

Laying the foundations for an evolving health care system: health care reform through health education reform

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The renaissance era of medicine is in full force and the body of knowledge is growing exponentially. As the knowledge base balloons, the onus is on health care professionals to amass this knowledge, stay current, push forward with research and then educate the next generation. Meanwhile the health care system in which these physicians, nurses and allied health professionals must work is evolving at an equally dizzying pace. The medical education model at most institutions, however, has changed little to accommodate the recent changes in the biomedical sciences and even less in its attempt to make sense of the health care delivery system [1, 2].

A practical study of the health care system has been largely neglected in even the most modern of curricula. With the current model of medical education, newly trained physicians will find themselves adequately equipped to deal with medical conditions, but exceedingly few will have the knowledge and experience to devise, work and evaluate a system that provides coordinated, patient-centered care over an individual's lifetime. Providing this level of health care is possible if professionals are effectively integrated in a system centered around efficient communication and dissemination of information across disciplines[3]. In short, medical education of the twenty-first century must be restructured to emphasize a practical training that prepares future health care professionals to develop, utilize and evaluate systems of care that focus on providing coordinated, patient-centered care.

The Health Care Challenge

The American health care system is facing a monumental challenge in its attempt to deliver high quality care to all Americans [4]. Poorly structured care delivery systems and inefficient medical administration are contributing to negative patient outcomes and medical mistakes while also increasing costs [5]. Though the US has the highest per capita health care expenditures of any country, an estimated 45.7 million Americans remain without insurance [6, 7]. The system is strained by a fragmented delivery of care process, soaring administrative costs and ineffective payment schemes, all adding to increased costs without improving patient outcomes [8]. Using the Porter definition of value- health outcome per dollar of cost expended- it would seem that Americans are suffering from one of the worst values in health care in the developed world [9].

An archaic infrastructure is exacerbating our burgeoning expenses by harboring a payment system which does not prioritize the interests of the patient. The majority of physicians still work in relative isolation of each other, the pharmaceutical industry, the health insurance sector, and even the public health arena. These physicians are entrenched in a system that makes interdisciplinary communication difficult. Moreover, it actually encourages a sort of protectionism from each individual player. Referring a patient to another doctor is synonymous with losing a customer in the business arena. However, some physicians may be ill equipped to intervene with certain conditions and may be treating patients less efficiently and less safely than their peers. In response to this skewed system of incentives, the payment system should be redesigned to ensure that

physicians are embedded in a well coordinated system of reciprocal exchanges which maximizes individual physician expertise.

The dissemination of health care is increasingly expensive, fragmented and disorganized. We are stuck in an archaic payment system that does not create incentives for a value-based approach to quality health care. The numbers of Americans not covered by health insurance are astronomical in comparison to any developed country in the world. Addressing all these systemic breakdowns at the same time would be the most effective manner to deliver patient-centered, high value, coordinated health care that covers everybody[10]. A fundamental shift in the practice and culture of health care delivery must be addressed by reforming medical education to adequately prepare physicians of the twenty-first century.

This paper argues for why an improved health care system will only prevail in the face of a medical education reform. This study proposes a medical education model that will be based on the current challenges of the health care system. While it is critical to reform the training of all health care workers, this paper will only address physician education, but the universality of the model allows it to be folded over to other branches of medical education as well.

The Dilemma

To realize a reformed US health care system, a new value driven payment system must be established in the context of a health care infrastructure that efficiently coordinates care among health care professionals. Central to reforming the payment system is the widespread publication of results[11]. Reporting results has been shown to dramatically improve outcomes as in the case of coronary artery bypass grafting procedures in New York [12]. Nevertheless, it still remains that very few physicians or institutions devise outcome measures and make the results public. This failure is largely a product of a protectionist culture fostered in medical education. As a result, physicians view the care of patients as a solo operation in which they alone stand to be personally judged by publishing results. Starting very early in the premedical education, the focus is on individual test scores and GPAs as opposed to a highly diverse education emphasizing group interactions. Interestingly, it is far more likely that the latter allows future physicians to relate and understand others more fluently[13]. Until physicians are taught to evaluate and be evaluated on their collective performance, a value driven payment system will not be achieved. In essence, the current medical education creates a physician culture that discourages publishing and evaluating results, an essential component of a reformed value driven payment system.

A reformed payment system will advance health care in America, but it must be done in conjunction with a new model in which care is coordinated over the full care cycle [9]. The current medical education promotes a specialty-based, segregated clinical education that rarely sees medical students incorporated over the full care cycle for a single patient. The core clinical years are a potpourri of clinical experiences, generally at academic medical centers, in which students are assigned to a physician for a short duration of time. In bouncing from one rotation to the other without ever being in a particular team for extended periods of time, students never develop the integral skills to design and work in coordinated teams over the full cycle of care for a single patient. Equally detrimental is that students are rarely expected to measure the outcome of a

particular episode of care and evaluate what could have been done differently. The current education reinforces an isolated medical model in which physicians work as individuals to deliver compartmentalized and fragmented medical care. In that sense, it is fair to assume that future physicians will be less capable and thus feel less comfortable to redesign the flow of patient care so that it is patient-centered, coordinated, results driven, and conducted over the full cycle of care.

The Medical Education Reform

In order to develop, utilize and evaluate a modern health care system that is both patient-centered and value driven, physicians of the twenty-first century must have a broader practical knowledge of health systems than that provided by the traditional medical education. More specifically, a much more rigorous interdisciplinary knowledge base must be established before physicians-in-training are clinicians. A longitudinal approach to increase the knowledge and practical applications of a wide variety of fields over the course of undergraduate, medical and graduate medical education must be emphasized in conjunction with the basic medical curriculum.

Figure 1: Traditional flow of knowledge in medical education

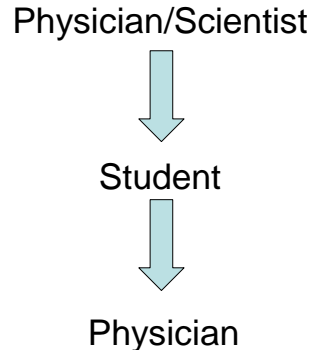
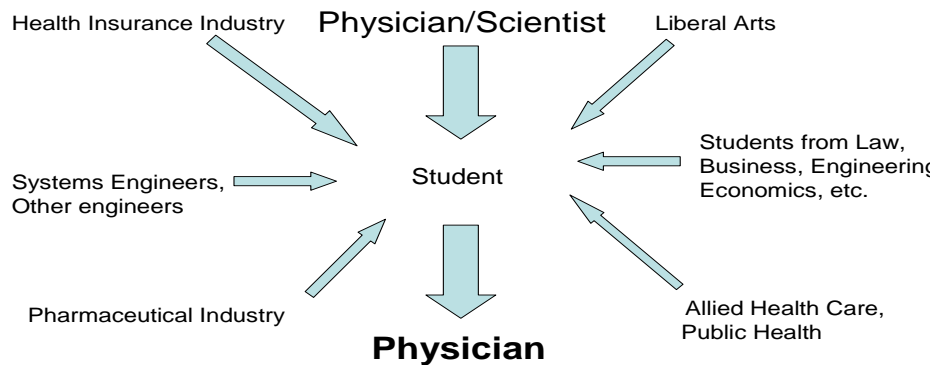


Figure 2: Flow of knowledge in the proposed interdisciplinary model of medical education



Undergraduate Studies

Undergraduate education must be viewed as an opportunity to broaden a future physician's capacities as a creative, organized and interdisciplinary thinker as opposed to the current view in which it is a necessary stepping stone on the path to medical school. Such a paradigm change requires the alignment of a new set of incentives for admission to medical school with the reformed approach to undergraduate studies [14]. Creativity, leadership and intellectual breadth of knowledge must be equally awarded with GPAs and MCAT scores. The current standard makes the study of the sciences, especially biology, the de facto major even though the biological sciences will be largely duplicated in medical school. The incentives in place for undergraduate education create a disturbingly homogenizing experience that are in stark contrast to the diversity of roles expected of future physicians as clinicians, researchers, educators, public health directors, hospital managers, health care consultants, politicians, and patient advocates.

In a reformed model, students who study a wide range of subjects will greatly influence and educate their peers when they arrive to medical school. They will be better suited to undertake interdisciplinary projects and create new ideas. As medical students, those who formerly studied economics, business or political science will debate the payment schemes within various fields of medicine. Computer engineers, public health and literature majors will discuss ways of creating helpful physician-patient web interfaces. Ideas will flourish and interdisciplinary skills will be second nature for this new cohort of medical students. Reform at the undergraduate level must be matched by a restructured medical school admission standard to ensure the selection of interdisciplinary students that will have the abilities needed in tomorrow's physicians.

Medical School

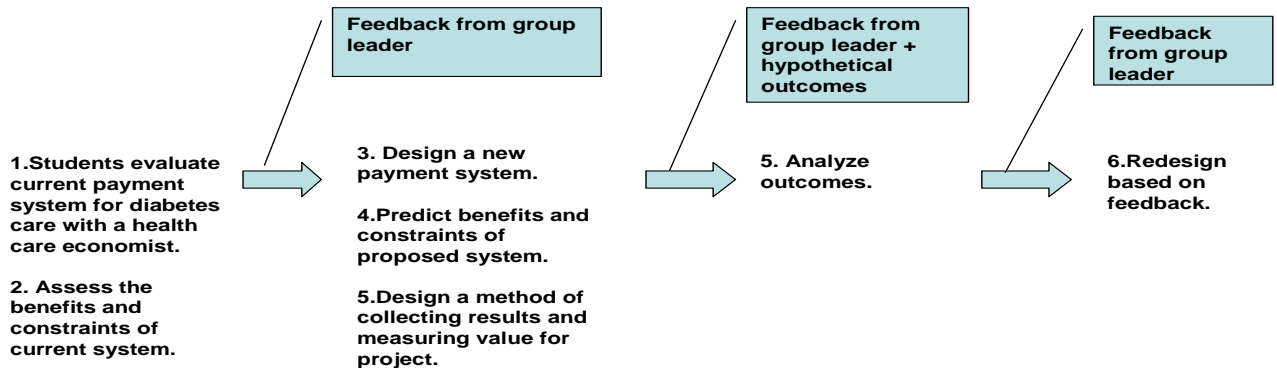
Once students with a wide breadth of education and experiences are admitted to medical school, it is pivotal to enhance their interdisciplinary education by integrating them with professionals and students outside of medicine. A problem based series of modules throughout the four years would allow medical students to acquire the necessary practical skills that will pave the way for reformed health care delivery. Led by professionals from other fields, the problem based modules would be designed to provide medical students with a practical experience in assessing a health care system, designing an improved system, preparing a method for studying that change, and analyzing the results. Under the guidance of professionals from other fields the medical students would develop vital communication skills pertinent to talking with professionals outside of medicine. They would be exposed to skills and knowledge implemented in other fields. They would gain practical experience in receiving and responding to feedback in dynamic group settings. Medical students could be joined by graduate students in other fields to enhance the practical real world experiences for both groups. Ultimately, integrating medical students with professionals and students from other fields will have a significant impact on the ability of future physicians to better understand and participate in the interdisciplinary teams necessary for coordinated health care delivery. The gains from each module for future physicians and the health care system can be seen in figure 3.

Figure 3: Expected outcomes from four fundamental modules emphasizing a practical education in health care systems

Modules	Creating Value	Reform Payment System	Coordinate Care	Insure everybody
Professional interaction	Systems engineers, economists, business experts, statisticians	Political scientists, lawyers, business experts	Systems engineers, management experts, health insurance experts	Public Health, financial consultants, pharmaceutical industry, anthropologists
Acquired Knowledge	Economics, analytical thinking, data collection and evaluation, social marketing, integration of technology, cost-benefit analysis	Economics, management skills, finance, law	Systems engineering, optimization and prioritization, team dynamics	Politics, ethics, history, epidemiology, finance, health promotion
Acquired practical skills	Outcome measurements and analysis, Interdisciplinary communication	Outcome measurement and analysis, Problem solving, practical knowledge of health care costs	Systems engineering and flow, management skills, team building, leadership skills	Political negotiating, Interdisciplinary communication, decision making
Application	Private/Public sector insurance, clinic management, value/outcomes	Hospital administration, private/public sector insurance	Hospital management, health insurance industry, public	Lobbying, writing/supporting legislation, political advisor, public health

The problem based modules would be centered on the skills that physicians must learn to participate in improving the delivery of care throughout their career. The series of modules would have a core syllabus addressing: 1) an improved payment system 2) coordinating care, 3) improving value and 4) insurance for everybody [10]. An example of the trajectory a typical course could follow is proposed in figure 4. By creating group projects in which students will be evaluated as a whole, these modules will also facilitate the paradigm shift in which future physicians will be more likely to publish and evaluate their results in order to improve outcomes. Health care reform will not be a single event with a defined end date. Instead, it will be a continuously evolving process which aims at optimizing health care systems given the current technology, economic situation and capacity. Physicians must be highly trained in practical skills enabling them to advance coordinated and patient-centered health care delivery models throughout their career.

Figure 4: Example of a problem based module in which a new payment scheme is assessed, redesigned, measured and evaluated.



Graduate Medical Education

Graduate medical education should allow residents to utilize their acquired knowledge from the problem based approach and apply it in real world scenarios. Admittedly, graduate medical education poses a difficult challenge since residents have

limited time for added responsibilities. Nevertheless, the vast majority of physicians will have duties in addition to their clinical responsibilities. Not training residents in the real world applications of health care delivery would be a disservice to them and to the patients that they will serve. Graduate medical education should therefore encourage residents to participate in various levels of non-clinical roles as junior members.

Conclusion

Until now a traditional medical education has shied away from training physicians to prepare them to create a meaningful health care reform that prioritizes a value driven, patient-centered and coordinated health delivery system. Physicians of the twenty-first century will have a spectacularly wide breadth of responsibilities and occupations throughout the flow of health care delivery. In response to the rising demands, health education must realign itself with a practical and interdisciplinary education that encourages physicians to reevaluate the dissemination and organization of care models. Undergraduate education must emphatically push students to take on a wide breadth of knowledge in fields other than medicine and biology in order to create multidisciplinary physicians. Medical schools should align their curricula with the demands of tomorrow by creating a series of practical modules that put medical students face to face with professionals from other disciplines. This reform would challenge students to develop new ways of thinking about how to deliver care while creating a future physician culture that will optimize health systems to deliver coordinated and patient-centered care. Graduate medical education will encourage residents to participate in real world systems improvement to begin a practical training in their future non-clinical work. Health care reform is no longer a choice but a necessity. New ideas and inventions constantly emerge in medicine. To bring these developments to patients, systems of care will need to continuously evolve. Physicians will play a major role in health care reform and therefore it is critical that they receive a practical education that prepares them for their interdisciplinary roles.

References

1. Christakis, N.A., *The similarity and frequency of proposals to reform US medical education. Constant concerns.* *Jama*, 1995. **274**(9): p. 706-11.
2. Whitcomb, M.E., *Redesigning clinical education: a major challenge for academic health centers.* *Acad Med*, 2005. **80**(7): p. 615-6.
3. Leonard, M., S. Graham, and D. Bonacum, *The human factor: the critical importance of effective teamwork and communication in providing safe care.* *Qual Saf Health Care*, 2004. **13 Suppl 1**: p. i85-90.
4. Obama, B., *Affordable health care for all Americans: the Obama-Biden plan.* *Jama*, 2008. **300**(16): p. 1927-8.
5. *Why Not the Best? Results from the National Scorecard on U.S. Health System Performance.* 2008 [cited 2009 March 12]; Available from: <http://www.commonwealthfund.org/Content/Publications/Fund-Reports/2006/Sep/Why-Not-the-Best--Results-from-a-National-Scorecard-on-U-S--Health-System-Performance.aspx>.
6. Schoen, C., et al., *How many are underinsured? Trends among U.S. adults, 2003 and 2007.* *Health Aff (Millwood)*, 2008. **27**(4): p. w298-309.
7. *Household income rises, poverty rate unchanged, number of uninsured down [press release].* [cited March 3, 2009]; Available from: http://www.census.gov/Press-Release/www/releases/archives/income_wealth/012528.html.
8. Spithoven, A.H., *Why U.S. health care expenditure and ranking on health care indicators are so different from Canada's.* *Int J Health Care Finance Econ*, 2009. **9**(1): p. 1-24.
9. Porter, M.E. and E.O. Teisberg, *Redefining health care : creating value-based competition on results.* 2006, Boston, Mass.: Harvard Business School Press. xvii, 506 p.
10. *Building upon the cornerstones: Recommendations, action steps and strategies to advance health care reform,* Mayo Clinic Health Policy Center: Rochester, MN.
11. Porter, M.E. and E.O. Teisberg, *Redefining competition in health care.* *Harv Bus Rev*, 2004. **82**(6): p. 64-76, 136.
12. Chassin, M.R., *Achieving and sustaining improved quality: lessons from New York State and cardiac surgery.* *Health Aff (Millwood)*, 2002. **21**(4): p. 40-51.
13. Gunderman, R.B. and S.L. Kanter, *Perspective: "How to fix the premedical curriculum" revisited.* *Acad Med*, 2008. **83**(12): p. 1158-61.
14. Thomas, *How to fix the premedical curriculum.* *New England Journal of Medicine*, 1978(298): p. 1180-1181.