Clinical Informatics: Update for OHSU Medical Students

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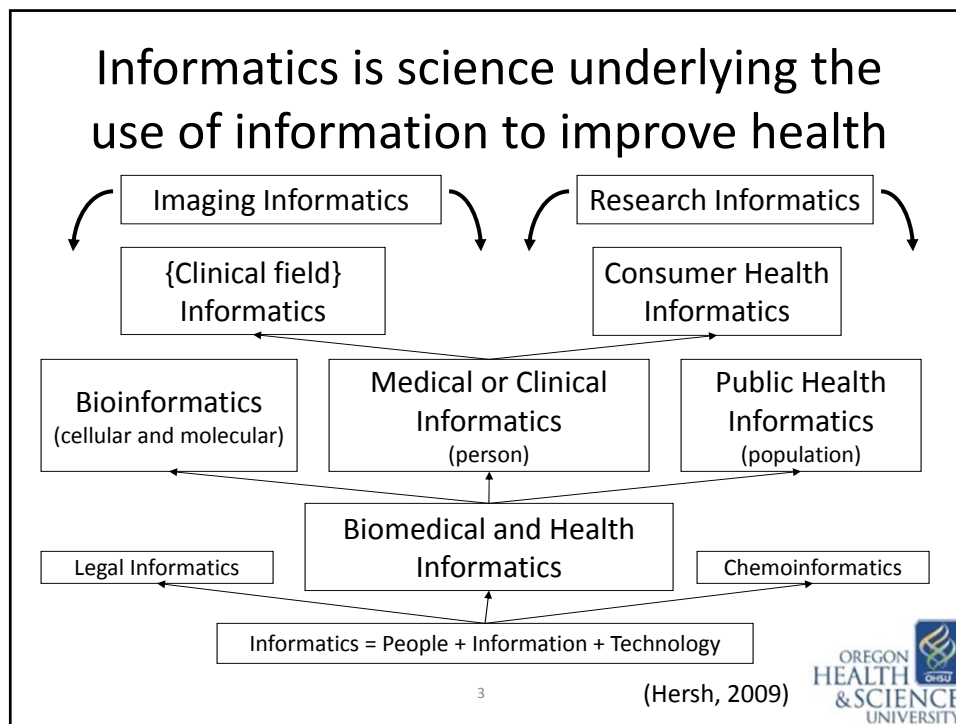Blog: informaticsprofessor.blogspot.com

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Outline of talk

- Biomedical and health informatics defined
- HITECH and meaningful use
- Clinical informatics subspecialty
- What is the evidence for all this?

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Informatics is science underlying the use of information to improve health

Imaging Informatics	Research Informatics

{Clinical field} Informatics	Consumer Health Informatics

Bioinformatics (cellular and molecular)	Medical or Clinical Informatics (person)	Public Health Informatics (population)

Legal Informatics	Biomedical and Health Informatics	Chemoinformatics

Informatics = People + Information + Technology

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(Hersh, 2009)

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Informatics at OHSU

- Department of Medical Informatics & Clinical Epidemiology (DMICE)
  - http://www.ohsu.edu/informatics
  - One of 25 departments of School of Medicine
  - An academic department focused on research and education
- Distinct from
  - Information Technology Group (ITG) – enterprise-wide IT, e.g., network, email, server and desktop support, etc.
  - OHSU Hospital & Clinics Clinical Informatics Department – operational clinical applications, mainly Epic

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Received a big boost in 2009 with arrival of a new US president

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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 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

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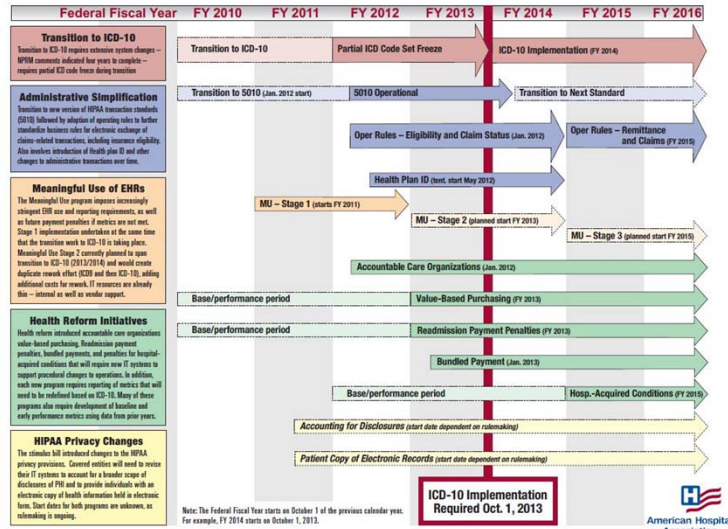
Leading the US to enter a new "ARRA"

- 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 and their "meaningful use" (MU) by physicians and hospitals (up to $27B)
  - Direct grants administered by federal agencies ($2B)
- Other provisions in other areas of ARRA, e.g.,
  - Comparative effectiveness research
  - NIH and other research funding
  - Broadband and other infrastructure funding

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MU is just one of several challenges

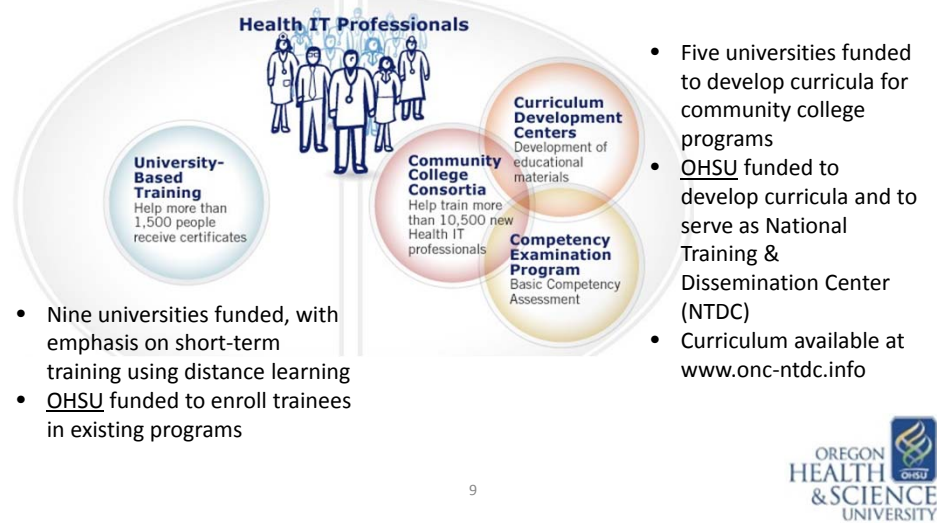http://www.aha.org/advocacy-issues/hit/mu/overvw-time.shtml

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Other HITECH funding initiatives

- HIT Regional Extension Centers (RECs)
  - $677 million to fund 62 RECs that will provide guidance, mainly to small primary care practices and critical access hospitals, in achieving meaningful use (Maxson, 2010)
- State-based health information exchange (HIE)
  - $547 million in grants to states to develop HIE programs (Kuperman, 2010)
- Beacon communities
  - $250 million to fund 17 communities that provide exemplary demonstration of the meaningful use of EHRs (McKethan, 2011)
- Strategic health information advanced research projects (SHARP)
  - $60 million for four collaborative research centers

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ONC Workforce Development Program

Based on estimated need for 51,000 professionals in 12 workforce roles

- 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

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

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Subspecialty of clinical informatics

- Recognition of importance of electronic health records and other IT applications focused on facilitating clinical care, clinical and translational research, quality improvement, etc. (Detmer, 2010)
- Growing number of health care organizations hiring physicians into informatics roles, exemplified by (but not limited to) the Chief Medical Informatics Officer (CMIO), e.g., Tom Yackel
- Approval by ABMS in Sept., 2011 to apply to all specialties (Shortliffe, 2011)
  – Administrative board: American Board of Preventive Medicine (ABPM) with cooperation from American Board of Pathology (ABP)

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Qualifications

- MD degree from LCME-accredited institution
- Current valid license to practice medicine
- ABMS member board certification
- Training pathway, one of
  - ACGME-accredited fellowship
    - None yet; criteria soon
  - Practice pathway (first five years)
    - Minimum of 25% time over 36 months
  - Non-accredited fellowship (first five years)

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Next steps

- ABPM
  - Define explicit criteria for "grandfathering" of training requirements
  - Develop certification exam, with first likely administration in late 2012 or early 2013
- ACGME
  - Define criteria for accredited fellowships
- Institutions like OHSU with existing graduate programs and research fellowships
  - Adapt programs to new requirements

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## What's the evidence for the value of informatics?

- What are the problems motivating information-driven solutions?
  - Quality – not as good as it could be (McGlynn, 2003; Schoen, 2009; NCQA, 2010)
  - Safety – errors cause morbidity and mortality; many preventable (Kohn, 2000; Classen, 2011; van den Bos, 2011)
  - Cost – rising costs not sustainable; US spends more but gets less (Angrisano, 2007)
  - Inaccessible information – missing information frequent in primary care (Smith, 2005)

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Growing evidence that information interventions are part of solution

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

(Buntin, 2011)
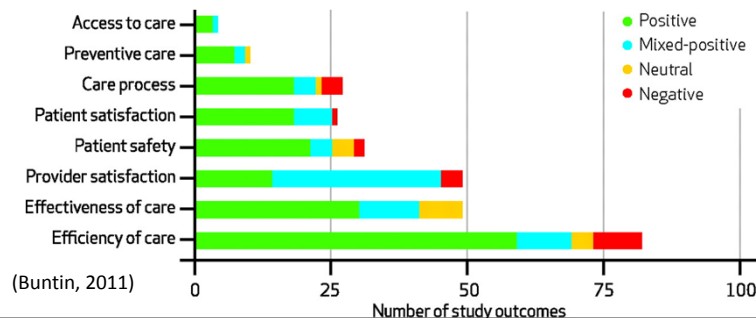
But it has been difficult to get there (Hersh, 2004)

Health Care Information Technology
Progress and Barriers

William Hersh, MD

IN THE 3 DECADES SINCE THE TERM "MEDICAL INFORMAT-ics" 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 innovation can lead to changes in the way medicine is practiced.

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

care IT.[89] 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.

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

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US has low rates of adoption in inpatient and outpatient settings

- Adoption in the US is low for both outpatient (Hsiao, 2011) and inpatient settings (Jha, 2010) though improving
- By most measures, US is a laggard and could learn from other countries (Schoen, 2009)
- Most other developed countries have undertaken ambitious efforts, e.g.,
  - England (Hayes, 2008)
  - Denmark (Protti, 2010)
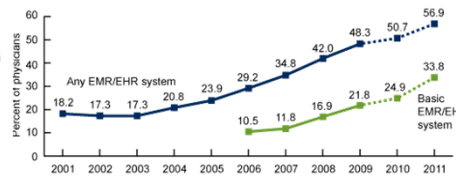
(Hsiao, 2011)

(Schoen, 2009)

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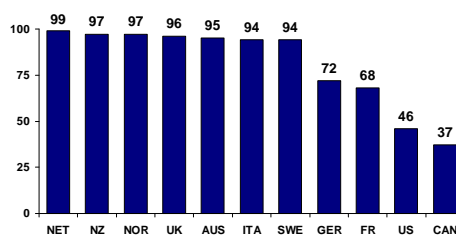
EHRs also allow and align "secondary use" (or "re-use") of clinical data

- Additional uses of EHR data include (Safran, 2007)
  - Clinical and translational research – generating hypotheses and facilitating research
  - Healthcare quality measurement and improvement
  - Personal health records (PHRs)
  - Health information exchange (HIE)
  - Public health surveillance for emerging threats
- One important tool for re-use of clinical data is *natural language processing* (NLP), which has been challenging but is seeing growing successes (Stanfill, 2010; Nadkarni, 2011; Chapman, 2011)

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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
  - Most resources in clinical informatics but plenty of other opportunity in bioinformatics, public health informatics, consumer health informatics, clinical research informatics, imaging informatics, etc.
- The grand experiment of HITECH is going on in the US – results not yet in
- There are many opportunities for practitioners, researchers, and others in BMHI

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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://www.informatics-scholarship.info
  - 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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