American College of Medical Genetics
Medical Genetics: Translating Genes Into Health®

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Recent Activities of
The American College of Medical Genetics

The American College of Medical Genetics (ACMG) is the professional home to more than 1,400 board certified clinical and laboratory genetics professionals and is the only nationally recognized medical organization dedicated to improving health through the practice of medical genetics. The College's mission includes four major goals: 1) to define and promote excellence in medical genetics practice and to facilitate the integration of new research discoveries into medical practice; 2) to provide medical genetics education to fellow professionals, other healthcare providers, and the public; 3) to improve access to medical genetic services and to promote the integration of genetics into all of medicine; and 4) to serve as advocates for providers of medical genetic services and their patients. This report summarizes key activities of the ACMG between mid-May and August, 2010.

ACMG Releases New Conflict of Interest Statement

Avoidance of conflict of interest (COI), and the management of COI where unavoidable, have always been goals of the American College of Medical Genetics. In our field, with its relatively small number of medical geneticists and genetic counselors, individuals are involved in many professional activities, often with unavoidable overlapping of roles and responsibilities. Conflicts of interest, real or perceived, often may attend these activities. A 2009 *JAMA* publication (Rothman et al., "Professional Medical Associations and Their Relationships with Industry") led to the formation of an *ad hoc* committee of the College chaired by Mira Irons, MD, to examine potential conflict of interest concerns between industry and the ACMG. The committee was appointed by the President and consisted of ACMG members that included, Drs. Gregory Grabowski, Wayne Grody, R. Rodney Howell, David Ledbetter, Barry Thompson, and Michael Watson. The completed document was sent for member comment and subsequently approved by the ACMG Board of Directors. It is posted on the ACMG website under Publications/Policy Statements.

Shortly after the ACMG committee began its work, the Council of Medical Specialty Societies (CMSS) convened a workgroup (representing all 29 member societies) to craft a statement on COI for the subsequent review and adoption by its governing body, comprised of the chief executive officers of the member societies. The CMSS "Code Governing the Relationship between Professional Medical Associations and Industry" was finalized and adopted at the spring meeting in 2010. ACMG's "Statement on Conflict of Interest" and the CMSS "Code" are coherent. It is anticipated that in the immediate future the ACMG will become a signatory to the code, joining our counterparts in other medical specialties in adopting the consensus position.

New Maintenance of Certification (MOC) Part IV Modules for Clinical Geneticists Now Available

In 2006, The American Board of Medical Specialties (ABMS) made significant changes to maintenance of certification (MOC). As the lead practice organization for medical geneticists, the ACMG has collaborated with the American Board of Medical Geneticists (ABMG) to develop a set of modules to satisfy the Maintenance of Certification (MOC) Part IV requirements. The modules allow medical geneticists to demonstrate and evaluate their excellence in practice, identify areas for improvement and document this improvement. These new practice performance assessment modules are derived from practice guidelines or expert opinion specific to genetic diseases or patient presentations for genetic evaluation. Eight modules are currently available including: 1) Autism Spectrum Disorder; 2) Counseling for

Inherited Cancer Risk; 3) Down Syndrome; 4) Fragile X Syndrome; 5) General Genetics Patient Evaluation; 6) Genetic Counseling for Preconception or Prenatal Diagnosis; 7) Neurofibromatosis Type-1; and 8) Phenylketonuria. Additional modules are being developed continuously.

The modules and instructions for completion are accessible from the ACMG homepage under the Education tab by clicking on "Maintenance of Certification."

ACMG Spearheads Development of Medical Genetics Competencies for the Physician Geneticist with Special Meeting

This past February, the College sponsored a meeting attended by about two-dozen invited participants representing various areas of clinical genetics expertise, aimed at developing competencies in medical genetics for the physician geneticist. The meeting was a continuation of a process that began with the first Banbury Summit on training the physician medical geneticist held in 2004. That conference recommended changes in training aimed at increasing the focus on adult genetics and treatment of genetic disorders (see Korf BR, Feldman G, Wiesner GL. Report of the Banbury Summit Meeting on training of physicians in medical genetics, October 20-22, 2004. *Genetics in Medicine* 7(6):433-438 (July/August 2005)). However, the conversation at the 2004 meeting also revealed that there was no consensus on what a geneticist does; hence a second Banbury Meeting in 2006 was aimed at defining the scope of practice in medical genetics (see Korf B, Ledbetter D, Murray MF. Report of the Banbury Summit Meeting on the evolving role of the medical geneticist, February 12-14, 2006. *Genetics in Medicine* 10(7):502-507 (July 2008)). This third meeting was intended to establish an "educational vector" beginning with residency training and continuing through maintenance of certification.

Meeting participants were asked to bring a list of what the medical geneticist should know for a specific area, such as neurogenetics, dysmophology, or prenatal diagnosis. Using this comprehensive list of knowledge points the group began to translate these points into competencies: Attendees asked not, "what should the geneticist know?" but rather, "what should the geneticist be able to do?" The group formulated a set of *overarching competencies* that cut across all areas of genetics, as well as specialty-specific competences such as neurogenetics, immunogenetics, skeletal dysplasias, etc. The full set of competencies is still being worked on by the committee and should be ready for distribution shortly.

An additional outcome of the meeting was the opportunity to succinctly articulate what medical geneticists bring to patient care in the 21st century. Three types of scenarios were identified, and they could be applied to almost any area of genetics practice. The first is consultative care—working with colleagues in other disciplines to advise on the workup of patients with conditions that might have a genetic basis. The geneticist will probably not be the primary caretaker for such patients in this scenario, but can have a critical role in guiding differential diagnosis, orchestrating genetic testing, interpreting results, and providing counseling. The second scenario is providing longitudinal care, including diagnosis, management, and, where possible, treatment. This is done for conditions that cut across disciplinary boundaries and have a prominent genetic basis, such as Down syndrome or neurofibromatosis. The third scenario is the application of genomic testing for risk assessment and management of common disorders. This is a new and still emerging area. There are not many current examples, but we believe this to be a critical aspect of the future of our discipline.

Further discussion about the role of the medical geneticist in genomic testing took place at the College's 2010 annual meeting in Albuquerque and again at the Association of Professors of Human and Medical Genetics (APHMG) meeting in April. The emerging view is that the "image" of the genome that will result from genomic testing will require interpretation just as an image of the brain from a magnetic resonance imaging procedure requires interpretation. This interpretation will integrate knowledge of the patient's family, medical, and social history with the constellation of genomic traits to provide a picture that will inform medical decision making, both about prevention and about treatment. Preparing trainees and current practitioners to rise to this need and opportunity may be the most important thing the College and its members can do to fulfill our mission of translating knowledge of genetics into health.

ACMG Takes Advocacy Role in Four National Genetic Testing Activities

During the summer months, genetic testing has moved to the forefront of national policy debates, with discussions of regulation and oversight. Descriptions of ACMG's roles and positions with regard to these issues and conversations follow.

ACMG Foundation Hosts Private Meeting with FDA to Discuss Regulation of Cytogenetic Arrays

On July 1-2, 2010, in Bethesda, MD, the ACMG Foundation hosted a successful private meeting with the FDA to plan a series of activities to deal with educational and regulatory issues around the use of cytogenetic arrays in the U.S. More than 60 attendees from industry, regulatory agencies—including the FDA and New York State—and the medical genetics community shared their perspectives and concerns through a frank dialogue around the role of

cytogenetic arrays and regulations in the future of healthcare. As a result of the meeting, two key points became clear: (1) cytogenetic arrays will be the entry point into clinical whole genome analysis; and (2) the ACMG can bridge some of the gaps between industry and oversight, which will require the College to develop more practice guidelines.

In addition to this vital meeting, the Foundation is working with the public television station in Boston, WGBH, to produce a web-based educational program to ensure provider education around these new technologies. This initiative will educate laboratory directors and provide a means by which clinicians can independently confirm the interpretation of test results. It is due to be released in late 2010.

These projects, and the growing need for more practice guidelines, are examples of the increasing importance of the financial support and donations from ACMG members and friends to the ACMG Foundation. While membership dues provide support for basic member services, medical genetics and genomic medicine are changing and growing so rapidly that the College relies on the financial support of the ACMG Foundation to remain nimble and agile enough to address unexpected issues such as these and to take advantage of new opportunities. The Foundation is especially grateful to the following companies and organizations for their generous support of the FDA meeting and planned activities relates to cytogenetic arrays, as outlined above: Affymetrix; Agilent; PerkinElmer; Roche NimbleGen; Illumina; OGT; BlueGnome; Counsyl, Inc.; ACLA: American Clinical Laboratory Association; BioReference; Genzyme Genetics; and CombiMatrix Molecular Diagnostics, Inc.

ACMG Weighs in on Evolving Genetic Testing Registry (GTR)

The ACMG responded by letter to the NIH regarding the GTR it proposes to develop. While ACMG and it members all recognize the importance of having accurate information on genetic testing to the readily available to health professionals and lay public, ACMG has several concerns with regard to the GTR as proposed: 1) Genetic tests are singled out among all medical tests for such a database, promoting a notion of "genetic exceptionalism" that we believe not to be in the best interests of integration of genetics into medical practice; 2) The scope of genetic testing varies widely, from tests applied to common traits such as pharmacogenetic polymophisms to very rare disorders. It will be especially difficult to provide statistically meaningful documentation of clinical validity for some of the tests for rare disorders, which are most meaningful only when interpreted by a skilled clinician who can take into account the clinical context in which the test is performed; 3) The information deposited in the registry will not be vetted for accuracy, raising questions about the quality of the data; and 4) ACMG is concerned about the displacement of GeneTests, which is a trusted source of information throughout the genetics community. ACMG has offered to work with NIH to develop a program that recognizes the issues that surround tests for rare disorders and also provides external review of data quality.

ACMG Participates in FDA's Public Meeting on Laboratory Developed Tests (LDTs)

On July 19-20, FDA held a public meeting to seek input on its proposed intent to regulate LDTs, which include many genetic tests. The FDA has so far not exercised its authority in regulation of most such tests, but notes now that testing has greatly expanded in scope and is often performed at laboratories that are remote from the site of clinical care. Most genetic tests currently in use are LDTs, and the prospect of federal regulation and the costs of acquiring the data necessary to meet regulatory requirements are major areas of interest to the College. Dr. Kathleen Rao, a member of the ACMG's Board of Directors and former chair of the Laboratory Quality Assurance Committee, provided public comment on behalf of the College.

This issue has substantial overlap with the meeting on regulation of cytogenetic arrays discussed above. These activities collectively, and their level of importance to ACMG, have reactivated efforts to develop CPT codes for genomic microarrays, following a period where the request had been tabled by the AMA.

Direct-to-Consumer (DTC) Genetic Testing

ACMG continues to follow this issue closely and its 2008 Position Statement is cited widely. Our policy staff and government affairs counsel recently provided technical assistance to the Oversight and Investigations Subcommittee of the House Energy and Commerce Committee during its examination of a number of complex issues related to DTC testing. ACMG commended the Committee for undertaking this important inquiry and particularly appreciated the subcommittee's invitation to ACMG Fellow, Dr. James Evans, as the expert witness on behalf of the medical genetics community, at its July hearing. Dr. Evans is highly regarded as a thought leader by the medical genetics community for his valuable contributions to both patient care and national policy. As Editor-in-Chief of *Genetics in Medicine,* he is an important member of ACMG's leadership.

Board of Directors Forms Two ad hoc Committees to Examine Special Issues in Genetic/Genomic Testing

ACMG President-Elect, Dr. Wayne Grody is chairing an *ad hoc* committee to examine the issues and develop an ACMG position statement on the subject of multiplex testing for determination of carrier status —including the

choice of traits selected for a testing panel and the appropriateness of direct-to-consumer marketing. In addition to the marketing issues raised by DTC testing, genomic testing raises many other opportunities and challenges. There is no established paradigm for how to provide counseling and medical follow-up based on genome-wide analysis. Thus, the ACMG is now organizing a workgroup to explore this issue, which will become increasingly central to medical genetics practice in the future.

AMA Adopts Gene Patenting Policy Based on ACMG's Recommendation

The American Medical Association (AMA) recently adopted a policy formally opposing the patenting of human genes after the ACMG delegate to the AMA, Dr. Raymond Lewandowski, proposed this important and public acknowledgment that genes are naturally occurring substances and should not be patented. The *American Medical News* featured Dr. Lewandowski, in the July 5th article "AMA meeting: Patents should not be issued for human genes." The article also mentioned the breast cancer gene patent case, in which ACMG is a plaintiff. The article cited, 'the policy ... states that patents that already have been issued should be licensed in a way that allows broad access by physicians and patients. The AMA will support legislation making those who use patented genes for medical diagnosis and research exempt from claims of infringement.'

Do You Know What Your Regional Collaborative (RC) Is Doing in 2010?

Since 2004, the ACMG has served as the National Coordinating Center (NCC) for the Regional Genetic and Newborn Screening (NBS) Service Collaboratives (RCs), through a cooperative agreement with the Health Resources and Services Administration, Maternal and Child Health Bureau, Genetic Services Branch. Each RC fosters programs and activities that bring high quality genetic and NBS services to local communities, while also building bridges between public health, primary care providers/Medical Home, genetic specialists, and families. Four times a year, the NCC publishes its very popular newsletter, the *NCC Collaborator*. The newsletters generally have a theme; the June 2010 issue highlights tools developed or adapted by the RCs to facilitate their mission. In addition to the RC reports you will read about "Knowledge and Attitudes of Parents on NBS and Bloodspot Storage," "The Advocate Partnership Program," and the "Genetics/Genomics Competency Center" (contributed by Jean Jenkins, NHGRI/NIH). The forthcoming issue addresses cultural competence and programs that target special populations and communities. Current and past issues of the *NCC Collaborator* can be found on the NCC website at www.nccrcg.org, and should be of interest to researchers as well as clinicians.

All NBSTRN-CC Activities Move Forward

As year two of the Newborn Screening Translational Research Network-Coordinating Center (NBSTRN-CC) contract between ACMG and the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development draws to a close, its list of accomplishments continues to grow. Bruce Bowdish, PhD joined the team as Director of Information Management Services, and each of the committees and workgroups remains very active.

- **The NBSTRN Standing Committee** is responsible for oversight of workgroup activities and charges, and for collaborations and relationships between NBSTRN and key partners such as the RCs, NICHD, HRSA, APHL, Genetic Alliance, etc.
- **The Laboratory Network Workgroup** is dealing with issues related to dried blood spot retention and storage (including developing a survey to be conducted this month by APHL); establishing a virtual DBS repository network; developing a laboratory network for new test and technology pilots; discussing nursery-based newborn screening and, together with the Bioethics & Legal Issues Workgroup, formulating ways to address media sensationalism around DBS retention and use.
- **The Clinical Centers Workgroup** has been reviewing the 80% long-term follow-up (LTFU) data set and addressing ownership of the data, data sharing/storage, IT issues, consumer representation, increasing patient involvement, and development of a clinical survey
- **The Disease Specific Sub-Workgroup,** comprised of experts from the metabolic, endocrine and hemoglobin fields is charged with delineating disease-specific elements of the LTFU data set.
- **The Bioethics & Legal Issues Workgroup** is determining a process for accessing NBSTRN services and resources, identifying policies and procedures required for participation within the network, outlining policies for data sharing and access, and discussing ethical and legal implications of NBS research on a national level including by partnering with PRIM&R.
- **The Information Technology Workgroup** is focusing its activities on the elements of the biorepository system and the infrastructure necessary to support the other workgroups' activities. Two RFPs are being developed, one is for a bedside LTFU data capture tool and the other is for a registry system.
- **LSD and SCID Pilot Projects.** The NBSTRN-CC has been contracted to assist with development of meetings related to the LSD and SCID Pilot Projects. Experts in both areas have been identified and a meeting of the LSD

working group was held June 24-25, 2010 in Bethesda, MD. The agenda included establishing provider networks, discussions around informed consent issues, developing diagnostic and long-term follow-up criteria, and IT/Informatics development issues. The SCID working group has been having monthly conference calls since June and is meeting September 15, 2010 in Bethesda, MD. Discussion topics for this group will include, data entry into the R4S database, various follow-up protocols and establishment of data elements, and a framework for the educational materials.

The NBSTRN-CC currently administrates two subcontracts:

Development of the Virtual Repository of Dried Blood Spots
Through a subcontract with 5AM Solutions, Inc., the NBSTRN is developing a centralized, web-based source for access to samples for newborn screening related research. This virtual repository links information from participating states and provides a de-identified view of stored dried blood spots, allowing researchers to browse and query for samples. For public health departments, the virtual repository provides the ability to review and manage sample requests, configure approved orders, track shipments, and view researcher responses to the samples they have received. The demo for the Virtual Repository should be completed at the end of September, with 5-6 states participating by the end of the year.

Adaptation of the R4S Laboratory Performance Database
Through a subcontract with the Mayo Clinic, the NBSTRN is adapting the Region 4 Stork Laboratory Performance Database to collect information from the SCID and LSD Pilot Projects.

New Practice Guidelines Published in *Genetics in Medicine*
Between May and August 2010 the following ACMG practice guidelines were published in the College's monthly journal, *Genetics in Medicine (GIM):*

Kishnani P, Austin SL, Arn P, *et al.* Gylcogen Storage Diseaase Type III diagnosis and management guidelines. *Genetics in Medicine* 12(7):446-463 (July 2010)

Cowan TM, Blitzer MG, Wolf B; A Working Group of the American College of Medical Genetics (ACMG) Laboratory Quality Assurance Committee. Technical standards and guidelines for the diagnosis of biotinidase deficiency. *Genetics in Medicine* 12(7):464-470 (July 2010)

Information about receiving Genetics in Medicine podcasts can be found at http://journals.lww.com/geneticsinmedicine/Pages/podcastepisodes.aspx?podcastid=1. *GIM* can also be read on a PDA with the new "mobile view" feature.

ACMG in the Media
ACMG leaders are quoted almost weekly by print and other news media on topics ranging from newborn screening to all aspects of genetic testing, SCID, gene patents, prenatal diagnosis and personalized medicine. Links can be found in the Newsroom section of the ACMG website at http://www.acmg.net/AM/Template.cfm?Section=Press_Room.

2011 Annual Clinical Genetics Meeting
The 2011 Clinical Genetics Meeting will be held in Vancouver, BC, March 16-21, 2011 and will include the March of Dimes Clinical Genetics Conference, featuring new understandings of connective tissue disease. Further details, including abstract submission information, will be available in the early fall at www.acmgmeeting.net.

2011 ACMG Genetics Review Course
The 2011 ACMG Genetics Review Course will be held June 2-5, 2011 at the Hilton DFW Lakes Executive Conference Center, Grapevine, Texas. Registration and hotel information will be available January 2011 at www.acmg.net.

Further information about all ACMG activities and a full listing of our press releases and clinical genetics laboratory and practice guidelines can be found on our website at www.acmg.net. ACMG also uses Facebook, LinkedIn, YouTube, and Twitter to augment its educational and advocacy missions, provide news and resources related to medical genetics, and improve communication with and among its members and stakeholders.

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