

A New Model for Medical Education

Celebrating Restraint

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HEALTH CARE EXPENDITURES ARE A MAJOR CONCERN of governments in Canada and the United States. Over the past 40 years, a variety of approaches have been used to control costs, including global budgeting, managed competition, cost sharing, and pay for performance. Policy makers recognize that physicians play a central role, with some estimates suggesting that physicians control 80% of health expenditures.¹

Most policy recommendations therefore acknowledge the importance of physicians in implementing changes to health care organization. Fundholding and various managed care organizational structures are examples of policy mechanisms that seek to control physician-driven health expenditures. Initiatives like the American College of Physicians' "High Value, Cost Conscious Care" program² and the *Archives of Internal Medicine's* "Less Is More" series³ seek to educate and engage physicians in appropriate resource management. The American Board of Internal Medicine Foundation and its partners go one step further with "Choosing Wisely."⁴ These initiatives aim to eliminate wasteful spending, which has been estimated at 10% of the US health care budget, or \$210 billion annually.^{5,6}

In this Viewpoint, we suggest complementing health care cost control initiatives by transforming the current approach used in medical education that primarily rewards meticulousness of clinical investigation to one that also celebrates appropriate restraint.

The Current Situation

In North America, medical education uses the apprenticeship method by which students are taught how to make clinical decisions "on the job." Students pass through stages of training with increasing levels of responsibility for patient care. The system is hierarchical, in that the attending physician has overall responsibility and the final authority but usually delegates a substantial amount of decision making to the senior resident, who in turn delegates some decisions to more junior members of the team. Trainees present their patient profiles to the attending physician and review the decisions they have made or will make. The attending physician demonstrates how he or she integrates

evidence, previous experience, patient preferences, and availability of resources in clinical decision making. This demonstration has a lasting effect on trainees.

Physicians overinvestigate patients' complaints for many reasons: financial incentives, "defensive" medicine, duplicating tests because of poor system-wide information sharing, or pressure from patients and families. Medical trainees work in an environment that especially promotes the overuse of medical investigation. The majority of medical training occurs in tertiary academic centers with easy access to advanced health care technologies and subspecialists. Unlike experienced physicians, junior trainees may have less confidence in their clinical acumen and therefore order more tests. Perhaps most important, the tradition of medical education, as reflected in examinations and clinical evaluation, emphasizes and rewards thoroughness and penalizes restraint. Multiple-choice examinations reward students who are capable of memorizing minutiae and the trainee who diagnoses a rare medical condition receives praise on the ward.

These values are evident when, for example, a patient presents with hypercalcemia. Attending physicians often reward students who can list more than 20 causes of that disorder instead of the 3 most common ones. The merits of rewarding exhaustive medical knowledge are clear, but those teachers must be wary of the implied lesson of doing so, which suggests that the trainee should investigate all of the causes on the patient's first day of admission.

The consequences of overinvestigation are not benign. In addition to straining limited budgets, overuse of diagnostic testing can reveal useless or even harmful information, causing further testing, anxiety, and unnecessary treatments. Investigations are associated with adverse effects as well, such as complications from invasive diagnostic procedures and radiation exposure from imaging studies.⁷

A Potential Solution

Clinical teachers who are role models could embrace a new approach. They could emphasize teaching restraint, both to improve health care quality and to acknowledge the pro-

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professional duty of resource stewardship. There are several components to this approach, which would build on the existing practice of probing students and trainees to justify individual clinical decisions they make by asking them why they ordered tests and what they will do with the results.

Teachers can demonstrate the consequences of seemingly simple decisions. For example, an order for an inpatient chest x-ray requires the following: someone schedules the test, someone informs the patient that the x-ray is being done and why, someone transfers the patient from the bed to a stretcher or wheelchair and transports him or her through hallways to the radiology department where the patient spends time alone in the holding area, and then someone leads the patient through maneuvers to obtain the radiograph. These steps are reversed to return the patient to his or her room. A radiologist interprets the image and creates a report. The clinician who ordered the test examines the report and then makes a decision based on that information. Then, the patient and often several family members need to be informed of the findings and how those findings will affect the next steps in care. This is not a simple process. Now multiply this by the number of patients under a team's care and the number of tests ordered for each patient. Consider the challenges of more complex diagnostic tests, such as colonoscopy. Then think about the influence of the patient's age and health status on that process. Having students observe each of these steps for tests they order on some of their patients would emphasize the effects of those decisions on patient comfort and resource utilization. This exercise would complement the strategy of showing trainees the prices of ordered health care services, an approach that has produced mixed results on cost reduction. It does so by translating prices in monetary units into real resource (primarily labor) requirements.

The next component is to identify the circumstances in which a test result leads to worse care. For example, an unnecessary blood culture may lead to a false-positive (contaminant) result, 3 days of administration of intravenous vancomycin (and its potential adverse effects), more blood cultures, and possibly an unnecessary echocardiogram. It can be instructive to have trainees observe an attending physician explain to patients and their families why there is sometimes limited utility in investigating a symptom and why it is sometimes better to have no explanation after several tests have failed to uncover one. Teaching trainees and patients how to deal with uncertainty is an important skill. At times, attending physicians have to allow the trainee make a decision and let the situation evolve. After the events unfold, the teacher can walk the student through what happened, pointing out pertinent lessons on how the decision affected resource use and patient outcome and then explaining how things might have been different if a test had not been ordered.

Teaching restraint is also relevant to attending physicians on subspecialty consulting services, who, when ap-

propriate, need to teach trainees to say, "You have already sent off all the tests I would recommend, and a few I wouldn't, and I will let you know my thoughts after I see those results." The current culture seems to expect every consultant to suggest something else to do.

The final, and perhaps most important, component of the new model is to find times to celebrate the use of restraint by a trainee, in the same way those who make rare diagnoses are celebrated. All physicians recall times when, as students, they received praise from clinical supervisors. When a trainee forgoes the use of antibiotics in a patient with no clear source of bacterial infection, appropriately chooses not to order a computed tomographic scan in a patient with abdominal pain, stops all blood work on a stable patient, or removes a urinary catheter promptly, the teacher should deliver as much praise as when the trainee suggests and then confirms a diagnosis of Goodpasture syndrome. The influence of this praise from an attending physician for a student will be significant and persistent.

Conclusion

The current system of medical education that emphasizes mentorship puts the attending physician in a remarkably powerful position of influence over the future practice of medical students and trainees. All practicing physicians find themselves falling back on strategies they learned from observing their clinical teachers and asking, "What would the attending who supervised my learning as a clinical clerk or resident do with this patient?" Policy makers should engage medical educators to harness that power to disseminate the practice of restraint as part of cost-control efforts in the future.

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