Physicians and Physician Organizations: Strategies for Building a Work Force to Manage Changes in Healthcare Through Information Technology

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The Workforce for Biomedical Informatics

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Characteristics of biomedical informatics

- It is a heterogeneous field, with physicians, other clinicians, non-clinicians, etc.
- It is not a "cookie cutter" field where all practitioners have a defined set of skills and competencies
  - In contrast to accounting, surgery, etc.
- There are few, if any, jobs that require formal training in informatics
  - Though many health care IT leaders would benefit from more knowledge of informatics!

Biomedical informatics is one part of larger health care IT

- Other professionals in health care IT include
  - IT professionals, often with computer science (CS) or management information systems (MIS) backgrounds
  - Health information management (HIM) professionals, historically associated with managing medical records departments
  - Health science librarians
  - Clinicians who gravitate into IT roles with or without formal training

Categories of biomedical informatics practice

Category	Jobs
Academic/ Research	Informatics researcher or teacher
Applied/ Professional	CIO, Chief Medical/Nursing Information Officer, Developer, Trainer
Practical	Health care professional, research assistant/associate

Adapted from Covvey et al., Pointing the Way, 2001

Is biomedical informatics a profession?

- According to SWEBOK, a profession is characterized by
  - An initial professional education in a curriculum validated through accreditation
  - Registration of fitness to practice via voluntary certification or mandatory licensing
  - Specialized skill development and continuing professional education
  - Communal support via a professional society
  - A commitment to norms of conduct often prescribed in a code of ethics
- By this definition, biomedical informatics is not a profession

Education in biomedical informatics

- Since a highly multi-disciplinary field, no standard curriculum or certification
  - Listing of programs on Web site of American Medical Informatics Association (www.amia.org)
  - Description of OHSU program to follow as an example; consult other programs' Web sites for details on their programs
- Education has historically focused on academics but is evolving to meet the needs of practitioners and users

Programs funded by National Library of Medicine

- Tend to be research-oriented
- Require full-time commitment
- Degrees are usually optional, at least at the present time

http://www.nlm.nih.gov/ep/AwardsTrainInstitute.html

Categories of informatics education for NLM fundees

Category	Typical Programs
Academic/ Research	- PhD - Postdoc ± master's degree
Applied/ Professional	- Postdoc ± master's degree - Master's Degree - Certificate
Practical	- Continuing Education

Medical informatics education at OHSU

- http://www.ohsu.edu/dmice/education/
- Academic/Research
  - Predoc/Postdoc Fellowship funded by NLM and VA
  - PhD in Biomedical Informatics degree
  - Master of Science in Biomedical Informatics degree for postdocs from other fields
- Applied/Professional
  - Master of Science and Master of Biomedical Informatics degrees
  - Graduate Certificate Program (distance learning)
- Practical
  - Continuing education courses

OHSU biomedical informatics core curriculum

- Master's and PhD program have core courses in six areas
  - Biomedical informatics – Core courses in informatics science and applications
  - Organizational and management sciences
  - Computer science – Practical introduction to core concepts
  - Health and biomedicine – for non-clinicians
  - Research methods – quantitative, qualitative
  - Thesis/capstone
- Certificate program focuses mainly on first two areas
- PhD program adds specialized research training, cognate area of interest, doctoral seminar, and dissertation

Additional aspects of curriculum

- Provide opportunities for students in "real world" internships and practicums with local vendors and companies
- Take advantage of local external (aka, "clinical") faculty for lectures, projects, etc.
- Collaborations
  - 5-year combined BS in computer science/Master in Biomedical Informatics with Portland State Univ.
  - Tuition discount programs with health care IT societies

How have our students done?

- General observation: What people do when they graduate often depends on what they did when they entered, e.g.,
  - Physicians, nurses, and other clinicians draw on their clinical background
- Graduates have obtained jobs in a variety of settings, e.g., clinical, academic, and industry
- Some have obtained jobs before finishing the program; a few before starting

The future is optimistic

- IT will play an integral role in biomedicine in the 21st century
- However, a well-trained workforce is an essential ingredient to making it work
- Collaboration is essential for success