CLINICAL INFORMATICS

Charles Safran, MD, Chief — The Division of Clinical Informatics celebrated its 40th anniversary this year. Clinical Informatics is an integrative discipline that explores the intersection between clinical processes, business processes and information technology. The goals of the Division are to improve the quality and reduce the cost of medical care, to improve the relationship between doctor and patient, to enhance medical education and to contribute to the emerging science of biomedical informatics.

The Division was among the first to create hospital-wide clinical computing systems (CCC systems) 30 years ago, electronic health records (OMR) 20 years ago, and personal health records (PatientSite) 10 years ago. We also pioneered the clinical use of email and end-user searching of the biomedical literature (PaperChase). The American Board of Medical Specialties has just recognized Clinical Informatics as a new sub-specialty, and fellows training in the Division will be among the first physicians to be board eligible.

Highlights

Clinical Activities

The Division provides informatics support for the Department of Medicine's international clinical and educational activities. Under the direction of Dr. Henry Feldman, we have developed an Internet-based electronic health record (EHR), customized for the workflows for chronic disease care in the ambulatory setting in the Middle East.

Based upon our extensive local experience with encounter-based EHRs, our new population-based EHR allows clinicians to represent the flow of problems seamlessly, with plans flowing from one evolution of the problem to the next in a chain. Population metrics allow both individual physicians and practice managers to better monitor and intervene across their entire practice, and we are seeing dramatic improvements in the care of diabetic patients.

Educational Programs

Dr. Alexa McCray heads the Harvard Medical School (HMS) Biomedical Informatics Fellowship funded by the National Library of Medicine. Under her leadership, the fellowship now offers a master's degree in Biomedical Informatics at HMS. Dr. Charles Safran is the BIDMC site director and leads the Clinical Informatics track for the entire program. We have four post-doctoral fellows at BIDMC this year and two pre-doctoral fellows from Portugal in a combined program with MIT.

Dr. Warner V. Slack, together with other physicians from BIDMC, teaches a course for Harvard College undergraduates, "The Quality of Health Care in America." Dr. Stephen Locke is the founding course director for "Enabling Technology Innovation in Healthcare and Life Sciences,"a graduate elective in the Harvard-MIT Division of Health Sciences and Technology that is taught every spring semester. Dr. Stan N. Finkelstein co-directs the Harvard MD/MBA program. Along with Dr. Safran, he also co-directs

Top: Warner V. Slack, MD, and Charles Safran, MD

"Medicine & Management." Dr. Shane Reti heads our international training program which has participants from Japan, Qatar, Saudi Arabia, Argentina and Portugal.

Research Programs

Dr. Feldman is leading the redesign of the hospital's patient portal, PatientSite. He is also developing and studying the use of the iPad in clinical care. He and Dr. Safran are leading the effort to evaluate the EHRs to support diabetic care in the Middle East, described above.

Dr. James Gray's research is focused on advancing the integration of evolving information technologies into the practice and evaluation of newborn care. His research defines how social networks of clinicians and patients affect the quality of care. Dr Meghan Dierks is focused on systems engineering/human factors engineering and human performance in high-risk settings such as intensive care units and operating rooms. Lastly, Dr. Reti leads the Division's international informatics research with evaluation of cultural attitudes toward health information technology in the Middle East.

Faculty

Howard L. Bleich, MD
Roger B. Davis, ScD
Meghan M. Dierks, MD
Henry J. Feldman, MD
Stan N. Finkelstein, MD
James Gray, MD
John D. Halamka, MD
Steven E. Locke, MD
Alexa T. McCray, PhD
Larry Nathanson, MD
Shane Reti, MD
David M. Rind, MD
Charles Safran, MD
Daniel Z. Sands, MD, MPH
Warner V. Slack, MD

Selected Publications

Durant KT, McCray AT, Safran C. Identifying temporal changes and topics that promote growth within online communities: A prospective study of six online cancer forums. *Int J Comput Models Algorithms Med* 2011; 2:1-22.

Cismondi F, Fialho AS, Vieira SM, Sousa JMC, Reti SR, Howell MD, Finkelstein SN. New methods to processing misaligned, unevenly sampled time series containing missing data. *IEEE Symposium Series on Computational Intelligence*, 2011.

Garrett NY, Mishra N, Nichols B, Staes CJ, Akins C, Safran C. Characterization of public health alerts and their suitability for alerting in electronic health record systems. *J Public Health Manag Pract* 2011; 17:1-7.

Finkelstein SN, Hedberg K, Hopkins J, Hashmi S, Larson RC. Vaccine availability during the 2009 H1N1 influenza outbreak. *Am J Dis Med* 2011; 1:23-30.

Haux R, Aronsky D, Leong TY, McCray AT. Methods in year 50: preserving the past and preparing for the future. *Methods Inf Med* 2011; 50:1-6.

Slack WV, Kowaloff HB, Davis RB, Delbanco TL, Locke SE, Bleich HL. Test-retest reliability in a computer-based medical history. *J Am Med Inform Assoc* 2011; 18:73-6.

Wachterman MW, Marcantonio ER, Davis RB, McCarthy EP. The association of profit status and diagnosis with hospice care. *JAMA* 2011; 305:472-9.

The Division of Clinical Informatics has an active international program currently training physicians and researchers from Argentina, Kuwait, Portugal, Qatar, Saudi Arabia and Japan. In addition, with support from the Kuwait Foundation for the Advancement of Science, the Division has developed an Internet-based electronic health records system that supports comprehensive care at the Dasman Diabetes Institute and serves as a model for primary care throughout the region.