

## Perspective: **Follow the Money: The Implications of Medical Schools' Funds Flow Models**

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### Abstract

Medical schools conduct research, provide clinical care, and educate future physicians and scientists. Each school has its own unique mix of revenue sources and expense sharing among the medical school, faculty practice plan(s), parent university, and affiliated hospital(s). Despite these differences, revenues from clinical care subsidize the money-losing research and education missions at every medical school.

In this perspective, the authors discuss the flow of funds among a medical school, its faculty practice plan(s), parent

university, and affiliated hospital(s). They summarize where medical school revenues come from, how revenues and expenses flow within a medical school and between a medical school and its partners, and why understanding this process is crucial to leading and managing such an enterprise. They conclude with recommendations for medical schools to consider in developing funds flow models that meet their individual needs and circumstances: (1) understand economic drivers, (2) reward desired behaviors, (3) enable every

unit to generate a positive margin, (4) communicate budget priorities, financial performance, and the use of institutional resources, and (5) establish principles for sharing resources and allocating expenses among entities within the institution.

Medical schools should develop funds flow models that are transparent, aligned with their strategic priorities, and reward the behaviors necessary to produce effective collaboration within and across mission areas.

**W**illie Sutton, the infamous bank robber, was once asked why he robbed banks. His answer was simple: "That's where the money is." If medical schools were to limit their activities to "where the money is," they would stop educating students and conducting research, because neither is financially profitable. Instead, they would concentrate on providing clinical services. However, a core mission of medical schools is to educate students, so they cannot elect not to educate future physicians.

All three missions of a medical school—research, education, and patient care—are interdependent, and each supports the others. For instance, learning to practice exemplary medicine requires that students understand the science underlying that medicine—the education mission of medical schools. It requires that role models deliver exemplary care—the patient care mission of medical

schools, which benefits from students, trainees, and practitioners constantly seeking new knowledge and better ways to prevent, diagnose, and treat disease. And it requires that students are exposed to the research that advances the art and science of medicine—the research mission of medical schools, which benefits from a continuously changing cadre of brilliant, inquisitive students and access to real-world clinical challenges.

Unlike Willie Sutton, medical schools cannot go where the money is, which creates a complex array of subsidies that cross missions, activities, faculty, departments, schools, and institutions. These subsidies include both the excess revenues that are generated by one activity but support another and the allocation of the costs of various activities to entities that did not create them.

Articles on funds flow in medical schools tend to focus on the flow of internal revenues and costs within a portion of the school<sup>1</sup> or on the interactions between two entities within the academic medical center (AMC).<sup>2</sup> In this perspective, we discuss, at a highly conceptual level, the flow of funds among a medical school, its faculty practice plan(s), affiliated hospital(s), and parent

university, based on our experiences in planning, budgeting, finance, and administration at a variety of medical schools and AMCs. We summarize where medical school revenues come from, how revenues and expenses flow within a medical school and between a medical school and its partners, and why understanding this process is crucial to leading and managing such an enterprise. We conclude with recommendations for medical schools to consider in developing funds flow models that meet their individual needs and circumstances.

### Sources of Medical School Revenues

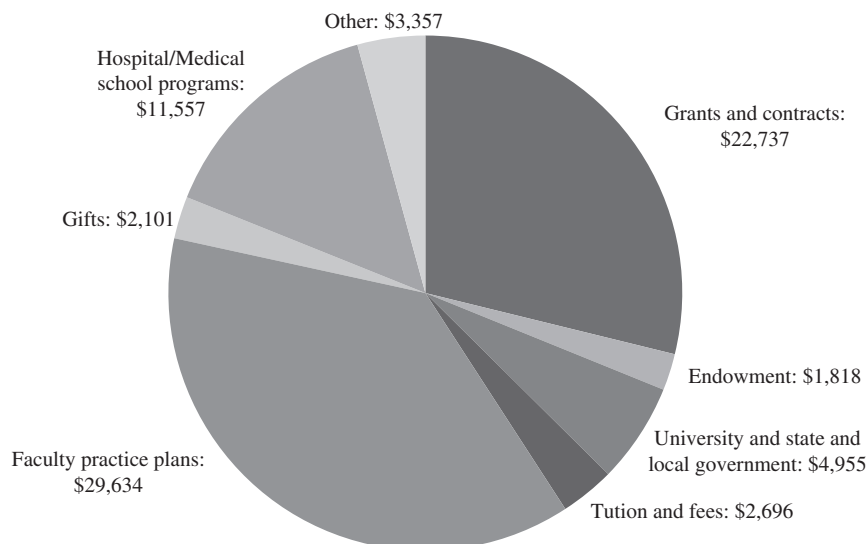
In academic year 2007–2008, U.S. medical schools and their affiliated faculty practice plans generated \$78.9 billion in revenues (see Figure 1).<sup>3</sup>

The clinical enterprise provides over half (53%) of a medical school's revenues. It consists of faculty practice plans, which account for 38% of those revenues and are the single largest source of income within the clinical enterprise, and hospital payments to the medical school or practice plans, which account for 15% (labeled as hospital/medical school programs in Figure 1). Hospital/medical

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**Figure 1** U.S. medical schools' annual revenues in millions by source, 2007–2008. Total revenue was \$78.9 billion.<sup>3</sup>

school program payments are those from the hospital to the medical school or faculty practice plans, the bulk of which are for medical or supervisory services that the hospital purchases from the medical school faculty.

Research grants and contracts represent 29% of revenues. Gifts and expendable earnings of endowment principal account for 5%. Support from the parent university and/or state and local government accounts for just over 6% of revenues. Tuition accounts for less than 4%. All other sources, including license fees, royalties, and fees for continuing medical education, account for the final 4% of revenues. Although the numbers of medical schools, students, residents, and faculty have grown substantially over the last half century (see Table 1), none compare to the growth in revenues. Even after adjusting for inflation, medical school revenues grew 2,492% in the last 50 years.

This extraordinary growth in overall revenues is due in large part to the rise in clinical revenues. Although medical school budgets have increased in absolute terms, only one source of income has increased in relative terms—clinical services (see Table 2).

In addition, the growth in cost, faculty, and space in the academic enterprise—education and research—has been funded in part by clinical service revenues. This cross-subsidization is increasingly difficult to sustain in a market-oriented health care delivery system, where AMC providers need to earn a premium from payers to subsidize the research and education missions of the medical school, while nonacademic providers do not bear the same additional financial burden.

### An Overview of Medical School Funds Flow

AMCs take money from multiple revenue sources and use it to create new knowledge, provide medical care,

and educate the next generation of physicians, scientists, and allied health providers. Because of the seeming arbitrariness of isolating specific revenue streams and tying them to specific “products,” such as new knowledge, AMCs have been described as black boxes. For example, a primary challenge to detailed cost accounting in academic medicine is measuring the cost of faculty time spent in teaching, caring for patients, conducting research, and/or fulfilling administrative duties (serving on promotion and tenure committees, designing the curriculum, mentoring junior faculty, writing grant applications, and more). The combination of products that are hard to define and costs that are hard to attribute to one product (generating new knowledge, caring for patients, or teaching) makes the black box metaphor apt.

### Sources and allocations of medical school revenues

Clinical income generated by the faculty practice plan(s) typically funds clinical departments and covers the expenses of the centralized faculty practice plan, most notably faculty salaries and fringe benefits. Surpluses in clinical revenue from one department cover the expenses of other clinical departments that do not generate sufficient revenue to cover their own costs. Most medical schools use a portion of the remaining clinical revenue to support academic activities. Another important subsidy source is the clinical faculty who pay their salaries with income generated by their clinical activities but spend a portion of their time teaching or conducting research.

The next largest source of revenue for medical schools is research grants and contracts. The portion of these revenues that funds the direct costs of research typically covers some but not all of the costs of the individual principal investigator to whom the grant was awarded and his or her collaborators. The overhead or indirect cost recovery portion of the research grant goes to fund the department, school, or parent university, depending on the funds flow model in place. Extramural funds do not cover the costs of conducting the research. Instead, the AMC is required to subsidize these costs to maintain a robust research portfolio.

**Table 1**  
**U.S. Medical School Growth, 1960–1961 to 2008–2009<sup>3</sup>**

Characteristic	1960–1961	2008–2009	% Change
No. of medical schools	86	126	47
No. of medical students	30,288	76,202	251
No. of residents/fellows	14,417	108,176	750
No. of full-time faculty	11,224	128,683	1,146
Expenditures in millions	\$437	\$78,856	2,492*

\*Consumer Price Index adjusted.

Table 2

**Sources of U.S. Medical School Revenues, 1960–1961 to 2007–2008<sup>3</sup>**

Source	% of Total, 1960–1961	% of Total, 2007–2008
Federal research funding	31	19
Other federal funding	10	3
State/local funding	17	8
Tuition/fees	6	3
Clinical service	6	52
Other income source	30	15

Together, support from the parent university and/or state and local government and income from tuition and endowments and gifts provide the next largest source of revenues for medical schools. Endowments support faculty salaries and other operating expenses. However, donors can set certain restrictions for how institutions use these funds. Other gifts (excluding endowment gifts) are typically given to be used for a specific purpose and, by their one-time nature, are not used to cover recurring expenses. Tuition may be used to defray some of the costs of designing and delivering the medical school curriculum, but, as is the case with research, the total cost of educating students exceeds the revenues brought in by tuition.

Another way to think about revenues is to recognize that the bulk of a medical school's revenues are generated by individual faculty providing patient care or conducting research. Each faculty member, on average, generates over \$400,000 in clinical or research revenues annually.

#### **Relationships between medical schools, affiliated hospitals, and parent universities**

Each medical school has a unique financial relationship with its affiliated hospital(s). For instance, who pays for clinical fellows? How are malpractice expenses apportioned between physicians and the hospital? Who pays for the deployment and maintenance of electronic health records? How are physicians compensated for the hospital administrative and management services that they provide? What does the hospital contribute to subsidize the education and research missions?

Each medical school also has a unique financial relationship with its parent

university. Universities, for example, provide varying degrees of salary support for medical school faculty. Also, they either provide research space to the medical school for free or require the medical school to pay for some or all of the occupancy costs. In addition, any indirect revenues recovered for research activities may be kept by the university, the medical school, or shared with units within the medical school and with individual faculty. Universities may or may not charge the medical school for central expenses, such as legal services or fundraising. The university also may tax revenues generated by the medical school and may require that the medical school contribute over and above their allocated share of the central expenses.

#### **Relationships between entities within medical schools**

Who pays for what, and how revenue is apportioned, is as complicated and potentially contentious an issue between the medical school and its departments, centers, institutes, and programs as it is between the medical school and its parent university or affiliated hospitals. Furthermore, for clinical departments, the funds flow models are often negotiated between the chair and the hospital, and the models may or may not reflect a shared vision between the hospital and the medical school.

For clinical departments, the clinical revenue stream must defray their share of the faculty practice plan and medical school overhead. Also, chairs have a major say in setting salaries and incentives for clinical faculty and in apportioning faculty time among research, patient care, education, and administrative activities. In addition, clinical departments tend to receive the majority of endowments, the legacy of grateful patients. Although clinical departments are net contributors

to the education and research missions, individual clinical departments vary widely in their capacity to contribute their surplus revenues based in part on their specialty.

Basic science departments, on the other hand, have no clinical revenue stream and generally receive few endowments. Typically, they receive substantial support from the medical school and/or parent university to augment their extramural research funds.

Centers, institutes, and programs are individually unique. They may be established to channel donor support, in response to external requirements to secure funding, or to foster collaborative research among departments and schools within the parent university. Centers, institutes, and programs typically require recurring institutional support.

#### **Other funds flow considerations**

One challenge in managing the finances of a medical school is properly associating income and cost for each department, activity, and faculty member. Because faculty members serve all three missions (teaching, research, and patient care), medical schools must estimate the time faculty spend on each activity to account for the total cost of that activity. In addition, medical schools (including their faculty practice plans) have large indirect cost bases (for space, institutional administration, information technology, etc.), which they also must allocate to specific activities. Still, generally accepted accounting principles provide considerable leeway for medical schools to determine how to allocate these costs.

Leaders at medical schools must understand the flow of money and the allocation of expenses to make effective strategic financial decisions. The decentralized nature of medical schools and the sprawl of departments, centers, and institutes (it is not uncommon to have 40 or more such entities within a single medical school), multiple organizations, and disparate accounting systems across schools, faculty practice plans, and affiliated hospitals make understanding funds flow a challenging task.

This understanding is all the more important given the capital-intensive nature of medical schools (i.e., the

need to invest in ever-more-expensive space and technology to support the increasingly sophisticated work of physicians and scientists). The inability of most medical schools to produce balance sheets separate from their parent university's financial statements makes long-term capital planning particularly challenging.

Income statement subsidies, which flow from the clinical enterprise to the research and education enterprise in the form of funding support for faculty salaries and other operating expenses, are widely recognized. However, a second type of subsidy also exists—balance sheet subsidies, which include the affiliated hospitals, parent university, or faculty practice plans providing the capital for the construction of facilities that are used by faculty physicians and scientists. Because data on balance sheet subsidies are not readily available, we will not discuss them in more detail. However, leaders at individual AMCs must understand how these subsidies work to facilitate informed decision making, rational financial planning, and making the best use of limited resources. Balance sheets, which provide information on assets, liabilities, the age of physical resources, days cash on hand, and myriad other variables, are as important as income statements to the understanding of a medical school's financial health.

Today, no medical school revenue source is secure. Federal deficits call into question the likelihood that future federal support for basic and translational research will remain comparable to current per-researcher levels. The cost of public programs (e.g., Medicare and Medicaid) and private employer-sponsored health care coverage has grown at an unsustainable rate. Recent health care reform, with an emphasis on cost containment, threatens the clinical enterprise subsidies that have become the lifeblood of the education and research enterprise at medical schools. Next, because of the recent economic downturn, endowment principal has decreased, reducing the annual operating support that medical schools receive from endowments. Additionally, for fiscal years 2008–2009 and 2009–2010, philanthropic support (i.e., new gifts) fell below the previous year's level.<sup>3</sup> Finally, historic tuition increases are not likely to be sustainable—students are

completing medical school with record debt. The unprecedented level of debt is negatively affecting a range of decisions, from who gets into medical school to students' specialty choices, which are now driven by economic necessity rather than aptitude or passion.

In addition to these pressures, which both public and private medical schools face, public, state-funded medical schools face an additional, unique challenge. Historically, such schools received funding from their states, which paid for education and research activities. This support has been steadily declining in recent years and, in some cases, has been eliminated entirely, leaving schools to make do with less.

### Why Funds Flow Matters

How expenses are allocated and revenues are shared within a medical school helps determine the nature of the institution and its implicit values. Some balance of capitalism (in which the units that generate revenue keep it) and socialism (in which the units that need and deserve support receive it) is found in every medical school. However, where the balance lies, and how it changes over time, can profoundly affect the culture of the medical school and the degree of collaboration across units and mission areas.

To understand the impact that allocating revenues and expenses can have on faculty behavior, consider the increasing number of medical schools that are expecting individual units to bear the cost of their research space. Historically, research space costs were borne by the medical school or parent university. Departments and faculty members regarded the amount of space that they controlled as indicative of their status within the institution. As medical schools started allocating the operating expenses for space to the individual units and allowing those units to keep a portion of the indirect revenue that they earned to pay for that space, faculty members' attitudes changed dramatically. Nonproductive space (where research activity is not funded by extramural research grants and contracts), which had always been someone else's problem, became an issue for department chairs and individual faculty members. Medical schools recovered such space—tens of thousands of square feet at some of our

institutions—which they could redeploy without extended negotiations or preemptive action by the dean.

Consider also payment for teaching. At one of our institutions, a generous policy of paying faculty for all types of teaching, combined with minimal oversight over the creation of new course offerings, led to a proliferation of courses and, eventually, a more focused policy on the type of teaching for which faculty should be remunerated.

AMCs increasingly will be held accountable for the quality, cost, and value of the care that they provide, and for their success not only at discovering new knowledge but also at applying it in their practice of medicine. The loosely connected departments, centers, and institutes must coalesce into a more formal structure, with coordination of care and cooperation in research across departmental and disciplinary lines. How expenses are allocated and revenues are shared can help or hinder this transition.

Increased transparency in the sources and uses of funds will facilitate accountability. For instance, a medical school can hold individual units accountable for covering an agreed-on portion of the costs of their research, and the medical school's central budget then can provide an agreed-on level of subsidy for the costs of the unit's activities. Within each unit, the financial and academic contributions of each faculty member can be calculated, and the medical school can set appropriate annual expectations for each. Such policies can be a powerful lever for changing the culture of a medical school, transforming it into an institution that embraces productivity without sacrificing academic freedom.

Detailing the flow of funds within a medical school promotes realistic strategic planning. If a medical school wants to grow its research enterprise, knowing what the required subsidy to run that enterprise is likely to be and where the money will come from is essential to ensuring the financial viability of the expansion. Similarly, the medical school must understand the cost of reforming the curriculum as part of a decision, for example, to replace large lectures with small, problem-based learning sessions or to create extensive (and expensive) simulation facilities.

Aligning revenues and expenses at the appropriate levels within a medical school facilitates rational decision making by the parties involved. At one of our schools, for example, when medical student tuition flowed directly to the parent university, faculty supported reducing class size. Once the medical school retained control of these funds, faculty support for reducing class size waned.

Understanding the flow of funds within a medical school also contributes to the faculty's sense of a collective, interdependent institution. For example, most medical school clinical departments have traditionally been autonomous units, spanning the medical school, affiliated hospital, and faculty practice plan. Yet, their agendas might or might not have been aligned across these multiple entities. Medical school departments, then, are not unlike the American states in the 18th and 19th centuries—independent actors that ceded little authority to the central, federal government. Historically, this federated model has served medical schools well, as specialties proliferated and revenues poured in to support research and education activities and to reimburse faculty members and the medical school for the costs of clinical care. With the financial challenges that medical schools and their parent universities are now facing, the optimum size of the education and research enterprise is a strategic decision. Skillful leaders must sell the need for and magnitude of the subsidies both within each mission area and across the mission areas for the medical school as a whole.

### **Considerations in Developing and Maintaining a Funds Flow Model**

In managing its finances, every AMC is continuously developing and balancing the trade-offs between principle and pragmatism and between economics and politics. This is an evolutionary process, and each AMC will be in a different stage of development.

As we explained earlier, how funds move into and through a medical school will impact the behavior of its different entities. A well-thought-out, reasonably transparent funds flow model can align behavior with strategic objectives, promote collaboration, and reward behaviors that contribute to the

greater good. A poorly designed or overly secretive funds flow model can impede collaboration, create a “bunker” mentality among faculty, and lead to energy wasted fighting internal battles. Given the external threats to every revenue source that AMCs currently rely on, these internal battles can be more than debilitating—they can threaten the very existence of the institution.

Each AMC must decide on the balance between the capitalist and socialist funds flow models that will best enable it to achieve its strategic objectives. This balance will influence the degree of transparency that makes sense for a specific institution at a particular point in the evolution of its funds flow model.

There are, however, some universal considerations that should prove useful to leaders at AMCs as they develop or expand their own funds flow models.

#### **Understand economic drivers**

Academic medicine is rife with debates about what it costs to educate a medical student, to conduct research, or to deliver a particular clinical service. At most AMCs, these questions cannot be answered with precision, which makes meaningful strategic and financial planning more difficult.

In the absence of perfect information, AMC leaders must share financial information and assumptions, develop a better understanding of the cost of what economists call the “production function,” and agree collectively on what strategies will be pursued, who will pay what portion of the cost of pursuing them, and how the revenues will flow through the combined enterprises. Medical schools are entities that thrive on the multiple talents of their faculty and the synergy among their missions. These complex relationships have created an environment in which reasonable men and women disagree on credit for generating revenue and responsibility for incurring costs.

To understand more fully economic drivers, medical schools should incorporate balance sheet subsidies into their financial planning and decision making.

#### **Reward desired behaviors**

Incentive compensation can be an important tool for aligning faculty's

interests and influencing their behaviors. Yet, the practice has historically been underused in basic science departments. Developing sophisticated measurement systems, which track collaboration and contribution to the overall mission—not just individual or departmental performance—will be vital to identifying and rewarding desired behaviors.

AMC leaders can also encourage desired behaviors by sending the right price signals. Free goods tend to be overconsumed, and faculty are reluctant to surrender space and are often undermotivated to recover institutional costs. Charging for space and other services promotes cost awareness and the efficient use of resources.

#### **Enable every unit to generate a positive margin**

Medical schools employ enormously talented individuals, but they are also burdened by unpredictable exigencies. For individual faculty members, departments, and medical schools to reach their full potential, departments require reserve funds that can be invested in new ventures and that can buffer them against inevitable funding lapses.

Some departments are able to generate a positive margin by providing patient care within a specific specialty or through their interactions with sponsors, donors, or patients. Other departments must rely more heavily on the dean's internal allocations of funds. Those departments that rely on internal funding should have the opportunity to build reserve funds if they achieve agreed-on financial performance and productivity levels. Although this encourages the individual work of each department, it also creates a substantial challenge at the systems level because the faculty practice plan, medical school, and affiliated hospital are often separate entities.

#### **Communicate budget priorities, financial performance, and the use of institutional resources**

Financial information can and should be shared with AMC leaders, who, as a result, will develop a better understanding both of the economic challenges faced by the entire enterprise and of the constraints the dean faces in meeting those challenges. Basic financial information, including annual operating and capital

budgets, financial performance, operating statements, and balance sheets should be widely shared and discussed. Budget allocations should support the strategic priorities of the enterprise, and the fact that they do should be clearly conveyed to all involved. Increased alignment and the integration of budgeting with strategic planning across all AMC departments, centers, institutes, and programs are essential.

### Establish principles for sharing resources and allocating expenses among entities

Although the missions of the parent university, the medical school, the faculty practice plans, and the affiliated hospitals overlap, the business model that supports each entity's mission is different. AMC leaders must enact clear principles for sharing costs, transferring funds, and investing in future opportunities. Without such principles, the medical school's education mission is the most at risk because it has the broadest portfolio and the least reliable funding sources.

### Conclusion

A robust funds flow model is not the silver bullet that will miraculously align efforts across an institution and remove barriers to effective collaboration across units. Effective governance, collaborative culture, and a robust strategy are all key to success. But leading a medical school and its partners is easier when the institution's funds flow model sends the right signals about its values and rewards behaviors that are aligned with the shared values and aspirations that advance education, research, and patient care.

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### References

- 1 Kennedy DW, Johnston E, Arnold E. Aligning academic and clinical missions through an integrated funds-flow allocation process. *Acad Med.* 2007;82:1172–1177.
- 2 Cohen JR, Fox S. Developing a new faculty practice plan with a model for funds flow between the hospital and the plan. *Acad Med.* 2003;78:119–124.
- 3 Association of American Medical Colleges. *AAMC Data Book.* Washington, DC: Association of American Medical Colleges; 2010.