

Clinical Informatics Program

Clinicians need rapid, easy access to a variety of quality information sources to aid in clinical decision making at the point of care. The IAIMS clinical informatics program is one of three core program areas. The other IAIMS initiatives are core resources and technology (UCARE) and educational systems and resources development (IDEAL).

The clinical informatics program has recently been expanded. Members of the group include Dr. Harold Goldberg (*hig@u.washington.edu*), Dr. Tao Kwan-Gett (*kwangett@u.washington.edu*), Dr. Peter Tarczy-Hornoch (*pth@u.washington.edu*) and Dr. Rita Altamore (*altamore@u.washington.edu*).

The group, led by Dr. Goldberg, will research, develop and test our strategies in critical areas of clinical decision support. Dr. Jim LoGerfo, IAIMS Co-PI and Medical Director, Harborview Medical Center serves as the IAIMS clinical informatics program director.

The clinical informatics group is working on clarifying key information needs and developing strategies in the following areas:

Preventive Care

- automatic event monitoring and rule-based reminder systems
- care provider notification via encrypted electronic mail
- access to preventive care guide-

lines on-line at point of care

- population-based analysis of data to identify areas for improvement

Diagnosis

- exploration of computer-aided diagnostic tools
- access to diagnostic reference materials and databases

Management

- enhanced communication with referring/consulting care providers
- access to computer-aided management tools
- event monitoring

Early projects for this group include the development of a more secure clinical email server (in collaboration with staff at campus Computing and Communications staff and Medical Centers Information Systems), prototyping a WWW interface to the medical record and clinical knowledge-base development.

Clinical Mail Project

Dr. Peter Tarczy-Hornoch has taken the IAIMS lead in prototyping and testing a more secure clinical email server. The goal of this system is to provide a more secure email environment which will allow physicians to communicate with colleagues internally, with external referring physicians, and patients as well.

In addition, a longer term goal is to support automatic receipt of clinical reminders and alerts. As currently envisioned, this system will be based on the UW developed-PINE email system. Confidential clinical data will be encrypted using Pretty Good Privacy (PGP) software.

The first phase of this project has been to work with small groups of clinicians to pilot test the use of

(Continued on page 2)

IAIMS Clinical Informatics Advisory Committee

To help guide the IAIMS clinical informatics program activities, we have established an advisory committee which will be chaired by Dr. Eric Larson, Medical Director, University of Washington Medical Center. This committee will include broad representation of clinical disciplines including medicine, nursing and pharmacy. The charge to the Committee is to provide overall guidance and prioritization to the clinical decision support projects conducted through the IAIMS grant, and to identify those important gaps which need to be filled in order for us to continue to move ahead with the development of clinical information systems.

Clinical Informatics Program (cont'd)

PGP in our clinical settings, and to work out the administrative/organizational issues with respect to assignment of keycodes and maintenance of user access security clearance.

WEB Browser for Patient Records

In the realm of enhancing clinical performance, Dr. Kwan-Gett has been working on a web browser interface for our networked clinical data base of patient information. Such an interface would allow physicians access to clinical data on a variety of computer systems using a single graphical interface. In the long run we envision that a pediatric housestaff member could, for instance, access similarly formatted data on their patients at UWMC, HMC, and CHMC. Dr. Kwan-Gett is currently in discussions with faculty at Boston Children's Hospital who are working on a similar project. He has been selected into the Robert Wood Johnson Clinical Scholars Program, and will continue to pursue his interest in clinical informatics as he begins the Scholars program this

summer.

Clinical Knowledge Base Development

With respect to enhanced knowledge support, Dr. Tarczy-Hornoch has developed a web site for consultative issues in perinatal care which is now widely used (URL <http://weber.u.washington.edu/~neonatal>). This site has been designed to supplement our regional medical consultation program known as MEDCON in which physicians from any of the four WAMI states have toll-free phone access to consultative support from appropriate UW faculty without charge to them or their patients.

Similarly, in the knowledge support arena, Dr. Kwan-Gett has continued development of a HealthLinks program called EthnoMed. It provides knowledge support to clinicians dealing with a number of immigrant/refugee populations. EthnoMed covers cultural beliefs about health and illness including cultural specific syndromes or explanatory models of illness of which clinicians should be aware in working with those populations. (EthnoMed can currently be found at <http://www.hslib.washington.edu/clinical/ethnomed>).

Ambulatory Care Information System Development

In addition to serving as leader of the clinical informatics group Dr. Goldberg will continue to work with MCIS staff on the Ambulatory Care Information System (ACIS). The basic system is now fully operational at the UWMC's Roosevelt Family Medicine Clinic.

ACIS provides access to the mini-medical record (MMR) which includes a problem list, medication summary, and summaries of recent labs, x-rays, and other test

reports. In addition, a Clinical Reminder/Outcome System (CROS) has been implemented which will allow the system to support and monitor clinical guidelines.

For instance, University of Washington Physicians has adopted a clinical guideline with the expectation that diabetics would have a retinal exam by an ophthalmologist on an annual basis. This has been shown to have improved outcomes with respect to prevention of blindness from retinal hemorrhage. If a diabetic is seen in any clinic and there is no record of any eye clinic appointment having been kept within the past year, an automated reminder is generated. If the patient has had an exam outside the system, the exam can be recorded by the physician and the data base updated. This system will enhance the various clinical preventive maneuvers such as mammography, pap smears, and immunizations.

MCIS/IAIMS Linkage

We are very excited about a recent decision by the Medical Centers Information Systems Steering Committee to provide direct support for a position, Coordinator of Clinical Informatics/MCIS. Dr. Harold Goldberg has accepted this position which provides a clear, strong link between the clinical informatics activities of the IAIMS grant and the need to coordinate a large number of decisions related to clinical decision support as we enter the next phase of our clinical information systems implementation. Mark Gargett, Associate Executive Director of Medical Centers Information Systems (MCIS), said he is pleased to be working in this collaborative relationship in a real and tangible way.

*Published by the IAIMS Program Office.
Supported, in part, by a grant from the
National Library of Medicine
(Grant #1 G08 LM 05620-02).*

*Sherrilynn Fuller and James LoGerfo
Co-Principal Investigators
Steve Rauch and Rory Murphy, Editors
Sandra Daluson, Production Manager*

*Contributors to this issue:
Harold Goldberg, Tao Kwan-Gett, Gregory
Raugi, Peter Tarczy-Hornoch*

IAIMS Office
University of Washington
Box 357155
Seattle, Washington 98195-7155
(206) 685-2166
iaims@u.washington.edu

The Language of Dermatology

An Interview with Gregory J. Raugi, M.D., Ph.D.

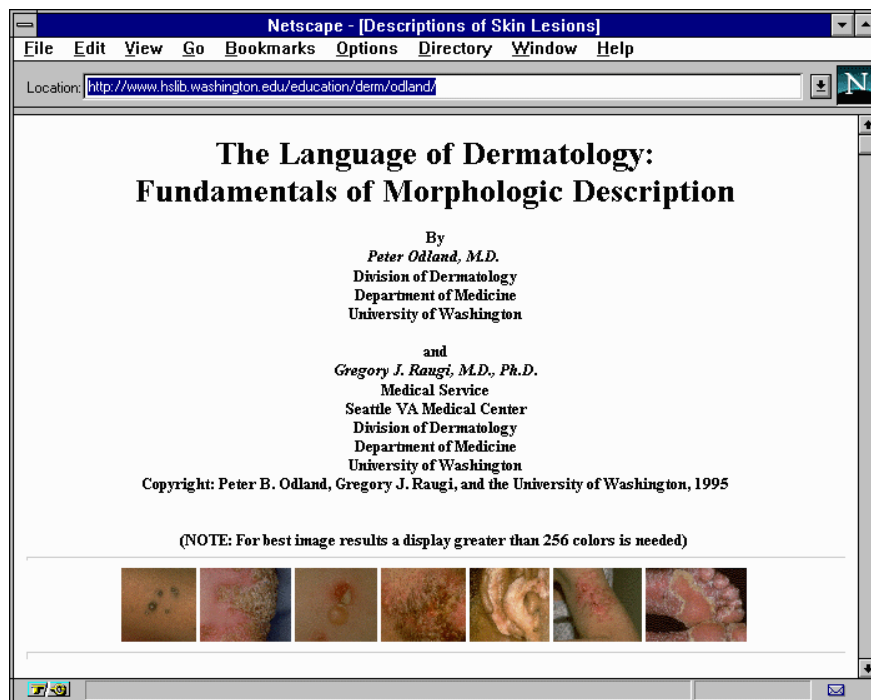
The monthly usage statistics for HealthLinks showed a sharp increase in September 1995. Much of this increase can be attributed to accesses to the Language of Dermatology pages used by Peter Odland, M.D. and Greg Raugi M.D., in their HuBio 567 course. This was the first instance of using HealthLinks to deliver a Web replacement for an actual class lecture. The obvious statistical success of this venture prompted us to ask the authors for their assessment of using the Web for course work. The interview with Dr. Raugi follows.

What factors led you to seek some alternative means of presenting this information on lesion terminology?

The material presented is complex and new, not based on anything the students would have previous experience with and would not build upon anything they already knew. The lecturer was tired of presenting this in 20 minutes. The lecture had become stale for the teacher (but not for the students, since it was enriched in clinical material, for which the students are starved at this point in their education). The amount of material that could be presented in the lecture was minimal and, judging from the students' performance in follow-up patient contact experiences, poorly assimilated.

Were you Web users before the decision to use the Web for this purpose?

I was not. Peter Odland might have been. You guys had to get



me the Dial IP software to connect from home. I still don't have a very functional link from my VA office, but no matter. I only have a 256 color monitor which doesn't render the images very well. I have become a Web browser.

What was the process like to take a class-based presentation and turn it into a web-based presentation? Would you do it again?

The process was easy. We had an idea. We took it to Jim Barrett (Director, Health Sciences Center for Educational Resources and Director of the IAIMS IDEAL program) who seems to have a gift for understanding what we wanted, and was able to produce something like it. We supplied him the images, the text, and the organizational outline and a concept of the look and feel and he brought it to reality. Piece of cake. The self-assessment module was much harder. None of us knew exactly how to do it at the time. I know much more now. It was also difficult, under the time constraints, to balance the realities of programming with the ideal of what we had envisioned. We got close to what we wanted, but as we learned, it had

problems, some of which we fixed on the fly during the course, which really helped a lot. Others were just too big and conceptual to deal with while students were using it.

We have statistics that show how many times the dermatology files were accessed in September, but those numbers do not judge usefulness. What kinds of feedback and evaluation of the Web pages has taken place?

For the most part, the criticism was VERY constructive and very positive.

As faculty, what is your evaluation of using such pages to replace or supplement classroom presentations?

I'm really gung-ho, now. I've been asked to talk to other course chairs about this and have demonstrated the material we developed in a number of forums. I'm about to submit two applications for funding from the Dean for new material I would like to have ready for the beginning of the course next year. I learned a lot from doing this. I

especially learned how hard it is to make the material interactive and how hard and absolutely necessary it is to evaluate students' performance.

What are the types of course material that you think are appropriate for presentation over the Web, and do you have plans to continue using this presentation method or even adding new ones?

I think visual material goes very well in this format. It is essential that the monitors be able to display 16 bit color, though; I would guess that most of the students right now don't have 16-bit capable displays on their personal computer. Things that can be self-paced go well in this format. Material that is conceptually difficult to present in a linear lecture format is often difficult to learn. One of the two projects I mentioned above is a new developmental biology of the skin module. Having heard two extremely capable lecturers make little headway in teaching this important

material, I thought we'd try to put it on the web so that it could be approached by the learner from a number of non-exclusive angles and be reviewed at their leisure. For grins, I'm sticking with the difficult task of designing self-assessment modules to go with it and like the September course, the final exam will contain questions in the self-assessment format, so there will be a reward for using the material and we will recover data about the effectiveness of our teaching

Any further comments you would like to make?

There is a lot of interest in our module from outside the UW. I have assurance that the work on this material will count on my CV as non-peer reviewed papers (like book chapters), so the opportunity for some career advancement is present. I've also been asked to submit a manuscript for an on-line dermatology journal detailing our experiences and results in putting this together.

HealthSciencesWeb Developers

IAIMS has been asked to arrange a regular meeting for Web Developers in the Health Sciences. As the use of the Web spreads throughout the Health Sciences Schools and across its missions, and as new developments are adding to the complexity of HTML and Web services, we believe this forum will provide a time and place for developers to see, talk, and learn.

The logistics for the meetings are unresolved as this issue of Vital Links goes to press. Known Web Developers within Health Sciences will be notified by e-mail. The meetings will also be announced on the IAIMS Home Page at URL: <http://www/hslib.washington.edu/iaims>.

Please send any comments or suggestions or to request an email regarding time and place of meeting to iaims@u.washington.edu or via Campus Mail to IAIMS Program Box 357155.

New Informatics Position Announced

Effective October 1, 1995, Sherrilynne Fuller was appointed Acting Director of Informatics, School of Medicine, on a half-time basis. She will continue as Coordinator, Health Sciences Information Systems Integration (including IAIMS). In her new capacity she will report to Lee Huntsman, the Associate Dean for Scientific Affairs, School of Medicine. Her charge is to:

Provide leadership, advocacy and coordination for the School's efforts to apply medical informatics to its educational, research and service missions;

Lead the development of a strategic plan for how the

School will prioritize its informatics initiatives and choose among technological alternatives;

Represent the School of Medicine, on campus and nationally, in the area of medical informatics;

Develop mechanisms for helping departments, programs and faculty apply information technologies in their academic efforts;

Promote informatics research and training;

Coordinate the School's efforts in informatics with those of other units in the Health Sciences and elsewhere on campus.

Medical Informatics Course Offered Spring Quarter

Medical Informatics (MedEd 530) will meet Tuesdays from 12:00 to 2:00. This is a 3 credit course. Drop-in students and auditors are welcome on a space available basis.

The course will provide an overview of medical informatics concepts and theories, historical evolution, current and future research directions in the context of information flow in health care settings.

The course chair is Dr. Sherrilynne Fuller. Participating faculty include Drs. James Brinkley, Jim Fine, Ira Kalet, Tao Kwan-Gett, Doug Schaad and Peter Tarczy-Hornoch.

Selected Topics in Health Informatics

Winter Quarter 1996 Informatics Seminar Series

Tuesdays, 12:00 p.m. to 1:30 p.m.
January 2-March 5
Warren G. Magnuson Health Sciences Center
Room T-747

February 6 — **The Webres Project: Web-Based Client Server Technologies for Multicenter Clinical Research**
Stan Kaufman, M.D., Division of Cardiology

February 13 — **The Use of Personal Digital Assistants in HealthCare**
Vernon Huang, M.D., Medical Director, Tactile Systems, Inc.

February 20 — **How Are Clinical Decisions Made?**
Tao Kwan-Gett, M.D., Acting

Instructor, Department of Pediatrics; IAIMS Program Clinical Informatics Consultant

February 27 — **The Seahawks Telemedicine Project: Design and Implementation Issues**
Kerry Ellen Meyer, Ph.D.
Assistant Professor, Department of Physiological Nursing, School of Nursing; Co-Director, Geriatric Evaluation and Management Program, VAMC

March 5 — **Prism: A Case Study in Medical Software Design**
Ira Kalet, Ph.D., Associate Professor, Department of Radiation Oncology

For more information, call the IAIMS office at 685-2166, or send e-mail to iaims@u.washington.edu

IAIMS Staff News

Leilani St Anna has joined IAIMS as a part-time consultant for departments and faculty wanting to create home pages. This cost recovery service will use a centralized bank of students and professionals. Leilani will serve as the coordinator and contact person. She began working for us on January 2, 1996 and will be sharing an office in T-211.

Her phone number is 616-7102. Her email address is lstanna@u.washington.edu.

Kevin Ibrahim has also recently accepted the position of Senior Computer Specialist. Kevin comes to us from Associated Western Universities in Salt Lake City. He has experience with databases — including serving WWW pages dynamically using databases — and with C++. His office is the IAIMS System Office — T-219. His phone number is 616-1799 and his email address is kevin@u.washington.edu.

Harold Goldberg, M.D., (as noted in our lead story) is the Lead for the Clinical Informatics Project. Dr. Goldberg will be in an office within IAIMS on a part-time basis, so e-mail can either be sent to him at hig@u.washington.edu or to the IAIMS Office at iaims@u.washington.edu.

The IAIMS Staff is also listed on our Web page at: <http://www.hslib.washington.edu/iaims/htmstf.html>

UW Classes of Interest

Health Sciences Libraries (HSLIC)
All HSLIC classes require prior registration. Call 543-3394 or email hsl@u.washington.edu. No fee charged but limited to Health Sciences personnel.

Netscape for Windows

2/12 3:30-5

Netscape for Mac

2/14 3:30-5

Netsurfing for Biologists (Windows focus)

2/7 10-12

Center for Educational Resources (CER). Limited Space, prior registration required (5-1186), open to all, \$35 fee

Printing Computer File Containing Graphics, Illustrations, and Photos

3/7 9-12

Image Management on the World Wide Web

3/28 9:30-12:30

Computing and Communications
Limited space, prior registration required (5-2763), no fee but must be staff, student or faculty

R118: Introduction to Pine

2/15 9:00-11:30

2/21 9-11:30

3/4 1:30-4:00

Intermediate Pine

2/8 9-11:30

2/28 2-4:30 (faculty only)

3/7 9-11:30

R119: Moving Files with Pine

2/6 12:00-1:30 (faculty only)

2/21 1:30-3

R550 Basics of WWW Browsers and HTML for Classroom Use

2/20 and 2/22 2-4

R555: Advanced Hypertext Markup Language (HTML) Features

2/12 and 2/14 10-12

2/27 and 2/28 10-12

National Meetings

A Course on Using Computers To Solve Clinical Problems

(<http://www.ohsu.edu/~hersh/cme.html>) Oregon Health Sciences University, Portland Oregon, January 23-27

The Information Connection: Emerging Technologies Linking Patients and Providers

(<http://uvmce.uvm.edu:443/iconnect.htm>) University of Vermont, February 8-9, 1996

American Telemedicine Association -- First Annual Conference

(email: abaker@idi.net) Albuquerque, New Mexico, February 23-25, 1996

First ACM International Conference on Digital Libraries

(<http://www.fox.cs.vt.edu/DL96/>) Bethesda, Maryland, March 20-23

AAAI Spring Symposium: Artificial Intelligence in Medicine "Applications of Current Technologies"

(<http://www.medg.ics.mit.edu/projects/aims/aim-96.html>) Stanford University, March 27-29

American Medical Informatics Association (AMIA) 1996 Spring Congress

(<http://amia2.amia.org/s96.html>) "Conquering Distance: Teleinformatics -- Telemedicine -- Telehealth" Kansas City, Missouri June 5-8, 1996

Global Telemedicine and Federal Technologies Symposium and Exhibition

(http://ourworld.compuserve.com:80/homepages/global_telemedicine_apex/) Williamsburg Lodge, Colonial Williamsburg, VA, July, 8-10, 1996

12th Annual Conference on Uncertainty in Artificial Intelligence

(<http://cuai-96.microsoft.com/>) Portland, OR, August 1-3, 1996

Appropriate Systems/ Appropriate Decisions - A Conference Addressing Information Technology Issues in Community Health

(<http://sol.uvic.ca/heis/ITCH/ITCH.html>) Victoria Conference Center, Victoria, B.C. November 3-6
Abstracts due March 1

IAIMS Program Office
University of Washington
Box 357155
Seattle, WA 98195-7155

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