

# ***The future of the academic medical center:*** Strategies to avoid a margin meltdown

*Health Research Institute  
February 2012*





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*The heart of the matter*

Academic medical centers are the nucleus of our health system, yet they face multiple systemic challenges that threaten their profitability

Academic medical centers (AMCs) are the nucleus of the health system. They train doctors, discover new treatments, and care for the most challenging patients. AMCs graduate nearly 17,000 MDs every year, provide more than 40% of charity care, and account for 20% of all hospital admissions, surgical operations, and outpatient visits.<sup>1</sup> The combined economic impact of the nation's AMCs exceeded \$500 billion in 2008, according to the Association of American Medical Colleges (AAMC), with AMCs responsible for the creation of more than 3 million full-time jobs.<sup>2</sup> AMCs clearly sustain the health system and are the economic engine for growth in many communities.

Yet they face multiple systemic challenges that threaten their profitability. Though consumers value the AMC brand, 78% of consumers indicated in a PwC Health Research Institute survey that they

would not be willing to pay a higher premium to access care at an AMC.<sup>3</sup> Meanwhile, funding sources are changing, research costs continue to rise faster than sources of funding, and AMCs are perceived to be “high-cost” providers in an accountable care environment focused on lowering costs.

PwC analysis reveals that Medicaid will become a more prominent funder of AMCs while the share of higher-paying commercial insurance will shrink. Additionally, up to 10% of traditional AMC revenue could be at risk due to external funding threats.<sup>4</sup> With slim operating margins that average approximately 5%, many AMC profit margins could disappear.

But what is often unclear to policy makers and the public is that an AMC's funding “DNA” is structured in a complex double helix of mission cross-subsidies. Reimbursement

changes to one AMC mission can affect all three of an institution's missions. Phrased differently, a single change to an AMC's “genetic code” can have significant effects, resulting in either a superhuman or a Frankenstein. Therefore, tomorrow's AMCs must revamp and recombine the tripartite AMC missions of clinical care, research, and education. AMCs will also need to address their own organizational shortcomings around decentralized academic administration, inefficient infrastructure, and a lack of clear business intelligence capabilities. And, they need to act now because changing the structure and culture of these infinitely complex organizations is ... well ... like recombining DNA.

This research report provides five strategies for the AMC of the future to remake itself and recombine its DNA in order to prevent a margin meltdown.

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1 2011 AAMC Databook: How Do Teaching Hospitals Serve America's Communities?, AAMC

2 The Economic Impact of AAMC-Member Medical Schools and Teaching Hospitals 2008, AAMC

3 PwC commissioned an online survey of 100 AMC leaders; however, not all survey questions received responses from the entire group of participants. References to data from the PwC Health Research Institute AMC Leader Survey are based on responses received.

4 PwC Health Research Institute Analysis

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*An in-depth discussion*

PwC's analysis shows that up to 10% of traditional AMC revenue is at risk

## ***Executive summary***

### ***The state of the academic medical center***

For years, many AMCs have thrived financially. But financial success has required a complex mix of revenue sources that flow through cross-subsidies to achieve the tripartite mission of clinical care, research, and education. Research and education have been loss leaders, cross-subsidized by the work of hospitals and physicians. So any changes to clinical revenue directly impact an AMC's ability to educate clinicians and scientists and to conduct research.

### ***The three major forces that will require AMCs to change:***

#### **Force #1—Reform rebound: Budgetary and political pressures will raise the threat level at AMCs**

As national and state governments face budgetary pressures, AMCs will be under pressure to play a part in finding

savings and quality in both traditional and new government programs. For example, 70% of AMC leaders surveyed by PwC identified decreased IME funding as a significant threat to their institutions. AMC leaders also identified eleven other significant threats in the survey, including the reductions in the Medicare annual update factor of 1.1% in 2012 increasing to an expected 1.75% in 2019, with productivity adjustments. The new health reform law, the Patient Protection and Accountable Care Act (PPACA), will change the AMC payer mix. Medicaid will become a larger source of revenue to AMCs, while commercial insurance will become less dominant. Fueling this change in payer mix, however, is the decline in the uninsured population. This will result in lower bad debt and charity care expenses as uninsured individuals join Medicaid or private insurance plans.

#### **Force #2—Brand breakdown: Low quality rankings and imprudent affiliations could damage the AMC brand**

The AMC brands are among the most powerful in healthcare, yet they do not score at the top of recent

quality rankings, and the brand could be further diluted through poorly managed affiliations and partnerships with other hospitals. Only 22% of consumers surveyed by PwC said they'd pay more to be treated at an AMC. When The Joint Commission (TJC) ranked the top quality performers of 2010, few major AMCs were among the 405 hospitals ranked. Yet only 49% of major AMCs surveyed by PwC felt that not meeting new quality standards was a threat to their organization. This could represent an underestimation of this threat, as recent legislation has strengthened the correlation between quality standards and reimbursement.

#### **Force #3—Organizational misalignment: Old AMC structure is not designed to address new challenges**

The highly decentralized governance structures at AMCs threaten their ability to respond to the challenges of the current and future healthcare environment. When AMC leaders were asked how they would respond to internal and external challenges, actions that required modifications to the governance structure at AMCs were among the lowest ranked.

## ***The five strategies that can help AMCs avoid a margin meltdown:***

### **Strategy #1—Build the brand by holding faculty accountable for cost and quality.**

AMC leaders said their organizations are complex to manage and that multiple layers and silos create enormous variation. The new payment models will be based on meeting quality metrics and controlling costs across the continuum of care. Three-fourths of AMC leaders said they would respond to funding and revenue challenges by improving quality outcomes. However, at the same time, well-entrenched faculty and organizational structures have made it difficult to address costs and quality. AMCs must place an equal focus on both reforming organizational structure and improving quality outcomes.

### **Strategy #2—Become part of a larger community network.**

Fifty-nine percent of the consumers surveyed by PwC said they were likely to seek treatment from a community hospital if it was associated with an AMC. As AMCs engage in network agreements, this consumer view will have a positive impact on attracting patients and referring care.

### **Strategy #3—Push the envelope on new kinds of extenders to increase effectiveness.**

New healthcare extenders such as telemedicine, collaborative classrooms, simulation technology, and shared services will dramatically change how AMCs deliver care and train doctors and scientists. Sixty-nine percent of AMC leaders surveyed by PwC said they are likely to adopt extended services through telemedicine as an important relationship model. This commitment to technology will allow AMCs to reach new patients and generate cost savings.

### **Strategy #4—Become an information hub to realize a return on HIT investment.**

AMCs have millions of patient records but no way to access them. Sixty-five percent of AMC leaders indicated that their institutions will collaborate with other research institutes or medical centers to share electronic health records (EHRs) during the next five years. AMCs will utilize technological advances, many of which have been developed by other AMCs, to share data and ultimately enhance scientific discovery through inter- and intra-AMC data sharing.

### **Strategy #5—Align the research pipeline with clinical and business strategies.**

Sixty-two percent of AMC leaders surveyed by PwC indicated that coordinating translational research will be a high priority at their institutions during the next five years. As AMCs follow this path they will capitalize on their existing strengths and develop transformational treatments and cures.



## The state of the academic medical center

AMCs, with their tripartite mission of patient care, teaching, and research, have thrived for many years. (For a definition of an AMC, see Figure 1.) Operating margins have averaged close to 5% during the last three years.<sup>8</sup> AMC business models rested on a simple equation: Patient treatment, education, and research are complementary activities that reinforce one another.

These overlapping activities are illustrated in the figure below. The size of the circles represents revenues generated. (See Figure 2.) For example, the overlap between the circles representing the education and clinic missions illustrates activities in which medical students and residents treat patients at the same time that they are engaged in learning. Other overlapping circles illustrate joint clinical and research activities, joint research and education activities, and finally joint activities involving all three missions, such as the example of a medical fellow working on a research protocol involving patients.

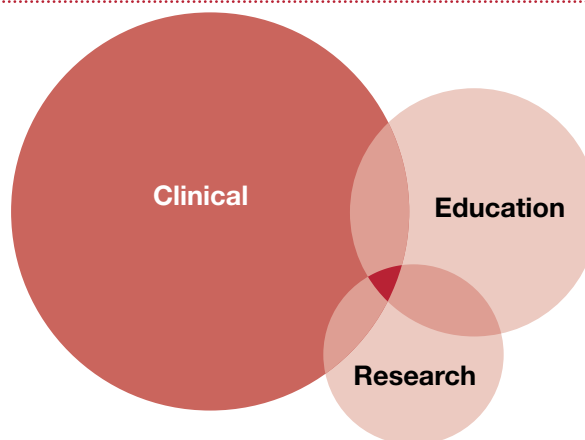
Figure 1: What is an academic medical center?

To properly evaluate the condition of academic medical centers (AMCs) in the United States, it is important to understand what an AMC is. All AMCs share the tripartite mission of caring for the sick; educating physicians, future doctors, and scientists; and performing research. These three missions involve the following activities:

- **Clinical:** AMCs are known for tertiary and quaternary care. For example, they account for 47% of the nation's organ transplants, 60% of Level One trauma centers, and two-thirds of all burn beds. The Council of Teaching Hospitals (COTH) recognizes approximately 400 teaching hospitals.<sup>5</sup>
- **Education:** Some AMCs have a medical school under the same ownership structure as the hospital. In other cases, an AMC hospital has an affiliation agreement with the medical school. The Association of American Medical Colleges (AAMC) recognizes 136 medical schools in the United States. However, more than 1,000 hospitals receive some form of Medicare funding for teaching medical students and residents.<sup>6</sup>
- **Research:** AMCs are at the core of innovation in medical research and are worldwide leaders in research. The AAMC estimates that medical schools and teaching hospitals conduct more than half of all extramural research sponsored by the National Institutes of Health (NIH).<sup>7</sup>

For the purposes of this PwC analysis, we recognize more than 130 AMCs that are defined as organizations delivering the tripartite mission in a coordinated fashion through educating doctors and scientists, performing research, and treating the sick.

Figure 2: AMCs are inextricably connected



Source: PwC Health Research Institute Analysis

5 <https://www.aamc.org/initiatives/patientcare/>, <https://www.aamc.org/members/coth/>, accessed January 2012

6 <https://www.aamc.org/about/>, PwC Health Research Institute Analysis of 2012 CMS Final Rule—IPPS Impact, accessed January 2012

7 <https://www.aamc.org/initiatives/research/>, accessed January 2012

8 PwC's AMC Financial and Operational Benchmarking Analysis, 2008-2010

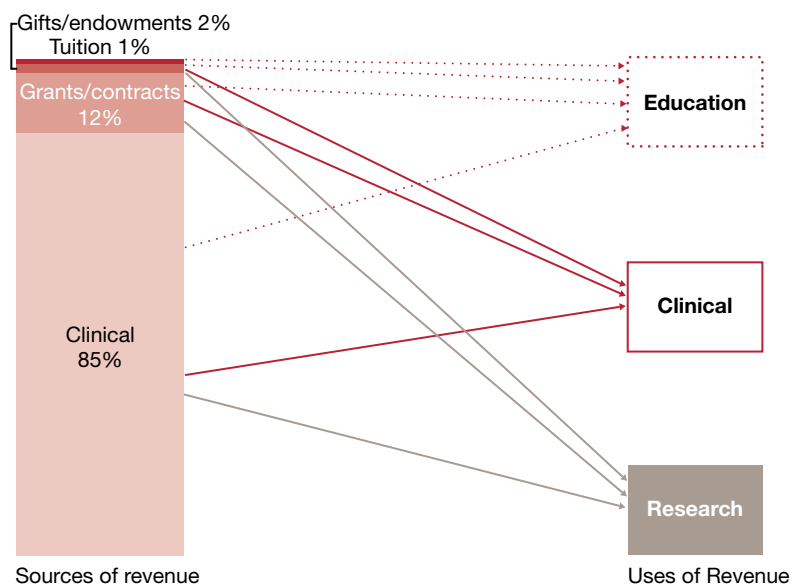
To capture how this cross-subsidization works, PwC constructed an illustrative model of a major AMC showing the disproportionate flow of revenue to the different missions. (See Figure 3.) Its revenues derive from a web of sources, each presenting unique characteristics. For example, clinical care performed through the hospital, faculty practice, or other clinics represented approximately 85% of revenue. The composition of this clinical revenue includes an assortment of Medicare and Medicaid reimbursements, commercial insurance payments, self payments, and various other payments. Grants and contracts represent the second-largest single income source, roughly 12% of total funding. All other sources combined—endowment income, gifts from donors, and tuition—account for approximately 3% of funding.

AMC leaders interviewed by PwC frequently mentioned the cross-funding of education and research from clinical revenue. The fact that clinical revenue supports teaching and research in no way implies that clinical care is worth less than what patients and their insurers are paying. Rather, it speaks to the fact that it's difficult to separate the costs of clinical care,

teaching, and research funding when they occur together. So, if clinical revenue decreases, patient care, teaching, and research are all reduced together. “It is about connecting the dots,” said Steven Strongwater, MD, former chief executive officer of Stony Brook University Medical Center. “If clinical reimbursements go down through bundled payments or cuts to Medicare, the cross-subsidies at AMCs will be difficult to maintain. There will have to be higher degrees of accountability in all the missions.”

The overall picture of the illustrative AMC is of a complex organization with many overlapping activities that cross-fund one another. Trying to predict how changes in funding, medical practices, or technology will affect AMCs is difficult. One thing is clear: Changes in the mix and methodologies of the payers of clinical care will threaten all three missions. These changes are beginning to boil over and major forces are developing that will require AMCs to modify their traditional business model.

**Figure 3: Revenue cross-subsidy at an illustrative major AMC<sup>9</sup>**



Source: PwC Health Research Institute Analysis

<sup>9</sup> Published statistics on AMCs are not readily available. Rather, organizations like AAMC publish statistics on medical colleges and then other statistics about teaching hospitals. PwC created its “illustrative” analysis using financial data from AMCs and national trend data available on medical schools and COTH hospitals. Although it is difficult to define a “typical” AMC, we believe the final percentages are reasonably consistent with the national averages reported separately by medical colleges and teaching hospitals and our knowledge of AMCs.

## The three major forces that will require AMCs to change

Most AMC leaders interviewed for this report were concerned about funding the future of their tripartite mission. These leaders mentioned the shift toward “value-based purchasing” based on measures related to quality and patient satisfaction in Medicare and performance and risk-based payment structures for private payers. At the same time, rising healthcare costs are creating more price sensitivity among healthcare purchasers, including government agencies, employers, and patients. We believe three major forces are acting on the AMC landscape that will ultimately require change and redesign by AMCs.

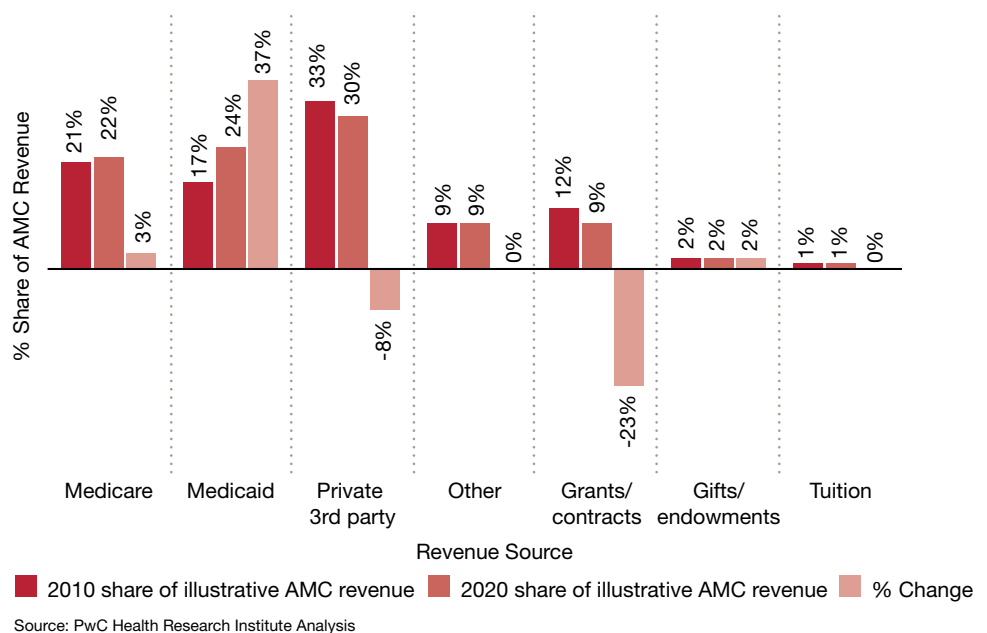
### Force #1—Reform rebound: Budgetary and political pressures will raise the threat level at AMCs

Federal, state, and municipal governments are struggling with financial deficits while also trying to incorporate the requirements of the PPACA. Beginning in 2014, the changes under PPACA will mean that many uninsured patients will suddenly be insured by private payers or Medicaid.

However, the impact on margins at individual teaching hospitals is less clear. Below are key ramifications of this law:

- Hospital spending may increase by \$8.6 billion more in 2014 than it would have in the absence of the PPACA.<sup>10</sup>
- An additional 8% of the US population is projected to have insurance coverage in 2014 from private payers or Medicaid.<sup>11</sup>
- Medicare disproportionate share hospital (DSH) payments are expected to be cut by 75%, only some of which will be returned to hospitals on the basis of a new DSH formula.<sup>12</sup>
- States may also reduce funding for indigent care, given the need for such payments will significantly decline.
- Patients who were previously uninsured are expected to use more services when they gain coverage.

Figure 4: Changes in sources of AMC funding, 2010-2020



10 National Health Spending Projections through 2020: Economic Recovery and Reform Drive Faster Spending Growth, CMS National Expenditures Team

11 Estimated Financial Effects of the “Patient Protection and Affordable Care Act,” as Amended, CMS, April 2010

12 Congressional Research Service, “Medicare Provisions in PPACA (P.L. 111-148)”, April 2010

- Some AMCs may lose patients who change providers once they have private insurance plans.

On average, hospitals may find that the level of services they provide increases more than the increase in revenues to finance those services. Additionally, under PPACA, AMCs will be trading uninsured patients for Medicaid and privately insured patients, representing just one example of the payer mix migration. PwC's analysis shows an AMC's biggest change in the share of revenues will be in Medicaid, a low-margin business, while an AMC's largest loss will be in the share of commercially insured patients, a higher-margin

business. (See Figure 4.) AMCs need both types of volume in order to train their medical students and residents while managing their margins.

Even though national spending trends show the hospital sector growing, AMCs may struggle for revenue. This means some AMCs will do much better with more insured patients after 2014, but others may not fare as well. Significant changes in the makeup of the payer mix, coupled with a decrease in uninsured patients (not shown in Figure 4) are sure to force AMC leaders to carefully analyze how these changes to their payer mix will impact an already slim profit margin. On top of

the changing payer mix, PwC's analysis shows that up to 10% of traditional AMC revenue could be cut due to external funding threats.<sup>13</sup> Whether due to a reduction in DSH payments, failing to meet new quality standards, or even NIH funding decreases, AMCs are facing a scenario where profit margins could completely evaporate if they do not respond quickly to revenue challenges.

PwC's Health Research Institute has identified 12 specific revenue threats to AMCs. The following table describes the funding threats and the percentage of AMC leaders that recognized them. (See Figure 5.)

**Figure 5: Twelve threats to AMC revenues**

Percent of AMC leaders recognizing revenue threat <sup>14</sup>	Description	Commentary
<i>Indirect medical education (IME)</i> <b>(70%)</b>	<p>MedPAC analysis indicates that only 40% to 45% of current IME payments are justified to cover the higher care costs of Medicare inpatients, suggesting a potential cut in IME payments of up to 60%.<sup>15</sup></p> <p>The president's budget deficit proposal includes a 10% reduction in IME by 2013.<sup>16</sup></p>	IME funding will be an easy target for policy makers. AMC leaders interviewed for this report say this reimbursement source is perceived by policymakers to not directly affect patient care.
<i>Disproportionate Share Hospital payment (DSH) Medicare and Medicaid</i> <b>(61%)</b>	<p>In 2014, under the PPACA, each hospital will continue to receive 25% of its Medicare DSH payments, and the remaining 75% will be subject to a new formula based on the reduction in DSH payments, the percentage decrease in the number of uninsured nationally, and each hospital's ratio of uncompensated care as compared to all DSH hospitals.<sup>17</sup></p> <p>The aggregate Medicaid DSH reductions mandated by the legislation are:<sup>17</sup></p> <ul style="list-style-type: none"> <li>• \$500 million for 2014</li> <li>• \$600 million for 2015–2016</li> <li>• \$1.8 billion for 2017</li> <li>• \$5 billion for 2018</li> <li>• \$5.6 billion for 2019</li> <li>• \$4 billion for 2020</li> </ul> <p>The methodology to implement these Medicaid DSH reductions has not yet been determined.</p>	Once the major expansion in health insurance coverage begins in 2014, AMCs are expected to benefit from more Medicaid and subsidized commercial insurance patients and fewer uninsured. Medicaid revenues will increase, and AMCs will need to attract these newly insured patients to make up for declining DSH subsidies.

13 PwC's analysis is based on the effects of the revenue threats to an illustrative major AMC. The analysis is a high-level estimate dependent on Medicare reimbursement variables and hypothetical reductions to the applicable revenues for threats represented in Figure 5. See Appendix A for further details on specific variables and reductions utilized by PwC to develop this estimated range of threatened revenue.

14 PwC Health Research Institute AMC Leader Survey

15 In its June 2010 report to Congress, MedPAC recommended cutting all unjustified IME payments and using these funds to form a new performance-based GME funding system. Under this proposal, however, payments to individual hospitals may be higher or lower than under current policy. (MedPAC, "Report to the Congress: Aligning Incentives in Medicare," June 2010, Recommendation 4-1). This is in contrast to the President's Plan for Economic Growth and Deficit Reduction, which instituted a 10% cut in IME payments without reallocating any of the cut funding to other Medicare reimbursements.

16 President's Plan for Economic Growth and Deficit Reduction, US Office of Management and Budget, September 2011

17 Patient Protection and Affordable Care Act (P.L. 111-148), and Health Care Education Reconciliation Act of 2010 (P.L. 111-152)

<b>Percent of AMC leaders recognizing revenue threat<sup>14</sup></b>	<b>Description</b>	<b>Commentary</b>
<b>Medicare basket updates (55%)</b>	<p>There are mandated reductions in the Medicare diagnosis related group (DRG) for the future:</p> <ul style="list-style-type: none"> <li>• Market basket reductions of 0.1% in 2012 increasing to 0.75% in 2019.<sup>17</sup></li> <li>• Productivity adjustment of 1.1% in 2012 and with similar reductions expected in future years.<sup>17</sup></li> <li>• The Budget Control Act sequestration reduces base payments by 2% (affects the base but not future growth rates).<sup>18</sup></li> </ul>	As the aging baby boomer population transitions to Medicare, Medicare's share will increase. Teaching hospitals will need to address their cost structure in order to maintain margins on Medicare payment rates.
<b>State Funding (53%)</b>	<p>States may be cutting Medicaid in multiple ways to narrow budget deficits.</p> <p>Not only would these cuts affect patient care reimbursement, but they will also affect operating budgets for public institutions.</p>	To curb Medicaid spending, states such as North Carolina, Florida, and Oregon have cut their inpatient hospital rates. In addition, many states are outsourcing management to private Medicaid health plans, which are intent on reducing hospital utilization. <sup>19</sup>
<b>New funding models: Accountable care organizations (ACOs) and bundled payments (49%)</b>	Competitive ACOs, trying to minimize costs, will be tempted to reduce hospital use and, in particular, high-cost services. Bundling of services may reduce inpatient hospital payments.	AMCs must consider demonstrating superior outcomes on cost and quality in order for ACOs to outsource patient care to their organizations.
<b>Commercial insurers tiering benefits and/or creating narrow networks (39%)</b>	Anecdotal information from insurers and employers indicates a renewed interest in tiered networks and narrow networks to decrease health insurance costs. AMCs are often considered "high-cost" places to receive care and are more likely to receive out-of-network status as organizations for specific treatments.	Some tertiary and quaternary care that is typically provided at AMCs is also performed at community hospitals. This provides payers an opportunity to exclude or limit the AMCs from performing these services, especially if the community hospital is less expensive.
<b>Meeting new quality standards (38%)</b>	<p>Value-based purchasing (VBP):</p> <ul style="list-style-type: none"> <li>• 1% reduction to the base DRG payment amount in 2013 reaching 2% by 2017.<sup>20</sup></li> </ul> <p>(EHRs) Meaningful use:</p> <ul style="list-style-type: none"> <li>• Non-hospital-based physicians: 1% reduction to the Medicare fee schedule by 2015 increasing to a maximum of 5% in future years; the industry awaits further guidance given that Stage 2 has been delayed.</li> <li>• Medicare-eligible hospitals: 25% reduction to the market basket update factor by 2015 increasing to 75% in 2017 and beyond.<sup>21</sup></li> </ul> <p>(EHRs) E-prescribing:</p> <ul style="list-style-type: none"> <li>• Non-hospital-based physicians: 1% reduction to the Medicare fee schedule by 2012 reaching 2% by 2014.<sup>22</sup></li> </ul> <p>Hospital-acquired conditions (HAC):</p> <ul style="list-style-type: none"> <li>• 1% reduction to Medicare payments in 2015 for providers in the bottom quartile (highest volume).<sup>20</sup></li> </ul> <p>Readmissions:</p> <ul style="list-style-type: none"> <li>• 1% maximum reduction to Medicare payments in 2013 reaching 3% by 2015.<sup>20</sup></li> </ul>	<p>AMCs function with operating margins at approximately 5% while the median AMC days cash on hand is only two months.<sup>23</sup> Numerous reductions to reimbursements could quickly undermine the financial viability of an AMC. Additionally, PPACA quality metrics will be publicly accessible, increasing the incentive for healthcare organizations to focus on meeting the benchmark levels.</p> <p>For AMCs dependent on their brand name, poor quality scores represent a reputational risk with financial implications. AMCs will need to continually monitor their quality measures and increase their ranking by focusing on those measures easiest to change.</p>

18 Estimated Impact of Automatic Budget Enforcement Procedures Specified in the Budget Control Act, Congressional Budget Office, September 2011

19 "Cuts to be felt at hospitals: State Medicaid reductions to cost Charleston-area facilities millions of dollars," The Post and Courier, June 2011; "Hospitals: 12% Medicaid cut won't cause layoffs," Highlands Today, May 2011; "Hospitals See Their Medicaid Rates Cut by 15 Percent," The Lund Report, October 2011

20 Patient Protection and Affordable Care Act (P.L. 111-148), and Health Care and Education Reconciliation Act of 2010 (P.L. 111-152)

21 American Reinvestment and Recovery Act (P.L. 111 - 5)

22 The Medicare Improvements for Patients and Providers Act (MIPPA)

<b>Percent of AMC leaders recognizing revenue threat<sup>14</sup></b>	<b>Description</b>	<b>Commentary</b>
<i>Grant and contract funding (NIH)</i> <b>(35%)</b>	The one-time \$10 billion stimulus in the American Reinvestment and Recovery Act (ARRA) funding for research expired in 2010. The November 2011 failure of the congressional “Super Committee” to identify \$1.2 trillion in federal spending cuts has triggered automatic budget cuts through a process known as sequestration. As part of that, NIH funding is projected to be cut by 7.8% in 2013. <sup>24</sup>	Many AMCs have built large research facilities and infrastructures. They will need to find other sources of revenue or limit their scope of research.
<i>Philanthropy</i> <b>(25%)</b>	Philanthropy is sensitive to economic markets. Healthcare donations and gifts experienced an 11% decrease in 2009 and rebounded with an 8% increase in 2010. <sup>25</sup> According to the AAMC, endowments experienced double-digit growth from 2006 to 2008 during the economic boom. However, the growth rate declined in 2009. <sup>26</sup> Some AMCs have relied on royalty income from drug patents to sustain their endowments. However, patent expirations will threaten this supplemental revenue source.	Philanthropy is currently tied to a volatile market, and donor generosity is connected to their expectation to do the most good with their giving. AMCs will need to tap into the aging baby boomer population to capitalize on potential donation revenue.
<b>Other threats derived from interviews with AMC leaders</b>		
<i>Tuition</i>	AAMC data shows an average increase of 5% in tuition each of the last five years; however, future tuition increases will be difficult because medical students are reluctant to take on more medical school debt, especially if they are going into primary care.	
<i>Physician sustainable growth rate (SGR)</i>	SGR cuts are approaching the 30% mark, however, cuts have frequently been delayed by Congress. <sup>27</sup>	
<i>Loss of private insured patients</i>	According to Centers for Medicare and Medicaid Services (CMS), 8% of the US population will gain private or subsidized coverage in 2014, mostly in the new state exchanges and Medicaid, and others will shift from current small group market to exchanges. <sup>28</sup> AMCs may lose patients who change health plans once they have private insurance plans. Competing for commercial patients will be every hospital's strategy, and AMCs will need to compete for these patients as well.	
<i>Revenue boosters</i>	<ul style="list-style-type: none"> <li>• Windfall from decrease of uninsured patient population</li> <li>• Value-based purchasing incentives</li> <li>• Electronic health records incentives</li> </ul> <p>According to CMS, hospital spending is estimated to increase by \$8.6 billion more in 2014 than it would have in the absence of the PPACA.<sup>29</sup> While there are revenue threats on the horizon, there also exist opportunities to increase revenue through incentives and additional patient volume. AMCs will need to change their organizational structure in order to take advantage of those opportunities.</p>	

Source: PwC Health Research Institute Analysis

23 PwC's AMC Financial and Operational Benchmarking Analysis, 2008-2011

24 Estimated Impact of Automatic Budget Enforcement Procedures Specified in the Budget Control Act, Congressional Budget Office, September 2011

25 FY 2010 AHP Report on Giving-US, Association for Healthcare Philanthropy, 2011

26 2011 AAMC Databook

27 Estimated Sustainable Growth Rate and Conversion Factor, for Medicare Payments to Physicians in 2012, CMS

28 Estimated Financial Effects of the “Patient Protection and Affordable Care Act,” as Amended, CMS, April 2010

29 National Health Spending Projections through 2020: Economic Recovery and Reform Drive Faster Spending Growth, CMS National Expenditures Team

The potential impact of all the threats listed above on any particular AMC will vary widely, partly due to the characteristics of the AMC and the market area in which it serves. To better understand the impact and interaction of these threats, three illustrative AMCs were examined with characteristics as follows:

- AMC “A” is an AMC built around a private medical college. AMC A has a strong brand name in its geographic area, high quality patient-care metrics, and a competitive cost structure. Although it can’t escape the reductions in the Medicare PPS update factor, this institution faces no loss in private payers because of its strong brand and efficient operations. Due to its high quality metrics, the institution would not face Medicare penalties for readmissions and hospital-acquired conditions. Finally, the institution

is well placed to draw in many of the newly insured patients, who will gain private coverage in 2014 and beyond.

- AMC “B” is an AMC built around a public medical college. AMC B has a high-cost operating structure relative to the other institutions in the area and a heavy share of Medicaid patients. In addition to the reductions in the Medicare PPS update factor, this institution will suffer from significant loss of revenues when private payers shift to lower cost providers, and ACOs are incentivized to shift care to low-cost providers and outpatient settings.
- AMC “C” is a private AMC that contrasts sharply with AMC B. AMC C has an aging population, high Medicare share, and a fading brand name combined with a

noncompetitive cost structure. Its quality metrics also disadvantage this AMC. This institution will have much higher dollar losses than the other illustrative AMCs from every one of the Medicare cuts (e.g., IME, DSH).

The table below shows the impact of the threats identified in Figure 5 on the three illustrative AMCs A, B, and C. (See Figure 6). The 2020 net change ranges from a positive increase in net revenues of 1% for AMC A to a net loss of 6% for AMC C. The range results from variations in impact from the share of private payers and the impact of quality metrics. Also, state institutions face state budget cuts that are not a factor at private AMCs. Similarly, reductions in DSH payments are not an issue for hospitals that do not receive them.

**Figure 6: Impact on illustrative AMCs of identified threats**

	Illustrative cases		
	AMC A	AMC B	AMC C
	Private AMC with strong brand name, high quality metrics, and competitive cost structure	Public institution with high cost structure that is not preferred by private payers	Private AMC with aging population and fading brand; uncompetitive cost structure
Reductions (2020)	-3%	-9%	-10%
Increases (2020)	+4%	+6%	+4%
Net change (2020)	+1%	-3%	-6%
Factors contributing to net change	Reductions in the update factor, IME, and DSH; no loss in private payers; no Medicare penalties	Reductions in the update factor, IME, and DSH plus loss of state support and private payers	Reductions in the update factor, IME, and DSH plus loss of key private payers and penalties from Medicare

Source: PwC Health Research Institute Analysis

## Force #2—Brand breakdown: Low quality rankings and imprudent affiliations could damage the AMC brand

For years, quality measures have been published in the popular press as “best hospital” rankings. These rankings use both quantitative measures and qualitative indicators, such as reputation as ranked by physicians and peer organizations. Many AMCs have enjoyed and advertised their top rankings over the years. But now that CMS and commercial payers require reams of detailed quantitative measures on outcomes, some AMCs may not fare as well. A recent report from TJC, a national hospital accreditation agency with deeming status from CMS, showed few major AMCs in their top hospital rankings.<sup>30</sup> Although many AMC leaders might argue that the current measures of quality do not properly account for differences in case mix and other factors, these are the measures that

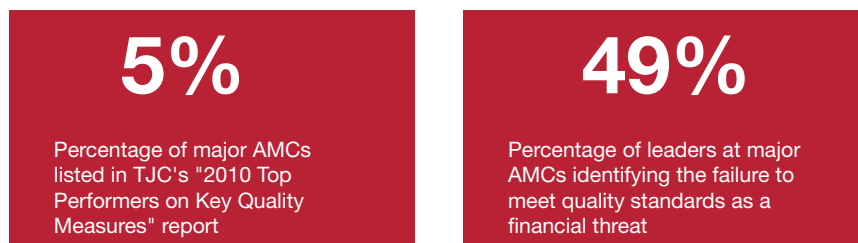
are reported and defined as quality in the media. These types of quality reports can damage an AMC’s brand. Yet PwC’s survey showed that many leaders may not recognize this as a new threat. In fact, only 49% of leaders at major AMCs (more than 500 beds) said that meeting new quality standards was a threat to their organization. (See Figure 7.) AMCs will need to rely on more than past reputation in an era in which quality data is directly tied to reimbursement.

Many AMCs possess recognizable brands and are successfully transporting those brands across the country and even globally through affiliations or acquisitions. For example, in 2001, the nation of Qatar agreed to spend \$750 million on a Cornell medical school branch, which included constructing a medical center, hiring faculty, and compensating Cornell for its services.<sup>31</sup> Stephen M. Cohen, executive vice provost at Weill Cornell Medical College in New York,

New York, described this strategy as a way for AMCs to keep pace with what is now a global demand for education and healthcare. “As the world becomes richer,” said Cohen, “people want to spend their money on education and health so it’s very appropriate for AMCs to have a global strategy.” Similar AMCs are developing international expansion relationships to find new revenue streams and further strengthen their brand recognition.

However, there is the risk that partnering with different organizations may damage an AMC’s brand, patient culture, or bottom line. In 2010, Atlanta-based Emory Healthcare ended a joint partnership with the healthcare company HCA Inc. in which several HCA-owned hospitals had obtained permission to operate under the Emory brand name.<sup>32</sup> One reason cited for the partnership dissolution was poor Medicare quality-of-care statistics for the two hospitals using the Emory name. While more hospitals want the AMC brand due to its popularity with consumers, AMCs must be prudent with these affiliations as they seek to ensure that they are protecting their brand. AMC leaders interviewed by PwC sounded a note of caution against forming potentially imprudent affiliations with other hospitals.” Part of this gets to the brand: Why would an academic medical center want to give away its brand in a loose

Figure 7: Changes in sources of AMC funding, 2010-2020



Source: Top Performers on Key Quality Measures, The Joint Commission; PwC Health Research Institute AMC Leader Survey, 2011

30 Top Performers on Key Quality Measure, The Joint Commission, 2010

31 <http://cunews.cornell.edu/releases/April01/weill.qatar.html>, accessed January 2012

32 <http://www.ajc.com/news/emorys-name-doesnt-ensure-189072.html>, accessed January 2012



strategy? Brand is the one thing that we really want to protect,” said Sally Mason Boemer, chief financial officer at Massachusetts General Hospital, one of two flagship hospitals for Partners HealthCare in Boston.

**Force #3—Organizational misalignment: Old AMC structure is not designed to address new challenges**

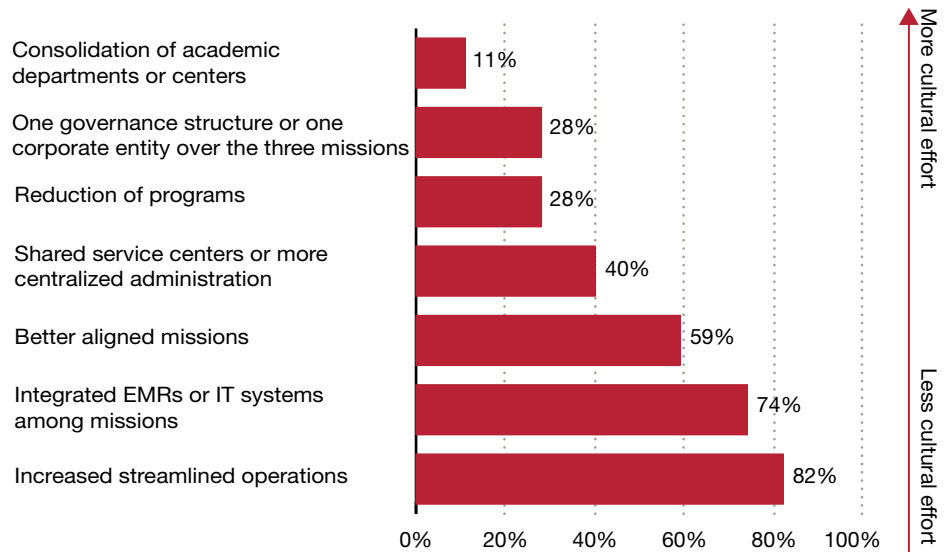
Most AMCs are relatively decentralized organizations, sometimes consisting of a swarm of related institutions—a medical college, several hospitals, faculty practice organization(s), and research centers—each with separate leaders and competing goals. Personal agendas often take preference over organizational needs in the boardroom, and crucial cost-cutting measures often are redirected away from “sacred cows.” As a result, the can is kicked a little further down the path and no real change is implemented.

When asked how their organizations would manage internal and external challenges, AMC leaders responded less favorably to initiatives that would require significant changes to their governance structures, such as the development of a single governance structure or the consolidation of academic departments. (See Figure 8.)

For example, only 11% of leaders were considering consolidation of departments or centers. However, a more streamlined organization can enable AMCs to quickly capitalize on partnership opportunities or research collaborations. “AMCs have always been viewed as slow to change, and we have defended ourselves by saying

it is because we are complex entities,” said John R. Brumsted, MD, interim president and chief executive officer at Fletcher Allen Health Care in Burlington, Vermont. “However, other large and complex organizations, such as Apple, are able to move a lot more quickly than we are.”

**Figure 8: AMC leaders are hesitant to address issues related to the AMC governance structure**  
How does your organization plan to manage external and internal challenges?



Source: PwC Health Research Institute AMC Leader Survey, 2011

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*What this means for your business*

The five strategies that  
can help AMCs avoid a  
margin meltdown

The celebrated physicist Albert Einstein once said that insanity is doing the same thing over and over again and expecting different results. If this statement is true, the US health system is experiencing a period of insanity. AMCs are expected to fulfill the multiple roles of the tripartite mission while also increasing quality and decreasing costs. This is all to be done through traditional reimbursement methods that historically have incentivized AMCs to do the exact opposite. PwC's revenue analysis shows that traditional funding sources (such as IME, DSH, and commercial insurance) and traditional operating methods are threatened and that changes must occur in order for AMCs to remain profitable.

"AMCs are going to have to become better at delivering quality care in a more cost-effective manner. If AMCs cannot do this, they may find themselves under water," said Paul Staton, chief financial officer at the University of California Los Angeles Medical Center. Reducing cost without sacrificing quality requires AMCs to strategically rework the way they operate. AMCs will need to manage each of their missions as

separate strings and then weave them together. Right now, many AMCs are a ball of tangled string. This leaves AMCs with a clear choice—refuse to evolve and face an arduous path of revenue scarcity or embrace change and recombine their DNA to evolve. The following section describes the five strategies that AMCs can undertake to recombine their DNA.

### **Strategy #1—Build the brand by holding faculty accountable for cost and quality.**

AMCs have achieved premier brand status, but the strength of that brand is being increasingly tested. The combination of a complex governance structure and a payment system that incentivizes waste has created an environment in which some AMCs are lax in controlling costs, especially in research and education. For example, 85% of AMC leaders surveyed by PwC indicated that the complex governance of the tripartite AMC mission is difficult to manage within their organizations. AMC leaders said that multiple layers and silos create enormous variation. Well-entrenched faculty and

organizational structures have made it difficult to control costs and quality. AMCs will need to address tough cultural and operational problems as a unified organization, with each organizational group and department buying into the importance of lowering costs and increasing quality.

*Monitor workflows and understand how faculty members are spending their time.*

"Streamlined governance is necessary at AMCs," said Ken Jones, chief operating officer of the UCSF Medical Center. "Because department chair reimbursement is frequently linked to clinical fees generated by the department, it sometimes makes it difficult for chairs to look at AMCs as a whole." In many AMCs, the department chair leadership structure has helped to feed subspecialties based on the strengths of the doctors, which have, in turn, led to research based off those subspecialties. Without impartial leadership groups, these AMCs have not been able to focus on budget-minded strategic plans for their institutions.

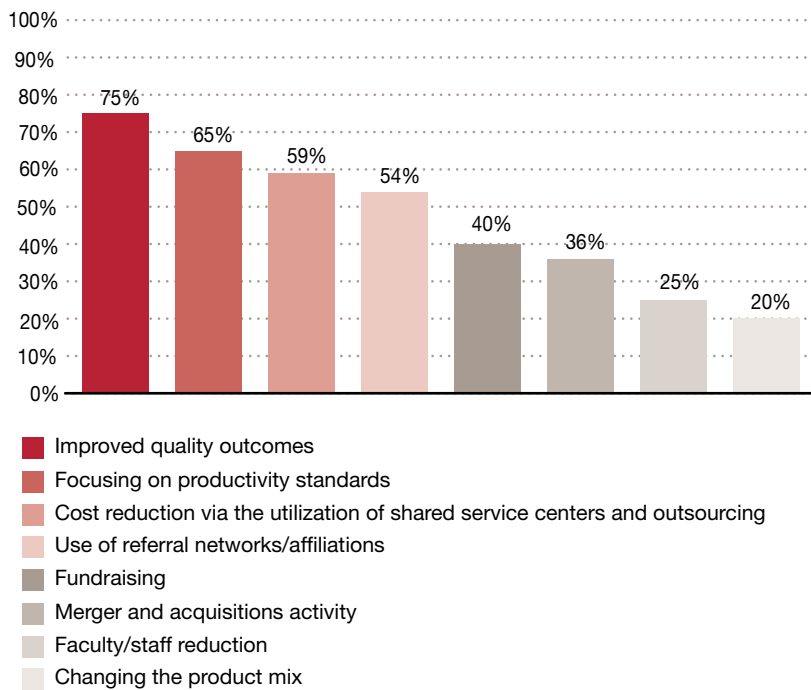
The new payment models will be based on meeting quality metrics and controlling costs across the continuum of care. In PwC’s survey, 75% of AMC leaders indicated that they would respond to budget challenges by improving quality outcomes. The

least likely definitive response at 20% was changing the product mix of services offered. (See Figure 9.) While improving quality outcomes may not be easy, changing the product mix by cutting various departments could be nearly impossible.

Yet department chairs are often encouraged to take on the mindset of individuals running their own shows, making it difficult to reduce price and quality variation across the enterprise. During our interviews with AMC leaders, it was frequently noted that although many AMCs have a recognizable brand, that brand is actually a collection of brands for each physician faculty member—the brand of “me, my lab, my research, my fellows, and my clinic.” Even in AMCs that are attempting to reform their governance structure, no faculty member wants to give up control over his or her domain. The resulting multiple layers of management are difficult to change.

During PwC interviews with AMC leaders, many indicated that responding to this type of faculty culture will require monitoring workflows and understanding how each faculty member is spending his or her time. These interviews further indicated that medical schools should be run as any other business, and no business would function properly without employee accountability. AMCs should hold their employees accountable as well. They must look at each individual professor and clinician and ask: What do you do at the institution and what are your goals and productivity in those areas? This type of organizational accountability will allow the AMCs to achieve cost savings and strengthen the brand.

**Figure 9: AMC strategies to generate revenue and control costs**  
Which of the following best describes how your organization is addressing funding and revenue challenges?



Source: PwC Health Research Institute AMC Leader Survey, 2011

*Tackle the problem of quality and price of care variability.*

By participating in accountable care organizations (ACOs) or developing bundled payment models, AMCs that reduce costs can receive a portion of the savings they generate. However, these arrangements, particularly bundled payment initiatives, require that AMCs tackle their pricing disparities. Treatment prices and payments can vary as much as 200% between AMC-affiliated hospitals, yet bundled payments hinge on price standardization.<sup>33</sup> As AMCs seek to invest in shared savings initiatives, this problem must be addressed by the entire organization, with AMC leadership working with doctors to identify areas of savings.

*Analyze cost structures to determine full costs of current initiatives.*

It will be important for AMC leaders to put operational changes in the context of improving quality. “Physicians will not resonate with a ‘we need to cut costs’ battle cry,” said Andrew von Eschenbach, MD, formerly executive

vice president and chief academic officer at the University of Texas MD Anderson Cancer Center. “They will resonate with a ‘we need to increase quality and in the process we will reduce costs resulting from wasted or inappropriate care.’ This is made possible through a focus on performance improvement initiatives rather than draconian cost cutting.” AMC leaders indicated that they need to analyze cost structure to determine where they are spending their money. Many agreed that their money is difficult to track. Cost tracking initiatives will become a trend over the next decade. When asked what priority they will place on conducting performance improvement initiatives in the future, 87% of AMC leaders indicated that this would be a high priority at their institution.

During his tenure at MD Anderson Cancer Center during the 1990s, von Eschenbach, now president of Samaritan Health, noted that cost-cutting efforts can easily be misplaced. For instance, his institution eliminated patient care coordinators, workers who guide patients through the labyrinth of various appointments around the

institute, because they were deemed unnecessary overhead. “You wouldn’t believe how much this undermined our clinical operations,” said von Eschenbach, who also is a former FDA commissioner. “If we really understood our business, we would have seen that these people were essential to the efficiency of the operations and patient satisfaction with our services. We eventually had to go back and replenish that group and make them a core part of our clinical operations.”

One costly long-standing element of medical care in AMCs is the tendency to over-test. Medical residents often run numerous tests on patients without regard to cost, setting a precedent for the rest of their careers. Jeff Balsler, MD, PhD, vice chancellor for health affairs at Vanderbilt University and dean of the Vanderbilt University School of Medicine, said that health IT can reduce unnecessary testing: “When provided the correct information to start, resident physicians will act appropriately regarding ordering tests.” Fortunately, with EHRs, clinical informatics, and data sharing becoming a reality, AMCs may be able to significantly reduce over-testing.

“It really boils down to leadership, both clinical and operational leadership,” said John R. Brumsted, MD, interim president and chief executive officer at Fletcher Allen Health Care. “We have seen it in our organization; when a crisis hits, everyone is willing to move quickly. It’s a matter of having that ability as part of your culture, as opposed to that only being what you do when the stock market bottoms out and you are financially at risk.” AMCs leaders must embrace the challenge to streamline their governance structure in order to thrive.

### **Strategy #2—Become part of a larger community network.**

AMCs have developed a reputation as the main providers of tertiary and quaternary care, while primary and secondary care has moved to suburb-based community hospitals. When AMC leaders were asked how clinical services offered at their organizations would change in the next five years, forming community networks with other healthcare groups to deliver clinical care ranked sixth out of nine options. Why? AMCs are proud

institutions, keen on preserving their individual brands and their roles as providers of complex medical care. But differentiating themselves has resulted in a culture of isolationism.

However, recent initiatives from the Centers for Medicare and Medicaid Services (CMS) are shaking AMCs out of their isolationism. For example, the provision within the Medicare Shared Savings Program for the development of ACOs is placing a clear focus on lower costs, higher quality, and better outcomes for a defined patient population. This ACO strategy is designed to require collaboration between community hospitals, physician groups, healthcare organizations, or other AMCs. “This is a sounding call to AMCs,” said Mitch Creem, MD, chief executive officer of the Keck Hospital of University of Southern California (USC). “The healthcare system of the future will undoubtedly consist of high-quality, high-cost providers (AMCs) partnering with high-quality, low-cost providers (community health hospitals) to deliver the highest quality and best outcomes, while driving down costs.”

While an AMC may not want to take on the risk of an ACO, the alternative could be grim. “We, as AMCs, must decide between the lesser of two evils in regard to the services we perform: develop accountable care strategies or face outright rate reductions through blunt regulations. The greater evil, rate reductions, could be in store if we don’t show an effort to reform,” said Sally Mason Boemer, chief financial officer at Massachusetts General Hospital. Indeed, Massachusetts has been a proving ground for new payment models such as Blue Cross’ Alternative Quality Contract, which sets global budgets for patient care. On the other hand, Maryland has a rate regulation system that sets rates for all hospitals.

Given these developments, it will be critical for AMCs to strengthen their organizations by avoiding narrow networks and affiliating with other health organizations to develop more attractive patient populations for research.

*Deploy infrastructure to lower cost of care settings.*

Network-driven community collaborations also represent a way for AMCs to respond to the growing trend of “narrow” or “tiered” insurance networks. Employer groups create narrow networks in an attempt to reduce members’ use of high-cost facilities either through increased co-pays or higher premiums. Some hospital systems in California charge more because they have consolidated within their regional markets.

Emma Hoo, director of value-based purchasing with the Pacific Business Group on Health (PBGH) in San Francisco, said she sees organizations “designing benefit plans to steer employees away from AMCs and toward community hospitals when these represent the low-cost options for clinical care.” Hoo sees hospital groups responding by taking steps to develop referral networks through acquisitions and partnerships with community hospitals. “Hospital leaders in California are organizing these types of alliances to retain market share, and AMCs may take this path as well.”

These alliances could improve the negotiating clout of AMCs with commercial insurance companies.

“Increasing your leverage for premium rate negotiations is always one of the unspoken drivers of acquisition and affiliation strategies,” said Ken Jones, chief operating officer of the UCSF Medical Center. “Providers seek to establish a controlled geographic network by way of then being able to peddle that network to the payers. If you are big enough, you can force them to contract with you.”

For instance, PBGH’s Hoo noted that some hospital systems in California charge more because they have consolidated within their regional markets. Undoubtedly AMCs must be able to leverage their footprint without stirring up anti-trust issues. Tom Rosenthal, MD, chief medical officer at the University of California at Los Angeles, summed up the challenge for AMCs when he said, “We have to make ourselves indispensable in the marketplace, either because we are unique or because we are doing it a lot better and it is better for the plans sending patients here. This requires performing really high-quality care, really high service, and keeping the growth in cost defensible. The patient, referrer, or plan has to believe that the care is worth the money.”

*Utilize your brand to branch outside of your regional market.*

Network-driven collaborations, ranging from affiliations to acquisitions, will be necessary not only to deliver high-quality and low-cost care while protecting against narrow networks, but also to ensure a steady flow of patients who need AMCs’ highly specialized care. As medicine becomes more specialized, AMCs must keep expanding to enlarge the pool of patients for both research and treatment. For example, Johns Hopkins Health System (JHHS), a Maryland-based system of six hospitals, recently expanded its pediatric research and care services by merging with All Children’s Hospital in St. Petersburg, Florida. “AMCs will need to move outside of their traditional markets and find ways to reach new patients,” said Ronald Werthman, chief financial officer at Johns Hopkins Health System in Baltimore.

In 2010, approximately 20% of health-related merger and acquisition deals involved AMCs, and this percentage is expected to increase in the coming years.<sup>34</sup> In these types of deals, while it is common to want the acquired

organization to adapt its culture and operating practices to match your own, Werthman describes a different approach. “When looking to merge with or acquire another health system, it is critical to focus on hospitals that are already achieving their mission effectively and are high performing. From there, the goal should be to match your AMC’s core competencies with the new health system’s needs.”

Yet owning community hospitals may not be the right strategy for some AMCs. For example, Florida-based Shands Healthcare recently moved from full ownership to joint ventures with several community hospitals. For Bill Robinson, chief financial officer at Shands Healthcare in Gainesville, Florida, the key was “divesting ourselves from the responsibility of running the hospitals while maintaining these community relationships. By allowing another organization to focus on turning those hospitals from ‘money-losers’ into ‘money-makers’ we decreased our involvement and increased our profit potential.” Additionally, community network collaborations require a close alignment of incentives, something

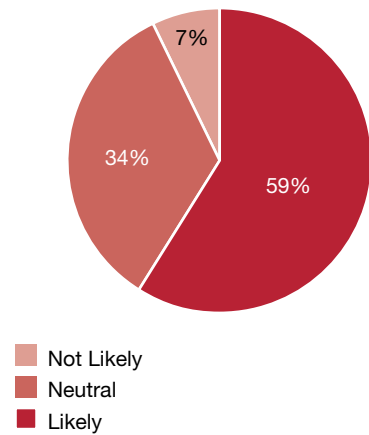
that is difficult to achieve. AMCs need the community-generated volume to keep their beds full and maintain a steady stream of revenue. However, AMC physicians often balk when forced to commute to community hospitals for clinical appointments or training. The incentives need to be right for physicians to support community partnerships.

Clearly, however, AMCs deliver a powerful asset in collaborations: brand equity. Fifty-nine percent of consumers surveyed by PwC said they were likely to seek treatment from a community hospital associated with an AMC. (See Figure 10.) Extending one’s brand to new partners essentially enables them to quickly adopt a reputation that may have taken decades to scrupulously build.

Community hospitals bring their own value to such partnerships. Without having to fund research and education, their cost of care is lower. And, community hospitals represent lucrative potential feeder systems to AMCs. Consumers undoubtedly place a strong value on this lower cost structure. While it was evident that consumers respect the AMC

**Figure 10: More than half of consumers are likely to go to an AMC-affiliated community hospital**

To what extent are you likely or unlikely to go to a community hospital associated with an academic medical center?



Source: PwC Health Research Institute Consumer Survey, 2011



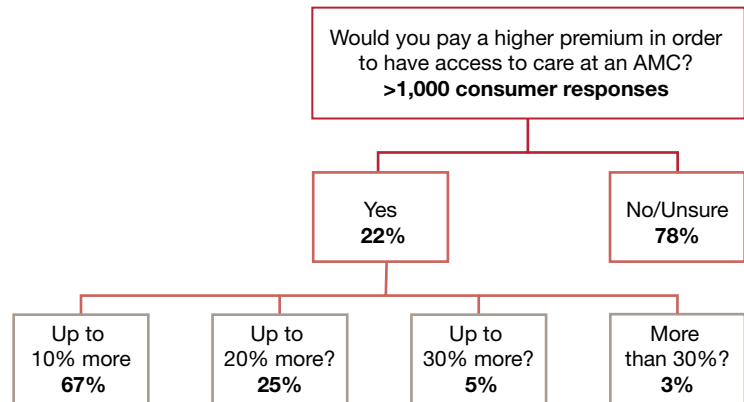
brand, they are also hesitant if access to that brand entails higher costs. Seventy-eight percent of consumers indicated they would not pay a higher premium to access an AMC, and of the 22% that indicated they would pay a higher premium, 67% said they would be willing to pay only up to 10% more. (See Figure 11.) This means AMCs bring the brand that consumers covet, but they must also provide lower cost options through a community network strategy.

**Strategy #3—Push the envelope on new kinds of extenders to increase effectiveness.**

Tomorrow’s health systems will compete on new competencies in how well they extend care and education outside of the organization. More AMCs are developing innovative practices that will burnish their brands as research and treatment leaders, but they are also leveraging them to reinvent teaching, speed up research, and reduce the costs of treatment. This is in part because the historical methods of attracting and treating patients are becoming obsolete. “In the past, AMCs were a mecca; patients came to them. The future AMC will come to the patient,” said Roger Deshaies, chief financial officer and senior vice president of Fletcher Allen Health Care.

**Figure 11: A majority of consumers are not willing to pay a higher premium to gain access to an AMC network**

When choosing health benefits, which of the following would you prefer?



Source: PwC Health Research Institute Consumer Survey, 2011

Traditional techniques for educating doctors and scientists are changing as well. Lloyd Minor, MD, provost and senior vice president for academic affairs at The Johns Hopkins University, reinforced this idea, saying, “We are leveraging technology for didactic learning, which makes it more flexible for the students. We know we cannot maintain our position as an education leader without an increased emphasis on technology.” By extending education through technology, doctors can be more effectively trained.

*Deploy virtual home visits and classrooms to extend education and clinical reach.*

For years, doctors have had the capability to remotely engage patients through telemedicine, but the digital age has made these technologies much more affordable and easier to use. In fact, in PwC’s survey, 69% of leaders from AMCs recognized telemedicine as an initiative they were likely to implement at their organizations.

Telemedicine can supplant services at both sides of the cost spectrum. For example, the University of Massachusetts Memorial Health Care, which recognized that ICUs have both the highest mortality and the highest costs in healthcare, implemented a tele-ICU initiative with two partner community hospitals. This \$8 million initiative allows University of Massachusetts physicians to remotely monitor, consult, and care for ICU patients at the partnering community hospitals. According to analysis conducted jointly by the Massachusetts Technology Collaborative, the New England Healthcare Institute, and PwC, the community hospital ICUs were able to care for nearly 50% more patients. But more important, mortality decreased by 20% and costs dropped \$2,600 per patient at the AMC ICU, as costs were spread across more patients.<sup>35</sup>

Virtual home visits represent another form of technological advancement. Wyandotte County, home to the University of Kansas Medical Center (KU), is working with Google to expand fiber optic network capabilities to the entire community. This new partnership will enable KU to expand

**An iPad for every student—University of California Irvine's digital educational makeover**

With the iMedEd Initiative, the University of California Irvine School of Medicine has become one of the first medical schools in the nation to build a completely digital, interactive learning environment for its medical students. Michael Drake, M.D., chancellor of UC Irvine, said that this initiative was undertaken "in an effort to allow students to focus less on memorization and more on the art of gathering technical information through technology." The iMedEd Initiative is designed to transform the classic lecturer-passive listener model with digital textbooks, online curricula, audio and video libraries, podcasts, and other technological advances, such as digital stethoscopes. The program uses Apple's iPad to digitally house the entire first-year curriculum, outlines, handouts, and essential textbooks. These encrypted tablets serve as platforms for complimentary technologies that enhance the curriculum, such as portable ultrasound devices, providing students with a noninvasive diagnostic tool to examine internal organs and blood flow. Specially designed iPad applications let students consult video tutorials as they perform bedside ultrasounds, enabling them to review normal and abnormal examinations and track procedures for quality assurance.

the services it already provides through its Center for Telemedicine and Telehealth. With better access to more patients via this new connection, Kansas doctors and nurses can live stream into patients' homes, coaching them through blood pressure tests, inoculation administration, or other low-risk procedures. "From an outpatient perspective, I think healthcare will move back toward a 'house visit' type model," said Barbara Atkinson, MD, executive vice chancellor at KU and executive dean of the University of Kansas School of Medicine. "This new technology will only help us in responding to this new future of telemedicine."

Not only is this technology enabling KU to establish new treatment methods, it is also helping the school to abolish geographical boundaries that frequently limit local medical education. KU is holding virtual classes via high-definition teleconferencing at its campuses in Salina and Wichita. Barbara Atkinson, MD, the university's vice president and dean, noted: "We must address the shortage of primary care physicians, particularly in rural areas where there is the strongest potential for AMC referral growth. The easiest way to do this is through training new primary care physicians right where they are. We think where they train is where they are likely to stay."

35 Critical Care, Critical Choices: The Case for Tele-ICUs in Intensive Care, New England Health Care Institute and Massachusetts Technology Collaborative, December 2010

*Bring students from different disciplines into the same classroom to extend team-based education.*

MedPAC, the agency that advises Congress on issues affecting Medicare, has implied in its reports that medical schools are training the wrong kinds of doctors (too many specialists, not enough primary care) in the wrong locations (too much hospital training, not enough community-based.) Meanwhile, consumers are increasingly attracted to integrated care models. These opinions indicate a desire for a stretching of medical license, maximizing the abilities of doctors to achieve costs savings and increase the availability of care.

One way AMCs can respond to these challenges is through collaborative classrooms. Nurses and doctors have traditionally been trained in separate schools. But new models of payment insist on a team approach, and AMCs must begin embedding that into their curricula and cultures. A significant number of AMC leaders plan to develop or expand existing dental, nursing, and allied health/physician assistant programs at their universities over the next five years. (See Figure 12.) More important,

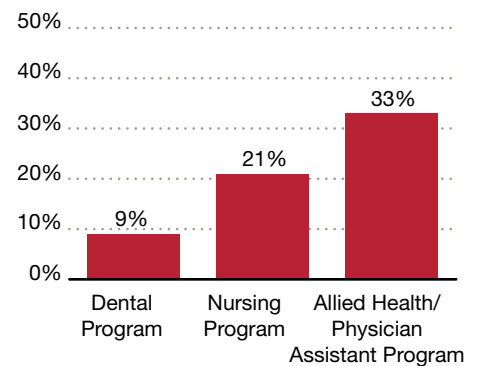
some universities are integrating classes. For example, students from the University of Vermont College of Medicine are trained with the support of Fletcher Allen Health Care nursing educators in a simulated environment. “When the residents come to Fletcher Allen following graduation, they have already built a relationship with the nurses, which allows for stronger collaboration, and they do a better job working together,” said Sandra Dalton, RN, MS, senior vice president of patient care services, and chief nursing officer at Fletcher Allen Health Care.

Faculty doctors are finding that students like team-based approaches. “Students in this generation like teams and like to understand their roles in the bigger picture. In response, we developed simulation exercises with nursing, occupational therapy, physical therapy, and pharmacy so that students understand how everyone fits together,” said Barbara Atkinson with the Kansas University School of Medicine. But Atkinson added that developing this new inter-professional model required a great deal of effort, and the university had to make interdisciplinary program development a strategic goal for the whole enterprise. She added, “In order

to help the process, you need to build a will and culture within the institution, not just the medical school.”

Finally, AMC leaders are finding that bringing students together also can cut costs. At the University of North Texas Health Science Center (UNTHSC), a single student affairs office now handles all students (whether public health, pharmacy, physician assistant studies, or medical), and a single library services the entire campus. “This approach was done

**Figure 12: AMCs are focused on increasing collaboration between disciplines**  
Do you currently plan to develop or expand the following programs over the next five years?



Source: PwC Health Research Institute AMC Leader Survey, 2011

not only to save costs, but also to foster a collaborative culture at the Health Science Center,” said Scott Ransom, DO, MBA, MPH, president of UNTHSC. “This cross-disciplinary approach undoubtedly helps to prepare our physicians and other health professionals for future inter-professional and collaborative real-life experiences outside of the classroom.”

*Develop simulation training and credentialing for doctors and residents to extend continuing education.*

In terms of teaching, simulation technology can play a greater role. By practicing on mannequins that can talk, breathe, or even give birth, students can train in a worry-free, litigious-free environment. In addition to training medical students, simulation is also finding a place in physician continuing education and credentialing processes. Edward Jones, chief operating officer at the Methodist Hospital Research Institute in Houston, Texas, said simulation will be a boon for continuing education. “After leaving the university setting, most physicians never set foot back into a structured training environment,” said Jones.

“However, new technology requires a great deal of training if [it is] to be used properly in practice.” Through Methodist’s simulation-based training center known as MITIE (Methodist Institute for Technology, Innovation, and Education), practicing surgeons and their teams — along with medical students and residents — can learn new minimally invasive surgical procedures, experience novel ways that imaging is being combined with surgery, train on surgical robots, and rehearse complex procedures.

Simulation technology will also dramatically change how students are assessed and physicians are privileged and credentialed. “As we have reimbursement tied to quality, we will see simulations being used as part of credentialing tests,” said Steven Strongwater, MD, former chief executive officer of Stony Brook University Medical Center in Stony Brook, New York. “The current model relies on reputation, but with simulation centers we could just have physicians or other providers come in, perform a simulation, and assess their competency based on their observed results.”

Technology is also reinventing another form of simulation: the use of standardized patients as a teaching tool. This teaching modality is becoming increasingly technology-enabled through software that captures the student’s work with the standardized patient on video for live supervision by a faculty member from a control station. This video is then provided to students for their review and improvement with the faculty critique. Stony Brook recently invested \$4 million in its Clinical Skills Center, a 6,000-square-foot facility with 10 patient exam rooms. Each room has a computer station that can be used to evaluate a student’s performance and an audio/visual observation system for review and analysis. The AMC’s leadership said the center will enable them to incorporate the growing shift to competency-based medical education.

According to Sandra Dalton, RN, MS senior vice president for patient care services, and chief nursing officer at Fletcher Allen Health Care, the next step for AMCs is the integration of the simulation experience with electronic

health records. “Clinicians will be charting electronically as they are caring for patients, making it as real as possible,” she said. “So much of our jobs as clinicians require technology today, especially the complex cases, and as such, we need that technology in the training process. When it comes to assessing patients and applying different interventions, we must have that technology in the simulation lab.”

*Extend operational reach through shared services.*

New applications of innovations such as simulations and telemedicine must be accompanied by cost reductions through an operational dedication to a shared services environment. While innovations have the potential to create a higher quality environment for patient care, research, and education, there must be a corresponding cost-reduction plan to justify the investment. In fact, 59% of AMC leaders surveyed by PwC indicated that cost reduction via utilization of shared services centers (SSC) is one way their organizations will address revenue challenges in the future.

AMCs are ripe for shared services implementation partially due to the ways in which they have grown. Since many AMCs grew in size through entrepreneurial department leaders or through acquisitions, there often

was not an integrated vision for health system operations. This helped to create an environment of disparate processes and systems. By creating a shared services center that would house departments that serve the entire organization, employees can be repurposed and allocated to support new innovative technology. In a recent PwC case study of the top 100 university healthcare organizations that recently implemented a shared services environment, the shared services strategy was a critical part of lowering costs, enhancing decision support, and finding more efficient service levels. (See Figure 13.)

#### **Strategy #4—Become an information hub to realize a return on HIT investment.**

As more data is captured electronically, AMCs will have access to many patient touch points across the healthcare continuum. Healthcare is experiencing significant convergence of data across traditional boundaries, which has introduced new healthcare data sets that need to be considered as part of a well-defined information strategy. AMCs epitomize convergence with their relationships and partnerships with payers, pharmaceutical companies, researchers, and federal

**Figure 13: Key findings from a recent shared services implementation at a major AMC**

While cost reduction was the single most important driver of the SSC at the organization, the leaders also were focused on increasing the centralization of services within the AMC, thus shifting from a culture of “autonomy” to one of “oneness.” This culture shift has the potential to allow for better management information/decision support, alignment of business services with a central operating structure, easier business-process integration following a merger or acquisition, and improved customer service.

##### **Major barriers**

- PwC surveyed the leaders at the AMC and noted that the largest obstacle was lack of senior management sponsorship and a resulting lack of communication.
- Other barriers—Conflict between local and central managers (30%); poor people management (13%); inadequate IT infrastructure and support (12%); insufficient project planning (12%); and difficulty recruiting in certain locations (12%).

##### **Lessons Learned**

- To make a SSC work, a company must have a central organizational structure in place before implementation begins.
- Cascading sponsorship and buy-in from key stakeholders are vital to swift, effective implementation.
- Building a SSC is a long-term, strategic decision, not a short-term, cost-cutting tactic.

By working with its leaders to identify tangible improvements in all areas of the organization including research, education, central service, and clinical enterprise and overhead, the AMC was able to achieve an annual savings of more than \$105 million. In most cases, considerable change is required in current operating practices; management must be willing to hold underperforming departments and individuals accountable in order to increase the benefits.

agencies. Leading providers are moving to next generation insight through accountable care analytics. They are moving beyond mere implementation of EHRs to adopting business intelligence platforms for aggregating clinical, financial, and administrative data. AMCs are analyzing that data to develop evidence-based practices and provide predictive analytics that bring lower costs and improved care. EHRs are just the starting point to this process—how AMCs link them and what they link them to is critical.

Unfortunately, decentralized data and multi-tiered silos of computing are long-standing barriers to AMCs' operations, research, and collaboration endeavors with data residing in multiple databases in incompatible formats. Most healthcare organizations lack the capacity to turn EHRs into usable databases for medical research. Lack of data interoperability across basic research and clinical communities forces researchers to invest substantial effort into harmonizing data.

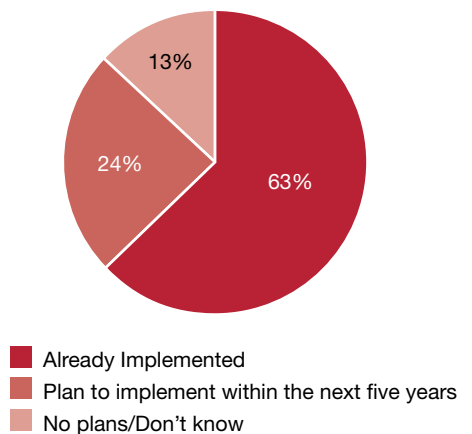
*Focus on IT analytics for research and clinical care rather than IT automation.*

Nearly 90% of AMCs have either begun investing or plan to invest in IT staff to manage data and systems, according to the PwC survey. (See Figure 14.) Additionally, EHR adoption has dramatically increased — recent results of the American Hospital Association's Survey of IT adoption showed 15% of acute care non-federal hospitals have adopted at least a "basic" EHR, which is an increase of nearly 75% since 2008.<sup>36</sup> Yet, many AMCs struggle to find the optimal health information technology (HIT) organizational structure, and they end up stopping short of the necessary investment to generate a return on their HIT. William Stead, MD, associate vice chancellor for health affairs and chief strategy and information officer at Vanderbilt University Medical Center, implies in a 2009 article in the Information Knowledge Systems Management Journal that there is too much focus using HIT investments for automation, as opposed to analytics and decision support. Organizations that are primarily focusing their HIT investments on automating processes

will not be able to achieve returns comparable to those of organizations that are using the technology to transform the way they are treating patients. Both BJC HealthCare in St. Louis, Mo., a 13-hospital system that includes Barnes Jewish Hospital, and Vanderbilt University Medical Center, have found ways to leverage their HIT departments for clinical application, and they have built an informatics-driven culture.

**Figure 14: A majority of AMC leaders say their organizations are properly staffed for HIT initiatives**

What are your organization's implementation timeframes for hiring of additional IT staff to manage data and systems?



Source: PwC Health Research Institute AMC Leader Survey, 2011

BJC HealthCare's Clinical Investigation and Data Exploration Repository (CIDER™) is a protected clinical repository of data with sophisticated query functions that can be resequenced for research at Washington University in St. Louis. BJC HealthCare at one time had more than 4.5 million patient records in various systems. However, until recently, no common system was capable of accessing and utilizing the data in those records. Under the leadership of David Weiss, senior vice president and chief information officer at BJC HealthCare, BJC developed the CIDER to take data from all of BJC's various sources and then reorganize it into a protected research repository with sophisticated query functions. This technology now provides the opportunity to significantly reduce the amount of time it takes to query and analyze data. It also allows for more personalized medicine, as physicians can use it to individualize treatments based on demographics and personal medical information.

At Vanderbilt University Medical Center (VUMC), patients' specific genetic information is now genotyped and incorporated into their EMR. By allowing VUMC's clinicians immediate

access to this genetic data, patients can be ordered the most appropriate tests and are prescribed the most effective medications or therapies. According to Jeff Balsler, MD, PhD, vice chancellor for health affairs at the Medical Center and dean of the School of Medicine, "Our clinical informatics system allows us to implement genetically-based decisions at the bedside. We can immediately review potential medication conflicts using a patient's specific genetic information. A great example of this is when a medication, such as Plavix, is ordered by one of our physicians, our system will inform the prescriber if a patient's liver won't metabolize this drug, and will recommend different options."

The Vanderbilt-created clinical decision support system has paid off in other ways. McKesson sells it as the Horizon Expert Orders CPOE, generating more than \$20 million in revenue for Vanderbilt. Vanderbilt and McKesson are also working on other related products.

For an in-depth discussion of the benefits of informatics at AMCs, see the forthcoming publication from PwC's Health Research Institute on informatics at [www.pwc.com/hri](http://www.pwc.com/hri).

*Prepare to share data outside of your organization to expand research science.*

While transforming the way AMCs view HIT application is one piece of the puzzle, another issue is access to large clinical data repositories. Many EHR databanks are closed, only available to university investigators. Meanwhile, the effectiveness of informatics-based decision-making increases as the population of patient data increases. In the future, partnerships with other AMCs will be vital to ensuring that data can be pooled and accessed across institutional lines. "Sharing data will open up opportunities for partnership among AMCs for research grants," said BJC's Weiss. "AMCs have a wealth of patient data, which, if shared, could lead to tremendous clinical discoveries. It would not surprise me to see future NIH funding awards incentivize this type of collaboration."

In fact, 54% of AMC leaders surveyed by PwC indicated that their institutions would be collaborating with other research institutes or medical centers to share EHRs over the next five years. Some have already started. Michigan State University, the University of Michigan, and Wayne State University formed the University Research Corridor in 2006. The research consortium has led to a 29% increase in R&D spending in southern Michigan between 2006 and 2010, resulting in numerous start-ups, patents, and scientific advances.<sup>37</sup>

Recently the Care Connectivity Consortium was formed by the Mayo Clinic, Geisinger, Kaiser Permanente, Intermountain Healthcare, and Group Health with a goal to share patient-specific data to generate research. This will enable comparative effectiveness research in real world settings with a broader range of patients than any of the organizations could reach on their own.

But few AMC's are anxious to lead these consortiums, which are ripe with secondary data use issues. As more AMC's share data, they need to address access-control models, information security functions, data encryption, and multiple levels of separation between the data and the end consumer. For example, HIPAA defines 18 data elements that must be removed for data to be considered de-identified. In addition, patient consent and security protocols may need to be adapted to cover new data uses or new channels of communicating and sharing data—such as EHRs, health information exchanges, mobile devices, and social media.

For an in-depth discussion of the impact of social media on AMC's, see the forthcoming publication from PwC's Health Research Institute on social media and healthcare at [www.pwc.com/hri](http://www.pwc.com/hri).

**Figure 15: Research at AMC's defined**

Type	Definition	Example
Basic research	Systematic study directed toward achieving fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind.	What is the genetic code of a human being?
Clinical research	The systematic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met.	What are the ways to treat a brain tumor?
Translational research	The process of transforming scientific discoveries arising from laboratory, clinical, or population studies into clinical or population-based applications to improve health by reducing disease incidence, morbidity, and mortality.	How do the genetic traits of human beings relate to the treatment of brain tumors?

Few have done this, according to a PwC survey, which showed that less than one-fifth of the healthcare organizations that are sharing data externally have implemented a process for managing patient consent for sharing that data.<sup>38</sup>

For an in-depth discussion of the necessity of IT privacy and security measures at AMC's, see *Old data learns new tricks* at <http://www.pwc.com/us/en/health-industries/publications/old-data-learns-new-tricks.jhtml>.

**Strategy #5—Align the research pipeline with clinical and business strategies.**

The drug Lyrica, developed in Northwestern University's chemistry department, generates more than

\$1 billion in sales annually to treat epilepsy, seizures, and fibromyalgia. The school's Lyrica royalties from Pfizer helped fund a new \$63 million Silverman Hall for Molecular Therapeutics and Diagnostics.<sup>39</sup> However, blockbuster discoveries such as Lyrica are few and far between.

Many now recognize that the research model is broken. Decades of separately funding basic and applied science endeavors with moderate incremental research breakthroughs have impeded scientific discovery. (See Figure 15.) More AMC's are subsequently redirecting their research dollars toward the translational research that can unite traditionally siloed efforts.

38 Old data learns new tricks: Managing patient privacy and security on a new data-sharing playground, PwC Health Research Institute  
 39 Silverman's golden drug makes him NU's golden ticket, North by Northwestern, February 2010



*Increase communication between basic and clinical scientists.*

“I think that everyone sees the basic and clinical research taking place and wonders why there has not been more progress,” said Jeff Boyd, PhD, senior vice president of molecular medicine at Philadelphia’s Fox Chase Cancer Center. “The problem is they don’t recognize there is common ground to apply basic science to clinical problems, and vice versa. There is value to bringing the right people in the right room to solve issues.”

AMC leadership must recognize that traditional research needs to change. While 62% of AMC leaders surveyed by PwC indicated that coordinating translational research will be a high priority at their institutions during the next five years, these opinions must turn to action. The NIH is pushing researchers to break out of their traditional silos. In 2006, NIH developed the Clinical and Translational Science Awards to

assist and fund translational research initiatives. Discussions are also under way to create the National Center for Advancing Translational Sciences within the NIH. As NIH funding typically represents a significant portion of an AMC’s research budget, it is clear that AMCs will need to increase their focus on translational research to remain relevant.

*Staff technology transfer offices with individuals with extensive business experience.*

AMC leaders must recognize that while it may be naïve for consumers or government groups to expect transformational medical discoveries, these groups will increasingly expect results. Translational research efforts may inevitably turn into marketable discoveries, but the path to commercialization has always been difficult. Tenacity and business know-how are essential to navigate the complicated path to marketing AMC intellectual property. To handle this difficult task, those with corporate

**Fox Chase Cancer Center funnels funding to scientists and clinicians to encouraging teaming**

While Fox Chase Cancer Center is primarily a research center and not a traditional AMC, its approach to research is instructional for how AMCs of the future can incentivize translational science. In 2007, Fox Chase started the Keystone Program to foster collaboration by incentivizing groups of clinicians and scientists to self-assemble around a theme or topic. Each group would compete for grants of \$5 million, funded through a mix of philanthropy and center revenues. Twelve groups applied, and five were funded. Each proposal was reviewed by outside reviewers, similar to NIH’s funding method. Fox Chase’s Boyd said “As soon as you add money, it changes the competition and motivation.” Boyd said the funding structure forces clinicians to talk about basic science and scientists to talk about clinical problems. “In order to survive, medical institutions, whether they are large AMCs or small community hospitals, will need to recognize the value of partnerships and networks. We need to be looking for ways to creatively partner with others like ourselves, but even more so with others not like ourselves like community hospitals, basic scientists, and bio-tech companies.”

and venture capital expertise, rather than clinicians and researchers, will represent the better choice to lead technology transfer offices. (See Figure 16.) Marketing, fundraising, and relationship-building skills can ease the process of bringing a new product to market. “Our institute has a very strong commercialization culture embedded in its fundamental DNA”, said Edward Jones, chief operating officer at the Methodist Hospital Research Institute (TMHRI) in Houston. “For example, our founding chairman is a very savvy venture capitalist and businessman. Our current president & CEO has participated in several start-up biotech companies. The head of systems medicine developed the ink jet printer and our chief medical and technology officer is a former astronaut, engineer, and emergency medicine trained physician. From inception, we have built the culture that values relationships with government agencies and industry.”

*Develop collaborations with industry groups while managing conflicts of interest.*

As AMCs look to find new revenue sources to fund their research, the path has led to collaboration with industry, particularly the pharmaceutical industry. AMC leaders interviewed by PwC warned that industry collaborations, although lucrative, can be difficult due to the time required to build and manage these relationships and the inherent risks such as a change in management that could cause an entire project to be terminated.

In addition, AMC leaders noted that complex governance structures within AMCs can frustrate negotiations with interested companies. So some AMCs have found an alternative path in which AMC physicians set up their own businesses and are ultimately purchased by companies. This creates situations in which the AMCs can stay out of the negotiating process but still generate royalties. This represents new territory for many AMCs; only 29% of AMC leaders said

**Figure 16: Five tips for developing a more effective technology transfer office**

- 1) Develop a clear mission statement that reflects the goals and values of the AMC and its technology transfer office (TTO).
- 2) Provide additional pools of funding for technologies during the development process to increase commercial value of leading inventions.
- 3) Import business professionals and venture capitalists into your TTO
- 4) Provide training on regulatory and licensing processes to TTO staff and inventors.
- 5) Monitor and improve office's financial efficiency; Track and manage income and expenses in real-time.

Source: “If innovation isn’t measured, can it be managed? How universities manage innovation through disciplined and novel measures”, PwC, March 2011

physician-led commercialization spin-offs are already taking place at their organizations. However, such start-up companies represent a growing movement. According to the Association of University Technology Managers, the number of university start-ups increased 9% from 2009 to 2010. That was up from no growth in 2009 and 7% growth in 2008.<sup>40</sup>

Several AMC leaders cited recent examples of collaborations between AMCs and pharmaceutical companies as a sign of new commercialization opportunities, as shown in Figure 17. According to Michael Drake, MD, chancellor at the University of California Irvine, “These collaborations come at a time when there is increased focus on eliminating the time between research discoveries in the lab and the delivery of those discoveries to the bedside. This waiting period has been a consistent problem for both academic and industry researchers.” Academic research can fall in the funding “valley of death” in which NIH grants support initial research but not the path toward commercialization. Industry researchers, on the other hand, often struggle moving drugs to market due to a lack of patient data needed to move drugs through clinical trials. As a team, industry can address academic medicine’s need for funding, and AMCs can provide the patient access that industry lacks.

With patents expiring on some of the industry’s most lucrative drugs, pharmaceutical companies are also actively searching for new revenue sources. AMC leaders noted that pharmaceutical company research and

development budgets are shrinking, so there is a need to look for alternative ways to get products in the pipeline. Venture capital firms are no longer the only entities purchasing AMC intellectual property; now big pharma sees the opportunity and is doing it. AMCs must explore opportunities to develop these innovative relationships as a means to provide alternative funding for the research mission and strengthen the brand of the AMC.

However, such collaborations have attracted regulatory and media scrutiny around pharmaceutical industry influence on medical education, research, and practice. This has prompted many AMCs to strengthen their conflict-of-interest

policies—in part to protect their brands. The American Medical Student Association publishes the PharmFree Scorecard, an industry-accepted tool designed to rate AMCs on their management of conflicts of interest in areas such as gifts and scholarships. By their measures, AMCs are improving. The number of AMCs scoring an A or a B grade increased from 30% in 2009 to more than 50% in 2010.<sup>44</sup> With the increasing importance on industry relationships in order to monetize research, AMCs must continue this upward trend. In order to do their part in reducing the potential for conflict of interest (COI) risks, AMCs must resolve to identify these risks and assess the effectiveness of controls that manage, reduce, or eliminate possible COI risks.

**Figure 17: Commercialization collaborations with pharmaceutical companies**

Partnering Organizations	Description
Gilead Sciences, Inc. and Yale School of Medicine	Multi-year research collaboration focused on novel cancer therapies. Gilead will provide \$40 million in support over four years and up to \$100 million over 10 years. <sup>41</sup>
Pfizer, Inc., with eight leading institutions in Boston, including Harvard and Tufts.	Pfizer will spend \$100 million over five years on a research collaboration. <sup>42</sup>
Sanofi-Aventis and the University of California San Francisco	Joined together for two R&D collaborations with Sanofi-Aventis agreeing to fund five UCSF research grants. <sup>43</sup>

41 <http://news.yale.edu/2011/03/30/yale-and-gilead-sciences-announce-cancer-research-collaboration>, accessed January 2012

42 <http://www.tuftsctsi.org/About-Us/Announcements/Pfizer-Research-Partnership.aspx?c=129678316960972312>, accessed January 2012

43 <http://www.ucsf.edu/news/2011/01/8370/sanofi-aventis-enters-two-research-development-collaborations-ucsf>, accessed January 2012

44 <http://www.amsascorecard.org/executive-summary>, accessed January 2012

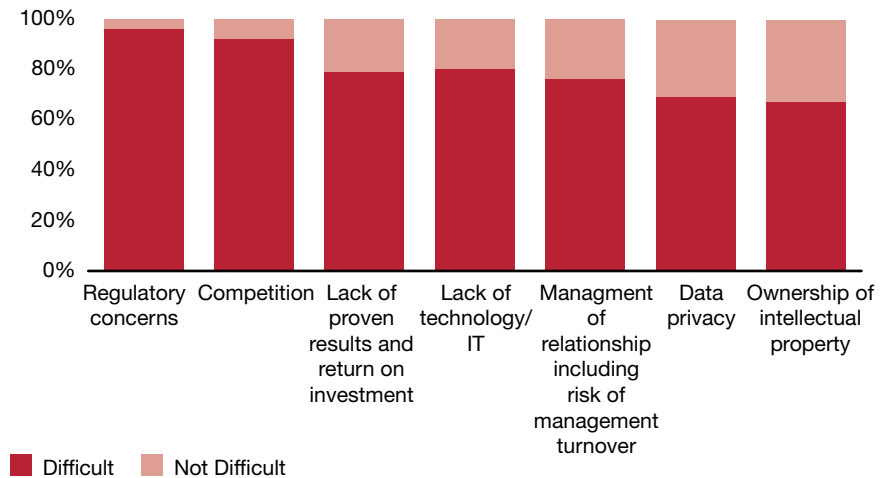
As opportunities develop, AMCs must also be mindful of the threats evident within these external collaborations. (See Figure 18.) AMCs must proactively respond to threats such as regulatory concerns, data privacy, and intellectual property rights in order to drive collaborations forward. The list of risks within collaboration arrangements is lengthy, but the benefits can prove rewarding.

*Focus your research portfolio on centers of excellence.*

Finally, one of the more overlooked areas of consideration seems to be the appropriateness of the research itself. NIH dollars allocated to research nearly doubled between 2000 and 2010 (from \$12 billion to more than \$21 billion), which, coupled with the \$10 billion increase in stimulus funds, helped to feed a “more research is better research” attitude in the research community. Organizations that became highly leveraged with research commitments are starting to see the days of unbridled funding growth grind to a halt.<sup>45</sup>

Roger Deshaies, chief financial officer and senior vice president at Fletcher Allen Health Care, says it may be a case of some AMCs looking at their situation and assessing the

**Figure 18: Threats that prevent or deter AMC collaboration**  
For the following barriers to collaboration with outside organizations, please rate the level of difficulty to your organization.



Source: PwC Health Research Institute AMC Leader Survey, 2011

appropriateness of their research mission. “Research can quickly turn from complementary to risky,” said Deshaies. “AMCs must rebalance and have a solid understanding of the endowment within their portfolio in order to weather the hard times. One must balance the research mission and ensure that it does not jeopardize the clinical mission.”

Seventy-two percent of AMC leaders maintained that their organizations will focus their resources on areas of clinical excellence in the next five years, while only 39% of AMC leaders

indicated that the same focus would be applied to areas of research excellence in the next five years. Rather than allow these two missions to drift apart, AMCs should focus on integrating them. That will allow research-fueled discoveries to be transferred directly into clinical practice, helping create organizational strengths that will take advantage of existing resources and create a knowledge loop. Additionally, a focus on uniting the areas of excellence within the clinical and research missions will inevitably lead to a more appealing profile for philanthropic donations, clinical trials, and additional targeted funding.

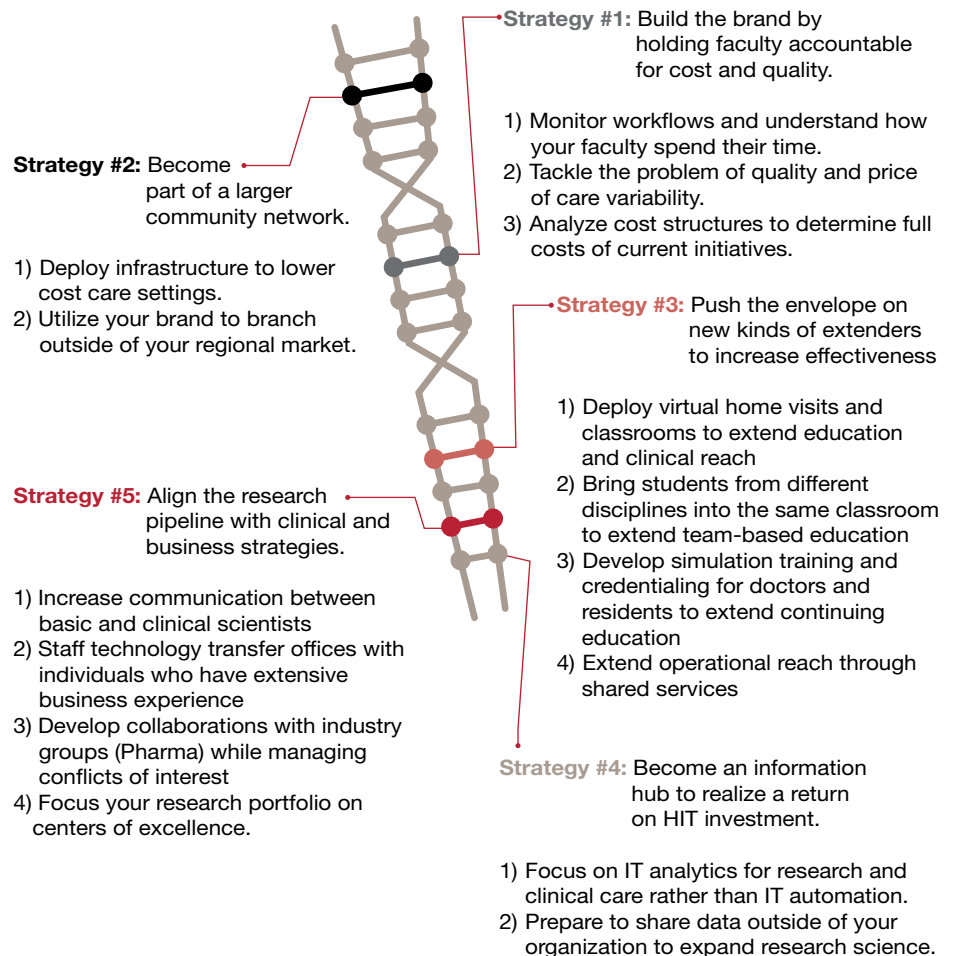
45 Mechanism Detail, Total NIH, FY 1983-2010, National Institute of Health Office of Budget ; NIH ARRA Funding, nih.gov

## Conclusion

As it is in most industries, adaptability is essential to the survival of academic medicine. The tripartite mission on which academic medical centers are built relies on a long-standing economic model that will make it difficult to sustain profit margins given the nature of funding threats. Michael Drake, MD, chancellor of the University of California, Irvine, said, “Academic medical centers are like mice going down cheese-less tunnels if they drive the status quo with little incentive and initiative for true change and innovation.” But he adds: “There is now a burning platform to make change.”

But today’s AMCs are at a crossroads. They must adjust to modern trends in financing and operations if they are to endure long term. The strategies outlined within this report represent a full menu of actions capable of delivering the necessary changes. (See Figure 19.) AMCs must embrace collaboration, innovation, and technology as a means to alter their current path. There will be resistance. People often cling to the status quo when they have grown comfortable with their day-to-day lives. But what has worked before is no longer sustainable. AMCs must adapt to modern times if they are to survive.

Figure 19: Five strategies can pull AMCs into a better future



Source: PwC Health Research Institute Analysis

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*Appendix*

PwC's margin  
meltdown analysis

The table on the next page shows the impact in 2020 of the various changes from Figure 5 on each of three illustrative AMCs (i.e., AMC A, AMC B, and AMC C). PwC based its estimates on internal expertise, financial data from AMCs, and national trend data available on medical schools and COH hospitals from the AAMC.

**Reductions:** AMC A has the smallest overall reduction in revenues, only 3% compared with 9% for AMC B, and 10% for AMC C. The modest impact of the funding reductions on AMC A is because most of the changes in Figure 5 do not affect AMC A. Specifically, it is not impacted by the DSH reductions since AMC A does not qualify for DSH payments, changes in private insurance coverage, by the changes in state funding for state institutions, or by the penalties for low quality, which pull down revenues for AMC B and AMC C by 9% and 10%, respectively. Interestingly, public AMC B has a smaller loss than private AMC C, despite the fact that AMC C is not affected by state budget reductions. This is a function of the higher Medicare share at this AMC C with its aging patient base.

**Increases:** The reductions in revenues are offset by the impact of more revenues from additional coverage under health reform. Under the PPACA, new Medicaid rules and subsidies for private plans begin in 2014. Also, existing private plans will be subject to new rules that require “minimum essential coverage for all private plans.” Eventually, nearly 60% of the uninsured are expected to gain insurance coverage, and coverage will be improved for those who already have it. This will have the greatest impact on those plans that have the largest share of uninsured patients and are able to retain those patients when they become insured. AMC A, which has the smallest share of patients who are uninsured, gains the least from the insurance effect, while AMC B, which has the largest share, gains the most.

**Net change:** The net impact on revenues of the losses offset by gains results in a net gain overall in 2020 for AMC A. Interestingly, AMC B has a much lower net loss than AMC C, despite the fact that both have similar gross losses in revenues before accounting for the new coverage. This

twist is the result of AMC B having a much heavier share of low-income patients that are then covered by Medicaid or private coverage in 2014 and beyond.

The impact on operating margins from the changes discussed above depends on a number of factors. First, margins can be maintained if the AMC’s cost structure is restructured to match the changes in patient volume, mix, and reimbursement level. Second, all of the assumptions about each of the illustrative AMCs may change over time. For example, AMC C may be able to change its patient mix and cost structure to attract private payers, while AMC B may be able to replace its public payments with new private sources of revenues.

**Details on specific variables and reductions utilized by PwC to develop the estimated range of threatened revenue.**

Revenue source	AMC A	AMC B	AMC C	Comments
	Private AMC with strong brand name, high quality metrics, and competitive cost structure. Has an illustrative total revenue of \$3,300,000	Public institution with high cost structure that is not preferred by private payers. Has an illustrative total revenue of \$3,300,000	Private AMC with aging population and fading brand; uncompetitive cost structure. Has an illustrative total revenue of \$3,300,000	PwC created its analysis of “illustrative” AMCs based on internal knowledge, financial data from AMCs, and national trend data available on medical schools and COTH hospitals from the AAMC.
IME revenues	0.6%	0.5%	0.8%	The inpatient portion of the Medicare revenue was based on a typical AMC and was varied across the three illustrative AMCs documented here. IME payments for major institutions were derived from the 2011 MedPAC Data Book. <sup>46</sup> This reduction is less than the 55% to 60% unjustified portion of IME payments as recognized by MedPAC but is greater than the 10% cut in IME payments under the President’s Plan for Economic Growth and Deficit Reduction. <sup>47</sup>
DSH (Medicare and Medicaid)	0.0%	2.2%	1.2%	The Medicare DSH payments as a percentage of Medicare PPS payments for major institutions were derived from the 2011 MedPAC Data Book. The hypothetical reduction to Medicare DSH is based on a high level rounding average of reductions based on PwC analysis of CBO and CMS estimates of the PPACA effects. <sup>48</sup> PwC analysis of Medicaid cuts based over estimated Medicare cuts derived from CBO estimates of the PPACA changes.
Market basket updates	1.7%	1.6%	2.4%	The reduction to Medicare inpatient revenue due to market basket updates was based on the expected effect of PPACA changes to the market basket update through FY 2021. <sup>49</sup>
Budget sequester	0.4%	0.4%	0.6%	Total Medicare revenue for the hospital and faculty practice is derived from an illustrative typical AMC and is varied by PwC across the three illustrative AMCs documented here.. Sequestration reductions are based on the failure to enact legislation by the deficit reduction committee resulting in a reduction to Medicare. <sup>50</sup>
Quality metrics	0.0%	0.5%	0.8%	The low-end range establishes a peak reduction based on quality failures from value based purchasing, hospital acquired conditions, and re-admissions. The high-end range adds a peak reduction based on a hospital’s failure to become an EMR meaningful user. <sup>51</sup>

46 2011 MedPAC Databook

47 MedPAC, “Report to the Congress: Aligning Incentives in Medicare,” June 2010, Recommendation 4-1.

48 Selected CBO Publications related to Health Care Legislation, Congressional Budget Office, December 2010; Estimated Financial Effects of the “Patient Protection and Affordable Care Act,” as Amended, CMS, April 2010

49 Patient Protection and Affordable Care Act (PPACA) (P.L. 111-148)

50 Estimated Impact of Automatic Budget Enforcement Procedures Specified in the Budget Control Act, Congressional Budget Office, September 2011

51 American Reinvestment and Recovery Act (P.L. 111-5)



Revenue source	AMC A	AMC B	AMC C	Comments
State funding cuts	0.4%	1.1%	0.4%	The Medicaid revenues at each illustrative AMC documented here are derived from the Medicaid revenues for the hospital and faculty practice at a typical AMC. The reduction to state funding is a high-level average reduction based on PwC's analysis of state cuts to hospital rates. <sup>52</sup>
State budget reductions	0.0%	0.5%	0.0%	The state appropriations to the medical school are derived from an average of actual state appropriations to medical schools based on PwC research. <sup>53</sup> The average reduction is a high level average reduction based on PwC's analysis of state budget cuts to public colleges and universities. <sup>54</sup>
ACOs	0.0%	0.8%	1.5%	Commercial insurance revenue is varied by PwC across the three illustrative AMCs based on commercial revenue for the hospital and faculty practice at a typical AMC. The reduction to commercial insurance revenues is based on losing commercial insurance patients.
Tiered networks	0.0%	0.8%	1.5%	Commercial insurance revenue is varied by PwC across the three illustrative AMCs based on commercial revenue for the hospital and faculty practice at a typical AMC. Hypothetical reduction to revenues is based on losing commercial insurance patients due to tiered networks.
Contract funding	0.2%	0.8%	0.6%	Grants and contracts revenue is based on the percentage of federal grants to total medical school revenue derived from the 2011 AAMC Databook. <sup>55</sup> Reductions are based on the failure to enact legislation by the deficit reduction committee, resulting in a reduction to NIH funding.
<b>Total downside effect on illustrative AMC revenue</b>	<b>-3.2%</b>	<b>-9.2%</b>	<b>-9.8%</b>	<b>Total downside</b>
Fewer uninsured	2.3%	4.5%	2.3%	Commercial insurance revenue is varied by PwC across the three illustrative AMCs based on commercial revenue for the hospital and faculty practice at a typical AMC. Hypothetical increase to revenues is based on the effect of gaining new insured.
Better coverage	1.5%	1.5%	1.3%	Commercial insurance revenue is varied by PwC across the three illustrative AMCs based on commercial revenue for the hospital and faculty practice at a typical AMC. Hypothetical increase to revenues is based on the effect of better insurance coverage for all.
<b>Total upside effect on illustrative AMC revenue</b>	<b>3.8%</b>	<b>6.0%</b>	<b>3.5%</b>	<b>Total upside</b>
<b>Net change</b>	<b>0.6%</b>	<b>-3.2%</b>	<b>-6.3%</b>	<b>Net change</b>

Source: PwC Health Research Institute Analysis

52 "Cuts to be felt at hospitals: State Medicaid reductions to cost Charleston-area facilities millions of dollars," The Post and Courier, June 2011; "Hospitals: 12% Medicaid cut won't cause layoffs," Highlands Today, May 2011; "Hospitals See Their Medicaid Rates Cut by 15 Percent," The Lund Report, October 2011

53 <http://www.amsa.org/AMSA/Homepage/About/Committees/StudentLife/TuitionFAQ.aspx#4>; [http://www.sc.edu/budget\\_pdf/2011\\_budget\\_fact\\_sheet.pdf](http://www.sc.edu/budget_pdf/2011_budget_fact_sheet.pdf)

54 <http://www.cbpp.org/cms/index.cfm?fa=view&id=1214>

55 2011 AAMC Databook

## About the research

This report discusses the challenges facing AMCs in the future and the various ways in which AMCs can positively respond to those challenges. To inform this report, PwC Health Research Institute conducted 26 in-depth interviews with thought leaders and executives representing healthcare providers, payers, and professional associations. In the fall of 2011, PwC Health Research Institute also commissioned an online survey of 100 AMC leaders and 1,000 health care consumers.

## Health Research Institute

PwC's Health Research Institute provides new intelligence, perspectives, and analysis on trends affecting all health-related industries. The Health Research Institute helps executive decision makers navigate change through primary research and collaborative exchange. Our views are shaped by a network of professionals with executive and day-to-day experience in the health industry. HRI research is independent and not sponsored by businesses, government, or other institutions.

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