

**DEPARTMENT OF HEALTH AND HUMAN SERVICES  
NATIONAL INSTITUTES OF HEALTH  
NATIONAL LIBRARY OF MEDICINE**

**MINUTES OF THE BOARD OF REGENTS  
May 11-12, 2010**

The 154<sup>th</sup> meeting of the Board of Regents was convened on May 11-12, 2010, at 9:00 a.m. in the Board Room, Building 38, National Library of Medicine (NLM), National Institutes of Health (NIH), in Bethesda, Maryland. The meeting was open to the public from 9:00 a.m. to 3:30 p.m., followed by a closed session for consideration of grant applications until 4:00 p.m. On May 12, the meeting was reopened to the public from 9:00 a.m. until adjournment at 12:00 p.m.

**MEMBERS PRESENT [Appendix A]:**

Dr. C. Martin Harris [Chair], The Cleveland Clinic Foundation  
Dr. Jordan Cohen, George Washington University  
Dr. John Connolly, University of California, Irvine  
Dr. Carol Friedman, Columbia University  
Mr. Bruce James, Nevada New-Tech, Inc.  
Dr. Joyce Mitchell, University of Utah  
Dr. Louis Rossiter, The College of William and Mary  
Ms. Eileen Stanley  
Ms. Virginia Tanji, University of Hawaii at Manoa

**EX OFFICIO AND ALTERNATE MEMBERS PRESENT:**

Ms. Nancy Clark, Veterans Health Administration  
Ms. Eleanor Frierson, U.S. Department of Agriculture  
Ms. Kathryn Mendenhall, Library of Congress  
Col. Arnyce Pock, U.S. Department of the Air force  
Col. John Powers, U.S. Department of the Army  
Dr. Dale Smith, Uniformed Services University of the Health Sciences  
RADM David Rutstein, Office of the Surgeon General, PHS

**CONSULTANTS TO THE BOR PRESENT:**

Dr. Tenley Albright, Massachusetts Institute of Technology  
Dr. Marion Ball, Johns Hopkins School of Nursing/IBM Research  
Dr. Holly Buchanan, University of New Mexico  
Dr. Thomas Detre, University of Pittsburgh  
Dr. H. Kenneth Walker, Emory University School of Medicine

**SPEAKERS AND INVITED GUESTS PRESENT:**

Dr. Jeffrey Barrett, Children's Hospital of Philadelphia  
Ms. Patricia Reynolds, Sarasota Memorial Hospital  
Dr. Randall Wetzell, Children's Hospital of Los Angeles  
Mr. Pat White, Office of Legislative Policy & Analysis, Office of the Director, NIH  
Dr. Robert Windom, Former Assistant Secretary for Health, DHHS

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### **MEMBERS OF THE PUBLIC PRESENT:**

Ms. Julie Guy, Lockheed Martin  
Mary Lindberg, Public  
Mrs. Susan Phillips, Public

### **FEDERAL EMPLOYEES PRESENT:**

Dr. Donald A.B. Lindberg, Director, NLM  
Ms. Betsy Humphreys, Deputy Director, NLM  
Dr. Milton Corn, Deputy Director for Research and Education, NLM  
Dr. Swapna Abhyankar, Lister Hill Center, NLM  
Dr. Michael Ackerman, Lister Hill Center, HPCC, NLM  
Mr. Terry Ahmed, Division of Library Operations, NLM  
Ms. Stacey Arnesen, Office of the Director, NLM  
Ms. Ione Auston, Lister Hill Center, NLM  
Dr. Olivier Bodenreider, Lister Hill Center, NLM  
LTSG Michael Bowens, Office of the Surgeon General, PHS  
Dr. Jesus Caban, Lister Hill Center, NLM  
Dr. James Cimino, Clinical Center, NIH  
Ms. Joyce Backus, Division of Library Operations, NLM  
Ms. Celeste Dade-Vinson, Office of the Director, NLM  
Mr. Todd Danielson, Office of the Director, NLM  
Ms. Darlene Dodson, Office of the Director, NLM  
Mr. Ivor D'Souza, Office of Computers and Communication Systems, NLM  
Ms. Kathel Dunn, Division of Library Operations, NLM  
Ms. Gale Dutcher, Division of Specialized Information Services, NLM  
Mr. Mehryar Ebrahimi, Lister Hill Center, NLM  
Mr. Bob Falk, National Center for Biotechnology Information, NLM  
Ms. Martha Fishel, Division of Library Operations, NLM  
Dr. Jim Fleshman, Lister Hill Center, NLM  
Dr. Valerie Florance, Division of Extramural Programs, NLM  
Dr. Hani Girgis, National Center for Biotechnology Information, NLM  
Dr. Marc Gwadz, National Center for Biotechnology Information, NLM  
Dr. Sally Howe, Lister Hill Center, NLM  
Dr. Zoe Huang, Division of Extramural Programs, NLM  
Mr. Gene Hurr, Lister Hill Center, NLM  
Ms. Christine Ireland, Division of Extramural Programs, NLM  
Dr. Xia Jing, Lister Hill Center, NLM  
Mr. Sheldon Kotzin, Division of Library Operations, NLM  
Dr. David Landsman, National Center for Biotechnology Information, NLM  
Dr. David Lipman, National Center for Biotechnology Information, NLM  
Dr. Simon Liu, Office of Computers and Communication Systems, NLM  
Dr. Robert Logan, Office of Communications & Public Liaison, NLM  
Ms. Cindy Love, Office of the Director, NLM  
Ms. Becky Lyon, Division of Library Operations, NLM  
Dr. Ning Ma, National Center for Biotechnology Information, NLM  
Dr. Clement McDonald, Lister Hill Center, NLM

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Ms. Melanie Modlin, Office of Communications & Public Liaison, NLM  
Ms. Wendy Narez, Lister Hill Center, NLM  
Mr. David Nash, Office of the Director, NLM  
Dr. Aaron Navarro, Lister Hill Center, NLM  
Mr. Michael North, Lister Hill Center, NLM  
Dr. Arthur Petrosian, Division of Extramural Programs, NLM  
Dr. Steven Phillips, Division of Specialized Information Services, NLM  
Dr. Barbara Rapp, Office of Health Information Program Development, NLM  
Dr. Jeffrey Reznick, Division of Library Operations, NLM  
Ms. Julia Royall, Office of Health Information Program Development, NLM  
Dr. Angela Ruffin, Office of the Director, NLM  
Dr. Allan Savage, Lister Hill Center, NLM  
Mr. Jerry Sheehan, Office of the Director, NLM  
Dr. Elliot Siegel, Office of Health Information Program Development, NLM  
Dr. Hua-Chuan Sim, Division of Extramural Programs, NLM  
Mr. Michael Simpson, Lister Hill Center, NLM  
Ms. Josseline de Saint Just, Division of Extramural Programs, NLM  
Ms. Erica St. Michel, Lister Hill Center, NLM  
Mr. Vitaly Stakhovsky, National Center for Biotechnology Information, NLM  
Dr. Laritza Taft, Lister Hill Center, NLM  
Dr. Paul Theerman, Division of Library Operations, NLM  
Dr. George Thoma, Lister Hill Center, NLM  
Dr. Jane Ye, Division of Extramural Programs, NLM  
Dr. Fred Wood, Office of Health Information Program Development, NLM  
Dr. Stefan Wuchty, National Center for Biotechnology Information, NLM  
Dr. Deborah Zarin, Lister Hill Center, NLM  
Dr. Dachuan Zhang, National Center for Biotechnology Information, NLM

### I. OPENING REMARKS

Dr. C. Martin Harris, Chair, welcomed the Regents, alternates, and guests to the 154<sup>th</sup> meeting of the Board. He called the meeting to order and introduced the first speaker, the representative from the Office of the Surgeon General (OSG).

### II. REPORT FROM THE OFFICE OF THE SURGEON GENERAL (OSG)

Rear Admiral David Rutstein noted that Surgeon General Dr. Regina Benjamin recently released her first official report, *The Surgeon General's Vision for a Healthy and Fit Nation*. In it, she promotes the rewards of a healthy lifestyle, rather than the perils of obesity and inactivity. The Surgeon General will also soon issue a report on how tobacco causes disease and a call to action on prevention of youth tobacco use. Other priorities include the prevention of youth violence, the simplification and, thus, improvement of prescription medication adherence for those who take multiple drugs (especially the elderly), steps to stem the spread of HIV/AIDs, and mental health issues as they relate to violence.

The Patient Protection and Affordable Care Act (PPACA), signed into law March 23, created a National Prevention, Health Promotion and Public Health Council, chaired by the Surgeon General and composed

of cabinet heads and other senior officials from across federal agencies and departments. This first-of-its-kind group is charged with developing a national strategy for prevention and health promotion, and its first report is due July 1.

PPACA also created a new Public Health Sciences Track, to be administered under the Surgeon General. The program will award a minimum of 850 four-year scholarships annually to students from the spectrum of health professions. Afterwards, the students will repay the government on a two-for-one year basis by serving in the Public Health Service (PHS) Commissioned Corps. (This service can be reduced if they work in underserved areas.) RADM Rutstein explained that funds were appropriated by the Secretary of Health and Human Services, from the substantial Public Health and Social Services Emergency Fund. The program is authorized in perpetuity. Helping to fill a need that has long existed in the PHS will have far-reaching implications; not only will it develop a well-trained new cadre of health professionals to serve the public, but it will create elite public emergency response teams made up of students, graduates and faculty members at institutions around the nation. There is no timeline for the program's launch, but it is a high priority for the OSG. Board member Dr. Joyce Mitchell asked how she could read more about this provision and was told it was in Section 5315, at [HealthReform.gov](http://HealthReform.gov). Former Board member Dr. Robert Windom (speaking later today) asked whether NLM could partner with this program on the disaster aspect. Yes, RADM Rutstein said, but much remains to be done—selecting staff, setting up offices, etc.—before the cash will start to flow.

Asked for details about the Prevention Council, RADM Rutstein directed the Board to Section 4001 of the law for details. It will be the first cross-cutting effort to create a unifying prevention and health promotion strategy, nationwide, and will be advised by a FACA (Federal Advisory Committee Act) board composed of no more than 25 people from academia and other areas of the private sector. Asked by Board member Bruce James whether the NLM Board of Regents could play a part, Dr. Rutstein said that it definitely could, both short- and long-term. He suggested that a Board member apply to join the FACA. NLM, as a trusted source of health information for the nation and an effective communicator of that information, would make a strong partner in this effort.

Consultant Dr. Tenley Albright supports the idea of the Council but thought a small group could chart its general course before the full body came together. Dr. Rutstein said that a smaller group was preparing the report due July 1, which would lay out broad principles to be dealt with later, in greater depth, by the full body. Board member Dr. John Connolly asked Dr. Rutstein how he came to work in the OSG. He said he attended the Morehouse School of Medicine with Dr. Benjamin. Their careers took different paths but, when she was named Surgeon General, she invited him to serve as her deputy.

### **III. REPORT FROM THE OFFICE OF LEGISLATIVE POLICY & ANALYSIS**

Mr. Pat White, Associate Director for Legislative Policy and Analysis, NIH, noted that the President's FY2011 budget freezes domestic discretionary spending, which includes NIH. NIH Director Dr. Francis Collins was able to secure a \$1 billion increase for NIH, to cover medical research inflation—no mean feat. The Senate has moved ahead with a budget that actually cuts \$4 billion more than freeze level suggested by the President. (NIH is unscathed but the overall plan is austere.) The House is considering a 2% cut of domestic discretionary spending, on top of the freeze, in each of the next three years. Obviously, the stakes are high for NIH, which represents 45% of the HHS budget and roughly one fifth of the Labor/HHS Appropriations bill, and for all other programs in the domestic discretionary portfolio.

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The economy continues to be of great concern, and the story of NIH's use of American Recovery and Reinvestment Act (ARRA) funds needs to be told. Much of the stimulus money was backloaded, meaning that it will be spent in 2010, not 2009, and should accelerate economic growth and job creation.

Unfortunately, one of NIH's great champions, Cong. Dave Obey, chair of the full House Appropriations Committee and its Labor-HHS-Education Subcommittee, has announced his retirement. During his tenure, he took the time to master all aspects of NIH and was a reliable backstop. Sen. Arlen Specter, a powerful advocate of biomedical research on the Senate Finance Committee, is facing a stiff challenge in his primary election. In the last 15 years, the culture of Congress has changed, with fewer new members willing to make a long-term commitment to understanding NIH and its mission. More positively, Dr. Collins' reception on Capitol Hill is as good as it's ever been for an NIH Director, NIH's standing is quite high and President Obama is avidly pro-science.

A notice of proposed rulemaking on conflict of interest at NIH is due out soon. This is a delicate but hugely important regulation—there must be a balance between the NIH community's ability to police itself and the impulse of other parties that want to do it for us. Mr. White hopes that the regulation will assuage the concerns of Congress and the press, so that no legislation is required.

There are two top priorities for NIH in the health care reform bill. One is the Cures Acceleration Network (CAN), a new authorization for much more aggressive translational research. It offers a great opportunity to push things along the therapeutic pipeline and allows NIH to function more like the Defense Advanced Research Projects Agency (DARPA). The program is an attempt to bridge the gap between basic biological research and the patient. The Patient-Centered Outcomes Research Institute (PCORI), a free-standing, independent body that will conduct comparative effectiveness research. NIH and the Agency for Healthcare Research and Quality (AHRQ) have been performing this work for years and will continue collaborating on this new initiative. Asked by consultant Dr. Thomas Detre who would likely succeed Chairman Obey, Mr. White replied that, assuming the Democrats hold the House, Cong. Norm Dicks of Washington was in line to chair the full committee, but would likely hang on to the defense subcommittee. Possible successors for the Labor-HHS subcommittee chairmanship are Cong. Nita Lowey of New York and Cong. Rosa DeLauro of Connecticut.

Board member Dr. Jordan Cohen asked whether NIH's Clinical and Translational Science Awards (CTSAs) would be a part of the new Cures Acceleration Network. Mr. White said that Dr. Collins and the NIH Institute and Center (IC) directors were in discussion about that and that CTSAs would play a major role. Likely, a continuum would evolve, in which CTSAs would test out research ideas that the CAN might then introduce.

Asked by Chairman Harris where PCORI would be housed, Mr. White said that it would be an independently chartered 501(c)(3) organization, its board appointed by the General Accountability Office (GAO) Comptroller General, to avoid any appearance of conflict of interest. Directors of NIH and AHRQ are members, and 17 others will be appointed from specified communities and stakeholders. Funding is \$10 million in 2010, \$50 million in 2011 and \$150 million in 2012. Authorized, through 2019, PCORI will also have a trust fund, created by a surtax levied on health insurance premiums. The language creating it says that cost effectiveness is not to be used as the justification of any treatment option, which speaks to the political sensitivity of this enterprise. Board member Dr. Carol Friedman asked how it can

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be funded; it has an authorization of \$500 million, but no appropriation. It can't be funded by taking money from the NIH baseline budget. NLM Deputy Director Betsy Humphreys asked when the first appropriation for PCORI might come through, and Mr. White said that there was guarded enthusiasm for the program among appropriators. He didn't expect resolution of appropriations, though, until Christmas. NLM Director Dr. Donald Lindberg said that Dr. Collins thinks it would be a good idea to get some money in and go from there.

### **IV. FEBRUARY 2010 MINUTES AND FUTURE MEETINGS**

The Regents approved without change the minutes from the February 2-3, 2010 meeting. The fall meeting is scheduled for September 14-15, 2010, the winter Board meeting is scheduled for February 8-9, 2011, and a spring Board meeting was approved for May 3-4, 2011.

### **V. REPORT FROM THE NLM DIRECTOR**

Dr. Lindberg noted that Mr. White had given an excellent snapshot of the funding climate at NIH. NLM received \$83.6 million from the American Recovery and Reinvestment Act (ARRA) of 2009. NLM carefully winnowed out the best applications from among many, awarding \$37 million in FY 2009. The remaining sum, \$46.6 million, will be obligated in FY 2010. The top priority was the restoration of slots in the Training Program, which had been lost due to lack of funds. Although grants lasting 1-2 years are not ideal for all pursuits, they work well for research contracts, under which specific products are developed.

For FY 2010, the NLM appropriation is \$340 million, plus \$8.2 million, provided by legislation, for the National Information Center for Health Services Research and Health Care Technology (NICHSR). For FY 2011, the President's Budget included \$373 million for NLM—\$364.8 million plus \$8.2 million for NICHSR. Appropriations hearings start soon; funds are tight, but Sens. Specter and Tom Harkin seem to be in NIH's corner, and NLM is hoping for the best.

In personnel matters, Dr. Valerie Florance has been named NLM Associate Director for Extramural Programs. Melvin Hurr has been appointed head of the Systems Services Section, Office of Computers and Communication Systems (OCCS), coming to the Library from Sprint. Former OCCS Director Dr. Simon Liu has left NLM but is the new director of the National Agricultural Library. As such, he will occupy an ex officio seat on the NLM Board of Regents, continuing to lend his talents. Terry Ahmed is the new head of the Reference and Web Services Section, Public Services Division, and Josseline de Saint Just is a new program analyst in Extramural Programs. New staff members from the Lister Hill Center were also introduced.

Dr. Lindberg then directed the Board's attention to the many pages of legislative developments at Tab C. Regarding health information technology (HIT), the Office of the National Coordinator (ONC) has issued awards for a number of programs authorized by the HITECH Act, including the Regional Extension Centers and the Health IT Workforce Development programs, which most of the Board probably knows about. There is also Strategic Health IT Advanced Research Projects (SHARP), which brings to mind DARPA (now known as ARPA, the Advanced Research Project Agency). DARPA can rightly claim most of the credit for inventing the Internet. Dr. Lindberg explained the benefits of ARPA, which has only 100 employees and no labs to fund. Agile and unfettered, it has been remarkably successful in developing and

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testing new ideas. SHARP has made four awards to highly regarded institutions: 1) security of HIT (University of Illinois, Urbana-Champaign); 2) patient-centered decision making (University of Texas, Houston); 3) network platform architecture (Harvard); and 4) secondary use of health data (Mayo Clinic).

Dr. Lindberg touched briefly on several bills about making federal information available on the Internet; none, including an amendment to the Federal Advisory Committee Act (FACA), would have much effect on NLM, which already rules regarding transparency. He discussed the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, both of which have been reauthorized. The Senate proposal raises the percentage of budget earmarked for these concerns from 2.5% to 3.5%. In the past, NLM has funded Phase 1 of some very promising projects, and former Extramural Programs Director Dr. Milton Corn shrewdly marketed them to the National Cancer Institute (NCI) and the National Heart, Lung, and Blood Institute (NHLBI), who agreed to fund the more expensive Phase 2. In the PPACA (P.L. 111-148), PCORI, which was discussed earlier, is definitely going to be funded to conduct comparative effectiveness research. The Cures Acceleration Network, on the other hand, was written into the legislation by Sen. Specter, to speed the pace of discovery. It can't be funded by NIH but must look to Congress for a separate appropriation. PPACA also contains provisions about HIPAA transaction standards and transparency of payment to physicians. The bill prohibits health insurers from denying patients access to clinical trials approved or funded by select government agencies, and requires that their "routine patient costs" are covered. ClinicalTrials.gov Director Dr. Deborah Zarin commented that this was a positive development, and the fact that "approved" clinical trials is the phrase employed will help stave off abuse, as if a shady enterprise was billing Medicare repeatedly for scans it said were part of a "clinical trial."

Next, the Director discussed the Emergency Access Initiative (EAI), a partnership between NLM and about 20 participating publishers, to provide free access to full-text articles and select reference books to healthcare professionals and libraries affected by disasters. Although initially conceived to help in the wake of U.S. disasters, this worthwhile exercise was activated January 25<sup>th</sup>, to assist with medical emergencies in the aftermath of the earthquake in Haiti. (A small committee determines whether a particular event will trigger EAI.) Publishers agreed to grant access to 220 journals and 69 monographs, following disasters. Although data is still being collected from publishers, the EAI Web site had 3,089 unique visitors, 935 documents were retrieved from the books collection and users clicked on the EAI full-text icon in PubMed 755 times. Dr. Connolly noted that the journal of the American College of Surgeons was not on the list, and Dr. Lindberg said that he'd welcome his help bringing them on board; the list is open.

Tab E describes an agreement between NLM and the U.S. Department of Veterans Affairs, to include the National Drug Formulary Reference Terminology (NDFRT) in the monthly releases of NLM's RxNorm. This step will allow users to obtain a workable set of standard medication terminologies designated as U.S. government standards from a single source.

ClinicalTrials.gov remains a success. It currently posts nearly 88,000 trials and roughly 2,000 results records. Staff is most pleased by the fact that the people providing the registration and results records are doing much better. Thanks to recent changes in processes for data curation and quality assurance, 33% of submissions need no curating. (That figure was initially 5%) When will this all end? The 2007 law laid down a lot of new obligations for ClinicalTrials.gov. There are many ambiguities, and these must be resolved by the very democratic (but also slow and deliberate) process of rulemaking. Dr. Lindberg referenced a diagram under Tab F, showing the federal rulemaking process. He acknowledged the hard work of Betsy Humphreys and NLM Assistant Director for Policy Development Jerry Sheehan on the NIH side of this complicated affair. NIH, in turn, has been in extensive talks with the Food and Drug Administration (FDA). HHS will put together the final regulation, which will address all aspects of trial reporting, including registration, results reporting and adverse event reporting. It will also contain proposals for expansion, such as the possibility of requiring results information for trials of unapproved drugs, biologics and devices. Also under consideration is a proposal Dr. Lindberg strongly opposes: to require submission of narrative summaries of all trials. That's a job for peer-reviewed literature, not the Library. He hopes that HHS will concur. Dr. Mitchell asked Ms. Humphreys where things stand right now, regarding rulemaking. She replied that they're at the third box in that complicated chart—a very large box, Mr. Sheehan added. Board member Ms. Eileen Stanley asked whether there were deadlines to help move the process along. Yes, Ms. Humphreys said, but not all agencies heed them. NLM has met all its deadlines but there are always difficulties to resolve. Dr. Zarin reported a positive development on the international front. The European Medicines Agency, an arm of the European Union, will harmonize their clinical trials database with ClinicalTrials.gov. Soon, the sponsor of a trial will be able to submit the information to both entities with one click. ARRA funds are adding several projects to CT.gov, such as modules for systematic review. Dr. Cohen asked about the prospects for harmonizing datasets with Asia and was told that the World Health Organization has created a 20-item minimum dataset that is the recognized international standard. Still, without unique identifiers, there's no way at present to prevent the same trial (sometimes with different names, PIs, etc.) from showing up in multiple registries around the world.

Dr. Lindberg announced that the recompetition of the eight Regional Medical Libraries is occurring this year, as it does every five years. A new NIH public database, the Genetic Testing Registry, will contain information on the availability, validity and usefulness of genetic tests and will be built by NCBI. Ms. Humphreys said that NLM will keep the Board informed of the opportunity to make formal comments, via the *Federal Register*. Tab I describes NLM's assistance to the Office of the National Coordinator for Health Information Technology. Betsy Humphreys has been closely involved with efforts regarding informatics and standards, and NLM's interest and expertise is recognized. Tab J describes an April conference sponsored by NLM and the Friends of the NLM, "The e-Patient: Digital and Genomic Technologies for Personalized Health Care." It included leading experts in the field as well as engaged, activated patients, who seek medical information and find supportive communities online. Tab K describes a meeting of the Washington, DC chapter of The Internet Society, which occurred in January at Lister Hill Auditorium. The evening session, titled "Internet 2020: Choices for the Smart Grid," explored ways of controlling the increasingly burdened electric power grid, thus saving energy and dollars.

## **VI. CONNECTING MEDLINEPLUS TO EMR AND PHRS**

Joyce Backus set the stage by describing her personal story: she came to NLM in 1983 with a newly minted bachelor's degree and found a solo practice family physician in Montgomery County. Then, her



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doctor provided her with a piece of paper, complete with codes, costs, etc., showing Ms. Backus's health history, tests and treatments, etc. In May 2010, her daughter will graduate with a bachelor's degree. For all of her life, she's been seeing the same doctor, with the same paper record. How long will a 22 year old be satisfied with this?

One encouraging step into the future is MedlinePlus (M+) Connect, which brings electronic health information to patients and clinicians, at the point of health care delivery, using Patient Health Records (PHRs) or Electronic Medical Record (EMR) systems. M+ has over 20,000 authoritative information links within its 800 Health Topic pages. M+ Connect allows health information systems to use ICD-9-CM or SNOMED CT codes to easily link to the corresponding M+ health topic. Sometimes, a single ICD-9-CM code may match up to multiple M+ topics (as with 003.0, "Salmonella enteritis," which matches "Foodborne Illness," "Gastroenteritis" and "Salmonella Infections" in M+) or, occasionally (as with, for example, "Person with feared complaint"), none at all. She showed how an EMR or PHR diagnosis or problem code (drugs and tests will be next) connects with M+ Connect to link a patient or provider to the appropriate M+ health topic. This is done using the HL7 Infobutton or a Web service using SOAP or custom XML.

Ms. Backus showed the prototype from the first effort, beginning in December 2009: the Institute for Family Health in New York City. This group implemented M+ Connect links to patients using their Epic "MyChart" Web service. They came to NLM and asked whether they could link to M+. Other early adopters include Dr. Harris's group at the Cleveland Clinic and the Columbia University Medical Center. This pilot effort will likely also be adopted by the NIH Clinical Center at some time in the future. The formal launch will likely be this summer.

Dr. James Cimino, affiliated with the NIH Clinical Center, NLM Lister Hill Center and Columbia University, gave a behind-the-scenes look at the Infobutton aspect of EHRs. People using clinical information systems (CIS) typically share a number of tasks with common information needs. The CIS knows who the user is, what the user is doing and what information the user is looking at. The system can automate information retrieval and even anticipate it. He gave a brief history of the development of the CIS. PubMed came along and Columbia worked to develop an automated query system for it. DXPLAIN followed, translating findings using UMLS, to gain a differential diagnosis. WebSys came along in 1998, with an Infobutton link users to drug information, PubMed search results and other resources. Because different people in different areas of the clinical setting want access to different resources, the next step was to develop an Infobutton manager, using a knowledge base to infer from the context what that user requires to generate a list of hyperlinks; that base is dynamically selected and created. (It may show a list of related questions of interest, with links to the answers.)

Dr. Cimino wrote a grant, which NLM funded, getting local librarians, who know their users' needs, to customize the Infobutton. The result was LITE (Librarian Infobutton Tailoring Environment), which allows the Infobutton Manager program (which is open to the world) to be customized anywhere. When Dr. Cimino learned about MedlinePlus, he thought that the logical next step would be to link to it via the Infobutton Manager. He worked that out, linking out to the M+ health topic. That system is currently in use by over 4,000 users at Columbia Presbyterian Medical Center. M+ is now HL7-compliant, although most people think of that as a system for shipping laboratory tests around.

However, HL7 messages can be used to make connections between diverse information systems and resources. HL7-capable resources can be integrated quickly. One challenge for the future is getting the information resource to send the results to the EHR system in an HL7 standard message. An international standard for Infobuttons will stimulate wider adoption; the EHR producers and knowledge vendors have already expressed interest. The LITE server will soon move to NIH, so that the resource is more public.

Dr. Harris commented on the importance of separating patients and clinicians in the discussion of the adoption of a national health IT system. Around 2013, according to the meaningful use criteria, a personal health record of some kind will be available and will provide services, such as logical alerts, such as screenings and tests, and include clear definitions or explanations about problems. In his view, such systems should be geared to patients and their needs first, and then clinicians. For scaling and sustainability, what would be required here at NLM to make it work? Using his own Cleveland Clinic as an example, with its quarter of a million patients, he asked his team what they thought was the degree of difficulty was for developing M+ Connect; they replied “1.” The ICD-9 model is very graceful, for mapping to M+ and other consumer-friendly resources, but it is not the entire solution. Cleveland Clinic tried inventing its own taxonomy, which was a challenge. If most patients will need to have such a system by 2013 and most vendors will be driven to create these systems, should NLM take the lead in this arena? Also, he noted, when such a system is in place, it changes the relationship between doctor and patient, because now the two are playing off the same page, using the same terms. Physicians know what the patients have already read. Can we scale it and hold it up over a long time, if we become the national resource? Dr. Cimino replied that it is about as easy to develop a PHR for one patient as more millions. There is very little computation involved. Patient questions are very stable, too, although the answers change and require updating, with medical advances. Terminology mapping is a challenge, although UMLS helps. Individual knowledge vendors have adopted the HL7 interface. It’s not hard to use and is flexible and powerful. Then, the challenge is, how do I index my content so I can answer these questions?

Dr. Lindberg asked what role NLM should play in this process, and Dr. Cimino replied that fully developing LITE would be a significant step. After that, educating librarians and others about its availability and how to set it up would be important. Institutions or vendors could help with that customization. Dr. Harris saw two roles: (1) a “universal products” phase that could be customized; and (2) some way of mapping “fear response, unexplained” to helpful medical information. Ms. Backus said that M+ has expanded by 50-100 topics during the Connect pilot project, but there are still gaps in the problem list.

Dr. Lindberg suggested a role for the Regional Medical Libraries, who are our frontline representatives. Commercial products are likely to be completely incompatible with anything else. Dr. Cimino asked how much the public understands about the information they’re receiving. The formats should be standardized, too. Dr. Mitchell drew comparisons to NLM’s Information Rx program, which also enhances the relationship between doctors and patients. An effort was made regarding Genetics Home Reference, directing patients to that rich resource. M+ Connect seems the logical extension. Ms. Humphreys thought NLM would be in a good position to organize and disseminate drug information. Dr. Walker thought a patient’s family tree would be an invaluable element of a PHR, helping doctors spot potential risks. Also, PHR would be invaluable for those who go to the emergency room or other settings for medical care. He suggested NLM do more studies on how people use its databases. Dr. Cimino said some usability studies

along those lines have been done, but they could be expanded. The key question is, what do the patients, doctors, nurses and all others involved need in order for good decision making to take place. That will guide our actions.

**VII. PRESENTATION OF CERTIFICATES TO OUTGOING BOARD MEMBERS, NLM DIRECTORS AWARD AND FRANK B. ROGERS AWARD**

Dr. Lindberg presented certificates and gifts to outgoing Board members Dr. Jordan Cohen, Dr. Martin Harris and Eileen Stanley (Dr. O. Wayne Isom was not in attendance). The NLM Director's Award went to Gale Dutcher and Dr. Fred Wood "for their creative development efforts, sustained leadership, and significant accomplishments that have shaped and strengthened NLM's Outreach Programs for Native Americans over an extended period of time." Dr. Lindberg then presented the Frank B. Rogers Award to Joyce Backus "for more than 10 years of technical oversight and programmatic direction of MedlinePlus, and for moving NLM's consumer health products into the National spotlight."

**VIII. DISASTER HEALTH INFORMATION AND THE IOM FORUM ON MEDICAL AND PUBLIC HEALTH PREPAREDNESS FOR CATASTROPHIC EVENTS**

Dr. Harris introduced the Disaster Health Information Panel led by Ms. Stacey Arnesen. She began the update by recalling for the BOR Members that the NLM Long Range Plan for 2006-2016 recommended that the Library create a Disaster Information Management Research Center (DIMRC) "to complement and support the activities of the federal, state, and local agencies responsible for disaster planning and response" and "to provide a platform for demonstrating how libraries and librarians can be part of the solution to this national problem."

In response to this recommendation, NLM formally established DIMRC in 2008. The establishment was also supported by a Senate report that accompanied the 2009 appropriations bill. So, while the Long Range Plan supported the creation of the Disaster Assistance Information Center, the NLM had been involved with disaster assistance for a number of years. For example, tools like Wisser for emergency responders had already been created. NLM had worked with the Pan American Health Organization on the creation of the Central American network for disaster and health information. However, the establishment of DIMRC has provided NLM with the opportunity to expand its relationships with other organizations and agencies. In 2007, NLM joined the Institute of Medicine's (IOM) Forum on Medical and Public Health Preparedness for Catastrophic Events as a partner. Recently, the NLM submitted a White Paper to the IOM Forum on DIMRC. Other partnerships include the Bethesda Hospitals' Emergency Preparedness Partnership (BHEPP) and The Lost Person Finder and the Reunite iPhone app to help locate and identify persons lost in a disaster and the Digital Pen triage forum.

Ms. Arnesen discussed DIMRC's initiatives over the last couple of years. DIMRC is located in NLM's Specialized Information Services (SIS) Division. It has a staff of seven. All parts of NLM are engaged in disaster and public health emergency products. There are several objectives. The first is maintaining library operations and services in locations affected by disasters. The NN/LM has focused on disaster preparedness and service continuities for libraries. They also developed a disaster preparedness toolkit. As previously mentioned by Dr. Lindberg, NLM has worked with a number of publishers to initiate the emergency access initiative so that during disasters, like Haiti, libraries can gain access to information for free of charge. Another activity involves the organization of disaster literature. Web pages have been

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created on certain types of disasters, like the crude oil spill, and NLM has worked with the New York Academy of Medicine on the development of a resource guide for public health preparedness. Another objective is the development of existing products and services regarding disasters. REMM, the Radiation Emergency Medical Management tool helps health professionals to manage mass casualty events. REMM's chemical counterpart, the Chemical Hazards Emergency Management is also under development. NLM is now conducting research to support disaster health information management.

Ms. Cindy Love of SIS discussed the Disaster Information Specialist program. Ms. Love noted that librarians have become disaster preparedness champions and they have a unique opportunity to use their information-gathering skills to contribute to good disaster management. She provided some examples of what Disaster Information Specialists are doing. They are active in all phases of preparedness, response and recovery. DIMRC is supporting the pilot demonstrations of roles that librarians can play within this specialty. The NNLM and the RMLs are encouraging all libraries to prepare for emergencies and disruption of services. The Medical Library Association (MLA) is discussing the creation of a certification program to prepare librarians to contribute to disaster preparedness and response. The idea of a certification program for librarians fits perfectly with current plans for a national curriculum in disaster medicine for public health preparedness. NLM, in developing the Disaster Information Specialist, is in line with other agencies in their response to disaster preparation.

Ms. Patricia Reynolds, medical librarian for the Sarasota Memorial Hospital (SMH) in Florida, described her activities as one of four pilot participants in the Disaster Information Specialist Project funded by NLM's Disaster Information Management Research Center. Ms. Reynolds is working to improve disaster planning both within her institution and regionally. A major hurricane is the most likely disaster in Sarasota, although they are now also focusing on emergency preparedness for all kinds of events. Sarasota Memorial Hospital is an 800-bed county hospital and the only nonprofit public hospital in that area, surrounded by private for-profit hospitals. This puts an extra financial and public service burden on SMH. Regional disaster planning is hampered by lack of information sharing among these hospitals and Reynolds has learned that a regional coalition of hospitals for preparedness is unlikely. Within the hospital, there have been considerable challenges in coordinating planning between clinical care providers and hospital security and emergency planners. Reynolds attends and provides informationist services for all hospital emergency committee work including disaster drills. She has provided training, web resources, guest speakers, CME activities, survey research, and consultation on disaster issues, especially bioethical aspects of crisis standards of care (determining standards of care under extreme circumstances). She has started a disaster preparedness coalition in partnership with medical libraries at Lee Memorial Hospital, Naples Community Hospital, and the State College of Florida. With funding from NLM's National Network of Libraries of Medicine she co-sponsored a Community Preparedness Day with the local public library system at its headquarters library. Reynolds concluded by noting that being part of an NIH/NLM program was critical in her gaining access to the right people and programs for advancing her disaster information outreach efforts.

Dr. Robert Windom, the Assistant Secretary for Health under President Reagan, summarized these efforts. He said that he met with Steven Phillips and encouraged him to get the Sarasota Memorial Hospital librarian into the NLM program. He said he is now working with Senators to promote funding for replication of the programs in sites in New Hampshire, San Diego, Sarasota, and Iowa.

Dr. Steven Phillips asked the BOR to create a working group to advise DIMRC about future activities. The recommendation was considered and approved by the BOR.

A discussion followed about the relationships established between trauma centers and Sarasota Memorial Hospital and the problems in maintaining those relationships. Ms. Reynolds also noted that their hospital always has a neurosurgeon on call for emergency purposes. A member asked if there is a unique role for the disaster information specialist to perform. Ms. Reynolds said that an important part of her role has been to bridge silos. Dr. Walker noted that disasters are likely to increase and that the national response will likely improve. He said that it has been great to watch the evolution of the SIS and to learn about the worthwhile work that NLM is involved with in this area.

#### **IX. REPORTS FROM NLM RECOVERY ACT CHALLENGE GRANT AWARDEES ON ADVANCED CLINICAL DECISION SUPPORT**

Dr. Jeffrey Barrett, from the Children's Hospital of Philadelphia, shared some of the progress that has been made in pharmacotherapy decision making for children. The lack of prescribing information and meaningful dosing guidance places an incredible burden on pediatric caregivers with the end-result often the sub-optimal use of many medicines in children. The overarching goal of his project is to look at dosing guidance that is provided and make sure that it can be consistently delivered with the formulary. The objective of this challenge grant application is to create a patient-based informatics system that contains the relevant guidance concerning dosing of specific agents to various pediatric subpopulations. The central hypothesis is that dosing guidance can be improved when the caregiver responsible for pharmacotherapy is informed in an expedient manner while in the process of patient care.

Dr. Barrett's research provides a mechanism to incorporate the most relevant prior knowledge into dosing guidance for an often understudied population – children. An important feature of the research is the incorporation of predictive models that provide real-time forecasting of patient response to existing therapy recommendations conditioned on prior patient experience with the potential to provide clinical scenario testing if the caregiver requests. He discussed how the initial dashboards developed as part of this proposal can easily be extended to accommodate other populations (elderly, pregnancy, etc) and expanded to include participation from additional stakeholders. Dr. Barrett noted that they are overcoming a lot of the barriers that are associated with the use of electronic medical records.

The Board also heard from Dr. Randall Wetzel, Professor of Critical Care Medicine at Children's Hospital in Los Angeles, USC Keck School of Medicine. Dr. Wetzel discussed how he is working to bring data to the bedsides of critically ill children to provide for decision support. He noted that the project began in 1997 with the support of 25 pediatric internists. The purpose was to create a common information space for an international community of caregivers providing critical care for children for the purpose of optimizing outcomes for them. The system was to improve our understanding about how critical illness happens to children and sharing this information with their caregivers. Medical informatics and data mining are critical components in this project.

Dr. Wetzel discussed how vast amounts of digital health care data are available for real time computational analysis using artificial intelligence and statistical approaches to ascertain relationships, determine 'diagnostic clusters' and trend outcomes of therapy in individual and groups of patients. While such algorithms have successful applications in business, industry, and physical sciences and in parts of health care, several barriers exist for their broader application to intensive care medicine and other health care domains. Using artificial intelligence (AI) and automated computational methodology he will

develop algorithms for data mining raw medical data from disparate clinical data sources. This will enable understanding and application of the most recent experiential information from large numbers of critically ill patients to find similarities between a current individual patient and historical, similar populations with known treatment outcomes. He noted that they would integrate expertise in medicine, computational mathematics and computer science to construct suitable data structures and develop AI computational techniques for analysis and presentation. The goal is to bring analyzed comparative data to the bedside of critically ill children in real time to support clinical decision-making. This will enable decision support for diagnosis, management, therapy and outcomes serving the functions of disease detection, direct patient care, quality, and safety.

Dr. Carol Friedman and other Board members expressed interest in both NLM projects and sought clarification from the principal investigators on specific elements.

Board Chair Dr. C. Martin Harris announced the board would table the extramural report to the next meeting.

## **X. NCBI UPDATE**

Dr. David Lipman, director of the National Center for Biotechnology Information (NCBI) updated the Board on several NCBI projects. Bookshelf, which contains online books and other materials, is growing in both content and usage. Reports from the National Academies and comparative effectiveness reports from the U.K. National Health Service's [National Institute for Health and Clinical Excellence](#) are among the new additions. To expand searching for Bookshelf entries, NCBI and Library Operations (LO) collaborated to add citations to PubMed for selected content within Bookshelf. The citations include an excerpt of the content and a link to the content. Dr. Lipman also said they've learned from looking at Google and Bing that people like to search for images. So, NCBI is creating an Entrez database of images from books and reports in Bookshelf and PubMed Central.

Dr. Lipman then discussed the 2009 H1N1 flu pandemic and NCBI's role in research, noting that he's had a scientific interest in the flu since medical school. He said GenBank contains over 100,000 flu sequences. A source of about half of that data is the National Institute of Allergy and Infectious Diseases (NIAID) influenza sequencing project. In addition, as a result of the 2009 H1N1 flu, GenBank received about 18,000 sequences, representing sequences from 4,000 different clinical isolates from around the world. An NCBI team worked overtime to get the information out as quickly as possible.

In a brief synopsis of the 2009 H1N1 pandemic, Dr. Lipman explained that researchers looking at the origin of the 2009 H1N1 flu found several different gene segments including North America swine and avian flu, Eurasian swine flu, and human flu. By comparing gene sequences, Dr. Lipman said, there was no question the virus had moved from swine to humans and had been in swine in a similar form since 1998. Using data from the Centers for Disease Control and Prevention, Dr. Lipman offered a non-quantitative summary of 2009 H1N1—it was mild in terms of people getting sick; it was extensive in terms of the number of people getting the virus but not getting really sick; and it appeared to hit young people harder than older adults.

Recognizing the need for a faster way to publish flu results so scientists can quickly share information, NCBI worked with Google and the Public Library of Science (PLOS), which developed PLOS Currents:

Influenza. It uses a publishing platform in which papers are written and reviewed on the Web. Editors screen each paper, decide if it merits review, and then send it out to a review board of leading researchers for comment. Papers are reviewed sometimes in a matter of days, published as soon as they are deemed suitable, and archived in PubMed Central. Dr. Lipman noted that it is open access and doesn't cost anything to authors or users. He said PLoS expects to expand this publishing model to other areas. Dr. Lipman discussed some of the findings reported in PLoS Currents: Influenza and elsewhere on the severity of the 2009 pandemic. The mean age of deaths for the 2009 pandemic was younger than most others except the 1918 pandemic. In terms of years of life lost, the 2009 pandemic was much more severe than a typical flu season. Because the virus was novel and found plenty of people to infect, there was no pressure for the virus to change and no evidence of significant change in the virus.

In discussion following the presentation, Dr. Mitchell asked about surveillance of domestic animals. Dr. Lipman said there has been a lot of surveillance of birds but more could be done for swine. Mr. James commended Dr. Lipman for reducing the publishing cycle. Dr. Lipman said you can speed up the process by focusing on whether the paper is sound and set aside how important it is. He also said it helps to screen the paper by matching it to reviewers who are experts in the field.

## **XI. ENERGY EFFICIENT TECHNOLOGY AND THE NLM DATA CENTER**

Ivor D'Souza, acting director of the Office of Computer and Communications Systems, updated the Board on efforts to make the most of energy and IT resources in the data center. The data center houses the IT equipment that supports the library's information services, research programs, and supporting operations. D'Souza explained that IT growth (adding more equipment) must be balanced with the fact that the data center has limited floor space, electrical power and cooling.

D'Souza cited two studies highlighting the need for energy efficiency. One study found that energy use in data centers doubled between 2000 and 2006 and would become uncontrolled unless energy efficiency is improved. The other found that greenhouse gas emissions in data centers would quadruple by 2020. In February 2010, the federal government's chief information officer sent out a memo requiring all federal government data centers to become more efficient. However, NLM had started down that road back in 2004. D'Souza outlined four projects to save energy and IT resources.

The first project was to rearrange the racks of computers to create isolated hot and cold aisles—an energy efficient configuration based upon industry best practices. By creating these aisles, the cold air that's drawn into the front of the rack to cool the computers doesn't become nullified by mixing with the hot air that's discharged from the back of the computers. A second energy-saving project was to install in-row coolers, which are air conditioning units installed right next to the computer racks. By having the coolers close by, the cool air only has to travel a short distance to the computers, rather than having to travel the length of the raised floor to reach the computers. A third project was to install chimney cabinets which completely separate hot and cold air. Cold air comes into the room through perforated tiles on the raised floor. Computer fans draw the cold air into the cabinet and the hot air that collects in the back of the computer gets drawn into the chimney and vented into the ceiling. The fourth project was to use computer virtualization technology, which enables you to put computer applications that don't work well together on virtual servers. That means you have fewer physical servers to power and cool. Because of these new measures, between the years 2005 and 2010, the data center's PUE (Power Usage Effectiveness) rating has improved by 9%.

Dr. Lindberg complimented Mr. D'Souza on the presentation and noted the problem is even more complex when you factor in the cost of renting additional space and the cost of electricity. Dr. Lindberg said some companies are choosing to build data centers in states with lower electricity rates. Dr. Mitchell added that her state, Utah, has several large companies coming in. She also asked how the data center could become even more efficient. D'Souza said that NLM was able to install chimney cabinets in the newest part of the data center, but can't do so in the old part because of obstructions in the ceiling. So, NLM will look to trap hot air in the hot aisles to separate hot and cold air, and thereby improve data center efficiency. D'Souza also noted that NLM is looking at the potential of doing "free cooling," in which air is brought in from the outside if the temperature and humidity is right. Consultant Dr. Marion Ball asked about future technology. D'Souza said manufacturers have become more conscious about energy efficiency and the NLM data center keeps its hardware refresh cycle to three years so NLM can take advantage of lower energy computers coming out.

## **XII. REPORT FROM THE BOARD OF REGENTS CHAIR NOMINATING COMMITTEE**

Ms. Kathryn Mendenhall presented the nominating committee report on behalf of the chair, Dr. Deanna Marcum. The committee is pleased to present the candidate they have identified, Mr. Bruce James, who has agreed to serve. The Board approved the nomination.

## **XIII. REPORT FROM THE SUBCOMMITTEE ON OUTREACH AND PUBLIC INFORMATION**

Chair Eileen Stanley reported on yesterday's meeting. The first item on the agenda was Dr. Corn's update on planning for NLM's 175<sup>th</sup> anniversary. The selection of events to be held throughout 2011 is expected in the next month or so. Board members suggested we have measurable goals for the impact of the celebration; that NLM and staff be thanked for public service; that NLM try to attain high profile television coverage. The committee was updated on the decision to end the Go Local project, which had the best intentions but was overtaken by other players and technology. The MedlinePlus redesign was addressed as was the new online newsletter, NLM in Focus. They also got a quick look at a version of the digital pen project in Uganda. In the following discussion, several Board members commented that the anniversary celebration should not simply be a look at the past, but a look at where NLM is headed.

Dr. Steven Phillips, NLM Associate Director, Division of Specialized Information Services (SIS), told the Board about his recent trip to Haiti. He went there with the Pan American Health Organization (PAHO): to assess information collection, determine lessons learned, and to find out more about the sharing and management of information following the earthquake. He said responders are divided into clusters, including agriculture, health, food and education. Dr. Phillips showed pictures of an operating room, an intensive care unit, damage in the streets, and tent cities housing two million people. He explained how there are 1,000 tent cities managed by different organizations. He said the people are resilient and trying to rebuild. Dr. Phillips said he would like to have librarians at NLM partner with librarians in Haiti to train them to be disaster information specialists.

## **XIV. UNROLLING THE SCROLL**

Dr. George Thoma of the Lister Hill National Center for Biomedical Communications (LHNCBC) and Michael North of the History of Medicine Division (HMD) told the Board about the newest addition to



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Turning the Pages. Turning the Pages was created as a way to bring the Library's historic treasures to the public. It can be experienced on touch-screen kiosks in the Library and online. Dr. Thoma said people frequently ask him for the Turning the Pages software so they can create their own version. But there is no single piece of software. Turning the Pages is a process involving a variety of tools and variety of people including computer graphics engineers. Dr. Thoma made his point by demonstrating and detailing the work behind the newest addition to the program, the Edwin Smith Papyrus. The papyrus was created by Egyptian surgeons 3700 years ago and named after the man who acquired it in the 19<sup>th</sup> century.

At some point during the 19<sup>th</sup> century, the 15-foot scroll was cut into 11 pieces, amounting to 14 panels of text front and back. The New York Academy of Medicine, which now owns the papyrus, scanned the panels at a very high resolution and shared the images with NLM. The first thing the Turning the Pages team did was to digitally stitch the scroll back together (ironically, the only way to see the scroll as it was seen by the Egyptians is in this virtual form). The data were also compressed, because too much data can create a computational burden for the people designing the virtual scroll, and can burden the computers of people using the scroll. Next, a 3D model for the papyrus was created. The model has all the information on the texture, geometry, shading, lighting, etc. for the papyrus. The content then was imported into the model. Then it was animated and made interactive to respond to a touch or a mouse click. Additionally, a feature to zoom into parts of the scroll was added. A key tool in the process is Maya, which is technology that's often used to create advanced video games.

Mr. North, head of rare books and early manuscripts in HMD, explained the significance of the papyrus and what we've learned from it. The papyrus is the oldest surviving surgical text. The document itself dates from about 1750 BCE, but the text is believed to be about 1,000 years older. It's written in a cursive version of Egyptian hieroglyphics. The papyrus describes 48 surgical cases from the head down the abdomen. The scribe stopped in the middle of a sentence so it's believed the text possibly contained cases dealing with the rest of the body. The papyrus stands out among Egyptian medical texts because it uses rational methods of examination and treatments, while many others tend to include a lot of magical incantations. Most of the cases in the papyrus involve traumas—the document most likely was used to treat battle wounds and construction injuries.

Each case is laid out using a specific formula starting with a title, examination and prognosis, and recommended treatment, and further explanation of the case. North noted that honey, known for its mild antibiotic effects, was often recommended for open wounds. The reverse of the papyrus provides prescriptions and spells. Perhaps the most interesting is a prescription for making an old man into a youth.

Mr. James asked how people know about the existence of the papyrus. Dr. Thoma and Mr. North noted that a press release was done. Dr. Lindbergh suggested finding a way to get this on iPads. Board member Virginia Tanji noted this would be appealing to students and would drive people to other NLM pages. Ms. Humphreys suggested integrating this and other tools for teachers into the programs for teachers that HMD does for its exhibitions. Ms. Gale Dutcher of SIS commented that they have been working with HMD to reach out to teachers. Dr. Albright suggested engaging the Friends of the National Library of Medicine to get the word out. Ms. Kathryn Mendenhall asked whether NLM has been approached by the History Channel, PBS or anyone else.

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### XV. ADJOURNMENT

Before banging the gavel for the last time, Board Chair Dr. C. Martin Harris thanked the NLM staff. Dr. Harris said it's been an honor and pleasure to be a member of the Board of Regents.

The Board of Regents meeting was adjourned at 12:00 p.m. on May 12, 2010.

#### **ACTIONS TAKEN BY THE BOARD OF REGENTS:**

- Approval of the February 2-3, 2010 Board Minutes
- Approval of the May 3-4, 2011 Future Meeting Dates
- Creation of a Working Group to advise the BOR regarding future activities of the Disaster Information Management Research Center (DIMRC).

Appendix A - Roster - Board of Regents

I certify that, to the best of my knowledge, the foregoing minutes and attachment are accurate and complete.

Donald A.B. Lindberg, M.D.  
Director, National Library of Medicine

C. Martin Harris, M.D.  
Chair, NLM Board of Regents