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ACADEMIC MEDICINE INVESTMENT IN MEDICAL RESEARCH



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Huron Consulting Group assisted the AAMC in designing the survey instrument and analyzing the final results of this report.

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EXECUTIVE SUMMARY

Medical research has improved the health of Americans, fueled the economy, and spurred innovation. Such advances have been possible because of investments by federal, state and local government, industry, foundations, and academic institutions. More than half of National Institutes of Health (NIH) extramural funding, close to \$13 billion in FY 2013, supports researchers in the nation's medical schools and teaching hospitals.

However, external sources alone are not enough to fund research. U.S. medical schools, teaching hospitals, and health systems are committed to making investments to supplement and leverage external funding. While external grants help cover direct costs for executing the research project, critical costs not fully covered by those funds—often referred to as indirect or facilities and administrative (F&A) costs—include those associated with establishing or refitting new laboratories, core facilities, and work spaces. Additionally, institutions provide support in other areas such as start-up costs. The institutional support for research often comes from clinical care revenue.

To measure the comprehensive investment of academic medicine in research, the Association of American Medical Colleges (AAMC) partnered with business office and research leaders at U.S. medical schools and engaged Huron Consulting Group to develop a survey tool that allows consistent reporting of the investment in medical research across medical schools. The survey tool provides: 1) a measure of the overall institutional investment for every extramural dollar received for research and 2) the distribution of institutional investment across subcategories.

Forty-six institutions collaborated with the AAMC and Huron on this effort. These institutions each received between \$26 million and \$751 million in external funding (total direct costs) for medical research in 2013. **The average medical school investment was an additional \$0.53 for each dollar of sponsored research received.** This accounted for an average investment of \$111 million per medical school.

The estimates of investments are over a single year; however, research expenditures and investments vary from year to year at an institution, with one-time major investments occurring sporadically. While the magnitude of U.S. medical school investment is significant, it cannot be a substitute for sustained federal investment in medical research funding.

Medical research has improved the health of Americans, bolstering both the length and quality of life. For example, the survival rate for children with the most common childhood leukemia is now 90 percent, and the five-year breast cancer survival rate has increased from 75 percent in the mid-1970s to 90 percent in 2010.^{1,2} Research conducted at medical schools and teaching hospitals has also fueled the U.S. economy and spurred innovation.³

Medical research advances have been possible because of investments by the federal, state and local government, industry, foundations, and academic institutions. The NIH is the largest federal medical research sponsor, with an annual budget of approximately \$30 billion.⁴ NIH's extramural budget goes to more than 300,000 researchers at more than 3,000 universities and research institutions. More than half of this funding, close to \$13 billion in FY 2013, supports researchers at the nation's medical schools and teaching hospitals.⁵

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U.S. medical schools and affiliated health systems have historically invested in medical research to supplement and leverage extramural funding. The breadth and depth of these investments reflect the complexity of what it takes to engage in cutting-edge medical research. NIH funds help cover direct costs incurred by investigators for executing research projects, as well as facilities and administrative (F&A) or indirect costs, which reimburse institutions for costs not directly related to an individual research project but are essential to support the research endeavor. These F&A charges include costs of buildings (operations, maintenance, and depreciation), equipment depreciation, information systems, environmental health and safety, grant management, and many other support costs. Institutions negotiate F&A rate proposals with the federal government based on real costs incurred in accordance with guidelines specified in the Office of Management and Budget Uniform Guidance.⁶ However the actual F&A reimbursement is less than the calculated and negotiated rate, leaving a gap in coverage of those costs associated with research.⁷ **Many research sponsors (e.g., private, state, foundation) provide far less than the federally negotiated F&A rate, leaving more costs unrecovered.**

¹ Hunger SP1, Lu X, Devidas M, Camitta BM, Gaynon PS, Winick NJ, Reaman GH, Carroll WL. Improved survival for children and adolescents with acute lymphoblastic leukemia between 1990 and 2005: a report from the children's oncology group. *J Clin Oncol*. 2012 May 10;30(14):1663-9.

² Howlader N, Noone AM, Krapcho M, Garshell J, Miller D, Altekruse SF, Kosary CL, Yu M, Ruhl J, Tatalovich Z, Mariotto A, Lewis DR, Chen HS, Feuer EJ, Cronin KA (eds). SEER Cancer Statistics Review, 1975-2011, National Cancer Institute. Bethesda, MD, http://seer.cancer.gov/csr/1975_2011/, based on November 2013 SEER data submission, posted to the SEER web site, April 2014.

³ Association of American Medical Colleges. 2011. The Economic Impact of Publicly Funded Research Conducted by AAMC-Member Medical Schools and Teaching Hospitals - A Report Prepared for the AAMC by Tripp Umbac. Washington, DC. Retrieved from <https://www.aamc.org/download/265994/data/tripp-umbach-research.pdf>

⁴ See http://www.nih.gov/about/director/budgetrequest/fy2016_directorsbudgetrequest_slides.pdf accessed 2/9/2015, accessed 2/9/2015.

⁵ NIH Reporter search using FY 2013 data. Organization type = Medical schools and independent teaching hospitals divided by extramural funding total. <http://projectreporter.nih.gov/reporter.cfm>

⁶ See <http://www.gpo.gov/fdsys/pkg/FR-2014-12-19/pdf/2014-28697.pdf>, accessed 2/9/2015.

⁷ Ledford H. Indirect costs: keeping the lights on. *Nature*. 2014 Nov 20; 515(7527):326-9.

Increased administrative requirements and other changes, such as caps on recovery of administrative costs or support of investigator salaries (salary cap), have further increased the amount of subsidy required from academic institutions' own resources.

This gap in the direct and F&A recovery for sponsored research represents one area where institutions make significant financial investments with their own resources. Institutional funds in support of externally funded research projects include costs that are under-recovered because of federal regulatory guidelines (e.g. over the salary cap cost sharing, mandatory cost sharing, administrative cap on F&A)⁷. **The institution supports costs associated with bringing in faculty (recruiting, establishing research laboratories, and startup costs) and developing ideas that are the basis for grant proposals.** An example of an institutional effort that supports idea development is a medical school-supported internal grant program that provides funds for pilot projects.

Recent strains on federal research support—the \$85 million in budget cuts from sequestration in 2013 on top of the long-term stagnation in NIH funding—have resulted in a downward trend in federal support for research (after adjusting for inflation) and increased budgetary pressures.⁸ Increased administrative requirements and other changes, such as caps on recovery of administrative costs or support of investigator salaries (salary cap), have further increased the amount of subsidy required from academic institutions' own resources.^{9,10}

To measure the comprehensive investment of academic medicine in medical research, the Association of American Medical Colleges (AAMC) partnered with business office and research leaders at U.S. medical schools and engaged experts from Huron Consulting Group's Higher Education Practice (Huron) to develop a tool that allows for consistent reporting of the investment in medical research across medical schools. The survey tool provides: 1) a measure of the investment of AAMC member medical schools for every extramural dollar received, and 2) the distribution of institutional investment across subcategories.

Methodology

On November 1, 2013, the AAMC convened a group of eight principal business officers and four deans of research from 12 accredited U.S. medical schools and representatives from Huron. This group designed the Investment in Research Survey Tool, and developed definitions and instructions for the survey instrument. On April 2, 2014, the survey was distributed to a pilot group of 12 institutions represented by research leaders and principal business officers at the November 1, 2013

⁷ See Appendix

⁸ See http://www.aas.org/sites/default/files/Agencies_0.jpg, accessed 2/9/2015

⁹ http://grants.nih.gov/grants/policy/fy2012_salary_cap_faqs.htm, accessed 2/9/2015

¹⁰ See Federal Demonstration Partnership. 2012 Faculty Workload Survey Research Report.

See http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_087667.pdf, accessed 2/9/2015.

The average medical school investment applied to externally supported research projects was an additional **\$0.53 for each dollar of sponsored research received.**

meeting. Eleven institutions responded to the survey by June 26, 2014, and provided additional feedback regarding the survey instrument and definitions.

On August 1, 2014, the updated survey was distributed to a total of 57 (including the 12 pilot) institutions. Responses were received from 46 institutions by November 1, 2014. The overall response rate for all participants was 81 percent. As survey responses were received, Huron contacted respondents to discuss data accuracy and methods of reporting. Eight institutions reported incomplete data because of limitations in data reporting from their financial systems. Therefore, the information from these institutions could not be included in the results reported below.

Institutional research expenditures were calculated by summing total direct costs of institutional-funded research, unrecovered F&A subsidy related to organized research and other sponsored activities, and F&A subsidy related to the institutional subsidy of direct research expenditures.¹¹

Results

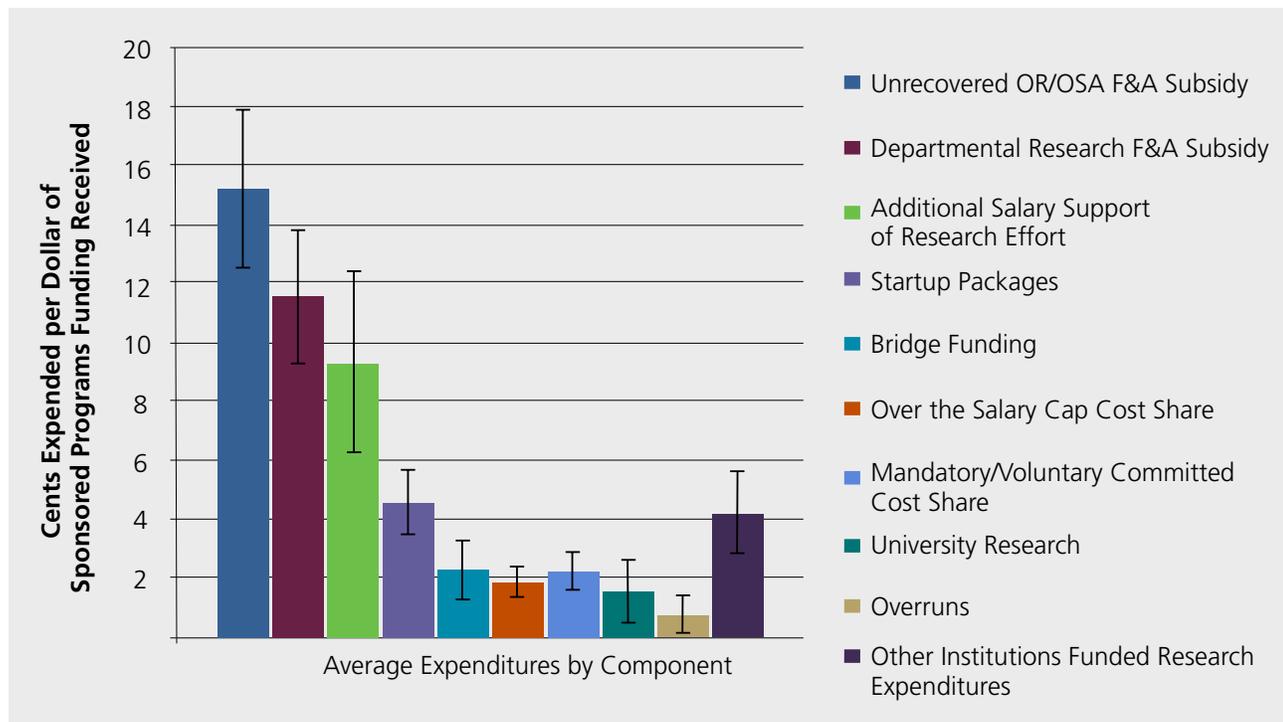
The results are based on investments for an institution’s 2013 fiscal year. The range of the respondents’ total direct costs for sponsored research was \$26 million to \$751 million, with 22 of the medical schools receiving less than \$150 million in funding and 24 institutions receiving greater than or equal to \$150 million in funding for 2013. Eleven of the medical schools were located in the Northeast, 15 in the South, 12 in the Midwest, and 8 in the West. Twenty-eight of the medical schools were public institutions and 18 were private institutions.

The main finding is that the average medical school investment applied to externally supported research projects was an additional \$0.53 for each dollar of sponsored research received. **This amounted to an average investment of \$111 million with a 95 percent confidence interval between \$90 million and \$132 million per medical school (Table 1).**

Table 1. Institutional Research Expenditures in 2013	Institutional Expenditures	
	Total Institutional Research Expenditures	Institutional Research Expenditures Expressed as per Dollar of Sponsored Program Dollars Received
Average	\$111,151,553	\$0.53
95% Confidence Interval	± \$21,143,786	\$0.07
Sample Size	38	38

¹¹ See Appendix for Definition of Terms.

Figure 1: Institutional Research Expenditures by Subcategory—Breakdown of the \$0.53



*Error bars represent 95% confidence intervals

The largest expenditures were incurred to cover unreimbursed F&A costs, with \$0.15 going to support unreimbursed indirect costs from extramural funds and \$0.12 going to support F&A costs associated with intramural funds provided by the institution (Figure 1). The other categories are additional salary support of the research effort, startup packages for recruiting new scientists, mandatory and voluntary committed cost sharing, cost overruns, and other institutionally funded research expenses not specified or included in the other categories.

Discussion

The data were collected from a survey tool that provided systematic and unified definitions of the expenditures for each institution. **The results indicate a substantial investment in medical research by U.S. medical schools to cover gaps and leverage extramural funding as well as provide direct support for research in 2013.** The findings are based on investments over a single year; however, research expenditures and investments can vary from year to year at an institution, with one-time major investments occurring sporadically.

The findings from the use of this survey tool reflect the commitment of academic medicine to medical research.

For example, recruitment of new research faculty requires a significant one-time investment in startup costs and establishing a new research center or program may require a one-time major investment, which is not incurred on an annual basis.

These findings capture the major investments by U.S. medical schools critical to ensuring the advancement of health through medical research. Recent breakthroughs in technologies to diagnose and treat diseases demonstrates that the investments in medical research have proved to be vital. However, the need for investment comes at a time when the financial underpinning of academic medicine is facing significant downward pressures. These pressures include reduced federal funding for research and decreases in Medicare payments such as reductions in the disproportionate shared hospital payments for providing care for underinsured patients. These downward pressures hamper the ability of academic medicine to improve health through providing patient care, training the next generation of physicians and scientists, and advancing discoveries through medical research.

These findings reflect the commitment of academic medicine to medical research. The AAMC will make the survey tool freely available to its member institutions to estimate their investments and compare them to the aggregate data. As substantial as the institutional investments are, they cannot replace the loss of federal funding incurred over the past few years. To continue the success of the medical research enterprise, federal funding must be predictable, consistent, and sustainable.

APPENDIX Additional Salary Support of Research Effort – Additional direct cost salary expenditures from institutional accounts used in support of internally funded research efforts.

Bridge Funding – Direct cost expenditures from institutional funds associated with bridge funding or interim support for continuing investigators. Bridge funding is a more structured form of research support, which could include a formalized application for these funds, a defined amount of support, and the timeframe over which the funds may be used. Bridge funding provides support for researchers who have promising lines of inquiry, but temporarily have lost support because of the highly competitive nature of research funding.

Cost Share – Direct cost expenditures associated with mandatory and voluntary committed cost sharing related to all sponsored program types. Mandatory cost sharing is required by the terms of the project, while voluntary committed cost sharing is not, but is documented and quantified in the proposal and becomes mandatory when the proposal is accepted.

Facilities and Administrative (F&A) or Indirect Costs – Institutional reimbursement for costs that are not directly related to an individual research project but are essential to support the research endeavor. These charges include costs of buildings (operations, maintenance, and depreciation); equipment depreciation; information systems; environmental health and safety; grant management; and many other support costs.

Institutional Research Expenditures – Costs calculated by adding Institutional Funded Research Total Direct Costs (TDC); unrecovered F&A subsidy related to organized research and other sponsored activities; and additional F&A subsidy related to the institutional subsidy of direct research expenditures.

Organized Research – All research and development activities of an institution that are separately budgeted and accounted for. Includes Sponsored Research, which is sponsored by federal and non-federal agencies and organizations, as well as University Research, which is separately budgeted and accounted for by the institution under an internal application of institutional funds.

Other Sponsored Activities – Programs and projects financed by federal and non-federal agencies and organizations that involve the performance of work other than instruction and organized research. Examples of such programs and projects are health service projects and community service programs.

Overruns – Direct cost expenditures from institutional accounts used to fund cost overruns on sponsored programs as a result of overspending on individual awards. These include expenditures where funds have been moved during the current year from a sponsored account to an institutionally funded account.

Sponsored Programs Expenditures – Costs calculated by adding Sponsored Programs TDC and Sponsored Programs F&A Expenditures.

Startup Packages – Direct cost expenditures from institutional funds associated with recruiting or attracting new researchers to the institution, including startup costs.

Over the Salary Cap Cost Share – Direct cost expenditures associated with cost sharing that resulted from exceeding sponsor-imposed salary caps, such as the NIH Salary Cap, on all sponsored program types.

University Research – Direct cost expenditures associated with activities that meet the Office of Management and Budget Uniform Guidance definition of University Research: all research and development activities that are separately budgeted and accounted for by the institution under an internal application of institutional funds. These funds typically are awarded through an internal proposal submission and evaluation process.