MEDICAL EDUCATION: TIME FOR REFORM

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Our model of medical education and training is almost a century old. The so-called "Hopkins" model was designed and widely adopted in the early part of last century to ensure that medical education was rooted in a solid base of knowledge in the biomedical sciences and that students would be trained in clinical medicine through a staged, closely mentored process of increasing exposure and responsibility, primarily in a hospital setting. Those so gifted or inclined would have opportunities to pursue bioscientific and clinical research. This model has served us well. Yet so much has changed in the decades since it was adopted. Is it still the best model for our future?

Both medical school education (UME) and graduate medical education (GME) for decades have been perceived to be not as coherent or as well structured as they could or should be. Kenneth Ludmerer, in his now classic study of the history of medical education, *Time to Heal*, showed in painful detail how medical education slowly took a back seat in medical schools and academic health centers (AHCs), first to the focus on the research enterprise and then, more recently, to the focus on re-engineering the clinical enterprise (1). With professional development and faculty rewards geared towards research and patient care, the education of medical students and the training of residents and fellows went into the academic equivalent of "automatic pilot."

Nevertheless, because of the dedication of many educators and faculty, medical schools began addressing curricular and training issues systematically. In the 1990s, in response to the proliferation of new knowledge and technologies, changing practice environments, and to new understandings of pedagogy, the majority of U.S. medical schools revised their curricula, especially the first two years, to involve students in more active learning and to better integrate basic science and clinical experiences.

But much evidence, both scientific and anecdotal, suggests that deans and educators continue to worry about the educational integrity of the second two years, especially the typically "Marco Polo" 4th year

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(2). Approaches vary to the exposure of medical students to clinical medicine and its integration with the basic science curriculum; and there is not much beyond anecdotal evidence by which to evaluate how well we prepare medical students for residency training. Of great concern is the iron curtain that drops at graduation from medical school, which largely divides student "education" from residency "training." It is widely understood that the not-so-secret "hidden curriculum," which is short-hand for the culture of training and practice that students and residents are taught outside of the classroom, inculcates values and approaches to clinical practice that often do not align well with those promoted within the formal medical school curriculum (3).

And then there is the troublesome no-man's land known as continuing medical education (CME) where educational programming is sponsored and conducted largely outside the purview of academic health centers. The vast majority of CME programming is conducted by private industry sponsors. Standards for course content and learning milestones are practically non-existent. And a significant scientific literature suggests that most CME training results in little or no change in physician behavior or practice (4).

The stark fact is that, despite the enormous changes in the environment, we have made only relatively minor changes and improvements in our medical educational and training programs. The most significant changes over the last century in virtually every medical field have been two: *proliferation* of training programs in new sub-specialties and *lengthening* of training time. In our programs, we regularly elaborate and elongate; we seldom innovate. The clinical environment within AHCs—including their teaching hospitals—is widely perceived as unreceptive to educational imperatives. Training remains largely tied to local and sub-specialty traditions and to the requirements of inpatient service units. Our mentors and preceptors seldom receive training as educators. The best and most innovative advances in learning and pedagogy are rarely brought to bear on GME or CME programs.

In 2001, the Institute of Medicine issued its report, *Crossing the Quality Chasm: A New Health System for the 21st Century* (hereinafter, *The Chasm Report*) (5). The distinguished committee that conducted this landmark study surveyed the American health system and found significant, underlying failings. It called for the creation of a new health care system based on achieving six quality aims: Safety, Timeliness, Effectiveness, Efficiency, Equity and Patient-Centeredness (hereinafter, the STEEEP aims). It identified health professions education, and in particular, medical education, as in need of major re-

form; and called for a Health Professions Education Summit, which was held in July, 2002. Out of that Summit came a new report, *Health Professions Education: A Bridge to Quality*, which offered a new vision of health professional education:

All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics (6).

To achieve this vision, the IOM stated that new efforts were required of leaders across all professions, and in concert with accrediting and certifying bodies, to ensure that all clinicians are educated to achieve a core of five basic competencies, in addition to others that are identified as critical to any particular discipline or specialty.

Many other organizations and scholars have reached similar conclusions (7). We note, in particular, two recent efforts. In the first, the Blue Ridge Academic Health Group (Blue Ridge Group), an ad hoc group of leaders in academic health centers and the health professions, held a conference in July of 2002, where it surveyed the entire literature on medical education reform and identified five critical and persistent factors that have slowed adoption of needed reforms:

"First, the art and science of education are not an explicit, manifest priority of academic health centers.

Second, health professional schools have not pioneered or adequately utilized advances in knowledge concerning cognitive development, styles of learning, and education theory and practice.

Third, health professional schools must provide sufficient support for faculty and scholarship in education.

Fourth, AHC learning environments often are not appropriate or consistent. GME is often treated as a term of service or servitude rather than as a term of learning and achievement.

Fifth, the regulatory framework makes significant reform almost impossible. It must be streamlined and rationalized" (8).

The Blue Ridge Group concluded, and we concur, that successful educational reform depends not only on explicit recognition of the importance of education in the academic health center, but also on addressing underlying "structural" deficits in the entire enterprise of health professions education.

In the Fall of 2002, the American Association of Medical Colleges (AAMC) established the Institute for Improvement in Medical Education (IIME) to provide an organizational focus to medical educational reform efforts. Its mission is, "[T]o boost the health of Americans by fostering innovations in medical education that will better align the

knowledge, skills and professionalism of medical students, residents and practicing physicians with the needs and expectations of the public" (9).

An ad hoc committee of ten medical school deans, chaired by Dr. Joseph B. Martin of Harvard University, was charged with conducting a comprehensive review of medical education and with recommending strategic directions for change. The committee's review effectively ratified the growing consensus on the significant problems in medical education, but also took two further crucial steps. The committee developed and outlined the properties of an "ideal" medical education system; and it recommended strategies for achieving these objectives (10). The report, with these crucial recommendations, was adopted by the AAMC's Council of Dean's in June of 2004 and is now the basis of a major organizational effort to effect significant reform throughout the continuum of medical education.

The IIME presents a potential turning point in the goal of reforming medical education. The AAMC's IIME is in a strong position to catalyze and engineer needed reforms. The effort has been further strengthened by the naming of an external advisory committee, chaired by Michael M. E. Johns, M.D., of Emory University. The IIME is designing projects and initiatives to:

- Harmonize accreditation standards across the continuum of medical education
- Catalyze educational innovations in undergraduate, graduate, and continuing medical education
- Strengthen the learning objectives for the clinical education of medical students by placing more emphasis on basic clinical skills and general cross-cutting issues e.g. cultural competence in medical practice
- Modernize the content and structure of clinical clerkships for medical students to create a better balance among in-patient, ambulatory, and community based experiences
- Empower more interdisciplinary curricular arrangement
- Assure that clinical faculty have adequate time to fulfill their educational responsibilities to medical students and residents
- Strengthen institutional accountability for graduate medical education
- Promote better alignment of residency curricula in every discipline with current and anticipated expectations of practicing physicians
- Promote a shift of continuing medical education towards self-directed, practice-based formats, coupled with performance-based assessments to document improvement in quality of care
- Effect changes in public policy to overcome the financial and struc-

tural barriers to improvement across the continuum of medical education
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The IIME represents an unprecedented opportunity to bring together all of the key players in the organization, regulation and conduct of medical education in order to achieve meaningful and necessary reforms. This is vitally needed.

We offer our own medical school's experience and aspirations as a case in point. At the Emory University School of Medicine, we have are in the midst of a re-evaluation and likely, reform of our curriculum. We feel we are actually a little late to the "prom" so to speak, in the sense that there are other schools that have undertaken major reforms in their curricula over the past five years or so. But we have felt relatively good about how our students do and the education they receive. Yet, over the past several years, we began to look at that more and more closely—and what we found was that we needed more evidence and more input. We decided to survey the faculty to get some formal input. What we found was both a little disturbing but also quite encouraging.

The overarching question we posed for ourselves was whether the current curriculum is what it needs to be to prepare those who will be practicing medicine and pursuing innovation and discovery in the biosciences into the middle of the 21st century. We asked for Faculty views on whether the current curriculum was accomplishing our goals and, if not, how the curriculum might be improved. Should we raise even higher our commitment to education? Can we improve the integration of educational program with our clinical and research missions?

In addition to the survey questionnaire, over 50 faculty and other key individuals were interviewed by our Executive Associate Dean for Medical Education. We also conducted site visits of a number of medical schools that had already been through this type of process and were in various stages of implementing reforms. A retreat was held attended by 20 representative faculty members to discuss and to develop initial parameters and guidelines for the process and substance of curricular change.

The somewhat disturbing result of our surveys of the faculty was that they were almost unanimous in the belief that while we are doing

a good job, we could do even better. The terrifically encouraging news was not only can we do better, but the faculty are anxious to be involved in improving the curriculum and full of ideas about how to accomplish this.

As a result of this preliminary work, we have now begun to describe the outlines of a curriculum that we think will be very exciting for students and faculty. A steering committee has been named and subcommittees are now at work putting flesh on the bones of our preliminary goals. These include: The elimination of redundancy between basic science courses so we can make sure our students get the excellent foundation they need without spending unwarranted amounts of time sitting on the seats of their pants. It includes plans for better integration of basic science and clinical education. It also includes development of in-depth experiences chosen with the oversight and counsel of faculty mentors as well as courses in the final year that explicitly prepare students for their residency or other post-graduate training.

However, throughout this process a major concern for us has been the alignment of our programmatic ideas and aspirations with existing regulatory standards and benchmarks. A great deal of discussion has revolved around the United States Medical Licensing Examination (USMLE) and how that affects or limits how we can alter the curriculum. And of course we have had similar discussions about the transitions into residency programs and the enormous variety of standards and regulatory bodies implicated in that process of training.

This is why, for the Emory School of Medicine and for every school that undertakes significant curricular reform, the reform efforts being pursued through the IOM and other policy bodies are so critical. And it is also why the goals of the IIME are so vitally important. So much in the way of meaningful and necessary reform depends upon bringing together around common goals all of the key players in the organization, regulation and conduct of medical education.

Last Century's paradigm of the medical professional was the individual superstar, the "triple threat." This Century's paradigm is the stellar team player, one who leads cross-professional teams, values and respects all members of the team inspires others to do the same. AHCs and the medical professions must redefine and reassert the role of health professional schools as centers of responsibility, authority, and leadership for the life-long education and training of health professionals. At long last, as we approach the centennial of the Carnegie Foundation-sponsored Flexner Report on medical education, the time looks right for nationwide reform of medical education.

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DISCUSSION

DuPont, Houston: Thank you very much Tom. I've been very impressed with the thinking at Emory and with the institutional commitment to improve education. The challenges are incredible. The faculty at all of our schools want to give all facts known to our students. They all have their own body of knowledge, and they think the students need to learn all this information. The students who are eager to find out which end of the stethoscope to put in their ears are looking for drugs and doses and things that are not what is needed. And then when they finish training and take the Boards a closed book secure exam again focuses on knowledge of factual information. We need to teach mechanisms and how they can learn on the job from their patients as they go along. Board exams for doctors should follow the lead seen with simulated pilot testing for the aviation industry, which doesn't focus on just facts but what can be done. Why can't we do the same for medical students and doctors and give them simulated patients to see how efficiently they reach the proper diagnosis and institute optimal therapy?

Lawley, Atlanta: Bert, I couldn't agree more obviously. I think your point is extremely well taken. There is no one group that can pull this off because we are so

fragmented in terms of the structure of medical education in this country. We basically have to align the incentives and I think that first of all at the faculty level we have to let people know that how they learned when they were growing up in medicine is not the way that these students need to learn in the future. There's nothing wrong with having lots of facts at your fingertips, but if it squashes creativity and the ability to think, and I think that's what happens in many of our schools. We have these young men and young women come in full of enthusiasm, full of creativity and we over the course of four years squeeze it out of them. We need to figure out how not to do that. We also need to bring together the leaders of AMA, AAMC, ACFME, ECGME, the whole group and get them to talk about where we want to go with medical education, because otherwise, one or two groups could stymie this right from the beginning. That's why I'm so happy that the AAMC, one of the very important groups in our lives looks like it's going to take a significant leadership role in this, so we will see what happens.

Wolf, Boston: I have two questions. What is Emory doing to change the incentives in order to encourage your faculty to teach? And the second question has to do with the concept that education ends and service begins with graduate medical education. My hospital's internal residency program provided our trainees with about 10 to 12 hours of conferences in small groups, and about a similar number of hours of one to one or one to two teaching verbally; I was wondering how many hours of similar teaching you provide your students?

Lawley: The answer to the second question is about 40% of the instruction and it's too low quite honestly is in small groups currently.

Wolf: And how many hours would that be?

Lawley: I can't give you an hour number right off hand.

Wolf: But you're saying it's considerably more than 20–25 hours we're providing in our graduate medical education programs?

Lawley: I am not sure but that's my understanding.

Wolf: So your students are having 60 hours per week of instruction?

Lawley: We have an enormous amount of contact hours. Again I can't give you a specific number. Is there hyperbole in what I said about an iron curtain that drops at graduation? Of course there is. But one of the things that I think you recognize is that not everybody runs residency programs like you do. And there are all sorts of residency programs across the country in which residents are viewed the providers of service rather than individuals we need to be educating. The question that you asked about; how we're going to provide opportunities or incentives for our faculty to teach is an excellent one. One of the things that we are trying to do at Emory is to figure out how the dollars that we are currently giving to the various departments are being utilized, and I think as often is the case in medical schools, some of these dollars are just being taken for granted and not understanding – there needs to be a commitment to teaching associated with that. So what we are doing to begin with is to take a look and audit how dollars are being used. The second thing that we've done is to create another fund in which we're putting dollars particularly into clinical departments that are doing a fair amount of teaching in the so called basic science years, because these are individuals who really do need more reward for what they are doing, particularly teaching in the interdisciplinary and cross-disciplinary courses.

Wolf: I would agree that we need to support and inspire faculty to teach – actually you don't need to inspire, because it's so much fun. They will do it even though they are under rewarded.

Lawley: I agree

Wolf: But we do want to be fair. I think the other comment that I would make is that not every medical school is as generous to its students in terms of teaching time as Emory.

Lawley: I don't know about that, but I think that more of us need to be generous with teaching time to the medical students. And it needs to be done not in these large group situations, but in smaller groups. But one of the other things that worries me about this whole business is the lack of mentors for our medical students. And also to a certain degree for our house officers too. So often the most junior faculty are those that are pressed into teaching. That is a problematic issue for the careers of these junior people who are also being asked to see patients and do research simultaneously. I think everybody in this room grew up with senior mentors that affected our careers. I see that as a problem going forward that there aren't enough, at least there's not opportunities for senior mentors to be able to interact with the students and residents, as there used to be. So I'm worried about that, but I think that the key is just to align the incentives and to make teaching not only something that people like to do, but it's something that they are economically able to do.

Goodenberger, St. Louis: Three comments and a question. The first comment is that there are curricular innovations going on around the country in medical schools. Interestingly some of the most innovative are going on in medical schools that most people think of as not particularly prestigious. The University of Missouri, Kansas City has been putting its medical students in the clinic all four years for almost thirty years. The University of South Dakota Yankton campus has an integrated clinical curriculum for two years, without individual rotations on medicine, surgery, etc. And even when these innovations are adopted by more powerful medical schools it's often done without credit. One of the paradoxical things about the best medical schools is that they are so heavily populated with highly accomplished intelligent alphas that achieving real consensus about curricular reform is paradoxically more difficult. The second observation is that the program directors' association in internal medicine is going to release a statement in the very near future supporting the disassociation of service from education in graduate medical education in Internal Medicine and will be seeking the endorsement of other stakeholders. I think that there is a ground swell of support for that position beginning to emerge. The third observation is that, at least in private medical schools like ours, the paradigm that arose over the last thirty years was the subsidy of undergraduate education in the clinical years by dollars, which were stolen, to put it nicely, from clinical practice. That is to say, that there was enough overage from practice to support education without additional funds from the dean. As a result, in many schools there is very little money actually directly allocated for undergraduate clinical education. My division, which is responsible for all of undergraduate education in our Department of Internal Medicine, receives a total of approximately $9,000. In addition, the Department of Medicine by itself is responsible for 40% of the clock hours in the first two years of medical schools, in addition to clinical education. I would agree with what you said about resources needed. My question is where do the resources come from?

Lawley: I think that two places really. One is that it has to come from a reallocation of resources within the medical schools. And this gets tricky because obviously there are people that have been receiving resources of one sort or another for years and doing things perhaps that Deans thought were related to education, but turn out not to be. So I think there does need to be a re-look at our budgets. I'm also not a huge fan of mission-based budgeting in the strictest sense of the word, but some element of that probably is going to be necessary. I think also that there needs to be outside funds to put into this, if this is going to be done nationally, at least for some pilot-projects. I think particularly in graduate medical education, and I think that the AAMC is going to try to take the lead in that regard. Unfortunately a lot of this does come back to resources and money. And if there was plenty of money it would be easy to do a whole lot of these things. There is not since all budgets have been squeezed over time. But when you look

at the tuition that medical schools charge students it's often times pretty considerable, and then you have to ask yourself how is that money being utilized on behalf of the students. And if it's not, why not.

Billings, Baton Rouge: Tom, I thought what you had to say was marvelous; however, I think we need to have a "revolution" and not an "evolution." At the moment we are only adding 18,000 new doctors per year, if you discount the brain drain that we are causing around the world by bringing in foreign medical graduates. 14,000 of our doctors are retiring, dying or clinical practice yearly. Of the new doctors that we are educating, half of them are women, half of those women marry men doctors and no disparaging comments intended, but both the men and women often have limited careers. The net gain is a loss. Furthermore, each patient now requires more doctors, specialists of all types, placing additional strain on the system. Each year this country is producing fewer productive physicians for full time teaching, research and patient care, and you're asking those physicians who remain – us – to teach and do things that are impossible to do on a one to one basis. Therefore, I think the situation is completely out of control and over the next fifty years I think we will see a doctor shortage in this country that is catastrophic. The fixes needed are going need to be major and not minor, and therefore "revolutionary." Marshall Wolf said that function of the Council of this organization was improvement without change. We need revolution and a hell of a lot of change. I don't know if that's a question or a comment or what?

Lawley: Well, I don't know either, but let me say a few words. The AAMC agrees that there's going to be a doctor shortage, and so around the country the message is going out that medical schools ought to be increasing the number of students that we are admitting by about 15% over the next five to ten years. And whether or not that's going to fix things, I have no idea, at least that's the current thinking. Look, there are lots of people who prefer reform without change, but I think that there is going to need to be a fundamental re-examination across all of the schools and all of the academic health centers of how it is we're doing business. And to the extent that we don't educate the medical students and the residents to the very best of our ability, we're short changing ourselves and the American public in the long run.

Luke, Cincinnati: I've spend almost as much time as Marshall in this business, perhaps more if you include Scotland. My comments relate to graduate medical education. Please don't judge residencies by the bad ones, and don't throw out the baby with the bath water. Service in the right way, with the right support faculty and systems, is medical education. And if you change it to some of the European ways of mere observation, you will diminish the best resident system in the world. Yes, it's got to change, and residents shouldn't be pushing patients around, and doing all the other service tasks that we don't want them to do, but if you make them mere observers, they won't learn clinical care. They have to be involved meaningfully in the care of the patients. Secondly, an enlightened Dean, John Hutton, and a (hopefully) enlightened Chair put in a teaching practice plan with teaching points (TRANSACTIONS 1999) for medical students and residents. It is not perfect, and my successor is changing it a bit, as he should. It had the division heads competing for money to teach at all levels, and my Dean (Dr. Hutton) stated that the State money given to you by the College is all for medical student or resident education.

Lawley: That's an enlightened view I must say. I couldn't agree with you more on the first point, that we just can't have individuals or observers. On the other hand we do need to look no matter how good we are, can we be better? I believe that we can be. I think there is lots of room for improvement at every level of medical education, including graduate medical education. Of course, we know there are some outstanding programs out there, generally exemplified by people in this room. But also I think we do need to take a repeated hard look at ourselves and make sure we are doing it the best way we can.