COMMENTARY

ON PEER REVIEW

RICHARD W. SATTIN, MD

The Prevention Research Initiative and the Peer Review Process at CDC

Dr. Sattin is Special Assistant for Extramural Research with the National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, Atlanta, Georgia.

Address correspondence to Dr. Sattin, CDC, NCIPC, Mailstop K-02, 4770 Buford Hwy, Atlanta GA 30341-3724; tel. 770-488-4265; fax 770-488-1662; e-mail <rsattin@cdc.gov>.

THE UNITED STATES PRIDES ITSELF FOR ITS LEADERSHIP POSITION IN basic biomedical research. Yet, we fall behind many developed countries in life expectancy and other measures of health quality.[1] Prevention research, one of the highest priorities of the Centers for Disease Control and Prevention (CDC), is a multidisciplinary approach to discovering new ways to prolong the health, well-being, and self-sufficiency of all Americans.

Prevention research focuses on preventing disease, injury, and disability. Researchers work with communities to identify health needs; they determine, select, and implement effective strategies for disease prevention and encourage healthy living. Results from prevention research will help communities discover the programs that work, how well they work, and at what cost. Americans are interested not only in protecting their own health status, but in learning how to promote and enhance the health of their families and communities. However, many questions that have been raised about the relationships among lifestyles, environment, and health remain unanswered because research emphasis has not been sufficient to determine best practices in community preventive services.[2,3]

The Prevention Research Initiative (PRI), which began in FY99, provides CDC an expanding opportunity to maximize public health impact by leveraging research to address high-priority and crosscutting topics. Such topics include evaluation of community interventions that address multiple health domains in communities; the impact of legislative, regulatory, and other policy changes on morbidity and mortality; methods to strengthen public health infrastructure and develop public-private partnerships for public health; and factors that facilitate or hinder adoption of effective prevention practices. The PRI is organized to complement existing public health research programs and to strengthen partnerships between the public health practice community and academia. In FY 1999, $12.5 million funded 50 research projects at academic health centers, research centers and university affiliated programs (in schools of public health, medicine, nursing, and engineering) across the country. The awards covered a range of subjects, from prevention of sexually transmitted diseases and asthma to home, workplace, and recreational injuries.

Activities include centers of excellence in prevention research, projects to inform public policy, and research investigator training and development. The average grant was approximately $250,000; most were funded for three years.

PEER REVIEW PROCESS

Through the Prevention Research Initiative, CDC also was able to expand the process of external peer review for the evaluation of grant applications for prevention research projects submitted to CDC. Currently, CDC uses two approaches in conducting independent review of applications submitted for public health research: (*a*) objective review, and (*b*) external peer review. While objective review is used more frequently at CDC, the use of peer review continues to grow.

Objective review is a process that includes an independent assessment of the technical or scientific assessment of research by panels composed of federal reviewers only, predominantly CDC personnel. The peer review process, on the other hand, includes an independent assessment of the technical or scientific merit of research by predominately nonfederal reviewers, scientists with knowledge and expertise equal to that of the researchers whose work they review. External peer review often is used when specific area expertise is needed or appropriate internal disinterest is not available. External reviewers provide written assurance that their reviews are free of any real or perceived conflicts of interest.

The peer review system for grant applications and cooperative agreements used by the CDC is based on two sequential levels of review, referred to as the *dual review system*. The first level involves panels of experts organized according to scientific disciplines or specialty research areas for the primary purpose of evaluating and scoring the scientific and technical merit of grant and cooperative agreement applications. A second level of review involves either a panel of outside experts or a panel of disinterested senior federal officials who review the ranked proposals to assure maximal impact and balance of the proposed research. Review criteria for both the first and second levels of review are included within the Request for Applications (RFAs).

Strengths of peer review. The CDC required that external peer review be used to determine the technical and scientific merit of research submitted in requests for applications funded through the Prevention Research Initiative. The CDC understood that the concept of peer review, strongly accepted by the scientific community, has led to major advances in biomedical research in this country. Peer review has been used in many different processes; two are of particular interest here.

The first is the requirement for peer review of research results before publication in scientific journals. Peer review can lead to improvements in the quality and impact of individual manuscripts, and can direct editors to eliminate from consideration manuscripts that are scientifically non-rigorous, those that lack important consequences, or those that cannot be interpreted.[4] The second process follows the decision to allocate funds for research based primarily on the results of peer review of research proposals. Both processes have led to enormous growth in the number and extent of research and training programs in the US, which have led, in turn, to significant scientific progress against diseases, injuries, and other health-related problems.[5] Peer review has also provided confidence to academia, legislators, and the public that funds appropriated for research will support the most meritorious research ideas and projects.

FEDERAL ADVISORY COMMITTEES

The use of peer review is more complex than objective review. Since nonfederal reviewers are involved, the review process must conform to the Federal Advisory Committee Act (PL 92, 463). This law establishes a system to govern the creation and operation of advisory committees in the executive branch of the federal government. A Federal Advisory Committee is defined as any committee, board, commission, council, conference, panel, task force, study section, working or other similar group that is not composed entirely of full-time officers or employees of the federal government. The committee is established or utilized by a department or agency to advise or make recommendations on matters relating to the programs, responsibilities, or activities of the department or agency.

At the CDC, the National Institute for Occupational Safety and Health and the National Center for Injury Prevention and Control currently have federally chartered external merit review groups, known as study sections. The study sections are composed of individuals nominated by agency scientists and program directors from among respected researchers in the prevention community and appointed by the Secretary of Health and Human Services to serve for staggered multi-year terms. The goals of the agencies are to have each group's combined knowledge span the diversity of subject matter

assigned to the study section for review, and to maintain a continuity of knowledge from review to review.

Those centers, institutes, and offices at the CDC that do not have study sections use the CDC-chartered Disease, Disability, and Injury Prevention and Control Special Emphasis Panel (SEP) to conduct external peer review of grants and cooperative agreements submitted in response to Prevention Research Initiative RFAs. The number of SEPs at CDC has increased significantly from 12 in FY1995 to 36 in FY1999 and 26 in FY2000. Membership is fluid, as panel members are designated to serve for a single review meeting rather than being appointed for fixed terms of service. Thus, SEP membership changes with each review meeting.

The second level of review is conducted by a chartered committee or a panel of disinterested senior federal officials. These secondary review groups review the ranked proposals to assure maximal impact and balance of the proposed research. Extensive federal government requirements govern the initiation and management of a study section, SEP, or a chartered secondary review committee. Each type of review group must reflect a balanced membership of minority, gender, and geographic balance.

CDC Access to Scientific Expertise

CDC's mission is to promote health and quality of life by preventing and controlling disease, injury, and disability. CDC seeks to accomplish its mission by working with partners throughout the nation and world to monitor health, detect and investigate health problems, conduct research to enhance prevention, develop and advocate sound public health policies, implement prevention strategies, promote healthy behaviors, foster safe and healthful environments, and provide leadership and training. As a result of the magnitude, diversity, and complexity of its research mission, as well as its pursuit of excellence, the CDC is able to draw on the assistance of a national pool of scientists and other experts actively engaged in research. These scientists assist the CDC by advising on the selection of the most meritorious and promising research projects for award.

Peer review is not a static system, but will undergo continual changes and improvements based on evaluations by peer reviewers, CDC staff, and others involved in the peer review process. These changes will lead to a distinctive CDC style in conducting peer review of prevention research projects submitted in response to an RFA while maintaining the openness, quality, and credibility of the process. With this foundation in scientific review excellence, we anticipate further successes in preventing disease, injury, and disability.

References

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