

Health IT Workforce in the Post-HITECH Era: Challenges and Opportunities

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: <http://informaticsprofessor.blogspot.com>

References

- Altman, RB (2012). Translational bioinformatics: linking the molecular world to the clinical world. *Clinical Pharmacology and Therapeutics*. 91: 994-1000.
- Anonymous (2012). Demand Persists for Experienced Health IT Staff. Ann Arbor, MI, College of Healthcare Information Management Executives. http://www.cio-chime.org/chime/press/surveys/pdf/CHIME_Workforce_survey_report.pdf
- Anonymous (2012). Needles in a haystack: Seeking knowledge with clinical informatics, PriceWaterhouseCoopers. <http://www.pwc.com/us/en/health-industries/publications/needles-in-a-haystack.jhtml>
- Anonymous (2013). 2013 HIMSS Workforce Survey. Chicago, IL, HIMSS Analytics. <http://www.himssanalytics.com/research/AssetDetail.aspx?pubid=82097&tid=128>
- Anonymous (2013). Closing the IT Talent Gap in Health Care - The Towers Watson 2013 Health Care IT Survey Report, Towers Watson. <http://www.towerswatson.com/en/Insights/IC-Types/Survey-Research-Results/2013/03/Closing-the-IT-Talent-Gap-in-Health-Care>
- Anonymous (2013). Solving the talent equation for health IT, PriceWaterhouseCoopers. <http://www.pwc.com/us/HITalent>
- Bui, AAT and Taira, RK, Eds. (2010). *Medical Imaging Informatics*. New York, NY, Springer.
- Buntin, MB, Burke, MF, et al. (2011). The benefits of health information technology: a review of the recent literature shows predominantly positive results. *Health Affairs*. 30: 464-471.
- Chaudhry, B, Wang, J, et al. (2006). Systematic review: impact of health information technology on quality, efficiency, and costs of medical care. *Annals of Internal Medicine*. 144: 742-752.
- Detmer, D, Bloomrosen, M, et al. (2008). Integrated personal health records: transformative tools for consumer-centric care. *BMC Medical Informatics & Decision Making*. 8: 45. <http://www.biomedcentral.com/1472-6947/8/45>
- Furukawa, MF, Vibbert, D, et al. (2012). HITECH and Health IT Jobs: Evidence from Online Job Postings. Washington, DC, Office of the National Coordinator for Health Information Technology. http://www.healthit.gov/sites/default/files/pdf/0512_ONCDDataBrief2_JobPostings.pdf
- Gardner, RM, Overhage, JM, et al. (2009). Core content for the subspecialty of clinical informatics. *Journal of the American Medical Informatics Association*. 16: 153-157.
- Goldzweig, CL, Towfigh, A, et al. (2009). Costs and benefits of health information technology: new trends from the literature. *Health Affairs*. 28: w282-w293.
- Hersh, W (2004). Health care information technology: progress and barriers. *Journal of the American Medical Association*. 292: 2273-2274.
- Hersh, W (2012). Challenges for Building Capacity of the Clinical Informatics Subspecialty. *Informatics Professor*, September 29, 2012. <http://informaticsprofessor.blogspot.com/2012/09/challenges-for-building-capacity-of.html>

Hersh, W (2012). From Implementation to Analytics: The Future Work of Informatics. *Informatics Professor*, April 1, 2012. <http://informaticsprofessor.blogspot.com/2012/04/from-implementation-to-analytics-future.html>

Hersh, W (2012). Update on the ONC for Health IT Workforce Development Program. HIMSS Clinical Informatics Insights, July, 2012. <http://www.himss.org/ASP/ContentRedirector.asp?ContentId=80559&type=HIMSSNewsItem;src=cii20120709>

Hersh, W (2013). Eligibility for the Clinical Informatics Subspecialty. *Informatics Professor*, January 11, 2013. <http://informaticsprofessor.blogspot.com/2013/01/eligibility-for-clinical-informatics.html>

Hersh, W (2013). Gimme Some Analytics (We Already Have It!). *Informatics Professor*, October 11, 2013. <http://informaticsprofessor.blogspot.com/2013/10/gimme-some-analytics-we-already-have-it.html>

Hersh, WR and Wright, A (2008). What workforce is needed to implement the health information technology agenda? An analysis from the HIMSS Analytics™ Database. *AMIA Annual Symposium Proceedings*, Washington, DC. American Medical Informatics Association. 303-307.

Hsiao, CJ and Hing, E (2012). Use and Characteristics of Electronic Health Record Systems Among Office-based Physician Practices: United States, 2001-2012. Atlanta, GA, National Center for Health Statistics, Centers for Disease Control and Prevention. <http://www.cdc.gov/nchs/data/databriefs/db111.htm>

King, J, Patel, V, et al. (2012). Physician Adoption of Electronic Health Record Technology to Meet Meaningful Use Objectives: 2009-2012. Washington, DC, Office of the National Coordinator for Health Information Technology. <http://www.healthit.gov/sites/default/files/onc-data-brief-7-december-2012.pdf>

Magnuson, JA and Fu, PC (2014). *Public Health Informatics and Information Systems*. New York, NY, Springer.

Miller, HD, Yasnoff, WA, et al. (2009). *Personal Health Records: The Essential Missing Element in 21st Century Healthcare*. Chicago, IL, Healthcare Information and Management Systems Society.

Richesson, RL and Andrews, JE, Eds. (2012). *Clinical Research Informatics*. New York, NY, Springer.

Safran, C (2009). Informatics training for clinicians is more important than hardware and software. *IMIA Yearbook of Medical Informatics 2009*. A. Geissbuhler and C. Kulikowski. Heidelberg, Germany, Schattauer: 164-165.

Schoen, C, Osborn, R, et al. (2012). A survey of primary care doctors in ten countries shows progress in use of health information technology, less in other areas. *Health Affairs*. 31: 2805-2816.

Schwartz, A, Magoulas, R, et al. (2013). Tracking labor demand with online job postings: the case of health IT workers and the HITECH Act. *Industrial Relations: A Journal of Economy and Society*. 52: 941-968.

Shortliffe, EH (2011). President's column: subspecialty certification in clinical informatics. *Journal of the American Medical Informatics Association*. 18: 890-891.

Health IT Workforce in the Post-HITECH Era: Challenges and Opportunities

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: <http://informaticsprofessor.blogspot.com>

1



Overview

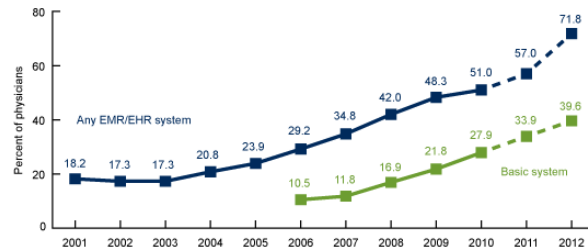
- Successes of the HITECH era
 - EHR adoption
 - Workforce development
- Challenges and opportunities ahead
 - From implementation to optimization
 - Transition of the workforce

2

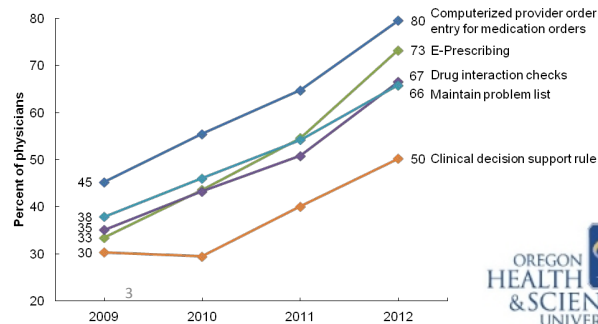


HITECH has been a success

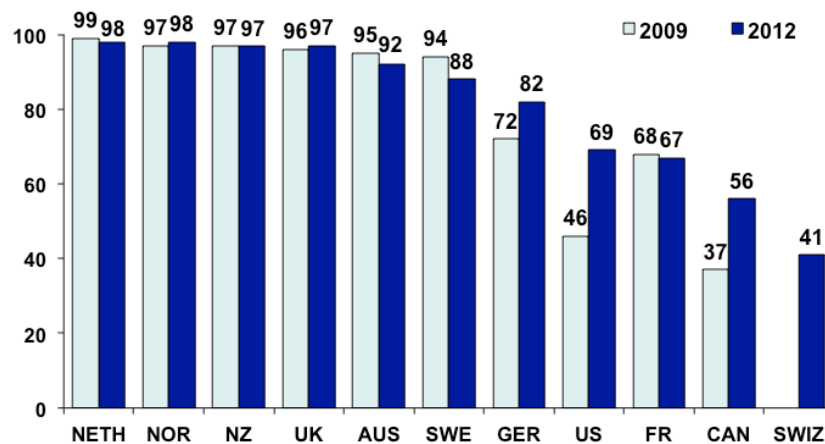
(Hsaio, CDC, 2012)



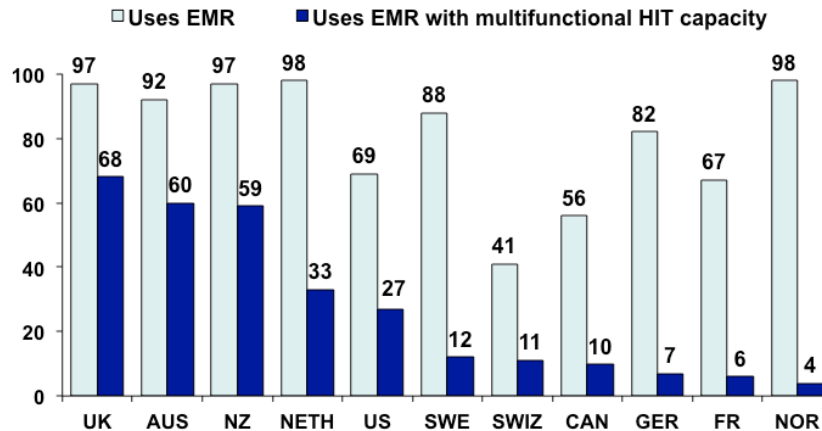
(King, ONC, 2012)



US is not as much of a laggard any more (Schoen, 2012)



Especially when it comes to advanced functionality (Schoen, 2012)

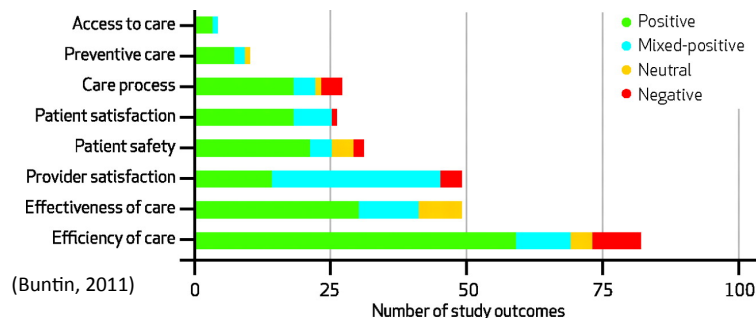


Multifunctional health IT capacity – use of at least two electronic functions: order entry management, generating patient information, generating panel information, and routine clinical decision support



(Mostly) US-based research has shown many benefits of health IT

- Identified in systematic reviews in a variety of areas (Chaudhry, 2006; Goldzweig, 2009; Buntin, 2011)
 - Although 18-25% of studies come from a small number of ‘health IT leader’ institutions



But it still has 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 improving the delivery of health care. The work is

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.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.

©2004 American Medical Association. All rights reserved.

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

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, BECC, Portland, OR 97201-3098 (hersh@ohsu.edu).

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

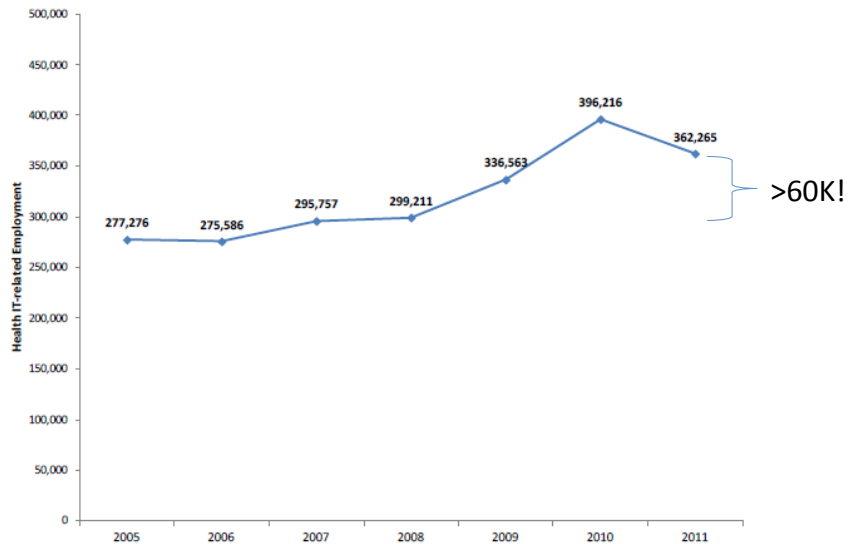


“Meaningful use” requires a competent workforce

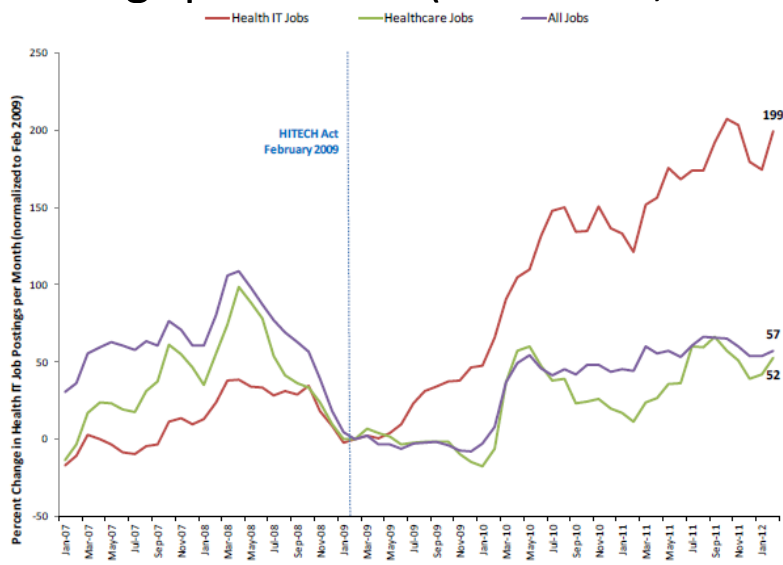
- Analysis of HIMSS Analytics Database™ estimated need of 41,000 additional HIT professionals as we moved to more advanced clinical systems (Hersh, 2008)
- ONC increased estimate of need to 50,000, leading to Workforce Development Program being part of HITECH Program (Hersh, 2012)
- Actual numbers hired have been even higher (Furukawa, 2012; Schwartz, 2013)
- 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)



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



Further analysis of HIT-related job postings (Schwartz, 2013)

- Postings
 - All – 83.5M
 - Healthcare – 11.2M
 - Health IT related 434,282
 - Health IT related (core) – **226,356**
 - Health IT related (clinical user) – 207,926
- Employer (%)
 - IT vendor – 42%
 - Provider – 39%
 - Ambiguous – 15%
 - Other – 4%
- About half of job growth attributable to HITECH Act, rest to historical trends
- Responsibilities (%)
 - Implementation support (system installation, customization, building, debugging, purchasing, or workflow redesign) – 43%
 - User training – 27%
 - System development – 22%
 - Technical support (maintaining continued technical functionality or providing customer support) – 21%
 - IT strategy (long-term IT planning and system optimization in the clinical setting) – 13%
 - Sales – 11%
 - Research (quantitative hypothesis testing using health IT systems) – 6%

11



But demand still persists for experienced HIT 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



Further borne out in HIMSS Analytics HIT Workforce Survey (2013)

- Completed by 224 individuals
 - ¾ from healthcare provider organizations, rest from vendors
- Provider organizations
 - Over 80% reported adding IT FTE in the past year, with half hiring 1-5 FTE and rest hiring more
 - Only 8% reporting laying off staff
 - About three-quarters outsourced rather than hired some of the above types of personnel
 - Essentially similar percentages in hiring plans for coming year
- Most common areas for hiring in provider organizations
 - Clinical application support (51%)
 - Help desk (51%)
 - IT management (29%)
 - Financial application support (28%)
 - System design and implementation (24%)
 - IT security (22%)
 - Project management (21%)
 - Clinical informatics/clinical champion (19%)
 - System integration (19%)
 - User training (15%)

13



HIMSS Analytics HIT Workforce Survey (cont.)

- Similar picture was seen for vendors and consultants for the past year, with over 90% adding FTE, and nearly 60% hiring more than 20 FTE
- Most common areas for hiring in vendor organizations
 - Sale and marketing (88%)
 - Field support staff (84%)
 - Support staff (68%)
 - Executive team (58%)
- Nearly one-third reported laying off some staff
- Comparable percentages noted in hiring plans for coming year

14



Other findings

- Various types of certification deemed important, more so vendors than healthcare provider organizations – most highly rated were
 - Security professional
 - Network/architecture support
 - Database administrator
 - Project manager
 - Informatics professional
- About 80% of providers and 57% of vendors reported lack of fully qualified staff as barrier to achieving organizational IT goals
- Most common reason for lack of staff was lack of qualified staff in local region (43%, 56%)
- Both types of organizations reported hires being attracted to other organizations by more lucrative offers (25%, 19%)
- About 31% of provider organizations reported putting an IT initiative on hold due to inadequate staffing, with another 19% contemplating doing so

15



Towers Watson (2013)

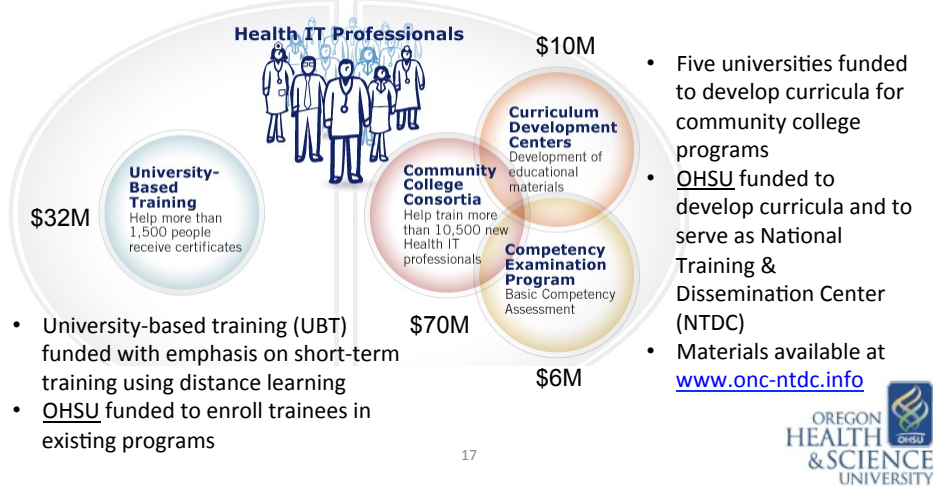
- Survey of 100 healthcare organizations found
 - 67% reported problems in attracting experienced IT employees
 - 73% reported problems hiring Epic-certified employees
- Organizations also reported problems in retaining
 - Experienced IT employees (38%)
 - Epic-certified employees (52%)
- Also found differences between employees and employers in drivers of attracting and retaining IT personnel
 - For attracting personnel, employees listed job security and salary as their primary concerns, whereas employers believed that challenging work and organizational reputation were key drivers
 - More concordance on drivers of IT employee retention, with both employees and employers ranking salary and opportunities for career advancement highest

16

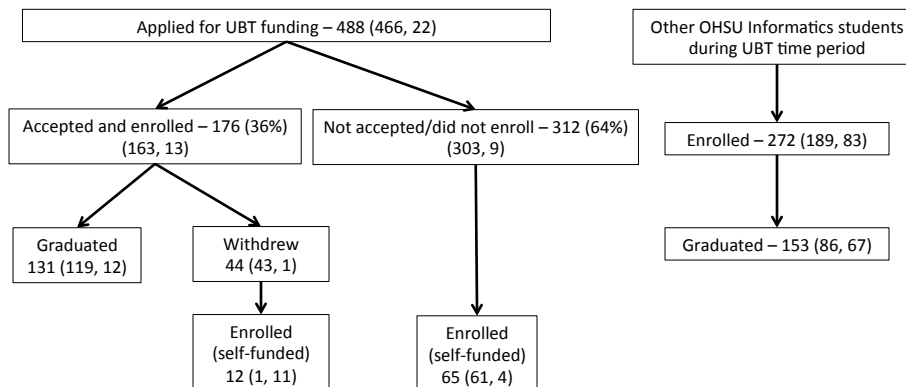


Workforce growth aided by ONC Workforce Development Program

Investment of \$118M based on estimated need for 51,000 health IT professionals in 12 workforce roles (Hersh, 2012)



OHSU UBT program to train 148 (135 Certificate, 13 Master's)



Also allowed development of practicum and internship programs

- Designed to provide real-world experience
 - Practicum provides one-quarter experience for Certificate students
 - Internship provides two-quarter experience for Master's students
- Student sets up with help from internship coordinator and faculty
 - Can be in healthcare delivery organization, industry, professional association, public health agency, etc.
 - Student completes project agreement
- OHSU and organization complete affiliation agreement (if not already in place)
- Student monitored by internship coordinator and faculty

19



Workforce issues going forward

- Nature of work shifting from implementation to optimization and analytics (PwC, 2012; Hersh, 2012; PwC, 2013)
- Professional certification, starting with medical subspecialty of clinical informatics

20



Informatics is transitioning from implementation to analytics

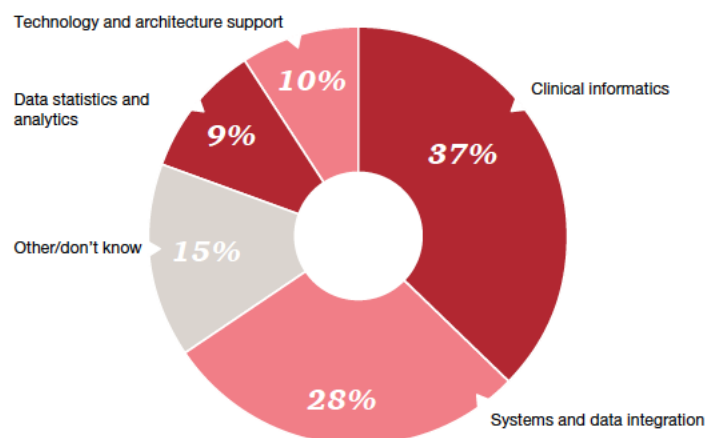
Providers	Health insurers	Pharma/LS
<ul style="list-style-type: none"> • Pay-for-performance reporting • Performance management report cards • Automated transaction system extracts • Clinical dashboards for use at the point of care • New government standardized data definitions • Program for acquiring evidence-based medicine practices and driving these to the bedside and clinic • Personalized medicine • Remote patient monitoring and management 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

“Health sector demands for informatics” (PwC, 2012)

21



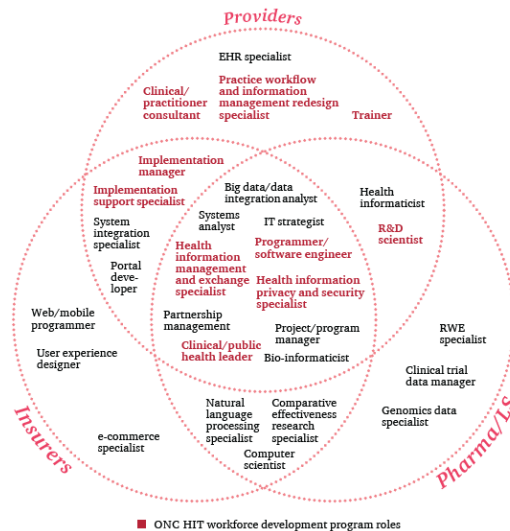
Most important skills needed to achieve HIT priorities (PwC, 2013)



22



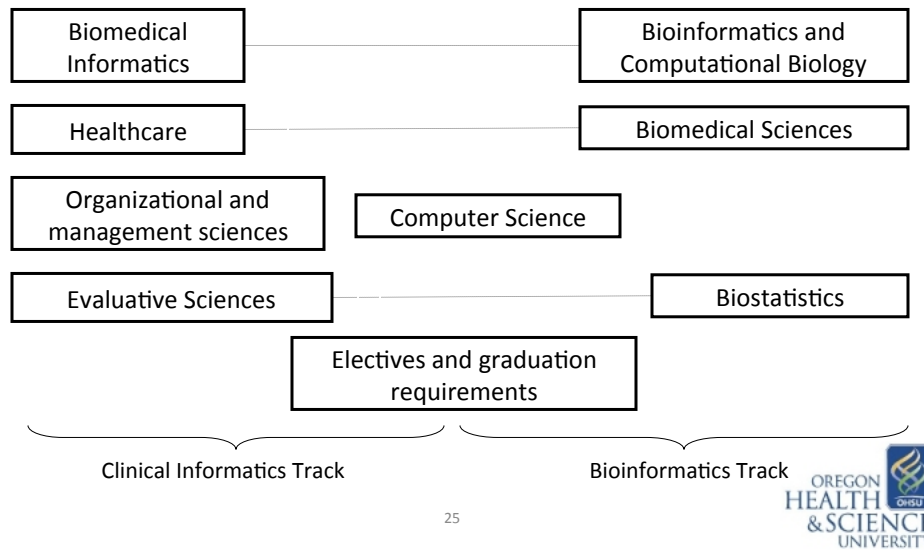
More workforce roles than just those designated by ONC (PwC, 2013)



What are required skills for healthcare analytics (Hersh, 2013)?

- Programming skills – analytics professionals must have programming skills, especially in data-related areas for locating and extracting data, using tools such as SQL and SAS
- Statistics
- Understanding the healthcare environment
- Communication skills – ability to work with clinical, administrative, and financial staff to understand their programs and present solutions in written and oral form
- Critical thinking – including the ability to understand a business problem, identify the appropriate data elements, extract and aggregate the data, and use it to solve the practical problem

Fits well with adaptation of OHSU core curriculum



There are still questions to answer

- How many people do we need to do the work of analytics?
- How many do we need to support analytics work?
- What fraction of informatics field will be working explicitly in analytics?
- What training is needed for
 - Those who work directly in analytics?
 - Those who need to know it as part of a well-rounded informatics education?

Certification in clinical informatics

- Historical – nursing and HIM
- Certifications not requiring formal training
- Clinical informatics subspecialty for physicians

27



Historical certifications in nursing and HIM

- 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>

28



Other certifications do not require specific formal training

- HIMSS
 - CPHIMS/CAHIMS – Certified Professional/Associate in Healthcare Information & Management Systems
 - <http://www.himss.org/getcertified/>
- HITPro/CHTS – six workforce roles, developed out of ONC Workforce Development Program but now administered by AHIMA
 - <http://www.ahima.org/certification/chts>
- Health IT Certification
 - <http://www.healthitcertification.com>
- CompTIA
 - <http://certification.comptia.org/getCertified/certifications/hittech.aspx>

29



Clinical informatics subspecialty for physicians

- History
 - 2009 – AMIA develops and publishes plans for curriculum (Gardner, 2009) and training requirements (Safran, 2009)
 - 2011 – American Board of Medical Specialties (ABMS) approves; American Board of Preventive Medicine (ABPM) becomes administrative home (Shortliffe, 2011)
 - 2013 – first certification exam in October; AMIA board review course launched
- Subspecialty open to physicians of all primary specialties
 - But not those without a specialty or whose specialty certification has lapsed



Clinical informatics subspecialty (cont.)

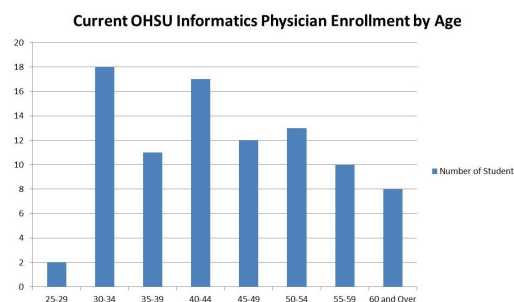
- Following usual path of five years of “grandfathering” training requirements to take certification exam before formal fellowships required
 - Two paths to eligibility for exam in first five years
 - Practice pathway – practicing 25% time for at least three years within last five years (education counts at half time of practice)
 - Non-traditional fellowships – qualifying educational or training experience, e.g., NLM fellowship, or educational program (master’s degree, certificate?)
- ABPM rules
 - http://www.theabpm.org/abpm_clinical_informatics.pdf
 - My interpretation (Hersh, 2013)

31



Concerns regarding capacity-building for the subspecialty (Hersh, 2012)

- Age at which many physicians enter informatics
 - OHSU experience shows many physicians (and others) enter field mid-career
- Ability of programs to provide both education and training
 - Will ACGME be flexible regarding educational portions?
- Paying for cost of training

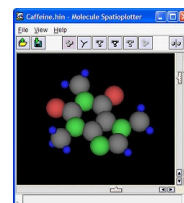


32



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 (Magnusson, 2013)
- 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)



33

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
- Now that adoption is widespread, work of informatics must change to make beneficial use of data and information



34

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>