2012 Association of American Physicians Presidential Address

Next-generation academic medicine

David A. Brenner

Today I would like to speak to you about the remarkable successes of academic medical centers to date, the significant problems that we are now facing, and the need for us to evolve into the next generation of academic medical centers.

Academic medical centers have been remarkably successful in fulfilling our three missions of clinical care, research, and education. We graduate 17,000 physicians each year, we provide 40% of the undercompensated care, and we account for 20% of all hospital admissions throughout the United States. However, I believe it is not generally understood how the three missions interact and how they are currently supported.

A Venn diagram (Figure 1 and ref. 1) demonstrates how the three missions of academic medical centers are linked and displays the relative effort devoted to each of the three missions. The overlap shows how the three missions really cannot be separated. For example, a postdoctoral fellow participating in a clinical trial will be at the interface of all three missions.

So what is supporting the three missions of the academic medical centers? It is largely driven by the success of the financial performance of the medical centers. For example, starting in 2007, there has been an impressive financial improvement at the five medical centers at the University of California, which culminated in an unprecedented 13% profit margin in 2011. However, in the early 1990s, the five UC medical centers were losing money, and starting with this current year, the margin will decrease substantially.

The critical issue that we need to understand is how these UC Health funds flow from the medical centers to support the medical school (Figure 2). The UC medical centers had revenue of $6.5 billion last year, which consisted of 60% from public payers, 40% from commercial insurance, and a very small amount from the state. So in reality, UC medical centers are functioning as private, not for profit, medical centers. $514 million was transferred from the medical centers to the medical schools to provide both for the purchase of services, such as medical directorships, and, more significantly, for programmatic support. The five UC medical schools had revenue of $3.8 billion, of which research and clinical care accounted for 78%, state support accounted for 7%, tuition for 2%, and medical center support for 13%.

It is only through this funds flow from the medical centers to the medical schools that the UC's medical schools are thriving or even viable.

However, impending risks to the academic medical centers will prevent us from carrying on business as usual. Our traditional operating margins have averaged 5%, and in fact this is approximately the UC's expected margin for this current year. We have three major sources of income: clinical, research, and state support, for those of us who are state institutions.

None of these three sources of income is expected to increase at its traditional rate, as for example I showed you for the clinical income of the UC's medical centers. In fact, recent studies have estimated that 10% of our traditional revenue is at risk. In light of the 5% operating margin, it is obvious that we cannot conduct business as usual.

According to PricewaterhouseCoopers (1), forces that require academic medical centers to change include these budget cutbacks as well as a risk to our academic brand.

The budgetary and political pressures facing academic medical centers have been well documented. The obvious hits include a decrease in the disproportionate share hospital (DSH) payment and a decrease in direct state funding. However, even more significant will be major changes in our payer mix. The good news is that we might have increased insurance coverage. However, the bad news, which might very well outweigh the good news, is there will be increased Medicaid and decreased commercial insurance. Since currently academic medical centers cannot be successful on Medicaid rates, we will need to change our model for providing medical care.

Academic medical centers currently have great brand recognition throughout the world. However, there is legitimate concern about a breakdown of the branding of academic medical centers. In general, academic medical centers do not rank highly in new quantitative assessments of quality and efficiency. Furthermore, there are concerns that in our attempt to form a network with extensive affiliations, we can undermine our branding.

The organization of academic medical centers has evolved over time to mirror other academic institutions. Most academic medical centers are decentralized, with separate structures for the medical schools, medical center, and faculty practices. These different silos or fiefdoms are each driven by their own unique motivation. In the extreme, in many academic medical centers you can see the organization was driven largely by individual personalities and agendas and not by what is best for the institution as a whole. It also leaves us unable to quickly realign our efforts when the situation changes.

Now that I have depressed you, what are the possible solutions for academic medical centers? Like the response to the energy crisis, I think it will be an all-of-the-above

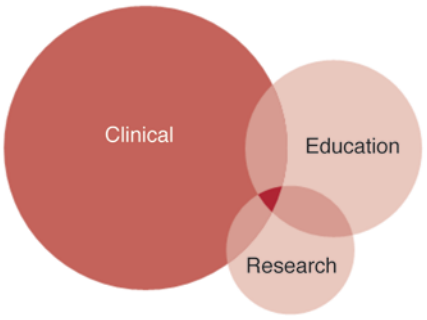

Figure 1
The links among the three missions of academic medical centers and the relative effort devoted to each of the missions. Figure reproduced with permission from PricewaterhouseCoopers LLC (1).

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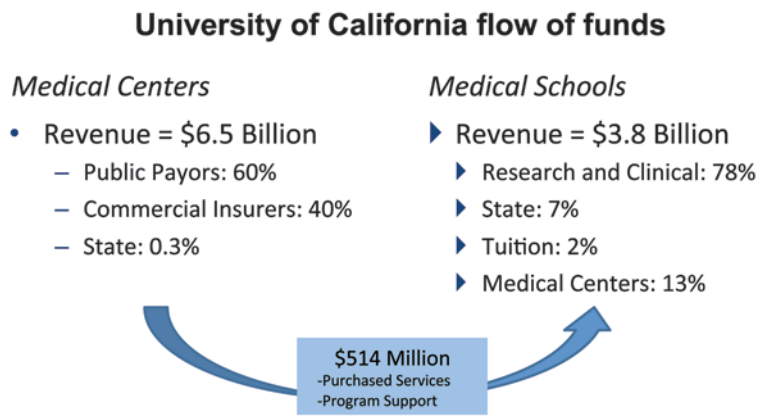

Figure 2
UC flow of funds from medical centers to medical schools. Information adapted from data provided by J. Stobo (University of California, Office of the President, Oakland, California, USA).

response with multiple approaches. We will need to leverage our academic strengths but also be more efficient and patient-oriented. This will require a change in our culture and a change in our expectations. I can think of at least nine possible solutions (Table 1). The possible solutions are all interconnected, but I have separated them into a discrete list for this presentation.

The most obvious solution is of course to increase philanthropy. We must convince our potential donors that we have a vision that they wish to share, that there will be a return on their investment, and that we will improve our community and the life of its residents. Philanthropy is not a solution in itself, but must be a part of the overall vision and strategy for the academic medical centers. In general, people wish to invest in programs and not just bricks and mortar. Philanthropy requires a long-term commitment to the community. It requires development of interpersonal relationships, and it requires a careful stewardship of gifts in order to justify subsequent support. For those of us at state institutions, it requires a new commitment to philanthropy and that paying your taxes is not enough.

Another part of the solution to the crisis of academic medical centers is less conventional. I think we should actively look to host independent research institutions. The idea is that academic medical centers can relocate, expand, or establish de novo affiliated semi-independent research institutions on our campuses. This has many advantages, by bringing outstanding new faculty to the academic medical centers without the cost to the underlying institution or university that would normally be a part of the recruitment and support. We can quickly establish research programs in new areas of interest without conventional academic limitations and inertia. The most obvious example is the Howard Hughes Medical Institute, which is located on multiple academic medical centers throughout the United States. However, my institution, UC San Diego, has experience with additional freestanding research institutions that each in its own way has made enormous improvements in the research and academic environment without a concomitant financial commitment. The Ludwig Institute for Cancer Research, the La Jolla Institute for Allergy and Immunology, and, most recently, the J. Craig Venter Institute have each greatly enriched the intellectual environment at UC San Diego through unique relationships with the university and the academic medical center, in ways that we could never have possibly done on our own through more conventional mechanisms.

Another part of the solution might be increased academic-industry collaborations. To some extent, I view both types of institutions as being currently at risk. On the one hand, academic research is now facing decreased federal funding, in particular NIH funding. On the other hand, Big Pharma's current research program has few drugs in the pipeline, and several blockbuster drugs are now going off patent. With the caveat that these types of academic-industry collaborations require very strict conflict-of-interest rules, I am convinced that there is an interface where translational research can be advanced into clinical care by these collaborations. This is an opportunity for academic discoveries to traverse the so-called "valley of death." There are several examples now, including our recent experience with Pfizer's Centers for Therapeutic Innovation, in which a joint Pfizer-academic review committee selects grants to fund for drug discovery using biotherapeutics. These types of support could supplement, but certainly not replace, conventional grant support.

I believe an intriguing part of the solution might be in the area of international collaborations. US academic medical centers are indisputably the gold standard that the rest of the world wants to emulate. The unique skills and infrastructure in our academic medical centers could, and should, be the basis to build new academic medical centers in other parts of the world. The caveat is of course that despite our enthusiasm and our belief in this approach, we must be sensitive to cultural and educational differences in other regions. The potential benefits to our academic medical centers are significant. They include a new revenue stream, new collaborative research in new populations, the possibility of patient referrals, and a cultural appreciation by our students and faculty as well as students and faculty from other countries. Although there have been some failures in this approach, there are at least two well-documented successes, and those are Cornell Medical School in Qatar and the Duke National University of Singapore medical school program. I think there are many potential opportunities in Asia, the Middle East, and South America.

Another part of the solution is to develop academic medical centers as medical destinations. Our consultants estimate that 25% of our patients should come from outside of our immediate region. We need to identify specific areas of clinical expertise. We then need to support enlarged, high-quality, and even novel specialty services in these areas. And we need to develop international contacts and liaison services to facili-

Table 1
Possible solutions for academic medical centers

1. Philanthropy
2. Host independent research institutions
3. Academic-industry collaborations
4. International partnerships
5. Academic medical centers as a medical destination
6. Medical informatics
7. Quality
8. Community affiliations
9. Translation of medicine

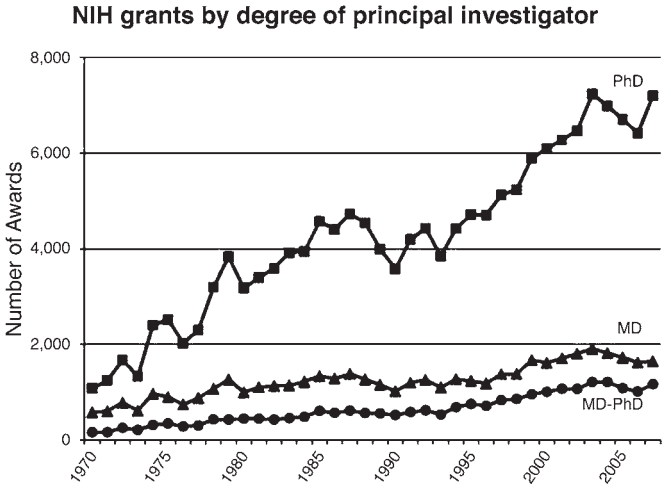

Figure 3
NIH grants by degree of the principal investigator. Figure adapted with permission from *Nature* (2).

tate providing these services in a patient-friendly way. This obviously overlaps with establishing international collaborations.

A new area of strength of academic medical centers is medical informatics. Medical informatics is vital to document and to assess the quality of care. At the same time, we must prove to our academic colleagues that it is not a commodity, but a legitimate translational research area, with rapid translation of findings to patient care. It is also an opportunity to provide outreach to referring physicians by connecting them to the academic medical center through our electronic health record and our bioinformatics support. It also provides an interface between clinical information and research information, so that we can now interrogate clinical data to gain new insights that were previously impossible to do with classic chart reviews.

Table 2
Translational medicine

- Truly unique niche of academic medical centers
- Requires clinician scientists
- Intensive analysis of well-phenotyped patients
- Precision medicine
- Medical informatics
- Genomics
- Stem cell therapy
- Wireless medicine

Another potential area of strength of academic medical centers is patient quality. Historically, academic medical centers received high scores in traditional rankings of quality. For example, academic medical centers are number one in each US city according to *US News and World Report*. However, community hospitals frequently score highest in more recent assessments of quality and efficiency, beating academic medical centers. We need to increase and document our improved quality, and at the same time use this to reduce cost. This will require us to standardize best practices, reduce overtesting, which is a historical problem in academic medical centers, share data and analysis across our systems, and hold our faculty accountable. This will interface with everything else I touched on, including, particularly, medical informatics.

Virtually every proposed solution to the current crisis involves community affiliations, including both physician practices and hospitals. We need primary care referrals to support our specialty care program; that has always been true. But now with impending lower reimbursements rates, academic medical centers need to lower their costs, and the most obvious idea is to utilize the more efficient facilities in community hospitals for patients with lower case mix index scores, for less complex patients. We can facilitate this by unifying our electronic medical records and our medical informatics with community affiliations. We can also utilize advances in telemedicine to do outreach, which is very popular in California.

The final — and, probably to this audience, the most obvious — solution for academic medical centers is to develop translational medicine. Clinician researchers are the key to advancing research into clinical care. However, as this frequently shown chart demonstrates (Figure 3 and ref. 2), we are not training the next generation of physician-scientists who will be leaders in translational medicine.

Translational medicine is an opportunity that we cannot miss. This is truly a unique niche for academic medical centers and clinician scientists (Table 2). It requires the intensive analysis and treatment of well-phenotyped patients, which is something that neither freestanding research institutions nor community hospitals can do. It is really a niche of the academic medical center. It will be the basis of precision medicine and will require us to assess all of the tools that are now becoming available to us: new tools in medical informatics, as we just discussed, in genomics, stem cell biology therapy, and wireless medicine.

It is really up to societies like the Association of American Physicians to encourage, to mentor, and to develop a new generation of clinician scientists who will be the leaders of translational medicine and advance the quality and efficiency of health care at academic medical centers.

Thank you for your attention, and thank you for the opportunity to be the president of AAP this year.

1. Health Research Institute. *The future of academic medical centers: strategies to avoid a margin meltdown*. New York, New York, USA: PricewaterhouseCoopers, LLC; 2012. http://www.pwc.com/us/amcfuture.
2. Butler D. Translational research: crossing the valley of death. *Nature*. 2008;453(7197):840–842.