U.S. POLICY

Research in academic medical centers: Two threats to sustainable support


Reductions in federal support and clinical revenue jeopardize biomedical research and, in turn, clinical medicine.

Unstable funding for biomedical research has created a hostile working environment that erodes the time available for investigators to conduct their research, discourages innovative high-risk science, threatens to drive established investigators out of U.S. academic biomedical research, and creates uncertainty for trainees and early-career investigators (1). However, executive directors at academic medical centers wrestle with another concern—one at the systemic level: At any amount of public investment, the cost of the biomedical research enterprise is growing inexorably beyond what available resources can reasonably support (1).

As leaders of U.S. academic medical centers, we are committed to providing high-quality patient care while using our limited resources effectively and efficiently. But we cannot achieve these goals nor meet the health care challenges of an aging and increasingly diverse population without acquiring new knowledge about human health and disease to support the development of creative therapeutic strategies (http://medresearch.tumblr.com). Moreover, our nation's economy has depended on discovering new knowledge about human health and increasing the time available for investigative research, which has increased substantially over the past half-century.

Aside from federal support, the major sources of funding available to academic medical centers are state governments, technology transfer (significant for only a few institutions) (3), philanthropy, tuition, and clinical income. According to the National Science Foundation (NSF), institution-provided funding for faculty-conducted scientific research has grown faster than any other source of support over the past two decades (4, 5). We estimate that, on average, our respective institutions contribute 53 cents for each dollar (direct and indirect) of all sponsored-research support expended (6).

Some have asserted (1) that federal grants and contracts, by reimbursing indirect (facilities and administrative) costs and faculty salaries, “encourage the institutions to grow without making sufficient investments in their own faculty and facilities.” In this context, the term “sufficient” is key. Indirect cost reimbursements compensate for costs already incurred by institutions, although many large research- and education-related expenditures are unallowable for reimbursement under federal cost policies, including the expense of both starting up laboratories and sustaining existing labs (4). Furthermore, the federal reimbursement rate for administrative costs for academic institutions has been capped at 26%, whereas administrative requirements for oversight of sponsored research, protection of human subjects, biosecurity and safety, humane use of animals in research, training in responsible conduct of research, and many other compliance obligations have increased significantly (www.nsf.gov/pubs/2014/nsb1418/nsb1418.pdf). Indeed, the Association of American Medical Col-

1Senior Vice Chancellor for the Health Sciences, John and Gertrude Petersen Dean, School of Medicine, and Professor of Medicine and Molecular Genetics, University of Pittsburgh, Pittsburgh, PA 15261, USA. 2Dean and Ensign Professor, Yale University School of Medicine, New Haven, CT 06520, USA. 3Dean and Vice Chancellor for Academic Affairs, Duke University School of Medicine, Durham, NC 27710, USA. 4Provost, Boston University Medical Campus, Dean, School of Medicine, Boston, MA 02118, USA. 5Vice Chancellor for Health Affairs, Dean, School of Medicine, Vanderbilt University, Nashville, TN 37232, USA. 6Associate Senior Vice Chancellor for Science Strategy and Planning in the Health Sciences, University of Pittsburgh, Pittsburgh, PA 15261, USA. 7Dean, Case Western Reserve University School of Medicine, Senior Vice President for Medical Affairs, Case Western Reserve University, Cleveland, OH 44106, USA. 8Executive Vice President for Academic Affairs and Provost, Dean, UT Southwestern Medical School, UT Southwestern Medical Center, Dallas, TX 75390, USA. 9Dean, School of Medicine and Public Health, Vice Chancellor for Academic Affairs, University of Wisconsin-Madison, Madison, WI 53705, USA. 10Executive Vice President and Dean of the Faculties of Health Sciences and Medicine, Chief Executive, Columbia University Medical Center, New York, NY 10032, USA. 11Executive Vice President, University of Pennsylvania for the Health System, Dean, Raymond and Ruth Perelman School of Medicine University of Pennsylvania, Philadelphia, PA 19104, USA. 12Dean, School of Medicine, A. Lorris Betz Senior Vice-President for Health Sciences, CEO, University of Utah Health Care, Salt Lake City, UT 84132, USA. 13Richard T. Crane Distinguished Service Professor, Dean of the Division of the Biological Sciences and the Pritzker School of Medicine, Executive Vice-President of Medical Affairs, The University of Chicago, Chicago, IL 60637, USA. 14Dean, Michigan State University College of Human Medicine, East Lansing, MI 48824, USA. 15Vice President for Medical Affairs, University of Maryland, John Z. and Akiko K. Bowers Distinguished Professor, and Dean, University of Maryland School of Medicine, Baltimore, MD 21201, USA. 16Dean of the Medical Faculty, CEO, Johns Hopkins Medicine, Baltimore, MD 21205, USA. 17Dean, Roy J. and Lucille A. Carver College of Medicine, Professor of Anesthesiology, Pharmacology & Biochemistry, The University of Iowa, Iowa City, IA 52242, USA. 18Spencer T. and Ann W. Olin Distinguished Professor, Executive Vice Chancellor for Medical Affairs, and Dean, Washington University School of Medicine, St. Louis, MO 63110, USA. 19The Marilyn and Stanley M. Katz Dean, Albert Einstein College of Medicine, Bronx, NY 10461, USA. 20*Corresponding author. E-mail: alevine@pitt.edu
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leges (AAMC) reports that 70 of its member institutions expended a total of $22.6 million to comply with the 2011 regulations just for managing potential financial conflicts of interest (7). To help address some of these costs, the current draft of the 21st Century Cures Act calls for the creation of a Biomedical Research Working Group to provide recommendations for reducing administrative burdens on NIH grantees and applicants.

Academic institutions also must pay faculty salaries. A survey of AAMC-member institutions in 2009 found that physicians who conduct sponsored research received, on average, 29% of their salaries from sponsored programs, whereas nonphysician investigators received 49% (www.aamc.org/download/170836/data/aibvol11_nol.pdf). Similar 2013 data for 72 academic medical centers (AMCs) (Fig. 1) show an overall median of 32% salary support from sponsored programs across full-time faculty who conducted sponsored research, with a median of 22% for M.D. faculty and 47% for non-M.D. faculty. We acknowledge that many research faculty are under extraordinary pressure to cover substantial portions of their salaries with grant funding, which is why we and others from academic medical centers are eager to participate in data-driven discussions with other stakeholders about how to reduce this pressure so that faculty members can focus more on the conduct of research than on securing funds for its support.

THE SECOND THREAT
Past growth in the biomedical research enterprise has depended substantially on clinical revenues generated at academic medical centers. Such revenues—which support capital infrastructure, employ medical faculty with research programs, and improve delivery of care through education, innovation, and discovery—are now shrinking as efforts to control the growth of health care costs are implemented. Reduced clinical revenues decrease the leverage that is critical to the overall support of research in academic medical centers—leverage needed to position such centers to compete for sponsored research funds. Moreover, amidst increasingly constrained clinical-reimbursement levels, academic medical centers remain both the major care site and the option of last resort for the most complex and challenging patients. Bearing the cost of outlier patients and of clinical care provided as part of clinical research represents another contribution to the public good. Moreover, academic medical centers treat a disproportionately large share of individuals without adequate health insurance or sufficient means to pay for care. In 2012, the median charitable health care provided by AAMC-member teaching hospitals was $65 million (8), which may or may not decline, depending on how the new landscape associated with the Affordable Care Act and other policy developments evolves.

RECOMMENDATIONS TO STABILIZE THE BIOMEDICAL RESEARCH ENTERPRISE

Recommendations to stabilize the biomedical research enterprise must identify new resources, policies, and business models for sustaining such research, not simply shuffle financial responsibilities within the current model. We must reinvigorate the federal-academic partnership for research across all sciences. The convergence of many essential fields around biology, as highlighted in the recent report entitled A New Biology for the 21st Century (9), offers opportunities for academic partners to serve social objectives (www.nap.edu/catalog/12764/a-new-biology-for-the-21st-century). With regard to sustainability, both the federal government and our institutions must recognize that we have made a huge investment in developing young scientists so that they can launch independent research careers, and if we are to recoup our investment, these careers must be sustained at least until failure is evident. The draft 21st Century Cures Act includes a section devoted to emerging scientists, in order to promote increased support of investigators at the early stages of their independent careers. Academic medical centers must join with NIH to strengthen support for the training and early-stage research of physician-scientists, who carry out a singular mission in biomedical research (9); promote stable careers for our most creative principal investigators; and provide more stable support mechanisms for staff scientists (10). Furthermore, we must create career paths that at least partially decouple research activity from the trainee enrollment and develop training models that recognize that many trainees go on to a variety of important nonacademic careers, in addition to academic ones.

A sustainable business model with predictable growth in appropriations to NIH and other research sponsors, indexed to the relevant rate of inflation and projected over 3 to 5 years, would allow both federal and academic institutions to plan their investments in human and physical capital and manage expenditures more strategically than is possible in the face of annual funding uncertainty. The 21st Century Cures Act draft authorizes (but does not appropriate) increases of ~4.6% for fiscal years 2016 to 2018. In addition, the draft proposes the appropriation of an additional $2 billion per year to the biomedical research enterprise, which must be matched with other resources. In addition, the draft identifies a series of important nonacademic goals, such as 

**Fig. 1. Showing the money.** Distribution of average salary coverage from sponsored programs at 72 academic medical centers in 2013. Because these data were obtained by dividing the total amount of sponsored support for faculty salaries by the total faculty-salary support from all sources at each institution, distributions across investigators at individual institutions are not available. [Data provided by the Association of American Medical Colleges, April 2015]
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year for fiscal years 2016 to 2020 through the creation of an “Innovation Fund,” the uses for which are still under discussion. This fund would be in addition to the regular NIH appropriation.

Academic medical centers are committed to leading the national effort to provide high-quality care to all Americans. But achievement of this goal requires a stable economic platform that supports the full spectrum of biomedical and engineering research, from the investigation of fundamental mechanisms of human biology and behavior to the translation of such discoveries to patients, communities, and populations. In short, to provide next-generation health care solutions, we require 21st-century policies that support modern scientific research and development. Because research in academic medical centers requires both federal and institutional support—the latter of which depends on clinical revenue—scientists, administrators, and policy-makers must collaborate effectively to address both threats.

REFERENCES AND NOTES

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