Medical Informatics in Context

Graduate School of Library, Information and Media Studies

University of Tsukuba
19 October 2007
Abstract

• Medical informatics can be defined as "the application of information science and information technology to the theoretical and practical problems of biomedical research, clinical practice, and medical education."

• An increasing numbers of knowledge workers are involved in medical informatics-related programs and activities.

• This talk will provide an overview of the field of medical informatics and show how it "fits in" with other information fields.
Many different terms are now in use!

- Medical Informatics
- Biomedical Informatics
  - These two are synonymous
- Bioinformatics
  - This one is different
- Health Informatics
  - This is the newest term
Medical Informatics Definition #1

The field concerned with the cognitive, information processing, and communication tasks of medical practice, education, and research, including the information science and technology to support these tasks….it is both a science and a technology.

from Shortliffe’s textbook
Medical Informatics Definition #2

An interdisciplinary field that combines medical science with several technologies and disciplines in the information and computer sciences [and one which] provides methodologies by which these fields can contribute to better use of the medical knowledge base and ultimately to better medical care…

*American Association of Medical Colleges*
Medical Informatics Definition #3

Medical informatics has to do with all aspects of understanding and promoting the effective organization, analysis, management, and use of information in health care. While the field of medical informatics shares the general scope of these interests with some other health care specialties and disciplines, medical informatics has developed its own areas of emphasis and approaches that have set it apart from other disciplines and specialties.

American Medical Informatics Association
Medical Informatics Definition # 4

Applications of advanced computer and communications technologies to health care, and specifically to information in health care…

Ellen Detlefsen’s working definition
MeSH® defines medical informatics as

• “The field of information science concerned with the analysis and dissemination of medical data through the application of computers to various aspects of health care and medicine.”

• Year introduced: 1987
MI developed as an academic field in the late 1960s and early 1970s.:

- Work on the practical issues of clinical documentation, information systems, and technology in which computers had been introduced to increase productivity of medical processes.
- Work on medical knowledge representation and language understanding, including artificial intelligence consultation and decision support systems.
- Work on terminologies, coding, medical records, and indexing for Medline, exemplified in the Unified Medical Language System and related research.

The first generation…

• many MI pioneers arrived to the field by chance, because they were interested in informational needs in clinical settings, complemented by colleagues from linguistics, mathematics, computer science, L/IS, engineering, and other disciplines.
MeSH® recognizes four sub-specialty areas

- Information Science Category
  - Information Science

- Informatics
  - Dental Informatics
  - Medical Informatics
  - Nursing Informatics
  - Public Health Informatics
Other sub-specialties are emerging

- Pathology informatics
- Radiology informatics
- Psychiatry informatics
- Primary care informatics
- Surgical informatics
- Veterinary informatics
- Consumer informatics
- Telemedicine

- Can be documented with journal articles and professional SIGs
What is Bioinformatics?

- Bioinformatics is concerned with the creation and development of advanced information and computational technologies to solve problems in biology.
  - Bioinformatics uses techniques from informatics, statistics, molecular biology and high-performance computing to obtain information about genomic or protein sequence data.
BI emerged in the 1990s...20-30 years after medical informatics

- The terms *bioinformatics* and *computational biology* are often used interchangeably, although the latter typically focuses on algorithm development and specific computational methods.

- A common thread in projects in bioinformatics and computational biology is the use of mathematical tools to extract useful information from noisy data produced by high-throughput biological techniques.

- The field of data mining overlaps with computational biology in this regard...
  - [en.wikipedia.org/wiki/Bioinformatics](en.wikipedia.org/wiki/Bioinformatics)
If you query the MeSH® database for “bioinformatics,” you are directed to

• **Computational Biology**
  - A field of biology concerned with the development of techniques for the collection and manipulation of biological data, and the use of such data to make biological discoveries or predictions. This field encompasses all computational methods and theories applicable to molecular biology and areas of computer-based techniques for solving biological problems including manipulation of models and datasets.

• Year introduced: 1997
Real-world definition.....

• Roughly, bioinformatics is *any use of computers to handle biological information.*

• In practice, bioinformatics is often a synonym for "computational molecular biology"---*the use of computers to characterize the molecular components of living things.*
So what’s the difference?

• “Traditionally, Medical Informatics has been focused on the intersection between computer science and clinical medicine,

• whereas Bioinformatics have been predominantly centered on the intersection between computer science and biological research.

• Although researchers from both areas have occasionally collaborated, their training, objectives and interests have been quite different.”

Shortliffe’s 4-part model

• Bioinformatics
  • Molecular and cellular processes

• Imaging Informatics
  • Tissues and organs

• Clinical Informatics
  • Individuals and patients

• Public Health Informatics
  • Populations and society

Health Informatics

• The Canadian (and European) preferred term for medical and biomedical informatics

  • http://www.coachorg.com/default.asp?ID=390
Key Topics in the 1980s…

- Introduction to Medical Informatics
- Databases
- Networking and Distributed Computing
- Ambulatory Care Records
- Hospital Information Systems
- Integrated Clinical Information Systems
- Medical Imaging Systems
- Patient Monitoring
- Computers in Education
- Medical Decision Making
- Bibliographic Retrieval
- Controlled Medical Terminologies

Stanford University, Medical Informatics Short Course, 1980s
“Grand Challenges” in the 1990s…

- Medical Information Standards
- Medical Informatics Training
- Integrated Health Information Management Systems
- Computerized Medical Records
- Clinical Information Systems, including radiology, laboratory, pharmacy
- Physician Order Entry Systems
- Computer-Aided Instruction
- Medical Expert Systems
- Nursing Informatics
- Health Information Networks
- Medical Software
- Research Funding Opportunities
- Cultural and Sociological Changes
- Medical Software Security

*Duke University, 1990s*
Some of the 21st century topics?

Competing for Capital - Creative IT Investment Strategies
Overcoming Barriers to Electronic Medical Records to Support HIV/AIDS Care in sub-Saharan Africa
Development & Evaluation of a Standards-based PDA Documentation & Decision Support System for Advanced Practice Nurses
Disseminating Innovations in Critical Care
Looking into & out of CPOE's (Physician Order Entry) Black Box: Monitoring its Uses, Benefits and Consequences
eCME: Is it ready for prime time?
Progress and Prospects for the National Health Information Infrastructure
Why is so much clinical IT so bad?

*From a medical informatics conference brochure, Johns Hopkins, 2005*
More 21st century topics?

Accessing Information at the Point of Care: Impact and Challenges
Three usability studies of informatics tools at patient-provider interface: a HRT decision tool, tobacco use risk tool, & medical resident usage of PDA tools
Managing a Drug Withdrawal Crisis via Health IT PDAs for Decision Support at the Point of Care: Lessons Learned
Effective Clinical Decision Support: Assessing Factors Critical for Success
Bringing technology to people & people to technology: Uganda as a case in point
eLearning and eEducators at the Point-of-Care
Redesigning Hospital Processes with EHRs-A Socio-Technical (ST) Approach
A Web-based Point of Care Knowledge Resource and Workflow Support for Ambulatory Care
PDAs: Improving Medication Safety through Access and Use of Drug Information Sources

*From a medical informatics conference brochure, Johns Hopkins, 2005*
Who Are Medical Informaticists?
Practitioners in an interdisciplinary academic field, chiefly based in medical schools, with a broad range of professional training

- physicians/health professions schools faculties
- computer scientists/engineers
- nurses
- pharmacists
- dentists
- veterinarians
- government officials
- medical records administrators
- medical librarians
- lawyers
- cognitive psychologists
- software/hardware producers/publishers
- healthcare consumers/advocates
- insurance providers/ third party payers
Where Do Medical Informaticists Work?

• health professions school faculty
• academic research & development
• educational support positions
• clinical administrative/educational managers
• healthcare facility Chief Information Officers
• corporate research and development
• health information professional/biomedical librarians
• entrepreneurs
Medical Informatics Journals

Artificial Intelligence in Medicine
BMC Medical Informatics and Decision Making
Computers in Biology and Medicine
Computers, Informatics, Nursing: CIN
Health Informatics Journal
Healthcare Informatics
IEEE Transactions on Information Technology in Biomedicine
International Journal of Medical Informatics
J Healthcare Information Management
J Telemedicine and Telecare
Medical Informatics and the Internet
Online Journal of Nursing Informatics
Telemedicine Journal and eHealth

Academic Medicine
Bioinformatics
BMC Bioinformatics
Health Informatics J
Healthcare Informatics
JAMIA
JASIST
J Biomedical Informatics
J of Medical Internet Research
Medical Decision Making
Organizations concerned with medical informatics…

- American Medical Informatics Association - www.amia.org
- International Medical Informatics Association - www.imia.org
- Health Information Management Systems Society - www.himss.org
- American Health Information Management Association - www.ahima.org
- Association for Information Science & Technology; SIG-MED http://www.asis.org/AboutASIS/asis-sigs.html#SIGMED
- Medical Library Association - www.mlanet.org
Where can someone go to earn a degree in medical informatics?

- Universities
- Medical libraries
- Medical centers
- Professional meetings
- On the Web
Degree Programs, Certificate Programs, Fellowships, and Short Courses

The following is a list of formal academic and training programs in North America in medical, nursing, and health care informatics. For a list of academic medical informatics programs outside North America, please click here.

The icons below are used under the names of institutions to indicate the types of formal academic and training programs available. 

- **A**: Associate degree in informatics
- **M**: Masters degree in informatics
- **PhD**: PhD degree in informatics
- **Informatics specialization within other degree programs**
- **NLM-sponsored post-doctoral fellowships**
- **Other post-doctoral research fellowships**
- **Certificate program**
- **Short courses**
- **Online/distance education programs**

If your institution has a program that should be included in this list, please send a message here, include the Web address of your program and indicate which of the above types of degrees and training are available.
A degree program in universities with an ALA–accredited LIS program.
Institutions with NLM training programs in medical informatics, and a strong L/IS program

- Training Program for Imaging-Based Medical Informatics – UCLA
- Biomedical and Health Informatics Research Training - University of Missouri Columbia
- Pittsburgh Biomedical Informatics Training Program University of Pittsburgh
- Regenstrief Informatics Research Fellowships Indiana University - Purdue University at Indianapolis
- Biomedical and Health Informatics Training Program - University of Washington
- Computation and Informatics in Biology and Medicine - University of Wisconsin Madison
University of Pittsburgh

Department of Biomedical Informatics

Learn about the Department of Biomedical Informatics (DBMI)

Training Program

The Pittsburgh Biomedical Informatics Training Program has been preparing individuals for basic and clinical research, healthcare and development careers since 1987. Areas of concentration include: Clinical Informatics, Bioinformatics, Dental Informatics, Health Services Research, Biosurveillance/Infectious Disease

Informatics Today

Words from the Wise

Highlights

View openings for post-doctoral research associates, fellowships and technical staff

Lectures
Institutions with NLM training programs in medical informatics, and a strong health sciences library-based training program

- Johns Hopkins Health Sciences Informatics Training Program - *Johns Hopkins* University

- Vanderbilt Biomedical Informatics Training Program - *Vanderbilt* University

- Training Program in Health Informatics - *Oregon* Health & Science University
Institutions with NLM training programs in medical informatics, but no L/IS program...

- Biomedical Informatics Training Program - University of California Irvine
- Medical Informatics Research Training Program - Columbia University
- Program in Biomedical Informatics - Harvard-MIT Division of Health Sciences & Technology
- Health Informatics - University of Minnesota Twin Cities
- Training Program in Computational Biology and Medicine - Rice University
- Training of Toolmakers for Bio-Medical Informatics - Medical University of South Carolina- MUSC
- Graduate Training in Biomedical Informatics - Stanford University
- University of Utah Medical Informatics Training - University of Utah
- Biomedical Informatics Research Training at Yale - Yale University
Degree Programs

The department of Biomedical Informatics at Columbia University offers a variety of training opportunities to meet different needs.

<table>
<thead>
<tr>
<th>Program</th>
<th>Prerequisite</th>
<th>Duration</th>
<th>Part-Time Study</th>
<th>Financial Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA</td>
<td>BA</td>
<td>1-3 years</td>
<td>YES</td>
<td>Self</td>
</tr>
<tr>
<td>PhD</td>
<td>BA</td>
<td>4-6 years</td>
<td>NO</td>
<td>Columbia or NLM</td>
</tr>
<tr>
<td>MD/PhD</td>
<td>BA</td>
<td>7-8 years</td>
<td>NO</td>
<td>Columbia or NLM</td>
</tr>
<tr>
<td>Master's degree fellowship</td>
<td>Doctorate</td>
<td>2-3 years</td>
<td>NO</td>
<td>Columbia or NLM</td>
</tr>
<tr>
<td>Post-doctoral fellowship (non-degree)</td>
<td>Doctorate</td>
<td>2-3 years</td>
<td>NO</td>
<td>Columbia or NLM</td>
</tr>
</tbody>
</table>

The field of Biomedical Informatics is very broad. Students can choose to focus on one of the four following tracks, which study the application of information technology and its impact on health and disease from the molecular level to whole populations:

- **Bioinformatics** - the structure and function of cells and cell components; genomics; proteomics
- **Clinical Informatics** - the delivery of patient care, nursing, and dentistry; electronic medical records; systems to improve the quality of health care and reduce cost
- **Public Health Informatics** - the health of populations; systems to educate providers and patients; medical research systems. Special funding slots available through NLM

A somewhat outdated description of the program is available in an article published in the 2002 Yearbook of the International Medical Informatics Association (IMIA). There is additional information about requirements for admission, and an application to the program can be completed on-line. The department offers a rich curriculum for biomedical informatics students in the MA, MD, and postdoctoral programs, as well as students in other departments. A number of links and presentations provide...
This three-day course provides an introduction to four domains of information generated by the field of molecular biology:

- nucleotide sequences
- protein sequences
- three-dimensional structures
- complete genomes and maps

An overview of flagship search systems and databases available at the National Center for Biotechnology Information emphasizes how your current search skills apply to molecular biology databases. A tour of advanced Entrez search features illustrates techniques for effective and efficient retrieval of molecular data and will help you to address some common user needs. The course also introduces more technical search systems, including BLAST, Map Viewer, and the Cn3D viewer for three-dimensional protein structures. The course format combines lecture, demonstration, and hands-on experience, and concludes with a discussion of various levels of molecular biology information services provided by libraries. Additional detail about the material covered is accessible from the modules page, and the daily schedule is also provided. This course is approved for 20 CE contact hours by the Medical Library Association (MLA).

November 2-4, 2005          Houston, TX  
November 2-4, 2005          National Library of Medicine  
March 1-3, 2006             Ann Arbor, MI  
March 26-30, 2006           Davis, CA  
June 14-18, 2008            Cambridge, MA

Additional details about each location as well as a link to a registration form are provided on the upcoming courses page. Each course is three days long, 9:00 AM - 5:00 PM each day (see schedule for details). Additional course dates/locations will be posted as they are scheduled. A list of past courses is also available.
Individual Biomedical Informatics Fellowships

Introduction
PAR Number: PAR-034070
Release Date: 02-12-03
Expiration Date: 03-31-06, unless reissued

Scope and Priorities
Purpose
Individual biomedical informatics fellowships provide support for the training of informatics scientists able to perform research in basic informatics problems or to application of informatics to any area of biomedicine, including clinical medicine, basic biomedical research, clinical and health services research, public health, professional education, and administration. Post-doctoral, pre-doctoral and, in certain specified fields, some post-baccalaureate candidates are eligible.

Training Objectives
Health informatics is concerned with the acquisition, representation, storage, retrieval, and utilization of information in a health-relevant domain. Fellowship training is intended to help meet the growing national need for research investigators and leaders trained in the myriad of specialized areas in biomedical computing and health informatics. Thus, this fellowship is suitable for training in informatics specializations ranging from clinical informatics to the information of molecular biology and other large research datasets. Applications that focus on building new skills or extending the applicant's existing expertise are particularly desirable.

Upon completion of training, fellows should be able to conduct basic or applied research at the intersection of biology...
Continuing education courses

• primarily at national and regional professional meetings
  – MLA
  – AMIA
  – ASIS&T
MLA '06: Continuing Education Courses

A full description of the specific CE course appears below. For further information, or if you have other questions about MLA CE courses, contact Debra Cavanaugh, mla.edu@mla.org, 312.419.5094, x32.

CE 703
Introduction to Medical/Health Care Informatics for Librarians

Level: Beginning
Prerequisite: None
Cost: $295 (nonmember, $335)
Attendance Maximum: 30

Instructor(s): Kathleen Ann McKibbon, associate professor, Clinical Epidemiology and Biostatistics, Health Information Research Unit, McMaster University, Hamilton, ON, Canada, and Ellen Delefsen, associate professor, School of Information Sciences, Department of Library and Information Science, University of Pittsburgh, Pittsburgh, PA

This workshop is designed around two basic purposes: First, it gives librarians a broad understanding of what medical/health care informatics is, how and to what extent it overlaps with medical/health care librarianship, and what to expect from more implementation of these systems in the organizations where librarians work. Second, it shows examples of how information is being integrated into health care delivery, where librarians can benefit from working with informatics systems, issues involved in implementation, and potential problems inherent with medical informatics.
Tutorials

Tutorials - Excellence in Informatics Education

A tutorial program will provide a learning experience filled with rich content.

There are 26 tutorials, taught by a faculty comprised of AMIA's widely recognized thought leaders in the field are designed to stimulate interest in the diverse body of informatics knowledge. Tutorials have been divided into four series - Primers, EHRs, Methods, and Selected Topics.

**Primer Series:**
A set of tutorials is designed to provide an introduction to key current and emerging areas in informatics and considered essential to the core foundation of informatics theory, application, and practice.

**R Series:**
A tutorial on the Electronic Health Record (EHR) is now upon us. This series of tutorials will focus on the key concepts required for individuals responsible for EHR selection, implementation, deployment, and evaluation.

**Methods Series:**
A methods series is designed for individuals looking for advanced instruction from leading experts on the algorithms and techniques characteristic of the field of biomedical informatics.

**Selected Topics Series:**
A series of tutorials provides in-depth treatment of special topics in clinical and health informatics, informatics, and public health informatics.

Tutorials Rates
Problems with the Distribution of Health and Medical Information (SIG KM and SIG MED)

Catherine Smith, Tim Patrick, Paula Rhyner, Deborah Swain and Leonard Davolio

(Submission #13)

Summary

According to many experts in the field of medicine, there is potential for an acute crisis in the collection and distribution of patient records and community health. In the 1990s, the introduction of HIPAA (Health Information Privacy and Accountability Act) regulations protected individual privacy, but the need for social computing, collaboration, and sharing of data about bird flu, for example, is changing information practices. Social networking groups, such as communities of practice (CoP) made up of health and medical professionals, are growing with the spread of communicable diseases, viruses, and pandemic flu. Applying research tools, health projects in pediatrics are creating communication maps for all stakeholders (care providers, parents, program managers, and researchers). This panel looks at both research and applications in the field of informatics as practiced in hospitals, clinics, and medical offices.
Distance education from the medical informatics or L/IS communities

• AMIA’s 10 x 10 program
• OHSU’s online master’s program
• Pitt’s Fast/Track medical specialization
American Medical Informatics Association

AMIA 10x10
10,000 Trained by 2010

Training Health Care Professionals to Serve as Local Informatics Leaders and Champions

"Because we are serious about transforming our system of health care to be safe, efficient, timely, patient-centered, equitable, and effective, we must invest not only in technology, but also in the education and training of individuals to ensure our workforce is poised to meet this challenge. One of the factors most important to the success of health care information technology projects is the engagement and participation of clinicians. There must be a cadre of health care professionals (physicians, nurses, and others) who have knowledge and skills beyond their clinical training. Virtually every hospital, clinic, physician office, or other health care provider organization will in some way utilize information technology solutions in the coming years and will need health care professionals versed in informatics to assist with the implementation, use, and success of these systems."

Don E. Detmer, MD, MA

AMIA 10x10 Program

The AMIA 10x10 will utilize curricular content from existing informatics training programs and other AMIA educational initiatives with a special emphasis toward those programs with a proven track record in distance learning. The content will provide a framework but also cover plenty of detail, especially in areas such as electronic and personal health records, health information exchange, standards and terminology, and health care quality and error prevention.

We anticipate AMIA 10x10 programs to be geared toward three major domains in the field of informatics:

- Clinical or health care (including personal health management, electronic and personal health records, health information exchange, standards and terminology, and health care quality and error prevention)
- Public health/population informatics
- Translational bioinformatics
Department of Medical Informatics & Clinical Epidemiology

Distance Learning in Medical Informatics

- Information about tuition discount for AMLA, HIMSS and AMDIS members
- Fall 2005 Course Schedule
- Textbook List 2004-2005
- If you would like more information about Biomedical Informatics Distance Learning courses at OHSU, please join our mailing list.
- A demo version of one course can be found at http://ohsu.blackboard.com. Please use User Name "guest1" and Password "guest1" to log in.

Courses Master of Biomedical Informatics Graduate Certificate Program

The goal of the OHSU medical informatics distance learning program is to provide knowledge and skills in the application of information technology (IT) to health care. Graduates of the program have taken on additional IT responsibilities in their existing careers or embarked on new careers as developers and managers of health care IT systems. In the program, individuals with a variety of backgrounds take courses in medical informatics, management, and related areas to gain expertise to assume positions that require a thorough understanding of both IT and the health care environment.

There are two distance learning programs offered. The first is the Graduate Certificate Program in Biomedical Informatics. This program requires eight three-credit courses for completion and provides broad exposure to the field.
Medical Librarianship/Medical Informatics Career Track

The University of Pittsburgh School of Information Sciences, through its Department of Library and Information Science (DLIS), offers an option within its Master of Library and Information Science (MLIS) degree to specialize in Medical Librarianship/Medical Informatics. This specialization is designed for students who wish to pursue careers in medical libraries, information management, and health care informatics. The specialization is offered in conjunction with the School of Business and Public Management and the School of Medicine.

The curriculum is designed to provide students with a strong foundation in information management, with a focus on health care and medical informatics. This includes courses in medical informatics, health information systems, and medical library practice. Students will also have the opportunity to gain practical experience through internships and research projects.

In addition to coursework, students will have the opportunity to engage in research projects and to participate in professional development activities. The program is designed to prepare students for careers in medical libraries, health information management, and related fields.

Special Admission Requirements for Medical Librarianship Career Track

The following requirements must be met to be admitted to the Medical Librarianship Career Track:

1. Completion of prerequisite courses in computer science, mathematics, and statistics.
2. A bachelor's degree in health sciences, life sciences, or a related field.
3. A strong interest in medical informatics and medical library practice.

The program is designed to prepare students for careers as medical librarians, informaticians, and health information managers. Students will have the opportunity to gain practical experience through internships and research projects. The program is offered in conjunction with the School of Business and Public Management and the School of Medicine.
Short courses....

- Woods Hole MBL
- Stanford University
  - designed for health professionals seeking additional training or updating, who will serve “change agents” in their institutions
  - a tradition of welcoming medical librarians as part of the multidisciplinary training class
**BioMedical Informatics**

**Course Dates:**
- Spring Session: May 28 - June 4, 2006
- Fall Session: September 24 - October 1, 2006

**Online Application Form. (PDF)** Deadline: January 19, 2006

**Course Website | Student Course Evaluation**

This week-long survey course is designed to familiarize individuals with the application of computer technologies and information science in biomedicine and health sciences. Through a combination of lectures and hands-on computer exercises, participants will be introduced to the conceptual and technical components of biomedical informatics. The conceptual components will include principles of database design, human-computer interfaces, medical terminologies and coding systems, medical decision analysis methods, clinical information systems architectures, and methods for measuring costs and benefits in health care systems. The technical components will include use of the Internet for biomedical applications, current and emerging wide area network technologies, use of literature and molecular sequence databases, and systems for telemedicine. Interactive evening workshops will teach personal computer skills such as creation of World Wide Web interfaces to databases and use of personal productivity tools.

Taught by a nationally known faculty, the course will prepare the student to become actively involved in making informed decisions about computer-based tools in their organizational environment, and improve the students' own computer skills.

This is a National Library of Medicine fellowship program directed at medical educators, medical librarians, medical administrators, and young faculty who are not currently knowledgeable but can become agents of change in their institutions. Limited to 30 fellows per session.

Costs of attending the course, including travel, housing and meals at MBL, are fully supported by the National Library of Medicine, NIH.

**Director:** James Simony, Columbia University

**Principal Investigator:** Cathy Norton, Marine Biological Laboratory
Medical Informatics Introductory Short Course (Online)

Course Description | Course Details | Course Topics | Other Information | Course Cost

**Course Description:** Streamed Over the Internet On Demand

The Medical Informatics Introductory Short Course provides an overview of the field of Medical Informatics using computers for management of clinical information. The lectures communicate the key technical issues in informatics through coordinated lectures that cover major themes in the field. The course will also describe state-of-the-art research topics through presentations and demonstrations.

**Course Objectives:**

- To provide an overview of the field of Medical Informatics (using computers for management of clinical information).
- To communicate the key technical issues in informatics through coordinated lectures that cover major themes in the field.
- To describe state-of-the-art research topics through presentations and demonstrations.

**Faculty:** Lawrence Fagan, M.D., Ph.D.
Bioinformatics Methods and Techniques

Online Programs

With its power to convert vast amounts of biological data into knowledge, Bioinformatics unlocks the tremendous potential for understanding the human body, accelerating biomedical research, and developing new medical therapies.

This interactive online course explores the broad scope of bioinformatics, discusses the theory and practice of how these tools are built, and provides an understanding of their applicability and limitations to sequence analysis, functional genomics, and protein structure analysis and prediction.

Course Objectives

- To provide an analysis of the field of Bioinformatics
- To communicate the key methods in Bioinformatics and Genomics through coordinated lectures that cover major themes in the field
- To reinforce major topics in Bioinformatics and demonstrations using software programs
- To describe state-of-the-art research in Bioinformatics through presentations and demonstrations

Intended Audience

Professionals in the pharmaceutical and biotechnology industries including: biologists, researchers, managers.
Are there any role models?

- Yes, there are L/IS faculty who teach and do research in medical informatics
- Yes, there are medical librarians and information specialists who work in academic and library settings, with a job description that encompasses bioinformatics....

- Typically, these people have a PhD degree and a degree in either the health sciences and/or the L/IS field
Ann McKibbon BSc. (Guelph), MLS (Western), PhD (Pittsburgh)

Associate Professor, Department of Clinical Epidemiology & Biostatistics

Member, Health Information Research Unit

Tel: 905-525-9140 x 22803  Fax: 905-546-0401  E-mail: mckib@mcmaster.ca

Postal address:
McMaster University
1200MainStreetWest, Rm. 3H7A
Hamilton, Ontario, Canada L8N 3Z5

Office location: HSC-3H7A

Academic Interests

Dr. McKibbon's current interests are in knowledge translation, medical/health informatics, and information retrieval. Specifically I am interested in how health professionals use electronic information resources, the results they get, and how identified information is used in practice.
Liaison Librarian to:

UF Genetics Institute

College of Medicine
- Molecular Genetics and Microbiology (joint appt.)
- Anatomy and Cell Biology
- Biochemistry and Molecular Biology
- Physiology and Functional Genomics
MS, Ph.D and IDP students

Other Programs
- ICBR
- Department of Zoology (CLAS)
- Plant Molecular and Cellular Biology (IFAS / CLAS)

As your Liaison Librarian, Michele can:
- Provide assistance with literature searches, including those for grants and IACUC applications
- Provide information consultations or library orientations
- Receive recommendations for books, journals, audio-visuals or databases to be added to the HSC Libraries collections

Michele Tennant
Ph.D, MLIS
Bioinformatics Librarian

The Medical Library Association’s 2005
Academic Medical Librarian of the Year

352-846-0149
michele@library.health.ufl.edu
Instructor

Ansuman Chattopadhyay has PhD in Biochemistry with extensive experience in signal transduction research using molecular biology approaches. He is currently working as Head, Molecular Biology Information Service at the Health Sciences Library System, University of Pittsburgh, where he has developed an information service program focused on the fields of Molecular Biology and Genetics. He offers hands on workshops in the use of molecular biology software and databases, provides consultation to research teams for questions related to bioinformatics resources, developed and maintains a web-based portal for molecular biology information. Dr. Chattopadhyay previously held positions in the Department of Biochemistry at Vanderbilt University School of Medicine at Nashville, TN and Cellomics Inc., at Pittsburgh, PA.
Nunzia B. Giuse, M.D., M.L.S., A.H.I.P.

Director of the Eskind Biomedical Library
Professor, Department of Biomedical Informatics
Professor, Department of Medicine

Nunzia B. Giuse, M.D., M.L.S., A.H.I.P., is Professor in the Department of Biomedical Informatics and in the Department of Medicine, and Director of the Eskind Biomedical Library (EBL) at Vanderbilt University Medical Center (VUMC). Prior to coming to Vanderbilt in 1994, Dr. Giuse established herself as an independent researcher in the area of multi-center medical knowledge base acquisition strategies while at...
Cynthia S. Gadd, Ph.D., MBA, M.S. (Cindy)
Associate Professor of Biomedical Informatics
Director of Educational Programs
Room 444, Eskind Biomedical Library
2209 Garland Ave
Nashville, TN 37232-8340
Office: (615) 936-5951
Fax: (615) 936-1427
Email: cindy.gadd@vanderbilt.edu

Dr. Gadd is an Associate Professor of Biomedical Informatics and Director of Educational Programs. She joined the Department of Biomedical Informatics in September 2005 after eight years at the Center for Biomedical Informatics at the University of Pittsburgh, where she directed the Biomedical Informatics Training Program since 2003. Dr. Gadd earned her doctorate in Information Systems from the University of Pittsburgh in 1995 and her masters in Biomedical Engineering/Informatics from Duke University in 1998.

Dr. Gadd has published numerous articles in her primary area of research, implementation and evaluation of integrated clinical information systems, including electronic medical records (EHR) systems, in large health care delivery networks. She has conducted evaluations of a diverse range of health information technologies, including: an integrated, multi-site vendor EHR; web-based guideline-based decision support system; multi-media EHR for outpatient oncology practice; bioscience collaboratories; handheld computing use to support a residency program; and teleradiology and telepathology initiatives. She also directed the evaluation of the Pittsburgh IAIMS initiative. Dr. Gadd has a continued interest in promoting and conducting information system evaluations that address system functionality and effectiveness, as well as user and organizational impacts.
Edward H. Shortliffe, MD, PhD

Ted Shortliffe

Dean, University of Arizona College of Medicine - Phoenix
Professor of Basic Medical Sciences, University of Arizona College of Medicine - Phoenix
Professor of Medicine (General Internal Medicine), University of Arizona College of Medicine
Professor of Biomedical Informatics, Arizona State University, Phoenix
Medical Informatics in Japan

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【重要】7月11日付け日本経済新聞マイクロソフト係連記事について

第27回医療情報学連合大会
2007年11月23日〜25日 神戸国際会議場

第12回日本医療情報学会学術学術大会（シンポジウム2006 in 秋田）
2008年5月30日〜31日 アトリオン・秋田総合生活文化会館（秋田市）

TOPICS
2007.08.01 お知らせ 会員履歴の追加・変更について

2006.09.21 お知らせ <上級医療情報技術師能力検定試験について>
・第1回 上級医療情報技術師能力検定試験のお知らせ
  一次試験 日時：2007年8月5日（日）
  会場：札幌・東京・名古屋・大阪・福岡
  二次試験 日時：2007年12月8日（土）、9日（日）
  会場：東京

2006.08.31 イベント MEDINFO 2007のお知らせ（World Congress on Medical Informatics）
東北大学
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■ 医療情報連携大会JCM2007 2007/11/23 - 25
■ 第12回IHEワークショップ in 広島 2007/11/10
■ 第47回日本核医学学会学術総会 2007/11/4 - 6
■ 第43回日本医学放射線学科秋季臨床大会 2007/10/25
■ 第38回日本臨床自動化学会 2007/9/27(終了)
■ IHE ペンダーワークショップ 2007/9/13(終了)
Computational method of identifying medical complications based on Hospital Information System data.

Shinohara N, Oyama H, Motsuya S, Ohe K.

Clinical Bioinformatics Research Unit, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan.

This study introduces an objective method for identifying limited types of medical complication cases based only on Hospital Information System (HIS) data. To identify medical complication cases, we established an identifying rule, prepared HIS data, and applied the rule to the data. We identified 3 shock cases with intravenous application of contrast media at CT examination by using only one year (2003/4/1 to 2004/3/31) of HIS data from The University of Tokyo Hospital.

PMID: 17238712 [PubMed - indexed for MEDLINE]

Related Links
- The hospital information system as a source for the planning and feedback of specialized health [Medinfo.1995]
- Iatrogenic venous air embolism caused by CT injector--from a risk management point of view. [Radiat Med.2004]
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The guideline of the personal health data structure to secure safety healthcare. The balance between use and protection to satisfy the patients’ needs.


Healthcare Informatics and Hospital Systems Management Department, Hiroshima University Hospital, 1-2-3 Kasumi, Minami-ku, Hiroshima 734-8551, Japan. kiyomu@hiroshima-u.ac.jp

PURPOSE: To inform about the impact of a recent movement towards a policy to develop integrative networked electronic health record (EHR) as a basis for cooperation among care teams and with patients and in support of safe patient care in Japan. METHODS: The author headed a commission developing policy for health record (HR) structure and its computerization. It executed two questionnaire surveys as the basis for its work. One survey assessed the current state of computerization of health record in the hospitals certified by Japan Council for Quality Health Care (JCQHC). The other survey assessed the attitudes towards a specific EHR system in the Hiroshima University Hospital and its affiliate hospitals. RESULTS: The survey of the above hospitals showed that most have computer supported administrative procedures, but only few computer-based health records. The attitudes of the Hiroshima EHR users show that while they expect efficiency and quality improvements, there is also apprehension that the system in use might lower practical efficiency and compromise patient safety. Accordingly, health recording requirements and storage policy have been restructured and communicated to the hospitals. CONCLUSION: These insights led to the initiation of curricula educating “Health Information Technologist” which is promoted by Japan Association Medical Informatics and the criterion of Chart Review Promotion of JCQHC. They will also lead to recommendation for improved and advanced EHR.

PMID: 17224303 [PubMed - indexed for MEDLINE]
Health Risk Appraisal using Internet technology.

Suka M, Yoshida K.

Department of Preventive Medicine, St. Marianna University School of Medicine, 2-16-1 Sugao, Miyamae-ku, Kawasaki, Kanagawa 216-8511, Japan. suka@marianna-u.ac.jp

OBJECTIVE: To develop a Web-based Health Risk Appraisal (HRA) system as a tool for health education based on personal health examination data. METHODS: A Japanese health examination database was analyzed to develop models for HRA, which were designed to predict each of ten laboratory values in a year with and without lifestyle modifications. The HRA models were embedded into a server. RESULTS: The Web-based HRA system has been introduced into a Japanese health care association having 37 branch centers. Following a health examination, an individual health education program using the Web-based HRA system is provided to a given client at each branch center or at a client's office. A measured laboratory value and corresponding predicted laboratory values in a year with and without lifestyle modifications are displayed on the screen in forms of both numerical values and graphs. A trained nurse or another health care provider operates the system and explains the HRA result. CONCLUSION: The Web-based HRA system will be a practical tool for individual health education following health examination.

PMID: 15924198 [PubMed - indexed for MEDLINE]

Related Links
- Behavioral science perspectives on health hazard/health risk appraisal. [Health Serv Res. 1987]
- [The development of health risk appraisal for Japanese as a new health educational tool] [Gan No Rinsho. 1989]
- Lifestyle evaluation system to support health education. [Medinfo. 1998]
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Anyone at Tsukuba?
Researcher Profile

Name
Masafumi Okada

Affiliation
Department of Epidemiology, Institute of Community Medicine,
Graduate School of Comprehensive Human Sciences,
University of Tsukuba

Title
Assistant Professor

Academic degrees
MD (University of Tsukuba)
PhD (University of Tsukuba)

Research Fields
Epidemiology, Medical Informatics
Researcher Profile

Name
Tetsuya Igarashi

Affiliation
University of Tsukuba (Institute of Clinical Medicine, University of Tsukuba)
Medical Informatics, Field of Advanced Biomedical Applications, Graduate School of Comprehensive Human Sciences

Title
Professor

Academic degrees
MD (University of Tokyo)

Research Fields
Epidemiology and prevention of life-related disease
Development of a telenursing system for patients with chronic conditions.

Kawauchi T, Azuma M, Ohta K.

College of Nursing and Medical Technology, University of Tsukuba, Tsukuba, Japan.
kawat@sakura.cc.tsukuba.ac.jp

We have evaluated the feasibility of a telenursing system for patients with a chronic condition who are in receipt of home care services. The Internet-based system allows patients (equipped with a laptop computer) and nurses and physicians to access information from a central database through a wireless network (128 kbit/s). Email and video-mail messages as well as vital signs data can be sent daily by the patient to a server at a regional health-care centre, and can be accessed by a nurse or physician, who can then decide on appropriate care. The system was tested by a male patient with type 2 diabetes mellitus, to see whether it would enhance his own management of his condition. During a 73-day baseline introductory period, no specific educational material was provided on the system Website about the management of diabetes (during this time the technical operation of the system was tested). During a second, 71-day period, educational material was provided. The telenursing system helped the patient to manage his condition, as shown by significant improvements in his levels of blood glucose and glycated haemoglobin (HbA(1c)) and in his blood pressure. Our findings suggest that the system is feasible.

PMID: 15273035 [PubMed - indexed for MEDLINE]
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• Ellen Detlefsen
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  – ellen@detlefsen.com