definitely or possibly affect meeting meaningful use criteria for incentive funding
- 85% also expressed concerns about being able to retain current staff
- 67% were aware of the ONC workforce programs, with 12% of those respondents reporting that they had hired graduates from them

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Important informatics workforce developments

- Office of the National Coordinator for Health IT (ONC) Workforce Development Program
  - Aiming to create the workforce needed to implement the HITECH Act
- Changing nature of informatics work
  - Transition from implementation to analytics
- Certification in health IT and informatics
  - New certifications being added to historical ones from nursing and HIM

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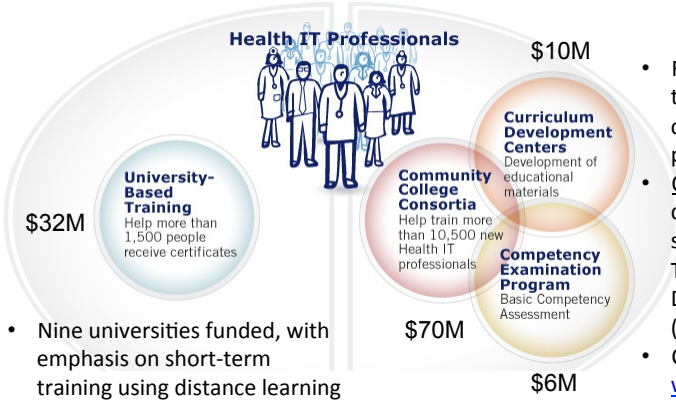
ONC Workforce Development Program

Investment of $118M based on estimated need for 51,000 health IT professionals in 12 workforce roles (half in universities, half in community colleges)



- Nine universities funded, with emphasis on short-term training using distance learning
- OHSU funded to enroll trainees in existing programs

- Five universities funded to develop curricula for community college programs
- OHSU funded to develop curricula and to serve as National Training & Dissemination Center (NTDC)
- Curriculum available at www.onc-ntdc.info

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"Health sector demands for informatics" (PwC, 2012)

Providers	Health insurers	Pharma/LS
•Pay-for-performance reporting •Performance management report cards •Automated transaction system extracts •Clinical dashboards for use at the point of care •New government standardized data definitions •Program for acquiring evidence-based medicine practices and driving these to the bedside and clinic •Personalized medicine •Remote patient monitoring and management	•Operational management to better manage costs and programs •Clinical analytics to support cost and quality programs •Consumer segmentation, to track product performance and support new product and growth sales strategies •Provider network management analytics, to identify and reward strong providers and track network performance •Pay-for-performance analytics to integrate into emerging quality and medical home payment models •Near real-time clinical data for care management; decreased reliance on claims as a source of data for analytics	•Revised research and development •Analytics-based identification of diseases/conditions/populations with unmet therapeutics •Informatics approaches to patient recruitment; virtual clinical trials •Real-world trials post-market •New business models •New approaches to marketing and sales •Real-world comparative effectiveness •Convergence and real-world evidence •Performance-based payment •Outcomes reporting •Personalized medicine

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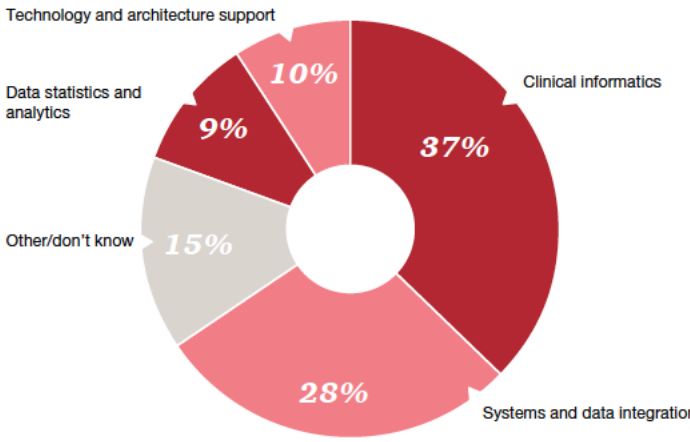
Most important skills needed to achieve HIT priorities (PwC, 2013)



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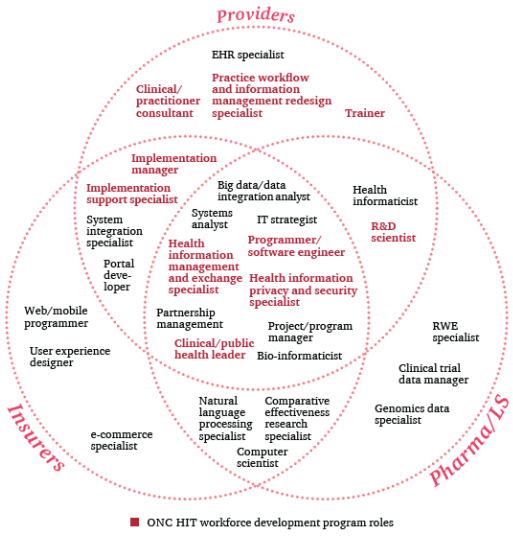
More workforce roles than just those designated by ONC (PwC, 2013)



HIT certifications in clinical and allied health professions

- Physicians – newly designated subspecialty in clinical informatics
  - Subspecialty for those who have primary board certification
  - "Grandfathering" now, clinical fellowships later
  - http://www.theabpm.org/ABPM_Clinical_Informatics.pdf
- Nursing – bachelor's degree with practice experience
  - http://www.nursecredentialing.org/NurseSpecialties/Informatics.aspx
- HIM has many; first three require formal education
  - Registered Health Information Administrator (RHIA)
  - Registered Health Information Technician (RHIT)
  - Certified Coding Specialist/Association (CCS, CCA, CCS-P)
  - Certified Health Data Analyst (CHDA)
  - Certified in Healthcare Privacy and Security (CHPS)
  - Clinical Documentation Improvement Professional (CDIP)
  - http://www.ahima.org/certification/default.aspx

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Certifications specific to HIT

- HIMSS
  - CPHIMS/CAHIMS – Certified Professional/Associate in Healthcare Information & Management Systems
  - http://www.himss.org/getcertified/
- HITPro – developed out of ONC Workforce Development Program but available to anyone
  - http://www.hitproexams.org
- Health IT Certification
  - http://www.healthitcertification.com
- CompTIA
  - http://certification.comptia.org/getCertified/certifications/hittech.aspx

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How do we build the informatics workforce?

- (Hersh, 2009; Hersh, 2010)
- Informatics requires a substantial knowledge of underlying healthcare and biomedicine but not necessarily formal training in these areas
- Let's explore
  - Career pathways
  - OHSU program experience
  - Opportunities to advance your career at OHSU

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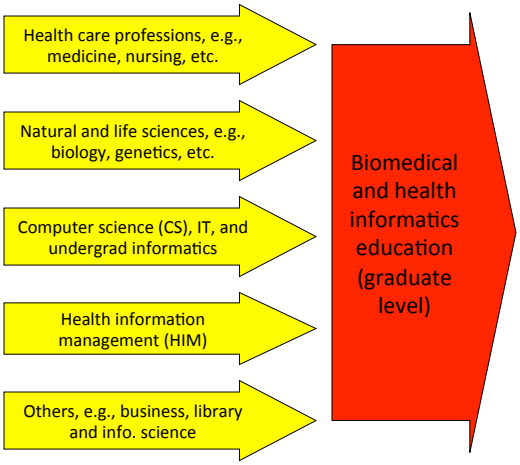
Career pathways have diverse inputs and outputs (Hersh, 2009)



There is no single career pathway, ladder, etc.

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

There are many career opportunities in many settings for all tracks

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Experience of the OHSU program http://www.ohsu.edu/informatics/

- Graduate level programs at Certificate, Master's, and PhD levels (Hersh, 2007)
  - "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 is a partnership with AMIA (Hersh, 2007; Feldman, 2008)
    - Overview and access to demo: http://www.billhersh.info/10x10.html

10x10™ Training Next-Generation Informatics Leaders

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Program 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

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Degrees and certificates offered

- 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

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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

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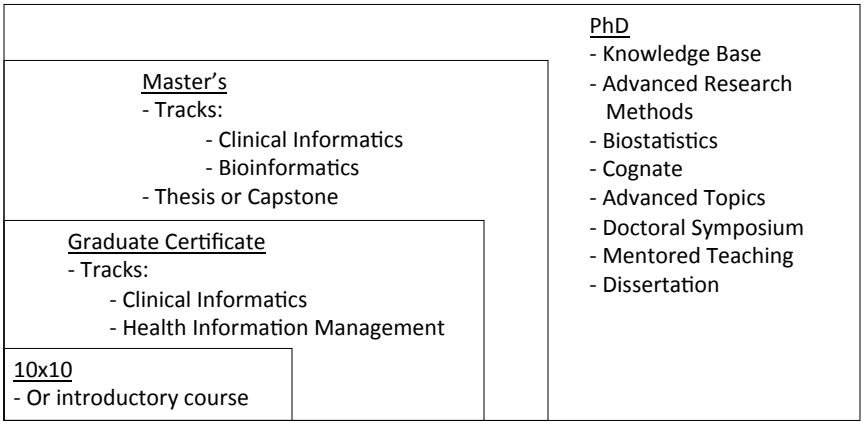
Overview of OHSU graduate programs and "building block" model



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OHSU informatics students come from all over the US (and world)

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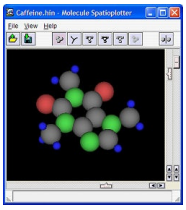
Opportunities in informatics are not limited to healthcare

- Bioinformatics – genomics and personalized medicine (Altman, 2012)
- Clinical and translational research – building the "learning" healthcare system (Richesson, 2012)
- Public health – protecting the public and promoting health (Araujo, 2009)
- Consumer health – for all ages, especially aging Internet-savvy baby boomers (Detmer, 2008; Miller, 2009)
- Imaging informatics – use of images for biomedical research, clinical care, etc. (Bui, 2010)



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OHSU can help advance your career – Employee Tuition Benefit Program

- https://o2.ohsu.edu/human-resources/documents/upload/tuition-benefit-program.pdf
- Graduate Certificate and MBI are part of program, which provides $150 per credit hour up to $5250 per year
- Current tuition and fees for distance learning programs, Oregon residents
  - ~$2085 per 3-credit course
  - ~$16K/$35K for Graduate Certificate/MBI
  - Tuition and fees lower for on-campus students but overall higher when add in health insurance and other fees
  - Out-of-state tuition about 15% higher

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Conclusions

- Achieving the learning healthcare system will require informatics tools and professionals
- The grand experiment of HITECH is going on in the US – results not yet in
- There is continued need and career opportunity for informatics professionals, researchers, and others
- From implementation to analytics – now that adoption is widespread, work of informatics will change to make beneficial use of data and information

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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://healthit.hhs.gov
- American Medical Informatics Association (AMIA)
  - http://www.amia.org
- National Library of Medicine (NLM)
  - http://www.nlm.nih.gov

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