

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

**MINUTES OF THE BOARD OF REGENTS
May 21-22, 2013**

The 163rd meeting of the Board of Regents was convened on May 21, 2013, 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 4:00 p.m., followed by a closed session for consideration of grant applications until 4:30 p.m. On May 22, the meeting was reopened to the public from 9:00 a.m. until adjournment at 12:00 p.m.

MEMBERS PRESENT [Appendix A]:

Dr. Joyce Mitchell [Chair], University of Utah
Dr. Ronald Evens, Washington University School of Medicine
Dr. Katherine Gottlieb, Southcentral Foundation
Dr. Trudy MacKay, North Carolina State University
Dr. Ralph Roskies, University of Pittsburgh
Ms. Mary Ryan, University of Arkansas for Medical Sciences Library
Dr. F. Douglas Scutchfield, University of Kentucky College of Public Health

MEMBERS NOT PRESENT:

Dr. David Fleming, University of Missouri School of Medicine
Ms. Gail Yokote, University of California, Davis

EX OFFICIO AND ALTERNATE MEMBERS PRESENT:

Dr. Regina Benjamin, Office of the Surgeon General, PHS
Mr. Christopher Cole, National Agricultural Library
Dr. Joseph Francis, Veterans Health Administration
Ms. Kathryn Mendenhall, Library of Congress
Col. Cathy Nace, United States Army
MGEN Kim Siniscalchi, United States Air Force
Ms. Linda Spitzer, Uniformed Services University of the Health Sciences
Mr. Howard Wactlar, National Science Foundation

CONSULTANTS TO THE BOR PRESENT:

Dr. Tenley Albright, Massachusetts Institute of Technology
Dr. Marion Ball, Johns Hopkins School of Nursing
Dr. Holly Buchanan, University of New Mexico

SPEAKERS AND INVITED GUESTS PRESENT:

Dr. Timothy Cardozo, New York University
Mr. John Mangano, comScore
Dr. Roderic Pettigrew, National Institute of Biomedical Imaging and Bioengineering, NIH
Dr. Neil Thakur, Office of the Director, NIH
Dr. Treye Thomas, U.S. Consumer Product Safety Commission

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MEMBERS OF THE PUBLIC PRESENT:

Ms. Melinda Curley, comScore
Mr. Andrei Komarov, Technical Resources International, Inc.
Mary Lindberg
Ms. Ronica Lu, Friends of the National Library of Medicine
Ms. Karen Mowrer, Association of Independent Research Institutes
Ms. Susan Phillips
Dr. Barbara Redman, Friends of the National Library of Medicine
Ms. Leandra Ross, Southcentral Foundation
Dr. Elliot Siegel, Consultant
Mr. James Swetnam, Google
Mr. Stephen Weitzman, MedData Foundation
Mr. Thomas West, The Krasnow Institute

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, NLM
Ms. Stacey Arnesen, Division of Specialized Information Services, NLM
Ms. Dianne Babski, Division of Library Operations, NLM
Ms. Joyce Backus, Division of Library Operations, NLM
Dr. Sema Candemir, Lister Hill Center, NLM
Dr. Dana Casciotti, Office of Health Information Programs Development, NLM
Ms. Francesca Crawford, Division of Extramural Programs, NLM
Mr. Todd Danielson, Office of the Director, NLM
Ms. Darlene Dodson, Office of the Director, NLM
Mr. Ivor D'Souza, Office of Computer and Communications Systems, NLM
Ms. Gale Dutcher, Division of Specialized Information Services, NLM
Dr. Valerie Florance, Division of Extramural Programs, NLM
Dr. Bert Hakkinen, Division of Specialized Information Services, NLM
Dr. Dan Gerendasy, Office of Health Information Programs Development, NLM
Dr. Zoe Huang, Division of Extramural Programs, NLM
Dr. Michael Huerta, Office of Health Information Programs Development, NLM
Ms. Christine Ireland, Division of Extramural Programs, NLM
Ms. Janice Kelly, Division of Specialized Information Services, NLM
Mr. Paul Kiehl, Office of the Director, NLM
Dr. John Kilbourne, Division of Library Operations, NLM
Ms. Lisa Lang, Division of Library Operations, NLM
Dr. David Lipman, National Center for Biotechnology Information, NLM
Dr. Robert Logan, Office the Director, NLM
Dr. Clement McDonald, Lister Hill Center, NLM
Mr. Dwight Mowery, Division of Extramural Programs, NLM
Ms. Jill Newmark, Division of Library Operations, NLM
Dr. Xuequn Pan, Lister Hill Center, NLM
Ms. Jamie Peacock, Division of Specialized Information Services, NLM
Dr. Arthur Petrosian, Division of Extramural Programs, NLM
Dr. Steven Phillips, Division of Specialized Information Services, NLM
Dr. Angela Ruffin, Division of Library Operations, NLM
Mr. Jerry Sheehan, Office of the Director, NLM

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Dr. Hua-Chuan Sim, Division of Extramural Programs, NLM
Dr. George Thoma, Lister Hill Center, NLM
Dr. Bart Trawick, National Center for Biotechnology Information, NLM
Dr. Alan VanBiervliet, Division of Extramural Programs, NLM
Ms. Kate Wise, Office the Director, NIH
Dr. Fred Wood, Office of Health Information Programs Development, NLM
Dr. Jane Ye, Division of Extramural Programs, NLM

I. OPENING REMARKS

Dr. Joyce Mitchell, NLM Board of Regents Chair, welcomed the Regents, alternates and guests to the 163rd meeting of the Board. She introduced Dr. Roderic Pettigrew, Director of NIH's National Institute of Biomedical Imaging and Bioengineering (NIBIB).

II. BRAIN MAPPING IN 2013

Dr. Pettigrew noted that on April 2 NIH Director Dr. Francis Collins and President Obama had announced the BRAIN (Brain Research through Advancing Innovative Neurotechnologies) Initiative to map the complexity of the brain on a neuron-by-neuron basis, with the ultimate goal of preventing and treating a host of neurological diseases, ranging from Alzheimer's to depression. The initiative that is being pursued is the development of the technologies and tools that will allow us to construct a picture of the brain, understand how it is structured, and how that structure functions. It requires the convergence of many disciplines, including genetics, engineering, bioinformatics, neuroscience and chemistry.

Dr. Pettigrew then summarized several exciting advances in science that will aid in this process. Brainbow is an imaging strategy used to label neurons in many different hues, using fluorescence. Another advance that caused quite a stir when news of it appeared in *Nature* is CLARITY, which makes it possible to image an intact mouse brain in high resolution, down to the level of cells and molecules. By replacing fat that normally holds the brain's working components in place with a clear gel, researchers made its normally opaque and impenetrable tissue see-through and permeable. It is then possible to capture in 3D neuronal connections that were previously difficult to do, as you were only able to do it in a thin slice at a time. This technique is being pursued and refined for use in humans. This is amazing, looking at the neuronal pathways of the brain including the complex interconnections which had eluded science for quite some time. The basic technique that gives rise to this goes by the term Diffusion Tensor Magnetic Resonance Imaging (DT-MRI). It is founded on the observation that water diffuses randomly in all directions, but principally along the axis of neurons. By using MRI in a motion-sensitive fashion, where you can actually quantify motion in three directions, one is able to decipher the direction in which water is diffusing and from that compute a neuronal pathway. DT-MRI was invented by National Institute of Child Health and Human Development (NICHD) intramural researcher Dr. Peter Basser. He developed this breakthrough in the early 1990s. According to Dr. Basser, DT-MRI provides novel, histological and anatomical information about tissue structure, composition, architecture, and organization. Changes in these tissue properties can often be correlated with processes that occur in development, degeneration, disease, and aging. This method is becoming more widely applied and will allow us to begin to understand the structure of fibers in the human brain.

There have also been some advances in our ability to decipher the functional nature of the brain and to model the brain. To demonstrate this, Dr. Collins appeared on *The Colbert Report* two days after the President announced this brain initiative. Colbert donned the cap of one of our NIH researchers, a skull cap that can detect the brain waves of an individual and interpret those brain waves and after some calibration allows one to understand something that you are thinking about. On that basis, you can actually spell by thought. This was developed for individuals who are unable to speak or write and is available around the globe.

At an even more basic level in terms of functionality is a work from Dr. Mark Schnitzer, an NIH Pioneer Award recipient who developed two-photon microscopy, which makes use of high intensity pulsed laser beams. Two-photon excitation has enabled remarkable advances in our understanding of the nervous system. Its three-dimensional resolution, superior depth penetration, and minimal phototoxicity for out-of-focus portions of the sample have made it the technique of choice for an impressive array of applications.

Dr. Pettigrew concluded by noting that some of these advances over the last several years underpin The BRAIN Initiative. It is ambitious and promises to understand neurological disease more than we currently do and to point us towards ways to detect and cure these diseases earlier.

Board member Dr. Ronald Evens said it is amazing how technology has evolved since he first started radiology in the 1960s. Dr. Benjamin asked how the BRAIN Initiative would help Alzheimer's. Dr. Pettigrew said that, by understanding the plasticity and wiring of the brain, along with the fundamental deficit that leads to Alzheimer's disease, we might be able to address a neurodegenerative disease like Alzheimer's. Another Board member asked about ADHD. Dr. Pettigrew replied that behavioral problems like ADHD are the most elusive, and this initiative will help us address some of these computational deficits. In response to a Board member's interest in how this relates to the Human Genome Project, Dr. Pettigrew said that the genome underlies everything.

III. REPORT FROM THE OFFICE OF THE SURGEON GENERAL (OSG), PHS

Dr. Regina Benjamin reported that the OSG will launch tomorrow the second phase of its national *Tips From Former Smokers* campaign, in conjunction with the Centers for Disease Control and Prevention (CDC). She noted that the biggest differences in health are behavioral, like getting physically fit and exercising. The OSG also announced its *Everyone Walks* campaign, which includes programs for the wheelchair-bound and disabled.

Dr. Benjamin said that more and more people are now using apps to record their fitness progress. She noted that the OSG has teamed up with over 400 agencies to distribute pedometers. Dr. Lindberg said that NLM did that in the past and should probably continue to do so. He said that the HHS Secretary encouraged people to walk 5,000-10,000 steps daily. Dr. Benjamin said her office tells people to sleep and rest, too, because that's another key element of physical fitness.

Board consultant Dr. Tenley Albright asked how employers can help encourage exercise. The Surgeon General responded that employers can send a message for employees to get out and exercise over their lunch break. They will be much more alert and productive as a result.

One Board member asked whether she could suggest any fitness groups that she has joined. The Surgeon General said that *America Walks* and *Exercise is Medicine* are both good. Another Board member asked whether anyone at HHS had taken a look at how effective these workplace fitness programs are. No, the Surgeon General replied, she did not believe so, but part of The National Prevention Strategy is to evaluate them. Board consultant Dr. Marion Ball asked if there was any effort underway to mandate physical education in the schools. Dr. Benjamin responded that Secretary of Education Arne Duncan would like to add physical fitness and recess back into the curriculum. So, they are moving in that direction. A Board member asked what can NLM do to help. Dr. Lindberg pointed out that the NLM makes efforts to ensure that all Surgeon General reports get included in the collection and are made available to the public.

IV. FEBRUARY 2013 MINUTES AND FUTURE MEETINGS

The Regents approved without change the minutes from the February 2013 meeting. It was agreed that next year's spring meeting will be May 13-14, 2014.

V. REPORT FROM THE NLM DIRECTOR

Dr. Lindberg began his report with a review of the budget. For FY2013, NLM received \$20 million less—a consequence of mandated reductions. As far as the FY2014 budget, we have the recommendation of the President, who has put in for a minor increase, which would of course be beneficial. What has happened at NIH and at NLM as a result of the FY2013 reductions? No one has been laid off yet. Instead, knowing it would not be a favorable year, everybody cut back at the outset of the year, under-spending because we knew we would have to. In FY2014, without a better budget, we know that some substantial things are going to have to go away. We have communicated that to the NLM leadership and we will ask them to give us ideas about where cuts can be made in their programs.

On the personnel side, May Cheh retired after 32 years of service to the Lister Hill Center. Dr. Aaron Navarro, Assistant Director for Program Development, Lister Hill Center, retired at the end of April after working in the IT field for more than 40 years. Dr. Paul Theerman has left the History of Medicine Division after 15 years of service. He will be taking a position as associate director of the new Center for the History of Medicine and Public Health at the New York Academy of Medicine. As far as new appointments, Dr. John Kilbourne has taken over as head of the Medical Subject Headings Section (MeSH), and had previously worked on RxNorm. Dianne Babski has been named Deputy Associate Director for Library Operations.

Dr. Lindberg asked Dr. Clem McDonald to introduce the new Lister Hill fellows. Dr. Xuequn Pan, who has her doctorate in information science from the University of North Texas, will be working on the use of Natural Language Processing for de-identification of clinical documents and phenotype identification in the Biomedical Translational Research Information System (BTRIS). Dr. Sema Candemir, who has her doctorate in computer engineering from Gebze Institute of Technology, Turkey, will be working with the Communications Engineering Branch.

Dr. Lindberg then discussed legislation. He noted that a lot of legislation of interest to the NLM has been introduced, but not yet passed. Regarding Public Access to Federally Funded Research Results, Senate and House legislation has been proposed, which would require federal science

agencies with extramural research expenditures in excess of \$100 million to develop public access policies similar to the NIH Public Access Policy. It was strongly supported by Dr. Elias Zerhouni, who tried a voluntary system during his tenure as NIH Director before Congress made it mandatory. All in all, it is working.

The Pandemic and All-Hazards Preparedness Act was passed. The Act reauthorizes existing programs and adds new authorities to strengthen the country's ability to respond to public health emergencies, including chemical and biological attacks.

Dr. Lindberg also noted that the White House Office of Science and Technology Policy (OSTP) issued a memorandum requiring federal agencies to develop public access policies for both publications and digital data. The data portion of this relates to the NIH Big Data to Knowledge initiative. Dr. Lindberg asked NLM Assistant Director for Policy Development Jerry Sheehan to summarize the OSTP memorandum. Mr. Sheehan explained that the memorandum identified specific objectives the agencies are to meet in improving access to scholarly publications and digital data that result from Federal research funding. The draft plans are to be submitted to the OSTP for review by August 22, 2013.

Dr. Lindberg asked ex-officio Board member Howard Wactlar of the National Science Foundation to comment. The main questions, he said, are: Where does research data get stored? Who has the enforcement capability if researchers are required to make their data availability? How does the Government follow up to ensure that they really are? And, where are the financial resources for it? Do we have to start adding funds to research grants for them to be able to maintain their data somewhere? A Board member echoed Wactlar's concern about standardization and the unfunded Mandate. Deputy Director Betsy Humphreys added that the OSTP memorandum and requirements are likely to be the first step in a journey. Another Board member said, the most common tool for a researcher to use is an Excel spreadsheet and that is where a lot of data lives. Dr. Lindberg said that the biggest data is patient care data, and Medicare and Medicaid are not operating on Excel spreadsheets. Dr. Lindberg asked Mr. Jerry Sheehan to give an overview of related activities of the Trans-NIH BioMedical Informatics Coordinating Committee (BMIC), which Dr. Lindberg chairs.

Mr. Sheehan was then asked to discuss the NIH Big Data to Knowledge (BD2K) initiative. As activities like the BRAIN Initiative are generating huge amounts of data and trying to pull multiple data sets together, a challenge is how to use the data in meaningful ways. The impetus for the NIH initiative came from the Data and Informatics Working Group, an advisory committee to the NIH Director. It made five major recommendations about data and informatics. The first three of these recommendations gave rise to the BD2K effort: first, to promote data sharing; second, to support the development and dissemination of analytic approaches and tools; and third, to build capacity so that the biomedical workforce knows how to make use of these tools and analyze these data. The other two recommendations focus on improving the IT infrastructure within NIH itself. NIH will put common funds into the BD2K initiative supplementing what the Institutes will put into the effort. The initial funding announcement will deal with the establishment of Centers of excellence. Across NIH, there are multiple working groups with more than 100 staff working on BD2K activities. (NLM is very well represented, with Dr. Mike Huerta, Associate Director for Health Information Programs Development, who

sits on the Executive Committee, as well as co-chairs the Datasharing Working Group.) This summer, there will be a series of workshops that will provide input to these groups about the plans and implementation that should be starting in FY2014. Mr. Sheehan concluded by saying that there is a scientific data council that has been created at NIH, which includes NLM Deputy Director Betsy Humphreys. Recruitment of an NIH associate director for data science, is also underway. Ex-Officio Board member Dr. Joseph Francis said that there is nothing of this scale at the Department of Veterans Affairs, but they do have large datasets and have done a lot to get metadata together. Dr. Lindberg mentioned that a critical element of the Big Data Initiative is the display of the data. The visualization is as important as the manipulation.

In conclusion, Dr. Lindberg noted that the NLM is lending two works from its historical collections to the Cloisters Museum and Gardens, part of the Metropolitan Museum of Art, for display in its new public exhibition entitled *Search for the Unicorn*. The works are Pierre Pomet's *Histoire générale des drogues* (1694) and al-Qazwini's *Wonders of Creation* (1700).

VI. OVERVIEW OF NLM'S OUTREACH PROGRAM

Dr. Mike Huerta noted that outreach occurs across NLM and represents the efforts of dozens of NLM staff. In terms of the NLM budget, outreach to the underserved at NLM in FY'12 was about \$12.8 million. \$7.3 million of that came from the National Network of Libraries of Medicine (NN/LM) budget. The total represents more than 3.7 percent of our budget. In FY13, those numbers will go down. So, the totals will be closer to \$11.1 million and closer to 3.4 percent of our budget.

According to Dr. Huerta, outreach is crucial to the NLM mission. Despite NLM's great health information resources, they have no impact on health unless people know of their existence, how to access and use them. In NLM's long-range plan, outreach to the underserved and underrepresented segments of populations figures significantly.

NLM outreach is characterized by connecting to and understanding those we are trying to reach, serving their needs in an appropriate context, and committing to the effort for a suitable duration. NLM has a number of different avenues for its outreach. Like the rest of NIH, NLM supports these activities through contracts and grants. Distinguishing characteristics are the amount of direct effort that NLM staff put into these outreach efforts and the involvement of the NN/LM. The Network allows us to reach people where they live in their local communities. And of course, NLM has online outreach mechanisms to offer as well.

In FY 2012, NLM supported 245 outreach projects in four categories: education and training of people to use NLM resources, specialized Web sites and information resources that are aimed at very particular audiences or topics, capacity building (including workforce development) in organizations that facilitate access to health information, and finally, exhibit booths at conferences and health fairs to promote awareness of NLM resources.

One major outreach channel is the NN/LM, the primary goal of which is to increase access to health information. Each year, thousands of people are reached through our network, with a focus on the underserved, students, and health professionals including librarians. The Network's community-based projects include training to increase health literacy, access to reliable health

information and awareness of NLM information resources. The Outreach Evaluation Research Center at the University of Washington helps to evaluate the Network's activities in a rigorous and ongoing way.

A second major emphasis to highlight is the outreach to Native Americans in Indian Country—the lower 48 states as well as in Alaska and Hawaii. This outreach effort blossomed after an evaluation in 1995 showed NLM could be doing a better job in reaching out to Native Americans. Soon thereafter NLM consulted with many tribes across the country; these early consultations have grown into strong relationships between NLM and Native American communities that continue to today. Over the years, outreach efforts have provided IT access, business training and employment (through contracts to perform needed tasks for NLM), access to and instruction about health information resources, and raising the prominence of the Native American health experiences through major efforts such as the *Native Voices* exhibition.

Dr. Huerta then discussed three specific outreach projects. The Environmental Health Information Partnership (EnHIP), which Board member Dr. Henry Lewis chaired, was started in 1991 to enhance the capacity of historically black colleges and universities and later expanded to include tribal colleges as well as Hispanic service institutions. EnHIP is now made up of 23 member organizations, and its accomplishments include: creation of PhD programs in environmental toxicology and environmental sciences; establishment of doctorate and masters of public health in these areas; training members of their community as well as their staff and students about health information resources; and an increase in the scholarly and scientific contributions from member organizations in the area of environmental health.

The African Journal Partnership Project began in 2003 to strengthen the sub-Saharan African medical journal capacity and promote the dissemination of indigenous research in those journals. Accomplishments include: five participating African journals have been accepted into MEDLINE; Ovid distributes all of these journals; there has been an increase in their salability; and the editors have initiated training sessions in their countries and are networking in Africa.

The final project described was Mentoring in Medicine (MIM). In 2008, NLM began supporting it together with the FNLM and the Robert Wood Johnson Foundation. Their vision is to bring kids from the poorest parts of New York City, and expose them to health careers, getting them into human biology by working hands-on with health professionals. It reaches from elementary school all the way to professional schools. This effort is expanding to 3 DC-area schools in the fall of 2013. And, last week, Fred Wood conducted a successful three-day program with MIM at a Montana high school in which 70% of the students are from Indian Country.

Board member Mary Ryan noted that health literacy and workforce development are important in academic health centers, and NN/LM support for outreach by academic health sciences libraries is an effective path to the underserved. She hopes budget cuts will not stop these programs. She asked if the curriculum and materials that have been developed for MIM are available online. Dr. Huerta said he thought they could be.

Dr. Benjamin said she served on the Sullivan Commission to increase diversity of health careers. They found that if you don't emphasize science before the fourth grade, and certainly by the

seventh grade, you are going to have a different trajectory. You have to get them early.

VII. PRESENTATION TO OUTGOING BOR MEMBER, FRANK B. ROGERS AWARD AND NLM DIRECTOR'S AWARD

Dr. Lindberg thanked departing Chair, Dr. Joyce Mitchell for her excellent leadership of the Board. He then presented the NLM Director's Award to Sally Howe, PhD, and Diane Boehr for their exceptional contributions to the Library. The Frank B. Rogers Award went to Donna Maglott, PhD, developer of ClinVar, and Rebecca Williams, PharmD, for her extraordinary services to the ClinicalTrials.gov program.

VIII. NIH PUBLIC ACCESS POLICY STATUS UPDATE

Neil Thakur, PhD, of the NIH Office of the Director and Bart Trawick, PhD, of NLM's National Center for Biotechnology Information (NCBI) provided an update on the NIH Public Access Policy, which has been in place since 2008.

The policy requires that final peer-reviewed manuscripts arising from NIH funds be submitted to NLM's PubMed Central (PMC) upon acceptance for publication, and made public no later than 12 months after the official date of publication. To "put some teeth" behind compliance efforts, a change for non-competing continuation awards was recently announced. Starting July 1, 2013, additional funding will be placed on hold until grantees demonstrate compliance with the policy. To help with compliance and tracking, the MyNCBI bibliography management system was connected to the Research Performance Progress Report (RPPR) section of the NIH grants management system. Now, grantees are required to use MyNCBI to report papers when electronically submitting progress reports. Dr. Thakur said the IT changes were implemented because compliance rates were starting to plateau under the old method, which consisted primarily of communication from a project officer.

Dr. Thakur also summarized the Office of Science Technology Policy (OSTP) memorandum that all federal science agencies make research papers that arise from their funds public no later than 12 months after publication. The language is similar to the NIH Public Access Policy, but does not specify PubMed Central. OSTP has convened a series of meetings to talk about how to implement this and Dr. Thakur said the infrastructure that NLM has developed is the obvious choice for many agencies.

Dr. Trawick then detailed how NLM supports implementation of the NIH Public Access Policy by providing tools that allow principal investigators (PIs) to assess compliance; systems to process and archive documents; and tools for institutions to monitor the compliance of their funded researchers. He demonstrated the My Bibliography feature of My NCBI that scientists use to manage their compliance. PubMed citations can be entered directly from PubMed. Citations for items that are in press can be entered, and the user will get an alert when the system finds a matching citation submitted to PubMed. My Bibliography links to ERA commons (the NIH grants management system) and when scientists fill out their RPPR, all the items in their bibliography are populated in the progress report. Citations are color coded, noting which are fully compliant; which are in process; which are out of compliance (with links to help for getting them into compliance). There's also a workflow so the PI can delegate the management to

someone else.

Dr. Trawick displayed a chart showing the sharp increase in manuscript submissions since the memorandum that funding would be delayed until compliance is demonstrated. More than 70,000 manuscripts have been processed over the last 12 months for deposit into PMC. He also noted that PMC, which now has more than 2.7 million articles, is always being improved. For example, there's a new, more reader-friendly view called PubReader.

Dr. Thakur briefly described another tool, the public access compliance monitor (PACM), that institutions can use to track compliance of publications that fall under the NIH Public Access Policy. Following the presentation, Board members complimented the work, and some asked for more details about the process.

IX. POSITIVE EFFECT OF OBESITY IN INTENSIVE CARE

Swapna Abhyankar, MD, a pediatrician in the Lister Hill National Center for Biomedical Communications (LHNCBC), discussed informatics research she and her colleagues at LHNCBC are doing using the MIMIC-II database. MIMIC-II contains data that have been de-identified per HIPAA regulations on more than 32,000 adults and babies treated in intensive care units at Beth Israel Deaconess Medical Center in Boston. The data, which have been collected since 2001, are linked to social security death records. There are more than 300 million rows of data, so this is big data. Information includes: patient demographics, clinical data, lab results, and free-text reports such as admission and progress notes, imaging reports and discharge summaries. MIT developed and maintains the database. It was funded by NIH's National Institute of Biomedical Imaging and Bioengineering and is a free, public resource for intensive care research for researchers who have completed human subjects training and agree to the MIMIC-II data use agreement.

The team is working with the MIMIC-II data to best understand how to use de-identified secondary clinical data for clinical research; to learn how to organize and standardize such a big database; and to develop relevant natural language processing (NLP) techniques. With regard to clinical research, the LHNCBC team studied the effect of body weight on survivability of adult ICU patients. They looked at survival at 30 days and one year after ICU admission for nearly 17,000 patients. A number of covariates were included such as demographics and obesity-related conditions. Preliminary results found that at 30 days, overweight patients had 81% of the risk of dying compared to normal weight patients and less than 70% at one year. Obese patients had 74% of the risk of dying at 30 days and less than 60% at a year compared to normal weight patients. There are two current theories to explain why obese ICU patients have lower mortality. One theory suggests that obese patients may benefit from having more adipose tissue, which stores blood cells that provide anti-inflammatory protection during serious illness. Another theory suggests that obese patients have more nutritional reserves to meet the increase metabolic demands of a critical illness. The LHNCBC work was published in the journal *Critical Care*. A CDC study that supported the LHNCBC findings was published in *JAMA (the Journal of the American Medical Association)*. So, the LHNCBC team wrote a letter to the editor in *JAMA* reviewing the origins of the definitions of overweight and obesity, and noting that the common assumption that overweight and obesity is always a mortality risk may not be grounded in fact.

Two more studies are in progress. One looks at Vitamin B12 as a predictor of mortality in the ICU. The team found when liver function and liver disease are taken into consideration, Vitamin B12 drops as a predictor. The other study looks at the effect of transfusions and feeding on a condition known as necrotizing enterocolitis (NEC) that primarily affects premature infants. Preliminary results find that feedings are a major risk factor for developing NEC, but feeding and transfusions together don't have an increased risk.

Dr. Abhyankar also explained how the team is standardizing the MIMIC-II data using the vocabulary standards NLM supports. This is particularly important for the MIMIC-II data because the system allowed users to create new variables at will, which meant the same concept could be represented by many different names and codes. MIT will be incorporating the LHCNBC mappings into subsequent releases, which will make it easier for researchers to use the data and allows the data to be linked to other sources that are using the same vocabularies. She also explained how LHCNBC is using natural language processing to extract information from the narrative notes in MIMIC-II. Projects on the horizon include: a follow-up obesity study; a study on under-reporting certain conditions in the discharge diagnoses; and an attempt to see if they can discover new medication side effects using the free-text notes.

In discussion following the presentation, Dr. Ronald Evens called this one of the more interesting papers during his time here. LHCNBC Director Dr. Clem McDonald, who is part of the MIMIC-II research team, said the research emphasizes that we have to stay skeptical and question commonly-held beliefs that may not necessarily be based on facts.

X. CONNECTING LARGE GENETIC AND CHEMICAL DATABASES TO ENABLE PERSONALIZED MEDICINE

Timothy Cardozo, MD, PhD, Associate Professor of Biochemistry and Molecular Pharmacology at New York University School of Medicine, discussed his NLM-funded research. Dr. Cardozo built the infrastructure to connect the RCSP protein databank of 3D protein structures with the PubChem chemical library. The end result is a single chemical biological network of direct links between genes, protein targets and potential chemical therapeutics.

Dr. Cardozo noted that public health tends to be viewed across three major activities: diagnosis, mechanism (what drives the disease), and treatment. He said there's an enormous amount of information that falls under diagnosis and mechanism at one end of the spectrum, and drugs to treat disease at the other end. But he believes there's a knowledge gap between mechanism and treatment—how do you get across the gap to pharmacologic intervention. The gap, he says, is where the chemicals (the compounds that could be drugs) fit into pockets on the proteins. His ARRA grant built a network to fill that gap, for the first time, with data, algorithms, and tools (a Web interface for searching). One goal was to populate the gap with data by doing massive computational molecular docking of chemicals to pockets to fill the data in that gap. Dr. Cardozo showed what a docking looks like and demonstrated the Web interface drugable.com, which allows users to search with compounds and find their molecular signatures of action. The team found that a molecular signature must be polypharmacologic; expression weighted; and tissue specific for translation to medicine. Dr. Cardozo gave examples of use cases for their work, such as identifying the molecular signature of a drug that's used to treat a disease but it's not clear just how it works; or identifying a biomarker and then determining which drug combinations best

match it. Dr. Cardozo's team decided to pursue a use case for psychiatry. He said it's the most challenging and high impact because there's no etiology, genetics or animal models—psychiatric diseases are distinguished by patterns and there's no organic basis for them. The team tried to develop a molecular signature for “atypia” of Clozapine, a drug used to treat schizophrenia. Thorazine is the typical anti-psychotic drug. Clozapine, which came out later, is atypical. It is used to treat some patients who were resistant to Thorazine. Dr. Cardozo said even though Clozapine is widely considered to be the better drug, it's not first line because of side effects such as hyper-salivation. So, he said there's great benefit to finding out how Clozapine works differently from Thorazine. He then described how, from an enormous amount of data, his team was able to obtain simple and interpretable molecular signatures and generate new hypotheses. For example, the current tissue-target view of schizophrenia is that symptoms are blocked by medication through inhibition of the DAD2 receptors. His team has a secondary hypothesis that serotonin 5HT2a in the pre-frontal cortex and 5HT2c in the caudate may be more significant contributors to psychosis than D2. In summarizing, Dr. Cardozo said the test of his system shows these searches, that weren't possible before, can be done. And, they have generated new thoughts on the organic basis of psychosis; the organic basis for the atypia of Clozapine; and the target responsible for a major side effect of Clozapine (hypersalivation). He said this is “the closest thing to an actual molecular dissection of psychosis in humans, based solely on chemical structure of drugs used in human and gene expression in human tissue. Their findings correlate with the only other direct human data--neuroimaging.

After the discussion, Dr. Joyce Mitchell, asked Dr. Cardozo to explain the Google visiting faculty program. Dr. Cardozo said Google was willing to contribute a portion of their massive computing architecture that was idle to do scientific projects and Dr. Cardozo's project was one that was picked.

XI. EXTRAMURAL PROGRAMS REPORT

Valerie Florance, PhD, Associate Director for Extramural Programs, gave her report. She focused on Career Transition Grant Programs. NLM has two career transition programs. One is an independent career award for biomedical informatics (K22). The other is a mentored program that is part of the NIH Pathway to Independence award (K99/R00). Both programs assist postdocs in transitioning to independent research careers.

The K22 NLM Early Career Development Award for Informatics is a non-mentored, three-year award. Applicants must have two years of postdoc training or an MD. They can apply before they've found a job, or in the first two years of an independent position. The award provides a salary up to \$85,000 plus benefits. The K-99 NIH Pathway to Independence Award is a mentored, one or two-year award. Applicants can apply with none to four years of postdoc training and receive \$50,000 plus benefits. The career awards are 6% of NLM's extramural budget. The average cost of a three-year K22 is \$537,400 and the average cost of a five-year K99/R00 is \$898,200. The number of applicants to each program is about the same and most applicants and awardees are NLM trainees or fellows.

NIH evaluated more than 250 K22 awardees of 11 institutes, using factors such whether they were the first author or senior author of a paper; whether they applied for and received PHS and R01 grants; and whether they were in academic tenure positions. Using the NIH model, Dr.

Florance evaluated NLM's K22 and K99/R00 awardees, comparing awardees to applicants who did not receive awards. She found that NLM's K22 awardees are doing as well or better than those in the NIH study. NLM's K99 awardees showed success in some areas, but the program is too new to compare on all factors. Dr. Florance also looked at post-award jobs of both groups of NLM grantees. Many K22 and K99/R00 awardees transitioned into tenure positions. The most common areas of interest are health care, bioinformatics, and translational informatics. In summary the success rates and publication patterns for both transition programs are similar; failure rates are low; and applications are up. She noted there's a difference in the average cost of each program. So, if both work well, and are having good effects the cost might become a factor for awards in tight budget times. Finally, Dr. Florance said there are no grants in this cycle that require special counsel review.

XII. INTERNET USAGE TRENDS IN HEALTH AND GOVERNMENT SECTORS

Fred Wood, DBA, of the Office of Health Information Programs Development described the four components of NLM's multidimensional approach to Internet usage evaluation: user feedback, including surveys; usage data; usability testing; and Web and Internet performance data.

NLM first started measuring Internet performance in a serious way 15 years ago, testing how quickly key NLM web resources could be accessed from different geographic locations in the US and around the world. At that time, it had a T3 computer connection, the best available in the commercial sector. Using charts, Dr. Wood showed the dramatic growth in capacity since then. Sadly, this dazzling increase doesn't mean that digital divide has disappeared, however. In April, Dr. Wood was doing a computer demonstration in rural Montana and experienced the same kind of problems one would have seen at NLM 15 years ago—peak-time congestion and slow response because of limited bandwidth.

Dr. Wood then introduced John Mangano from comScore, to discuss "The American Patient Online—How Americans Use the Internet to Learn About and Manage Their Health."

comScore measures Internet use and digital interactions. With special software, it measures the online activity of a million people in the US and a million people in various other countries, who have consented to have their use tracked. comScore knows when users have seen an ad, which Web sites they consult and how much time they've spent viewing those sites. Its analysis has expanded from studying the use of traditional computers to include use of mobile devices. comScore is currently capturing about 95% of the digital interactions in any country where they measure. The company captures about 1.5 trillion digital interactions a month, on all topics.

Mr. Mangano's team focuses on health issues. They collaborate with medical associations, journal publishers, pharmaceutical companies, healthcare providers and other entities, and have been working with the NIH for several years.

He gave an overview of the rapid development and adoption of the Internet and the technologies that use it. (He singled out the Apple iPad, which gained 50 million users in the 80 days following its 2010 launch.) The number of Internet users is growing at a rate of about 1 percent per year, but the more dramatic growth is in the amount of time that people use it— up about 6

percent annually. About 61% of the population is using the Internet to research health, including fitness information, healthcare topics, pharmaceutical Web sites, etc.

Only 42% of the US population consults government Web sites. That figure is relatively flat. Health sites, public and private, actually saw a dip in usage from March to September 2012; one factor was an overall decrease in health advertising in the pharmaceutical industry. The Internet is always growing and changing, and it certainly reacts to the health news of the day. In fact, the number of hours per person spent seeking health information has increased by 20 percent.

Repeat visitation to health sites has increased 11 percent. A lot of that rise is attributable to the development of new technologies that interact with the health information. In a chart showing visitation of health Web sites, the NIH and the NLM sites are both third, because NLM rolls up into NIH. NIH's ranking is especially impressive, since Web MD and other commercial sites are able to rely on advertising revenue to increase visitation.

The next big thing in the Internet world is the idea of multiplatform information. In the retail world they call it omni-channel. Mr. Mangano presented data on how people use PCs/Macs, mobile devices/smartphones and tablets. The conclusion was that you have to give them the option of finding information via all three. In brief, mobile devices are used during times when people are out and about, like when commuting. In contrast, most people use their PCs during working hours, for "heavy lifting" projects like writing a paper or doing research. Finally, people tend to use their tablets at night, for reading a magazine or Google-ing for information while they're watching television. If you have a tablet, you're more likely to use that than your smartphone to search for health information. It's worth noting, however, that far fewer people have a tablet than a smartphone.

Looking at what the future holds for technology and health information, apps are great, but they're just a small part of what the future is all about. Instead, they'll be the connection to promising new technologies, such as the aerial WiFi scale, which transfers users' weight, body mass index and other information from the scale to their phones, giving them a fitness snapshot and also a long-term record. Other devices, like Fitbit, count users' steps and even measure their sweat. Biometric measurement sends that data to their phones, and the Internet shares that information, too, as desired, allowing them to compare progress with others in their circle. "Big data" is an overused term but its prospects are truly exciting when it comes to health. The US may see the ultimate in crowdsourcing with the national implementation of electronic medical records (EMRs). When one person's health information is combined with everyone else's, analysts will be able to identify someone who meets that criteria, may have the same condition, and also 2,000 other people may be taking certain drug for that condition, along with records of side effects, dietary reactions, etc.

Board member Dr. Ralph Roskies observed that a 100% increase in network capability over 15 years sounds good. The problem is that the networks are not keeping up with the overall strength of the computing power in the country, so there are always bottlenecks in the network. He asked whether there was any way to get NIH sites higher on the search results lists. The key, Mr. Mangano replied, is search engine optimization, a free activity. Experts may spend their entire careers learning how that algorithm works and making sure that the information on every page is

structured so that Google will rank them. NLM has a couple of things working to its advantage. Links to other sites and links to universities improve your rankings. Also, NLM has the right information and the right connections for information; that will help you get higher. He was willing to bet, he said, that if the Library wasn't doing search engine optimization but started pursuing that course, it could easily move up at least half.

Board consultant Dr. Holly Buchanan said that she thought the EMRs are going to continue to push patient portals for the patients in their health system. How does Mr. Mangano anticipate this data will change if there is great access and pushing within that health system for the product that's going to be used in the EMRs? EMR platform providers are still the Wild West, he noted—there are a lot of them out there and they have different models. What's interesting about them is that many creative, interactive things are going on. Patients' access to doctors and information has improved markedly and now, instead of handing them a pamphlet, a doctor can say, here's your personal health information; now track your progress on this Web site.

Dr. Buchanan referenced a recent article which said 18-24 year olds are leaving social media sites. If that's true, where does NLM need to be now, in order to reach that age group? The 18-24 year olds are not moving away from social media, Mr. Mangano replied. They are wired for it. Facebook will not be going away anytime soon, but the way people interact with it is changing. It'll be optimized for mobile devices and the way people filter the information will continue to evolve. New sites like Pinterest are gaining in popularity, too. The way 20 year olds interact with social media and communicate with each other is going to be different than, say, the way 40 year olds do. It makes sense to promote your content across as many platforms as make sense, to reach your audiences.

XIII. NANOTECHNOLOGY AND HUMAN HEALTH

Bert Hakkinen, PhD, of the Specialized Information Services Division, gave a brief overview of nanotechnology. Some say a single nanometer, one billionth of a meter, is a million times smaller than an ant. An important resource on nanotechnology is nano.gov, a national initiative that's been around for about 12 years. Nano objects may be engineered, but they can also be in naturally occurring things such as volcanic ash, sea spray and smoke. Why use nanomaterials? They often exhibit unique properties that are different from those of similar substances of a larger size—more high-strength and lightweight, with increased control of the light spectrum and allowing greater electrical conductivity.

Nanomaterials are used in a wide range of commercial products, from cosmetics to electronics to sporting goods. Future uses will include new medicines and medical tools, fuel cells and batteries, and more. A recent news story described a nanoartificial pancreas—an insulin delivery nanodevice.

These small materials have had a big impact on the global economy—a \$251 billion enterprise in 2009, expected to grow to \$2.4 trillion by 2015. Dr. Hakkinen described several international databases that collect information on nanotechnologies and said that PubMed is doing a great job providing access to published literature already. But with so much new information emerging, it's a challenge to keep up. NLM has been working with Environmental Protection Agency (EPA) and the Consumer Product Safety Commission (CPSC) for several years to understand

those organization's nanomaterial-related information needs and the needs of the users of their information, with SIS taking the lead on how to provide nanomaterial-related content to support the mission of all three agencies. With its mission to collect, preserve, disseminate and organize information, NLM is the natural choice to provide access to information on nanomaterials and nanotechnology. Of course, the Library also has a history of providing information on toxicology, a field now known mainly as exposure science, as well as risk assessment and risk management.

The interagency agreement between NLM and the CPSC aims to develop Web content allowing consumers and others to find information about nanotechnology, with consumer products its main focus. Content will be placed on the NLM Website and some of this information may also be placed on the CPSC site. NLM has a Memorandum of Understanding with the EPA, which overlaps somewhat with its agreement with the CPSC. Again, the goal is to collect and share information on nanomaterials and nanoparticles, likely adding them to existing NLM and EPA Web sites.

NLM's Household Products Database (HPD) currently features information on over 13,000 consumer products in nine categories, but it could be expanded to include sports equipment, household furnishings, clothing and other products in which nanomaterials are frequently found. The Hazardous Substances Data Bank (HSDB) features information on about 6,000 substances. As recently as 2008, there was nothing about nanomaterials on the site. By 2009, the first seven substances had been added. Now, SIS is in the process of updating records for those nanomaterials while also adding several others. SIS is also adding nanotechnology content in its online tutorial, ToxLearn. Its target audiences are university students and professors, and the public. Over the last few years, SIS also developed a guide to nanotechnology and the Web. It offers access to information on a wide variety of topics, such as nanotechnology medicine, with links to the National Cancer Institute, the Food and Drug Administration, and other trustworthy sources, public and private. Another activity, undertaken with input from members of the American Chemical Society, is to develop a laboratory safety Web site. It includes a section on nanomaterials and laboratories, which should prove helpful to universities, high schools and any other places conducting research. Finally, ToxTown is another SIS resource geared to the general public. It too, features content about nanotechnology and nanoparticles. Dr. Hakkinen then introduced Dr. Treye Thomas with the US Consumer Product Safety Commission.

Dr. Thomas thanked Dr. Hakkinen and NLM for being such excellent partners. He also underscored the importance of the National Nanotechnology Initiative (NNI), an unprecedented effort uniting more than 25 federal agencies to develop research and advance the understanding of nanotechnology for economic benefit of the nation as well as national security. Important goals for scientists conducting environmental health and safety (EHS) research are that we understand the potential health and safety implications of materials and products introduced into commerce, and that we have developed adequate risk management steps to address potential health implications. Dr. Thomas co-chairs the Nanotechnology and Environmental Health Implications Working Group (NEHI), which provides guidance to federal agencies. Among other research areas, that group focuses on human health, the environment and exposure, as well as risk assessment and management methods. The first strategy was released in 2008, and a revised version in 2011. NEHI has worked with representatives of academia, the nano industry, civil

organizations and the public to gain their perspectives and make their strategy documents more robust. NEHI has also incorporated informatics into the EHS strategy, a topic of obvious interest to NLM, and how best to exchange information, not only within the US but globally. How can the EHS research community target and accelerate research and what are the best practices? How do we implement this research strategy?

Focusing on the CPSC, Dr. Thomas observed that the number of consumer products made with nanomaterials is increasing, and the use of nanomaterials is a global phenomenon. In 2005, the CPSC issued a Nanomaterial Statement declaring that CPSC should regulate nanomaterials using existing statutes, regulations and guidelines. One of the agency's regulations, the Federal Hazardous Substances Act, can be applied to nanomaterials, but unique exposure and risk assessment approaches may be required. Dr. Thomas then laid out the many challenges of obtaining toxicity and exposure information, developing robust studies of nanomaterials, and then sharing all information with the public. A major question is how do we characterize risk and communicate risk information and information about products to the public? Nanotechnology can be used to improve household products such as sports equipment, and to improve health and safety, e.g., via drug delivery, nanosensors and other applications in medicine. However, as we incorporate them into products, we need to develop them responsibly. Public acceptance will be critical and an important part of public acceptance is providing reliable information, which is again such an important facet of the Memorandum of Understanding with NLM. Examining the safety implications of nanomaterials will involve federal agencies, manufacturers and other stakeholders, all sharing information so that the CPSC, EPA, NLM and others can inform the public about these materials, their benefits and their potential risks.

Board chair Mitchell asked Dr. Thomas to talk about how the CPSC deals with nanoinformatics. He replied that it's a special subset of nanotechnology and there are ongoing policy meetings in the US and abroad, with the CPSC being peripherally involved. Another advantage of the CPSC-NLM partnership will be greater collaboration and discussion on how to move the science of nanoinformatics forward. Dr. Mitchell said she thought that would be important to do.

The National Agricultural Library's Christopher Cole said he assumed that the CPSC was working closely with the National Institute of Environmental Health Sciences (NIEHS) to ensure that NIEHS information on hazardous exposure to nanoparticles and nanotechnology are ending up on appropriate places on CPSC and NLM Web sites. Dr. Lindberg expressed concern that NLM and NIEHS not be duplicating efforts. Dr. Hakkinen said that NIEHS comes to NLM periodically for information management and resources, but an open dialogue would be a good idea at this point. Betsy Humphreys concurred, but said collaboration with NIEHS could expand to include topics beyond nanotechnology. For example, she was recently in a conference with the Director of NIEHS on another matter relating to information technology management. Another idea was working with NCI's nanolabs, which have an informatics component that really needs to be thought of more broadly. That's a timely suggestion, said Ms. Humphreys, as she'll be meeting with NCI this afternoon.

XIV. REPORT FROM THE BOR CHAIR NOMINATING COMMITTEE

Kathryn Mendenhall, ex-officio Board representative from the Library of Congress, announced that the Nominating Committee's choice to serve as the next Board of Regents chair was Dr.

Ronald Evens, and he has accepted. The nomination was unanimously approved by the full Board.

XV. REPORT FROM THE SUBCOMMITTEE ON OUTREACH AND PUBLIC INFORMATION

Board member and Subcommittee chair Mary Ryan summarized yesterday morning's meeting. History of Medicine Division (HMD) Chief Dr. Jeffrey Reznick and Deputy Associate Director, SIS, Gale Dutcher reported on traveling version of the *Native Voices* exhibition. They have selected four pilot sites to host it, in Alaska, Hawaii, North Dakota and Oklahoma. The exhibition will be at each site for three months and then be evaluated. *Native Voices* is different than other traveling exhibitions that NLM has developed because it is more technology-intensive, with four iPads to display video content and, in keeping with the exhibition's theme, a "tell your stories" component, recording local peoples' personal experiences of health and illness. Dr. Reznick also reported on loans of items in the NLM collection to the Metropolitan Museum of Art and the Smithsonian's Sackler Gallery. The opportunity to share items with these prestigious institutions raises the visibility of the NLM collection, he noted, and is good public relations. HMD will start a blog this summer, focusing on interesting items in the collection and invite people to come and visit. HMD is also contacting cultural organizations throughout the country to let them know that they can borrow items from HMD and reaching out to organizations meeting in the DC area, encouraging them to incorporate NLM visits in their programs.

Next, Dr. Mike Huerta and Dr. Fred Wood of OHIPD discussed NLM's partnership with Mentoring In Medicine (MIM). Last week, MIM sponsored an all-day conference at NIH for students and teachers from the DC area. MIM will expand in the DC area this fall, launching after-school programs in three public schools in the metropolitan area. Dr. Wood reported on another MIM program which took place recently in Montana. Geared to students in rural areas and focused on the Native American population, the event had students in grades 9-12 dissecting pig hearts, viewing videos from the *Native Voices* exhibition, hearing presentations on science and health topics, participating in a demonstration of MedlinePlus and attending a health fair where health professionals and healthcare organizations were represented. This event is being fully evaluated and it received great coverage from the local press in Montana. SIS Director Dr. Steven Philips suggested connecting with health professionals who regularly speak in the schools about the health professions, enlisting their help with MIM and with generally getting young people more interested in careers in medicine. Dr. Marion Ball suggested working with school nurses to help encourage young people to enter health professions. Dr. Huerta reported on a recent NLM-sponsored lecture series about innovative approaches to providing consumer health information and how to measure their success. The lectures were recorded and archived and can be viewed by any interested parties on the NIH Videocast Web site. Finally, Dr. Phillips reported on a public health informatics course held at the Uniformed Services University of Health Sciences (USUHS) in Bethesda, Maryland. This was the fifth year of the course. USUHS plans to expand the class and formalize it so that the students can earn academic credit for it.

XVI. OAK LEAVES ON HIS SHOULDERS: DISCOVERING AFRICAN AMERICAN CIVIL WAR SURGEONS IN THE NLM COLLECTIONS

Ms. Jill Newmark, exhibition specialist in the History of Medicine Division, began with a quotation. “Splendid among the shabby field hands the sight of his uniform stirred the faintest heart to faith in the new destiny of the race, for Dr. Augusta wore the oak leaves of a major on his shoulders.” These words describe African American Civil War surgeon Alexander T. Augusta at the mustering of the first two companies of black soldiers in Washington, DC in 1863. The appearance of a black officer in uniform stirred the deepest emotions, positive and negative, and represented the beginning of a change in the status of African Americans. The story of African American medical personnel is an important but often neglected part of Civil War history. There are few personal accounts of black nurses, surgeons and hospital workers, and those are often hidden among the thousands of Civil War records maintained in repositories throughout the US, including NLM. Ms. Newmark discussed two extraordinary African American men who served as surgeons in the Civil War and showed how their stories were revealed in part by newly discovered materials in the NLM collection.

In 1863, after the signing of the Emancipation Proclamation, the Union Army began to recruit and to enlist black men as soldiers. Some black physicians were also determined to serve as surgeons. Of the more than 12,000 surgeons who served during the war, we only know of 13 who were African American. Since white surgeons and officers would not serve alongside black surgeons or be their subordinates, the African American surgeons were most often assigned to facilities that treated only African Americans. One of the main hospitals where almost half of the black surgeons served during the war was Contraband Camp and Hospital in Washington, DC. Established by the Union Army in 1862, it provided temporary housing, food and medical care to thousands of formerly enslaved men, women and children. Dr. Augusta is one of the best known of the black surgeons who served there. Four books from his personal collection are now held by NLM, having been donated by his wife after his death. They might have gone undiscovered except that, during the digitizing of them, HMD staff discovered a little plate in the front of each, reading, “Donated to the Library of the Surgeon General [NLM’s parent] by Mrs. A. T. Augusta, 1891.” Ms. Newmark then recounted how Dr. Augusta rose above rampant discrimination to attain his dream of a career as a surgeon. His appointment as Surgeon-in-Charge at Camp Contraband made him the first African American to head a hospital in the United States. When he arrived at the hospital, Dr. Augusta brought his own surgical instrument kit and he likely brought the *Handbook for the Military Surgeon*, also in the NLM collection. In 1867, he was brevetted to the rank of Lieutenant Colonel, making him the highest ranking African American to serve during the Civil War. More on his extraordinary career is featured in an NLM online and traveling exhibition, *Binding Wounds, Pushing Boundaries: African Americans in Civil War Medicine*. Dr. Augusta died in 1890 and was buried with full honors at Arlington National Cemetery—the first African American military officer to be buried there. After Augusta’s departure from Contraband Hospital in October 1863, two other African Americans replaced him as Surgeon-in-Charge. One was his good friend, Dr. Anderson Abbott, appointed in 1864. NLM has a small Abbott collection which it received from his great granddaughter, Catherine Slaney, who spoke at a Board of Regents dinner in 2010. Dr. Abbott supervised the 1864 move of the hospital to another section of DC; it was then renamed Freedmen’s Hospital. While serving in Washington, Drs. Abbott and Augusta were part of an elite group of African Americans who had unprecedented access to social and political circles. In February 1864, both Abbott and Augusta

attended a White House reception where they met President Lincoln and stunned most of the attendees when they showed up in their uniforms. Dr. Abbott also became close friends with Elizabeth Keckley, seamstress and confidante to First Lady Mary Lincoln. He, too, had an illustrious career, becoming in 1894 the medical superintendent of Chicago's Provident Hospital and Training School for Nurses, the first black owned and operated hospital in the United States.

Twelve of the 13 African American surgeons who served during the Civil War were born in America. They were American citizens but they lived during a time when their choice of a career as a physician was not considered acceptable because of their color. They confronted challenges and obstacles throughout their lives but faced them with persistence and dedication. Some were forced to pursue a medical education outside the US, but all were determined to become physicians. When their country was in need of their skills, they served gallantly and with pride, each contributing in their own way to the cause for freedom.

Colonel Cathy Nace from the Office of the Army Surgeon General thanked Ms. Newmark for an excellent talk and asked about the searchability of the digitized materials on Drs. Abbott and Augusta, and how hard it was to locate hard copies of their books and writings in the NLM collection and elsewhere. The digitized records can be searched with ease, she replied, but finding original records on these surgeons was like searching for a needle in a haystack. She worked with Army and National Archives records, and sought clues in many other works, including Elizabeth Keckley's book, *Behind the Scenes: My Life in the White House*.

XVII. ADJOURNMENT

Dr. Mitchell adjourned the Board of Regents meeting at 12:00 p.m. on May 22, 2013.

ACTIONS TAKEN BY THE BOARD OF REGENTS:

- Approval of the February 5-6, 2013 Board Minutes
- Approval of the May 13-14, 2014 Future Meeting Dates
- Approval of New BOR Chair

Appendix A - Roster - Board of Regents

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



Dr. Donald A.B. Lindberg
Director, National Library of Medicine



Joyce A. Mitchell, Ph.D.
Chair, NLM Board of Regents