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 discovery and invention, the ultimate products of scientific research. Thus, biomedical research is crucial to the U.S. national agenda, and academic medical centers—the provenance for much of this research—are at particular risk. Persistent constraints on federal funding for biomedical research, including that from the U.S. National Institutes of Health (NIH), threaten to undermine the biomedical research enterprise, and decreasing clinical revenue compounds this threat. Support for the research ecosystem must be predictable and sustainable both for institutions and individual investigators. The U.S. Congress is currently developing the 21st Century Cures Act with the intent of addressing some of these concerns (see http://energycommerce.house.gov/cures).

DIMINISHING RESOURCES FOR SERVING SOCIETY

The remarkable collaboration between the federal government and academic institutions that shares the burden of scientific research and training began after the second World War and was built on the philosophy that new knowledge is a public good. These institutions dedicate resources to grow and sustain research programs (2). However, for the partnership to work effectively, the public’s investment should be commensurate with the expansion of expensive taxpayer-driven research and development priorities in the areas of cancer, diabetes, cardiovascular and neurodegenerative diseases, clinical depression, emerging infectious diseases, and precision medicine as well as with the growth in federal regulation and oversight of 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 grantee 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, pre- and post-award review and submission, and many other compliance obligations have increased significantly (www.nsf.gov/pubs/2014/nsb1418/nsb1418.pdf). Indeed, the Association of American Medical Col-

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leges (AAMC) reports that 70 of
its member institutions expended
a total of $22.6 million to com-
ply 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 recommenda-
tions for reducing administrative
burdens on NIH grantees and ap-
pclicants.

Academic institutions also
must pay faculty salaries. A sur-
vey of AAMC-member institu-
tions in 2009 found that physi-
cians 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/
aibv011_nol.pdf). Similar 2013
data for 72 academic medical cen-
ters (AMCs) (Fig. 1) show an overall
median of 32% salary support from
sponsored programs across full-time faculty who conduct-
ed 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 discus-
sions 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 en-
terprise has depended substantially on cli-
cial revenues generated at academic medi-
cal centers. Such revenues—which support
capital infrastructure, employ medical fac-
culty with research programs, and improve
delivery of care through education, inno-
vation, 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 com-
p lex and challenging patients. Bearing the
cost of outlier patients and of clinical care
provided as part of clinical research rep-
resents another contribution to the public
good. Moreover, academic medical centers
treat a disproportionately large share of in-
dividuals 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 de-
cline, depending on how the new landscape
associated with the Affordable Care Act and
other policy developments evolves.

UNCERTAINTY HINDERS STRATEGIC PLANNING
Loss of funding from all sectors inevitably
means that the biomedical research en-
terprise must decrease in size. A smaller enter-
prise might be more sustainable, but the size of
the biomedical research enterprise is not
the appropriate end point. Improving the
health of our patients and communities is our
objective, and a smaller biomedical research
enterprise will slow progress in our ability to
address the health of our patients and lessen
our contribution, through new knowledge
and technology development, to the growth
of the nation’s economy.

Recommendations to stabilize
the biomedical research enterprise
must identify new resources, poli-
cies, and business models for sus-
taining 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 biol-
ogy, as highlighted in the recent
report entitled A New Biology for
the 21st Century, offers opportuni-
ties 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 invest-
ment in developing young scien-
cists so that they can launch inde-
pendent 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 scien-
cists, in order to promote increased support of
investigators at the early stages of their inde-
pendent 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 sup-
port mechanisms for staff scientists (10). Fur-
thermore, 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 ca-
reers, in addition to academic ones.

A sustainable business model with pre-
dictable 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 invest-
ments in human and physical capital and
manage expenditures more strategically
than is possible in the face of annual fund-
ing 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
FOCUS

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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