Health Informatics Education for the Clinical Workforce

MedInfo 2013 Panel Session
Education III
Panel Presenters

- Anthony Maeder, Australia
- Kathleen Gray, Australia
- Kendall Ho, Canada
- Edward Shortliffe, USA
- Paul Taylor, UK
- Maurice Mars, South Africa
Motivation

- Health Informatics education driven by HI curriculum design

- Variable extent of coverage within Clinical qualifying courses

- Varying nature of recognition and regulation of HI knowledge

- Little on issues of delivery methods, assessment, scaffolding...
Outline

- Major study undertaken on Australian circumstances
- Examples of “state of play” in some other national settings
- Discussion on issues and directions for further consideration
- Anecdotal contributions from audience on other experiences
Discussion

- Appropriate coverage, depth, methods etc for clinical courses
- Examples of success and failure aspects from case studies
- Approaches for motivating and introducing HI components
- Further (international) initiatives or opportunities
Informatics Education
for Clinical Health Professionals: an Australian perspective

Medinfo Panel
Wednesday 21 August 2013

Kathleen Gray
Health and Biomedical Informatics Centre
University of Melbourne
Outline

1. Context
2. Current practice
3. Challenges for practice
4. Ways forward
1. Context and challenges
   - The Australian scene
   - 3 slides about our project
Australia’s Local & Global Ehealth Concerns


- State & Territory government strategies:
  Public hospitals, public health, some primary and community care

- Mixed public and private systems / investments:
  Healthcare + biomedical R&D + ehealth IT industry

- Domestic but also international interests:
  Health workforce, student population, globalisation of healthcare/IT
Context: An Australian national project (1/3)

To initiate and encourage:

– curriculum renewal for ehealth capability
– in clinical health professional degrees
– through a coordinated interprofessional approach

4-university, 4-State team 2010-2013:
Kathleen Gray & Ambica Dattakumar, University of Melbourne
Anthony Maeder, University of Western Sydney
Kerryn Butler-Henderson, Curtin University, Western Australia
Helen Chenery, University of Queensland

Supported by Australian Government Office of Learning & Teaching; reference group from national and international agencies; clinical education champions.
Our project focus & assumptions

“Future clinicians will be expected to be more effective than is now the case in acquiring, managing, and utilising information for clinical decision making.” (UK National Health Service, 2009)

How does tertiary education in Australian need to respond, so that it produces a generation of clinicians with the knowledge, skills and attributes to use ICTs effectively in healthcare?

• Clinicians can’t all build this competence by informal learning alone.
• The disciplinary foundation is health and biomedical informatics.
• Informatics education for clinicians can be formal & comprehensive; more so than EBP / information literacy / computing skills curricula.
(3/3) We took a coordinated interprofessional approach

All Australian tertiary degrees for entry into clinical practice:

• ~20 health professions in all, including medicine, nursing, allied health, complementary therapies
• Bachelor to Doctorate entry level degrees; 2 in TAFE / VET sector

With reference to others doing related work, e.g.

• Australian work: ACPDHS, AIPPEN, ATHS, HWA, NEHTA, AHIEC & its members (ACHI, ACS, HIMAA, HISA, HL7A)
• International work: UK eICE, US ONCHIT Workforce Development Program, Canada COACH Clinician Forum, IMIA Health and Medical Informatics Education Working Group
2. Our perspective on current practice in clinical informatics education comes from these project activities:

- Literature review
- Degree coordinator survey & interviews
- Interprofessional workshops
What we wanted from the literature

Evidence from peer-reviewed reports of implementing and evaluating clinical informatics education for future health professionals.

What is known to be good pedagogical practice in clinical informatics education, regarding:

– student diversity, learning needs and learning styles?
– teaching methods and modes of delivery?
– techniques for assessment of student learning?
– attainment of intended learning outcomes?
– standardisation and accreditation of curriculum?
– educational quality improvement processes?
What we found in the literature

• A shortlist of around 20 papers in the peer-reviewed journal and conference literature published in English between the years 2000-2011 covering university teaching of medical / clinical / health informatics to future clinicians.

• Very few research reports of cases or trials that use externally validated instruments or processes.

• A limited evidence base to support effective approaches to clinical informatics teaching, learning, assessment or evaluation.

What we wanted to know from educators

2011 snapshot data from degree program directors / coordinators:
40 universities / 400 invitations
Over 100 completed surveys & 35 extended interviews
Representatives of Faculties, Schools and Departments of health sciences in three-quarters of Australian universities

What matters about ehealth to you as the coordinator of an entry level health profession degree?
What are you doing about ehealth in the degree for which you are responsible?
What we found out from educators:

Educators are unclear about what is known and what is needed. Clinical informatics education is not systematic nor widespread.

- 25% - 75% unable to confirm important aspects of educational quality e.g. academic knowledge base; explicit curriculum; formal assessment practices; review processes; student-centredness
- Pockets of good practice e.g. contextualised teaching about EHRs.
- Misconceptions e.g. ehealth = elearning.

What else we wanted to know from educators

Can educators responsible for different health profession degrees work together to improve basic clinical informatics education?

52 academics from 14 different professions took part in a 2012 workshop held in 4 cities.
Resource documents and expert presentations from healthcare, government and academia were provided.
Individual and small group work was recorded, analysed, reported.
Workshop outcomes

Some core clinical informatics competencies were recognised:
– Efficiency with electronic information and communication
– Accountability for information ethics and security
– Awareness of digital data and tools for decision support
– Evidence-based adoption of ICTs in healthcare
+ examples of learning, teaching and assessment methods.

Other synergies: single profession collaboration across institutions; interprofessional cooperation within States

AND Government and healthcare expert panellists assumed that there was systematic clinical informatics teaching; they were taken aback by low levels of educational activity and educator awareness.
3. Challenges for educational practice

Our perspective comes from project investigations into:
  • Learning resources
  • Accreditation guidelines
  • Employer requirements
Can we leverage existing learning resources?

- Broad web search for ‘teachable’ materials from government, industry, education and research organisations, not-for-profits
- Inventory of 100 relatively open and reputable resources
- Development of 13 scenarios of ehealth in clinical practice

What’s missing:
- Core clinical informatics materials with an Australasian orientation
- Generic ehealth software and tools for learning and assessment
- AND widely available convenient CPD for educators
Can we leverage degree accreditation guidelines?

- Review of 21 health professions’ degree accreditation guidelines
- Search for terms broadly related to ehealth and clinical informatics

The missing link:

- ‘ehealth’ nowhere; ‘telehealth’ once; ‘electronic health records’ once; ‘informatics’ twice
- BUT just as often the inference is to elearning facilities.
- Informatics related terms often are not clearly defined.
- AND guidelines are revised and referred to over long cycles:
  – 8 documents last updated in 2010; the oldest 2001
  – degree (re)accreditation happens every 3-5 years
Can we leverage clinicians’ employers’ requirements?

• Monitored Australian clinical job ads weekly for 3 months in 2012
• Analysed 800 ads for any evidence of ehealth and biomedical informatics knowledge, skills, attributes sought by employers

Missing in action:
• The word ‘ehealth’ never appeared.
• Fewer than 10% of ads (just over 60) included any term that could be construed as relevant - most commonly ‘computer literate’.
• Such criteria listed as desirable as often as essential.
• Type of competence required often described narrowly or vaguely.
• BUT one ad with an exceptionally detailed job spec; three other ads seeking ability to use a particular software package.
4. Where to from here, maybe in my lifetime?
Recent developments

  - associated ehealth tools are promised...

• National expert consensus on competencies for HI specialists, Certified Health Informatician Australasia, launched July 2013
  - reverse engineering for core clinical informatics competencies?

• Work going on within separate clinical professions
  - what outcomes for connected care if some do and some don’t?
Leadership and collaboration

• Focus on learners:
  Development of learning, teaching and assessment resources

• Focus on educators:
  Provision of CPD for teachers, trainers and student supervisors

• Focus on employers:
  Implementation of skills recognition in employer organisations

• Focus on professional organisations:
  Revision of accreditation and certification frameworks

• Focus on policy-makers:
  Alignment of education & training strategy with ehealth strategy.

• Focus on educational researchers:
  Let’s build the evidence base!
Thanks for your attention!

Comments / Questions / Follow-up

Project website: http://clinicalinformaticseducation.pbworks.com

Email: kgray@unimelb.edu.au
MedInfo 2013 Copenhagen

August 21, 2013

Health Informatics Education for the Clinical Workforce:
A Perspective from Medicine in Canada

Kendall Ho, MD FRCPC
Professor, Emergency Medicine
Director, eHealth Strategy Office
3 days in Paris

“Add one more site?”
HI Training for health professionals

How to integrate HI training into a Medical Curriculum?
UBC Faculty of Medicine HI Training:
- Current integration
- Curriculum renewal

Canadian HI Training:
- Med Schools/Residency
- Health professionals
EMR Learning Platform (1 week)

Tele-Psychiatry (7 weeks)

- 3rd year medical students
- Videoconference interview: patients
- Supervised by psychiatry mentor
- Critique each others’ interviews
UBC Curriculum Renewal 2014

- Integration into **clinical case management**
- **Live** lectures, skills workshops, forums
- **Online** modules: compulsory and optional
- **Assessment** (e.g. OSCE)
- **ePortfolio** to track attainment of objectives
- **Scholarship**: elective/projects/research
National HI Training Strategy: CanMEDS*

- Associations of Faculties of Medicine
  eHealth Education Committee
- Royal College eHealth Expert Working Group
- Canada Health Infoway Clinician Engagement Strategy

*By the Royal College of Physicians and Surgeons of Canada
Patient Centred Care: Inter-Professional Roles

"Towards an interoperable EHR training in Canada" – a 2014 report to Health Canada
HI Training: Evaluating Progress

- Evaluate engagement
- Measure change management
- Assess diffusion/dissemination
- Accomplish destination goals

• BC, National, Global:
  - Clinician engagement
  - EHR training
  - Benefits evaluation
• HHR Competencies
Timing is everything!!
It’s Time: eHI Training

• Workforce preparation for today
• Trainee engagement for tomorrow
• Interprofessional involvement
• Global exchange
UBC Faculty of Medicine
eHealth Strategy Office

- Internet:  www.eHealth.med.ubc.ca
- Facebook:  @UBC eHealth Strategy Office
- Twitter:  @ehealthstrategy
- E-mail:  Kendall.Ho@ubc.ca
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Bringing Informatics into Clinical Practice

Edward H. Shortliffe, MD, PhD
Professor of Biomedical Informatics, Arizona State University
Adjunct Professor of Biomedical Informatics, Columbia University
Adjunct Professor of Public Health, Weill Cornell College of Medicine
Scholar in Residence, New York Academy of Medicine

Panel on Education III -
Health informatics Education for the Clinical Workforce

Medinfo2013, Copenhagen, Denmark
August 21, 2013
Making the Case for Informatics in Medical Education

JAMA, February 23, 1990—Vol 264, No. 8 1114-1120

Medical Informatics
An Emerging Academic Discipline and Institutional Priority

Robert A. Greenes, MD, PhD, Edward H. Shortliffe, MD, PhD

Information management constitutes a major activity of the health care professional. Currently, a number of forces are focusing attention on this function. After assessing the efficacy and cost-effectiveness of proposed diagnostic and
Making the Case for Informatics in Medical Education

**ESSAY**

Medical Informatics Meets Medical Education

Edward H. Shortliffe, MD, PhD, Director, Medical Information Sciences Training Program, Stanford University School of Medicine

Because of the expanding influence of computers in society, it is appropriate to ask how medical education should evolve to reflect increased computer usage. Essentially all hospitals and outpatient practices depend on computers for administrative functions, especially for financial management, but the machines are also playing a more prominent clinical role. Physicians and other health workers increasingly feel the need for an informed view of how advances in computing and information technology are affecting medical practice.¹ Interest in computing topics has grown even stronger in recent months with the explosive growth in the Internet, extensive attention in the mass media, and increasing recognition of the global network’s potential role in bringing...

Workers in medical informatics have developed many of the information systems that now provide the medical community with clinical computing tools, and current research continues to anticipate both the needs of our evolving health care system and the remarkable new technologies that regularly appear. The Figure summarizes the core themes in medical informatics research, including the focused attention on biomedical data and knowledge and their proper use.

Essentially all US medical schools are making use of computers to assist with portions of their standard curriculum, and many have defined formal requirements for ensuring that all medical students are “computer literate.”²
Biomedical Informatics in the Education of Physicians

Edward H. Shortliffe, MD, PhD

When I first meet with preclinical medical students, I make a point of asking them what they believe will receive the greatest focus of their attention once they are in clinical practice. The most common response, not surprisingly, is patients, and yet it is clear to experienced practitioners that A formal discipline has emerged over the last few decades, initially termed “medical informatics” but subsequently broadened to “biomedical informatics” when its relevance to the basic medical sciences, as well as clinical sciences, became clear. A recent consensus process by the American Medical Informatics Association has resulted in the following evolving definition of the field, which notably does not include any mention of the computing technology that is often a modern external manifestation of the discipline: “Bio-
Acronyms to Remember

- AMIA = American Medical Informatics Association
- CMSS = Council of Medical Specialty Societies
- ABPM = American Board of Preventive Medicine
- ABMS = American Board of Medical Specialties
- ACGME = Accreditation Council for Graduate Medical Education
- RRC = Residency Review Committee
- MOC = Maintenance of Certification
CI Subspecialty timeline

• 2004 AMIA calls for training 6000 physicians and 6000 nurses
  • Later 10,000 → 10X10 program
• 2005 AMIA town meeting
• Growing interest in certification noted among health professionals working in clinical informatics
American Academy of Allergy, Asthma & Immunology (AAAAI) - American Academy of Dermatology (AAD) - American Academy of Family Physicians (AAFP) - American Academy of Neurology (AAN) - American Academy of Ophthalmology (AAO) - American Academy of Orthopaedic Surgeons (AAOS) - American Academy of Otolaryngology-Head & Neck Surgery (AAOHNS) - American Academy of Pediatrics (AAP) - American Academy of Physical Medicine & Rehabilitation (AAPMR) - American College of Cardiology (ACC) - American College of Chest Physicians (ACCP) - American College of Emergency Physicians (ACEP) - American College of Medical Genetics (ACMG) - American College of Obstetricians & Gynecologists (ACOG) - American College of Occupational and Environmental Medicine (ACOEM) - American College of Physicians (ACP) - American College of Preventive Medicine (ACPM) - American College of Radiology (ACR) - American College of Rheumatology (ACR) - College of Surgeons (ACS) - American Geriatrics Society (AGS) - American Medical Informatics Association (AMIA) - American Psychiatric Association (APA) - American Society for Clinical Pathology (ASCP) - American Society for Reproductive Medicine (ASRM) - American Society for Radiation Oncology (ASTRO) - American Society of Clinical Oncology (ASCO) - American Society of Colon & Rectal Surgeons (ASCRS) - American Society of Hematology (ASH) - American Society of Nephrology (ASN) - American Society of Plastic Surgeons (ASPS) - American Urological Association (AUA) - Society of Critical Care Medicine (SCCM) - North American Spine Society - Society of Hospital Medicine (AHM) - Society of Neurological Surgeons (SNS) - Society of Nuclear Medicine (SNM) - Society of Thoracic Surgeons (STS)
CI Subspecialty timeline

- 2007 RWJF grant to AMIA
- 2008 Core and Training documents created
- 2009 Core and Training documents published after AMIA Board approval
Perspectives on Informatics

AMIA Board White Paper

Core Content for the Subspecialty of Clinical Informatics

REED M. GARDNER, PhD, J. MARC OVERHAGE, MD, PhD, ELAINE B. STEEN, MA., BENSON S. MUNCER, PhD, JOHN H. HOLMES, PhD, JEFFREY J. WILLIAMSON, DON E. DETMER, MD, MA, FOR THE AMIA BOARD OF DIRECTORS

Abstract
The Core Content for Clinical Informatics defines the boundaries of the discipline and informs the Program Requirements for Fellowship Education in Clinical Informatics. The Core Content includes four major categories: fundamentals, clinical decision making and care process improvement, health information systems, and leadership and management of change. The AMIA Board of Directors approved the Core Content for Clinical Informatics in November 2008.


Background
The Core Content for a medical subspecialty defines the

by the Robert Wood Johnson Foundation. In November 2008, the AMIA Board of Directors approved both the Core Content and Program Requirements for clinical informatics.
AMIA Board White Paper

Program Requirements for Fellowship Education in the Subspecialty of Clinical Informatics

CHARLES SAFRAN, MS, MD, M. MICHAEL SHABOT, MD, BENSON S. MUNGER, PHD, JOHN H. HOLMES, PhD, ELAINE B. STEEN, MA, JOHN R. LUMPKIN, MD, MPH, DON E. DETMER, MD, MA, FOR THE AMIA BOARD OF DIRECTORS

Abstract The Program Requirements for Fellowship Education identify the knowledge and skills that physicians must master through the course of a training program to be certified in the subspecialty of clinical informatics. They also specify accreditation requirements for clinical informatics training programs. The AMIA Board of Directors approved this document in November 2008.


Introduction

The Program Requirements for Fellowship Education for the Subspecialty of Clinical Informatics identify the knowledge and skills that must be mastered through the course of fellowship training and specify accreditation requirements for training programs. The document is based on the Core Content for Clinical Informatics and follows the format that the program requirements for the subspecialty of medical informatics established by the American Medical Informatics Association and supported by the Robert Wood Johnson Foundation. In November 2008, the AMIA Board of Directors approved both the Core Content and Program Requirements for clinical informatics.

Definition and Description of the Subspecialty

Clinical informaticians transform health care by analyzing, integrating, implementing, and disseminating information.
CI Subspecialty timeline

- AMIA contacts boards to assess interest in sponsoring new subspecialty proposal
- 2009 ABPM Board Agrees to Propose CI as a subspecialty to ABMS (works with AMIA to draft proposal and present it to the other specialty boards)
Welcome to the American Board of Preventive Medicine

The American Board of Preventive Medicine (ABPM) provides this web site as a service to our clients - our Diplomates, applicants, residents, residency program directors, and the general public. The look and enhanced functionality of our web site is designed to meet the needs of our clients in a more efficient and comprehensive way. Virtually all the interactions between our clients and the Board staff can be conducted through the various features of the web site. However, we are available for telephone calls between 9:00 AM and 4:30 PM CST, Monday through Friday at (312) 939-ABPM [2276] if we can be of further assistance.

The 2013 online application for initial certification is now active. You can complete your application at http://www.theabpm.org/examapp.cfm. The deadline to submit your online application without late charges is June 1.

New Clinical Informatics Subspecialty Certification

The online application for Clinical Informatics is now open. Diplomates of the American Board of Pathology must apply though the American Board of Pathology. Physicians certified through all other ABMS member Boards can apply through ABPM and may click here to begin the online application.

Physicians who practice Clinical Informatics collaborate with other health care and information technology professionals to analyze, design, implement and evaluate information and communication systems that enhance individual and population health outcomes, improve patient care, and strengthen the clinician-patient relationship. Clinical Informaticians use their knowledge of patient care combined with their understanding of informatics concepts, methods, and tools to: assess information and knowledge needs of health care professionals and patients; characterize, evaluate, and refine clinical processes; develop, implement, and refine clinical decision support systems; and lead or participate in the procurement, customization, development, implementation, management, evaluation, and continuous improvement of clinical information systems. Click here for information on requirements for certification in Clinical Informatics.
CI Subspecialty timeline

- 2010 Pathology joins Preventive Medicine as a cosponsor
- 2011 ABPM and AMIA jointly present CI subspecialty proposal to ABMS subcommittee that reviews all proposals for new subspecialty certifications
- 2011 ABMS approves CI as subspecialty
Setting the Standard for Quality Medical Care.

Certification Matters. The American Board of Medical Specialties (ABMS), a not-for-profit organization, assists 24 approved medical specialty boards in the development and use of standards in the ongoing evaluation and certification of physicians. ABMS, recognized as the “gold standard” in physician certification, believes higher standards for physicians means better care for patients.
CI Subspecialty timeline

- 2011 ABPM, as sponsoring board to oversee CI subspecialty, begins process to create exam
- 2012 ABPM and AMIA begin planning for Maintenance of Certification (MOC) process that will be in place by the time the first diplomats complete their certification in the CI subspecialty
- Fall 2013 CI exam offered
- 2013 AMIA offers highly successful board review courses
- 2013 Accreditation body (ACGME) defines criteria for approving clinical fellowships in CI
Implications of These Developments

- Remarkable change in attitude and acceptance of CI as a professional field
- Results in greater visibility and validation of CI
- Makes careers in CI more attractive to physicians who are choosing their specialty and subspecialty options
- Strengthens the core discipline and its applied implications
- May have positive influence on adoption of informatics topics throughout medical school curriculum
Thank You!

ted@shortliffe.net
HI In Clinical Curricula?

Maurice Mars
Head, Dept of TeleHealth
University of KwaZulúNatal
South Africa
HI In Clinical Curricula?

What are we trying to achieve?

Why do we think this is necessary?

Is it relevant?
What are we trying to achieve?

Awareness vs Training vs Education

Generic vs contextual
The Problem

25 sub-Saharan African countries have 10 Doctors or fewer per 100,000 people

Not enough Doctors to train Doctors

WHO World Health Stats 2013
Countrywide, 56% of doctor posts are vacant and 46% of nursing jobs unfilled.
The Problem

eHealth activities must not add extra steps to the normal workflow of overburdened doctors and nurses.

Not enough Doctors to train Doctors

WHO World Health Stats 2013
10 Strategic Priorities
Priority 7: Capacity and Workforce

“... involves developing career paths, training and skill retention strategies in order to build up a workforce that can innovate, develop, deploy, maintain and support all eHealth interventions, especially health information systems and health management information systems.”
Priority 7: Capacity and Workforce

“Define a standardised eHealth competency framework for health workers and health IT practitioners providing an understanding of required eHealth knowledge, skills and attributes for each professional group.”
Key Activity:
Leverage partnerships and collaborations for Health Informatics training

Outputs:
Memoranda of Understanding (MoU) entered into with relevant institutions for partnerships and collaborations for Health Informatics training
What have we done?

Awareness  vs  Training  vs  Education
What have we done?

Capacity development in health informatics

Postgraduate diploma
Coursework masters
PhD
Fogarty International Training Grant
>100 students in 9 countries
Introduction To Electronic Medical Records

Y. SINGH

NELSON R. MANDELA SCHOOL OF MEDICINE DEPARTMENT OF TELEHEALTH
SINGHY@UKZN.AC.ZA

HiBBs

HiBBs is a program of the Global Health Informatics Partnership
The Way Forward?

YOU ALWAYS WERE A GEEK.
Introduction to Electronic Medical Record

Introduction To Electronic Medical Records

Y. SINGH

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UNIVERSITY OF KWAZULU-NATAL

HiBBs
Health Informatics Building Blocks

HiBBs is a program of the Global Health Informatics Partnership

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10 Strategic Priorities
What are we trying to achieve?

Awareness
vs
Training
vs
Education
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