DEPARTMENT OF HEALTH AND HUMAN SERVICES

Twenty-First Meeting of the
SECRETARY'S ADVISORY COMMITTEE ON
GENETICS, HEALTH, AND SOCIETY
February 4-5, 2010

Meeting Summary

Omni Shoreham Hotel
Washington, DC

Prepared by the Office of Biotechnology Activities
National Institutes of Health

Participants

Committee Members Present

Steven Teutsch, M.D., M.P.H., Chair
Mara Aspinall, M.B.A. (by teleconference 2/5/10)
Sylvia Mann Au, M.S., CGC
Janice Bach, M.S., CGC (pending appointment)
Paul Billings, M.D., Ph.D., FACP, FACMG
David Dale, M.D.
Gwen Darien
Rochelle Dreyfuss, M.S., J.D. (by teleconference)
Charis Eng, M.D., Ph.D. (pending appointment)
James P. Evans, M.D., Ph.D.
Andrea Ferreira-Gonzalez, Ph.D.
Barbara Burns McGrath, RN, Ph.D.
Charmaine Dawn Marie Royal, Ph.D.
Sheila Walcoff, J.D.
Marc S. Williams, M.D., FAAP, FACMG
Paul Wise, M.D., M.P.H.

Ex officio Members/Alternates Present

Michael Amos, Ph.D. (Department of Commerce/National Institute of Standards and Technology)
Michael A. Carome, M.D. (HHS/Office for Human Research Protections and Office of Public Health and Science)
Denise Geolot, Ph.D., RN, FAAN (HHS/Health Resources and Services Administration)
Eric Green, M.D., Ph.D. (HHS/ National Institutes of Health)
Alberto Gutierrez, Ph.D. (HHS/Food and Drug Administration)
Adam B. Kanis, M.D., Ph.D. (U.S. Army Medical Corps, Lt. Col.)
Muin Khoury, M.D., Ph.D. (HHS/Centers for Disease Control and Prevention)
Douglas Olsen, Ph.D., RN for Ellen Fox, M.D. (Department of Veterans Affairs)
Iliana Peters, J.D., Ph.D. for Robinsue Frohboese, J.D., Ph.D. (HHS/Office for Civil Rights)
Gurvaneet Randhawa, M.D., M.P.H. (HHS/Agency for Healthcare Research and Quality)
Jeffrey Roche, M.D. for Barry Straube, M.D. (HHS/Centers for Medicare & Medicaid Services)
Laura L. Rodriquez, Ph.D. for Eric Green, M.D., Ph.D. (HHS/National Institutes of Health)
Barry Straube, M.D. (HHS/ Centers for Medicare & Medicaid Services)
Zivana Tezak, Ph.D., for Alberto Gutierrez, Ph.D. (HHS/Food and Drug Administration)
Amy Turner, J.D. for Phyllis Borzi, J.D., M.A. (Department of Labor/Employee Benefits Security Administration)
Jennifer Weisman, Ph.D. for Robinsue Frohboese, J.D., Ph.D. (HHS/Office for Civil Rights)

SACGHS Staff

Sarah Carr, Executive Secretary
Kathryn M. Camp, M.S., RD
Symma Finn, Ph.D.
Cathy Fomous, Ph.D.
Darren Greninger, J.D.
Allison Lea. M.A.

Linda Silversmith, Ph.D., Consultant
Marianne Tshihamba, The Dixon Group

Special Guests/Consultants

Vence Bonham, J.D. (National Human Genome Research Institute)
Clifford Goodman, Ph.D. (The Lewin Group)
Sandra Howard (HHS/Office of the Assistant Secretary for Planning and Evaluation)
Joseph Telfair, Dr.P.H., M.P.H., M.S.W. (former SACGHS member/University of North Carolina)

Speakers

Sylvia Au, M.S., CGC (SACGHS)
Barbara Burns McGrath, Ph.D., RN (SACGHS)
Alberto Gutierrez, Ph.D. (HHS/Food and Drug Administration)
Mark Hoffman, Ph.D. (Life Sciences Solutions, Cerner)
R. Rodney Howell, M.D. (Secretary's Advisory Committee on Heritable Disorders in Newborns and Children)
David Hunt, M.D. (HHS/Office of Health Information Technology Adoption)
Muin J. Khoury, M.D., Ph.D. (HHS/Centers for Disease Control and Prevention)
Daniel Masys, M.D. (Vanderbilt University)
Joyce Mitchell, Ph.D. (University of Utah)
Jana Monaco (Secretary's Advisory Committee on Heritable Disorders in Newborns and Children)
Gurvaneet Randhawa, M.D., M.P.H. (HHS/Agency for Healthcare Research and Quality)
Jeffrey Roche, M.D., M.P.H. (HHS/Centers for Medicare & Medicaid Services)
Laura Lyman Rodriguez, Ph.D. (National Human Genome Research Institute)
Charmaine Royal, Ph.D. (SACGHS)
Catherine Schaefer, Ph.D. (Kaiser Permanente Research Program on Genes, Environment, and Health)
Robert H. Shelton, M.B.A. (Private Access)

Public Commenters

Joann Boughman, Ph.D. (American Society of Human Genetics)
Maureen Fitzgerald (Disability Policy Collaboration)
Mark Sobel, M.D., Ph.D. (Association of Molecular Pathology, Association of Pathology Chairs, and American Society for Investigative Pathology)
Jeffrey Voight, M.B.A., M.P.H. (Medical Device Consultants of Ridgewood)
Cristina Kapustij, M.S. (Duke University/Institute for Genome Sciences and Policy)
Ashley Stevens, D. Phil. (Association of University Technology Managers)

Friday, February 4, 2010

Opening Remarks

Dr. Steven Teutsch, Chair of the Secretary's Advisory Committee on Genetics, Health, and Society (SACGHS), welcomed participants, pointed out the scheduled public comments sessions, and reviewed the agenda topics. He then made note of the following items:

- SACGHS correspondence: the November 2009 reply from Health and Human Services (HHS) Secretary Kathleen Sebelius to the Committee's September 2009 letter; a January 2010 letter from Myriad Genetics in response to a presentation by Facing Our Risk of Cancer Empowered (FORCE) at the October 2009 SACGHS meeting; and responses from the Centers for Medicare & Medicaid Services (CMS), Food and Drug Administration (FDA), and Federal Trade Commission (FTC) to Myriad Genetics' characterization of its regulatory activities.
- Revisions to the Committee's report on direct-to-consumer (DTC) genetic testing and plans to finalize the report and transmit it to the Secretary of HHS.
- Development of a journal commentary by Committee members and staff, highlighting the Committee's prior work on emerging issues in genomic medicine and plans to submit the paper to *Journal of the American Medical Association* for publication.
- The goals of Healthy People 2020 (HP2020) and the comments and recommendations submitted by the Committee to include genetic and genomic components in these goals.
- The interim final regulations implementing Title I, the insurance provisions, of the Genetic Information Nondiscrimination Act (GINA), took effect December 7, 2009. The final regulations implementing Title II of GINA, the provisions prohibiting employment discrimination on the basis of genetic information, is awaiting clearance from the Office of Management and Budget. Although the final rule has not yet been issues, the statute became effective November 21, 2009, and the Equal Employment Opportunity Commission has begun enforcing the protections against the use, acquisition, and disclosure of genetic information in the employment setting.
- Two new SACGHS members—Dr. Charis Eng and Ms. Janice Bach— joined the Committee, although their appointments are pending until completion of final paperwork. Members Ms. Sylvia Au and Dr. Julio Licinio ended their SACGHS terms after this meeting. Dr. Eric Green, Director of the National Human Genome Research Institute (NHGRI), joined the Committee as the new National Institutes of Health (NIH) *ex officio*. Also, Allison Lea joined the SACGHS staff.

Ms. Sarah Carr, SACGHS Executive Secretary, reminded Committee members that they are special government employees, and she noted the rules on conflicts of interest and lobbying.

Preliminary Planning for Session on the Implications of Affordable Whole-Genome Sequencing

Dr. Teutsch opened a planning session on how the Committee should address implications of affordable whole-genome sequencing (WGS). He recognized it as a reoccurring topic of interest over the past couple of years and the importance of the Committee in addressing it. The goal of the session was to elicit members' thoughts about where SACGHS should focus its initial exploration of this topic.

Discussion. In response to a question about whether the Committee has received specific guidance or questions on this topic from the Secretary, Dr. Teutsch replied that it had not. However, he noted that at his September 2009 meeting with the NIH Director that Dr. Collins stated it was a topic high on his priority list. Other areas of discussion included the clinical utility of WGS, testing that will likely occur outside of the clinical arena, implications for reimbursement, educational needs for physicians and the

public, public health issues, data quality, data security, and health information technology (IT) issues related to the magnitude of data such as the integration of WGS data with electronic health records (EHRs) and data transmission.

Dr. Teutsch asked for volunteers to plan an exploratory session on the affordable genome for the June 2010 Committee meeting. Committee members Dr. Paul Billings and Dr. Charis Eng volunteered to carry out this task.

Clinical Utility and Comparative Effectiveness Research

Dr. Marc Williams, Chair of the SACGHS Task Force on Clinical Utility and Comparative Effectiveness Research (CER), provided an overview of the Task Force's work. The Task Force was charged with determining which issues, if any, SACGHS should explore in the areas of clinical utility and CER. The immediate focus has been to assess the status of Federal funding for CER, which included $1.1 billion appropriated by Congress in the American Recovery and Reinvestment Act (ARRA). From this funding, NIH received $400 million, the Agency for Healthcare Research and Quality (AHRQ) received $300 million, and the HHS Office of the Secretary received $400 million. The Secretary's funds must be used to conduct CER or to encourage the development and use of clinical registries, clinical data networks, and other forms of electronic health data that can be used to generate or obtain outcomes data. In addition, ARRA required the Secretary to task the Institute of Medicine (IOM) with a report recommending national priorities for CER funds appropriated to the Secretary and to consider recommendations from the Federal Coordinating Council for CER (FCCCER).

The Task Force reviewed the IOM and FCCCER reports to identify CER topics related to genetics and genomics and to assess the degree to which these topics were funded by NIH and AHRQ. Of the 100 prioritized research topics in the IOM report, two explicitly mentioned genetics and genomics, and eight may include genetics and genomics within their scopes but were not explicitly mentioned. NIH reviewed all 100 recommended study topics and concluded that most are already included in ongoing NIH research projects, and 24 are supported by CER funds. An initial review of AHRQ ARRA-funded CER indicated that about 10 percent of the grants are related to genomics. The FCCCER recommended that the primary investment of the Secretary's funds be directed to creating data infrastructure for CER and significant investments for dissemination and translation of CER, particularly CER studies on priority populations (i.e., racial and ethnic minorities, persons with disabilities, multiple chronic conditions, elderly, and children). Dr. Williams then turned to the gaps he perceived in CER funding and explained how SACGHS could assist in addressing these issues. Potential next steps for the Task Force included (1) creating an inventory of genomic-related CER projects and identifying and prioritizing gaps in the genomic CER agenda, which could inform how funds should be distributed; (2) encouraging health IT policies that support the collection of genetic information useful for CER; and (3) establishing evidentiary standards for the use of genetic tests. He also suggested the option of disbanding the Task Force because other entities have begun to address this topic area.

Discussion. The Committee supported the continued work of the Task Force and many topics were suggested such as clinical utility, comparative methodology research, and quality control of collecting and storing specimens. In light of workshops and activities by other entities over the next few months, the Committee decided that the Task Force should continue to monitor the distribution of ARRA CER funds as well as the work of other groups and update the Committee at its October 2010 meeting.

Genetics Education and Training

Dr. Barbara McGrath, Chair of the SACGHS Task Force on Genetics Education and Training, stated that the goals for the session were to review the findings of the Task Force, discuss the genetics education and

training draft recommendations, and decide whether the draft report was ready for public consultation. Before she began her review, Dr. McGrath explained that the Committee would be briefed on the work of the Secretary's Advisory Committee on Heritable Disorders in Newborns and Children (SACHDNC) Education Subcommittee.

SACHDNC Education Subcommittee

Ms. Jana Monaco, Co-Chair of the SACHDNC Education and Training Subcommittee reviewed the subcommittee's activities, which included helping to facilitate the creation of a National Newborn Screening Clearinghouse (funded by the Health Resources and Services Administration), the Prenatal Family Health History project that is designed to assist family practitioners in using a family health history tool during the prenatal period to educate and prepare families on genetic issues and newborn screening, and the Medical Genetics Summer Scholars Program of the American College of Medical Genetics that will be launched in 2011 to address existing and future shortages of medical geneticists. She noted that some of the barriers to genetics education for primary care providers were lack of time, lack of geneticists to train providers, and lack of enthusiasm due to poor literacy in genomic medicine and concerns about the relevance of genetics to child health. Ms. Jana described some of the educational interventions that are helping to address these barriers, such as developing education curricula for residency training programs, assuring that board certification exams assess basic literacy in genetics, and developing continuing education modules that focus on the practical aspects of incorporating genetics in primary care.

SACGHS Draft Education and Training Report

Dr. McGrath briefly reviewed the work of the Task Force and its findings, which included

- Integration of genetics in health care is limited by inadequate and/or ineffective genetics education for health care professionals
- The genetic-specific workforce is insufficient to meet the needs for clinical genetic services.
- Health care professional organizations report that competing priorities are the primary barrier to providing genetics and genomics education.
- Barriers to assimilating genetic and genomic information in public health include diverse education and training paths for public health professionals, out-of-date formal training, and a sense that the utility of genetics in public health is not clear.
- Consumers prefer to obtain genetic information from health care providers but view the government as a trusted source of information.

The Task Force drafted seven recommendations that addressed these findings. The actions proposed in these recommendations included that HHS (1) form an advisory panel or support a workshop that promotes innovative approaches to genetics education and training, (2) address the needs of underserved population (e.g., support programs to increase workforce diversity, involve members of disadvantage communities in developing education models), (3) evaluate the composition of the public health workforce to improve targeted educational efforts, (4) ensure sufficient funding for government web-based genetics educational resources, (5) support research that identifies effective methods for translating genetics and genomics knowledge into information that consumers and patients can use to make health decisions, (6) continue efforts to educate health care professionals, public health providers, and the public about the importance of family history, and (7) ensure reimbursement of health care professionals for genetic and genomic services.

Discussion. The Committee made suggestions related to the scope and language of the recommendations and approved the draft report for public consultation.

Public Comments

Dr. Mark Sobel, Association for Molecular Pathology (AMP) Executive Officer, spoke of the organization's long concern over broad patents on genomic discoveries, including individual genes and mutations, which, in AMP's view, have led to patent holders and licensees monopolizing molecular testing. Dr. Sobel indicated that AMP strongly endorsed the Committee's draft report on gene patents and the report's recommendations. He concluded his remarks by noting that AMP supports awarding patents for true acts of invention, but single genes or genomic sequences, which are products of nature, should not be patentable.

Dr. Sobel, next spoke on behalf of the Association of Pathology Chairs (APC) and American Society for Investigative Pathology (ASIP), noting that these two organizations also support SACGHS' recommendations in its report on gene patents. He elaborated that APC and ASIP particularly agree with the proposal to exempt patient caregivers from liability stemming from infringing gene patents, including anyone making, using, ordering, offering for sale, or selling a test developed under the patent for patient care or in the pursuit of research.

Maureen Fitzgerald, Director of Disability Rights for Disability Policy Collaboration (DPC), explained that DPC is a joint venture of the Arc and United Cerebral Palsy, both of which have represented individuals with disabilities for more than 60 years. Her comments focused on her group's concerns about confusion over the extent of the protections provided by the Genetic Information Nondiscrimination Act (GINA). Ms. Fitzgerald specifically noted that the terms "manifested" and "manifestation" are difficult for a layperson to understand, and the process for filing a complaint under GINA is not readily apparent.

Dr. Joann Boughman, Executive Vice President of the American Society of Human Genetics (ASHG), indicated that SACGHS' recommendations concerning gene patents and licensing practices are generally consistent with ASHG principles relevant to intellectual property and genetics.

Jeffrey Voigt, M.P.H., M.B.A., a principal at Medical Device Consultants of Ridgewood, urged SACGHS to help promote a clear Federal Government definition of clinical utility to help guide policy and facilitate innovation in genetic testing. He noted that the existence of multiple definitions for clinical utility makes it difficult for technology developers to know what they must demonstrate for their tests to be deemed clinically useful. He also indicated that private payers and Medicare have defined clinical utility in such a way that the quality of evidence test developers need to demonstrate utility is too high. He also noted that the process instituted by the Centers for Medicare & Medicaid Services (CMS) for coverage with evidence development needs to be faster and more transparent.

Genomic Data Sharing

Dr. Charmaine Royal, Chair of the SACGHS steering group on genomic data sharing (GDS), explained that the goals of the session were to gather information about GDS models, discuss existing standards and policies, and decide whether there is a need to identify best practices. She noted that the collection and broad sharing of individual genomic data facilitates research but sharing such data, even when de-identified, has ethical implications for informed consent, privacy, and discrimination. Dr. Royal explained that the session would include an overview of Federal GDS activities, presentations on five models of genomic data sharing, and a discussion of future directions in health IT. Dr. Royal suggested the Committee think about the common elements of the policies of these various models in terms of consent, data storage, access issues, secondary uses of data, privacy, confidentiality, protection against re-identification, how to handle sensitive data, and incorporation of genomic data in EHRs. The key areas

for the discussion after the presentations would be what elements have worked well and whether there are issues that could benefit from more policy development efforts.

Review of Federal GDS Activities

Laura Rodriguez, Ph.D., Acting Director of the NHGRI Office of Policy, Communications, and Education, and Senior Advisor to the NHGRI Director for Research Policy, discussed the federal survey that SACGHS administered among federal agencies to gather information about current agency activities, identify relevant GDS policies, and determine whether there are any policy gaps. The survey was sent to the 16 federal agencies that have *ex officio* representation on SACGHS as well as the Department of Agriculture and the National Science Foundation. Dr. Rodriguez described the survey questions then summarized the findings from the 12 agencies that responded. Agencies with genomic data policies included the Centers for Disease Control and Prevention, Department of Veterans Affairs, and NIH. In addition, the Office for Human Research Protections has policies that may relate to GDS. The following gaps were identified through the survey: guidance and best practices are needed for informed consent; additional consideration is needed for return of individual results to research participants; and clear structures for the inclusion of genomic data in EHRs are needed.

GDS Models

Health Care Systems Model

Catherine Schaefer, Ph.D., Executive Director of the Research Program at Kaiser Permanente Northern California (KPNC), discussed the Research Program on Genes, Environment, and Health (RPGEH) program that will link together data on 500,000 KPNC members, including comprehensive clinical data from EMRs, data from participant surveys, data on environmental exposures based in a geographic information system database, and genetic biomarker and environmental data from collected biospecimens. The overall objective of the RPGEH program is to enable or facilitate translation of research findings into improvements in medical care and public health. The specific aims are to enable scientists to conduct research on genetic and environmental influences on disease susceptibility, course, prognosis and outcomes as well as response to treatment and conduct research on the ethical, legal, and social implications of genetic research and the use of genomic information in medical care. Genome-wide genotype data will be collected on 100,000 participants by the end of 2011 and will be shared through the NIH database of Genotypes and Phenotypes (dbGAP). Dr. Schaefer noted that research results will not be placed in the medical record, and genomic data will not be returned to individuals or their providers. She also pointed out that the quality of phenotypic data derived from high-density EHRs is critical to the best use of the genomic data.

Academic Model

Daniel Masys, M.D., Professor and Chair of Vanderbilt University Department of Biomedical Informatics and Principal Investigator for the National Coordination Center for the Electronic Medical Records and Genomics Consortium (eMERGE). Dr. Masys explained that the aim of eMERGE is to develop the necessary methods and procedures for, and then perform, if feasible, genome-wide studies in participants with phenotypes and environmental exposures derived from EHRs, with the aim of widespread sharing of individual genotype-phenotype data to accelerate the discovery of genes related to complex diseases. The eMERGE network consists of five institutions—Group Health of Puget Sound, Marshfield Clinic, Mayo Clinic, Northwestern University, and Vanderbilt University. Informatics issues in eMERGE include determination of comparability of patient populations across institutions, data exchange standards for phenotype data, representation of repeated measures and "clinical uncertainty" for EHR-derived observations, and re-identification potential for clinical data and associated samples. Focusing on the last

issue, Dr. Masys explained that re-identification of de-identified information requires the establishment of uniqueness of a collection of data or attributes associated with an individual and a naming source that is part of or linkable to this data collection. As a result, de-identification methods are generally aimed at either preventing isolation of unique records, blockage of links to naming sources, or both.

Government Model

Dr. Laura Rodriguez explained that the NIH data-sharing policy is essential to expedite translation of research into practice and to made data available prior to publication. The policy covers data submission to dbGaP, data access, and data protection. Data deposited in dbGaP is de-identifed, and access to this data is two-tiered, with different levels for the public and for authorized secondary data users. The institution that generated the data is asked to provide a certification to NIH that stipulates that all the data in the dataset are appropriate for distribution to secondary users or that limitations on secondary use are articulated in the certification. She also noted that the NIH policy stipulates that principal investigators who contribute data to the dbGaP have exclusive rights to publish for 12 months after the dataset is made available. The NIH data-sharing policy is overseen by a Senior Oversight Committee (SOC), chaired by SACGHS *ex officio*, Dr. Eric Green, and it reports to the NIH Director. The SOC makes policy decisions and manages how the policy is implemented across NIH. The governance structure also includes two committees that report to the SOC—the Participant Protection and Data Management Steering Committee that is concerned with human subjects research protection and bioethics, and the Technical Standards Steering Committee that focuses on scientific issues and security standards.

Commercial Model

Mark Hoffman, Ph.D., Vice President Cerner Life Sciences Solutions, described the central themes of his presentation—how to generate high-quality data during patient care to facilitate data sharing and decision support, and strengths and weaknesses of various data-sharing models. Capturing information during clinical processes is fundamental and simplifying data retrieval, queries, and analysis are the key goals in moving from paper to electronic medical records. Automatic processes should reduce errors; provide decision support capabilities; and generate a body of data that can be analyzed for administrative, operational, clinical, or scientific insights. Dr. Hoffman also explained various data-sharing models, which included the centralized data warehouse, distributed queries using a common technology platform, project-based data warehouses, consent-based web systems, and social media (e.g., Facebook). The centralized model allows rapid iterative analysis and provides the statistical power for CER but is costly to operate and required data transfer to a centralized warehouse. The distributed models has limited data transfer and summarization occurs locally at the contributor site but do not allow rapid iterative analysis. With social media models much can be inferred by scanning affiliations, profiles, and blogs, and accessible data may go beyond the person who agreed to share data (e.g., on Facebook, individuals who share their profile also share profiles of their "friends"). He concluded by noting that the role of health IT is to standardize and structure information at the point of care and provide services to enable data exchange.

Consumer-Controlled Model

Robert Shelton, Founder, Chairman, and Chief Executive Officer of Private Access, stated that in talking about a consumer-empowered model, he is referring to a model that empowers researcher as well as consumers. He founded Private Access to address privacy concerns of patients and families and balance those concerns against access to confidential information and empowering people to safely leverage the Internet to improve their lives. As an example of the importance of empowering consumers, he noted a Case Western Reserve study about the use of newborn screening (NBS) specimens for future research. More than 75 percent of parents indicated they would be very to somewhat willing to share NBS

specimens if asked for permission, but only 28 percent of parents would be willing if permission were not asked. An IOM report reported that 57 percent of people would permit their personal health information to be used for research only if certain privacy-oriented conditions were met. Mr. Shelton explained that Private Access uses an automated transaction-based system that is programmed with an ontology of privacy that looks at applicable laws and the personal privacy preferences expressed by the individual record holder. The initial applications of the system have focused on clinical research, to help clinical researchers locate patients who wish to participate in research. In concluding, Mr. Shelton noted that merging respect for privacy with access to actionable medical information gives patients control and accelerates medical progress.

Future Directions in Health Information Technology

Joyce Mitchell, Ph.D., Chair of the Department of Bioinformatics at University of Utah, provided a brief review of existing and emerging genomic technologies and noted that consumer demand for genetic information is exploding, which is changing the pace and the standards for data exchange in genomic medicine. She also noted that genomic information is pervasive in public health systems as a result of newborn screening, tissue and organ banks, DNA samples required by the Department of Defense, and the identification of infectious agents (e.g., SARS). Dr. Mitchell explained that two important factors in developing standards for data sharing are messaging and vocabulary, which will be increasingly important as genomic data are used in public health programs. Other issues that require attention include making the data understandable to providers and patients and keeping this knowledge up to date. In addition, environmental variables are being correlated with genomic data to achieve an appropriate interpretation of many genetic tests, and researchers are taking into account the microbiome and epigenetics as the context for interpreting genomic information.

Discussion. Topics of discussion pertained to cost, community engagement, whether system updates required reconsent, best practices for informed consent, de-identification, and the boundary between research and clinical information. Dr. Royal suggested that the steering group could discuss how to proceed, and Dr. Teutsch agreed with this approach. He also noted that by the June 2010 SACGHS meeting The Lewin Group findings may help guide the Committee to identify information gaps.

Updates from Federal Agencies

Development of HP2020 Genomics Objectives

Muin Khoury, M.D., Ph.D., SACGHS *ex officio* and Director of the Office of Public Health Genomics at the Centers for Disease Control and Prevention (CDC), discussed challenges in translating gene discovery to population health impact, which include moving validated genetic information from research to practice, documenting health impact, and preparing the public health workforce. He noted that CDC is working collaboratively with AHRQ and other groups to move validated genetic information into practice through initiatives such as the Evaluation of Genomic Applications in Practice and Prevention (EGAPP) program and the Genomic Applications in Practice and Prevention Network (GAPPNet.)

Dr. Khoury also explained the integration of genomics objectives in HP2020. He reviewed the goals of HP2020 and discussed the process of developing objectives. He noted that there were no genomics focus areas among the 467 objectives in HP2010. Consequently, he and others formed a workgroup, which developed four genomics objectives for Healthy People 2020. Two objectives that promote the implementation of evidence-based practice for genomic applications were accepted by the federal panel for inclusion in HP2020. The objectives are (1) to increase the proportion of persons with newly diagnosed colorectal cancer who receive genetic testing to identify Lynch syndrome and (2) to increase

the proportion of women with a family history of breast and/or ovarian cancer who receive genetic counseling.

Medicare Evidence Development and Coverage Advisory Committee (MEDCAC) Meeting on Pharmacogenomic Testing for Anticancer Therapies

Dr. Jeffrey Roche, Medical Officer for the Division of Items and Devices in CMS's Coverage and Analysis Group reported on the January 2010 MEDCAC meeting that focused on pharmacogenomic testing (PGT) and cancer therapy. Potentially, PGT could be used to select patients likely to benefit from a given agent, modify dose to improve efficacy genetic variants affect drug metabolism, and indicate patients more likely to experience treatment-related adverse events. After hearing from experts in the field, the panel voted that pharmacogenomic testing improves health outcomes for cancer patients in the following situations: KRAS testing for Cetuximab and Panitumumab treatment for colorectal cancer, and BCR-ABL1 testing for diagnosis and monitoring of chronic myeloid leukemia. The panel also noted gaps in understanding polypharmacy and nutritional status on response to medications, standardization of genotype or phenotype assignments in order to compare studies, data on functional outcomes and evidence of clinical utility, and studies that represent diverse patient groups.

AHRQ Evidence-Based Reports Relevant to Genetic Testing

SACGHS *ex officio*, Dr. Gurvaneet Randhawa, of the AHRQ Center for Outcomes and Evidence, provided an update on the Evidence-Based Practice Center (EBC) methods project, the BRCA clinical decision support tool, the status of a Warfarin and gene-based dosing calculator, the upcoming genomics and primary care workshop, and CER grant opportunities. The EBC methods project examined the strengths and limitations of several evaluation frameworks such as Fryback-Thornbury; U.S. Preventive Services Task Force (USPSTF); analytic validity, clinical validity, clinical utility and associated ethical, legal and social implications (ACCE) model; and EGAPP. A single framework is unlikely to be useful, so a small set of frameworks that are useful for most situations is being proposed. Another part of the project is examining analytic validity because little of these data are published. An EGAPP approach may be a good foundation for a new quality-rating tool.

Dr. Randhawa explained that the BRCA clinical decision support tool under development aims to assist primary care physicians identify women at high risk for BRCA mutations. Patients will fill out a family history using the tool and a risk assessment score will be generated that provides guidance to the clinician. He then announced that AHRQ is planning a genomic and primary care workshop that will focus on clarifying the primary care approach to gene-based tests. In addition, a white paper will be written, and Dr. Randhawa said he would share it with SACGHS members for their feedback. He also reported on an AHRQ-funded randomized control trial on Warfarin pharmacogenomics at the Marshfield Clinic that compares two dosing calculators—one based on clinical factors and the other based on clinical factors plus gene-based information. He concluded with some information on CER funding.

Development of an Adverse Event Reporting Mechanism for Laboratory-Developed Tests (LDTs)

SACGHS *ex officio*, Dr. Alberto Gutierrez, Director of FDA's Office of In Vitro Diagnostic Device Evaluation and Safety, explained that because of FDA enforcement discretion, LDTs are not subject to postmarket oversight steps, and FDA has lacked a mechanism to analyze and segregate LDT data that would point to adverse events. In contrast, the *in vitro* diagnostic tests that are cleared or approved through the agency are given product codes based on the analytes, and the reported data can be tracked through that code, with experts looking for trends and issues involving specific protocols. He announced that FDA is in the process of creating a mechanism for reporting any issues with LDTs, and an analyst will be assigned to look for trends. Reporting will be voluntary and done through an existing system

called MedWatch, which is for use by health professionals and consumers to report adverse events and product quality problems.

Closing Remarks

Dr. Teutsch thanked the speakers as well as all attendees for their tolerance of the late extension of today's program and noted that the meeting will begin at 7:30 a.m. the next day.

Friday, February 5, 2010

Opening Remarks

After welcoming everyone to the second day of the SACGHS meeting, Dr. Teutsch reviewed the agenda, which was revised due to impending inclement weather.

Gene Patents and Licensing Practices

Dr. Teutsch reported that SACGHS members had briefed the Office of the HHS Secretary, the U.S. Patent and Trademark Office, and the Office of Science and Technology Policy on the conclusions and recommendations in the Committee's report on gene patents and licensing practices. He then explained that a small subcommittee was formed at the end of the October meeting to revise the report, specifically to strengthen the rationale and conclusions that justify the recommendations and to incorporate more discussion of public perspectives. He noted that a few SACGHS members decided to write a dissenting statement, which is included at the end of the report. Dr. Teutsch stated that the Committee's task for the morning was to decide whether to move the report forward to the HHS Secretary. After a discussion among the Committee, a motion was made and approved to transmit the report to the Secretary.

Public Comments

Association of University Technology Managers (AUTM) Dr. Ashley Stevens, AUTM President-Elect and Executive Director of the Boston University Office of Technology Transfer, focused his remarks on the Committee's gene patents report. He stated that AUTM wished to reiterate its view that the findings from the case studies in the report did not justify the Committee's recommendations in this area. He explained that AUTM is particularly concerned about the recommendation for supporting the creation of exemptions from infringement liability, which AUTM believes would weaken the protection for novel technologies, delay commercial development, and harm job creation.

Cristina Kapustij, Policy Analyst and IRB member from Duke University's Center for Genome Ethics, Law and Policy, described how exclusive and restrictive licensing caused problems for patient access in seven of the case studies while no problems arose in situations where the patents were licensed nonexclusively. She observed that the practice of exclusively licensing patents for genetic testing had not stopped. Several weeks after the draft SACGHS recommendations were approved and AUTM noted in its public comment that the recommendations were based on licensing practices that are no longer prevalent, Johns Hopkins and Myriad announced exclusive licensing of PALB2 testing for familial pancreatic cancer. Moreover, she indicated that, at the time this licensing deal was announced, another company, Ambry, already offered full gene sequencing for the relevant mutations. She concluded her remarks by noting that for the majority of clinical conditions studied, there are problems with exclusive licensing that will only get worse with multi-allele testing and full genome sequencing.

Updates from Federal Agencies

Efforts to Develop National Policy Recommendations for the Retention and Use of Residual Dried Blood Spot Specimens after Newborn Screening

R. Rodney Howell, M.D., Chair of the Secretary's Advisory Committee on Heritable Disorders in Newborns and Children (SACHDNC), noted that most states retain the residual dried blood spot specimens (RDBSSs) after newborn screening (NBS) is completed, most often for quality assurance and quality control purposes. Currently, there is no national policy for the retention and use of RDBSSs, and SACHDNC has been developing a draft document with recommendations that address policy needs. Dr. Howell reviewed the five recommendations in the draft report, which call for all state NBS programs to have policies that address the disposition of RDBSSs after NBS and specify who may access and use these specimens after NBS is completed and that state NBS programs work proactively to ensure all families receiving prenatal care are educated about NBS and have a mechanism in place to indicate the parents' awareness and willingness to participate in research using RDBSSs. In addition, the HHS Secretary should provide administrative support and funding to state programs to develop model consent/dissent processes and model education programs.

Dr. Howell explained that the draft report was reviewed by NIH. NIH urged SACHDNC to become an advocate for the research use of RDBSSs and that SACHDNC should propose voluntary national standards for broad research use that each state could consider, incorporate a fuller discussion of education needs of health care professionals and parents, and consider the potential benefit of suggesting the creation of a national voluntary RDBSS repository. The NIH comments also recommended that the HHS Secretary provide resources to facilitate a national dialogue with relevant stakeholders. SACHDNC also accepted the formal comments from the HHS Office for Civil Rights regarding privacy concerns and is working with the Office for Human Research Protections to address its comments on anonymized and de-identified specimens. Dr. Howell noted that SACHDNC wants to prevent public distrust that could compromise the core mission of NBS or lead to too many parents forbidding the use of RDBSSs in what could be valuable research.

Discussion. In response to a question about recommendations for existing RDBSSs that were not "consented" for research purposes, Dr. Howell replied that SACHDNC would likely recommend that research is not an appropriate use of nonconsented specimens. Generally, states store identified specimens that are de-identified if used for research purposes. A discussion followed that confirmed that the next revision of the SACHDNC draft recommendations would be available for SACGHS review at its June 2010 meeting. SACGHS members and *ex officios* volunteered to review the draft before the June meeting and included Mara Aspinall, Janice Bach, and Paul Billings, David Dale, Andrea Ferreira-Gonzalez, Alberto Gutierrez, Adam Kanis, Muin Khoury, Charmaine Royal, and Paul Wise.

Carrier Screening

Dr. Howell explained that SACHDNC's charge goes beyond newborn screening to include genetic testing in children for other purposes such as carrier screening. He also noted that NBS for hemoglobinopathies routinely identifies carriers for sickle cell disease, and some states inform parents of an infant's carrier status while others do not. SACHDNC became particularly interested in sickle cell carrier screening in 2009 when the National Collegiate Athletic Association (NCAA) recommended that institutions test sickle cell carrier status of student athletes. Dr. Howell remarked that implementing the NCAA recommendation would be very expensive and would single out carriers, including a significant number of African-American athletes, who require a special athletic training program. He pointed out that the U.S. military performed a retrospective analysis of heat-related death rates among two million military recruits, which has provided the most data on this issue. The researchers concluded that exertional heat

illnesses, which is preventable, contributes to sudden exercise-related death in persons with sickle cell trait. However, because simple steps can be taken to prevent heat illness, the military does not exclude persons who are sickle cell carriers from becoming active duty personnel. Thus, SACHDNC does not consider sickle cell carrier screening all student athletes a prudent recommendation. Dr. Howell closed by suggesting that SACHDNC and SACGHS could work together to examine the broad implications of carrier screening.

Discussion. The Committee expressed interest in working on issues related to carrier screening. As a first step, Dr. Howell will present a proposal for collaboration between SACGHS and SACHDNC at the June 2010 SACGHS meeting.

Interim Final Regulations for Standards for the Meaningful Use of Electronic Health Records

David Hunt, M.D., Medical Officer at the Office of Health IT Technology Adoption in the Office of the National Coordinator for Health IT (ONC), reported that the President and Congress had provided unprecedented resources and authority to ONC to improve the value and efficiency of health care services through the meaningful use of IT. He reviewed the challenges that ONC faces in creating the mandated infrastructure, which included spurring the adoption of EHRs in clinical practice. The six top barriers to adoption of EHRs are the amount of capital needed; uncertainly about return on investment; resistance of physicians; capacity to select, contract, install, and implement EHRs; concern about loss of productivity during implementation; and concern about inappropriate disclosure of patient information. Dr. Hunt used the concept of Maslow's hierarchy of needs to illustrate how to implement health IT. To help provide the needed resources, ONC has dedicated $600 million for assistance. ONC is also providing grants, ranging from $10 million to $20 million, to 15 beacon communities to demonstrate the full potential of what health IT can do in a community setting.

Dr. Hunt also discussed the Health Information Technology for Economic and Clinical Health (HITECH) Act, which speaks to the use of certified EHR technology, information exchange, and reporting on quality measures. Additionally, CER, which is not in the HITECH Act, benefits communities and groups not traditionally included in research protocols and makes care decisions easier. The second comment period on the proposed rules under the HITECH Act was now underway, and Dr. Hunt specifically invited SACGHS to respond.

Discussion. The Committee discussed providing comments to the HITECH proposed rules. In light of the March 13, 2010, deadline for comments, Dr. Williams volunteered to draft the comments that will be sent to the Committee for review. Dr. Teutsch noted that Committee members may submit individual comments as well. ONC was invited to consider providing a liaison to the Committee, and Dr. Hunt suggested that SACGHS provide an official invitation.

Concluding Remarks and Adjournment

Dr. Teutsch briefly reviewed the decisions made during the meeting, assured a Committee member that SACGHS would continue to track GINA implementation, and thanked everyone for their valuable input.

Adjournment

The meeting was adjourned at 9:15 a.m.

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We certify that, to the best of our knowledge, the foregoing meeting minutes of the Secretary's Advisory Committee on Genetics, Health, and Society are accurate and correct.

Steven Teutsch, M.D., M.P.H.

Sarah Carr