

Solving One of Graduate Medical Education's Problems: A Loss of Thoroughness

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Of all the challenges faced by graduate medical education (GME) today, perhaps the most fundamental (from an educational perspective) is that residents, especially those in internal medicine, admit more patients than they can adequately care for or manage in the time available. The well-known economic pressures that threaten many academic medical centers have exacerbated the long-standing tension in GME between education and service. While educators have focused on decreasing resident activities that are devoid of educational value,¹ we would posit that residents at many academic medical centers still lack sufficient time to be thorough in patient care. Innovative efforts that have been recently introduced at several academic medical centers to rebalance the physician workload might go a long way in improving both education and patient care.

A half-century ago, the leading medical education programs in the United States were found predominantly at large municipal hospitals or on the ward services of major teaching hospitals where residents took the lead role in caring for patients. For example, on the Osler Medical Service at the Johns Hopkins Hospital, residents assumed responsibility for patient care, lived in the hospital, and were expected to thoroughly evaluate their patients.² Today's residents face very different challenges. Among others, financial pressures from payers to decrease lengths of stay, the often-confounding electronic health record, a resolute focus on decreasing the costs of care, and pressure to move inpatients through the system as quickly as possible create a high-intensity environment. Early discharges and duty hour restrictions can result in trainees seeing only a narrow window of an acute disease, and residents may be precluded from participating in the entire decision-making process if the results of diagnostic tests are not returned while the patient is hospitalized or if important diagnostic tests are performed postdischarge. Time pressures can also predispose residents to practice by algorithms, since the default to individualized care is more time consuming.

The high intensity of the current inpatient service has created an educational environment for both residents and students that has moved away from the concept of *thoroughness* in patient evaluation and care—a principal dictum of residency training since the beginning of the system.³ In 1 context, thoroughness is defined as not only considering the patient's chief complaint but also understanding why patients were admitted, where they are going, and how to prevent further declines or admissions. Equally important is the concept of performing a complete history and physical examination on each patient admitted to the medicine service—a model that has disappeared at many institutions. For example, in internal medicine, students and residents frequently perform incomplete examinations. They may listen to the chest through the clothes, and it is unusual for them to examine the eye grounds, the skin, the breasts, the gynecological-urinary systems, or the neurological system. Furthermore, as the volume of patients becomes unmanageably high and discharge becomes the priority, patients' problems unrelated to the cause of admission are often not resolved (eg, "hemoglobin of 5: refer to hematology clinic").

Prototypical models that address the issues related to high patient volumes, high intensity, decreased thoroughness, and diminished patient contact have been successfully implemented at 2 teaching hospitals in the United States—the Aliko Initiative at Johns Hopkins Bayview Medical Center and the Integrated Teaching Unit at Brigham and Women's Hospital at Harvard University.^{4,5} Both programs have inpatient teams led by a small group of master clinicians, and the teams admit half the number of patients as traditional teams to optimize the time residents have to spend with their patients and to reflect. The Aliko residents participate in a multimodal, patient-centered care curriculum that promotes knowledge of patients as individuals, as well as the ability to improve patient transitions of care and reduce barriers to medication adherence.⁶ Performing a comprehensive history and physical examination is the norm and not the exception. Spending more time with patients does not come at the expense of longer hospital stays, as the program at Brigham and

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Women's was associated with a significant decrease in length of stay (J. Loscalzo, MD, written communication, January 2016). At Johns Hopkins Bayview, longitudinal coordination and comprehensiveness of care are facilitated by intern telephone calls to the patient's primary care physician.⁷ In addition, interns contact the patient shortly after discharge, perform medication adherence reviews, engage in patient-centered discharge planning, and visit the patient in his or her home when possible.^{7,8}

Programs that decrease the size of a resident service can increase hospital costs due to the need to transfer work that would ordinarily be the responsibility of residents to attending physicians or mid-level providers. However, at Johns Hopkins Bayview, patient-centered care has reduced heart failure admissions and significantly improved patient satisfaction scores—important drivers of health care costs and reimbursements, respectively.⁸ In fact, at Bayview, the original Alike Initiative has now been expanded to the entire inpatient medical service and to many of the nonmedicine services (R. Ziegelstein, MD, written communication, December 2016). The structure of the innovative services at both Johns Hopkins Bayview and Brigham and Women's also might lend themselves to innovations in outpatient medicine. For example, an inpatient clinical team might be coupled with an outpatient team—both of which cared for the same patient cohort—with the 2 teams alternating between the inpatient and outpatient settings each month.

Optimizing the educational environment at the more than 500 teaching hospitals in the United States will not be easy, but academic leaders may pursue innovative and outcomes-based approaches.⁹ For example, public-private partnerships could be formed that focus on designing and funding new structures for GME. Innovations in medical learning that take advantage of technology, harness big data analytics, and are competency based may enhance the educational experience. However, they are less likely to suffice if the current service-intensive model remains the primary educational construct.

The Centers for Medicare & Medicaid Services should consider providing waivers for teaching hospitals that are piloting innovative redesigns of educational services. For example, the Centers for Medicare & Medicaid Services could encourage teaching hospitals to evaluate new educational models if they excluded these novel services from penalties due to adverse length of stay, pay for performance, or cost to treat calculations until a full economic analysis is available. Service innovation may increase direct costs. However, higher patient satisfaction, lower readmission rates, decreased use of

tests, and improved population health might actually decrease the overall cost to treat.

Health care economists can facilitate change by creating the metrics to enable meaningful comparisons of trainee competency and patient outcomes across different GME structures while factoring in the resulting training costs and overall health care expense.⁹ Interestingly, an Institute of Medicine report estimated that the cost of transferring excessive clinical work from residents to attending physicians or mid-level providers—a critical component of the initiatives at Johns Hopkins Bayview and Brigham and Women's—is approximately \$1.6 billion per year.¹⁰ This is less than a third of the \$6 billion spent each year on indirect medical education.¹¹ If Congress eliminates indirect medical education payments as has been recommended by many health policy experts,¹¹ at least some dollars would be preserved to create a rich learning environment, making the cuts more palatable to both hospitals and federal payers as well as being politically expedient.

Just as structure follows function in biological systems, we believe that the structure of both the inpatient and outpatient teacher services would function better as teaching environments if they were reengineered by educators to optimize the ability of trainees to spend time with their patients and to be thorough in all aspects of patient care. Despite strong economic pressures to maintain the status quo, it behooves teaching hospitals to support the evaluation of new and innovative structures for medical education; the best medical education leads to better patient care, and the best patient care saves money. Thus, in the long run, restructuring GME may provide a hedge against rising health care costs.

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