Why Have Academic Medical Centers Survived?

Hamilton Moses III, MD
Samuel O. Thier, MD
David H. M. Matheson, JD, MBA

During the 1990s, predictions of the demise of the academic medical center (AMC) were common.1-3 Some observers even advocated that they fail, viewing them as large, antiquated, and inefficient behemoths.4 Yet, despite many upheavals in medicine since those predictions were made, the demise of the AMC has not occurred. Why were these predictions incorrect and what does it indicate about the current value of the AMC? What does it suggest about the future role of the AMC? What changes will be required to ensure that the AMC remains vital to medicine and society at large?

During 2004, we conducted interviews to gauge opinion on these questions. A selection of teaching and community hospital and their affiliated group practice administrators, insurance and pharmaceutical industry executives, disease association executives, and trustees were included. All had written or spoken on the future of the AMC. Twenty-five invitations were extended to senior leaders in 15 different academic institutions; 23 individuals agreed to be interviewed representing 14 entities (TABLE). Those interviewed included 2 university presidents from institutions with an AMC, medical school deans, vice presidents, or health division chief executive officers (12); hospital/health system presidents, chief executive officers, or trustees (5), and multispecialty physician group heads (4). Thirteen institutions were research-intensive AMCs or their affiliated hospitals and medical groups. Of these, all ranked in the top 30 of National Institutes of Health research and training grant awards. Two were large community hospitals with teaching affiliations.

Interviews were nondirective and open-ended. Interviewees were asked to describe issues, questions, or choices that were most important to them individually and their institution now and during the next several years. It was stressed that comments should apply to their local situation, not what they thought was applicable at other institutions. In addition, 5 senior representatives from research-intensive pharmaceutical or biotechnology companies, foundations supporting research and education entities, and insurance companies were also included. Those responses are not included in the table but they serve to inform the commentary.

Four issues recurred in the interviews: strong clinical demand despite growing competition, continued economic fragility, a need to tie research

Author Affiliations: The Alerion Institute, North Garden, Va (Dr Moses); The Boston Consulting Group, Bethesda, Md (Dr Moses and Mr Matheson); The Massachusetts General Hospital and Harvard Medical School, Boston, Mass (Dr Thier).

Corresponding Author: Hamilton Moses III, MD, The Alerion Institute, PO Box 150, North Garden, VA, 22959 (hm@alerion.us).
Survival of AMCs

The Paradox: Survival Against the Odds

Historically, pessimism about the future of the AMC stemmed from 4 propositions: aggressive clinical competition from community hospitals, single-specialty centers, and private group practices; their fragile economics; a shift of laboratory research and clinical trials to for-profit companies; and the burden of laborious internal decision making spawned by multiple missions of the AMC. Some even saw primary responsibility for postgraduate education shifting to the specialty societies, with financial support from pharmaceutical and device companies. In essence, many predicted that each of the historical roles of the academic center would be usurped by highly focused entities having limited offerings that would be more effective, efficient, and less costly. This would leave the AMC with a narrow range of activities that others did not view as attractive (such as, care of the poor, patients with highly complex needs, and other safety net services), and that would not sustain the AMC’s financial or educational needs, and would inevitably lead to a loss of talent. What has really occurred?

Clinical Competition. AMCs pride themselves on their ability to provide highly specialized clinical services, that require clinicians with considerable expertise in multiple areas. Whereas, some large community hospitals have sought to mimic the quality and range of offerings of the AMC, few have found this to be fully achievable. Similarly, the advent of single-specialty hospitals (the boutique or “focused factory”) has proved neither consistently attractive to patients and insurers nor financially viable in most locations. Even in areas where many such specialized facilities exist (eg, the US Southwest), our interviews indicate that services in the AMC have continued to experience robust volumes and increasing demand despite growing competition. This apparent anomaly is explained by the disadvantage in the single-specialty hospital of isolating clinical services from one another. For instance, orthopedic, cancer, and cardiac hospitals also need infectious disease and neurological specialists. To the surprise of those who predicted efficiency in specialization, a recent detailed economic analysis showed that differences between academic and community hospital costs were driven primarily by programs and facilities such as trauma and burn centers, specialized intensive care units, and other unique services (eg, transplantation, high-risk obstetrics, inpatient psychiatry) not provided elsewhere in the community.

Economics. The volume and unreimbursed costs of care for the poor and medically underserved, as well as the number of patients with Medicare and Medicaid, account for the largest difference in financial performance between teaching and nonteaching hospitals and their affiliated physician groups. Likewise, when the higher proportion of patients with Medicare and Medicaid are accounted for (payer mix in the lexicon), similar economics have been reported for faculty practice plans in the AMC and private group practice. Although changes in Medicare reimbursement in 2004 did alleviate some of the difference, they were insufficient to do so completely.

However, as the economics of the AMC are becoming better understood, it has become clear that the full costs of medical education and research are not being met, and may well prove unsustainable as the opportunities for cross-subsidies, state appropriations, and philanthropy all become increasingly limited. Estimates of excess costs over revenue (margin) show a range of 6% to 28% associated with these academic activities. The most telling markers of financial distress are the reduced borrowing capacity of medical schools and teaching hospitals and a decline in their bond ratings. This is of particular concern since financing of long-term investments in clinical and research facilities are highly dependent on continuing ability to borrow at favorable cost.

Research and Innovation. Academic investigators have historically been the chief agents who apply basic scientific information to practical clinical use. This activity now commonly referred to as “translational research,” has been challenged by industry, which has sought increasingly to supplant the role of the AMC. The challenge has proven much more difficult than companies expected because an academic environment remains desirable for effective clinical innovation. This has both surprised and dismayed many research sponsors. For example, one reason cited for the decline during the past decade of new drugs entering clinical trial is that pharmaceutical researchers are isolated from their counterparts in academic laboratories. Consequently, potentially useful new technologies, such as combinatorial chemistry and high through put screening, were found to be less productive than predicted.

Table. Ranked Concerns of AMC Leaders

<table>
<thead>
<tr>
<th>Topics</th>
<th>No. of Mentions (%):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reimbursement policy of commercial insurers</td>
<td>23 (100)</td>
</tr>
<tr>
<td>Medicare/Medicaid reimbursement</td>
<td>21 (91)</td>
</tr>
<tr>
<td>NIH policy and budget impact</td>
<td>21 (91)</td>
</tr>
<tr>
<td>Governance and decision-making Operating</td>
<td>20 (87)</td>
</tr>
<tr>
<td>Quality</td>
<td>17 (74)</td>
</tr>
<tr>
<td>Internal organization/departmental structure</td>
<td>15 (65)</td>
</tr>
<tr>
<td>Community physician relationships</td>
<td>13 (57)</td>
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<tr>
<td>Capital for buildings</td>
<td>13 (57)</td>
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<tr>
<td>Legislators and state government</td>
<td>12 (52)</td>
</tr>
<tr>
<td>Capital for programs</td>
<td>11 (48)</td>
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<tr>
<td>Recruitment and retention of faculty</td>
<td>9 (39)</td>
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<tr>
<td>Ties to other university divisions</td>
<td>9 (39)</td>
</tr>
<tr>
<td>Regulatory issues</td>
<td>8 (35)</td>
</tr>
<tr>
<td>Residency and fellowship training</td>
<td>8 (35)</td>
</tr>
<tr>
<td>Community/neighborhood ties</td>
<td>7 (30)</td>
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<tr>
<td>Relations with trustees/board</td>
<td>7 (30)</td>
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<tr>
<td>Community hospitals</td>
<td>6 (26)</td>
</tr>
<tr>
<td>Faculty physician practice plan</td>
<td>4 (17)</td>
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<tr>
<td>Research-clinical balance</td>
<td>3 (13)</td>
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<tr>
<td>Press relations</td>
<td>2 (9)</td>
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Abbreviations: AMC, academic medical center; NIH, National Institutes of Health.
One conclusion is that the right mix of industrialized discovery and insight-driven application is required to achieve greater productivity. The choice of many pharmaceutical and biotechnology companies to locate major new laboratories in or near AMC facilities in the United States, Europe, Australia, and Asia is tangible recognition of the importance of both academic talent and ideas and proximity to patients. For clinical trials, commercial companies and private practice groups have had more difficulty than was predicted in sustaining clinical development due to limited access to well-characterized patient populations, necessary information technology tools, and qualified investigators. These developments in the basic, translational, and clinical realms highlight the interdependence of AMCs’ clinical, research, and academic missions, and reaffirm their value.

**Organization.** Twenty years ago Peter Drucker, a well-known observer of effective management practice, described the AMC as one of the most complex of all modern organizations. He viewed the complexity of the AMC as an adaptive response to the requirements of having multiple missions, and meeting conflicting expectations of diverse internal and external constituencies. In this view, the AMC has been helped, not hindered, by its complexity. Twenty years later, Drucker’s conclusion may—in part—be challenged.

Our interviews suggest a growing sense among industry leaders that rigidity imposed by the traditional departmental structure renders decision making dysfunctional and no longer allows effective balancing of needs. For example, choices for investment and program portfolios require an institution-wide perspective that individual departments may understandably be unprepared to undertake. Further, requirements for multidisciplinary clinical care make traditional medical specialty departments anachronistic because the process of care itself and its economics are no longer linked to a single specialty. This fragmentation of responsibility for care (in part fostered by the different cultures of the specialties) has been recognized as a serious barrier to advancing clinical quality. Remedies for these shortcomings require simplifying the organization and finding alternatives to the generally failed attempts to establish service lines and multidisciplinary centers that often diffuse responsibility without adding efficiency or effectiveness. Those interviewed voiced an appetite for innovative solutions to the dilemma, but were wary of unrealistically facile lessons imported from industry or unproven recipes from the management literature.

Thus the paradox: despite growing competition, adverse economics, and organizational complexity, the AMC has survived. But how must it change in order to become stronger? The mandate of the AMC must be reinterpreted to require a better understanding of the 3 activities central to the enterprise: innovation, early application and dissemination of new knowledge and leadership.

Responsibility for undergraduate medical education is in the sole domain of the medical school and teaching hospital. Because much current attention is devoted to identifying changes needed to equip students to maintain life-long scientific literacy and clinical acumen, we will not comment on them here. Instead, we will focus on other priorities receiving less attention.

**Strategies for Survival**

**Innovation.** AMCs must organize research, not only conduct it. The success of an increasing number of academically based clinical trial groups is an indicator of the demand for this role. Academic clinical trial consortia have been a feature for decades in some fields such as retinal disease and many rare childhood conditions. They are now also common for conditions such as cancer, cardiovascular diseases, diabetes, and the fields of neurology and orthopedics.

Also critical to innovation is the fostering of relationships. Clinical and health service researchers now rely on information held in large databases controlled by insurers and employers that have immense value due to their comprehensiveness. Laboratory research increasingly relies on high-cost laboratory instrumentation, large clinical databases, tissue banks, high-performance computing, and other tools that have high maintenance costs beyond the financial reach of single institutions. Some have suggested that biomedical science will come to resemble physics and astronomy in scale. This trend toward “big science” in biology and medicine means that the AMC will increase in complexity, depending even more on an extensive web of external relationships. The increasing pace of research and need for constant investment in infrastructure makes this inevitable.

Today’s researchers frequently collaborate for short periods to answer specific questions. These self-organizing networks assemble and dissolve quickly once their work is done. The short duration of the interactions proves a growing challenge for research sponsors, as has recently been recognized by the Roadmap Initiative of the National Institutes of Health. Within the AMC, it will further tax the traditional departmental structure and place additional responsibility on academic leaders to manage important external ties.

**Dissemination of New Knowledge and Education.** Before advances enter mainstream clinical practice, a period of early adoption and individualization occurs. While an increasing number of surgical and interventional procedures are now devised outside academic institutions, most new drugs and diagnostic tests come from academic collaboration with industrial sponsors. Truly innovative technologies, such as entirely new classes of drugs and diagnostics, are proving difficult to assimilate and are often confusing to physicians and patients alike. Current examples include pharmacogenomics, genetic predisposition testing (especially for common polygenic disorders), new molecular diagnostic probes for cancer and neurological dis-
ease, and many interventional devices at prototype stage.

The AMC plays a critical role in the early stages of technology evolution. The AMC must also more actively disseminate new technologies once their application has been mastered in appropriate groups of patients and promote the distribution of proven technologies to community hospitals and physicians. In practice, given the financial exigencies of faculty practices and hospitals, it has been tempting to try to maintain control of new technologies beyond the early stage—to hoard them. In addition to being ineffective, such attempts have often resulted in highly destructive competition between AMCs and community-based practitioners. It is important for the AMC to stand above the fray. In the long run, this stance is safe since new technology will always replace the old. Patients will continue to select academic centers where they can rely on informed, impartial advice as choices become more difficult.

We have entered an era when information available to patients is ubiquitous, through the media, pervasive advertising, and the Internet. Much of the information is confusing, contradictory, often based on personal anecdotes, or openly promotional. Consequently, it may be dangerously misleading. Patients are increasingly bewildered by choices they confront and often feel powerless without understandable information, yet they repeatedly assert no wish for a return to paternalistic medicine where decisions are made for them. This increases the need for the AMC to be a responsible partner with patients ensuring that accurate information reaches the public. Few, if any, other existing entities can play this critical role.

The plethora of information and advertising has only increased the need for clinicians to provide interpretation and guidance. It has also changed the questions patients ask. General issues such as “Is autism related to childhood immunization?” now lead to more specific questions, such as “Should my child be immunized?” Our interviews confirm that this type of vexing question is an increasingly common reason for referral. The AMC has a unique responsibility to broker discussions between patients, external research sponsors, and advocacy groups and to strive for objectivity. Ubiquitous conflicting information also highlights the need for the AMC and all physicians to be trusted agents to patients, independent of commercial or noncommercial pressures. Therefore, a commitment to objectivity and academic detachment must be reaffirmed.

Similarly, AMCs should be willing to play an aggressive role in advocating measures for improved clinical outcomes and comprehensive treatment for patients with chronic diseases. Despite many recent publications and growing general awareness of the enormous human and financial costs of medical errors and the neglect of comprehensive approaches to chronic illnesses such as, asthma, diabetes, depression, and cardiovascular disease, meaningful progress has been disappointingly slow. The AMC is one of the few entities that can sustain pressure on legislators, regulators, insurers, and community agencies that is required for development of workable approaches to these intractable problems. National coalitions of major employers, like the Leapfrog Group, and efforts by the insurance industry to address quality and cost are important allies. However, these coalitions are unlikely to be sufficient, because none has the independence required to advocate changes that run counter to their sponsors’ interests, nor have they developed a sufficiently strong voice within the medical community. The AMC should fill that gap.

AMC-led but community-based initiatives in information technology are particularly compelling. For instance, BioCrossroads in Indiana is a cooperative effort of academic and community hospitals, with foundation and corporate partners, to mobilize information for clinical care and research. Similarly, in the early years of Medicare and Medicaid, AMCs sponsored novel community-based clinical services for elderly and poor patients. The almost immediate success of Medicare 4 decades ago has been attributed to the AMCs’ early embrace of their responsibilities to elderly patients.

Leadership. Strong, innovative leaders are required. What experience will they need to be successful? Each AMC must develop a cadre of individuals who have experience outside of academic medicine. Full awareness of the context of modern medicine in light of current scientific, economic, and political events is essential. The short tenure of academic leaders, now less than 5 years for most deans and hospital directors, reflects equally the limitations of current leadership models and the stresses placed on institutions by an unforgiving environment. Short tenure may also reflect limitations in the professional backgrounds and capabilities of those chosen for senior positions. As a remedy, AMCs should encourage aspiring young leaders to gain experience away from academic institutions, especially in settings requiring them to develop skill in negotiation, analysis, or policy. This can occur in government, foundations or companies, and in either public or private settings. Such experience would be invaluable in helping to foster understanding of critical external constituencies and in operating within complex environments.

What Changes Are Required to Meet the Challenge?

We believe 2 fundamental changes must occur: strengthened ties between academic and private practitioners and simplification of AMCs’ organizational labyrinth.

Greater interaction with outside practitioners and patient groups may not be natural for all AMCs. Competition hampers such ties. Yet to meet the quality challenge and fulfill patients’ expectations, the AMC must deliver truly useful knowledge to physicians. Competition between private and academic practitioners is here to stay. It is likely to be made healthier if both groups’
complementary roles are better understood and a common ground is established on which more effective relationships can be built.

We believe that education will be an important element in this rebuilding. In particular, AMCs must regain their primacy in continuing medical education. They are in a favored position to interpret conflicting claims in rapidly moving fields and to counter the current dominance of the pharmaceutical and device industries’ roles in continuing medical education. Consequently, requirements for the faculty’s objectivity and independence must be strengthened.

**Simplifying the Organization.** AMCs have generally failed to solve problems of governance and accountability or to provide analytic and financial tools that today are prerequisites for effective management. We believe a solution lies in distinguishing between clinical, research, and academic activities, then tailoring the organization accordingly.

Both basic and clinical research are collaborative efforts and will likely become more so as large teams and multiple institutions are required to understand disease. Researchers from many different departments will be needed, as well as from outside the AMC. Therefore, the organization that supports research must be flexible to accommodate the changing environment and be ready to accept new challenges in a timely manner. Research should be managed by alternatives to traditional single departments. Temporary collaborative centers should fill that role.

Clinical care, on the other hand, is primarily local. Collaboration among clinicians is usually predictable and can be built into the care model. Therefore, traditional departments will still be needed. External requirements in areas like credentialing those of the residency and fellowship accrediting bodies make clinical departments logical units. The balkanization of clinical care is a danger that should be overcome by full use of information technology. Cultural change is also required, in which expectations for enhanced collaboration becomes an essential element.

Many of the responsibilities of the AMC cannot be met by research centers or individual departments because they have institution-wide implications, require significant investment, and entail difficult choices between competing options. Choosing where to invest is inherently difficult for all organizations, and AMCs have understandably avoided making portfolio choices among equally attractive alternatives. But such choices will be necessary in the years ahead. This raises the question of governance.

In both nonprofit and for-profit entities, effective governance flows from a series of general institutional principles that are well understood and used to measure both short-term performance and long-term impact. Rarely are those principles solely contained in hollow mission statements. Rather, they become imbedded in the actions of those within the enterprise, at junior and senior levels. Successful organizations accomplish this, while unsuccessful ones flounder without a guide to make difficult program and investment decisions.

The importance of establishing explicit nonfinancial as well as financial criteria for evaluation is stressed in the management literature. Useful nonfinancial factors include social and scientific impact, improved accessibility to patient groups in areas of particular expertise, or new collaborations. However, at most AMCs the dimensions are vague or ambiguous. Therefore, they are subject to misunderstanding. As the interviews confirm, rarely do AMCs address tradeoffs between clinical and academic programs. Rarely are sufficient information and analytic tools available to aid the process. This suggests that each AMC should look closely at its roles in more concrete and specific terms than usually occurs, and reinterpret the overarching “patient care, research, and teaching” rubric that is common to all AMCs. The questions become “Where can we really make a difference—in which fields, communities, services, or advocacy efforts?” and “How can we provide the organizational momentum that otherwise would not exist?” Our conversations with leaders confirm their great frustration in applying these principles and increasing difficulty in making necessary choices.

The role of the teaching hospital must also change. In most AMCs, the hospital has provided the organizational framework and momentum for community ties. It has also generated much of the capital to invest in clinical buildings, equipment, and programs. The hospital, not the medical school, has usually been the main link to private practitioners. This is understandable since until relatively recently, reimbursement has favored inpatient care. As outpatient programs have become economically more important, however, the traditional role of the hospital as organizer and source of investment may no longer be necessary or appropriate. This will create changes in power relationships, especially between medical school deans and hospital leaders, as well as their boards, that must be addressed.

There is a parallel need to include other disciplines from the broader university and research communities, particularly mathematics, information technology, engineering, law, economics, and government. Traditional links among schools of medicine, public health, nursing, social work, and other health-related disciplines must also be renewed. Currently, schools of public health and nursing, often marginalized in the past, have become more visible because of domestic security concerns and nursing shortage, respectively. They have also developed strong political and address fields often neglected by the clinical community, such as nutrition, injury prevention, and vaccination policy. Clearly, the AMC has a significant role in fostering close links among all schools related to health. This is not always embraced.

Responsibility falls on the country’s AMCs to do, not just preach.

The institutions and faculties of the AMC have a mantle of responsibility that...
is considerable. They are trusted. They have obligations extending to multiple constituencies, ranging from those conducting the most elegant science to the needs of a single ill individual. That trust must not be squandered. We believe a renewed emphasis on education should serve to temper relentless competitive and economic challenges of the clinical marketplace. Many medical schools are revisiting the needs of students to ensure they are equipped to be scientifically literate and personally effective physicians throughout their lives. Teaching hospitals are actively revisiting educational needs of residents and fellows, now that the initial impact of work-hour reductions is assimilated. Attention to the practicing physician should be next. The AMC must regain the primacy it once held as the source of independent, unbiased, ongoing medical education. This can be accomplished by renewing ties to practicing physicians through talented educational offerings in areas of therapeutic controversy, new techniques, or emerging science. It will not be easy given the growing competition of recent years. Yet, it is important lest we squander the trust historically placed in us.

Financial Disclosures: Dr Moses is a senior advisor and Mr Matheson a senior vice president at The Boston Consulting Group, Bethesda, Md, which actively consults with academic medical centers and pharmaceutical and biotechnology companies in the United States, Europe, and Asia. Dr Moses is also chairman of the Alerion Institute, North Garden, Va, which studies innovation in the sciences and professions. Dr Thier is on the boards of directors of Merck and Co and Charles River Laboratories and is the former chief executive officer of Partners HealthCare, Boston, Mass.

REFERENCES