New technology and new approaches to surgical education

by
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During the past decade, minimally invasive technologies have rapidly dispersed throughout medical practice. Unfortunately, training in these emerging techniques has often left something to be desired. In the case of laparoscopic cholecystectomy, for instance, there has been a relatively high incidence of operative bile duct injuries. Although for the moment training in many of these techniques occurs primarily during residency, it would seem only a matter of time before a new spurt of technology renews this challenge. Thus, it is important that we focus attention on how new technologies are evaluated, taught, and learned.

Even if the learning of new technologies could be confined to the residency environment, significant problems would remain. As an example, many of these new technologies complement rather than replace the more traditional "open" procedures. As a result, the time required to learn the new technology often competes with that required in learning their traditional counterparts. All of these changes occur in an era in which restrictions on time and resources further detract from the educational environment. The result, as Charles T. Klodell, MD, and his colleagues note in this issue (p. 11-15), has been to accelerate the tendency for specialization and to encourage post-residency fellowships.

In considering these authors' approach, it is important to reflect on the fact that there have been relatively few efforts to re-examine the "efficiency" of current residency education. Indeed, there appears to be an increasing sense that the problems facing our health care system and the traditional residency model are sufficiently severe to warrant exploratory alternative approaches. This lack of educational innovation seems overdue since the current Halstedian-based model has been extant for roughly 100 years and was developed in a very different era of medical practice. Concentrating experience is a relevant and well-established principle of surgical experience. The University of Louisville's (KY) efforts (and those at Indiana University, as well) to address teaching new technology in residency training appear to go beyond tradition, and, therefore, are very welcome.

Important considerations

Several features of the authors' model are particularly worthy of comment. The primary consideration is the value of broadening surgical skills within the context of current residency education in general surgery. "See, do, teach" is another hallmark of surgical education and also remains a valid principle. Every procedure has a learning curve, and the shape of this curve varies among individuals and by procedure. However, we lack uniform criteria or reproducible methods by which to assess when a

surgeon has achieved "competence" in a given technique. Thus, current accreditation and certification depend on acquiring at least a minimal defined experience with specific procedures. Again, due to difficulties in measurement, relatively little emphasis has been placed on aspects of the structure and the context of the educational process that are critical to its outcomes. The enhanced availability of supervision and feedback on performance implied in the Louisville model should greatly facilitate learning.

Another consideration relates to the fact that our current health care system is extremely disjointed. The solution to this problem involves creating a system that enhances (or simplifies) communication and coordination. By expanding the capabilities of a given surgeon, the authors' approach facilitates the ability of both patients and managed care organizations to be referred to an appropriate surgeon in a timely fashion. Patient satisfaction as well as other outcomes are also likely to be improved by enhancing collegiality (and thus communication) among specialists with overlapping turf. The Louisville approach, by increasing the collegial atmosphere of learning among relevant specialists, could address both of these issues.

A related consideration is the trend toward increasing specialization. It is hard to argue against the idea that more training and experience is better. Specialization, per se, is not bad, and the forces driving it make it seemingly inexorable. However, we should be cautious of such specialization if it is tied to technique rather than to the fundamental knowledge of given disease systems and the principles of their treatment. Specialization related to technique alone makes one vulnerable to being outdated by the emergence of even newer technologies.

What works?

The key question about the Louisville approach is, of course, whether these types of experiences accomplish what they say they do. The emerging paradigm of quality assessment in health care identifies three measurable elements of quality: structure, process, and outcome. Regardless of the teaching structure that students of surgery may have at their disposal, the context of the process will always be critical to the outcomes. The Louisville program is clearly the beneficiary of the resources to create the structure. Hopefully, this new approach will further improve the processes and the outcomes by improving the context within which teaching occurs.

It should be noted that this is a time of significant changes in some of the forces that affect surgical education. To name a few: (1) the Residency Review Committee for Surgery, through a joint initiative of the Accreditation Council for Graduate Medical Education and the respective specialty boards, has recently begun to sharpen the focus on outcome measures for specific competencies; (2) the evolution of virtual reality also holds great promise for enhancing the teaching of surgical technique and for creating objective criteria for measuring technical ability; (3) there is increasing uncertainty about the future funding of graduate medical education; and (4) there are concerns about the attractiveness of the surgical lifestyle. The result of these interactions cannot be predicted, but only through continued active participation in the process can we hope for the best possible outcome. Ω

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