Trends in NIH Funding to Medical Schools in 2011 and 2020

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Abstract

Purpose
To examine trends in National Institutes of Health (NIH) funding to U.S. medical schools and their academic departments and the amount of awards provided by each of the NIH institutes.

Method
All data on NIH awards to U.S. medical schools from 2000 to 2020 are publicly available and were obtained from the NIH Research Portfolio Online Reporting Tools and Blue Ridge Institute for Medical Research. These data include the value and number of awards to each medical school, medical school department, medical school location, principal investigator, and the NIH awarding institute. Trends in the inflation-adjusted awards from 2011 to 2020 were calculated and a comparison of the awards made in 2011 and 2020 was performed.

Results
The total NIH budget increased by 16.1% from 2011 to 2020. The allocation of NIH funds to medical schools increased 26.3% ($13.7 billion to $17.3 billion) during this interval. In 2020, 29.3% of all medical school NIH funds were allocated to departments of internal medicine/medicine. Psychiatry was the second ranking department, which was followed, in order, by pediatrics, neurology, and microbiology/immunology/virology. The National Cancer Institute, National Institute of Allergy and Infectious Diseases, and National Heart, Lung, and Blood Institute were the top medical school funding institutes in 2011 and 2020. Medical schools as a group continue to receive the greatest percentage of NIH funding. Funding to clinical science departments increased by a larger percentage than that to basic science departments (35.3% vs 10.9%, respectively) over the 2011–2020 interval.

Conclusions
Funding for clinical science departments is increasing at a faster rate than that of basic science departments. However, that so much investigation in basic science and clinical science departments is performed by personnel with a PhD degree indicates the goals and methods of the basic and clinical sciences may not be so different.

Medical schools are vital to the health of populations in the United States and the world because of their role in training health care providers and advancing medical research and standards of clinical care.[1,2] In 2020, medical schools in the United States received about $17 billion in federal support from the National Institutes of Health (NIH) and about $4 billion from the Centers for Disease Control and Prevention, Food and Drug Administration, Veterans Health Administration, and Health Resources & Services Administration.[3] Additionally, in 2020, medical schools received about $12.6 billion in grants and contracts from nonfederal sources, such as the American Cancer Society, American Heart Association, Howard Hughes Medical Institute, and pharmaceutical and biotechnology industries.[3] However, there are longstanding concerns about the equity, or lack of thereof, of research funding distribution.[1] Moreover, as health care reimbursement rates and state support for public medical schools and public universities has decreased, these organizations are under significant financial pressure to adequately support research.[2] Thus, it would be helpful to quantify NIH funding to both public and private organizations. To this end, we at Blue Ridge Institute for Medical Research (BRIMR) used publicly available data obtained from the NIH to examine trends in NIH funding to U.S. medical schools and their academic departments. We also examined the amount of the awards provided to medical schools by each of the NIH institutes.

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Method

All data regarding grants from the NIH to U.S. medical schools from 2000 to 2020 are publicly available and were obtained from the NIH Research Portfolio Online Reporting Tools (RePORT) and BRIMR.[4,5] These data include the value (in dollars) and number of awards to each medical school by medical school department, medical school location, principal investigator, and NIH awarding institute. We made several hundred corrections in the NIH data based on feedback that we received from numerous organizations.[6] These corrections involved changes in the crediting of awards to schools (e.g., changing the School of Public Health to the School of Medicine) or to departments (e.g., changing the Department of Neurology to the Department of Neurosurgery). However, the total dollar allocations listed in the BRIMR files were exactly the same as those found in NIH RePORT (all of which were corrected for inflation). Additionally, the total NIH appropriations from 1938 to 2020 are listed on the NIH website.[7]

Medical schools were ranked according to their research activity, which we defined as the total support in NIH grant dollars received in a U.S. government fiscal year (i.e., October 1–September

30). To analyze the totality of funding for 2011 and 2020, we grouped schools in the following fashion: tier 1 schools were those that ranked from 1 to 10, tier 2 ranked from 11 to 30, tier 3 ranked from 31 to 50, tier 4 ranked from 51 to 100, and tier 5 ranked from 101 to 139 (in 2011) or 140 (in 2020). We computed the total, mean, and median of all NIH funds as well as the number of awards that each tier and department received. We also determined the value (dollar amount) that the various NIH institutes granted to medical schools and their departments. The results are presented in terms of 2020 dollars, with an adjustment for inflation according to the Biomedical Research and Development Price Index of the NIH for the 2011 data.[8] That is, using this index, we converted 2011 dollars to 2020 dollars by multiplying by 1.16007.

Results

Distribution of NIH awards to medical schools, principal investigators, and departments

In 2020, the NIH awarded medical schools a total of 32,688 grants that supported individual research projects, career development awards, training grants, and program project grants. Together these grants were worth $17.3 billion; this value excludes NIH research and development contracts owing to the inability to identify whether these contracts were awarded to medical school or nonmedical school components of recipient organizations. In 2011, about 38.1% ($13.7 billion in 2020 dollars) of the total NIH budget was distributed to medical schools. In 2020, this increased to about 41.7% ($17.3 billion) of the total NIH budget. Based on 2020 dollars, the total NIH budget increased by 16.1% from 2011 to 2020. These data indicate the NIH budget and NIH awards to medical schools increased modestly in inflation-adjusted dollars over the past decade. Medical schools as a group continue to receive the greatest percentage of NIH funding.

The proportion of research grants awarded to medical schools with the greatest research activity as assessed by dollars of NIH funding remained relatively constant between 2011 and 2020, with tier 1 schools receiving nearly 30.0% of the total awards (Table 1 and Supplemental Digital Appendix 1 at http://links.lww.com/ACADMED/B333). Tier 2 schools received 33.4% of the funds in 2011, which increased to 36.3% in 2020. Tier 3 schools received about 18.0% of the total funds in 2011 and 2020. In contrast, the fraction of funds to tier 4 schools decreased from 16.7% in 2011 to 14.2% in 2020. Similarly, the funding of tier 5 schools decreased from 1.8% in 2011 to 1.3% in 2020. These data indicate the total medical school funding to the tier 1 plus tier 2 schools during this period increased from 63.0% to 66.1%. The mean dollar amount of grants decreased moving from the tier 1 to tier 5 schools in 2011, and these differences were more pronounced in 2020. That the dollar amount of the mean award was about 30.0% larger than the median award in 2011 and 2020 reflects the skewness of the award data and the effect of large grants on the overall distribution.

The data show that the NIH funded 27,835 awards to 18,900 principal investigators in 2011, and this increased to 32,688 awards to 21,415 principal investigators in 2020. The number of awards increased 17.4% and the number of principal investigators increased 13.3% during this time frame.[5]

The NIH Worldwide master file (available from NIH RePORT) includes 45 different categories under the rubric of department. These categories include traditional basic science and clinical science departments, as well as several catchall affiliations (e.g., other clinical sciences, other basic sciences). In 2011, the data indicate 26.8% of all NIH awards ($3.7 billion of 2020 dollars) allocated to all medical schools were given to departments of internal

Table 1

Allocation of National Institutes of Health (NIH) Grant Dollars to Medical Schools (MSs), 2011 and 2020[a]

MS tier	MS rank	Total NIH awards	% of total NIH awards for year[b]	No. of grants	Mean NIH awards	Median NIH awards
2011						
1	1–10	$4,041,241	29.6	7,913	$511	$377
2	11–30	$4,560,765	33.4	9,039	$505	$372
3	31–50	$2,529,971	18.5	5,376	$471	$370
4	51–100	$2,282,067	16.7	4,897	$466	$357
5	101–139	$246,659	1.8	610	$404	$355
Total	1–139	$13,660,703	100	27,835	$491	$369
2020						
1	1–10	$5,158,741	29.8	9,131	$565	$393
2	11–30	$6,288,019	36.3	11,806	$533	$388
3	31–50	$3,170,691	18.3	6,131	$517	$378
4	51–100	$2,465,604	14.2	5,086	$485	$371
5	101–140	$226,241	1.3	534	$424	$359
Total	1–140	$17,309,296	100	32,688	$530	$383

[a]Years are U.S. government fiscal years (i.e., October 1–September 30). Awards in thousands of inflation-adjusted 2020 dollars, as calculated according to the Biomedical Research and Development Price Index of the NIH.[8]

[b]Percentages may not equal 100% due to rounding.

medicine/medicine; this increased to 29.3% ($5.1 billion) in 2020 (Table 2 and Supplemental Digital Appendix 2 at http://links.lww.com/ACADMED/B333). The growth of departments of internal medicine/medicine as large units was fostered by the increase of federal funding for research, graduate medical education, and patient care in the 1950s and 1960s.[9] Of historical interest, the initial departments at Johns Hopkins School of Medicine in 1892 included medicine, surgery, pathology, and gynecology. In our study, the top 5 departments (in order, internal medicine/medicine, psychiatry, pediatrics, neurology, and microbiology/immunology/virology) received a similar fraction of the funds (about 50%) earmarked for medical schools in both 2011 and 2020.

We tallied the total dollar amount of the awards allocated to each medical school department and the size of the mean and median award in 2011 and 2020 (Table 2). Going from 1 to 5 in 2020, the traditional departments with the highest median total dollar amounts were radiology ($437,000), psychiatry ($422,000), family medicine ($417,000), public health and preventive medicine ($409,000), and neurology ($402,000). At the low end of the scale was pediatrics ($361,000), dermatology ($356,000), biochemistry ($355,000), orthopedics ($346,000), and obstetrics and gynecology ($335,000). The mean and median for all awards in 2020 were $500,000 and $379,000, respectively. Based on the 2020 data, calculations indicate the median award to all clinical science departments was about $388,000 and the median award to all basic science departments was about $369,000. The data show that from 2011 to 2020 there was a 10.9% increase in inflation-adjusted funding to the basic sciences that was exceeded by a 35.3% increase in funding to the clinical sciences. All basic science departments (except for biochemistry and physiology) and all clinical departments (except for urology) experienced relative increases in funding.

We examined the trends in U.S. government funding to the NIH from 2000 to 2020 based on inflation-adjusted 2020 dollars and performed a comprehensive comparison of the awards made in 2011 and 2020. There was an increase in the total NIH budget from 2000 to 2003 that leveled off and then declined until 2008.[10] The 2000–2003 increase followed a doubling of the NIH budget from 1994 to 2003.[10] Government funding of the NIH remained flat from 2008 through 2010 and then declined again until 2013.[10] The total NIH budget steadily increased from about $35.2 billion in 2015 to about $43.5 billion in 2020 (Figure 1). NIH funding to all medical schools, tier 1 plus tier 2 (top 30) schools, and tier 1 (top 10) schools followed a similar trajectory. Tier 1 plus tier 2 schools received 22.5% of the total NIH budget in 2011, and this increased to 26.3% in 2020. The increase in medical school funding from 2011 to 2020 was due to a 17.4% increase in the number of awards (from 27,835 awards in 2011 to 32,688 awards in 2020) and a 26.3% increase in the dollar amount of the awards (from $13.7 billion in 2011 to $17.3 billion in 2020). Based on inflation-adjusted 2020 dollars, the greatest allocations to medical schools occurred in 2020. In contrast, the total inflation-adjusted NIH budget was greatest in 2003 and 2004. The United States spends about $3.6 trillion or about 18% of its gross national product on health care.[11] Thus, the total NIH 2020 budget—not just that dispersed to medical schools—corresponds to only 1.25% of U.S. health care costs.

Distribution of awards granted by the NIH institutes

Every grant identification number has 2 letters that denote the funding institute. For example, all grants allocated by the National Cancer Institute (NCI) are identified by the letters CA. Using these identification numbers, we computed the dollar amount of the awards allocated by the 25 NIH institutes (Table 3 and Supplemental Digital Appendix 3 at http://links.lww.com/ACADMED/B333). The NCI, National Heart, Lung, and Blood Institute (NHLBI), National Institute of Allergy and Infectious Diseases (NIAID), National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), and National Institute of Neurological Disorders and Stroke (NINDS) were the top 5 institutes, in that order, that supported medical schools in 2011, making up 55.8% of total medical school funding. The NIAID, NCI, NHLBI, National Institute on Aging (NIA), and NINDS were the top 5 institutes, in that order, that supported medical schools in 2020, making up 54.5% of total NIH funding to medical schools. In 2011, 38.1% of the total NIH budget was provided to medical schools and this increased to 41.7% in 2020. Of note was the change in the budget for the NIA; it increased from $1.3 billion (ranking 10th overall among NIH institutes) in 2011 to $3.5 billion (ranking 4th overall) in 2020, representing a 178% increase. In 2020, the National Center for Advancing Translations Sciences, National Institute of Arthritis and Musculoskeletal and Skin Diseases, NHLBI, NINDS, NIDDK, and National Institute of Biomedical Imaging and Bioengineering allocated more than half of their total budgets to medical schools.

Changes in medical school rankings

The relative ranking of medical schools was somewhat fluid, as our data indicate that large changes in rankings occurred in lower-ranked schools, but large changes in rankings were uncommon in higher-ranked schools (see Supplemental Digital Appendix 4 at http://links.lww.com/ACADMED/B333). However, 4 schools that were lower-ranked schools in 2011 moved into the top 10 in 2020, including the University of California, Los Angeles (from 12 to 2), Columbia University (from 14 to 5), Stanford University (from 13 to 7), and Duke University (from 11 to 10).[5] Moy et al previously reported that it is unusual for a school to move into the top 50 from a lower rank.[1] Confirming this supposition, we found that only the University of Arizona, which moved from 65th to 45th, and the University of Kentucky, which moved from 58th to 50th, moved into the top 50 during the 2011–2020 interval.

Geographical distribution of NIH funds

The top 10 NIH-funded states for medical schools in 2020 include, in order, California, New York, Pennsylvania, North Carolina, Texas, Illinois, Maryland, Massachusetts, Connecticut, and Missouri. The 10 leading states and territories for medical school funding per capita were Connecticut, Maryland, the District of Columbia, New York, Vermont, Massachusetts, Pennsylvania, Missouri, North Carolina, and Minnesota. Although California ranked first in total medical school funding with $2.6 billion in 2020, it ranked 12th in per capita funding (about $66). Connecticut ranked first in per capita funding (about $160). Complete per capita and total

Table 2

National Institutes of Health (NIH) Funding to Medical School (MS) Basic Science, Clinical Science, or Other Departments or Entities, 2011 and 2020[a]

	2011				2020				
Department or entity	Total MS awards	% of all MS awards[b]	Mean MS awards	Median MS awards	Total MS awards	% of all MS awards[b]	Mean MS awards	Median MS awards	% increase in MS awards from 2011 to 2020
Basic sciences									
Anatomy/Cell biology	$467,795	3.4	$406	$369	$502,540	2.9	$401	$368	7.4
Biochemistry	$702,138	5.1	$427	$358	$630,600	3.6	$387	$355	–10.2
Genetics	$518,239	3.8	$594	$373	$670,179	3.9	$595	$391	29.3
Microbiology/Immunology/Virology	$720,728	5.3	$469	$389	$813,347	4.7	$463	$386	12.9
Neurosciences	$314,183	2.3	$400	$363	$517,230	3.0	$464	$377	64.6
Physiology	$514,848	3.8	$433	$378	$481,656	2.8	$409	$380	–6.4
Pharmacology	$582,839	4.6	$417	$367	$620,892	3.6	$442	$378	6.5
Total	$3,820,770	28.0			$4,236,444	24.5			10.9
Clinical sciences									
Anesthesiology	$118,645	0.9	$394	$369	$210,329	1.2	$466	$375	77.3
Dermatology	$70,438	0.5	$358	$358	$90,785	0.5	$405	$356	28.9
Emergency medicine	$41,595	0.3	$540	$225	$91,541	0.5	$619	$389	120.1
Family medicine	$63,817	0.5	$449	$353	$94,676	0.5	$476	$417	48.4
Internal medicine/Medicine	$3,657,334	26.8	$562	$373	$5,078,234	29.3	$643	$389	38.9
Neurology	$488,584	3.6	$492	$364	$936,482	5.4	$663	$402	91.7
Neurosurgery	$86,083	0.6	$428	$378	$162,245	0.9	$440	$381	88.5
Obstetrics and gynecology	$181,463	1.3	$496	$348	$198,906	1.1	$430	$335	9.6
Ophthalmology	$226,079	1.7	$481	$420	$302,454	1.7	$413	$389	33.8
Orthopedics	$56,858	0.4	$355	$374	$102,755	0.6	$348	$346	80.7
Otolaryngology	$93,060	0.7	$375	$348	$141,728	0.8	$428	$386	52.3
Pathology	$710,864	5.2	$474	$369	$733,334	4.2	$489	$388	3.2
Pediatrics	$834,489	6.1	$531	$363	$1,021,032	5.9	$554	$361	22.4
Physical medicine and rehabilitation	$17,676	0.1	$307	$252	$45,013	0.3	$446	$381	154.7
Psychiatry	$900,225	6.6	$465	$363	$1,029,327	5.9	$551	$422	14.3
Public health and preventive medicine	$319,941	2.3	$576	$401	$430,252	2.5	$594	$409	34.5
Radiology	$379,151	2.8	$477	$373	$506,787	2.9	$502	$437	33.7
Surgery	$311,754	2.3	$417	$350	$442,522	2.6	$493	$383	41.9
Urology	$74,514	0.5	$500	$330	$58,584	0.3	$393	$364	–21.4
Total	$8,632,570	63.2			$11,676,986	67.5			35.3

(Table continues)

Table 2
(Continued)

Department or entity	2011 Total MS awards	2011 % of all MS awards[b]	2011 Mean MS awards	2011 Median MS awards	2020 Total MS awards	2020 % of all MS awards[b]	2020 Mean MS awards	2020 Median MS awards	% increase in MS awards from 2011 to 2020
Other									
Administration	$23,305	0.2	$752	$205	$7,203	0.0	$720	$667	–69.1
Biology	$155,657	1.1	$371	$374	$157,359	0.9	$426	$367	1.1
Biomedical engineering	$31,408	0.2	$393	$365	$94,581	0.5	$511	$360	201.1
Biophysics	$16,137	0.1	$394	$381	$13,830	0.1	$432	$350	–14.3
Biostatistics and other math sciences	$49,616	0.4	$512	$315	$111,348	0.6	$577	$414	124.4
Dentistry	$970	0.0	$243	$215	$730	0.0	$243	$193	–24.7
Engineering (all types)	$11,667	0.1	$432	$434	$30,094	0.2	$640	$384	157.9
Miscellaneous	$70,405	0.5	$546	$368	$37,246	0.2	$653	$374	–47.1
No code assigned[c]	$0	0.0	$0	$0	$1,682	0.0	$561	$46	—
None[c]	$483,442	3.5	$597	$369	$565,781	3.3	$631	$387	17.0
Nutrition	$4,251	0.0	$354	$373	$3,585	0.0	$448	$462	–15.7
Other basic sciences	$198,616	1.5	$433	$372	$268,003	1.5	$446	$379	34.9
Other clinical sciences	$41,882	0.3	$1,551	$421	$12,170	0.1	$609	$346	–70.9
Other health professions	$44,237	0.3	$481	$292	$40,405	0.2	$511	$337	–8.7
Physics	$3,602	0.0	$327	$284	$4,267	0.0	$474	$475	18.5
Plastic surgery	$509	0.0	$254	$254	$430	0.0	$430	$430	–15.5
Psychology	$8,740	0.0	$576	$408	$10,677	0.1	$485	$188	22.2
Social sciences	$5,905	0.0	$656	$436	$9,890	0.1	$618	$463	67.5
Veterinary sciences	$56,970	0.4	$934	$431	$26,587	0.2	$554	$495	–53.3
Total	$1,207,319	8.8			$1,395,868	8.1			15.6
Totals	$13,660,659	100			$17,309,298	100			26.7
Averages			$481	$347			$500	$379	

[a]Years are U.S. government fiscal years (i.e., October 1–September 30). Awards in thousands of inflation-adjusted 2020 dollars, as calculated according to the Biomedical Research and Development Price Index of the NIH.[8]
[b]Percentages may not equal 100% due to rounding.
[c]No code assigned and none are both labels used by the NIH.

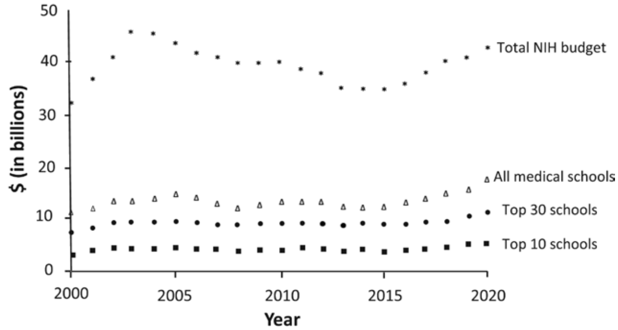

Figure 1 Trends in U.S. government funding to the National Institutes of Health (NIH) and NIH funding to medical schools from 2000 to 2020. Data are in inflation-adjusted 2020 dollars as calculated according to the Biomedical Research and Development Price Index of the NIH.[8] Years are given as U.S. government fiscal years (i.e., October 1–September 30). Top 30 schools are tier 1 and tier 2 schools, and top 10 schools are tier 1 schools.

medical school funding by state data are provided in Supplemental Digital Appendix 5 (at http://links.lww.com/ACADMED/B333). The tallies of NIH funds distributed to each medical school and to each department by state or territory in 2020 are posted on the BRIMR website.[12]

Discussion

Katz and Matter refer to the disproportionate funding of favored institutions as an example of the Matthew effect (i.e., "For to everyone who has, more shall be given," Matthew 25:29, or the rich get richer).[13] We found that the higher-tier medical schools received more total grant dollars than the lower-tier schools. Moreover, the mean dollar amount of grants was larger for the higher-tier schools than the lower-tier schools. The difference in the mean award between tier 1 (1–10) and tier 2 (11–30) schools was $6,000 in 2011, and this difference increased to $32,000 in 2020 (Table 1). Furthermore, a similar trend was observed between tier 1 schools and schools in all other tiers in 2011 and 2020. Though many have argued that there should be a greater dispersal of NIH funding,[13,14] procedures for implementing such plans, while still supporting the best science, have not been forthcoming.

The Association of American Medical Colleges (AAMC) provides information on the faculty makeup of medical schools.[15] These data indicate the number of faculty in basic science departments in U.S. medical schools increased from 18,600 to 19,800 (a 6.5% change) from 2011 to 2020, while the number of faculty in clinical science departments increased from 131,200 to 163,400 (a 24.5% change). The larger number of potential applicants suggested by these data may play a role in the increased funding to clinical science departments that we saw. The AAMC data also indicate the number of investigators with a PhD degree in clinical science departments (~23,000) exceeds the number of investigators with a PhD degree in basic science departments (~15,000).[15] This suggests that the difference in the specific aims and approaches of investigators from basic science and clinical science departments may not be as great as one might have expected.

There was a 17.4% increase in the total number of awards and a 26.3% increase in the dollar amount of awards from 2011 and 2020.[5] These trends, which exclude training grants and other nonresearch awards, indicate the increase in inflation-adjusted NIH funding from 2011 to 2020 that we found was due to increases in both the number of grants and the size of the grants.

Many medical schools have faculty based at independent hospitals or other affiliates that receive NIH awards. Some of the nation's most prominent pediatric centers, teaching hospitals, and cancer or neuropsychiatric institutes administer NIH grants, which necessarily shifts credit away from the medical schools and departments whose faculty practice there.[4–6] Awards to such entities decrease the apparent influence and productivity of medical school faculty. In 2020, independent hospitals received about $2.9 billion from NIH awards and about $2.0 billion of this was credited to medical school teaching hospitals and to investigators with medical school appointments.[12] Do these data suggest that too much NIH support is allocated to medical schools and medical school faculty and that NIH funds should be more widely disseminated to principal investigators elsewhere? This is a question that policy makers can ponder.

The NIH posts data on all extramural grants and contracts at the end of each fiscal year in its Worldwide file, which is the source of all the data that BRIMR uses for its analyses.[6] This spreadsheet credits a single principal investigator for each award, even those with numerous coinvestigators, so we were not able to allocate such awards to multiple investigators. On close examination, coprincipal investigators are often not in the same department as the credited principal investigator and may not even be in same organization. Thus, it is not possible to determine how multi-investigator awards contribute to the trends reported in this article.

The NIH institutes that provided the most funding to medical schools included the NCI and NHLBI in both 2011 and 2020. Because cancer and cardiovascular disease are the leading causes of death in the United States and the Western world, it is fitting that the annual budgets of these NIH institutes are large and that they provide significant support to medical schools. That the NIAID was also a major supporter of research performed at medical schools is appropriate, perhaps now (in response to the COVID-19 pandemic) more than ever. The large increase in the budget of the NIA during the 2011–2020 interval reflects the needs of an aging population in the United States and worldwide. The NINDS experienced a significant budget increase during this time period as well; this is likely related in part to its support of research targeting Alzheimer's disease. Alzheimer's is the fifth leading cause of death in adults over 65 years of age in the United States, and the total health care costs for its treatment were estimated to be $305 billion in 2020.[16]

We believe that our findings will be of interest to clinicians, investigators, department chairs, deans, administrators, and policy makers at medical schools and elsewhere. We included all of our data

Table 3

Funding by National Institutes of Health (NIH) Institutes Ranked by Percent of Total Medical School (MS) Funding, 2011 and 2020[a]

NIH institute, grant ID letters	2011				2020					% increase in MS funding from 2011 to 2020
	Total MS funding	% of total MS funding	TIB	% of TIB	Total MS funding	2020 success rate, %	% of total MS funding	TIB	% of TIB	
NIAID, AA	$1,629,635	11.9	$5,540,457	29.4	$2,396,909	23.1	13.8	$5,885,470	40.7	47.1
NCI, CA	$1,943,953	14.2	$5,868,303	33.1	$2,085,358	15.1	12.0	$6,440,442	32.4	7.3
NHLBI, HL	$1,808,072	13.2	$3,561,094	50.8	$2,025,696	26.3	11.7	$3,624,258	55.9	12.0
NIA, AG	$575,175	4.2	$1,276,635	45.1	$1,600,715	26.3	9.2	$3,543,673	45.2	178.3
NINDS, NS	$1,008,903	7.4	$1,881,637	53.6	$1,356,542	24.5	7.8	$2,444,687	55.5	34.5
NIDDK, DK	$1,240,894	9.1	$2,253,116	55.1	$1,249,488	25.3	7.2	$2,264,314	55.2	0.7
NIGMS, GM	$927,225	6.8	$2,359,329	39.3	$1,154,656	32.8	6.7	$2,937,218	39.3	24.5
NIMH, MH	$727,241	5.3	$1,712,604	42.5	$863,060	24.3	5.0	$2,038,374	42.3	18.7
NCATS, TR	$0	0	$0	0	$654,079	34.4	3.8	$832,888	78.5	—
NIDA, DA	$480,635	3.5	$1,218,702	39.4	$638,623	20.6	3.7	$1,462,016	43.7	32.9
OD, OD	$968,776	7.1	$2,870,729	33.7	$555,773	17.6	3.2	$2,409,387	23.1	–42.6
NICHD, HD	$459,408	3.4	$1,528,803	30.1	$489,898	21.2	2.8	$1,556,879	31.5	6.6
NEI, EY	$386,460	2.8	$813,010	47.5	$390,129	29.5	2.3	$824,090	47.3	0.9
NIAMS, AR	$316,559	2.3	$619,882	51.1	$350,577	18.5	2.0	$624,889	56.1	10.7
NHGRI, HG	$205,580	1.5	$593,372	34.6	$234,492	26.9	1.4	$606,349	38.7	14.1
NIAAA, AA	$207,904	1.5	$531,644	39.1	$227,587	25.7	1.3	$545,373	41.7	9.5
NIBIB, EB	$100,867	0.7	$364,032	27.7	$207,613	21.0	1.2	$403,638	51.4	105.8
NIDCD, DC	$174,137	1.3	$481,609	36.2	$196,158	29.2	1.1	$490,692	40.0	12.6
NIEHS, ES	$182,378	1.3	$884,876	20.6	$185,458	21.2	1.1	$883,598	21.0	1.7
NIMHD, MD	$79,272	0.6	$243,282	32.6	$164,011	11.3	0.9	$335,812	48.8	106.9
NIDCR, DE	$91,137	0.7	$475,174	19.2	$90,730	23.0	0.5	$477,429	19.0	–0.4
NCCIH, AT	$56,145	0.4	$148,156	37.9	$71,897	17.4	0.4	$151,740	47.4	28.1
NINR, NR	$27,891	0.2	$167,492	16.7	$48,618	14.2	0.3	$169,113	28.7	74.3
NLM, LM	$27,788	0.2	$390,634	7.1	$41,408	13.7	0.2	$456,911	9.1	49.0
FIC, TW	$34,622	0.3	$80,551	43.0	$29,820	24.2	0.2	$80,760	36.9	–13.9
Total	$13,660,659	100	$35,865,124	38.1	$17,309,297	22.7	100	$41,490,000	41.7	26.7

Abbreviations: TIB, total institute budget; NIAID, National Institute of Allergy and Infectious Diseases; NCI, National Cancer Institute; NHLBI, National Heart, Lung, and Blood Institute; NIA, National Institute on Aging; NINDS, National Institute of Neurological Disorders and Stroke; NIDDK, National Institute of Diabetes and Digestive and Kidney Diseases; NIGMS, National Institute of General Medical Sciences; NIMH, National Institute of Mental Health; NCATS, National Center for Advancing Translations Sciences; NIDA, National Institute on Drug Abuse; OD, NIH Office of the Director; NICHD, National Institute of Child Health and Human Development; NEI, National Eye Institute; NIAMS, National Institute of Arthritis and Musculoskeletal and Skin Diseases; NHGRI, National Human Genome Research Institute; NIAAA, National Institute on Alcohol Abuse and Alcoholism; NIBIB, National Institute of Biomedical Imaging and Bioengineering; NIDCD, National Institute on Deafness and Other Communication Disorders; NIEHS, National Institute of Environmental Health Sciences; NIMHD, National Institute on Minority Health and Health Disparities; NIDCR, National Institute of Dental and Craniofacial Research; NCCIH, National Center for Complementary and Integrative Health; NINR, National Institute of Nursing Research; NLM, National Library of Medicine; FIC, John E. Fogarty International Center.

[a]Years are U.S. government fiscal years (i.e., October 1–September 30). Awards in thousands of 2020 dollars, as calculated according to the Biomedical Research and Development Price Index of the NIH.[8] The 2020 success rates are from the NIH website.[18]

as spreadsheets in Supplemental Digital Appendixes 1–5 (at http://links.lww.com/ACADMED/B333) so that interested parties can use them to perform additional analyses. Moy et al suggested that there was greater stability for funding in the basic sciences as compared with funding for the clinical sciences.[1] In contrast, however, our data indicate funding for clinical science departments is increasing at a faster rate than that of basic science departments. As noted above, that so much investigation in basic science and clinical science departments is performed by personnel with a PhD degree indicates that the goals and methods of the basic sciences and clinical sciences may not be so different. Charles B. Huggins, the 1966 Nobel Laureate in Physiology or Medicine, who discovered the link between hormones and cancer, wrote that "In experimental medicine the value of research is determined by its content of exact sciences, chemistry or physics; without such aids little of value can be accomplished."[17] This strategy indicates that advances in the clinical sciences are dependent on the findings of the basic sciences. As a major steward of medical research in the nation, the NIH supports fundamental research about the nature of living systems and the goal of such research is to enhance health, lengthen life, and reduce illness and disability.

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