A New Conceptual Framework for Academic Health Centers

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Abstract

Led by the Affordable Care Act, the U.S. health care system is undergoing a transformative shift toward greater accountability for quality and efficiency. Academic health centers (AHCs), whose triple mission of clinical care, research, and education serves a critical role in the country's health care system, must adapt to this evolving environment. Doing so successfully, however, requires a broader understanding of the wide-ranging roles of the AHC. This article proposes a conceptual framework through which the triple mission is expanded along four new dimensions: health, innovation, community, and policy. Examples within the conceptual framework categories, such as the AHCs' safety net function, their contributions to local economies, and their role in right-sizing the health care workforce, illustrate how each of these dimensions provides a more robust picture of the modern AHC and demonstrates the value added by AHCs. This conceptual framework also offers a basis for developing new performance metrics by which AHCs, both individually and as a group, can be held accountable, and that can inform policy decisions affecting them. This closer examination of the myriad activities of modern AHCs clarifies their essential role in our health care system and will enable these institutions to evolve, improve, be held accountable for, and more fully serve the health of the nation.

Editor's Note: This New Conversations contribution is part of the journal's ongoing conversation on the present and future impacts of current health care reform efforts on medical education, health care delivery, and research at academic health centers, and the effects such reforms might have on the overall health of communities.

The Affordable Care Act set in motion dramatic changes to the way that health care is delivered in the United States. Yet in the entire law, academic health centers (AHCs)—the institutions that include a medical school, other health professions training programs, and affiliated teaching hospitals and health systems—are mentioned only 10 times, and never in reference to the sweeping health care delivery reforms initiated by the law. As the U.S. health care system undergoes this seismic transformation, some have questioned the role and even the relevance of the AHC. These academic institutions, with their complexity and high overhead, have been portrayed as costly relics in a system that is increasingly focused on delivering value and managing the health of populations. Recognition of the formidable challenges looming ahead for U.S. health care has led to calls for a dramatic overhaul of the ways AHCs function.[1,2]

It is clear that the AHC must evolve to keep pace with this changing environment, but we caution against jettisoning successful elements in favor of unproven concepts. AHCs have adapted over the years, taking on greater clinical responsibilities in response to the demand for more complex and technologically driven medical care. Along the way, AHCs have built their success on evidence-based clinical care, research, and education. However, AHCs cannot and should not rest on their laurels. They need to continually progress and to have accountability both for their current performance and for their ongoing adaptability to address future health care needs. Only by fully understanding their roles and mission can AHCs best measure their current performance and chart their courses moving forward. A closer examination of the myriad activities of modern AHCs will clarify their role and enable these institutions to evolve, improve, and be accountable for more fully serving the health of the nation.

A valid and current conceptual framework is necessary to measure AHC performance and enable function-specific accountability. Although the triple mission of patient care, research, and education has adequately defined the contributions of AHCs in the past, it no longer sufficiently describes the breadth of roles that AHCs serve today or will serve in the future. We propose a new conceptual framework that expands the triple mission along four new dimensions: health, innovation, community, and policy (Figure 1). The activities of clinical care, research, and education interact with each of these dimensions in unique ways (Table 1), helping to illustrate the complete spectrum of current and future AHC activities and functions. Because it is an artificial construct, this framework inevitably involves some blurring of the various intersections. Nonetheless, as the below discussion of each dimension demonstrates, expanding the scope of the triple mission allows for a more thorough examination of the AHC's place in modern health care. Through

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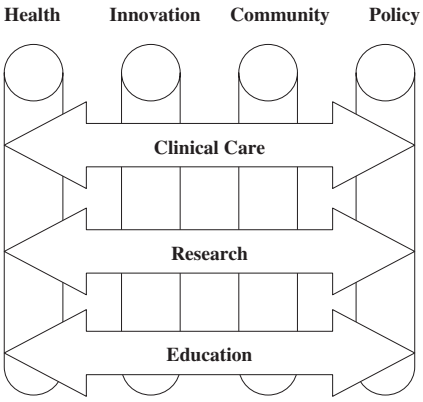

Figure 1 A conceptual framework for academic health centers.

this expanded and more accurate understanding of the AHC role, these institutions can better demonstrate and be held accountable for their performance.

Health

The term "health" in this context encompasses all of the elements necessary for maintaining wellness, including the delivery of preventive care, expedient diagnosis of illness, management of chronic conditions, and treatment of manifest disease, though these activities are not limited to the direct provision of clinical care. Within the health dimension, AHCs are best known for clinical care, including their advanced specialty services such as transplantation, neonatal, and trauma care. They are often the providers of last resort, serving as transfer destinations for patients who require technology and expertise that are often unavailable elsewhere. A 2006 analysis by the Association of American Medical Colleges found that members of its Council of Teaching Hospitals and Health Systems, which represents major teaching medical institutions, cared for 42% of transferred Medicare patients, even though they constituted only 8% of all hospitals surveyed.[3]

Although they are best known for their tertiary and quaternary care, AHCs also deliver a substantial amount of primary and secondary care to their local communities, many of which are economically and socially disadvantaged. One study showed that, despite composing only 6% of hospitals nationwide, AHCs provide approximately 40% of hospital-based charity medical care.[4] Relative to nonteaching hospitals, AHCs have lower mortality rates for common conditions such as acute myocardial infarction, congestive heart failure, and pneumonia, though those institutions that serve a safety net role typically have higher readmission rates. These findings suggest that, while AHCs provide excellent care, they also require a supportive ambulatory care environment to achieve the best overall patient outcomes.[5,6] To address this issue, AHCs are advancing new care delivery models to better serve their local communities. As an example, Montefiore Medical Center of New York combines clinical care coordination with outreach to the local Bronx community through efforts such as an integrated comprehensive primary care network, meaningful integration of health information technology, and interventions that target the needs of high-risk populations.[7] This model has resulted in Montefiore's achieving the best financial performance of all Pioneer Accountable Care Organizations in 2013.[8]

In the area of research, AHCs contribute to health as discoveries and new medical advances are made possible through translational research. This "bedside to bench to bedside" research involves clinicians generating hypotheses while caring for patients, bringing those research questions to the laboratory, and then carrying their discoveries forward into clinical trials. Many hospitals and clinics provide patients with opportunities to enroll in clinical trials, but AHCs conduct the full spectrum of research necessary to take an idea from discovery to evaluation to implementation. For example, the identification of the Philadelphia chromosome in chronic myelogenous leukemia (CML) at the University of Pennsylvania eventually led to the development of the drug imatinib (Gleevec), which has had dramatic success in treating CML and other cancers.[9]

The education component of the triple mission contributes to the health dimension through AHCs' training of generations of health care providers. AHCs educate most allopathic medical students and train approximately half of the nation's residents and interns,[10] while also helping to educate the health care workforce in nursing, pharmacy,

Table 1

Applying Examples Within the Four Dimensions of a Conceptual Framework for Academic Health Centers

AHC mission	Health	Innovation	Community	Policy
Clinical care	• Provide advanced specialty care • Provide care to low-income communities, with significant free care	• Achieve improvements in patient safety	• Engage in community outreach through health screenings, etc. • Provide economic benefits through employment, construction, sourcing, etc.	• Consolidate expensive resources through regionalization • Provide health care surge capacity for disaster relief
Research	• Conduct bedside-to-bench-to-beside research	• Develop medical technology into practical clinical use	• Integrate AHC and community research programs	• Allow for research both with and without commercial potential • Examine quality of care and efficiency through health services research
Education	• Train next generations of all health care providers (MDs, RNs, technicians, etc.)	• Use novel education techniques to address challenges in care	• Serve as medical "capital" of any geographic region • Provide continuing education for community physicians	• Provide an avenue for adapting to future workforce needs through Medicare support of training

Abbreviations: AHC indicates academic health center; MD, medical doctor; RN, registered nurse.

dentistry, and other areas. As the baby boomer generation ages and more Americans gain health insurance, there will be an increased demand for health care workers. One projection foresees a shortage of 90,000 physicians by 2020,[11] meaning that AHCs have a critical role to play in ensuring that there are sufficient care providers to serve the health care needs of all Americans.

Innovation

Although it seems similar to the general AHC mission of research, the innovation dimension specifically includes the direct application of medical advances to clinical care. The unique environment at AHCs facilitates the teaching and active cultivation of innovation, offers support for innovation through financial and other means, and provides venues for implementing innovations.[12] AHCs are leaders in developing innovative approaches to delivering high-quality and highly reliable care, as exemplified by the work of Peter Pronovost and colleagues[13] at Johns Hopkins in successfully developing and disseminating evidence-based checklist strategies to reduce catheter-related bloodstream infections.

Health care professionals and trainees at AHCs regularly provide care for rare, advanced, and complicated diseases that require new approaches. The abundance of innovation at AHCs grows from the established research infrastructure, close ties to the general university community, and interactions among clinical experts, basic researchers, and social scientists that lead to cross-disciplinary discoveries. Work at AHCs has led to discoveries that touch millions of lives worldwide, ranging from liver transplantation to in vitro fertilization to the basis for cholesterol-lowering drugs.[14] AHCs often have the infrastructure to commercialize these innovations, with 44% of Association of Academic Health Centers member institutions having relationships with research parks or business incubators that facilitate academic–private collaborations.[15] Coronary stents are a prime example of this role of AHCs in innovation, as two of the top three cited patents came from companies formed as a result of research conducted at AHCs.[16]

Medical education is advancing at AHCs through innovations such as deemphasizing lectures, providing earlier clinical exposure, and instituting problem-based learning. The growth of simulation-based medical education has allowed trainees to gain both procedural skills and practice techniques before direct patient encounters, thereby improving patient safety.[17] Educational innovation remains a dynamic process, with calls from the 1910 Flexner Report through the 2010 report "Educating Physicians: A Call for Reform of Medical School and Residency" continuing to press AHCs to adapt new educational methods, such as incorporating team-based work, patient-centered care, and continuous learning to meet the needs of both individual patients and the health care system as a whole.[18]

Community

There is a growing recognition that AHCs have a role and responsibility to the communities in which they are located, and this involves more than just providing care to the uninsured and underinsured. Rather than being a cost to society, AHCs generate a significant economic return to both their local communities and the national economy. AHCs had a combined positive economic impact of over $512 billion in 2008 and produced over $22 billion in state tax revenue.[19] Additionally, more than 3.3 million people—1 in every 43 U.S. workers—are employed by AHCs.[19] The reach of AHCs extends beyond their walls through activities such as community health needs assessments, which identify the comprehensive health gaps and opportunities within geographic areas. Additionally, AHCs facilitate opportunities to educate community members about health, with one notable example of urban barbers who were trained as health coaches through an AHC helping to improve blood pressure control for hypertensive patrons.[20] Many AHCs also serve the global community by disseminating innovation, as is the case at over 40 North American universities that have interdisciplinary centers focusing on global health.[21]

AHCs' research connection to the community has been strengthened in recent years by the creation of the National Institutes of Health–funded Clinical and Translational Science Award (CTSA) program. CTSA recipients emphasize community engagement in research and collaborative care to meet community priorities, such as through chronic disease prevention and management efforts.[22] University of Chicago CTSA researchers built a health research and discovery infrastructure on Chicago's South Side that sought to put "science in service to community" by focusing on identifying and leveraging local priorities and assets, such as working with grocery stores to improve nutritional food availability. The researchers were able to achieve strong community engagement and trust, and they returned data of value to local organizations seeking to address health and well-being.[23]

AHCs serve a broader educational role in the community as the main source of clinical education in many regions and a professional "home base" for many local physicians. Nearly half of physicians either remain in, or return to practice in, the state where they received their graduate medical education.[24] These physicians often have deep and enduring ties to the AHC where they completed their residency or fellowship, and they view these institutions as the clinical and intellectual capitals of their regional medical communities. Though medical schools represent about 6% of continuing medical education providers, they serve more than 20% of academic and nonacademic physician participants.[25]

Policy

In many ways, AHCs sit at the center of and help inform our country's ongoing policy debates on topics as diverse as quality of care, health care cost control, and comparative effectiveness research. They both drive the generation of new policy ideas and serve as venues for policy implementation. Although forays into the policy world inevitably evoke different political views amongst faculty, such as opinions about the role of government in health, AHCs generally have a culture that embraces these differences in opinion and emphasizes using data to develop solutions and recommendations.

As far back as 1961, Kerr White and colleagues[26] described the societal value of consolidating expensive clinical care resources in AHCs through regionalization and the resultant economies of scale and expertise. This discussion of regionalization continues today, with advocates arguing for

Table 2

Examples of Potential Performance Metrics Within the Four Domains of a Conceptual Framework for Academic Health Centers

AHC mission	Health	Innovation	Community	Policy
Clinical care	Percentage of total medical care that is uncompensated	Percentage performance on patient safety indicators	Percentage of individuals in defined AHC community achieving population health goals (e.g., blood pressure targets)	Number of key regionalized or specialized services provided (e.g., burn center or inpatient psychiatric care)
Research	Number of academically developed new molecules receiving FDA approval as new therapeutics	Number of academically developed new devices receiving FDA approval as therapeutics	Percentage of research at an AHC that engages community members	Number of local, state, or national health care laws based on AHC-developed concepts
Education	Number of practicing physicians meeting societal health needs	Percentage of AHCs using procedure simulation for students before their first patient procedure (e.g., for central venous catheter placement)	Number of continuing medical education hours earned through AHCs	Percentages of new physicians in specialties meeting policy-driven workforce needs

Abbreviations: AHC indicates academic health center; FDA, Food and Drug Administration.

defining an AHC's region not only by local geography but also by the referral needs of patients requiring complex medical services.[27] An AHC provides sophisticated tertiary and quaternary care for the broader community, including transplantation, burn care, and complicated brain, heart, and lung surgeries, as well as providing surge capacity for disaster preparedness. Locating this clinical capacity at the AHC consolidates experience and expertise, thereby improving quality through greater volume,[28] and potentially reducing societal costs. The clinical comprehensiveness of AHCs also enables them to offer vitally important yet unprofitable services, such as inpatient psychiatric care, through cross-subsidization by more profitable care services.

AHCs also serve an important role in elucidating policy by being the country's main resource for health services research. As the nation seeks a higher-value health care system, AHCs have been, and continue to be, active in both proposing and analyzing various policy options to inform these policy discussions.[29–32] Moreover, AHCs have been instrumental in health policy developments ranging from the development of diagnosis-related groups over 30 years ago[33] to the more recent work done by medical school researchers from Dartmouth College that laid the groundwork for accountable care organizations.[34] In addition to the health policy contribution of their clinical faculties, much of this work is performed in departments or schools of public health or public policy that are part of AHCs.

Lastly, AHCs have a critical role in shaping and addressing future health care workforce policy. Because AHCs train the next generation of health care providers with the support of $15 billion in annual governmental graduate medical education funding,[35] they represent an integral part of any solution resolving the aforementioned physician shortfall. More than just training the right number of providers, AHCs will need to collaborate with federal, state, and local governments to produce the appropriate mix of primary care physicians, specialists, advanced practice practitioners, and other health care professionals necessary to meet the nation's future needs.

Future Directions

With the exception of discussions about costs, AHCs are rarely acknowledged in the larger debates about health care reform. In response, we have created this expanded conceptual framework to provide a better understanding of AHCs' current function and contributions within our complex health care system and their importance for achieving the goals of reform. Given the changes underway in health care, this framework provides broad categories within which goals can be set, resources allocated, and performance evaluated.

Although the framework is agnostic as to the weighting of resources and effort to be applied to each of the dimensions, it can help individual AHC institutions and the AHC community as a whole—with appropriate stakeholder input—to set short-, medium-, and long-term goals. These goals can then help inform national and local policies that affect resource allocation and the societal responsibilities of AHCs.

In today's value-based environment, where resource allocation is increasingly tied to performance evaluation, AHCs are too often evaluated using the same metrics and compared against the same benchmarks as other health systems that do not have the same mission or responsibilities. Our framework provides a structure for developing AHC-specific metrics that can more accurately track performance across the full spectrum of AHC activities that add societal value. Examples of such metrics are presented in Table 2, though these are only conceptual. As with the development of clinical performance measures, actual AHC system metrics should be developed with societal goals in mind and tested rigorously before being applied.

Our focus on AHCs should not be taken to imply that nonacademic medical centers are any less important or that AHCs are flawless. Rather, our intent has been to articulate those dimensions of AHC activity that add value to our health care system and to society. Our framework makes clear why these institutions need to be strengthened, and provides a roadmap by which our country can ensure that they continue to do so. Jeopardizing the future of AHCs, whether directly or through unintended failures to recognize and support AHCs' broad societal value, would destroy a core element of U.S. health care.

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