Reforming Graduate Medical Education

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THE CURRENT FUROR OVER RESIDENT working hours has thrust graduate medical education (GME) into the spotlight. In view of its centrality to the education of physicians, GME appropriately receives such attention. It is residency that prepares physicians for the independent practice of medicine and plays a crucial role in shaping their habits, behaviors, attitudes, and values.

However, GME has always fallen short of its potential. Today’s problems in GME do not reflect new developments but rather a continuation of issues that have plagued the enterprise for more than a century. This article will trace the evolution of GME as a way to place current issues in a historical and educational context. This background will be used as a means to suggest reforms and actions that might finally invigorate GME. The overarching theme is that what matters in residency training is not the hours of work alone but what residents do during those hours. Throughout the history of GME, the delicate balance between education and service has been heavily tilted toward service. This balance must be redressed and the educational component of residency training reaffirmed if we are to produce the best physicians possible to serve the public in the century ahead.

The Evolution of Graduate Medical Education: A Promise Unfulfilled

Before World War I, medical education in the United States focused almost exclusively on undergraduate medical education—the years of study at medical school leading to the MD degree. At a time when the great majority of medical school graduates entered general practice, the 4 years of medical school were considered an adequate preparation for the practice of medicine. Abraham Flexner’s 1910 report1 did not even mention internship or other hospital training for medical graduates, reflecting the prevailing orthodoxy that the 4 years of medical school provided sufficient preparation for general practice.

By World War I, however, medical knowledge, techniques, and practices had grown enormously. There was too much to teach, even in a 4-year course. Accordingly, a period of hospital education after graduation—the internship—became standard for every physician as a rounding-out clinical experience before general practice.2 Medical education in the early 20th century faced another challenge: meeting the needs of individuals who desired to practice a clinical specialty or pursue a career in medical research. To this end, the residency—a several-year hospital experience after internship—became the accepted vehicle.2

Two educational principles lay at the heart of GME. First, the defining characteristic of GME was the assumption of responsibility by house officers for patient management. It was axiomatic in medicine that an individual was not a mature physician until having learned to assume full responsibility for the care of patients. To acquire this capacity, interns and residents evaluated patients for themselves, made their own decisions about diagnosis and therapy, and performed their own procedures and treatments. Responsibility was graded: the more senior the house officer, the more responsibility allowed. House officers were supervised by and accountable to attending physicians. Nevertheless, they were allowed considerable clinical independence. To seasoned educators and clinicians, this was the best way for learners to be transformed into mature physicians.
Second, medical educators repeatedly emphasized that the “case load” of house officers should not be too heavy. It was far better for the intellectual growth of residents, they argued, for house officers to study fewer patients in depth rather than more patients superficially. In 1925, Abraham Flexner wrote, “Men become educated by steeping themselves thoroughly in a few subjects, not by nibbling at many.” Scientific method was best taught through the “intensive and thorough study of relatively few patients.” This educational principle was honored at the better teaching programs. For instance, in 1939 interns at teaching hospitals cared for an average of 9 patients at a time, compared with an average load of 25 patients at a time among interns at community hospitals. The lower numbers of patients at teaching hospitals allowed house officers more time to read, attend conferences and rounds, and monitor their patients carefully.

Few experiences invoked such an extraordinary range of emotions as residency. The innumerable stresses were real: hard work, long hours, sleepless nights, sense of vulnerability to unpredictable forces such as nursing shortages or summertime heat waves, and pressures of being responsible for every aspect of patient care. Yet, these stresses were countered by the camaraderie among the resident staff, the feeling of being part of a family, the deep satisfaction of affecting people’s health and lives, and the exhilaration of being aware that one’s medical competence was growing perceptibly almost daily. At most programs, there was a discernible sense that the educational returns justified the many rigors and demands.

Although most physicians in retrospect have tended to view their residency years fondly, a fundamental dilemma plagued GME. Was the training education or service? Were house officers students or hospital employees? As with other dualisms, the answer was both. It was impossible to separate the educational from the service components of GME because the fundamental pedagogic principle of internship and residency called for house officers to develop independence by assuming responsibility for their patients’ total care. However, the amount of service actually required for learning was far less than that which hospitals and medical faculties typically extracted from house officers. A tradition of the economic exploitation of house officers began, as hospitals from the start insisted that trainees perform an extraordinary range and amount of ancillary responsibilities.

Even in the 1920s and 1930s, house officers were regularly exploited as a source of inexpensive labor. The greatest deviation from educational ideals occurred at community hospitals not affiliated with medical schools. At some of these hospitals, interns were considered subordinate to nurses and permitted only to take routine medical histories and administer intravenous medications. Didactic rounds, teaching conferences, and other educational activities were few. However, even at the best programs, the amount of routine work could be overwhelming. At the major teaching hospitals, house officers were deluged with innumerable duties—performing blood counts and urinalyses, transporting patients, drawing blood samples, and starting intravenous lines—that hardly required a physician to perform. Complaints of too little teaching, too much “scut work” were commonplace. Such problems were highlighted in 1940 in the Report of the Commission on Graduate Medical Education, the first report on GME in the United States. This report criticized the economic exploitation of interns and residents. To improve the educational value of GME, first and foremost hospitals “must work out plans to relieve the intern [and resident] from many routine procedures which he is now performing but which have relatively little educational value.” After the noneducational responsibilities are removed, the next step to improve GME is “by expanding its educational content.” According to the report, hospitals should hire salaried physicians rather than interns and residents if they cannot make adequate educational opportunities available for house officers.

Nevertheless, such pleadings went unheeded, and the subjugation of education to service continued. This led to many additional calls for residency programs to take their educational responsibilities more seriously. In the 1960s, the Millis report, sponsored by the American Medical Association, and the Coggeshall report, sponsored by the Association of American Medical Colleges (AAMC), challenged universities to make GME a genuine educational experience. In the 1970s, the economic exploitation of house officers was a major factor in the house staff union movement. Jordan Cohen, president of the AAMC, has spoken often of the importance of “honoring the E in GME.” Recent reports by the Commonwealth Fund Task Force on Academic Health Centers, the Institute of Medicine Committee on the Roles of Academic Health Centers in the 21st Century, the Council on Graduate Medical Education, and the Blue Ridge Academic Health Group have reiterated this point. Yet, although many individual residency programs have reformed and improved the training experience, no organized, focused attempt to improve the overall educational quality of GME has resulted from this litany of criticism.

The lack of genuine reform has occurred even as the stresses of GME have increased. The ever-growing capability and sophistication of medical practice in the past half century have required mastery of a host of powerful new drugs and technologies. The residency was created in an era when relatively stable patients lingered in the hospital for long periods. Now, hospitalized patients are much sicker, and, since the introduction of prospective payment for hospitals in 1984, the number of patients per admitting night is much greater and the length of stay much shorter. For house officers in all fields, this means busier days and nights, less time to read and sleep, and greater
stress, tension, and fatigue. Reinforcing these conditions was a common cultural characteristic of residency programs, ie, house officers had to demonstrate that they had the “right stuff” to be physicians by handling any problem and any amount of work without calling for help. These pressures have only increased year by year.

In this context, the most recent effort to relieve house officer stress must be considered: the strict limitation of residents’ work week to 80 hours imposed by the Accreditation Council for Graduate Medical Education (ACGME), the organization that accredits residency programs, which took effect in July 2003. This ruling has been exceedingly controversial, with defenders and critics both highly vocal.

In our view, a shorter work week is necessary and desirable, though we long for more flexibility than the ACGME regulations allow. The great problem with the ACGME regulations is that they have not resolved, and have probably worsened, the problem they were intended to correct: house officer stress. Residents now have more time off, but nights on call are still arduous and long, and the amount of work has increased because there are more patients to admit each call day. Moreover, despite an ACGME requirement that hospitals add more support staff, few have done so adequately. Consequently, this work falls to the house staff. One study found residents in all disciplines devoting as much as 35% of their time to activities of either marginal or no educational value. The new rules do not guarantee adequate amenities while on call, a faculty that knows and cares about the house staff, stimulating conferences and rounds, the ready availability of advisors and mentors, a fair policy about parental leave, the immediate accessibility of help, or a strong sense of camaraderie. The new rules certainly do not guarantee residents enough time to evaluate and study their patients thoroughly. The limitation of working hours, in short, does not address the larger issue of working conditions. The good intentions of the ACGME aside, the regulations perpetuate and probably aggravate the tradition of subordinating education to service in GME.

Given the trajectory of GME from the beginning, this situation should hardly be a surprise. There has never been a time when GME in the United States has realized its own educational ideals. The chief problem has been the ongoing subordination of the educational aspects of residency to institutional service needs. The lesson for today, given the present controversy about work rules, is that GME must be judged by the total experience and not by the hours of work alone. Medical educators need to pay attention to what house officers do with their hours, not merely how many hours they do it. It is crucial that professional leaders understand this point if GME is to be made better.

Restoring the Balance

How can GME become the invigorating experience it was meant to be? From a historical and educational perspective, 4 tasks need to be accomplished. First, and most important, medical educators need to provide trainees the opportunity for detailed study of patients, which can occur only if residents receive sufficient time—time for meaningful clinical encounters, critical thinking, and study and reflection. Since prospective payment was introduced 2 decades ago in an effort to control hospital costs, this cardinal educational principle has been ignored. House officers have been functioning as evaluators, the primary opportunity for detailed study of patients, which can occur only if residents receive sufficient time—time for meaningful clinical encounters, critical thinking, and study and reflection. Since prospective payment was introduced 2 decades ago in an effort to control hospital costs, this cardinal educational principle has been ignored. House officers have been functioning as evaluators, the primary opportunity for detailed study of patients, which can occur only if residents receive sufficient time—time for meaningful clinical encounters, critical thinking, and study and reflection.

It is imperative that this fundamental educational principle once again be honored. There must be a major reduction in the number of patients residents are expected to evaluate per admitting day. For this reduction to occur, teaching hospitals will need to reengineer themselves so that they become less dependent on house officers for the provision of patient care, which will require the greater use of hospitalists, fellows, and other physicians, as well as nurses, nurse practitioners, physician assistants, and other health care workers. Faculty will have to reevaluate what they do. For instance, faculty might have to do some of their own evaluations and write-ups, and attending physicians might have to run a service without house officers. The cardiovascular service at the Mayo Clinic has already reported a successful experiment with this approach. They created a new service consisting of a team of cardiovascular attending physicians, cardiovascular fellows, nurse practitioners, physician assistants, and registered nurse liaisons but no internal medicine residents. Educational and clinical outcomes were eminently satisfactory, as was the satisfaction with the experiment among house officers, attending cardiologists, and patients.

Second, residents must be relieved from chores that have minimal educational value and that can be done equally well by nonphysicians, which requires the provision of more nurses, technicians, clerks, transporters, intravenous teams, phlebotomists, and other support staff. It also requires more assistance with all the scheduling issues and discharge planning that have become such a conspicuous part of contemporary hospital medicine. Such changes have already been occurring at many hospitals, but these organizational changes need to be accelerated and made permanent.

Third, residency programs need to remain focused on maintaining and improving the quality of educational opportunities they offer. Continued attention must be given to the array of conferences, seminars, rounds, and other formal and informal educational activities important to GME. Even more attention must be given to encouraging residents to attend these activities. It would be refreshing to see the ACGME encouraging residents to attend educational events with the same vigor it now requires house officers to leave the hospital when the shift is over. Efforts also need to be made to bring...
faculty back to the teaching units—not only for direct teaching and supervision but also for the establishment of personal relationships. Of course, the same present-day forces on faculty to increase clinical productivity that have taken faculty out of the lives of medical students have had similar consequences for residents. However, medical faculties have ample opportunity to bring clinical teachers back to teaching, provided they are willing to place a higher priority on the educational mission than in the past. Indeed, many have already started to do so via a greater willingness to promote clinician-educators, as well as by the adaptation of “academies of medical educators,” mission-based budgeting, and other strategies to raise or identify funds to pay teachers for teaching.

The effort to strengthen the educational quality of GME also affords the opportunity for educational innovation. For instance, Johns25 and Goroll26 have proposed a new outcomes-based, competency-based model for residency training programs. In this model, training programs and specialty certification would be based on specific achievement milestones, not on time served. In reexamining GME, educational leaders have the opportunity to examine the entire continuum of medical education. To revamp residency training without examining the interfaces with other parts of medical education would be unfortunate. Opportunities are also present to provide residents much more effective exposure to outpatient medicine, chronic diseases, and other conditions of practice similar to those they will encounter when they complete their training, as are opportunities to link residency training with efforts to reduce medical error, improve patient safety, and promote continuous quality improvement. The enhanced use of Web applications, other new information technologies, and adult learning theory could have a major impact on residency training, as they have already started to do in the education of medical students.27 The use of simulations and novel assessment formats might also be explored, as well as greater discussion of ethics and professionalism.

Fourth, training programs need to work hard at changing the culture of GME so that stress is decreased and the experience is more responsive to the emotional needs of trainees. This means much more than providing house officers with amenities such as parking, meals, and comfortable on-call quarters. It also includes such opportunities as split residencies for house officers with young children and ready access to help. It is essential that department chairs, training program directors, and faculty truly care about the welfare of their residents and that the residents know that they care. Faculty must work hard to counter the traditional mindset that a resident who is not around all the time is not a good physician. In the past, residents were taught that the best way to learn medicine is to spend more time. Faculty and trainees must be taught that the best way to learn medicine is to invest time wisely. In a related vein, program directors need to eliminate the “cowboy” mentality of the resident and make certain that house officers can ask for help without fear of recrimination.

It is hard to imagine making significant progress in the reform of GME without regulatory action. The power to accredit programs (ACGME) or certify individuals (American Board of Medical Specialties) is the power to shape the content, structure, and methods of GME. Yet, the record to date suggests that the national bodies that regulate GME remain largely rooted within the traditional service-oriented framework that we have described. In addition, regulations may be issued that medical educators in the field consider unwise, and requirements are often implemented in a rigid, top-down fashion that denies program directors any flexibility or discretion. The ACGME’s adoption of the 80-hour work week policy is a case in point. The unhappiness among residency program directors with the new policy is palpable. A program director recently said to one of us what dozens of program directors have told him privately in the last year: “The ACGME has no idea of what life as a patient or resident is like today, and I am frightened by what we are now turning out.” Regardless of the merits of this view, we find it disturbing that, without good evidence or outcome data, major regulations have been implemented that are contrary to the best judgment of many educators.

For these and other reasons, several organizations have called for review and reform of regulation (which involves more than 400 bodies regulating the education of health professionals nationwide).11,28,29 We concur. Because it is perhaps the most important regulatory organization in medicine, the ACGME should take the lead. Despite the important role that the ACGME has played over many years in working to ensure and improve the quality of GME, one area of education program evaluation and performance that it has not carefully evaluated is its own. The time has come for the ACGME to undertake a thorough review of its own performance. As is standard in such evaluations, the ACGME should first appoint an internal panel to review all aspects of its mission, organization, performance, and outcomes. On completion of this internal review, the ACGME should invite a peer review by an external blue-ribbon commission. This type of thorough review could provide an extraordinary array of insights and recommendations to guide the future development and regulation of GME and the rest of medical education in this country.

From a broad perspective, the challenges in GME are accentuated by current cultural trends in US society. Professionalism at its core involves hard work and service to society. Practitioners of medicine are expected to place the interests of their patients before their own. Yet, medical education and practice take place in a society in which there is a preoccupation with short-term rather than long-term thinking, an emphasis on immediate gratification, and domination by a private market sys-
tem beholden to owners and shareholders and frequently insensitive to public needs and the common good. Medical educators face the daunting task of promoting an attitude of service and self-sacrifice among physicians who live in a society that champions greed, material excess, and selfishness. We have no easy answer for this problem, though we do believe that an appreciation of the deeper layers of our educational dilemmas is the first step toward finding solutions.

A common denominator to most of our suggestions for reforming residency training is that they are expensive. No hospital, however willing, can carry out the types of proposals made here unless third-party payments are sufficient to make that allowable. Unfortunately, in the current market-driven health care environment, third-party payments to hospitals are more restrictive, forcing institutions everywhere to retrench. In addition, hospitals are operating under an enormous regulatory burden that adds profoundly to their expenses. Funds that easily could be spent for more nurses, technicians, and computer systems are siphoned off to satisfy regulatory requirements, many of which are far removed from patient care and education. Teaching hospitals are in the paradoxical position of being criticized by the public for working their house officers too hard yet often being without sufficient resources to lessen the workload of residents appreciably. Given the centrality of GME to the quality of medical care available in the United States, it would seem foolhardy for the public not to support GME adequately, particularly with the huge amount of money the nation already spends on health care.

Teaching hospitals must also be prepared to use internal sources to provide additional funds for the support of GME. Can they achieve further operational efficiencies without affecting the quality of care and the service expected by patients and their families? Can they cap or reduce the size of the rapidly expanding administrative staffs found at so many of them? Have they adequately protected existing educational funds by making certain that federal GME payments (which go directly to teaching hospitals, not to training programs) are fully distributed to the intended recipients? Perhaps most important, given that compensation guidelines reflect the values and mold the behavior of organizations, can the boards of teaching hospitals create compensation plans that reward senior hospital executives for the quality of medical work the institution does rather than for merely coming in below budget? We recognize that margins are necessary to fulfill mission, but bonuses and other financial incentives based solely on margins might tempt some administrators to skimp on mission. In short, teaching hospitals must be able to demonstrate that they have the institutional competency to use resources wisely.

GME in the United States has much to be proud of. On balance, for more than a century it has served the public well. Nevertheless, its history is one of a persistent failure to live up to its own ideals. With the astonishing complexity of modern medicine and the extraordinary demands on today’s physicians, the need to address the deficiencies of GME has become urgent. The key to doing so is to establish, at last, the primacy of education over service.

Financial Disclosures: None reported.

REFERENCES


