

Welcome!
We'll get started shortly.
WICHE ICE Webinar

Health IT Collaborative Initiative

HOW TO PARTICIPATE

- Please hold questions until the end.
- We'll ask group hosts to pose questions via conference call first.
- Individuals may pose questions via the chat box.
- To send a private message to a colleague, use the chat box and select name of individual.

WICHE Internet Course Exchange

Pat Shea & Dr. William Hersh • December 8, 2009 • 12:30 pm MTN

Webinar Health IT Collaborative Initiative

*Addressing Workforce Needs
in the West*



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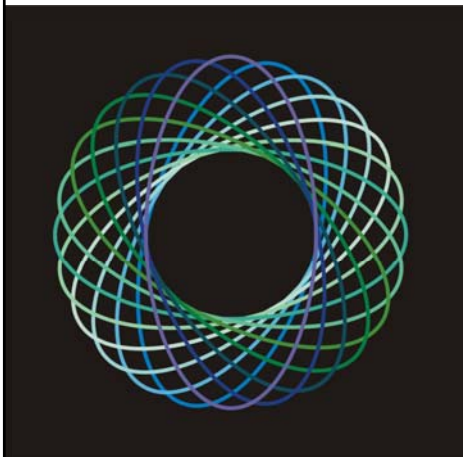
WICHE



Western Interstate Commission for Higher Education

- 1952 – WICHE founded by U.S. Congress
- WICHE mission: to expand educational access and excellence for all the West's citizens by promoting innovation, cooperation, resource sharing, and sound public policy

Mission of WICHE ICE



WICHE ICE creates opportunities for students to seamlessly access **through their home institution** high quality online courses and programs offered by accredited **four-year** and **two-year** institutions throughout the WICHE region and beyond.

Today's Speaker



Dr. William Hersh

Professor and Chair of the Department of Medical Informatics & Clinical Epidemiology in the School of Medicine at Oregon Health & Science University

Conceptualized and implemented the first offering of the AMIA 10x10 program

Leads an active research program, with recent efforts focusing on characterizing the health information technology workforce.

Health Information Technology: The Need for a Competent Workforce

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Overview of talk

- Health information technology (HIT) workforce: what we know and should know
- What education and certification should HIT and informatics professionals have?
- What must we do to expand and improve the workforce?

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The biggest advocate for HIT

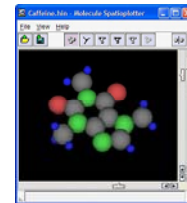
- “To improve the quality of our health care while lowering its cost, we will make the immediate investments necessary to ensure that within five years, all of America’s medical records are computerized ... It just won’t save billions of dollars and thousands of jobs – it will save lives.” (1/5/09)
- The American Recovery and Reinvestment Act (ARRA) allocates \$40 billion to the Office of the National Coordinator for Health IT (ONC) for “meaningful use” of HIT though
 - Adoption of electronic health records (EHRs)
 - Health information exchange (HIE)
 - Infrastructure
 - Regional extension centers – 70 in country
 - Workforce development (Section 3016)



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Opportunities are not limited to healthcare

- Bioinformatics – genomics and personalized medicine
- Clinical and translational research – building a “learning” healthcare system
- Public health – protecting the public and promoting health, e.g., H1N1 surveillance
- Consumer health – for all ages, especially aging Internet-savvy baby boomers
- Imaging informatics – better use of images for biomedical research, clinical care, etc.



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What exactly is biomedical and health informatics? (Hersh, 2009)

- Emerging discipline, based on the growing recognition of the distinction between
 - IT – generic skill sets to deploy and maintain networks, servers, devices, etc.
 - Informatics – domain-specific (in this case, biomedical- and health-related) focus on use of information to improve individual health, healthcare, biomedical research, and other areas
- Many (too many) “flavors” of informatics, all of which have core fundamental similarities
 - e.g., health, medical, clinical, biomedical, etc.

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Informatics has been called one of ten “ahead of the curve” careers

Careers that are “relatively new, already viable, and promise further growth...”
(Nemko, 2008)

The screenshot shows the top portion of a U.S. News & World Report article. The header includes the publication name, date (Wednesday, February 6, 2008), and navigation tabs for various categories. The article title is 'Best Careers' with a sub-header 'Ahead of the Curve: Health Informatics Specialist'. The author is listed as Marty Nemko, and the article was posted on December 19, 2007. The text begins with a quote from Merida Johns, a health informatics specialist at the University of Alabama-Birmingham, stating that the job market for health informatics is 'absolutely out of sight'. It notes that hospitals, insurers, and regional collaboratives are switching to electronic medical records, and that nurses and doctors are using computerized expert systems for diagnosis and treatment recommendations.

Despite the benefits, there are barriers and challenges to HIT (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 improving patient care, and also cataloging 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.¹² It is no exaggeration to declare that the years ahead portend the “decade of health information technology.”¹³ 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

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



Why do we need to know about the HIT workforce?

- Systematic reviews of HIT benefits show 20-25% of all studies done at 4 medical centers (Chaudhry, 2006; Goldzweig, 2009)
- Problematic HIT implementations well-known, with failure usually attributable to lack of understanding of clinical environment and workflow (Leviss, 2009)
- Case study: implementation of computerized physician order entry (CPOE) showed adverse consequences
 - Mortality rate increased from 2.8% to 6.6% at Children’s Hospital of Pittsburgh Pediatric ICU (Han,2005)
 - Increased mortality not seen at other academic centers (Del Baccaro, 2006; Jacobs, 2006)
 - Pittsburgh adverse outcome may have been avoided with adherence to known “best practices” (Phibbs, 2005; Sittig, 2006)

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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
 - Clinical informatics (CI) – often from healthcare backgrounds
 - Others – librarians, trainers, etc.
- Most research about workforce has focused on professional groupings (usually IT or HIM staffing)

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What do the data show?

- Mostly done in hospital settings; usually focused on one (of three main) groups
 - IT
 - Gartner study of US-based integrated delivery systems
 - Study of HIMSS Analytics Database™
 - HIM
 - Bureau of Labor Statistics data
 - CI
 - Mainly estimates
- Recent work focused on needs for the ARRA EHR agenda
- Also international studies from England, Australia, and Canada, which have taken broader view, i.e., include all HIT personnel

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Gartner on IT staffing in integrated delivery systems (Shaffer, 2008)

- About 2.1% of organizational FTE in IT, i.e., one IT staff per 48 non-IT employees
- Typical IT job functions include
 - Programmer/analyst – 49%
 - Management – 15%
 - Technical support/help desk – 13%
 - Computer operations – 8%
 - Telecommunications/ network support – 7%
 - Administration – 3%
 - Security – 2%

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HIMSS Analytics study

(Hersh and Wright, 2008)

- Question: How many IT personnel do we need?
- Answered 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 (as well as broken down by major IT job categories), applications, and the vendors used for those applications
 - EMR Adoption Model™, which scores hospitals on eight stages to creating a paperless record environment

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HIMSS Analytics EMR Adoption Model™

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

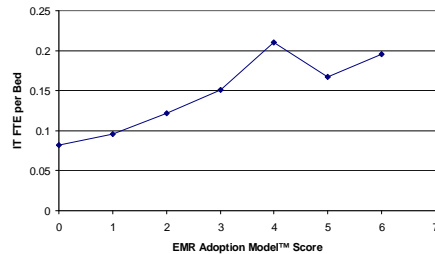
Stage 7	Medical record fully electronic; CDO able to contribute to EHR as byproduct of EMR
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS
Stage 5	Closed loop medication administration
Stage 4	CPOE, CDSS (clinical protocols)
Stage 3	Clinical documentation (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

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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 2006-2016 (Dohm, 2007)
 - Medical Records and Health Information Technicians – about 170,000 employed now, increasing to 200,000 by 2016 (17.8% growth)
 - Need 76,000 employed for growth and net replacements

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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)

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Case study of two Oregon health systems (Jacobs, under review)

- Semi-structured interviews of leadership and managers
- Key qualifications for CI professionals included
 - Clinical training or exposure and an understanding of clinical workflow
 - Soft skills, including “culture fit,” service and team orientation, communication skills, patience, and adaptability to a rapidly changing environment
 - Aptitude for technology learning and appreciation of data rather than highly advanced technical skills or a computer science background
 - Six Sigma, Lean, and Change Management training
 - Baccalaureate degree as a baseline

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HIT workforce needs for the ARRA agenda (i.e., health care reform)

- **ONC Coordinator Blumenthal has estimated need for 50,000 workers** (Monegain, 2009)
- **Categories of workers needed** (ONC, 2009)
 1. Implementation technical support staff
 2. Implementation support managers
 3. Workflow redesign specialists
 4. Clinical consultants
 5. Software support specialists
 6. Trainers

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HIT workforce in other countries

- **England** (Eardley, 2006)
 - Estimated 25,000 FTEs out of 1.3 million workers in English NHS
 - One IT staff per about 52 non-IT workers
 - Future people and skills shortages anticipated
- **Australia** (Legg, 2009)
 - Distinguishes those who work “in” and “on” the system
 - Estimated 9,000-15,000 workers (one estimate based on 1:50 ratio)
 - Anticipated shortage, to be addressed through increased supply, improved productivity, and reduced demand (through system design)
- **Canada** (O’Grady, 2009)
 - Seven categories (including IT, HIM, and informatics)
 - Estimated 29,000-36,000 workers with 7-26% expansion by 2014 based on different growth scenarios
 - Also estimated need for further training and experience by 27% now and 38-79% by 2014 under various growth scenarios

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How do we build the workforce? Education and training!

- Historically mostly 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
 - Educational level
 - Competencies
 - Career pathways

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What education should informatics professionals have?

- Healthcare Informatics (Vendome, 2009) has found following distribution of degrees
 - Leadership - 18% have doctoral or professional degrees, 48% have master's degrees
 - Clinical/High Authority - 34% have doctoral or professional degrees, 29% have master's degrees, and 30% have bachelor's degrees
 - Clinical/Low Authority - 20% have doctoral or professional degrees, 31% have master's degrees, and 35% have bachelor's degrees
 - Non-Clinical/High Authority - 36% have master's degrees, and 38% have bachelor's degrees
 - Non-Clinical/Low Authority - 24% have master's degrees, and 51% have bachelor's degrees
- AHIMA Vision 2016 aims for entry level of HIM to be at master's degree level

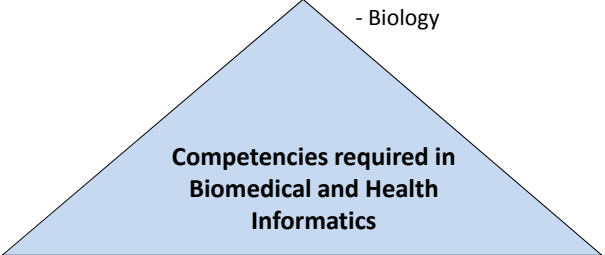
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What competencies should those professionals have? (Hersh, 2009)

Health and biological sciences:

- Medicine, nursing, etc.
- Public health
- Biology



Competencies required in Biomedical and Health Informatics

Management and social sciences:

- Business administration
- Human resources
- Organizational behavior

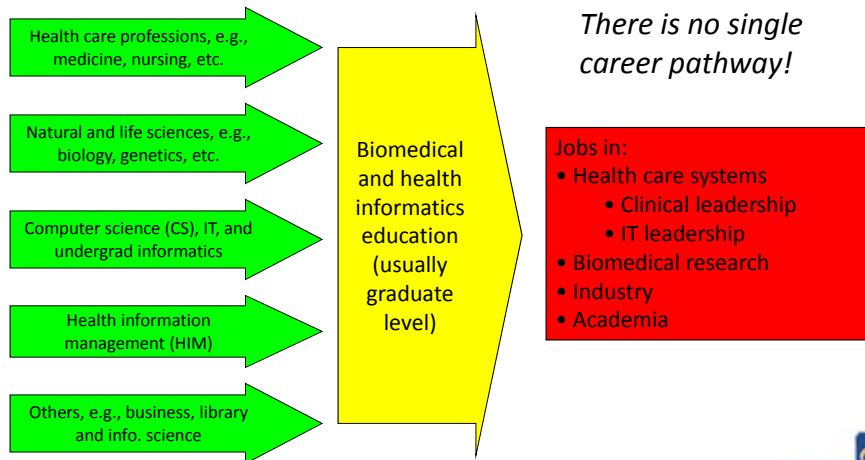
Computational and mathematical sciences:

- Computer science
- Information technology
- Statistics



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



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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
- Most 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

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What about certification?

- Present in nursing for nearly a decade
- Board sub-certification coming for board-certified physicians (Gardner, 2009; Sarfan, 2009)
- Needed or desired for others?
 - AMIA evaluating certification of other doctoral-level professionals (healthcare doctorates, PhDs)
 - CAHIIM assessing certification of master's-level professionals

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ARRA Section 3016 funding (<http://healthit.hhs.gov/HITECHgrants>)

- Recognizes need for adequate workforce to achieve success of EHR adoption goals
 - Calls for “short-term” training to quickly ramp up
 - Original OHSU view: Graduate Certificate program in 6 months
- ONC aims to train 10,000 workers through two funding opportunities (FOAs)
 - EP-HIT-10-001 will establish 5 regional consortia of community colleges to develop 6-month certificate programs for the 6 job roles
 - EP-HIT-10-003 will fund 5 centers to develop curricula for the community college consortia
- Summary and analysis on my blog
 - <http://informaticsprofessor.blogspot.com/2009/12/section-3016-has-arrived.html>

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Conclusions

- Informatics is maturing as a discipline and profession
 - The field has an emerging identity
- There are tremendous opportunities now and in the future
 - A competent and well-trained workforce is required
- Although education has historically been at the graduate level, there are growing numbers of undergraduate and community college “informatics” programs, for which there are concerns
 - CI requires broad competencies
 - Informatics is not just IT/CS + HIM + healthcare, but the synergies among them
- Stay tuned for the results of this exciting “experiment” in the years ahead!

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For more information

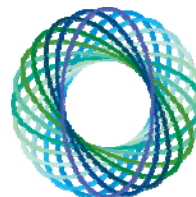
- Bill Hersh
 - <http://www.billhersh.info>
- Informatics Professor blog
 - <http://informaticsprofessor.blogspot.com>
- OHSU Department of Medical Informatics & Clinical Epidemiology (DMICE)
 - <http://www.ohsu.edu/dmice>
 - <http://oninformatics.com>
- What is BMHI?
 - <http://www.billhersh.info/whatis>
- 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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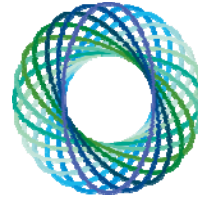
ICE Collaborative Opportunities

- Exchange seats in existing courses
- Exchange entire courses
- Jointly create & offer new program
- Seek funding



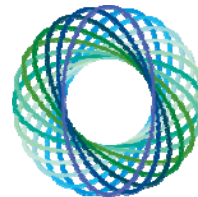
Questions & Ideas for Collaboration?

- ICE Members
 - Adams State University: Diana Wentzel
 - Boise State University: Mark Wheeler
 - University of Alaska Anchorage: Tom Miller
 - University of Alaska Fairbanks: Curt Madison
 - University of Wyoming: Scott Seville
- Other groups?
- Individuals?



Next Steps

- Determine interest in affinity group participation
- Establish faculty affinity groups to identify opportunities for sharing
- Seek funding for collaborative efforts



Thank you!

Pat Shea

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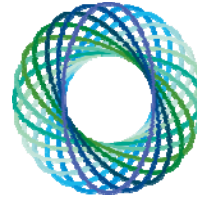
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