



# Academic Medical Centers: *The tipping point*

Building sustainable  
strategies for the future



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# Foreword

Academic Medical Centers (AMCs) are at a tipping point: While driven to serve their tripartite mission of teaching, research and patient care, they are susceptible to a myriad of pressures that endanger their long-term viability.

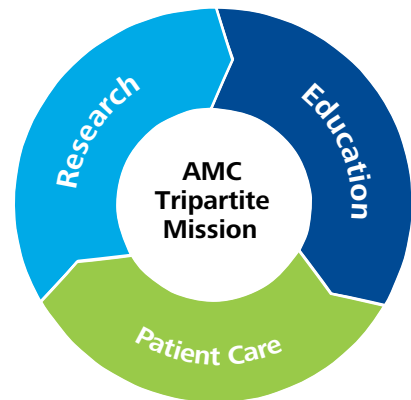
Each of the 126 accredited AMCs in the United States is unique and faces a different set of challenges. There are, however, common issues that require strategic reflection and transformative actions. Failure to respond endangers the important health care sector that AMCs represent – one with a \$451 billion economic impact and jobs for one of every 48 wage earners.<sup>1</sup>

This analysis by the Deloitte Center for Health Solutions, part of Deloitte LLP, shares recent research about the distinct pressures on each element of Academic Medical Centers' tripartite mission. We offer a perspective on opportunities, strategies and innovations that some AMCs have pursued and the questions that will drive their future sustainability.

We believe that the role of the AMC is central to the U.S. health system, but transformational change is essential to safeguard its future. As health reform at a national level plays out, reform of academic medicine is necessary and likely.

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Note: Kip Perlstein, a respected Deloitte colleague and friend to leaders in academic medicine nationwide, died suddenly last summer. He will be remembered for his passion to conduct meaningful, worthwhile work and the energy he invested in doing so. He will be missed. This study is dedicated to his memory.



<sup>1</sup> "The Economic Impact of AAMC Member Medical Schools and Teaching Hospitals," AAMC, January 2007

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# Academic Medical Centers: The tipping point

The Academic Medical Center (AMC) supports a community's need for patient care while also training medical professionals and investigating new diagnostic and therapeutic innovations to improve care. An AMC is a complex organization – mission-driven, large, labor- and capital-intensive and subject to every positive and challenging trend in health care.

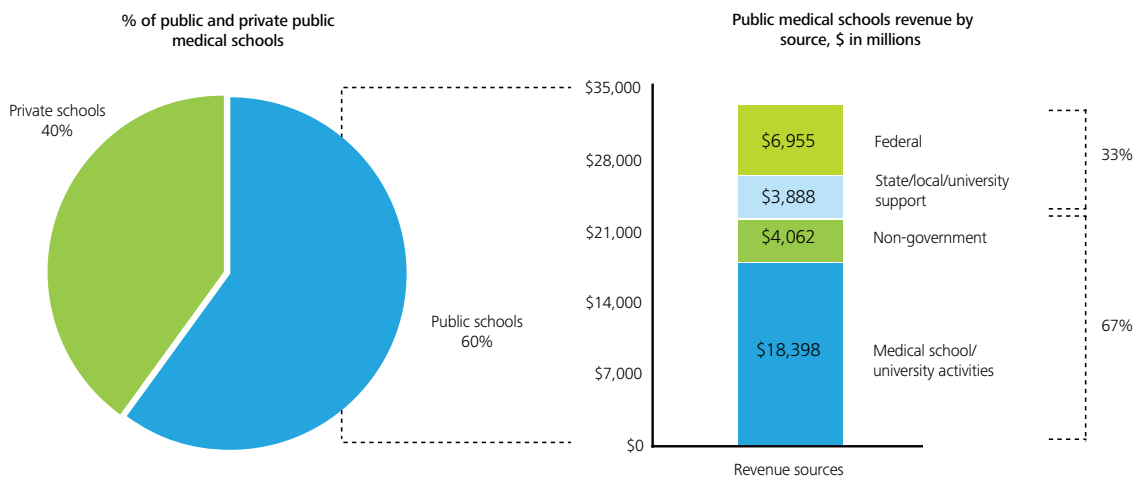
An AMC traditionally includes a general hospital, a medical school and/or substantial faculty and teaching enterprise, and research or laboratory facilities. Often, a disease- or population-based center of clinical excellence and research (e.g., children's hospital or cancer center) is also part of the AMC umbrella entity.

Despite the important roles that AMCs play in local and global communities, the AMC entity itself has been criticized for an inflexible hierarchical structure, complex incentives, and cumbersome organizational culture, which impair the basic underpinnings of an AMC's

financial health. Such criticism suggests a static business environment wherein AMCs are slow to adapt, less efficient than competing provider organizations and prone to operate in ways not normal for a business operation. The intrinsic conflicts between an AMC's academic and business cultures often cannot be easily reconciled. In AMCs that are state-owned, the conflict is exacerbated as a result of funding conflicts with other governmental programs and complex budgeting procedures (Figure 1).<sup>2,3</sup> AMCs are often forced to operate in a reactive mode, largely dependent on economic forces outside their direct control.

The complexity of funding an AMC is among its many challenges. Consider funding for the teaching mission in AMCs: For the 76 Schools of Medicine that are publicly owned, less than 25 percent of operating revenues come from public sources. The schools depend on a wide variety of funding sources to stay afloat at a time of significant shortages of trained health care workers.

**Figure 1: Public medical schools and revenues in the United States**



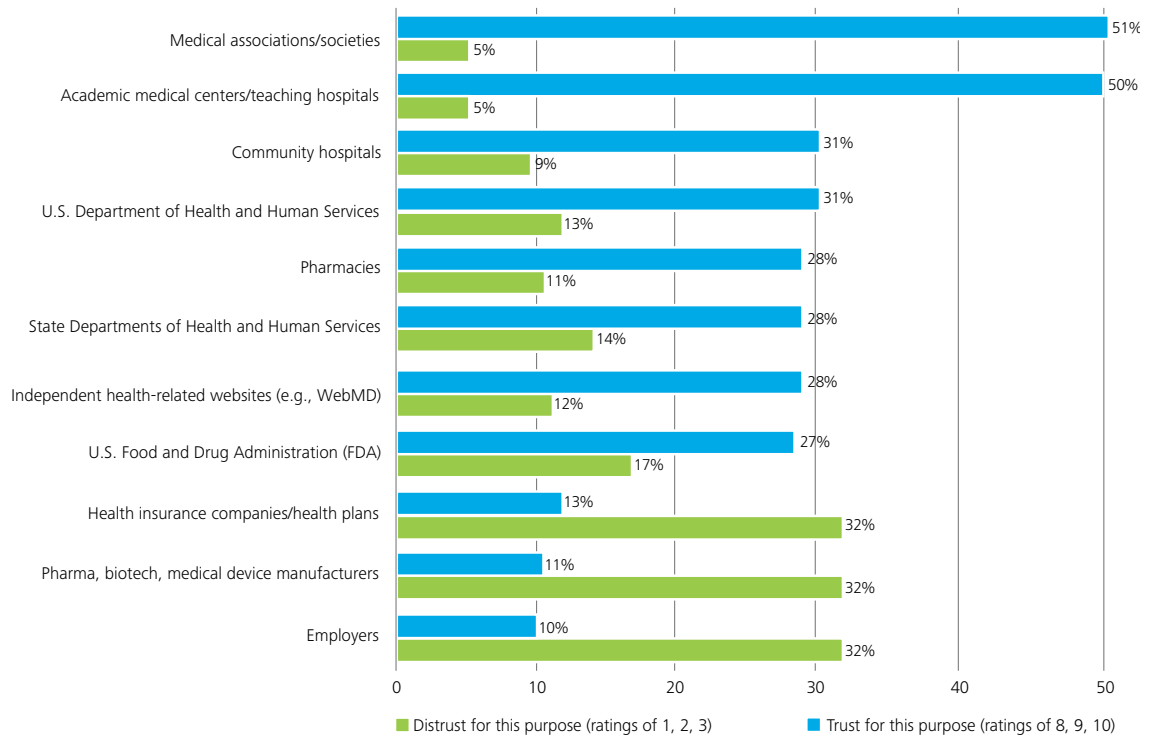
Source: AAMC Data Book, May 2008

<sup>2</sup> DeAngelis C. "The Plight of the Academic Medical Center," *JAMA*, 2000; 283:2438-2439

<sup>3</sup> Cohen J, Siegel E. "Academic Medical Centers and Medical Research: The Challenges Ahead," *JAMA*, 2005; 294:1367-1372

Despite these challenges, consumers believe that AMCs are the most trusted source for medical information. The *2009 Survey of Health Care Consumers*, conducted by the Deloitte Center for Health Solutions, provides insightful context (Figure 2):

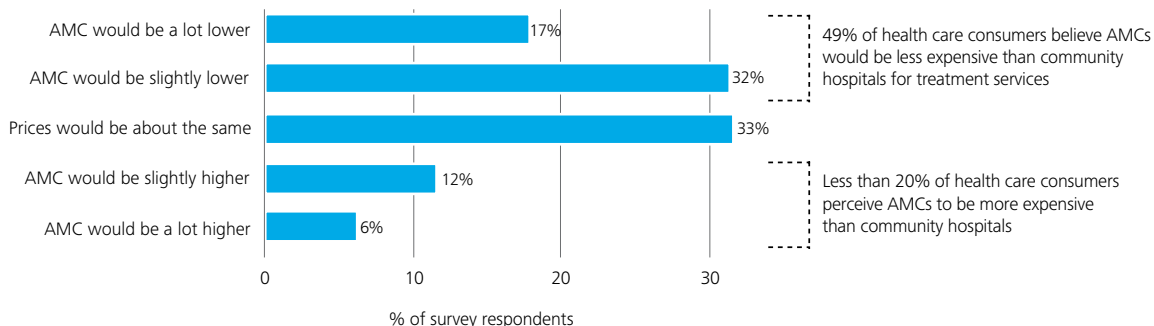
**Figure 2: Trust in sources of information about the effectiveness and safety of treatments**



Source: Deloitte's *2009 Survey of Health Care Consumers*

However, most consumers do not perceive a cost-differential in the operation of the AMC versus a community hospital, reflecting overall confusion among consumers when asked to assess costs for health services (Figure 3, next page):

**Figure 3: Consumer perception of AMC pricing compared to community hospitals**



Source: Deloitte's 2009 Survey of Health Care Consumers

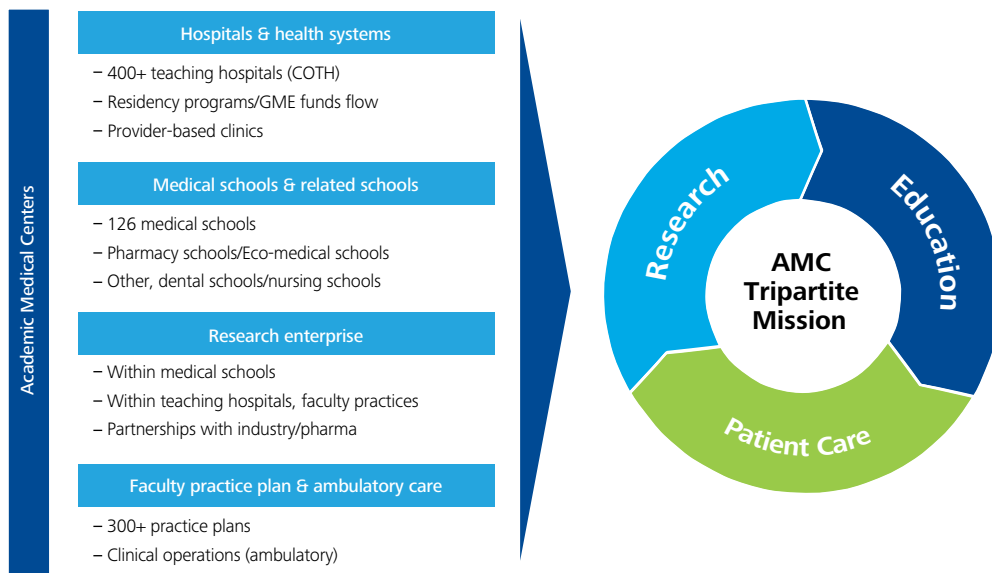
Although consumers have a favorable impression of AMCs, they are unclear about the unique characteristics of the AMC operation that lead to higher costs and wider scope of services. *It may be surmised that the value proposition for academic medicine is not widely understood by consumers.*

**Defining the Academic Medical Center**

Each AMC is unique. In some AMCs, major components – teaching hospitals and patient care activity, medical and allied health professional schools, research enterprises and faculty practices plans – are tightly integrated; in others, they are loosely configured and sometimes misaligned. As Figure 4 illustrates, AMCs are complex organizations: sometimes aligned to achieve collaborative purposes, but often misaligned and at cross purposes.

**Figure 4: Academic medical centers: Complex**

*Although the distinct entities within an AMC share the organization's tripartite mission, they also have divergent interests and operating models that compete for resources, revenue and recognition.*



**In each AMC, structure, governance and operations vary widely. Consider:**

- Some AMCs own hospitals with the clinical, research and educational enterprises reporting to a Dean.
- Some are part of a larger health system wherein a CEO manages the clinical enterprise and a Dean oversees the research and teaching endeavors.
- Some permit faculty department chairs to hire faculty and manage their finances autonomously; others use more centralized controls and limit department chair independence.
- Some are strategically integrated under university oversight whereby capital budgets and operating procedures are tightly integrated; others operate semi-autonomously from their university affiliate.
- Some emphasize specialty care; others focus on primary care.
- Some subordinate research and education to patient care; others weight the three equally, building mechanisms to assure that clinicians engage in all three.
- Some contract with local hospitals for faculty and resident privileges; others own and operate their clinics and hospitals.
- Some staff the clinical programs exclusively with academic faculty and residents, while others include community-based providers.
- Some operate on a single campus; others operate as a distributed network or within the context of a regional system as the “teaching hub.”
- Some allow mid-level practitioners to treat patients in a wide scope of practice; others are restrictive.

# Three in one... or three ones?

The complexity of academic medicine places a premium on leadership savvy, operating policies, and procedures that limit conflict and optimize organizational efficiency and effectiveness. While internal politics and complex structures are a constant challenge, a more strategic assessment would suggest they pale in comparison to environmental trends that threaten the viability of the AMC.

## The clinical enterprise: Capital-intensive, labor-intensive and adversely impacted by payment mechanisms

The AMC clinical enterprise is frequently more costly than competing provider organizations. As depicted in Figure 5, there are eight major distinctions between non-teaching, community-based provider organizations and AMCs:

Figure 5: AMC distinctions

Operating focus	AMC	Community-based provider organization
<b>Physician relationships</b>	All or the majority of physicians are employed; compensation is based on teaching, research & patient care; controls are primarily in clinical departments, and patient care productivity is not the primary factor in compensation, informal power, advancement or recognition. A significant overhead is necessary to support academic faculty plans.	The majority of physicians operate independently of the institution. Decisions and financial responsibility for overhead costs to manage practices, information technologies, et al, are assumed by the physicians. Compensation is based primarily on productivity in patient care. Advancement to leadership roles in the organization is based on informal relationships among peers, resulting in board appointments or medical staff election to office.
<b>Clinical program portfolio</b>	AMCs provide services across a wide range of programs, sometimes to support faculty research interests or reputational pursuits; sometimes to accommodate small populations of patients with complex conditions/needs; sometimes to facilitate teaching programs with medical students and residents.	Local provider organizations select clinical programs based on community need, mission and prospect for financial viability. Highly specialized programs with strong profit margins are frequently pursued; lacking the potential for significant ROI, specialty programs are not developed.
<b>Medical residencies</b>	Medical residencies in AMCs provide additional staffing for clinic and acute patient care, but a requisite administrative infrastructure to monitor student performance, assess risk and oversee patient care is also required. In addition, attending physicians and chief residents are prone to overuse of diagnostic tests for learning purposes, driving costs higher.	In community-based organizations, residency program investments are a means to an end of supporting the institution's medical staff development (recruitment) efforts. Residents are typically used in a few targeted clinical programs, and the infrastructure (costs) to manage residency programs are significantly less.
<b>Mid-levels</b>	The roles played by mid-levels vary widely. In AMCs, their scope of practice is more restrictive, but typically more are directly employed in AMCs to support patient care activity in outpatient clinics and inpatient acute units.	Mid-levels typically play a lesser role in staffing and are restricted via medical staff by-laws to limited direct patient interaction unless overseen by a physician.
<b>Patient acuity</b>	AMCs typically have higher acuity as a result of higher severity of patient mix and unique tertiary programs (trauma, burn units, NICU, organ transplantation, et al).	Community-based organizations generally have lower acuity levels.



Operating Focus	AMC	Community-based provider organization
<b>Reputation</b>	Consumers perceive AMCs more favorably than community hospitals for quality of care, specialization, technology and complex care.	General acute community hospitals enjoy favorable reputations in local settings for provision of care for non-serious conditions. They are usually thought to be more accessible than AMCs, although not as specialized.
<b>Costs and Infrastructure</b>	AMC costs are 10-20 percent higher on a case-mix-adjusted basis as a result of added staffing costs (residencies, mid-levels), faculty compensation plans (salaried except for small portion that's productivity-based) and clinical program mix (which requires latest technologies and facilities). AMCs typically have more advanced clinical IT systems cutting across multiple ambulatory and acute applications, and sometimes bio-medical informatics capabilities for data management; these also add costs.	Capital investments, staffing levels and acuity level advantages give general acute organizations a cost-advantage over AMCs.

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As a result of these challenges, AMCs face inordinate pressure to be more cost-effective while facing internal pressure from faculty to stay current on technology, faculty recruitment and reputation. Not surprisingly:

- Sixty-four percent of teaching hospitals are in financial distress.<sup>4</sup>
- Fourteen percent are in immediate risk of bankruptcy.<sup>5</sup>
- Bond ratings for medical schools and teaching hospitals were in decline before the current economic crisis;<sup>6</sup> today, access to capital is even more limited, interest on debt is up and investment income is down.
- Operating costs are 25 percent higher than community counterparts.<sup>7,8</sup>

*However, publicly reported quality metrics show no discernible AMC advantage for quality. In fact, some data suggest AMCs do not perform as well as community-based organizations for routine care.*

<sup>4</sup> Langabeer J. "Predicting financial distress in teaching hospitals," *Journal of Health Care Finance*, Winter 2006; 33:84-92

<sup>5</sup> Ibid

<sup>6</sup> Moses H, Thier S, Matheson D. "Why Have Academic Medical Centers Survived?" *JAMA*, 2005; 293:1495-1500

<sup>7</sup> Rosenthal GE, Harper DL, Quinn LM, Cooper GS. "Severity-adjusted mortality and length of stay in teaching and non-teaching hospitals: results of a regional study," *JAMA*, 1997; 278:485-90

<sup>8</sup> Ludmerer KM MD. "The Embattled Academic Health Centre," *HealthcarePapers*, 2002;2(3):59-65

This is not “new news” to AMCs. Most are transforming their clinical operations to improve quality and reduce costs. As detailed in Figure 6, examples point to acknowledgement that the status quo is no longer a viable option.

**Figure 6: Examples – Innovations in AMC patient care operations**

Organization	Innovations
<b>University of Wisconsin Hospital and Clinics (UWHC)</b>	<ul style="list-style-type: none"> <li>• UWHC developed a product line matrix, consisting of three service lines based on patient populations and clinic expertise, to identify opportunities for greater patient care efficiency, enhanced patient satisfaction, improved margin, and expansion of teaching and research initiatives.</li> <li>• The objectives for each product line include improved continuity of specialty care, integration and innovation of service delivery, and focused resource allocations to support strategies that emphasize patient care.<sup>9</sup></li> </ul>
<b>The Cleveland Clinic</b>	<ul style="list-style-type: none"> <li>• The Cleveland Clinic has created an Institute model which clusters multi-disciplinary clinical care, biomedical research and education around organ and disease systems rather than individual clinical disciplines, and which organizes an interdisciplinary health care team to provide a patient-centered model of care.</li> <li>• Using this approach, The Cleveland Clinic has created 36 clinical Institutes,<sup>10</sup> with the Cleveland Clinic Neurological Institute at Lakewood Hospital the most recently opened, in November 2008. The Neurological Institute will bring together a mix of physician specialties, advanced nurse practitioners and therapists to provide targeted acute, diagnostic and ambulatory care in a common location with coordinated services for patients.<sup>11</sup></li> </ul>
<b>Johns Hopkins Medicine</b>	<ul style="list-style-type: none"> <li>• Johns Hopkins Medicine is a collaboration between Johns Hopkins Health Systems Corporation (JHHS) and The Johns Hopkins University School of Medicine. It allows these two distinct yet interdependent organizations to respond in an integrated fashion to opportunities and pressures affecting the Johns Hopkins medical enterprise.<sup>12</sup></li> <li>• Through the Johns Hopkins Medicine collaboration, a number of contractually-based joint ventures have been established that collectively provide an integrated health system with a broad array of quaternary, tertiary, secondary and primary services across the acute, ambulatory and community-based care domains – all under a common brand, providing coordinated service to patients and a common base for education and research.</li> </ul>
<b>Vanderbilt Medical Center (VMC)</b>	<ul style="list-style-type: none"> <li>• VMC clinical operations feature a paperless electronic record (WIZ Order) used throughout the ambulatory and acute enterprise to standardize care per evidence-based guidelines, clinical pathways and order sets.<sup>13,14</sup> The institution has made a major investment in biomedical informatics and has successfully licensed its technology to other acute organizations.</li> <li>• Managers from the faculty and staff use a dashboard to monitor performance in key clinical, financial and service delivery areas. Hosted by Vice Chancellor Health Affairs, all 500+ managers meet quarterly to review results and define areas for innovation and continuous improvement.<sup>15</sup></li> </ul>
<b>UCLA Medical Center</b>	<ul style="list-style-type: none"> <li>• In 2005, UCLA Medical Center innovated through technology to address the shortage of available intensivists in its Neurosurgery ICU by testing on-unit, human-sized robots to provide remote patient monitoring from physician homes and offices.<sup>16</sup></li> <li>• The robots provide an increased presence on the ICU that previously was not available, and through an interface with UCLA’s information systems, keep diagnostic information integrated with the patient’s electronic health record.</li> <li>• Further, this technology innovation enables UCLA to meet leading practices which identify that a high intensivist presence leads to a decrease in morbidity, mortality, length of stay and cost of care.</li> </ul>

<sup>9</sup> Turnipseed W, Lund D, Sollenberger D. “Product Line Development: A Strategy for Clinical Success in Academic Centers,” *Annals of Surgery*, 2007; 246: 585–592

<sup>10</sup> The Cleveland Clinic, <http://my.clevelandclinic.org/services/departments.aspx?topic=i-1186769638433-1971372189:1>; accessed November 2008

<sup>11</sup> “The Neurological Institute at Lakewood Hospital Opens Its Doors to Patients,” The Cleveland Clinic, [http://my.clevelandclinic.org/news/2008/neurological\\_institute\\_lakewood\\_hospital.aspx](http://my.clevelandclinic.org/news/2008/neurological_institute_lakewood_hospital.aspx); accessed November 2008

<sup>12</sup> Johns Hopkins Medicine, <http://www.hopkinsmedicine.org/about/healthcare/>; accessed November 2008

<sup>13</sup> Rosenbloom ST, Talbert D, Aronsky D. Integrating Decision Support into Computerized Physician Order Entry. Vanderbilt University Medical Center, 2001. Available at: <http://www2.amaia.org/pubs/proceedings/symposia/2001/D010001291.pdf>

<sup>14</sup> Strategic Plan for VUMC Informatics, Progress Report. Vanderbilt University Medical Center, July 2006. Available at: [http://www.mc.vanderbilt.edu/infocntr/Progress\\_Report\\_6\\_06.pdf](http://www.mc.vanderbilt.edu/infocntr/Progress_Report_6_06.pdf)

<sup>15</sup> Performance review strategies take shape. Vanderbilt University Medical Center Report, February 17, 2008. Available at <http://www.mc.vanderbilt.edu/reporter/index.html?ID=4530>

<sup>16</sup> “New robots help doctors keep an eye on patients, even when they can’t be bedside,” <http://www.uclahealth.org/body.cfm?id=122&action=detail&ref=130>; accessed November 2008

Organization	Innovations
<b>West Virginia University (WVU)</b>	<ul style="list-style-type: none"> <li>• Access WVU assists indigent and uninsured individuals with access to health and human services programs in the region (up to 30 different programs) and financial counseling.<sup>17</sup></li> <li>• Access WVU features a dedicated website for program participants and a separate site for clinical enterprise staff to automate and manage the program application process across the entity.</li> <li>• The health system reported a 25 percent reduction in bad debt as a result of the program.<sup>18</sup></li> </ul>
<b>Georgetown University Medical Center (GUMC)</b>	<ul style="list-style-type: none"> <li>• In 2000, facing major financial losses across its clinical services, Georgetown University Medical Center (GUMC) entered into a partnership with Medstar Health, in which Medstar assumed ownership, operations and financial responsibility for Georgetown's clinical enterprise – including Georgetown University Hospital, a faculty practice group, and a network of community physician practices.<sup>19</sup></li> <li>• GUMC continues to own, operate and have financial responsibility for its education and research mandates, and receives net revenue contributions from the clinical enterprise if certain financial targets are reached.</li> <li>• Department chairs are recruited and report dually to the leadership of the clinical enterprise and GUMC, providing for continued alignment across the academic mandates.</li> </ul>

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### Research: Competitive and complex

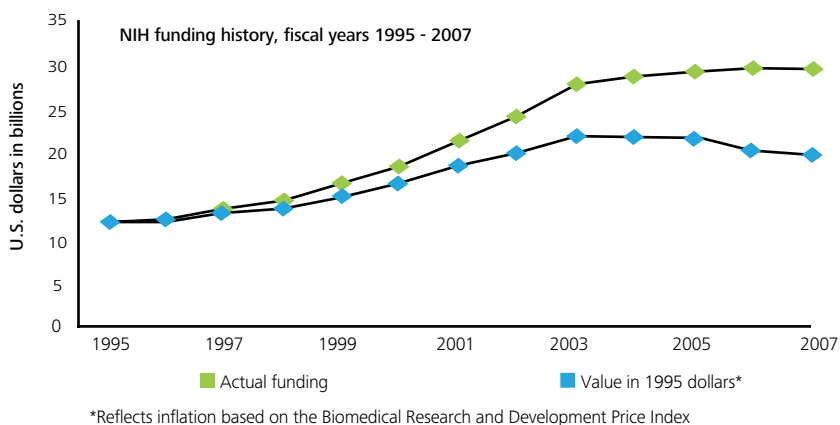
The AMC research enterprise is competitive and complex. The constants in academic research operations are securing grants from government and industry sources; managing the Institutional Research Board (IRB) to oversee compliance, animal and human research operations, faculty and research assistant staffing and management; and meeting the ever-present pressures to publish. Wet and dry labs are a constant source of wrangling and negotiation with faculty and department chairs, and competition for capital to invest in expansion of the research enterprise is always at odds with more immediate needs in the patient care enterprise for technologies, staffing and facilities that generate near-term revenues.

At a time when National Institutes of Health (NIH) and industry R&D funding levels are slowing, *even with short-term funding from the stimulus package signed into law in February 2009*, the viability of the academic research enterprise is severely challenged:

- NIH funding has remained relatively flat since 2003, reaching \$28.6 billion for fiscal year 2007 (Figure 7). Accounting for inflation, NIH funding has actually fallen 16 percent from 2003 to 2007.<sup>20,21</sup>
- AMC research funding from NIH grew by only 2.1 percent in 2007, reflecting a slowing of funding growth.<sup>22</sup>

- In the American Recovery and Reconstruction Act (ARRA) signed into law by President Obama February 17, 2009, an additional \$10.2 billion is targeted to research, especially in cancer, neurosciences and related disciplines. Though promising, the stimulus requirements that 75 percent of these funds be spent within two years prompted federal officials to suggest that it is highly unlikely grants will be awarded to new investigations. Rather, the majority will be awarded to grant requests already submitted – the backlog of proposals from established research institutions will be the likely beneficiary of the stimulus grants rather than new entrants or AMCs wishing to upgrade capabilities in their research operations.

Figure 7: NIH funding, 1995-2007



Source: National Institute of Health. [http://hms.harvard.edu/public/news/nih\\_funding.pdf](http://hms.harvard.edu/public/news/nih_funding.pdf)

<sup>17</sup> WVU Charity Care. Available at: <http://www.health.wvu.edu/hospitals/wvuh-info-hdp-cca.aspx>

<sup>18</sup> Wolfskill, S.J. Charity Care: Tools to Manage the Uninsured Population. HC Pro, Inc., 2005, Pg. 188-190

<sup>19</sup> Georgetown University-Medstar Clinical Partnership, [http://gumc.georgetown.edu/communications/facts/medstar\\_2002.html/](http://gumc.georgetown.edu/communications/facts/medstar_2002.html/); accessed November 2008

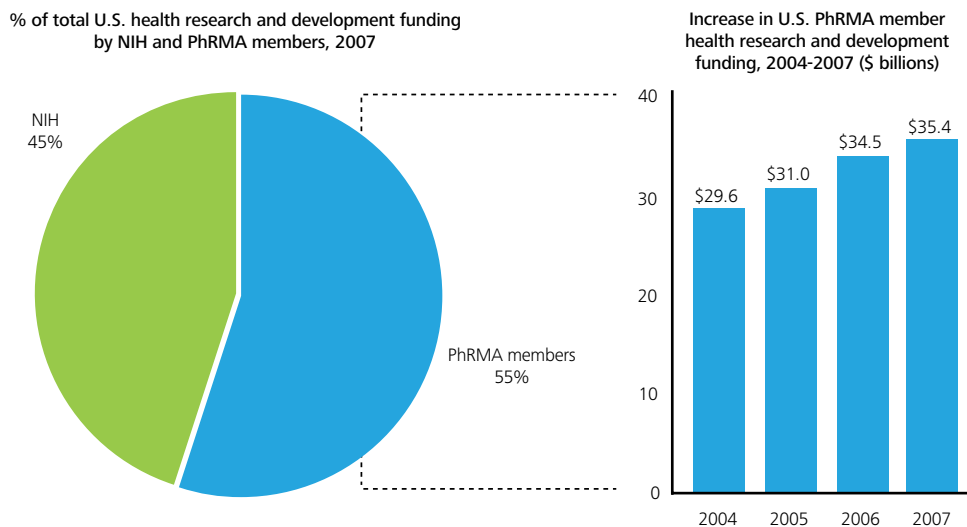
<sup>20</sup> Loscalzo J. "The NIH Budget and the Future of Biomedical Research." *New England Journal of Medicine*, 2006; 354:1665-1667

<sup>21</sup> Mitka M. "Scientists Warn NIH Funding Squeeze Hampering Biomedical Research," *JAMA*, 2007; 297:1867-1868

<sup>22</sup> Ibid

- In contrast to NIH reductions, there has been a dramatic increase in private funding from industry over the past decade.<sup>23,24</sup> In 2007, the pharmaceutical industry invested an estimated \$35.4 billion in domestic research and development by PhRMA members alone, over 23 percent higher than the NIH budget that year (Figure 8).<sup>25</sup>

**Figure 8: NIH and PhRMA member health research and development funding, 2007**



Source: PhRMA industry profile 2008.

- Earlier data from 2005 suggests that investments made by the pharmaceutical industry in U.S. health research are estimated to be only 50 percent of total private industry funding – with biotechnology and medical device firms funding the remaining 50 percent (Figure 9, next page)<sup>26,27</sup> – creating a large overall private industry funding stream to AMC research through targeted agendas, but leaving gaps in the overall research value chain (e.g., from studies of molecular mechanisms of disease to population-based studies of disease prevalence).<sup>28</sup> And, the acceleration of merger-acquisition activity between drug and biotech companies portends increased consolidation of R&D purchasing power in commercial markets, and likely pressure from lower-cost, quicker turnaround private research options available to these companies as they expand their global influence and distribution.

<sup>23</sup> Bowman M, Rubenstein A, Levine A. "Clinical Revenue Investment in Biomedical Research: Lessons From Two Academic Medical Centers," *JAMA*, 2007; 297:2521-2524

<sup>24</sup> Heinig S, M.A., Krakower J, et al. "Sustaining the Engine of U.S. Biomedical Discovery," *New England Journal of Medicine*, 2007;357:1042-1047

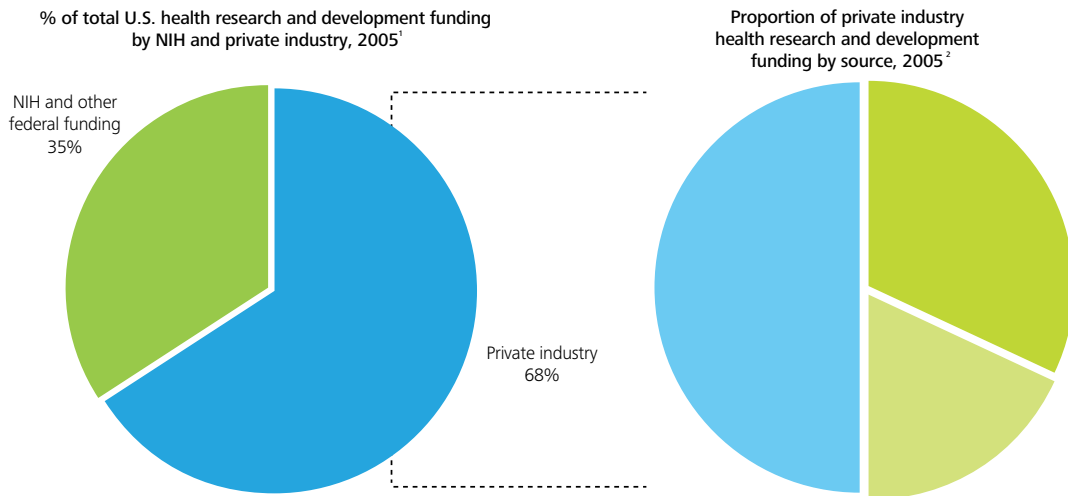
<sup>25</sup> PhRMA Industry Profile 2008, <http://www.phrma.org/files/2008%20Profile.pdf>; accessed November 2008

<sup>26</sup> Hamilton Moses III, MD; E. Ray Dorsey, MD, MBA; David H. M. Matheson, JD, MBA; Samuel O. Thier, MD. "Financial Anatomy of Biomedical Research," *JAMA*, 2005; 294:1333-1342

<sup>27</sup> Shergold M. "Health and Medical Research in the United States," RAND Europe's Health Research System Observatory Documented Briefing, 2008

<sup>28</sup> Loscalzo J. "The NIH Budget and the Future of Biomedical Research," *New England Journal of Medicine*, 2006; 354:1665-1667

Figure 9: U.S. private industry health research and development funding by source, 2005



Sources:

<sup>1</sup>Shergold M. Health and Medical Research in the United States. RAND Europe's Health Research System Observatory Documented Briefing, 2008.

<sup>2</sup>Hamilton Moses II, MD; E. Ray Dorsey, MD, MBA; David H. M. Matheson, JD, MBA; Samuel O. Thier, MD. Financial Anatomy of Biomedical Research. JAMA. 2005;294:1333-1342

As AMCs endeavor to balance government-funded research with industry-sponsored studies, the research operation takes on added pressures:

- Industry funding is increasingly important to AMC research efforts, but responding to commercial expectations around research protocols and patient protections requires increased research infrastructure.<sup>29,30</sup> The result has been increased indirect costs for industry-sponsored research – up to 67 percent above costs associated with government studies.<sup>31</sup> (An AMC with a significant quantity of non-federally-sponsored research may realize a “blended indirect recovery rate” [from all research expenditures] that is less than half of its negotiated NIH rate.)
- AMCs conducting government-funded research must comply with specific requirements: 42 percent of federally-funded principal investigators’ time is now spent on administrative duties rather than scientific work.<sup>32</sup>
- Access to data is a challenge: Increasingly rigorous research designs and inclusion criteria require larger cohorts and informatics analytics capabilities.
- The complexity of these studies corresponds to increased costs for Institutional Review Board operations.
- Competition from non-AMC contract research organizations (CROs) is a constant threat. CROs are emerging as a viable option to AMCs for access to study subjects, sophisticated analytics and quicker turnaround for peer-reviewed work.
- Issues around intellectual property (IP) ownership and potential commercialization are compounded in AMCs undertaking significant industry and government research efforts.

The economic well-being of biotechnology, pharmaceutical and medical device manufacturers is a factor in AMC research. As these industries respond to regulatory, competitive and economic pressures in their markets, R&D priorities change and budgets shift. As a result, AMC research enterprises are put on the defensive, anticipating future needs but unable to change course as quickly as optimally needed.

Not surprisingly, AMCs compete with CROs and life sciences manufacturers for the best research teams, offering sweetheart deals for wet labs and administrative support, tenure for senior faculty, and handsome relocation programs. Where research teams bring secured funding, this adds immediate value to the AMC research enterprise but increases the focus of an AMC on primary investigator retention, to mitigate the risk of primary investigators and their funding being recruited elsewhere. The upside to offering these expensive recruitment and retention incentives is the potential for lucrative royalties, equity in commercial ventures, and brand distinction. Admittedly, AMCs seek recognition for their brands and guard them fervently, recognizing that AMCs are usually considered the “best and brightest” health care facilities by consumers.

In the face of compounding research pressures, AMCs are exploring industry partnerships, seeking initial seed funding for investigational research, and employing other innovative strategies to support and expand their research mandates (Figure 10, next page):

<sup>29</sup> Mello M, Phil M, Clarridge B, Studdert D. “Academic Medical Centers’ Standards for Clinical-Trial Agreements with Industry,” *The New England Journal of Medicine*, 2005; 352:2202-2210

<sup>30</sup> Mello M, Phil M and Joffe S. “Compact versus Contract — Industry Sponsors’ Obligations to Their Research Subjects,” *The New England Journal of Medicine*, 2007; 356:2737-2743

<sup>31</sup> Bowman M, Rubenstein A, Levine A. “Clinical Revenue Investment in Biomedical Research Lessons From Two Academic Medical Centers,” *JAMA*, 2007; 297:2521-2524

<sup>32</sup> [http://www.thefdp.org/Faculty\\_Committee.html#P11\\_2305](http://www.thefdp.org/Faculty_Committee.html#P11_2305), referenced by AAMC Stat; March 3, 2008

Figure 10: Examples – Innovations in AMC research operations

Organization	Innovations
<b>Yale University</b>	<ul style="list-style-type: none"> <li>• Yale University has agreed to allow Pfizer to invest in a research center in exchange for guaranteed future research business.</li> <li>• Pfizer contributed \$5 million to Yale’s \$25 million, state-of-the-art PET scan center, which promises to speed drug development and help reveal the molecular basis of central nervous system diseases.</li> <li>• Pfizer also agreed to give the center \$2 million worth of business a year over the next decade.<sup>33</sup></li> </ul>
<b>University of Michigan Medical School (UMMS)</b>	<ul style="list-style-type: none"> <li>• To support its research administration effectiveness, UMMS developed web-based reporting tools to identify financial trends (e.g., clinical activity, grant funding, etc.), track the utilization of research space, calculate the break-even cost of research space, and model scenarios to help plan effectively for UMMS’ future needs.<sup>34</sup></li> </ul>
<b>The University of California at San Diego (UCSD)</b>	<ul style="list-style-type: none"> <li>• UCSD created a Science Research Park, a 30-acre property adjacent to UCSD’s East Campus Medical Center complex that is designed to strengthen industry relations in research.</li> <li>• Tenants must conduct industrial, scientific and technological activities in various scientific disciplines, including medicine, life sciences, engineering, information technology, etc.</li> <li>• Tenants must also agree to collaborate with UCSD in research and educational programs.<sup>35</sup></li> </ul>
<b>Cincinnati Children’s Hospital Medical Center (CCHMC)</b>	<ul style="list-style-type: none"> <li>• In 2001, CCHMC launched the Translational Research Initiative (TRI) through investment seed funding, with the mission to build an institutional infrastructure for promoting and facilitating the clinical implementation of new research.</li> <li>• Investment in the TRI was made with the expectation that it will support its mission by emphasizing research’s impact on human health and patient care.</li> <li>• TRI pursues NIH funding opportunities and incorporates a “charge-back system” based on the services offered by the TRI program to principal investigators to partially offset the institutional investment.<sup>36</sup></li> </ul>
<b>Mayo Clinic</b>	<ul style="list-style-type: none"> <li>• Through its Discovery, Innovation and Investment fund, the Mayo Clinic received a \$15 million endowment for neurosciences research.</li> <li>• The terms of this endowment enable the Mayo Clinic to accelerate translational research that will bring Mayo’s basic research to the bedside; to expand the Clinic’s ongoing basic research; and to add two Medical School professorships.<sup>37</sup> Mayo’s innovation in the design of this endowment is its commitment to dedicate a portion of its own revenues, generated through the commercialization of research technologies and knowledge, which in turn will create further funding support for its neurosciences research.</li> <li>• This endowment complements Mayo Clinic’s other investments, including the SPARC Innovation Program, a unique, design-based research and development laboratory led by a dedicated full-time physician.</li> </ul>
<b>University of Pittsburgh Medical Center (UPMC)</b>	<ul style="list-style-type: none"> <li>• Seeking to expand its informatics capabilities and create new commercialization opportunities, the University of Pittsburgh Medical Center (UPMC) entered into a three-year joint initiative with Cerner Corp. to create and commercialize innovative health care information technology solutions that improve the quality of health care.<sup>38</sup></li> <li>• The initiative is governed by a board with equal representation from both organizations, which will share oversight for project selection and development.</li> <li>• One result of this innovative venture is the joint development of a new oncology information system that “captures data and analyzes its relevancy to clinical decisions in a manner that assists physicians in selecting the most appropriate treatment, continually improves care and collects comprehensive outcomes data.”<sup>39</sup></li> </ul>

<sup>33</sup> Katz, A. “Researchers have high hopes for PET center,” *Knight Ridder Tribune Business News*, Washington: Jan 19, 2007

<sup>34</sup> Elger W. “Managing Resources in a Better Way: A New Financial Management Approach for the University of Michigan Medical School,” *Academic Medicine*. 2006; 81:301–305

<sup>35</sup> “UCSD Marks Major Milestone with Premier Groundbreaking in Science Research Park,” *Business Wire*, New York: Feb 17, 2005

<sup>36</sup> Cripe T, Thomson B, Boat T, et al. “Promoting Translational Research in Academic Health Centers: Navigating the Roadmap,” *Academic Medicine, Management Series: Managing the Research Enterprise 5-11*

<sup>37</sup> <http://news.bio-medicine.org/medicine-news-3/Mayo-Clinic-receives-2415-million-to-launch-innovative-neuroscience-research-program-8440-1/>; accessed November 2008

<sup>38</sup> Cerner and UPMC Launch Innovation Initiative. Accessed December 2008. Available at: <http://www.cerner.ca/public/NewsReleases.asp?id=257&cid=5657>

<sup>39</sup> <http://www.upmc.com/aboutupmc/icisd/commercialservices/pages/strategicpartnerships.aspx#cerner>; accessed December 2008

Organization	Innovations
<b>University of Louisville School of Medicine</b>	<ul style="list-style-type: none"> <li>• In the decade ending in 2006, during which NIH budgets doubled, the University of Louisville obtained a nearly sevenfold increase in its NIH funding, effectively out-performing its peers for these limited resources. One result of this accomplishment was a 60 percent increase in published journal articles by School of Medicine faculty.<sup>40</sup></li> <li>• The university achieved this research growth through funded support from the state and private donors, supported by a decision not to drive research growth through increased investment of clinical revenues. The university's strategy targeted "programs of distinction" and reallocated research funds from programs not considered to be of the highest priority.<sup>41</sup> A major example of such reallocation was the closure and transition of the University's School of Allied Health Sciences to other academic institutions in the community (although many additional smaller reallocations were also made), which allowed for more focused funding in the programs of distinction.</li> <li>• The university implemented several pivotal initiatives in support of its strategy: recruitment of endowed chairs and scholars, implementation of clear promotion and tenure standards within the research mandate, creation of research-productivity-linked salary incentives, and investment in research administration and facilities infrastructure.<sup>42</sup> Examples of research infrastructure investment included information systems to streamline high-workload administrative processes, and a near-tripling of research facility space – from 220,000 to 606,000 net square feet over the decade – which was allocated on the basis of department-wide productivity.</li> </ul>

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<sup>40</sup> Schweitzer L, Sessler D, Martin N. "The Challenge for Excellence at the University of Louisville: Implementation and Outcomes of Research Resource Investments Between 1996 and 2006," *Academic Medicine*, Vol. 83, No. 6 /June 2008

<sup>41</sup> *Ibid*

<sup>42</sup> *Ibid*



## Education: Preparing tomorrow's health care providers

The AMC education mission is challenged by the market's need for a well-trained, competent health professional workforce. Traditionally, AMCs responded through ongoing curriculum overhauls and emphasis on lifelong learning via continuing education. In addition, AMC leaders have pressed for new core competencies – the use of technologies in clinical training and shared decision-making with patients; inclusion of diversity in student populations; focus on patient-centeredness and team-based care; and others.

But the ominous challenge to the AMC education mission remains daunting: The supply of well-trained health professionals – physicians, nurses, technicians and others – is increasingly inadequate. Consider:

- Physician shortages are increasing. Future physician shortages are projected to be as high as 159,300 by 2025.<sup>43</sup>
  - Although applications to medical schools have increased by over 21 percent since 2003,<sup>44</sup> AAMC has called for a further 30 percent increase by 2012.<sup>45</sup>
  - Average debt for physicians leaving medical school is increasing. The average now is \$138,000.<sup>46</sup>
  - Interest in primary care medicine is decreasing. The proportion of medical graduates entering into primary care decreased from 53.4 percent in 1997 to 35.1 percent in 2004.<sup>47</sup>
  - Resident matching is deteriorating. In 2007, matches were not made for 7,430 PGY-1 applicants, an increase of 11.8 percent from the year prior.<sup>48</sup>
  - Faculty recruitment and retention is a major expense at academic health centers, consuming as much as five percent of an AMC's annual operating budget.

- While the need for Graduate Medical Education (GME) funding has increased, the supply of funds has not. Both direct<sup>49</sup> and indirect<sup>50</sup> medical education dollars have declined: the Indirect Medical Education (IME) adjustment, originally set at 11.59 percent in 1986, was at one point reduced to 5.5 percent for fiscal year 2007 and beyond,<sup>51</sup> but recent MedPAC recommendations are for a further reduction to 4.5 percent.<sup>52</sup>
- Nursing shortages are also increasing. Future RN shortages are projected to grow from 340,000 to over one million by 2020.<sup>53,54</sup>
  - Faculty shortages are persistent. For example, the national nurse faculty vacancy rate is 7.6 percent.<sup>55</sup>
  - Applicants are being turned away. U.S. nursing schools turned away 40,285 qualified applicants to baccalaureate and graduate nursing programs in 2007 due to an insufficient number of faculty members.<sup>56</sup>
  - On a positive note, innovations over the past few years in nursing credentials have resulted in the Doctor of Nursing Practice (DNP) degree, for which 80 schools currently offer programs; an additional 50 schools are expected to start DNP programs.<sup>57</sup>
- Allied Health and Technical fields face similar shortages:
  - According to the U.S. Department of Labor, 60 percent of the U.S. health care workforce is made up of allied health professionals. The number of these professionals is predicted to reach 1.6 million to 2.5 million by 2020.<sup>58</sup>
  - Specific initiatives that are targeted to increase allied health resources in the U.S. – such as the recent federal Allied Health Reinvestment Act of 2007, which offers financial assistance to increase allied health professional recruitment – will take time to achieve results.<sup>59</sup>

<sup>43</sup> *The Complexities of Physician Supply and Demand: Projections Through 2025*, AAMC, 2008

<sup>44</sup> *AAMC Data Book: Medical Schools and Teaching Hospitals by the Numbers*, AAMC, 2008

<sup>45</sup> AAMC Statement on the Physician Workforce, AAMC, 2006

<sup>46</sup> *Out of Order Out of Time: The State of the Nation's Health Workforce*, AAHC, 2008

<sup>47</sup> *Ibid*

<sup>48</sup> Otto A, Novielli K, Morahan P. "Implementing the Logic Model for Measuring the Value of Faculty Affairs Activities," *Academic Medicine*, 2006; 81:280-285

<sup>49</sup> Direct medical education dollars typically include incremental costs incurred for GME, including resident salaries, faculty teaching support, administrative support such as the GME office expense, and non-salary costs such as gowns, beepers, etc.

<sup>50</sup> Indirect medical education dollars typically include additional costs specific to teaching hospitals. These costs can be difficult to measure but revolve around higher patient care costs as a result of treating sicker patients, using more diagnostic tests, and longer patient visits or hospital stays.

<sup>51</sup> Medicare Indirect Medical Education (IME) Payments. <http://www.aamc.org>; accessed on January 24, 2008

<sup>52</sup> Report to the Congress: Medicare Payment Policy. MedPAC, March 2008.

<sup>53</sup> Auerbach, D.I, Buerhaus, P.I., & Staiger, D.O. (2007). "Better late than never: Workforce supply implications of later entry into nursing," *Health Affairs*, 26(1): 178-185

<sup>54</sup> "What is Behind HRSA's Projected Supply, Demand, and Shortage of Registered Nurses," Bureau of Health Professions, 2004, <ftp://ftp.hrsa.gov/bhpr/workforce/behindshortage.pdf>; accessed November 2008

<sup>55</sup> Special Survey on Vacant Faculty Positions, AACN, 2008

<sup>56</sup> 2007-2008 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing, AACN, 2008

<sup>57</sup> Doctor of Nursing Practice (DNP) Programs, <http://www.aacn.nche.edu/dnp/DNPProgramList.htm>; accessed November 2008

<sup>58</sup> *Allied Health Professional Shortage Contributing to Problems Facing U.S. Healthcare*, [https://medical.wesrhc.com/User\\_images/Pdf/MS1\\_1217825887.pdf](https://medical.wesrhc.com/User_images/Pdf/MS1_1217825887.pdf); accessed November 2008

<sup>59</sup> *Ibid*

The quality and quantity of the health care workforce is central to the mission of the AMC. To effectively fulfill this responsibility, an AMC must have...

- Access to information technologies that connect providers and patients (electronic health records, personal health records) with a registry function (clinical decision support), and data warehousing capabilities to stimulate research. *NOTE: In Title XIII of the American Recovery and Reconstruction Act (H.R. 1, aka "stimulus bill"), AMCs may receive up to \$4 million per hospital and \$44,000 per physician for accelerated "meaningful use" of electronic health records.*
- Access to biomedical informatics and computational math capabilities to effectively evaluate clinical data and thus improve the efficacy and effectiveness of diagnostic and therapeutic recommendations.
- Support of institutional leaders to transition facility-based educational programs to ambulatory and in-home-based learning environments for students.
- Changes in regulations about scope of practice and professional competence that will force the health care workforce to suspend traditional silo approaches to patient diagnosis and treatment planning.
- Changes to graduate medical education (GME) that require more protected time for faculty, higher standards for accreditation and more attention to the "education" portion of GME that may drive new approaches to curriculum design.<sup>60</sup>
- Compensation plans and recruitment programs for faculty to reward investments in student preparation and effectiveness.
- A commitment to uphold the respect and dignity of healing professions in external communications and in internal operations: health professionals choose these careers to make a difference. They thirst for appreciation and respect at a time when sentiment is otherwise in some circles.

Notably, the market is responding to workforce shortages: At least 12 new medical schools will open in the next five years, primarily to accommodate looming shortfalls in all specialties.

However, the reality is that current payment models through Medicaid and Medicare jeopardize growth in the supply of health professionals.<sup>61</sup> In February 2009, MedPAC recommended an increase in payments to physicians of 1.1 percent for FY 2010 – far below inflation costs and without consideration of the increased bad debt practitioners and hospitals face as a result of the economic downturn.

<sup>60</sup> Pessar L, Levine R, Berstein C et al, "Recruiting and Rewarding Faculty for Medical Student Teaching," *Academic Psychiatry*, 2006; 30:126-129

<sup>61</sup> Keough C, Webster S. "Why Medicaid GME Funding should be preserved," *Healthcare Financial Management*, 2007; 61: 54-57

Figure 11 shows how some AMC's are innovating in their response to education challenges:

**Figure 11: Examples – Innovations in AMC education**

Organization	Innovations
<b>Harvard Medical School (HMS)</b>	<ul style="list-style-type: none"> <li>Recognizing physicians' need to continue their pursuit of lifelong learning, Harvard Medical School (HMS) offers a wide range of e-learning modules and live courses for continuing medical education.</li> <li>In 2007, HMS offered approximately 263 courses to over 60,000 health care professionals from over 100 countries.<sup>62</sup></li> </ul>
<b>University of California Davis Health System</b>	<ul style="list-style-type: none"> <li>To expand its telehealth clinical and education offerings, UC Davis Health System in November 2007 received a three-year, \$22 million award from the FCC to help develop a new California Telehealth Network.<sup>63</sup></li> <li>The initiative will establish a statewide broadband telehealth network aimed at improving California's rural health care infrastructure.</li> <li>This award enables UC Davis Health System to maintain its position and commitment to deliver telehealth education to health professionals, and offers the health system the potential to expand its telehealth clinical footprint.</li> </ul>
<b>University of California at San Francisco</b>	<ul style="list-style-type: none"> <li>The University of California at San Francisco and Harvard University have earmarked endowed funds for dedicated support to a cadre of "master teachers" in medical education.<sup>64</sup></li> <li>The program uses a peer-review process to reward excellence in teaching, resulting in the establishment of a core group of acknowledged master educators.</li> </ul>
<b>University of Kansas School of Medicine</b>	<ul style="list-style-type: none"> <li>In 2003, the University of Kansas School of Medicine's Department of Internal Medicine developed and implemented an educational value unit (EVU) system that is time-based, prospective and recognizes value across all domains of core education, clinical teaching and education administration.</li> <li>By linking the number of EVUs to salaries and other department funding, the university was able to reallocate funding so that it is consistent with its mission, considered fair by faculty, and supports corresponding mission-based incentive programs.<sup>65</sup></li> </ul>
<b>Nassau University Medical Center in East Meadow (NUMC)</b>	<ul style="list-style-type: none"> <li>To increase the revenue base for its education mission and to meet demand for increased medical school enrollees, Nassau University Medical Center (NUMC) in East Meadow signed a 10-year, \$19 million contract with American University of the Caribbean School of Medicine in St. Maarten, in June 2008.<sup>66</sup></li> <li>Under the contract, NUMC will accommodate an increased number of U.S. clerkships to U.S. citizens attending the offshore university in St. Maarten. Revenues from its fee-per-student model will help to address nearly 40 percent of NUMC's 2007 annual operating deficit.</li> </ul>
<b>University of San Francisco</b>	<ul style="list-style-type: none"> <li>Taking a leadership role for the new DNP designation, the University of San Francisco School of Nursing was the first school in California to offer a DNP degree.<sup>67</sup></li> <li>The program was accredited in 2007 by the Western Association of Schools and Colleges and admitted 22 DNP students its first year.</li> </ul>
<b>Vanderbilt Medical Center</b>	<ul style="list-style-type: none"> <li>To advance lifelong learning, Vanderbilt Medical Center's School of Medicine initiated a curriculum revision featuring several one-week intersessions wherein students focus on use of information technology, team-based coordination of care and other core competencies useful in their career.</li> <li>At the end of the undergraduate medical education four-year program, students are provided a "capstone" course to refresh understanding of basic science before entering a residency program.</li> <li>School of Medicine students operate the Shade Tree Clinic, working alongside volunteer physicians to provide primary care to underserved populations. The clinic is funded by contributions and students manage all aspects of its operation.</li> </ul>

<sup>62</sup> Harvard Medical School Department of Continuing Education, <http://cmeonline.med.harvard.edu/>

<sup>63</sup> "UC Receives \$22 Million FCC Telehealth Grant," November 20, 2007, <http://www.ucdmc.ucdavis.edu/newsroom/releases/archives/other/2007/telemed11-2007.html>

<sup>64</sup> *Reforming Medical Education: Urgent Priority for the Academic Health Center in the New Century*, The Blue Ridge Academic Health Group, 2003. [http://www.whsc.emory.edu/blueridge/\\_pdf/blue\\_ridge\\_report\\_7\\_2003may.pdf](http://www.whsc.emory.edu/blueridge/_pdf/blue_ridge_report_7_2003may.pdf)

<sup>65</sup> Stites S MD, Vansaghi L MD, Pingleton S MD, Cox G MD, Paolo A PhD. "Aligning Compensation with Education: Design and Implementation of the Educational Value Unit (EVU) System in an Academic Internal Medicine Department," *Academic Medicine*, Management Series: Mission-Based Management, 2005

<sup>66</sup> Page L. "Teaching Hospitals Get Top Dollar to Reserve Slots for Medical Students," *Hospitals and Health Networks*, September 2008, [http://www.hhnmag.com/hhnmag\\_app/jsp/articledisplay.jsp?dcrpath=HHNMAG/Article/data/09SEP2008/0809HHN\\_InBox\\_MedEducation&domain=HHNMAG](http://www.hhnmag.com/hhnmag_app/jsp/articledisplay.jsp?dcrpath=HHNMAG/Article/data/09SEP2008/0809HHN_InBox_MedEducation&domain=HHNMAG); accessed November 2008

<sup>67</sup> "School of Nursing Offers First DNP Degree in State," *The Bridge*, Summer 2008, [http://www.usfca.edu/nursing/pdf/SON\\_TheBridge08Summer.pdf](http://www.usfca.edu/nursing/pdf/SON_TheBridge08Summer.pdf); accessed November 2008

### Innovating across the AMC enterprise

All AMCs see clinical, research and education challenges. In response, some have stepped back, assessed and constructed “future state” scenarios reflecting sweeping changes in their organizations. Examples include the following (Figure 12):

Figure 12: Innovations across the AMC

Innovations	Examples
Re-allocating the AMC budget across its missions	<ul style="list-style-type: none"> <li>At the University of Pennsylvania, Penn Medicine re-evaluated the funds flow across its three missions, using a systematic and transparent method to re-allocate the flow to more effectively support its tripartite mission.               <ul style="list-style-type: none"> <li>The resulting annual budget was an organizationally accepted and validated re-allocation among teaching, research and clinical operations that effectively tripled the funding to the teaching and research mandates over a three-year period, while maintaining stable clinical service budgets over that same period.<sup>68</sup></li> <li>To achieve these results, Penn Medicine changed its governance model to a single administrative leader for all three missions. Further, it disbanded existing governing boards responsible for various entities within the school of medicine and health system and created a new single board.<sup>69</sup></li> </ul> </li> <li>The University of Wisconsin Medical School implemented its Mission-Aligned Management and Allocation (MAMA) model in 1999, which has helped to focus attention and transparency on funds alignment to the school’s mission and strategy at the department and individual faculty levels.<sup>70</sup></li> </ul>
Revising faculty practice plans and performance models	<ul style="list-style-type: none"> <li>At Duke University Medical Center, the Faculty Practice Plan (FPP) compensation plan uses relative value units, rather than dollar assignments, to accurately credit faculty activity within and beyond clinical activity across all three of the AMC’s missions. Scores are weighed against each faculty member’s assigned responsibilities to determine total compensation.<sup>71</sup></li> <li>In contrast, the compensation plan at the University of Florida College of Medicine Health Science Center is based on industry benchmarks to select performance measurements, which are then combined to determine final compensation.<sup>72</sup></li> <li>At the University of Michigan Medical Center, each department develops its own compensation structure, which is supplemented by organization-wide, performance-based rewards and governed by an FPP mechanism to deal with unproductive physicians. This system allows the FPP to increase practice revenue while keeping fixed salary costs to a minimum.<sup>73</sup></li> <li>In The Cleveland Clinic’s clinic model, the 1,800 physicians operate on staff as salaried employees in a not-for-profit group practice. This model removes financial incentives for increasing diagnostic procedures and tests, and incorporates performance incentives focused on quality, productivity and operations efficiency – helping The Cleveland Clinic manage the cost base for its patient care mission.<sup>74</sup></li> </ul>

<sup>68</sup> Kennedy D, Johnston E, Arnold E. “Aligning Academic and Clinical Missions Through an Integrated Funds-Flow Allocation Process,” *Academic Medicine*, 2007; 82:1172–1177

<sup>69</sup> Phillips SE, Rubenstein AH. *Academic Medicine*, 2008; 83(9):861-866

<sup>70</sup> Ridley GT, Skochelak SE MD, Farell PM MD. “Mission Aligned Management and Allocation: A Successfully Implemented Model of Mission-Based Budgeting,” *Academic Medicine*, 2002; 77(2):124-129

<sup>71</sup> Roger L. “Productivity-based compensation plans should support goals of the institution,” *MGMA e-Connexion*, 2005;71

<sup>72</sup> Ibid

<sup>73</sup> Ibid

<sup>74</sup> Cleveland Clinic Group Practice Model, <http://my.clevelandclinic.org/professionals/default.aspx>; accessed November 2008

Innovations	Examples
<b>Building strategic alliances</b>	<ul style="list-style-type: none"> <li>• Recognizing growing economic and competitive pressures, the leadership of Meharry Medical College (MMC) and Vanderbilt University Medical Center (VUMC) initiated a strategic alliance in 1997 that has since developed a focus on clinical science training, academic support, biomedical research and training, health services and community involvement. <ul style="list-style-type: none"> <li>- The alliance is now in its tenth year, and has achieved over \$190 million in joint research and research training grants, with a current annual average of \$35 million in these joint grants.</li> <li>- The alliance has improved the clinical service delivery and management at Nashville General Hospital at Meharry (NGHM), while also benefiting the education and research mandates of both institutions.<sup>75</sup></li> </ul> </li> <li>• Formed in 1998, the Brigham and Women’s/Faulkner Hospitals (BW/FH) is the product of a successful merger between the Boston-area BWH academic tertiary center and the local FH community hospital. <ul style="list-style-type: none"> <li>- The merger has resulted in the sharing and realignment of programs to maximize clinical service access to patients and related service efficiencies, and improved clinical resource sharing (human, infrastructure and technology) across the two hospitals.</li> <li>- This affiliation has also provided an integrated academic/community hospital training ground for Tufts Medical School.<sup>76</sup></li> </ul> </li> <li>• Two additional examples from The Methodist Hospital (TMH) in Houston, TX, demonstrate how AMCs are evolving strategic alliances to expand their capabilities in the face of an evolving health care system: <ul style="list-style-type: none"> <li>- On the international front, TMH’s affiliations include one formed in 2007 with American British Cowdray Medical Center (ABC) in Mexico City, which will enable knowledge transfer focused on quality and organizational design, and education opportunities in the U.S. for ABC health professionals.<sup>77</sup></li> <li>- Within the U.S., TMH has a tripartite affiliation with Weill Cornell Medical College (WMC) and New York-Presbyterian Hospital (NYP) in New York City to augment its teaching hospital resources with a dedicated connection to the medical college at WMC. This affiliation provides opportunities for the three institutions to collaborate in providing patient care, clinical and biomedical research, and medical education and training.<sup>78</sup></li> </ul> </li> </ul>
<b>Enhancing donor relationships</b>	<ul style="list-style-type: none"> <li>• Through its Discovery, Innovation and Investment fund, the Mayo Clinic received a \$15 million endowment for neurosciences research.</li> <li>• The terms of this donor relationship enable the Mayo Clinic to accelerate translational research that will bring Mayo’s basic research to the bedside; to expand the Clinic’s ongoing basic research; and to add two Medical School professorships.<sup>79</sup></li> <li>• Mayo’s innovation in the design of this donor relationship is its commitment to dedicate a portion of its own revenues, generated through the commercialization of research technologies and knowledge, which in turn will create further funding support for its neurosciences research.</li> </ul>
<b>Consolidating governance &amp; simplifying structure</b>	<ul style="list-style-type: none"> <li>• Wake Forest University Baptist Medical Center (WFUBMC) was created in 2007 through a restructuring effort that unified North Carolina Baptist Hospital, Wake Forest University Health Sciences and Wake Forest University Physicians under a single governance board and CEO.<sup>80</sup></li> <li>• This unique governance approach was not designed as a full-blown merger, as the Hospital and University Health Sciences will retain their own boards, and no transfer of assets will take place. Rather, instituting a common board and corporate CEO is intended to foster collaboration and integration. In this new model, WFUBMC remains academically independent of, but closely affiliated with, the Wake Forest University.</li> </ul>

<sup>75</sup> Meharry-Vanderbilt Alliance Background and History, <http://www.meharry-vanderbilt.org/background.htm>; accessed November 2008

<sup>76</sup> Brigham and Women’s/Faulkner Hospitals. <http://www.brighamandwomens.org/general/bwhfaulkner.aspx>; accessed November 2008

<sup>77</sup> ABC Medical Center, [http://www.methodistinternational.org/about/abc\\_affiliation.shtml](http://www.methodistinternational.org/about/abc_affiliation.shtml); accessed November 2008

<sup>78</sup> “Weill Cornell Medical College and New York-Presbyterian Hospital in New York City Announce Affiliation With The Methodist Hospital in Houston,” <http://www.nyp.org/news/hospital/6.html>; accessed November 2008

<sup>79</sup> <http://news.bio-medicine.org/medicine-news-3/Mayo-Clinic-receives-2415-million-to-launch-innovative-neuroscience-research-program-8440-1/>; accessed November 2008

<sup>80</sup> <http://www1.wfubmc.edu/ceo/>; accessed November 2008

# Getting beyond the tipping point

We believe that the challenges to the AMC enterprise are precarious but manageable. They require fresh thinking, strong leadership, strategically-attuned boards and institutional leaders, and effective execution.

The process starts with answers to tough questions:

- What is the value proposition of academic medicine in our community? Is it sustainable? Realistic? Objective?
- Do we operate as “three-in-one” or as “three ones”? Should we change? How much time do we have?
- How should we focus our capital and human resources for priorities in infrastructure, technology and programs and services to accelerate our transformation? And what do we say “no” to?
- How can we better prepare tomorrow’s health care workforce to be professionals who deliver appropriate services well to populations served using technologies and processes that work better than the status quo?
- How can AMCs support health care professionals in their quest to be well-trained, lifelong learners who use technology appropriately?
- Do we have the right leadership and structure to implement the plan?
- How will regulators, health plans and consumers relate to us as a result of the plan?

## The path ahead

The AMC is a unique organization – one that is arguably more complex than any other in health care. It is simultaneously a lab for scientific breakthroughs, a path for workforce development and a safety net provider of care for communities. Its stakeholders include governments, health plans, employers, providers, life sciences companies and the public.

In our view, the “three-in-one” model of the AMC’s tripartite mission presents challenges requiring careful planning and strategic execution. We present a framework for this transformation (Figure 13), which focuses AMC efforts across seven zones of action:

**Figure 13: AMC transformation framework: seven zones of action**



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In recognition of the AMC's complex roles and responsibilities, the pressures and opportunities AMCs face, and the functions that various stakeholders have in AMCs' future, we highlight in Figure 14 a framing question for each of these seven zones of action, supported by a set of strategic questions that serve as a "checklist" for AMCs and their stakeholders to consider as they look to transform their organizations:

Figure 14: AMC checklist

Zone of action	A checklist of strategic questions for AMCs
<b>Strategy development</b>	<p><i><b>What is our future? Where should we be in 10 years?</b></i></p> <ul style="list-style-type: none"> <li>• Does the AMC have a long-range strategy and vision for how its missions integrate planning and execution in the future, with a supporting governance and leadership model?</li> <li>• Is maintaining a decentralized, departmentally controlled structure advisable?</li> <li>• Do certain clinical programs need more emphasis than others?</li> <li>• How do the evolving clinical capabilities of non-teaching hospitals to compete in delivering tertiary/quaternary services impact clinical care, research and education programs?</li> <li>• Does the leadership team require outside perspective to ward off insulation from market realities?</li> <li>• Might AMC leaders from business and industry be worthwhile additions to executive roles in leading AMCs into the future?</li> </ul>
<b>Revenue optimization</b>	<p><i><b>How do we optimize revenues in the near term to fund future investments and maintain targeted programs for growth and sustainability?</b></i></p> <ul style="list-style-type: none"> <li>• Is a common method of funding and budget management across the three missions in place?</li> <li>• Are information systems in place to help define and track value across each mission?</li> <li>• How are inter-mission funding trade-offs managed?</li> <li>• Is there sufficient organizational resolve to divest non-core programs or underperforming assets?</li> <li>• What new business models are being considered to push outside of the traditional three-in-one model?</li> </ul>
<b>Research enterprise redesign</b>	<p><i><b>How do we enhance the operation of our research enterprise to access funding from industry and government sources, produce valid and reliable studies in a more timely manner, facilitate translation of research into education and patient care activity of the organization, enhance awareness of research among graduates and community-based providers and participate in commercialization efforts dependent on our research?</b></i></p> <ul style="list-style-type: none"> <li>• What is the research strategy and portfolio approach to core vs. "orphan" research endeavors?</li> <li>• What industry partnerships are in place to fund research?</li> <li>• Are research informatics capabilities in place to meet the needs of industry partners?</li> <li>• Does the infrastructure and expertise exist to quickly translate and commercialize research?</li> <li>• How are commercialized product revenues being harnessed to enable further research?</li> </ul>
<b>Workforce</b>	<p><i><b>How do we recruit, keep, recognize and compensate the workforce necessary to achieve our short- and long-term vision and strategy?</b></i></p> <ul style="list-style-type: none"> <li>• Do faculty compensation and performance management systems support the mission and vision?</li> <li>• Are staff engaged and enabled through training and infrastructure in all three missions of the AMC?</li> <li>• How are inter-professional changing scopes of clinical practice being managed in the education and research missions?</li> <li>• What supports are in place for mass career customization?</li> <li>• How is a service culture being encouraged for patient care?</li> </ul>

Zone of action	A checklist of strategic questions for AMCs
<b>Information technology</b>	<p><i>How do we equip the organization to optimize efficiency and effectiveness and facilitate decision-making necessary to key decisions?</i></p> <ul style="list-style-type: none"> <li>• How are infrastructure and technology planning, deployment and utilization aligned across the three missions?</li> <li>• Is information available and used on a timely basis to manage administrative, clinical, education and research requirements?</li> <li>• Does the organization’s inventory of technology and supporting infrastructure support leading practice across the missions?</li> <li>• Is a comprehensive electronic health record in use to manage the patient experience across the continuum of care?</li> </ul>
<b>Training</b>	<p><i>How do we train our workforce toward continuous improvement of processes and individual lifelong learning?</i></p> <ul style="list-style-type: none"> <li>• When were the education curricula last refreshed to meet leading practice?</li> <li>• Are technologies in place to support new models of learning?</li> <li>• How are faculty education contributions recognized?</li> <li>• Is a demonstrated commitment to lifelong learning and professional development evaluated in faculty and staff?</li> <li>• What ongoing infrastructure and incentives are available to support faculty and staff in pursuing lifelong learning?</li> </ul>
<b>Capital</b>	<p><i>How much capital do we need, and what sources should we pursue?</i></p> <ul style="list-style-type: none"> <li>• What strategies are in place to pursue alternative sources of capital -- through new business ventures? Globally?</li> <li>• How is the organization cultivating donors?</li> <li>• Are strategic partnerships being explored for new capital in the research or education missions?</li> <li>• Is a consistent management approach to basic operational efficiencies and service in place across the three missions?</li> <li>• Does the organization actively manage its bond credit rating?</li> </ul>

The viability of academic medicine is relevant to every stakeholder in the U.S.:

- Companies that produce medical devices, pharmaceuticals, biotechnologies and information technologies need AMCs to equip tomorrow’s health professionals to use their innovations.
- Health plans and employers need AMCs to lead in reducing unwarranted variation, avoidable errors and ineffective treatments.
- Policymakers need AMCs to fill vital roles in preparing tomorrow’s health care workforce to support economic development in communities, states and regions.
- Consumers need AMCs to lead in the discovery of newer, better ways for them to care for themselves and loved ones.

The sustainability of academic medicine is vital to the U.S. health care system. Its major challenges are internal – recognition that change is necessary and willingness to move in a new direction.

We are hopeful that the questions and implications raised in this paper push current thinking and stimulate discussion about the methods, tools and alliances that can be used to advance the future of academic medicine in society.



# Information

## Special dedication

Kip Perlstein, a respected Deloitte colleague and friend to leaders in academic medicine nationwide, died suddenly last summer. He will be remembered for his passion to conduct meaningful, worthwhile work and the energy he invested in doing so. He will be missed. This study is dedicated to his memory.

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We would like to recognize the individuals who contributed their insights and support to this research.

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