

A vision for the future: notes from the NHLBI director

It is a pleasure and a privilege to address the readership of *Blood* in my new capacity as director of the National Heart, Lung, and Blood Institute. Our institute has a long and distinguished record of scientific progress in cardiovascular, lung, and blood diseases and sleep disorders, and the present transition affords an opportunity for reflection and critical assessment of our future directions. In this communication, I want to share my vision for the institute. This vision is based on a fundamental set of values—excellence, innovation, integrity, respect, and compassion—that will permeate all activities of the NHLBI. I believe that scientific discovery provides the basis for progress and that the NHLBI is uniquely positioned to catalyze changes that must be made to transform our new scientific knowledge into tangible improvements in health. Within this framework, let me outline some priorities for the coming years: priorities that will, of course, undergo reevaluation and reformulation as we seek the input of our grantees, constituents, and advisors.

Basic research

Basic research provides the foundation of the NHLBI portfolio and has been one of its great strengths. The typical model of investigation—research conducted by single investigators or small groups of investigators on projects of their own inspiration—accounts for most of the unanticipated and major scientific discoveries in this country. I believe strongly that we must protect and nurture investigator-initiated research. The NHLBI will continue to invest in the most talented scientists conducting the highest caliber research.

In addition to renewed support of investigator-initiated research, the NHLBI must exert national leadership in capturing research opportunities, taking risks, and developing an innovative and distinctive research portfolio that is science-driven. We intend to make the most of exciting and unprecedented opportunities to support emerging scientific fields. One approach is to develop funding mechanisms (eg, for support of high-risk research) that encourage innovative thinkers to turn their attention to the major current challenges in heart, lung, blood, and sleep diseases and that give these creative scientists the intellectual freedom to pursue their ideas and follow them in unexpected or serendipitous directions. By bringing unconventional perspectives and originality to bear on key research questions, awardees may develop seminal theories or technologies that will propel fields forward and facilitate the translation of discovery into treatments to improve human health.

The institute also will pursue funding approaches that make it easier for scientists to conduct interdisciplinary research. For instance, the NIH is considering granting principal investigator status not just to a single investigator, as is the norm, but to all key members of a research team. Integrated reviews of NHLBI-solicited programs would take into account the melding of various disciplines to address the problem at hand and provide encouragement for interdisciplinary teams to evolve in both directed and unexpected ways.

The NHLBI Division of Intramural Research is a very special program that has the resources to conduct bold, innovative, distinctive basic and clinical research. The division is well positioned to take on high-risk, cutting-edge projects that complement work performed in the extramural community, and we are committed to maintaining and nurturing this extraordinary scientific resource.

Clinical investigations, trials, and networks

Clinical research is critical if we are to translate basic discoveries into the reality of better health. But such work is often time-consuming and inefficient, and is increasingly burdened by regulatory requirements. Our challenge is to expand clinical research to complement the exciting basic science discoveries, while making it more efficient and cost-effective.

We intend to develop a translational research agenda supported by clinical trials, clinical networks, and clinical workforce training. Clinical trials must be driven by science and designed to foster evidence-based decision-making in clinical practice. Key components should focus on increasing interactions between basic and clinical investigators and easing the movement of new tools from the laboratory to the clinic. An infrastructure that comprises core facilities to provide clinical researchers access to sophisticated manufacturing capacity, along with expert advice to ensure that drug development regulations are observed, could expedite the translational process.

The NHLBI has a rich history of developing and supporting clinical research networks, and we plan to build on this strength to develop new partnerships among organized patient communities, community-based physicians, and academic researchers. Integrated clinical networks of academic health centers that include community practices will enhance our ability to conduct clinical trials. Such efforts will also require improved bioinformatics and clinical databases, better standards for clinical research protocols, and cooperation between patient advocacy groups and the NHLBI. Thought must also be given to the development of metrics to improve the ascertainment of clinical outcomes as well as quality assessment. This research will require the tools and expertise of many fields, including those focused on health education, outcomes, health-care delivery, and health-care economics.

The NHLBI also must cultivate clinical researchers who have skills commensurate with the complexity and needs of our research enterprise. Clinicians must be trained to work in interdisciplinary, team-oriented environments and must possess skills in an array of relevant disciplines, including genetics, epidemiology, biostatistics, and behavioral medicine.

Training, mentoring, and education

We intend to conduct a careful review of NHLBI training programs with an eye toward improving their ability to equip emerging scientists with the knowledge and skills needed for success in an

ever-changing and complex research environment. During these times of tight budgets, we will focus on helping our new investigators make the transition from fellowships to independent faculty positions (for instance, by designing portable mentored awards that provide more flexibility and control in pursuing their research interests). I believe strongly that skills-development programs should be included in all program projects, specialized centers of research, and other large multicomponent grants. Opportunities to develop research interests and skills should be made available to students at all levels, beginning with high school, and should focus special attention on underrepresented groups, such as racial and ethnic minorities, and individuals from disadvantaged backgrounds.

Health disparities

Disparities in health status constitute a significant global issue and a longstanding concern of the NHLBI. Research is essential to understand the contributions of genetics, health behavior, diet, socioeconomic status, culture, and environmental exposures to health disparities of relevance to the NHLBI and to formulate, evaluate, and disseminate intervention programs. This work will necessarily entail a vigorous effort to increase the representation of minorities in the ranks of NHLBI researchers. A full resolution of the health disparities problem will only occur through committed and sustained efforts by many in our government, health centers, and society.

Outreach and communication

Our mission extends beyond research alone; we have an obligation to translate our research findings into education and dissemination programs, particularly to address the health needs of at-risk populations in underserved communities. We will continue to work collaboratively with our federal colleagues, including the Centers for Disease Control and Health Resources and Services Administration, to support prevention and treatment programs. In addition, we have an unprecedented opportunity to work with the relevant professional organizations that have a large stake in developing and implementing practice guidelines and monitoring their effectiveness, and with patient advocacy groups. Education of our patients and the public at large regarding prevention and treatment of heart,

lung, blood, and sleep disorders must be one of our highest priorities.

Rates of cardiovascular disease, asthma, chronic obstructive pulmonary disease, and blood-borne diseases are rising worldwide, and I am committed to our involvement in global health issues. We will take this opportunity to review the NHLBI portfolio in international programs in light of changing global demographics and to establish priorities and goals for these programs so that institute resources are used most effectively.

As cochair (with Dr Allen Spiegel, director of the National Institute of Diabetes and Digestive and Kidney Diseases) of the NIH Obesity Research Task Force, I am working to enhance obesity research and education across the NIH. My vision is to bring to the task force an emphasis on basic research into the mechanisms of obesity-induced cardiovascular and pulmonary disease development and progression; on clinical investigations of cardiovascular, pulmonary, and sleep complications of obesity; and on education programs to prevent onset and progression of obesity, especially among our youth. Our NIH efforts will be coordinated with the Department of Health and Human Services, other federal agencies, professional societies, and consumer groups to achieve synergy in our efforts. I am fortunate, indeed, to be able to draw on the many productive experiences of the NHLBI in the field of obesity, as well as the institute's proven models for outreach and education, to share successful approaches that might be applied at the NIH level.

The challenge

In summary, I foresee an array of opportunities to build and diversify the strengths of the NHLBI. Our challenge is to take the institute to the next level of excellence. The realization of this vision will require the advice, wisdom, and efforts of many. I look forward to working with you to achieve these goals. We are engaged in a special form of public service, that is, the promotion of patient and public health. Be assured that I will work diligently to preserve public trust in *our* institute, in the NIH, and in the biomedical research enterprise, and to ensure that the NHLBI serves the public with the highest level of integrity. I hope you will join me in this exciting venture.

Elizabeth G. Nabel

Director, National Heart, Lung, and Blood Institute

This editorial will also be published in Circulation, Sleep, and the American Journal of Respiratory and Critical Care Medicine.