

COSSA Washington Update

IN THIS ISSUE:

- [COSSA Holds Annual Meeting](#)
- [NIH Advisory Committee to The Director Also Hears About Peer Review](#)
- [Results of International Student Assessments Released](#)
- [NIMH Seeks Input on Strategic Plan](#)
- [National Heart, Lung, And Blood Institute Annouces New Strategic Plan](#)
- [Mississippi State Joins COSSA](#)
- [Editor's Note](#)

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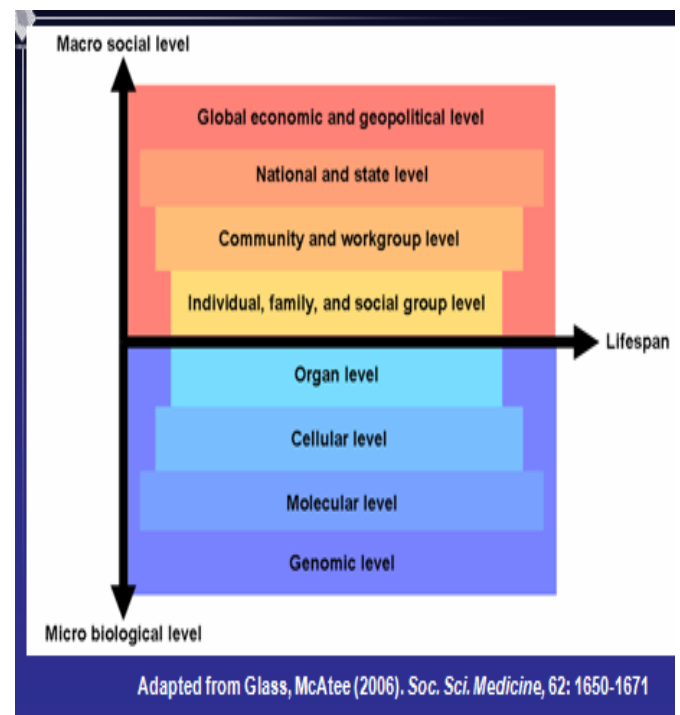
December 10, 2007

COSSA HOLDS ANNUAL MEETING

On December 3, COSSA held its 26th Annual Meeting. This year's version featured the usual mix of speeches by policymakers and panels on important issues where social/behavioral science research contributes to public policy as well as a focus on an important aspect of science policy. Close to 75 representatives of COSSA's membership attended the meeting, which for the first time featured concurrent sessions. COSSA's President Susan Cutter of the University of South Carolina presided over the meeting.

OBSSR's Abrams: Systems Science and New Methods to Foster Gene, Behavior, and Social Environment Research

The meeting began with the return appearance of David Abrams, director of the National Institutes of Health's (NIH) Office of Behavioral and Social Sciences Research (OBSSR). When he first appeared at a COSSA meeting in 2005, he had been on the job about six months. Now after three years, Abrams discussed his perspective of the research needed to advance the health of the nation, which includes a major focus on "systems science" that integrates biology, behavior, and the social environment. According to Abrams, the rubric of systems science is more appealing to the language of NIH because of systems biology. Consequently, the population impact side of systems science is emphasized in the OBSSR's new strategic plan. Abrams noted that he sees "health as a continuum between biological, behavioral, and social factors across the lifespan and across generations." He noted that big population science, like epidemiology, is doing well at the NIH. Citing Glass and McAtee, whose model illustrates the world from the genomic to the global, (see diagram above) as inspiration, Abrams stressed that it was important to "fill in the filling" between the multi-levels, the



of systems science is more appealing to the language of NIH because of systems biology. Consequently, the population impact side of systems science is emphasized in the OBSSR's new strategic plan. Abrams noted that he sees "health as a continuum between biological, behavioral, and social factors across the lifespan and across generations." He noted that big population science, like epidemiology, is doing well at the NIH. Citing Glass and McAtee, whose model illustrates the world from the genomic to the global, (see diagram above) as inspiration, Abrams stressed that it was important to "fill in the filling" between the multi-levels, the

"interfaces of that vertical integration." The true gene-environment interaction requires individual level genetic analysis which does not get done in classic epidemiological genetics. "It is not just about the sequence of your genes, but how that sequence is turned on and off by environmental exposures that is likely to determine whether you will be healthy," declared Abrams. "Influences of genetics are fundamentally dependent on context," he said.

"Solid basic behavioral and social science is needed as a firm foundation to build systems within systems models," Abrams asserted. Accordingly, the OBSSR plans to release announcements designed to bring the behavioral and social sciences up to speed. The announcements will support a 'systems science' perspective in which the "problem space is conceptualized as a system of interrelated component parts." A systems science perspective "offer insights into the nature of the whole system that cannot be gained by studying the component parts in isolation," Abrams explained. A systems science seminar series sponsored by the OBSSR is available for viewing via webcast at <http://videocast.nih.gov> - "past events" - "special."

There is, however, a need for improved precision in methods in the behavioral and social sciences, he explained, adding that there are some new technologies that can provide this precision. For that reason, "OBSSR will support and facilitate the next generation of basic behavioral and social science research informed by breakthroughs in complementary areas such as genetics, informatics, and multilevel analysis." The office will use the Institute of Medicine's reports: [Genes, Behavior, and the Social Environment: Moving Beyond the Nature/Nurture Debate](#) and [New Horizons in Health: An Integrative Approach, 2003](#); as well as the *Report of the Working Group of the NIH Advisory Committee to the Director on Research Opportunities in Basic Behavioral and Social Sciences, 2004*.

The next generation of scientists needs to know math and computational thinking, said Abrams. Such expertise will allow for multi-level computer simulation that further allows for "what if" scenarios of where to make the biggest impact in terms of interventions. Emphasizing that the world is "complex, contextual, dynamic, multi-causal, multi-level, and multiply determined," Abrams stressed that research designs, methods and measures should take this into account and capitalize on advances in computer sciences, technology, informatics, imaging, knowledge management, networking and communications.

Pointing to the National Science Foundation's report, [Revolutionizing Science and Engineering through Cyberinfrastructure](#), Abrams explained that it reveals that the "opportunity is here to create cyberinfrastructure that enables more ubiquitous, comprehensive knowledge environments that become functionally complete for specific research communities in terms of people, data, information, tools, and instruments and that include unprecedented capacity for computational, storage, and communication. . . They can serve individuals, teams, and organizations in ways that revolutionize what they can do, how they do it, and who participates."

In terms of systems integration, Abrams explained that the NIH's vision for the future includes personalized medicine, a somewhat narrower version than that of personalized health care. Using systems integration, the OBSSR plans to capitalize on new discoveries and new tools -- informatics, computer technology, and gene-environment interaction to predict, pre-empt and personalize care. The Office will also support interdisciplinary science to solve problems with scopes that overwhelm single paradigms. Highlighting the newly created Clinical and Translational Science Awards (CTSAs), Abrams noted that these present a critical opportunity for biopsychosocial integration. He underscored that the mission of the Subcommittee for CTA Translation is to "foster improvements in translational technologies through bidirectional integration of basic and clinical research to improve health and patient care." He encouraged the behavioral and social sciences to seek out opportunities to participate in the CTSAs on their campuses ([see Update, September 24, 2007](#)).

Abrams acknowledged that "many challenges remain," including both emerging human threats and persistent public health challenges. The emerging public health threats include: the unsustainable cost of quality healthcare, obesity and the accompanying diabetes epidemic, and natural and human-made disasters. Persistent public health challenges include: disparities, stereotypes, health literacy, quality of life, well being, tobacco use, stress, unhealthy built environment, chronic disease management and support, and health care delivery systems and policy. Aligned incentives at every level of the system can change populations, Abrams concluded.

Nanotechnology: Big Things Come in Small Packages

This year's luncheon speaker was Julia Moore, Deputy Director of the Project on Emerging Nanotechnologies, a joint partnership between the Woodrow Wilson International Center for Scholars and The Pew Charitable Trust. Moore's presentation entitled "Nanotechnology: Why Sweat the Small Stuff?" provided a brief overview on nanotechnology's current status and possible future risks.

Nanotechnology is the purposeful engineering of matter at scales of less than 100 nanometers to achieve size-dependent properties and functions. Materials at such a small scale can do vastly different things than normal-sized matter and

make new materials. Moore expects that in our lifetime we can expect nanotechnology to lead to the development of materials created from the bottom up; that is we will have the capability to build things atom by atom.

Moore pointed out that in addition to the research, “over the past two years, nanotechnology has moved dramatically from the lab into the marketplace.” Estimates suggest that by 2014, 15 percent of all goods manufactured globally will involve some form of nanotechnology. Virtually every large manufacturer has some form of a nanotechnology initiative including: General Electric, Hewlett Packard, IBM, Johnson and Johnson, Proctor and Gamble, and Kraft Foods. There are about \$60 billion worth of products that utilize nanotechnology currently on the market including sun screens, teddy bears, and non-stainable clothing. There are more than 450 manufacturer-identified nanotechnology products. That, however, does not include products that utilize nanotechnology but don’t label their products as having nanotechnology. Globally nanotechnology research and development investment reached \$10 billion in 2005; \$497 million from venture capital, almost \$4.5 billion in corporate R&D spending, and \$4.6 billion in government funding, including a major U.S. National Nanotechnology Initiative led by the National Science Foundation.

Nanotechnology creates new possibilities to make dramatic improvements to our lives, especially in the field of medicine. However, the uncertain impact on our personal health that may arise from using and working with products that contain nanotechnology remains a concern and needs more attention, according to Moore. Currently oversight, regulations, and safety procedures dealing specifically with the use of nanotechnology in consumer products are sorely lacking, Moore suggested. Safety regulations involving nanotechnology are left largely in the hands of the business community. There is very little attention to the possible long term medical effects of exposure for workers dealing with nanotech on a daily basis or for the consumers that use the end product. The National Institute on Occupational Safety and Health (NIOSH) has spent some funds on research, but the Occupational Safety and Health Administration (OSHA) has not done very much on this issue.

According to the Project on Emerging Nanotechnologies, the government does not have the capacity to examine the potential risks associated with nanotechnology. At the moment, government organizations such as the EPA are not ready to examine this new technology with its possible complications. Moore cited J. Clarence Davies, Senior Advisor to the Project on Emerging Nanotechnologies, who has noted that “virtually every authority that EPA has at its disposal has weaknesses in terms of nanotechnology oversight.” In particular, he states that the Toxic Substances Control Act (TSCA), which is currently the only federal law capable of providing oversight for nanotechnology, is inadequate. Davies recommends that the both the law and the current TSCA regulations need updating so they have the capacity to deal with nanotechnology. He also recommends that a dialogue needs to occur among stakeholders including manufacturers, non-governmental organizations, the EPA, and consumers to formulate the outlines of an oversight system appropriate for dealing with 21st-century technologies.

Moore concluded that the future of nanotechnology is enormous with the potential to improve our lives. But, as Moore illustrated, so far 92 percent of the public has heard little or nothing about nanotechnology and less than 200 newspaper articles have been published in the U.S. and the United Kingdom on its risks. It is clear more education and information needs to get to the public about the benefits and possible risks associated with this new technology.

Global Issues Fraught With Uncertainty, Frustration, and the Need for More Knowledge

The meeting also featured a session on Global Issues moderated by Michael Brintnall, Executive Director of the American Political Science Association. William Zartman, Professor at the School for Advanced International Studies of the Johns Hopkins University noted the difficulty in ascertaining the current geopolitical order. The pre-World War II era was defined by the colonial system of colonizers and colonies, Hartman asserted. Then post World War II, the bipolar world of the Cold War delineated the global order. Now, he suggested we have a world of a “hobbled hegemony,” where the post-Cold War dominance of the singular superpower, the United States, has been challenged on a number of fronts. Other strands such as regional integration, democratization, and international regimes, are all flawed explanations for what is going on, according to Zartman. Regionalism appears only to work economically, and in fact, Zartman noted, rather than regional political integration there is a marked desire in some places toward devolution into smaller states. Democratization is thwarted by “authoritarian nostalgia,” as evidenced by Russia. International regimes have difficulty overcoming state actors and in the case of the U.N. are still mainly discussion bodies, Hartman concluded.

The economic realm faces the same difficulties in bringing about economic convergence among nation-states, according to George von Furstenberg, Professor Emeritus of Economics at Indiana University and currently a program officer in the National Science Foundation’s (NSF) economic program. For von Furstenberg, earlier attempts to develop convergence by encouraging savings and population growth gave way to the “Washington Consensus” of reforms fostered by the World Bank and International Monetary Fund through interventions in poor economies. This in turn gave way to the United Nations’ Millennium Development Goals (MDG) to “pull up the bottom.” His conclusion: “Nothing works the same everywhere in complex systems.” There is a need to “identify the most likely choke points and the dynamics to be avoided” by examining individual nation’s situations. He pointed out that growth has certainly worked in Asia, but in Africa, particularly sub-Saharan, remains way behind in achieving the MDGs of alleviating poverty. Is the link between

political freedom and economic growth still viable, von Furstenberg asked? Not necessarily he concluded, with China as his prime example.

In discussing global climate change, Robert O'Connor, Professor Emeritus of Political Science at Penn State and now program officer for NSF's Decision, Risk, and Management Science Program, focused on what we know about the human dimensions of the problem and what we still need to know. He suggested that research indicates that people are willing to make sacrifices to solve the global warming problem, if policies are perceived to be effective and fair. We also know a lot about comparative environmental policies and policy processes, particularly the role of science cross-nationally and incentive-based policies. Yet, O'Connor suggested, we still do not know what makes communities resilient to environmental stress and why nations historically have failed to be resilient to climate change. We have very little knowledge of how tradable permits, one of the current proposed political solutions, would work. We also have a dearth of studies on environmental policy implementation and why and how environmental treaties work. The role of intergovernmental relations needs further study, he said, as does how to close the attitude/behavior gap, in which people express the desire for energy efficiency and still buy gas guzzlers.

Developing Human Capital

Running concurrently with the session on Global Issues, a panel, moderated by Mary Ann McCabe from the Society on Child Research and Development, examined the Development of Human Capital and its policy implications.

James Griffin, formerly Assistant Director for the Social, Behavioral, and Education Sciences at the White House Office of Science and Technology Policy, and currently at the National Institute of Child Health and Human Development, discussed trends in early childhood as they relate to learning, school readiness, and other issues affecting human capital. He highlighted the Interagency School Readiness Consortium (ISRC), which examines the effectiveness of integrated early childhood interventions in promoting school readiness across multiple domains for children at risk of later school difficulties. The interventions are used to examine different approaches to provider preparation and training. They are implemented in public settings such as Head Start centers, child care centers, and pre-kindergarten classes. The research results reveal that an integrated curricula combined with mentoring for teachers appears to create modest but significant improvements in children's academic, cognitive, and socio-emotional skills over the course of a year. He noted that not all changes in teacher practice, however, lead to changes in child outcomes. It remains unclear which factors are most important in mediating change. Likewise, it is not clear if family interventions show the same patterns.

To address these and other questions, the ISRC has issued a request-for-application to fund multi-site research consortiums designed to perform experimental or quasi-experimental efficacy trials on integrative early childhood programmatic approaches that promote school readiness for children ages three to five who are English Language Learners and at-risk for later school difficulties.

Griffin also focused on the school readiness skills on Latino children who in the near future will make up the largest part of America's workforce. Using the results of the Early Childhood Longitudinal Study - Birth Cohort (ECLS-B), a database of children from birth through age two that measures their school readiness skills and early childhood experiences, Griffin noted that more than 25 percent of Hispanics are not in regular day care with many infants simply accompanying their mothers to work. Accordingly, they are not attaining the necessary skills and are not being exposed to English until kindergarten. Griffin concluded his remarks by highlighting the National Children's Study (NCS), the largest long-term study of children's health and development every to be conducted in the U.S. ([see Update, October 8, 2007](#)) He underscored that the NCS is hypothesis driven and will be a national resource for other studies. It will allow for the submission of proposals for investigator-initiated research that adds to the study.

Ruth Friedman, Senior Education Adviser on the Majority Staff of the House Education and Labor Committee, discussed the intersection of research and policies under discussion by the current Congress. Friedman highlighted House Speaker Nancy Pelosi's (D-CA) *National Summit on America's Children* (<http://speaker.gov/issues/form?id=0032>) as an example of a "greater emphasis on talking, listening, and hearing the scientists." The full day Summit brought researchers from across the disciplines (economics, psychology, neuroscience, and other social science researchers) to talk with Congress about research results. Friedman's boss, House Education and Labor Chairman George Miller (D-CA), indicated that this demonstrated what "must happen in bringing researchers to Congress" to assist members in crafting legislation. In addition, the Committee, for the first time during her tenure on staff, is now allowed to have more than one person present their research at hearings. That change, she asserted, "has had an enormous impact." For example, it allowed the Head Start reauthorization bill to finally move after stalling in Congress since 2003.

According to Friedman, other issues for the Congress include the growth in pre-K education, "which has been enormous," and issues surrounding juveniles. She called it "shortsighted not to help parents access quality care," and noted that funding to assist parents for this has essentially remained flat. Even mediocre quality care is tremendously expensive for families. She also cited the juvenile justice reauthorization bill and its attempts to provide better support to that

system. The research in this area has examined interventions that have “a host of better outcomes associated with them” and this is showing up in the discussions on the legislation, concluded Friedman.

William Tate, Distinguished Professor of Arts and Sciences at Washington University in St. Louis, the current President of the American Educational Research Association and a new member of the COSSA Board of Directors, addressed another point along the continuum of developing human capital - the problems with urban schools. For Tate the significant problem for student deficiencies in math and science learning (see story below), is not just teacher quality, but the student dropout rate. “If the students are not there, they cannot advance in math and science,” declared Tate.

Generally, cities are not doing a very good job of preventing students from dropping out of high school, Tate indicated. Accordingly, this costs cities an “inordinate amount of money” since there is value-added to advanced learning. If there is a lower dropout rate, more people pay more into the tax system and you get more intergenerational development. He also pointed out that research in the St. Louis area demonstrates that “generally, differences in academic achievement patterns among racial/ethnic groups reflect the fact that the variation in family resources is greater than the variation in school resources.” Exacerbating the problem is that “demographic group educational advancement is an intergenerational process.” Thus, Tate emphasized that “educational attainment is a function of the quality of education-relevant opportunity structures over several generations. The pace of educational advancement depends on multiple generations of children attending good schools.” He expressed disappointment that these issues are not part of the 2008 presidential campaign agenda, so far.

Peer Review: Is it Working?

The meeting concluded with a panel examining peer review moderated by Richard Lempert of the University of Michigan Law School and former director of NSF’s Division of Social and Economic Sciences. Lawrence Tabak, director of the National Institute of Dental and Craniofacial Research, described the process the National Institutes of Health (NIH) is currently using to analyze its peer review system. (For a full description of the preliminary outcomes of that process see below). For Tabak, one of the main difficulties in NIH’s system, which involves study sections and advisory councils, is how to tell investigators that their projects are simply not good enough for funding. Should there be a “not recommended for resubmission” category, so that some relief may be given to an overburdened review system, he asked?

This was also a concern expressed by Jacqueline ‘Jack’ Meszaros, program officer for NSF’s Innovation and Organizational Science, who described the difficulties the peer review process is facing at her agency. NSF relies on peer review panels and program officer discretion. An earlier report, *The Impact of Proposal and Award Management Mechanisms* (see Update, September 10, 2007), focused on the impact of a large increase in proposals at NSF as the budget has increased. Meszaros noted that the report indicated that a result of the proposal expansion has been the increase in the workload on all concerned: NSF staff, reviewers, and applicants. The report concluded that this has led to a “stressed” review system in which reviewers have admitted that the quality of their efforts has diminished. Another difficulty for the system has been finding reviewers who do not have conflict of interest problems. NSF’s increased emphasis on interdisciplinary activities - Human and Social Dynamics, the Science of Science and Innovation Policy - has also created the need to focus on creating review panels that mesh. The key, Meszaros concluded, is still “finding the right people” to review proposals and managing the behavior of the panels, which is the role of the program officer.

James Wilson of the House Science Committee Majority Staff and a former program officer at the Air Force Office of Scientific Research, where program managers make funding decisions based on their own knowledge and evaluation of the proposal and proposer, gave his perspective on the process from his two positions where he has observed it. Wilson pointed out that the first peer review panel for scientific research was established in 1937 by the National Advisory Cancer Council. He noted the multiple options that agencies use: the NIH process of scoring and funding the top scores until the money runs out; the NSF system of peer review panels making recommendations to program officers who then act on those recommendations; and the Department of Defense process of using program managers to decide what to fund. He also mentioned the NSF Report and the increasing stresses on the systems used in all agencies. The stress, he suggested, is also a product of greater demand brought on by increased budgets that then gets exacerbated as budgets increase slow down. One way to avoid the problem altogether, he proposed, would be to give block grants to departments at universities that had proven their worth.

NIH ADVISORY COMMITTEE TO THE DIRECTOR ALSO HEARS ABOUT PEER REVIEW

On December 7, National Institutes of Health (NIH) director Elias Zerhouni convened the 95th meeting of Advisory Committee to the Director (ACD). Agenda items included an interim report of the ACD Working Group on Peer Review. Zerhouni stated that examining peer review is the first step in the long term effort related to addressing the issues surrounding supporting new investigators. On the advice of the ACD, Zerhouni has made peer review the central issue of the NIH’s agenda for year. Peer review is the “cornerstone” of biomedical and behavioral science that prevents the

politicization of science and has proven itself over 60 years as the best system to manage science worldwide, Zerhouni declared. No system, however, will remain perfect, he cautioned, adding that there are always unintentional consequences. NIH has put forth a huge effort to examine the peer review process, engaging the public and professional associations, Zerhouni acknowledged. He emphasized to the ACD that reviewing peer review is "one of the most challenging tasks" it has as a group.

The ACD Working Group on Peer Review co-chair, Lawrence Tabak (director, National Institute on Dental and Craniofacial Research) and Keith Yamamoto (University of California, San Francisco, School of Medicine) updated the Committee on its efforts. Echoing Zerhouni, Tabak reminded ACD members that NIH's efforts on behalf of peer review are a "self study by the NIH in partnership with the scientific community to strengthen peer review in changing times." The guiding principles behind the study are: (1) the increasing breadth, complexity, and interdisciplinary nature of biomedical science are creating new challenges for the system used by NIH to support biomedical and behavioral research; and (2) peer review is a key component of this system. He pointed out that Zerhouni's charge to the Working Group was to "fund the best science, by the best scientists, with the least amount of administrative burden..."

According to Tabak, the Working Group received more than 2,600 responses to a request for information, held two Deans' teleconferences with more than 100 participants each, held five regional meetings with more than 100 individuals in attendance, made presentations at the various 27 NIH institutes and centers advisory councils and held town meetings with the NIH staff.

Tabak also referenced that while the self study is being undertaken by the Working Group and a second Steering Committee Working Group on Peer Review co-chaired by he and Jeremy Berg (director, National Institute of General Medical Science), the NIH Center for Scientific Review (CSR) is in the process of reviewing some of the mechanical issues around peer review. The Steering Committee Working Group is coordinating its efforts with CSR's initiatives which include: 1) Shortening the review cycle; 2) Immediate assignment of applications to Integrated Review Groups; 3) Realignment of study sections; 4) Electronic reviews; and 5) Reducing the size of applications.

Yamamoto stressed that their presentation was an interim report from the Working Group, specifying that decisions have not been made. His presentation, he explained, was from a November 14 meeting of the ACD Working Group. The Working Group has discerned that there are four challenges that need addressing:

1. Reaffirm and emphasize core values of peer review that allow for the advancement of the best science and health.
2. Support new investigators by creating an exciting encouraging environment for talent.
3. Reduce the administrative burden for applicants, reviewers, and administrators.
4. Strengthen the review leadership and culture of review, and engage top scientists to make the process an esteemed, rewarding experience.

Yamamoto discussed two potential solutions : (1) set up study sections as editorial boards, and (2) create a two- "R01" track system: innovation (99 percent of all applications) and transformative (1 percent of the applications).

The study section as editorial boards, Yamamoto explained, would provide two levels of merit review by technical experts as needed. The study sections would assess the proposal together through mail reviews. This type of review would introduce a one page applicant prebuttal. It would also bring a methodological approach to the review process, allowing little things to be picked up and caught and transmitted to the applicant. Key features of the model, Yamamoto explained, are that it elevates the review discussion to the larger issues; study sections maintain their charters, and enhance the potential to clarify potential problems.

In the two RO1 tracks proposed model, the principal investigator would choose which track to submit his application. The innovative track would recognize and reward types of research that is new, original, inventive, pioneering, advances shifts in paradigms, incremental, and evolutionary. The transformative track would be for research proposals that are revolutionary, disruptive, create new fields of science, and synthesize new paradigms. He commented that many would say that the NIH currently does not reach for this "transformative" type of research.

Yamamoto reiterated that 99 percent of the RO1s the NIH receives would fall within the innovative track. The track would use an admittedly arbitrary grant application of seven pages, for five-year awards, which would explicitly focus on impact and innovation and not on preliminary results, and include an increased focus on the investigator. As discussed, the proposal would allow one page each for addressing the question and issue to be approached by the applicant, the specific aim of the research; the impact of achieving aims and innovation of concept or approach would be allowed one-half page each. Four pages would be devoted to approaches to doing the research, including progress and preliminary results. In the biosketch section, Yamamoto indicated that publications would be limited to 15 citations, possibly five for the most relevant, five of the most significant, and five of the investigator's best papers. A final one-half page would provide the qualifications of the investigator for the proposal.

The transformative R01, modeled on the NIH Director's Pioneer Awards, would be investigator focused, consist of a 3-5 page essay, and lead to a 10 year award with few reporting requirements. The essay would explicitly focus on revolutionary concepts and approaches and evidence that the investigator is an explorer.

Emerging Themes from the Scientific Community

Tabak then discussed additional emerging themes heard from the community along with "potential solutions from both of the working groups." He indicated that the themes were not being presented in "any priority order" and were "presented to only facilitate discussion." Tabak informed the ACD that the scientific community "has been told that the selection of ideas for follow-up is not predicated on the 'village vote.'" The best idea, he noted, could come from a single individual. Below is a modified version of Tabak's slide presentation.

Emerging theme: Administrative Burden

Challenges:

- Too many applications in the system.
- Low 'A0' success rates "clogs" queue.
- Feedback remains ambiguous about applications that are not competitive.

Suggested solutions:

- Pre-application for A0's to provide rapid identification of non-competitive applications.
- Limit applications to a single submission only.
- Employ administrative review for those applications that have correctable deficiencies.
- Use a two-score system to provide merit review of applications as received and to assess the potential of an amended application if all deficiencies were redressed.
- Provide a checkbox to identify those applications that are not recommended for resubmission - "NRR."

Challenge:

- Too many mechanisms - leads to confusion; gaming.

Suggested solution:

- Collapse mechanisms by complexity and scale; points along career path

Challenge:

- Investigators spend too much time writing applications.

Suggested solutions:

- Shorten length of application.
- Assume greater risk by funding a higher percentage of early career investigators.
- "Cherry pick" our own by creating Select NIH Investigator Awards. The award would recognize outstanding scientists with high impact in their field.

Emerging theme: Support for Investigators at Different Stages of Career Development

Challenges:

- Do we need different mechanisms for scientists at different stages of their careers?
 - Nurturing new investigators, providing a facile entry into the system
 - Early career investigator review is uneven - sometimes given "extra" points by reviewers and/or the NIH institutes and centers; other times reviewed with the same rigor and expectations as established investigators

Suggested solutions:

- Assume greater risk by funding higher percentage of early career investigators
 - Separate review for early career investigators
 - Eliminate category of "un-scored" applications - provide scores for all applications
 -
- Create a NIH-wide mechanism to allow investigators to compete for "shared resources" to supplement their grants for support of interstitial scientists. Currently there is a cadre of senior post-docs that have nowhere to go.

Challenge: Providing "Established" investigators with stability

Suggested solution:

- “Cherry pick” our own outstanding investigators - Select NIH Investigator Award

Emerging theme: Review (er) Quality

Challenges:

- Current scoring system introduces false precision by process; reviewers weight different elements of an application in an uneven manner
- Current evaluation focuses on weakness
- Too much emphasis on methodology and preliminary data and not enough on impact and innovation
- Role is not to mentor applicant but to review scientific merit of the application
- No accountability/training for reviewers and study section chairs
- Do “peers” make best reviewers?
- Too few people decide application fate
- Different types of review required for different types of science
- Factual errors in summary statements diminish credibility of review
- Amended applications often reviewed by new reviewers leading to new issues being raised
- Insufficient incentives for highly qualified (and busy) people to participate in the peer review process
- How can we recapture the prestige of being a reviewer?
- How much “context” should reviewers be provided (firewall)

Suggested solutions:

- Drop second decimal point of current scoring system; employ seven-point scale
- Employ matrix scoring system to evaluate different elements of an application
 - Impact, innovation, research plan, investigator/environment, and service to science
- Score and rank using appropriate iterative process
- Only the merit of the application as written should be addressed
- Limit applications to a single submission only
- Provide meaningful training for reviewers prior to their assignment on a study section
- Have each reviewer rate the reviews of their colleagues on the study section
- Engage professional “full time” reviewers
- Employ editorial board model that includes opportunity for “prebuttal”
- Engage reviewers for the full “lifecycle” of an application
- Add time to extant grants to provide incentives for highly qualified people
- Make service more flexible
- Make service mandatory (if asked) as a condition of acceptance for highly meritorious awards
- Consider development of a cadre of “select reviewers” with appropriate incentives
- Provide reviewers with NIH-wide portfolio analysis of relevant area
- Train SRO’s to ensure that requests for applications are clearly understood

Emerging theme: Strains on the System Employed to Support Research

Challenges:

- Resources are finite
 - Indirect costs
 - Support redundancy
- How many R01s are enough?
 - Are there too many overlapping R01’s?
 - Are too many resources concentrated in the hands of too few investigators?
- Team science remains undervalued
 - Should R01s remain the “gold standard” of investigator success?

Suggested solutions:

- Set 25 percent minimum effort for research project grants’ principal investigators; 20 percent effort for multi principal investigators; 5 percent minimum effort for all other roles on application
- Create NIH-wide mechanism to allow investigators to compete for “shared resources” supplement to their grants for support of interstitial scientists

According to Tabak, the next phase of the examination includes a meeting in February 2008 to discuss how to implement the low hanging fruit and design pilots for more complex interventions, with an implementation and analysis of pilots scheduled for March 2008.

RESULTS OF INTERNATIONAL STUDENT ASSESSMENTS RELEASED

On Tuesday, December 4, six national organizations: Alliance for Excellent Education, Asia Society, Business Roundtable, The Council of Chief State School Officers, ED in '08, and the National Governors Association, co-hosted a briefing at the National Press Club for the release of the 2006 Programme for International Student Assessments' (PISA) results. Andreas Schleicher, head of the indicators and analysis division for the Organisation for Economic Co-Operation and Development (OECD) Directorate for Education presented the data.

Since 2000, the PISA assessment has been given every three years to 15 year olds in the OECD's 30 member countries and 27 partner countries. Students are tested in reading, mathematics, and science to assess whether they have "acquired the knowledge and skills essential in everyday life." In 2006, the 57 countries who participated make up close to 90 percent of the world economy.

International comparisons are becoming more important in understanding today's global environment. American states and cities compete not just with each other for jobs and economic development, but with other nations as well. Economists and social scientists assert that the educational abilities of a nation's workforce significantly impact its ability to remain economically strong. Reports such as *Rising Above the Gathering Storm*, assert that students must have strong skills, not only in reading and writing, but also in math and science, if the U.S. is to continue its current level of economic prosperity.

Unfortunately, American students are falling behind their international peers. When the last PISA results were released in 2003, U.S. students ranked 15th in reading, 24th in math and 19th in science literacy among the 29 OECD member countries that participated in the assessments. The 2003 data also shows that the U.S. placed below the OECD average in high school graduation rates, ranking 19th. In addition, more countries are starting to send a larger proportion of their students to college, while the number of American students not graduating from college with a degree is growing.

Gene Wilhoit of the Council of Chief State School Officers explained that, "the release of the 2006 PISA results is important...it provides all of us a unique opportunity to benchmark student learning in the United States with that of emerging and high-performing countries." The 2006 numbers show the U.S. continues to perform poorly, and is even experiencing a decline. The U.S. ranked, among the 30 participating OECD member countries, 25th in mathematics and 21st in science. American reading test scores were thrown out due to a printing error in the test. "These results reaffirm that America's education system is in crisis and that there are lasting implications for our children, who are unprepared to enter an increasingly competitive global marketplace," said Roy Romer, former Colorado Governor and chairman of ED in '08.

The 2006 PISA results place American students below the OECD member country average in both math and science. Almost a quarter of the U.S. students tested demonstrated very low proficiency in science, and 28 percent scored at below the minimum math level. In both subjects, the U.S. has a far greater percentage of students at these very low proficiency levels than OECD member countries as a whole. Even the highest achieving American students are either at or below the OECD average. Schleicher stated that U.S. students are not performing poorly because they are scoring lower than they traditionally have on international tests, but because students in other countries are scoring higher. Other countries, such as Poland and Estonia, have focused on improving their educational systems and are rapidly catching up to or overtaking the U.S. John J. Castellani, president of the Business Roundtable expressed dismay: "It is difficult to understand why mediocre achievement by U.S. teenagers on international math and science assessments produces less concern and outcry than mediocre performance by a football or basketball team."

These new results will add fuel to the current debate on educational reform raging across the country. The future well-being of the U.S. rests on our ability to educate our children to be able to compete on a global level. Vivien Stewart of the Asia Society noted, "The global talent pool is increasing. We urgently need to develop a globally oriented world-class educational system to prepare students in the U.S. with the knowledge and skills to succeed."

NIMH SEEKS INPUT ON STRATEGIC PLAN

The National Institute of Mental Health (NIMH) is seeking public comments on its draft of this Strategic Plan before the main text is finalized. Go to <http://www.nimh.nih.gov/about/strategic-planning-reports/nimh-draft-strategic-plan.pdf> for the contents of the plan. The Institute notes that the draft is "written such that the Institute's Strategic Objectives build upon one another, with themes from the first Objectives mentioned and interwoven with later ones." It encourages individuals to "read and comment on the draft as a whole, in addition to any comments [they] may have with regard to specific strategies and examples." According to the Institute, the final version will include attention to the comments received, as well as additional stories of discovery that highlight collaborative efforts and recent research advances.

Comments will be accepted by email through December 21, 2007 and may be submitted via strategicplanning2@mail.nih.gov. Comments may also be mailed to the following address but must be postmarked by December 21, 2007: National Institute of Mental Health, Attn: Draft Strategic Plan, 8280 Greensboro Drive, Suite 300, McLean, Virginia 22102

NATIONAL HEART, LUNG, AND BLOOD INSTITUTE ANNOUNCES NEW STRATEGIC PLAN

The National Heart, Lung, and Blood Institute (NHLBI) recently announced its new strategic plan, *Shaping the Future of Research: A Strategic Plan for the National Heart, Lung, and Blood Institute*, to guide its efforts for next decade in research, training, and education designed to reduce the burden of cardiovascular, lung, blood, and sleep disorders. According to NHLBI director Elizabeth Nabel, the “plan sets the institute on a trajectory toward preempting disease by using emerging and sophisticated research approaches, adapting to a rapidly changing health care environment and remaining flexible to invest in new research opportunities that offer the best potential for improving the nation’s health.”

Of the plan’s three goals, the third goal is to “generate improved understanding of the processes involved in translating research into practice and use that understanding to enable improvements in public health and to stimulate further scientific discovery.” The plan acknowledges that many evidenced-based approaches to prevent and treat heart, lung, and blood diseases have not been uniformly applied in clinical and community practice. Likewise, the plan recognizes additional research is needed on “the translation process itself to expedite and expand the adoption of biomedical advances into clinical practice and individual health behaviors.” Accordingly, research that addresses issues directly relevant to clinical and community practice is a priority for the Institute.

Challenges addressed in the plan include:

1. To complement bench discoveries and clinical trial results with focused behavioral and social science research.
 - a. Develop and evaluate new approaches to implement proven preventive and lifestyle interventions. Although research has uncovered a number of preventive and lifestyle interventions that are effective in small, controlled studies, it is often not clear how to implement them on a larger scale.
 - b. Develop and evaluate policy, environmental, and other approaches for use in community settings to encourage and support lifestyle change. Research is needed to identify factors that are important influences on behavior and health and determine how they can be changed in a cost-effective way.
 - c. Develop and evaluate interventions to improve patient, provider, and health care system behavior and performance in order to enhance quality of care and health outcomes. Integrating behavioral and social sciences research with clinical research is crucial for developing successful strategies to improve health care.
2. To identify cost-effective approaches for prevention, diagnosis, and treatment. To achieve a substantial improvement in the health of the Nation, more cost-effective approaches to prevent, diagnose, and treat heart, lung, and blood diseases are needed.
 - a. Evaluate the risks, benefits, and costs of diagnostic tests and treatments in representative populations and settings.
 - b. Develop research designs, outcome measures, and analytical methods to assess prevention and treatment programs in community and health care settings across populations and lifespan. New approaches are needed that can accommodate nontraditional family patterns, low SES, and immigrant status.
3. To promote the development and implementation of evidence-based guidelines in partnership with individuals, professional and patient communities, and health care systems and to communicate research advances effectively to the public. Too often, evidence-based guidelines that distill the best available scientific knowledge into recommended actions for individuals, communities, and health care systems are not fully adopted in practice.

- a. Establish evidenced-based guidelines for prevention, diagnosis, and treatment and identify gaps in knowledge. NHLBI will continually assess the nature of the available evidence and identify areas that need additional research to support clinical decision-making.
- b. Develop personalized and community- and health care system-oriented approaches to increase the use of evidenced-based guidelines by individuals, communities, health care providers, public institutions, and especially, by populations that experience a disproportionate disease burden. Systems approaches will be developed to speed the implementation of knowledge in health care and community settings; foster partnerships among practitioners, patients, family members, community organizations, and community health workers; and create environments that support health choices and reduce known risk factors.
- c. Communicate research advances effectively to the public. NHLBI plans to continue to investigate and evaluate new communication and social-marketing approaches to communicate research advances with the goal of engaging all interested parties.

Strategies to Implement Plan

The plan also includes eight strategies to address its goals and challenges:

1. Develop and facilitate access to scientific research resources . Lack of access to costly technologies often limits what individual investigators can accomplish.
2. Develop new technologies, tools, and resources.
3. Increase the return from NHLBI population-based and outcomes research. The value of existing NHLBI supported studies could be enhanced by adding new genetic, social, environmental, and psychological measures.
4. Establish and expand collaborative resources for clinical research. The new NIH network of CTSA's offers great promise for investigators interested in conducting research in community settings, affording them access to an integrated and organized resource. The Institute views the CTSA's as an important resource for stimulating community involvement in clinical research whenever appropriate.
5. Extend the infrastructure for clinical research.
6. Support the development of multidisciplinary teams. Development of multidisciplinary teams will require greater recognition in the research community, and especially in universities and medical schools, of the accomplishments of groups rather than individuals. NHLBI encourages this trend by including research initiatives, wherever appropriate, a requirement that diverse groups of scientists be assembled to work together on a common problem.
7. Develop and retain human capital. The Institute is committed to extending the reach of its educational efforts to elementary and high school students, and it will continue to expand its support of science education in the schools to ensure a steady supply of enthusiastic and creative young scientists.
8. Bridge the gap between research and practice through knowledge networks. NHLBI will explore new network approaches to promote collaborations among researchers that enable them to develop evidence-based initiatives to improve public health.

Shaping the Future of Research: A Strategic Plan for the National Heart, Lung, and Blood Institute is available at <http://www.nhlbi.nih.gov/strategicplan>.

MISSISSIPPI STATE JOINS COSSA

Mississippi State University has become the latest university to join the Consortium. COSSA appreciates its support and looks forward to working with Mississippi State faculty and other key officials to promote attention to and enhance funding for the social and behavioral sciences.

EDITOR'S NOTE

This is the last issue of Update for 2007. We will return with the results of the FY 2008 appropriations process on January 14, 2008. The COSSA staff wishes everyone a Joyous Holiday Season and a Happy and Healthy New Year!

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