

Finding the Future Workforce to Support Data-Driven Healthcare

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 to improve health and healthcare
- Need for a professional workforce and programs to develop it
- Future directions for the workforce in data-driven healthcare



2

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

- Recent IOM report (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

BEST CARE AT LOWER COST

The Path to Continuously Learning Health Care in America

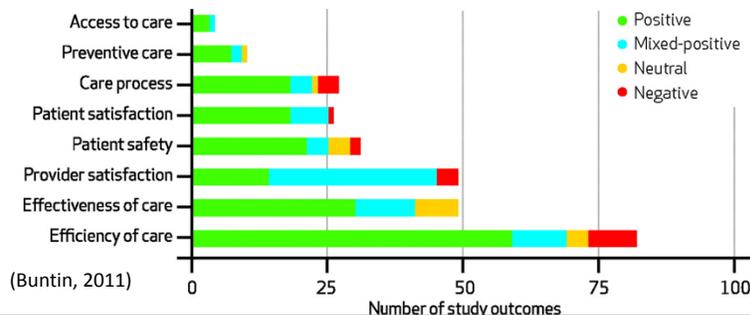
WHAT'S POSSIBLE FOR HEALTH CARE?



3

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



HIT and informatics are required for the learning healthcare system

- Components of the learning healthcare system (IOM, 2012)
 - Records immediately updated and available for use by patients
 - Care delivered that has been proven “reliable at the core and tailored at the margins”
 - Patient and family needs and preferences are a central part of the decision process
 - All healthcare team members are fully informed about each other’s activities in real time
 - Prices and total costs are fully transparent to all participants in the care process
 - Incentives for payment are structured to “reward outcomes and value, not volume”
 - Errors are promptly identified and corrected
 - Outcomes are routinely captured and used for continuous improvement



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Informatics plays a role at every step of the learning healthcare system

- Clinical research informatics (CRI)
- Bioinformatics and personalized medicine
- Public health informatics
- Imaging informatics
- Information retrieval (search) and digital libraries
- Evidence-based medicine (EBM)
- Natural language processing (NLP)
- Standards and interoperability
- Electronic health records (EHRs)
- Clinical decision support (CDS)
- Computerized provider order entry (CPOE)
- Healthcare quality and improvement
- Health information exchange (HIE)
- Privacy and security
- Telemedicine
- Personal health records (PHRs)
- Analytics and business intelligence



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 aimed at

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 innovation can lead to changes in the way medicine is practiced.

- 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

See also p 2255.

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

Author Affiliations: 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, BEC, Portland, OR 97201-3098 (hersh@ohsu.edu).

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Helped was provided by a new US president



updated 7:42 a.m. EST, Mon January 12, 2009



Obama's big idea: Digital health records

President-elect Barack Obama, as part of his effort to revive the economy, is proposing a massive effort to modernize health care by making all health records standardized and electronic. The government estimates about 212,000 jobs could be created by this program. CNNMoney reports. [Full story](#)

"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

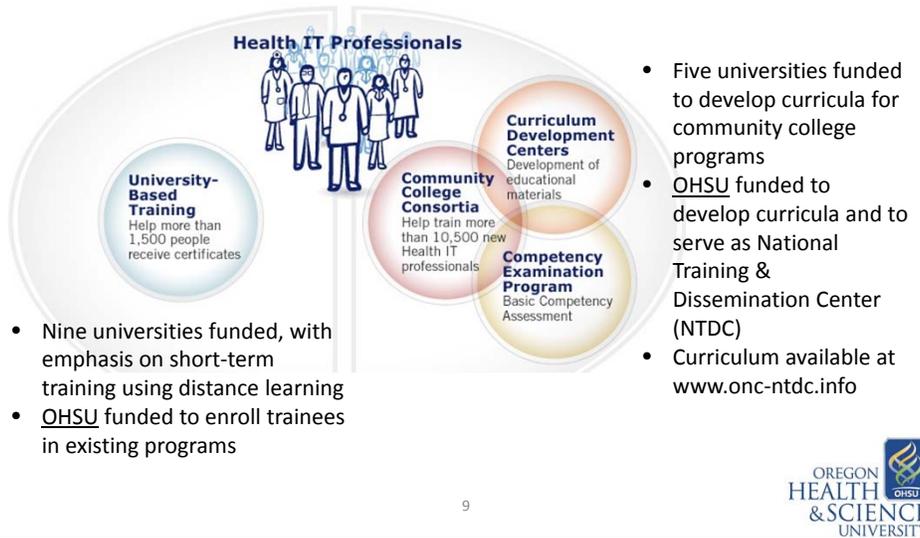
Health Information Technology for Economic and Clinical Health (HITECH) Act of the American Recovery and Reinvestment Act (ARRA) (Blumenthal, 2010)

- 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)



ONC Workforce Development Program

Based on estimated need for 51,000 professionals in 12 workforce roles (Hersh, 2012)



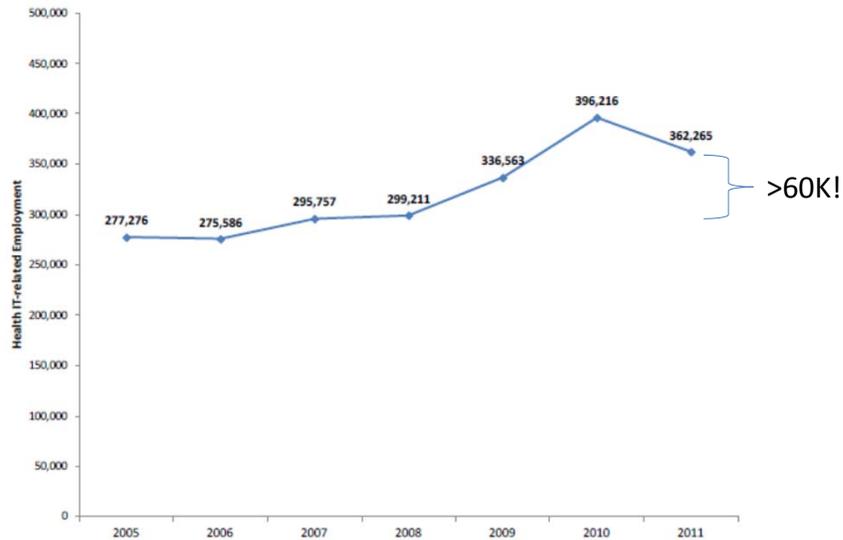
- Nine universities funded, with emphasis on short-term training using distance learning
- OHSU funded to enroll trainees in existing programs

- 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

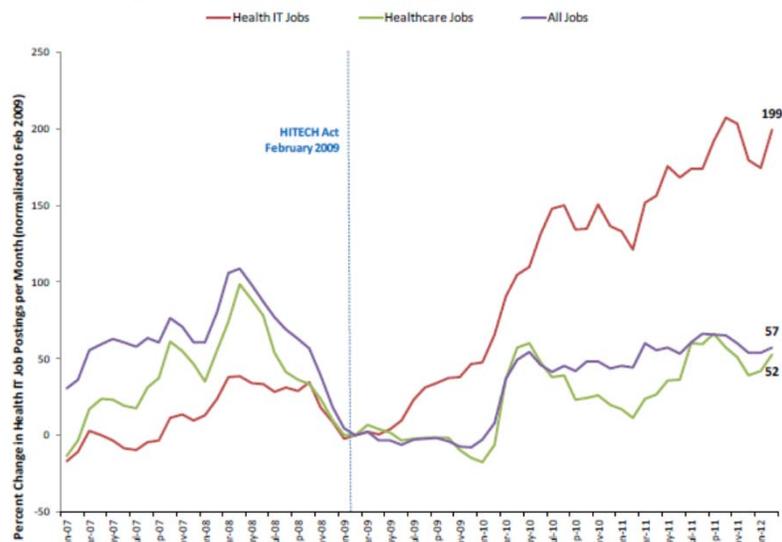
One of the challenges has been lack of a professional workforce

- 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)

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



Opportunities for career development and study in informatics

- Educational programs at growing number of institutions
 - <http://www.amia.org/education/programs-and-courses>
- OHSU program one of largest and well-established (Hersh, 2007)
 - <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
- Formal certification in various disciplines
 - Baccalaureate certification in nursing informatics for many years
 - Long-standing certification in HIM, e.g., CCS, RHIT, RHIA
 - New subspecialty for physicians recently approved (Shortliffe, 2011)



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 began as OHSU-AMIA partnership (Hersh, 2007; Feldman, 2008)
 - Overview and access to demo: <http://www.billhersh.info/10x10.html>
 - Significant minority of these adult learners do not complete a program but still use knowledge and skills gained

10x10TM
Training Next-Generation Informatics Leaders

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Other important workforce developments

- From implementation to analytics
 - Now that adoption is widespread, work of informatics must change to make beneficial use of data and information (Haugen, 2010; Hersh, 2012)
- Clinical informatics subspecialty
 - Professional recognition for growing number of physicians who “practice” clinical informatics, exemplified by the Chief Medical Informatics Officer (CMIO) (Shortliffe, 2011)

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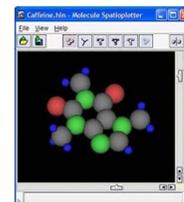
Clinical informatics subspecialty for physicians

- History
 - 2009 – AMIA develops and publishes plans for curriculum (Gardner, 2009) and training requirements (Safran, 2009)
 - 2011 – ABMS approves; ABPM becomes administrative home
 - 2013 – first certification exam
- Will follow usual path of five years of “grandfathering” training requirements to take certification exam before formal fellowships required
 - Practice pathway and non-traditional fellowships; ABPM to define rules
- Some concerns (Hersh, 2012)
 - Age at which many physicians enter informatics
 - Ability of programs to provide both education and training
 - Who will pay?



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)



Conclusions

- There is continued need and career opportunity for informatics professionals, researchers, and others
- Achieving the data-driven learning healthcare system will require informatics tools and professionals
- The grand experiment of HITECH is going on in the US – results not yet in

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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-74duDDvU>
 - <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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