2014 Annual Report
Chief’s Message

2014 was a very productive year with new global events and research. Our division hosted a global e-health conference on September 16, 2014, in Boston that brought together over 60 leading e-health researchers from Boston, Kuwait, and Malaysia. The event was highlighted by the inaugural e-health award given to Kazem Behbehani, MD, for lifetime contributions to global e-health. The division also welcomed two new faculty members, Melek Samai, MD, and Yuri Quintana, PhD, to expand our efforts in research and global e-health programs. The division faculty made research presentations at the American Medical Informatics Association (AMIA) national conference and participated on board committees to expand the role of AMIA internationally. I was also honored to receive the Morris F. Collen Award at the AMIA conference. This award was named in honor of Morris F. Collen, a pioneer in the field of medical informatics. The division continues to make significant contributions in research and education. We look forward to staying in touch and hearing from you.

Best wishes for the year.

Charles Safran, MD

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On September 16, 2014, the Division of Clinical Informatics (DCI) hosted over 60 participants from Boston, Kuwait, and Malaysia to discuss global e-health initiatives and research. The conference goals were to advance innovation, education, and global collaborations for the advancement of science and health care around the world.

The event was supported by Harvard Medical Faculty Physicians (HMFP) and the newly formed Longwood Medical International Foundation to support international health initiatives.
The conference was opened by Antoine Kaldany, MD, Associate Clinical Professor of Medicine, Harvard Medical School Executive Director, International Initiatives, and Chairman of Longwood Medical International Foundation (LMIIF), and Charles Safran, MD, Chief, Division of Clinical Informatics, Associate Professor of Medicine, Harvard Medical School, Vice-Chair of LMIIF.

DCI faculty members who spoke at the conference and their topics included Communities of Practice by Yuri Quintana, PhD, Foundations of e-Health in Kuwait by Henry Feldman, MD, Patient Engagement with Portals by Brad Crotty, MD, and Infosage - community based elder care by Charles Safran, MD.

For an Asia/Pacific view on e-health, H. M. Goh, MD, from the UMSC hospital in Malaysia, presented a talk entitled “TransformHealth with Clinical Informatics: An ASEAN Perspective.”

A panel on the topic of challenges in e-health was moderated by Charles Safran, MD, and included University of Malaya School of Medicine Dean Adeeba Kamarulzaman, MD, Kazem Behbehani, PhD, Director General of the Dasman Institute, Kuwait, Antoine Kaldany, MD, and H. M. Goh, MD.
Charles Safran, MD, Chief of the Division of Clinical Informatics, recalls the founding of the Division at Beth Israel Hospital over 40 years ago. “Back then, it was called ‘Computer Medicine,’” he says. “We were one of the first academic divisions focused on the use of computers in health care.

Since then, the field has become essential, integrating technology into clinical practice. Decision support, clinical protocols and patient education are all part of the clinical informatics toolkit. But perhaps the most important innovation to come out of the field is the electronic health record (EHR). Here at BIDMC, the Online Medical Record (WebOMR)—which Safran and his team originally developed in 1989—has become the standard for storing and sharing patient information across BIDMC’s ever-growing provider network.

Just as BIDMC has WebOMR, most other health care networks have their own EHRs. But these systems rarely “talk” to each other, meaning information doesn’t travel with patients, who may receive care in various places. So when Safran and his team began to envision a next-generation EHR that could help ensure continuity of care and information-sharing across care providers, they looked beyond the US to an environment where there were fewer systems in place. In fact, they looked well beyond to Kuwait, a small country at the top of the Persian Gulf. There they partnered with the Dasman Diabetes Institute to create the Knowledge-Based Health Record (KBHR), a clinically intuitive and patient-centric EHR that is on its way to becoming, in the words of Safran, “the central nervous system of health care efforts throughout Kuwait.”

In addition to being a clean slate for EHRs, Kuwait has one of the highest rates of diabetes in the world. Because managing the disease requires close coordination of primary care physicians and specialists, a unified and accessible health record is especially important in diabetes care. “Treatment and research are strongly impacted by KBHR in that it forms a single source of truth for both research and clinical data,” says Henry Feldman, MD, Chief Information Architect of the KBHR team at BIDMC. “You don’t have to combine data from many systems to come up with an answer about the patient.” This, as Feldman notes, is useful not only from a clinical standpoint but from a research perspective as well. The KBHR team is working on an exciting addendum to KBHR’s information repository: a system called I2B2, developed as part of Harvard’s Catalyst program. “I2B2 is a research database for integrating technology and informatics at the bedside,” explains Safran. “It not only allows administrators and scientists to access records for performance evaluation or basic research, but it allows physicians to ask, ‘Have we seen a patient like this before?’ And if so, what happened? What were the diagnoses, the complications, the best medical regimens?”

Antoine Kaldany, MD, of Joslin Diabetes Center and BIDMC’s Division of Nephrology, spearheaded the BIDMC-Dasman partnership and agrees that Kuwait and Dasman, in particular, have been ideal for this project. “Kuwait’s citizens are open-minded and eager to improve their health,” says Kaldany. “And Dasman’s Director-General, Dr. Kazem Bebbehani, and his team have been exceptional partners.” Bebbehani believes that KBHR has the potential to revolutionize health care in Kuwait and beyond. He says, “KBHR will help providers be more efficient and to make better clinical decisions for their patients. We hope to serve as a global model for the best technology that clinical informatics has to offer.”
Awards

KAZEM BEHBEHANI, PHD, AWARDED INAUGURAL GLOBAL E-HEALTH LEADERSHIP AWARD

Kazem Behbehani, PhD, Director General of the Dasman Institute, Kuwait, was awarded the inaugural e-health award for lifetime contributions to global e-health. It was presented at the 2014 DCI Global e-health conference. Kazem Behbehani, PhD (London), Royal College of Pathologists (UK), joined the World Health Organization (WHO) Geneva headquarters in 1990. He became WHO Assistant Director-General for External Relations & Governing Bodies in 2003 and in 2005 became the WHO Envoy. He co-chairs Harvard University’s scientific advisory board for the environment and public health. He joined WHO’s HIV/AIDS program, was appointed program manager in the Tropical Disease Research Division, and subsequently became Director of the Control of Tropical Diseases Division and Eastern Mediterranean Liaison Office in Geneva.

Before joining WHO, Dr. Behbehani was Professor of Immunology at the Faculty of Medicine of Kuwait University, and held the posts of: Vice Dean of the Faculty of Science, Vice Dean (Research) of the Faculty of Medicine, and Vice President for Research of Kuwait University and was a member of the University Council. He became a visiting professor at Harvard Medical School. Dr. Behbehani is actively involved in environmental and health issues, health management, application of information technology to health (e-health), and development of interactive educational materials for public, professional, and medical use (e-learning). He has written more than 100 scientific publications and a book on science and technology.
CHARLES SAFRAN, MD, AWARDED MORRIS F. COLLEN AWARD OF EXCELLENCE IN MEDICAL INFORMATICS

Charles Safran, MD, FAMCI, Chief of the Division of Clinical Informatics at Beth Israel Deaconess Medical Center (BIDMC), has received the American College of Medical Informatics’ 2014 Morris F. Collen Award in recognition of his commitment to and achievements in medical informatics. The award is given annually in honor of Morris F. Collen, a pioneer in medical informatics, which concentrates on the use of communications and information technology to advance patient care, teaching, and medical research.

Safran is the third BIDMC informatician to receive the honor, following Warner Slack, MD, and Howard Bleich, MD, who founded the Division of Clinical Informatics more than 40 years ago. The Division was among the first academic divisions in the world to concentrate on the use of computers for patient care, teaching, and medical research.

Under Safran’s leadership since 2007, the Division works to improve the quality and reduce the cost of medical care, enhance the quality of medical education, improve the relationship between doctor and patient, and explore innovative approaches to research through computing.

“I am honored to be following in such footsteps and build upon the solid foundation created by Warner and Howard.”

“The clinical informatics program has always been about the care and well-being of our patients and fellow citizens.”

View the award video at https://vimeo.com/113206054
Safran is a primary care internist who has devoted his career to improving patient care through the innovative use of informatics. He helped to develop and deploy the integrated clinical computing and electronic health record systems at BIDMC and Brigham & Women’s Hospital, two Harvard Medical School teaching hospitals. Safran also developed Baby CareLink, a telemedicine program that incorporates videconferencing and online technologies to enhance communications between families with premature babies, medical staff, and community providers.

He has also designed clinical decision support systems to help clinicians implement care guidelines, select diagnostic strategies for patients with cancer, and treat patients with HIV/AIDS. Currently, he is working to explore how technology can improve family collaboration in the care of elders through the Information Sharing Across Generations and Environments (InfoSAGE) project, with support from the federal government’s Agency for Healthcare Research and Quality (AHRQ).

Earlier this year, the American Board of Medical Specialties issued the first round of certifications for clinical informatics, a subspecialty in which physicians use information and communication systems to enhance individual and population health outcomes, improve patient care, and strengthen the clinician-patient relationship. Safran, who helped define the core contents of the field and led the delineation of training requirements for the subspecialty, was among the first physicians to receive board certification.

“ACMI is proud to honor Charles Safran with the Colleen Award,” said ACMI Chair Alexa McCray, Ph.D., of Harvard Medical School. “We congratulate Dr. Safran on his accomplishments in improving patient care at Beth Israel Deaconess Medical Center and Harvard’s teaching hospitals and thank him for the clinical informatics leadership role he has played both throughout his career and recently during the creation of the CI subspecialty of medicine.” “Dr. Safran has had a profound impact on BIDMC and me personally,” added John Halamka, M.D., BIDMC’s Chief Information Officer. “I began my career in his lab and first prototyped our BIDMC web-based systems under his mentorship.”

Safran is the past President and Chairman of American Medical Informatics Association and was previously Vice President of the International Medical Informatics Association. He is an elected fellow of both the American College of Medical Informatics and the American College of Physicians. He chairs the Clinical Informatics track for Harvard Medical School master’s program in biomedical informatics and National Library of Medicine informatics fellowship. Safran graduated cum laude in mathematics from Tufts University, where he also earned a master’s degree in mathematical logic and a doctor of medicine degree.
Charles Safran, MD, is leading InfoSAGE™ (Information Sharing Across Generations and Environments), an AHRQ-funded project to advance care and communication for elders. InfoSAGE™ was developed by the Division of Clinical Informatics in collaboration with investigators at Hebrew SeniorLife. It was designed to support the challenges facing families in communicating, coordinating, and collaborating on shared care. The goal of this system is not only to support the special needs of the independent elder, but also to be capable of supporting an incremental transition to shared management of information. The aim is to improve the patient’s and family’s sense of awareness and control over long-term care plans, as well as optimize overall resource utilization around care transitions.

Aging creates new healthcare decision-making, information management, and communication challenges - not only for elders but also for their families. When the need arises for family members and other informal caretakers to take a more active role in care and decision making, it can be exceptionally challenging for them to manage an elder’s healthcare information while respecting the individual’s preferences and priorities.

The InfoSAGE project has been studying these information needs of elders and the adult children who are involved in their care through the building of a “living laboratory.” This allows us to study real-life situations of elders and the challenges for families of communicating, coordinating, and collaborating with complex and costly care environments. Elderly patients may face diminishing cognitive function and may need to transfer aspects of control of their personal health information and decision-making to one or more family members. Based on focus groups and interviews, we see that elders want to retain control over their healthcare information and decision-making, but also want to gradually transition to a shared model as their needs evolve.
The broad goal is to gain a deep understanding of the healthcare information ‘ecosystem’ that can support the special needs of the independent elder, yet also be capable of supporting an incremental transition to shared management of information, decision-making, and communication. Based upon our extensive experience studying IT-enabled collaborative care we know that one of the most effective ways to understand a person’s information needs is to learn through direct observation of behavior. The specific aims are to:

1. Identify the information needs and decision-making dynamics of elders and those helping to care for them, with a particular focus on how needs evolve as they transition from full independence to family-supported care.

2. Create a “living laboratory,” a novel, family-centered information management and collaborative environment that is based on the requirements and needs identified in Specific Aim 1.

3. Longitudinally study elder and family collaborative interactions and information management behaviors with InfoSAGE in the context of real healthcare decision-making and care transitions.

4. Evaluate the extent to which InfoSAGE improves communication, coordination, and collaboration for elders and their family.

The outcome of the InfoSAGE project will be a robust model of the healthcare information management infrastructure needed to meet the growing needs of elders and their adult children and other caretakers, as well as a framework for measuring the impact of consumer information technology on several key outcome variables. The team sought to identify gaps and ascertain whether and how online solutions might help by conducting a series of 10 focus groups with elders 75 years of age and older living in senior housing, and with family members of such elders. The group identified several key themes from our focus groups. Identifying these themes pointed to widespread gaps in communication and information related to elder care in general. Based on our focus group results, Bradley Crotty, MD, presented a poster at the American Medical Informatics Association (AMIA) symposium on November 18, 2014, entitled “Elders & Families rely on social networks for aging-related information: implications for informaticians,” B.H. Crotty, J. Walker, J. O’Brien, L. Lipsitz, M. Dierks, C. Safran.

Additionally, as part of our analysis of PatientSite and how elders 75 years of age and older use the online patient portal at BIDMC, we conducted a cross-sectional analysis of secure messaging use among elders, families, and physician. We assessed trends in the use of secure messaging in a patient portal to characterize the reasons why patients may be using secure messaging and also to determine if family members of elders also use the portal to communicate with providers. The group presented an analysis to the AMIA Symposium entitled “Not Just for the Millennials: A Cross-Sectional Analysis of Secure Messaging Use Among Elders, Families, and Physicians,” B.H. Crotty, J. O’Brien, M. Dierks, X. Lu, H.J. Feldman, C. Safran.

We have also written a literature review of technology to improve elder care, published by the International Journal of Medical Informatics, “Acceptance and Use of Health Information Technology by Community-Dwelling Elders,” Fischer SH, David D, Crotty BH, Dierks M, Safran C.
RESEARCH ON HEALTHCARE PROXY AND FAMILY HISTORY

Dr. Adarsha Bajracharya, Hollis Kowaloff, Dr. Bradley Crotty, and Dr. Warner Slack have been working with elders on the design for online systems for documentation of a healthcare proxy. They have built the model to include health proxy documentation in the Online Medical Record system and have submitted to the IRB a plan to make this module part of the hospital’s Patient Portal – PatientSite – and to study the use of this module. Dr. Bajracharya presented this research at the 2014 American Medical Informatics conference with a poster entitled “Picking a Proxy on the Web: Interactive Patient Interview Module for Health Care Proxy Documentation.” He also presented this research at the BIDMC Silverman Symposium. This group has also designed an interview focused on family history and presented the abstract “An Interactive Web-based Interview to Improve Family Medical History Documentation” at the American Medical Informatics Association.

RESEARCH PRESENTATIONS

HENRY FELDMAN, MD, gave THE ETHICS GRAND ROUNDS at ST. ELIZABETH MEDICAL CENTER in Boston on October 23, 2014.

JUNPING ZHAO, PHD, MD, Institute of Med Informatics, at the 5000 beds PLA General Hospital, Beijing, China, shares his experience at THE DCI SEMINAR on September 19, 2014.


Harvard Medical Student MUJEEB BASIT, MD, presented the results of his research at THE DCI SEMINAR on October 29, 2014.
NEW FACULTY

In 2014, Yuri Quintana, PhD, joined the Division of Clinical Informatics as a new faculty member and Director of Global Health Informatics; he is also a lecturer, Harvard School of Medicine. Dr. Quintana’s research focuses on the design of online platforms that empower communities of professionals and consumers to collaborate on a worldwide basis. Previously, he was at St. Jude Children’s Research Hospital, where he developed international education and informatics programs in pediatric oncology. He led the development of Cure4Kids, an online pediatric cancer education and collaboration website used by thousands of health professionals worldwide; online systems used for international clinical trials; and Cure4Kids for Kids, a community outreach education program to educate children and communities about cancer and healthy living. Before coming to St. Jude, Quintana was a principal investigator in the Canadian HealNet Research Network, focusing on consumer health informatics. Formerly a faculty member at the University of Western Ontario, Dr. Quintana also served as director of the New Media Research Lab developing innovations in interactive media and online education. He has held high-tech positions at IBM Canada Limited and Watcom, as well as academic appointments at the University of Waterloo and the University of Victoria.

In 2014, Melek Somai, MD, MPH, joined as a new faculty member in the Division of Clinical Informatics. Dr. Melek is also a lecturer at MIT, Department of Health Science and Technology, Division of Computational Physiology and is the co-founder of the Tunisian Center for Public Health, a non-governmental organization aimed at developing public health in Tunisia. Dr. Somai’s research focuses on building an analytics platform for both research and clinical care. He has previously worked extensively in the area of predictive analytics and big data.
The National Library of Medicine supports research training in biomedical informatics at selected educational institutions in the United States. These programs offer graduate education and postdoctoral research experiences in a wide range of areas including: health care informatics, translational bioinformatics, clinical research informatics, and public health informatics. Charles Safran, MD, DCI Division Chief, directs the fellowship program that is part of the Harvard / HST Medical Informatics Training program funded by the National Library of Medicine. The Division Fellowship Program (http://www.hmfindinformatics.org/fellowship.shtml) seeks to train leaders who will help transform tomorrow’s healthcare through the creative use of information and communication technology. Through real-world exposure to and participation within one of the world’s preeminent clinical computing system environments, our fellows learn how to assess needs of clinicians and patients, refine clinical processes, and design and implement clinical systems. Each fellow is expected to complete a research project that evaluates a clinical informatics intervention.

In 2014, Mujeeb Basit, MD, joined DCI for a two-year fellowship. He obtained his medical degree from George Washington School of Medicine in 2008. His current research interest is in clinical process improvement and facilitation via supportive electronic health records. He is working on analysis of existing health record data to understand secondary benefits from existing drugs.

Adarsha Bajracharya, MD, joined DCI for a two-year fellowship in 2013. He obtained his medical degree from Manipal College of Medical Sciences, Nepal. His current research interest is in the development and evaluation of applications to facilitate the capture and use of patient-generated family medical history and health care proxy information in clinical care. Dr. Bajracharya completes his fellowship in May 2015.
On July 16, 2014, Dean F. Sittig, PhD, Professor, School of Biomedical Informatics, University of Texas Health Sciences Center, Houston, and Joan Ash, MD, Professor and Vice Chair, Department of Medical Informatics and Clinical Epidemiology, School of Medicine, Oregon Health & Science University, Portland, visited the Division of Clinical Informatics to interview Warner V. Slack, MD, and Howard L. Bleich, MD, about the work that they and their colleagues did in the Center for Clinical Computing. The day-long interviews were taped, transcribed, and then edited for inclusion in the Medical Informatics Pioneers Oral History Project of the National Library of Medicine. The interviews discussed Dr. Slack’s work with the Computer Based Medical History and patient empowerment, Dr. Bleich’s work with Electrolyte and Acid-Base Balance and PaperChase, and their joint work with the Hospital Information systems developed for the Beth Israel and Brigham and Women’s Hospitals. Charles Slack, Dr. Slack’s son, who is an accomplished author with experience and expertise in interviewing, helped edit the transcripts.
ABOUT DCI

The Division of Clinical Informatics, created over 40 years ago by Drs. Howard Bleich and Warner Slack, was among the first academic divisions in the world to concentrate on the use of computers for patient care, teaching, and medical research. The goals of the Division have been to improve the quality and reduce the cost of medical care, to enhance the quality of medical education, to improve the relationship between doctor and patient, and to explore innovative approaches to research through computing.

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PLEASE CONTACT

Ava Atkinson at email:
aatkinson@bidmc.harvard.edu