Cultivating the Clinician Innovator: Is There Pay Dirt in Academic Medicine?

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Innovators and creative geniuses cannot be reared in schools. They are precisely the men who defy what the school has taught them. . . . An entrepreneur cannot be trained. A man becomes an entrepreneur by seizing an opportunity and filling the gap. No special education is required for such a display of keen judgment, foresight, and energy.

Ludwig von Mises, Human Action, p. 311.

Who could oppose the thesis advanced by Majmudar and co-authors in this commissioned opinion piece? The very phrase “clinician innovator” congers up the vision of a young professional poised to lead us through the frontier of modern medicine to the Promised Land. But, wait just a minute. Let’s examine this a bit further before applying for a position in this track.

Technological Innovations Are Being Developed at Warp Speed

First, few would disagree with the authors that we are in the midst of great changes in health care because of the rapid pace of technological innovations. Recently, as I sat at a company board dinner, another guest pulled out his AliveCor® (noncontinuous, patient-triggered event monitor), which works via his smartphone to help confirm his bouts of paroxysmal atrial fibrillation and allows him to appropriately self-administer his “pill in the pocket” to restore sinus rhythm.

It happens I’m developing a new drug for that same purpose intended for patients with structural heart disease, so I was particularly intrigued by his enthusiasm for avoiding the doctor’s office and the emergency department. I use this example to illustrate how innovation can and will move more of the practice of medicine from the bedside and the clinic to the bedroom and the dining table. And just in time. . . . With healthcare costs outpacing every other aspect of the economy except government spending, and baby boomers (aka “the silver tsunami”) developing their advancing age-related health conditions, we must find ways to provide the best possible care more economically. It is clear to most of us that the cost of health care is unlikely to decrease because of a miraculous change in single- or third-party payer systems. The best way to contain cost is to put more low-cost health care in the hands of the patients themselves and away from the hospitals. That is where technological innovations come in. The question posed in the present opinion piece is how academic medicine can best contribute to these innovations.

Academic Medicine Should Adapt to Healthcare Evolution

Let’s examine some of the authors’ assertions and provide some further perspective. The article is said to be an “AHA Presidentially Commissioned Article.” That certainly adds gravitas to the document, although the authors of their own accord are very highly recognized in cardiology and certainly can speak authoritatively on this topic. It appears that the suggestion to write this article came out of the recently held first Health Tech Forum (www.heart.org/HEARTORG/Conditions/Health-Tech-Forum-Highlights_UCM_469136_Article.jsp), where career development of the clinician innovator in academic medicine was said to have been a key component of the meeting. No doubt this was of particular importance to the attendees from academic medicine, where training tomorrow’s cardiologist is of great importance. Adapting today’s curriculum to be better suited to tomorrow’s technology is certainly a worthy cause for academic medicine. After all, the academic medicine faculty has to keep itself relevant to the market it serves. Enlightened self-interest is a potent force. As the healthcare delivery system changes, one would hope the training of healthcare providers will change in parallel.
Ostrovsky and Barnett have addressed this elegantly in their recent article on the same topic.\(^3\)

Can Academic Medicine Change Its Reward System? We’re Judged by Our Actions, Not Our Intentions

The authors go on to remind us that academic medicine has always been a significant contributor to innovation, with the advances in basic research providing the foundation of healthcare innovation. It is true that basic science has been the foundation of much of modern medicine, but it is also true that there are many steps between the bench and current healthcare innovation, and these many steps or this wide gulf is where academic medicine has been struggling over the past several decades. By the authors’ own admission, the triple threat of clinical care, biomedical research, and education has become more difficult for the trainee to accomplish so that new tracks have been developed that emphasize 2 of the 3 and sometimes only 1. Young faculty in these tracks have sometimes struggled and in fact been relegated to second-class status because of unclear metrics for promotion and mixed messages from departments as to how best the trainee can succeed. This problem combined with diminished funding sources has made for difficult times in academic medicine.

So, I applaud the authors’ pursuit of the clinician innovator as a potential new track better suited to the health care of tomorrow but only if the track is recognized as an equal to standard tracks and given appropriate metrics and rewards for success. By way of example, in my role as the board chair of a university cardiovascular research center board of directors, I am charged with helping faculty members at the school of medicine with starting up companies around the technology they discovered/developed, an opportunity for which I am extremely grateful. Through this process, I met with an assistant professor who was struggling with the dilemma of publishing her work in order to advance in her academic track. To do so would have meant that she was going to create “prior art” to a potential “method of use” patent she was hoping to file for the company she was creating. The former would have of course invalidated the latter, making a future licensing agreement or transaction/financing between her company and a partner/investor potentially less valuable.

The obvious solution is that the proposed clinician innovator tracks must have metrics that allow the “method of use” patent filing to substitute for the peer review publication in the promotional criteria. Let me hasten to point out that this same university has one of the most enlightened technology transfer offices I’ve ever encountered. The vice president of research has been quoted as saying he’d rather give away the technology than have it go undeveloped. This same institution has recently awarded a new faculty member a regular tenure track position in large part because of the technology he developed and the company that has been founded because of that technology. They are to be applauded. There is much to be said about the enlightenment of institutions and the faculty therein who can adapt their existing system to the clinician innovator.

It Won’t Work Everywhere

Let me turn now to the 2 main points of my perspective on the clinician innovator. First, the clinician innovator is not right for every academic center. The “ecosystem” necessary for innovation cannot exist/reside solely within the academic center. The academic center must reside within a greater environment of innovation, not only contributing to it but also helping draw new people to the geography who may create technology outside but nearby the academic center. One of the greatest sources of talent is the spouse of faculty members residing at or recruited to an academic medical center. This person often contributes substantially to the innovation environment outside the academic center. We all know examples of the law firm partner specializing in intellectual property who is spouse to the newly recruited department chair. Of course the geographic area of Silicon Valley near Stanford/UCSF is a great example, as is the Boston/Cambridge area around Boston University and the Harvard healthcare systems and also San Diego in conjunction with UCSD. But to believe that the ecosystem can be created and flourish solely within an academic center is folly. Where would one find the innovators, entrepreneurs, risk-taking investors, etc.? These people are out risking capital in the free market which is not the norm in the academic center. Here’s where the academic center will fail miserably. A clinician innovator without an ecosystem of innovation outside the academic center will wither on the vine. I was taught this by the late Duane Roth who took over UCSD Connect, the nonprofit organization focused on helping innovation in San Diego. When he took it over it was struggling as an organization within UCSD. He believed it was struggling because the organization had not engaged the community, and had not found the right mix of support from various components of the business world including investors, legal experts, entrepreneurs, and other members of industry. Further, he found that the potential innovators within the university were sometimes happy to “settle” for internal funding granted by Connect within UCSD much as they might for NIH funding, choosing not to pursue the technology to its most appropriate conclusion: starting up a company or licensing the technology to another company. The reward inside the University seemed to be enough. He recognized
that the academic center must be an equal partner with components of the community in order to successfully create the environment of innovation. Today, San Diego Connect is a truly great success, having been a part of hundreds of new companies in the greater San Diego area (http://connect.org). That said, there must be sufficient support and collaboration between the community and the academic center for such an undertaking. A true partnership must be established between the “town and gown,” a relationship that can sometimes be difficult to establish, especially if the population base is not of sufficient size with sufficient interest in its development.

Unintended Consequences
The second point worth making about the risk of the clinician innovator track: It could in some cases have the opposite effect of its intent. Let’s examine the history of some of the important innovations in cardiovascular medicine including devices for percutaneous intervention and electrophysiology. We find several important examples where the inventor of such a device held a full-time faculty appointment and was unintentionally thwarted along the way by the bureaucracy of academic medicine, be it the technology transfer office, the department promotion committee, the sometimes onerous overhead charges to conduct critical enabling research on the device/drug, and even the institution’s unwillingness to allow pursuit of research that could be seen as “capitalist” in nature. I well recall colleagues in my previous academic career who were pursuing marketable technologies being chastised for their interests in developing drugs or diagnostic tests rather than pursuing science for the sake of science. These single or multiple impediments literally drove these same innovators from academic medicine and in some strange way such behavior by the institution catapulted these technologies forward. There are such examples in various academic centers throughout the United States that morphed into companies that have participated in the explosion of health care to the benefit of millions of patients. Would some of these technologies have been developed in a setting of support from the academic center? Would sufficient resources have been available to move these technologies forward within the academic center? Perhaps not. It is my belief that the entrepreneurial spirit of the inventor/innovator is often galvanized by his/her inability to pursue the development of the idea because of the inherent though unintended impediments that naturally reside within the academic medical center. There can be no doubt that the negative forces of the leviathan we call academic medicine have launched a number of innovations to success.

How Best Can Academic Medicine Contribute?
Does an academic medical center contribute to technological advancement by continuing its current mission of basic research, education, and clinical care without creating the clinician innovator track? Without a doubt they do even if sometimes it is an unintended consequence. That said, I believe there should be a cohort of academic centers nationally that pursue the clinician innovator track as described by the authors, with the caveats about appropriate metrics for advancement and appropriate rewards for success in a track that is viewed by everyone as being entirely equal to the most highly regarded track of that institution. This takes support at all levels of the institution. But these centers should really only pursue this when they reside in a community where innovation is already in full bloom or on the verge of it, where support in the community is strong and entrepreneurial experience is bountiful.

Disclosures
The author is an unrepentant supporter of the free market who proudly discloses his position as Chief Medical Officer of Laguna Pharmaceuticals; Chair, Board of Directors of IOWA Approach Inc; Board member of Mast Therapeutics; Board member and President, Advanced Endovascular Therapeutics; Adjunct Professor of Medicine and Chair, François M. Abboud Cardiovascular Research Center, University of Iowa Carver College of Medicine. The opinions expressed herein are strictly those of the author and none of the organizations listed had any role in the creation of this document.

References

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